3.0 Environmental Justice Perspectives

■ 3.1 Background

Investments in transportation increasingly are being assessed on their ability to contribute to a variety of community, economic, and environmental objectives. Mobility and accessibility remain important priorities; but the manner in which improved transportation affects the livability and environmental quality of neighborhoods, urban areas, rural areas, and entire states is assuming a growing importance in all aspects of transportation decision-making – investment, operation, and maintenance.

This change in emphasis is resulting in important changes in the manner in which impacts of transportation policy and investment are being examined. Examining transportation impacts on an aggregate or regional basis no longer is sufficient. Equal attention is now being given to the manner in which these benefits and burdens are distributed among the different potentially affected communities, with *community impact assessment* methods growing in acceptance and importance within state departments of transportation. Impacts of particular concern are those affecting a community's overall quality of life and include community cohesion, displacements, safety, business and residential economics, land use, aesthetics, and livability.

The concept of *environmental justice* refers, in the broadest sense, to the goal of identifying and avoiding disproportionate adverse impacts on minority and low-income individuals and communities. Environmental justice extends community impact assessment by examining communities based on characteristics such as race, ethnicity, income, age, and even disability. The term "environmental justice" may be relatively new to transportation planning, but the requirement itself is not; it is embodied in the 1964 Civil Rights Act, Title VI, which states that, "No person in the United States shall, on the ground of race, color, or national origin be excluded from participation in, be denied the benefits of, or be subjected to discrimination under any program or activity receiving Federal financial assistance." The legal framework influencing the practice of environmental justice, however, is broader, including the 1994 *Executive Order 12898, Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations*; the National Environmental Policy Act of 1969; Section 109(h) of the 1970 Federal-Aid Highway Act; the Age Discrimination Act of 1975; and the Americans with Disabilities Act of 1990.

The combination of these provisions affect a wide range of planning and project decisions undertaken by the Indiana Department of Transportation (INDOT), Indiana's Metropolitan Planning Organizations (MPO), public transportation agencies, and other transportation

providers. Questions related to environmental justice arise in both system-level analyses of regional issues and corridor-level analyses of specific projects. These questions may relate to accessibility to jobs and other activities, as well as to the magnitude and distribution of other consequences of transportation policies and projects.

States and their local transportation partners are working today to ensure that the principles of environmental justice are consistently upheld with regard to transportation planning. Transportation investment can promote greater respect for environmental justice in three ways. First, it can provide infrastructure and services that meet the needs of the entire public, including minority and low-income communities. Second, transportation projects can be developed so as to provide community, economic, and environmental benefits by employing practices such as those embodied within the emerging practice of *context sensitive design*. Third, it can ensure that potential adverse health and environmental impacts associated with new project construction do not strike these communities disproportionately, and that such impacts are either eliminated or effectively mitigated.

The population of the State of Indiana, consistent with patterns observed throughout the country, is becoming increasingly diverse racially and ethnically, including persons having limited English proficiency. There also is an increasing desire on the part of INDOT, and other state DOTs as well, to improve the manner in which they respond to customer needs, including the explicit recognition of differences among different population or stakeholder groups. The challenge in identifying, monitoring, and satisfying the needs of INDOT's customers is made all the more challenging because of the increasing diversity in the state's population.

■ 3.2 Objectives

The purpose of the Task 3 program of market research activities was to develop an improved understanding of current and potential future environmental justice issues within the State of Indiana and to use this understanding as the basis for identifying potential policy, technical analysis, community outreach, and training initiatives that could be undertaken by INDOT. The work program involved these elements:

1. Analysis of existing demographic conditions and trends building on the results of the Year 2000 Census of the Population;

2. Interviews with stakeholders, MPO, and INDOT staff;

3. Use of a stratified sample in the market research telephone survey to ensure a statistically valid sample of minority population subgroups; and

4. Development of potential actions that INDOT could take based on the cumulative results of the previous four information gathering activities.

The objective of this task, therefore, is to help INDOT establish an appropriate state-level and department-wide perspective on the topic of environmental justice by:

- Developing a better understanding of the types of environmental justice issues within the State of Indiana that fall within the purview of INDOT; and

- Defining an overall approach through which to better integrate environmental justice issues throughout the activities of INDOT.

While both INDOT and the state's MPOs already have taken important steps to respond to potential issues of environmental justice, INDOT recognizes that these existing actions, while they represent an important start, may not be sufficient. Additional actions may be desirable in three distinct areas:

1. Examining potential issues of environmental justice earlier in the transportation planning process, especially as part of developing a long-range statewide systems-level plan and during the process of programming transportation projects;

2. At the program level, in the detailed planning and design of specific projects, and in the operation and maintenance of the state's transportation facilities; and

3. Articulating an overall INDOT policy with respect to environmental justice.

■ 3.3 Changing Demographics of Sensitive Population Groups in Indiana

This subsection examines demographic trends among Indiana's minority and low-income population groups. It is intended to set the stage for the more detailed and project-specific interviews and telephone survey results. It begins with a summary of overall findings, then focuses on the patterns and change in spatial distributions between the 1990 and 2000 Census years for each of the following subsets of population: White, Black, Other, Hispanic, and poverty. For the purposes of this report, Black, Other, Hispanic and poverty groups will represent Indiana's environmental justice populations.   The White population is described first because it is the majority group and its characteristics can be used as a control for comparison to the other groups.

Statewide Findings

According to the 2000 Census, Indiana Department of Transportation served just over 6.08 million people, the population of Indiana, in 2000 (Table 3.1). This is up from 5.54 million people in 1990 which represents a 10 percent growth in population from 1990 to 2000. While the majority of the state's population is White, a significant and growing number of people are included in Indiana's minority population groups and their unique settlement patterns warrant specific study and treatment. This section outlines general demographic trends and then each trend is discussed in more detail in its own section.

Table 3.1 Indiana Statewide Population Summary
1990 and 2000

	1990	Percent of Total	2000	Percent of Total	Percent Growth
Total Population	5,544,159	100.0%	6,080,485	100.0%	9.67%
White Population	5,020,700	90.6%	5,317,334	87.4%	5.91%
Black Population	432,092	7.8%	504,449	8.3%	16.75%
Hispanic Population	98,788	1.8%	210,538	3.5%	113.12%
Other Population	91,367	1.6%	258,702	4.3%	183.15%
Population in Poverty	573,632	10.3%	559,484	9.2%	-2.47%

In general, racial and ethnic minority groups represent a significant portion of Indiana's total population and are increasing at a much faster rate than the general public. Approximately, 87 percent of Indiana's population is White. Of the non-white population, the majority group is Black, comprising about eight percent of the total population. However, Indiana also has a increasingly prominent non-Black racial minority population, representing the remaining five percent of the state's population, a population group that almost tripled in the last 10 years in absolute terms.

Probably the most noteworthy trend in population change with respect to Title VI, between 1990 and 2000, is the rapid increase in the Hispanic population which has more than doubled. It is important to note that in this report, as in the U.S. Census, the term Hispanic is not used as a racial group and is completely independent of racial status. That is, a person may be counted as either White, Black, or Other (Other could be any other racial group or a combination of racial groups) and be either Hispanic or non-Hispanic. While this growth in Indiana's Hispanic population still represents less than four percent of the state's total population, Hispanics comprise higher percentages of the 10 largest cities' populations and are dispersed throughout the State.

Another important trend has been the population decline seen in Indiana's largest cities (Table 3.2). Nine of Indiana's 10 largest cities have seen a decrease in their overall population. The exception is Indianapolis which has experienced a small increase in population. Besides a difference in general population change, the 10 largest cities also exhibit vast differences in race and poverty trends compared to areas outside the cities.

Finally, statewide poverty has decreased since 1990. This encouraging trend is further examined in its own section below.

Table 3.2   Total Population of Indiana's 10 Largest Cities

City	1990	2000	Percent Growth
Indianapolis	729,057	778,669	6.800%
Fort Wayne	191,576	191,533	-0.020%
Evansville	123,475	118,488	-4.040%
Gary	116,596	100,560	-13.750%
South Bend	104,710	104,237	-0.450%
Hammond	84,044	82,720	-1.580%
Muncie	68,507	64,856	-5.330%
Anderson	60,008	59,870	-0.230%
Terre Haute	59,571	57,116	-4.120%
Bloomington	58,376	60,824	4.190%
Total	**1,595,920**	**1,618,873**	**1.438%**

General Quick Facts

1. Population has increased by 10 percent between 1990 and 2000;

2. Urban population has decreased (Indianapolis is the exception);

3. Racial minority groups are increasing at a much faster rate than the general public (Whites only increasing by six percent) – especially in the 10 largest cities;

4. Hispanic population has more than doubled between 1990 and 2000; and

5. Population in poverty overall has decreased.

White Population

The White racial group makes up 87.5 percent of the population. Statewide, the White population has increased at a rate of six percent since 1990. This increase is less than the general increase in population for the State which increased 9.7 percent. This means that the percent of the total population that is White is decreasing.

Indiana's suburban and rural counties have the largest White percentages while the 10 largest cities have relatively low White percentages. Together, Indiana's largest 10 cities grew by only 1.4 percent. Eight of the 10 largest cities, have actually experienced significant negative population growth. The two exceptions are Indianapolis which had a 6.8 percent population growth and Bloomington which had a 4.2 percent population growth. This downward population trend is exaggerated for the White population in the
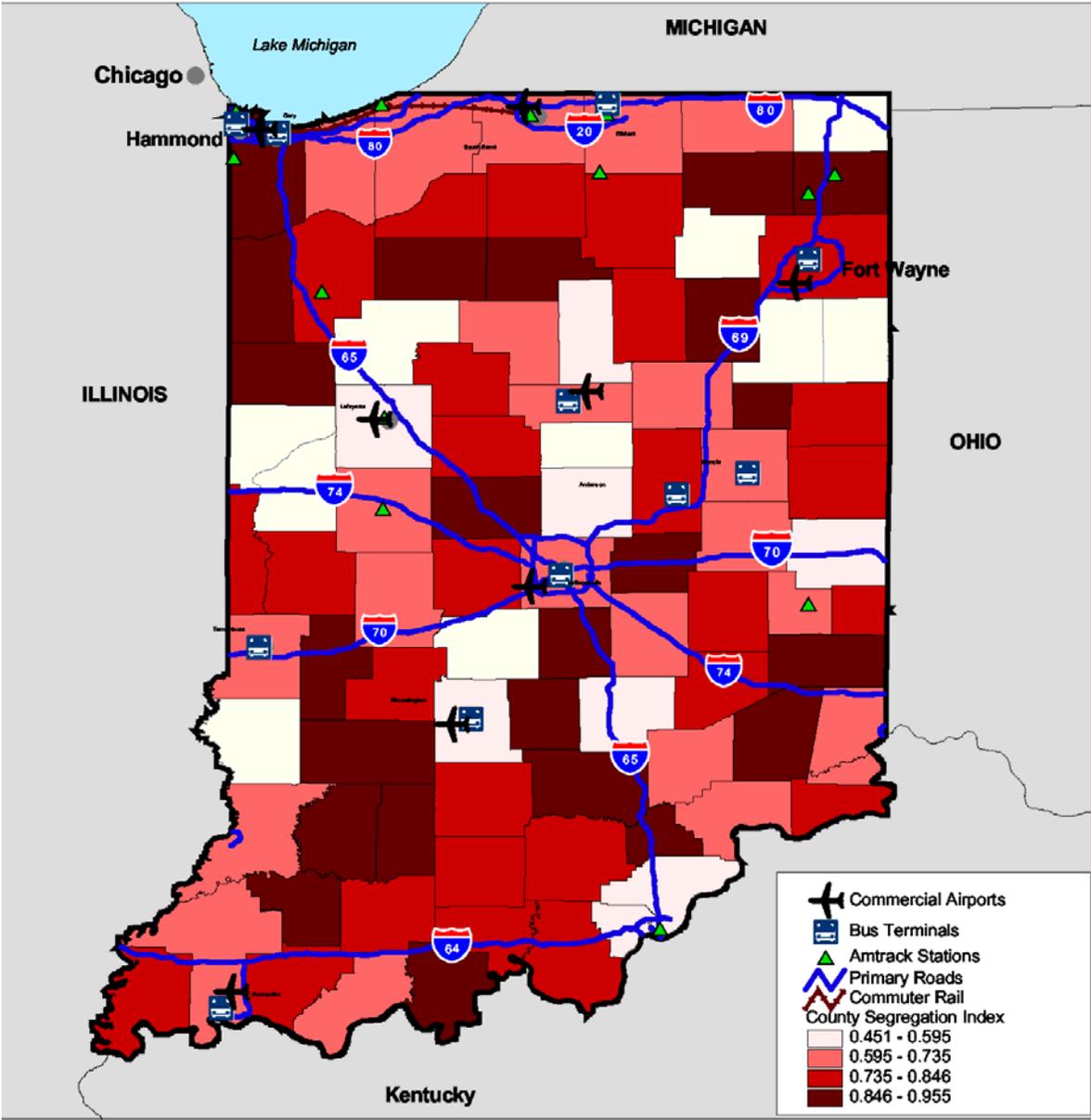
10 largest cities (Table 3.3). In fact, White population is only increasing in Bloomington and by only 0.07 percent. In all of the other 10 largest cities, White population is decreasing. The cities that have the smallest White percentages also experienced some of the largest decreases in White population. For example, the White population in Gary, which is only 12 percent White, decreased by an additional 39 percent between 1990 and 2000; South Bend has the second smallest White percentage, 67 percent, and its White population decreased by 13 percent; Indianapolis which is 69 percent White saw a decrease in its White population by three percent; and Hammond which is 72 percent White had a decrease in its White population by 16 percent.

Table 3.3   White Population of Indiana's 10 Largest Cities

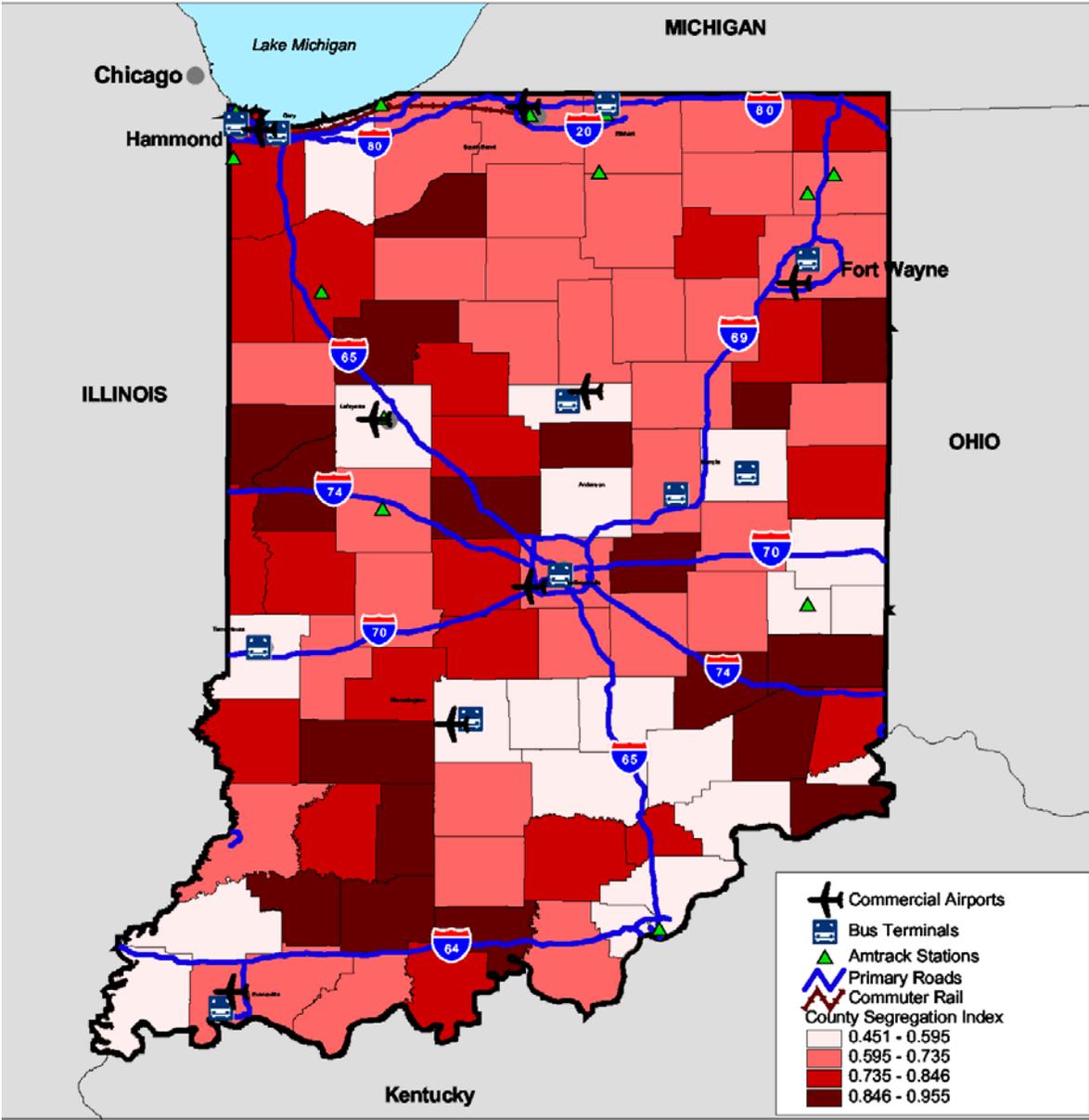| City	1990	Percent of Total	2000	Percent of Total	Percent Growth
Indianapolis	554,462	76.1%	539,390	69.3%	-2.718%
Fort Wayne	157,490	82.2%	144,044	75.2%	-8.538%
Evansville	110,594	89.6%	102,789	86.8%	-7.057%
Gary	18,994	16.3%	11,503	11.4%	-39.439%
South Bend	80,044	76.4%	69,615	66.8%	-13.029%
Hammond	71,430	85.0%	59,785	72.3%	-16.303%
Muncie	60,990	89.0%	55,865	86.1%	-8.403%
Anderson	51,032	85.0%	49,321	82.4%	-3.353%
Terre Haute	53,630	90.0%	49,494	86.7%	-7.712%
Bloomington	53,100	91.0%	53,136	87.4%	0.068%
Total	**1,211,766**	**75.9%**	**1,134,942**	**70.1%**	**-6.340%**

This "White flight" from the largest cities exacerbates the segregation of cities and sub-urbs. The segregation index, a statistic which describes how segregated two groups are within a geographic area, compares the spatial distributions between White and Black populations (Figures 3.1 and 3.2). Results show that segregation has worsened between 1990 and 2000. In 1990, many rural counties had a very low segregation index indicating a relative even distribution of White and Black populations. In 2000, many of those same rural counties had a much higher index.

Figure 3.1   1990 County Segregation Index
    Black versus White

Formula for Segregation Index

$$D = (0.5 * \sum_{l=1}^{K} |x\,l - y\,l|)$$

County Segregation Index
    Better (less segregation)
    Worse (more segregation)

X = The percentage of the study area's white population living in a given census block group.
y = The percentage of the study area's black population living in the same census block group.
k = The number of block groups.

Figure 3.2   2000 County Segregation Index
Black Versus White

Formula for Segregation Index

$$D = \left(0.5 * \sum_{l=1}^{k} \mid x\,l - y\,l \mid\right)$$

County Segregation Index
Better (less segregation)
Worse (more segregation)

X = The percentage of the study area's white population living in a given census block group.
y = The percentage of the study area's black population living in the same census block group.
k = The number of block groups.

White Population Quick Facts

- Statewide, White population has increased less than the general population;

- Indiana's rural and suburban counties have far higher percentages of Whites than cities;

- White population is decreasing in the largest 10 cities. The cities with the largest percentage of population that is minority also has seen the largest decrease in White population; and

- Racial segregation between Black and White populations has increased in Indiana from 1990 to 2000.

Black Population

The Black population is Indiana's largest racial minority. Blacks made up 8.3 percent of Indiana's total population in 2000. This is up from 7.8 percent in 1990. Statewide, the Black population has increased at a rate almost twice that of the general population.

Indiana's Black population is overwhelmingly urban. In 2000, 77 percent of the Black population lived within the borders of the 10 largest cities. This statistic is more than three times higher for Blacks as it is for Whites (24 percent of White population lives within the same 10 cities). Indianapolis has the largest absolute Black population, with the collective populations of Gary, Hammond and South Bend making up the largest regional Black population (Table 3.4). The maps illustrating percentage Black by county (Figures 3.3 and 3.4) clearly show a ring around cities where the Black percentage is very low. This trend is explained by the very low suburban representation of Blacks. However, the per-centage of Blacks living in the 10 largest cities has decreased by four points from 1990 to 2000 so the rate of Black suburbanization is likely rising. Black population in rural areas is also very low.

Table 3.4   Black Population of Indiana's 10 Largest Cities

City	1990	Percent of Total	2000	Percent of Total	Percent Growth
Indianapolis	163,368	22.4%	196,368	25.2%	20.200%
Fort Wayne	28,680	15.0%	33,027	17.2%	15.157%
Evansville	11,701	9.5%	11,900	10.0%	1.701%
Gary	93,966	80.6%	84,953	84.5%	-9.592%
South Bend	21,810	20.8%	25,249	24.2%	15.768%
Hammond	7,523	9.0%	11,657	14.1%	54.951%
Muncie	6,360	9.3%	6,831	10.5%	7.406%
Anderson	8,486	14.1%	8,820	14.7%	3.936%
Terre Haute	4,885	8.2%	5,388	9.4%	10.297%
Bloomington	2,306	4.0%	2,493	4.1%	8.109%
Total	**349,085**	**21.9%**	**386,686**	**23.9%**	**10.771%**

Figure 3.3 1990 County
Percent Black
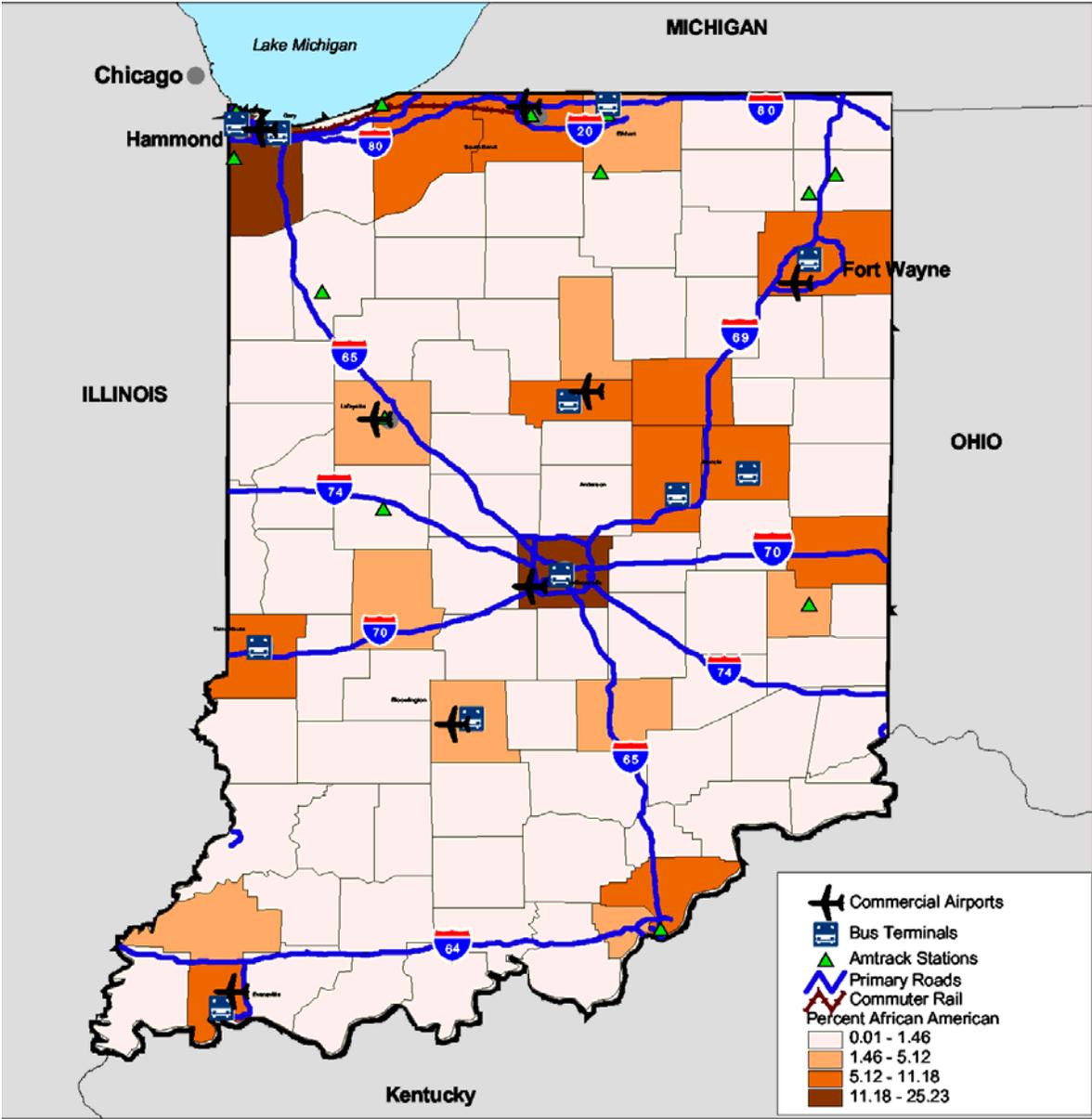
Figure 3.4 2000 County
Percent Black
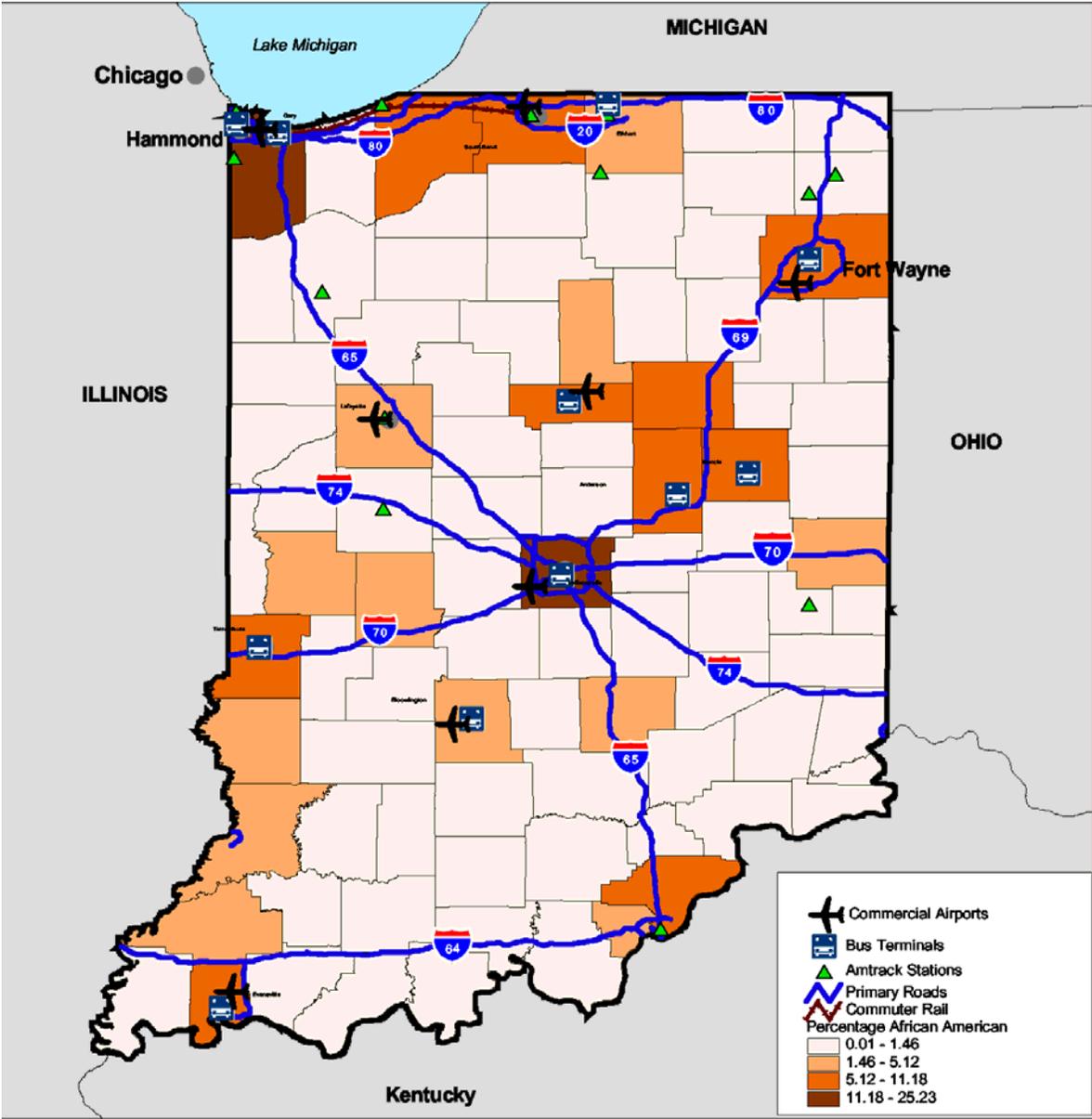
Of the marginalized populations studied, the Black population has the most clustered spatial distribution. This pattern is very apparent in both the 1990 and 2000 census data. The dot density maps of Black population in Indiana (Figures 3.5 to 3.8) show that the clusters of Black population are correlated with large cities. However, even within rural counties, Black population is clustered. That is, within rural counties, the Black population is not distributed evenly with respect to the majority population. The segregation index between White and Black populations further supports this notion as it is high in 2000 for most rural counties as well as urban counties, indicating that Blacks throughout the State are clustered and not spread out with respect to Whites.

Figure 3.5   1990 Block Group – Black Population
(One Dot = 50 Persons)

Figure 3.6   2000 Block Group – Black Population
(One Dot = 50 Persons)
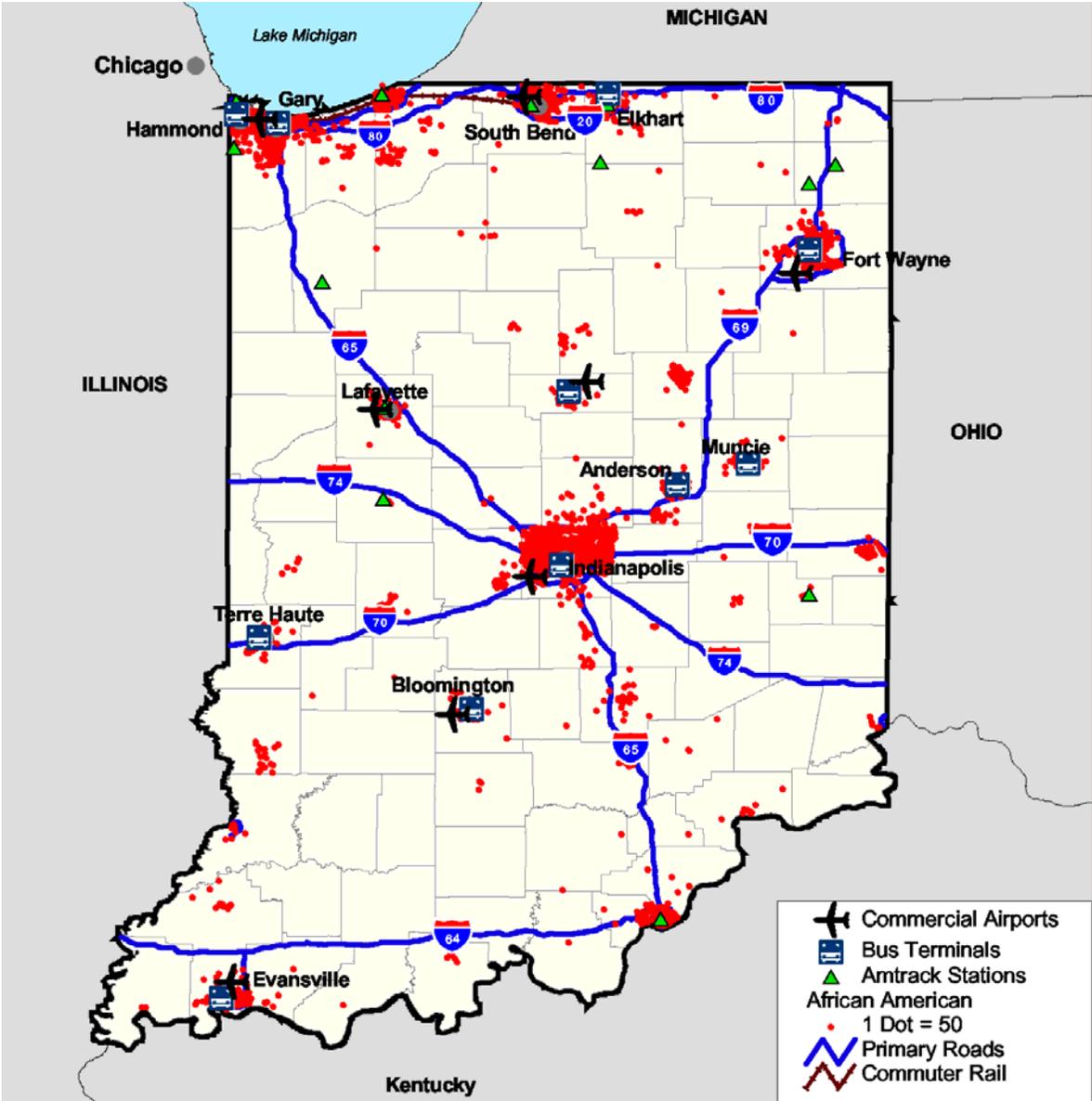
Figure 3.7   1990 Block Group – Black Population
Northwest Indiana (One Dot = 50 Persons)
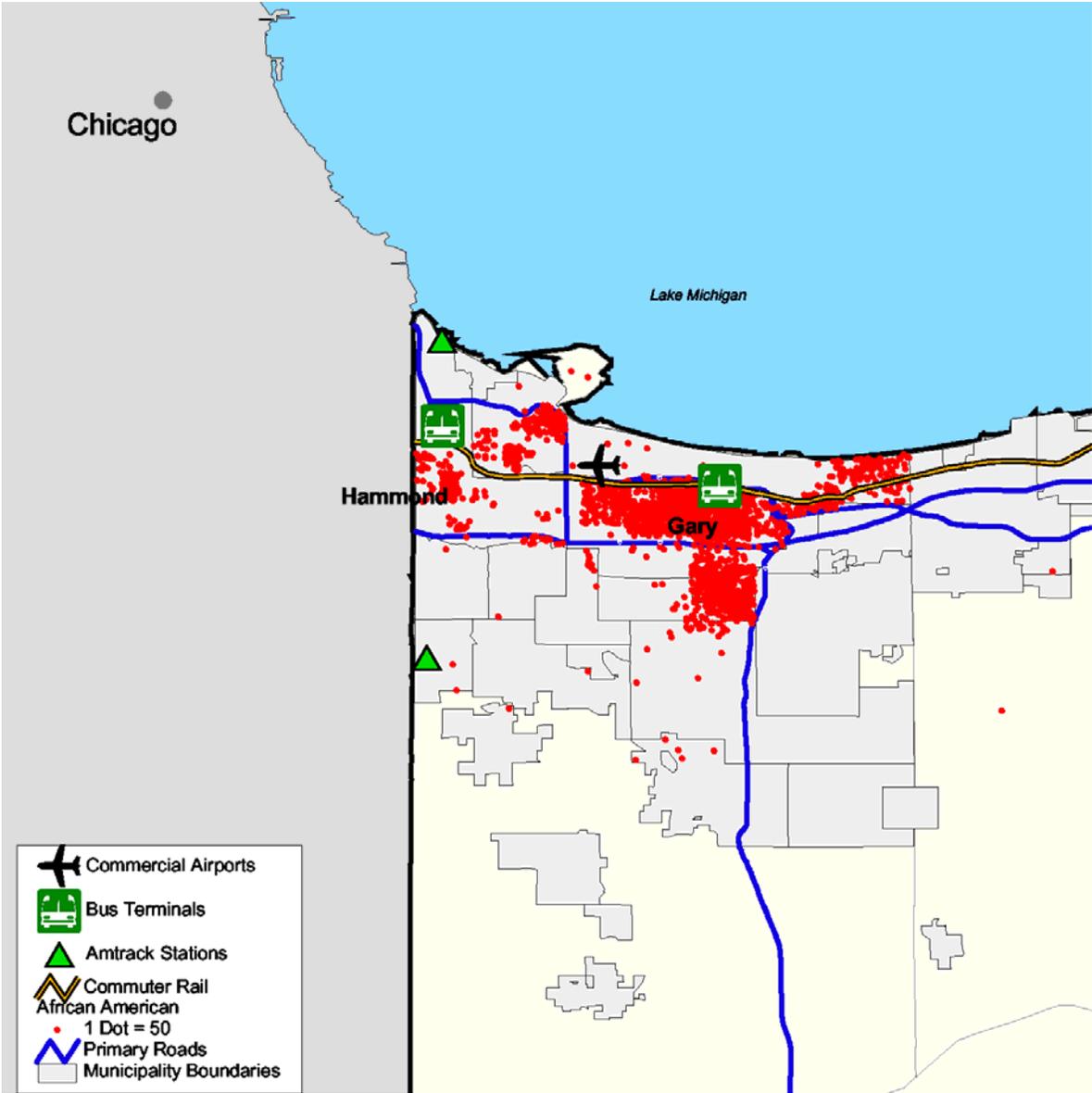
Figure 3.8   2000 Block Group – Black Population
Northwest Indiana (One Dot = 50 Persons)
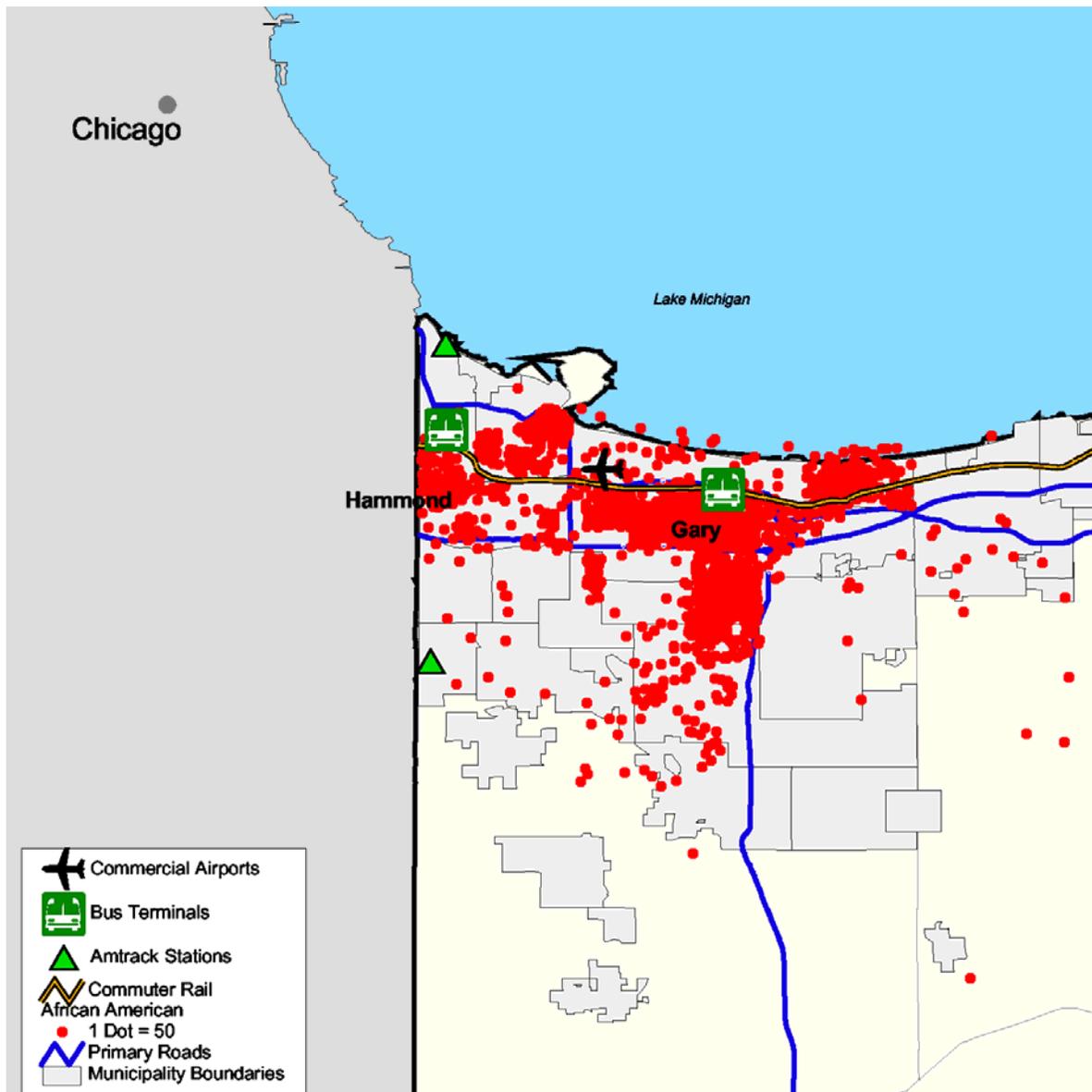
Because the most prominent clusters of Black population are in the 10 largest cities this set of the largest 10 cities were paid special attention in this analysis. Population as a whole increased only 1.4 percent, in the 10 largest cities between 1990 and 2000. In eight of 10 cities, population actually decreased. Only two cities, Indianapolis and Bloomington, experienced small population increases. Also noted above, the total White population in the 10 largest cities decreased by 6.3 percent. However, Black populations in the 10 largest cities increased sharply between 1990 and 2000. Only one city, Gary, experienced a decrease in Black population in the 10 years and this decrease, 9.6 percent, was lower than the city's population decrease as a whole (13.8 percent) and much higher than that city's

decrease in White population (almost 40 percent). Similarly, Hammond experienced a 54.9 percent increase in Black population and Indianapolis had an increase of 20.2 percent.

Black Population Quick Facts

- Statewide, the Black population has increased at a rate almost twice that of the general population;

- The Black population makes up Indiana's largest racial minority. However, it is not the growing as fast as the Hispanic population;

- Of the populations studied, the Black population has the most clustered spatial distribution. This pattern is evident in both the 1990 and 2000 census data;

- The Black population is concentrated in the 10 largest cities. The percentage of urban populations that is Black is increasing at a much higher rate than statewide averages; and

- The only city in the 10 largest where the Black population is decreasing is Gary, which is seeing an even larger decrease in population generally.

Other Population

For the purposes of this analysis, "Other population" is defined as population from all racial groups that are not White and not Black. "Other" includes all bi- or multiracial populations. In Indiana, this group is made up of Asian, Hawaiian, Native American, and many others. The Other population has increased by 183 percent from 1990 to 2000. Although growing rapidly, the Other population still makes up a relatively small proportion of Indiana. It comprised just 4.3 percent of the population in 2000, up from 1.6 percent in 1990.

Although the Other population is predominantly located in the industrial northern half of the State, this population, unlike the Black population, is not particularly clustered, nor is it overrepresented in the 10 largest cities. In fact, only 15.8 percent (down from 24.9 percent in 1990) of the Other population lives in the 10 largest cities (Table 3.5). This is a slightly smaller proportion than for White and Hispanic populations. In fact, growth in Other population in all of the 10 largest cities together, was only 80.2 percent. This statistic seems very large, but not when compared to the 183.2 percent that the Other population grew as a whole between 1990 and 2000. It is likely that individual racial minority groups within the Other category are clustered. However, each makes up such a small percentage of the state's total population that they are treated, for the purposes of this report, as a combined group. Nevertheless, there is a significant and growing number of non-Black and non-white people who are well spread throughout the State.

Table 3.5   Other Population of Indiana's 10 Largest Cities

City	1990	Percent of Total	2000	Percent of Total	Percent Growth
Indianapolis	4,563	0.6%	15,605	2.0%	241.990%
Fort Wayne	3,508	1.8%	6,152	3.2%	75.371%
Evansville	443	0.4%	641	0.5%	44.695%
Gary	3,491	3.0%	2,061	2.0%	-40.962%
South Bend	2,089	2.0%	4,878	4.7%	133.509%
Hammond	4,821	5.7%	7,868	9.5%	63.203%
Muncie	613	0.9%	419	0.6%	-31.648%
Anderson	286	0.5%	500	0.8%	74.825%
Terre Haute	339	0.6%	238	0.4%	-29.794%
Bloomington	567	1.0%	554	0.9%	-2.293%
Total	**20,720**	**1.3%**	**38,916**	**2.4%**	**87.819%**

Other Population Quick Facts

- Other population is small, 4.3 percent of the state's population, but grew by 183 percent from 1990 to 2000;

- Other population has a dispersed distribution; and

- Other population is disproportionately located outside the top 10 cities.

Hispanic Population

The Hispanic population of Indiana has more than doubled statewide since 1990. In 1990 only 1.8 percent of the population was Hispanic but by 2000 that statistic grew to 3.5 percent.

In 1990, the Hispanic population was mostly in the more industrial northern parts of Indiana but has spread south to more counties in 2000. The Hispanic population also has become less clustered in the last 10 years. The Hispanic population is a bit more urban than the White population; in 2000, 37.7 percent of it was in the 10 largest cities. However, it is far less clustered in the largest cities than the Black population.

The segregation index between Hispanic and non-Hispanic is interesting and shows opposite patterns to that of the Black versus White segregation index. The index shows that Hispanic and non-Hispanic populations in urban counties in Indiana's industrial northeast and the urban and suburban area of Indianapolis are not very segregated;

conversely, Hispanic and non-Hispanic populations in rural counties, especially in the south where the absolute number of Hispanics is very low, are highly segregated.

The 10 largest cities of Indiana have experienced a boom in their Hispanic populations from 1990 to 2000, an increase of 118 percent that is consistent with the statewide increase of 113 percent (Table 3.6). Anderson shows the single largest increase of 370 percent and Indianapolis' Hispanic population increased by nearly 300 percent. Generally, the proportion of each of the 10 largest cities that is Hispanic is relatively low. Of Indiana's largest three cities, Indianapolis is only 3.8 percent Hispanic, Fort Wayne is 5.9 percent Hispanic and Evansville is only 1.1 percent Hispanic. The only city with a large Hispanic proportion is Hammond which is 21.1 percent Hispanic, up from 11.7 percent in 1990. As was the case with the Black population, Gary is the only city in which the Hispanic population has decreased from 1990 to 2000. This is a rate that is more than double the rate of decrease in the general public in Gary.

Table 3.6   Hispanic Population of Indiana's 10 Largest Cities

City	1990	Percent of Total	2000	Percent of Total	Percent Growth
Indianapolis	7,374	1.0%	29,453	3.8%	299.417%
Fort Wayne	4,488	2.3%	11,278	5.9%	151.292%
Evansville	547	0.4%	1,308	1.1%	139.122%
Gary	6,278	5.4%	4,574	4.5%	-27.142%
South Bend	3,429	3.3%	8,924	8.6%	160.251%
Hammond	9,860	11.7%	17,410	21.0%	76.572%
Muncie	692	1.0%	1,099	1.7%	58.815%
Anderson	246	0.4%	1,156	1.9%	369.919%
Terre Haute	603	1.0%	761	1.3%	26.202%
Bloomington	897	1.5%	1,369	2.3%	52.620%
Total	**34,414**	**2.2%**	**77,332**	**4.8%**	**124.711%**

This examination of Hispanic population finds that Hispanics are much more spatially dispersed then Blacks. This dispersion can add to the challenge faced by transportation providers. Another attribute of this population is the decreased likelihood that Hispanic people will speak English as a first language or at all. Since most information about transportation services is available in written format, it is important to understand the patterns of non-English speaking patrons.

Hispanic Population Quick Facts

- Statewide, the Hispanic population increased by 113 percent from 1990 to 2000;

- Together, the 10 largest cities experienced a 118 percent Hispanic population increase;

- Indianapolis had a 300 percent increase in Hispanic population;

- Hispanic population is spread out in the northern half of the State in urban, suburban and rural areas;

- Gary is the only city in which the Hispanic population decreased, and it did so by more than double the rate of decrease in the general public;

- Hammond Indiana is now 21 percent Hispanic; and

- Unlike the distribution of Black population, which is tightly clustered in the largest cities, the distribution of the Hispanic population is much more spread out.

Population in Poverty

Between 1990 and 2000, the number of people living under the poverty line, as defined by the U.S. Census, decreased statewide by approximately 2.5 percent. In 2000, population in poverty comprised nine percent of the state's population which is down from 10 percent in 1990. Poverty status is a very different statistic than membership in racial and ethnic population groups, because unlike race or ethnicity, poverty status for individuals can change. As a result, this statistic can fluctuate with economic trends and regional employment and industrial changes as well as with the variables that affect all demographic statistics such as fertility rates and settlement patterns.

In Indiana, the patterns of poverty are similar to patterns found in other states. Poverty is concentrated in cities and spread out fairly evenly in rural areas. Counties that are largely suburban have very low poverty rates. These patterns are evident in both 1990 and 2000 but de-intensified in 2000. The segregation index, shows a difference in the magnitude of dissimilarity between rural poverty and urban poverty. That is, when the segregation index is applied to poverty and non-poverty distributions and mapped (Figures 3.9 and 3.10), it can clearly be seen that within urban areas (cities and suburban areas) poverty and non-poverty populations are extremely segregated while in rural areas, poverty and non-poverty populations are more coexistent or likely to be integrated. This could have implications for the provision of transportation services that meet the needs of both urban and rural populations in poverty.

Figure 3.9   1990 County Segregation Index
Below Poverty versus Above Poverty
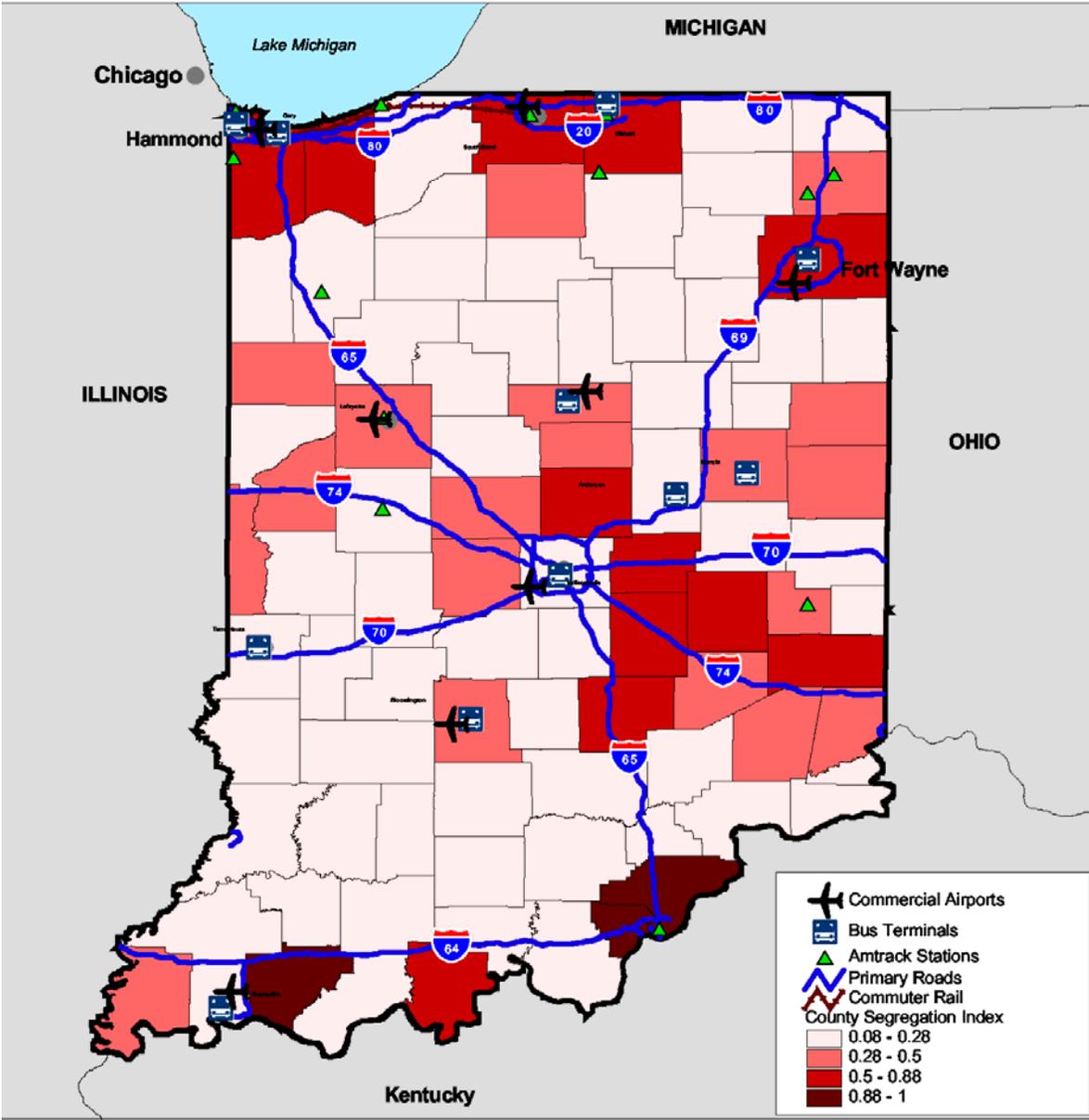
Figure 3.10 2000 County Segregation Index
Below Poverty versus Above Poverty
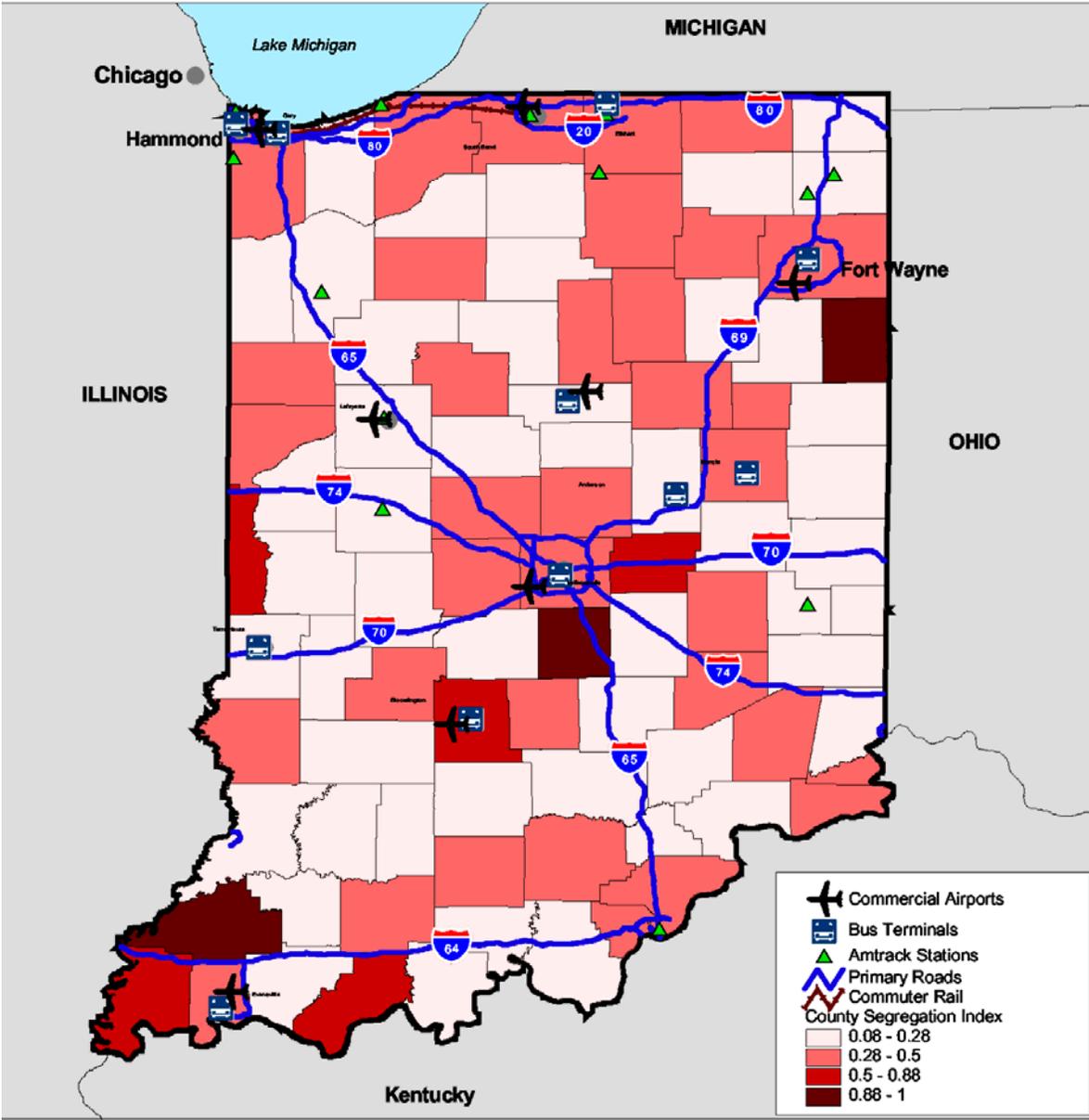
The decrease in poverty is not evenly distributed around the State. Generally, poverty decreased much more in the largest 10 cities than in the State as a whole. In Bloomington, people in poverty decreased by almost 50 percent (Table 3.7). Indianapolis, Evansville, Gary, Muncie, Anderson, and Terre Haute all saw decreases in poverty ranging from 10 to 40 percent as well. This is likely due to the fact that poverty is even more sensitive to economic trends and shifts in unemployment in urban areas than in rural areas. During the late 90s, (the part of the decade the 2000 Census best reflects) unemployment was extremely low and the economy was very good. For the same reason, it is possible that a illusory Census taken in 2003 would show an increase in poverty in urban areas. The city of Fort Wayne is an exception to this observation; Fort Wayne has seen a slight increase in poverty levels between 1990 and 2000.

Table 3.7   Population in Poverty of Indiana's 10 Largest Cities

City	1990	Percent of Total	2000	Percent of Total	Percent Growth
Indianapolis	104,631	14.4%	89,897	11.5%	-14.082%
Fort Wayne	23,348	12.2%	24,216	12.6%	3.718%
Evansville	21,673	17.6%	15,029	12.7%	-30.656%
Gary	35,191	30.2%	25,517	25.4%	-27.490%
South Bend	17,142	16.4%	16,632	16.0%	-2.975%
Hammond	11,824	14.1%	11,759	14.2%	-0.550%
Muncie	21,626	31.6%	13,215	20.4%	-38.893%
Anderson	12,157	20.3%	7,625	12.7%	-37.279%
Terre Haute	16,556	27.8%	10,022	17.5%	-39.466%
Bloomington	28,356	48.6%	14,504	23.8%	-48.850%
Total	**292,504**	**18.3%**	**228,416**	**14.1%**	**-21.910%**

The decrease in poverty not withstanding, population in poverty is Indiana's largest or most prominent marginalized group with respect to environmental justice. In 2000, 9.2 percent of the population was under the poverty line as compared to 8.3 percent that was Black and 3.5 percent that was Hispanic. Only the treatment of all non-white racial groups together, 12.5 percent, accounts for a bigger percentage than that in poverty. Compared to the other subsets of Indiana's population that were analyzed in this study, the population in poverty is by far the most sprawling. This can be seen easily by looking at the dot density maps of poverty for 1990 and 2000 Figures 3.11 to 3.14). This can make serving such a population very challenging for transportation providers.

Figure 3.11 1990 Block Group – Below Poverty
(One Dot = 50 Persons)
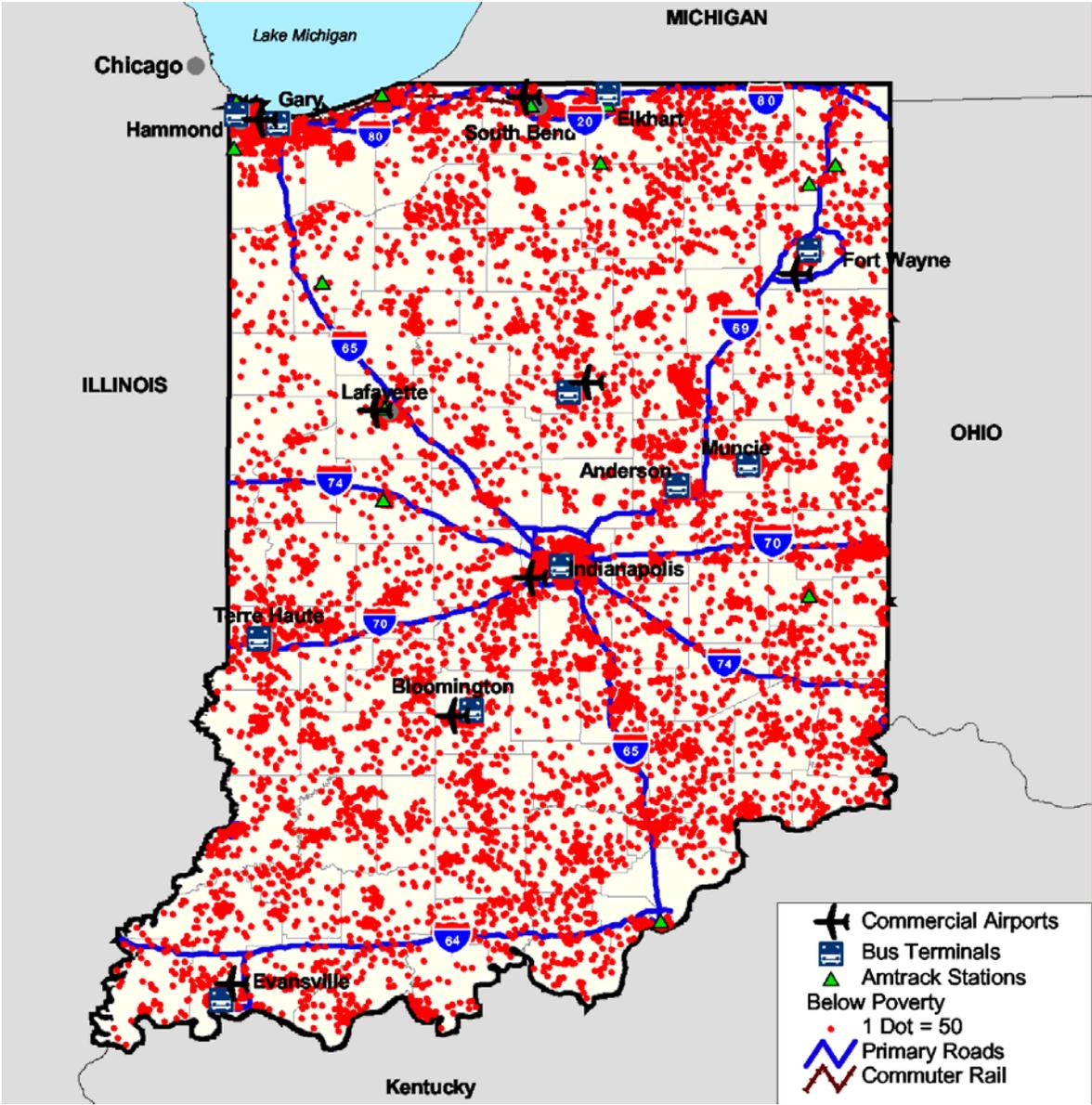
Figure 3.12 2000 Block Group – Below Poverty
   (One Dot = 50 Persons)
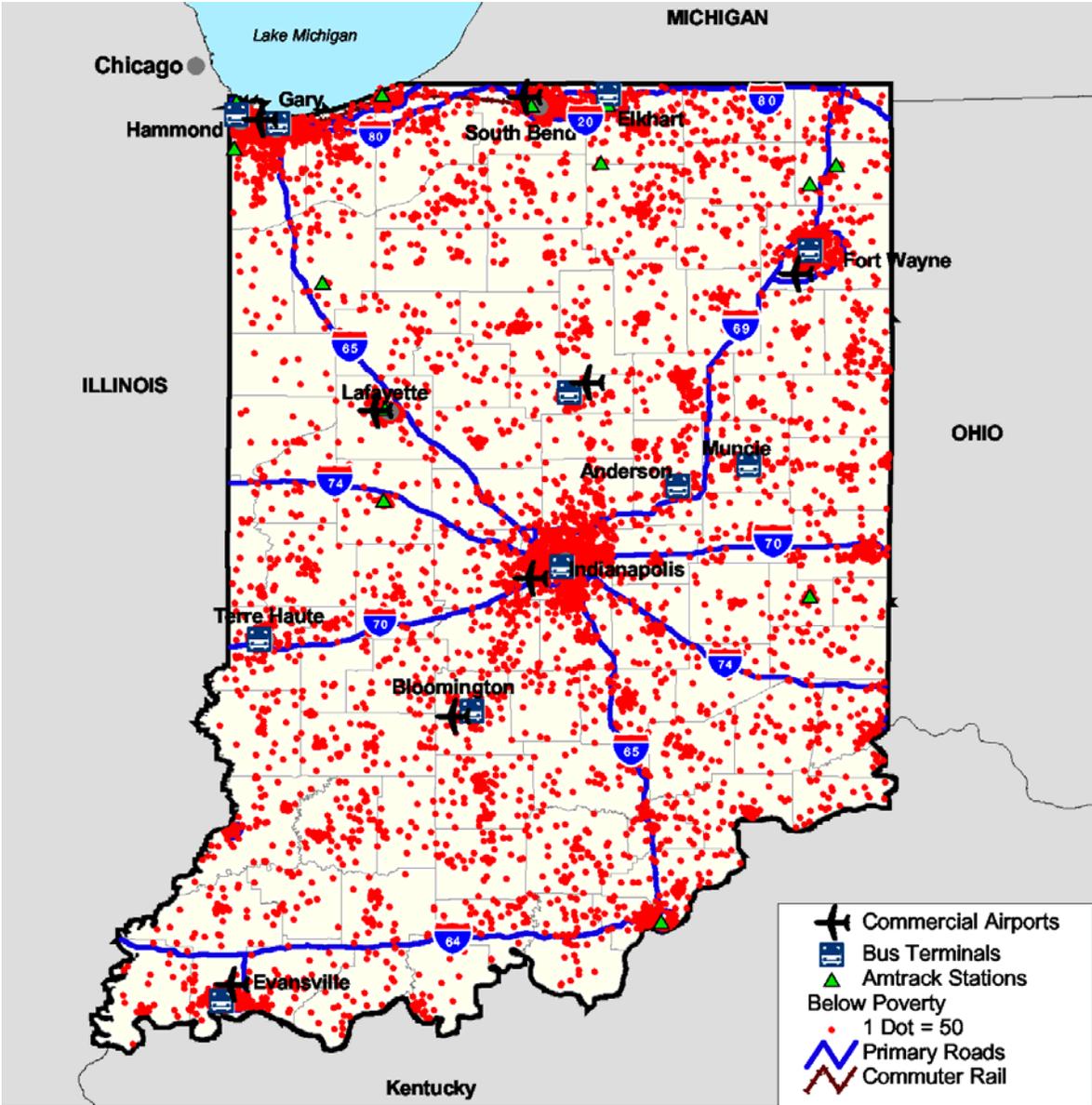
Figure 3.13 1990 Block Group – Below Poverty
Northwest Indiana (One Dot = 50 Persons)
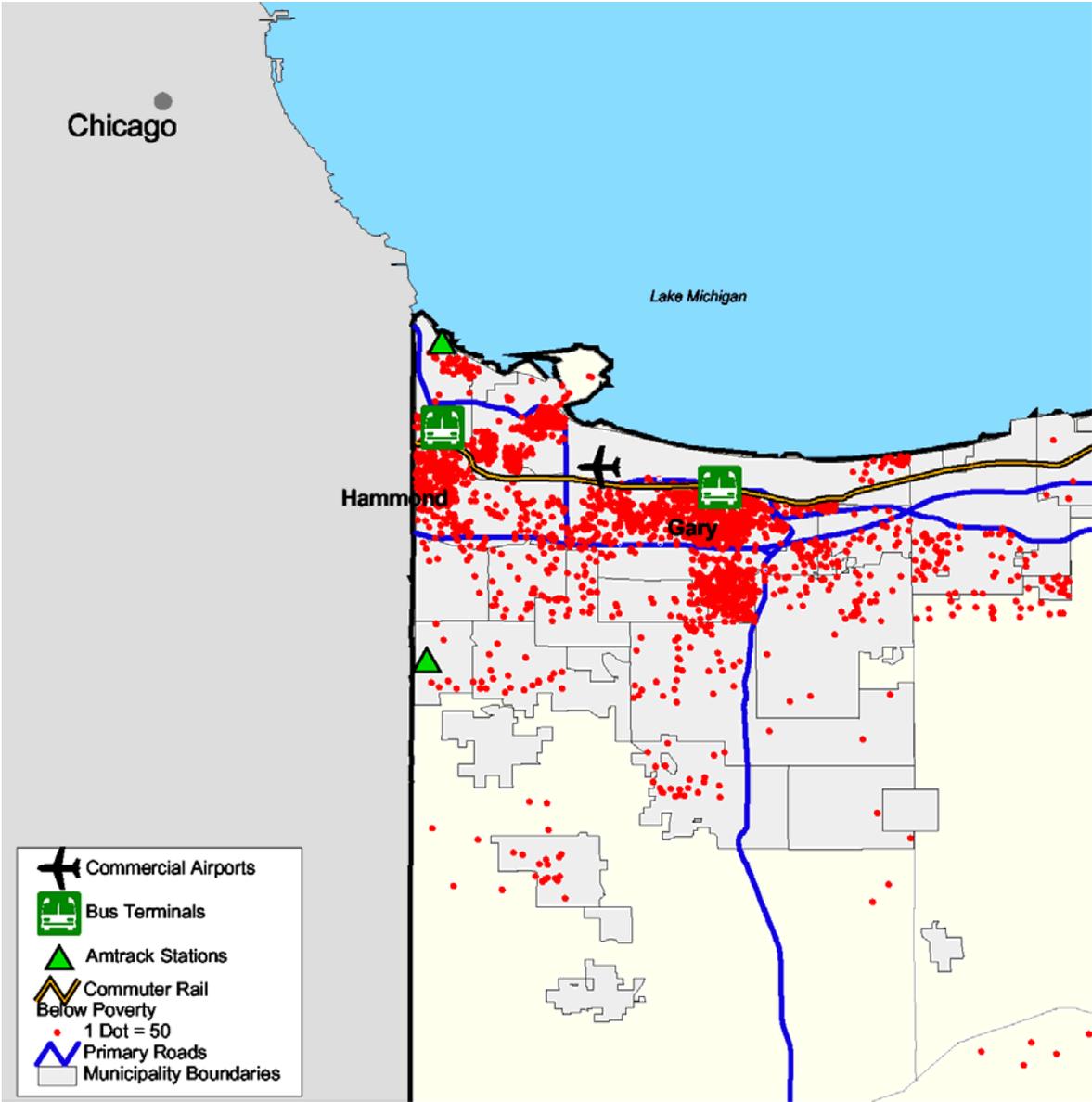
Figure 3.14 2000 Block Group – Below Poverty
  Northwest Indiana (One Dot = 50 Persons)
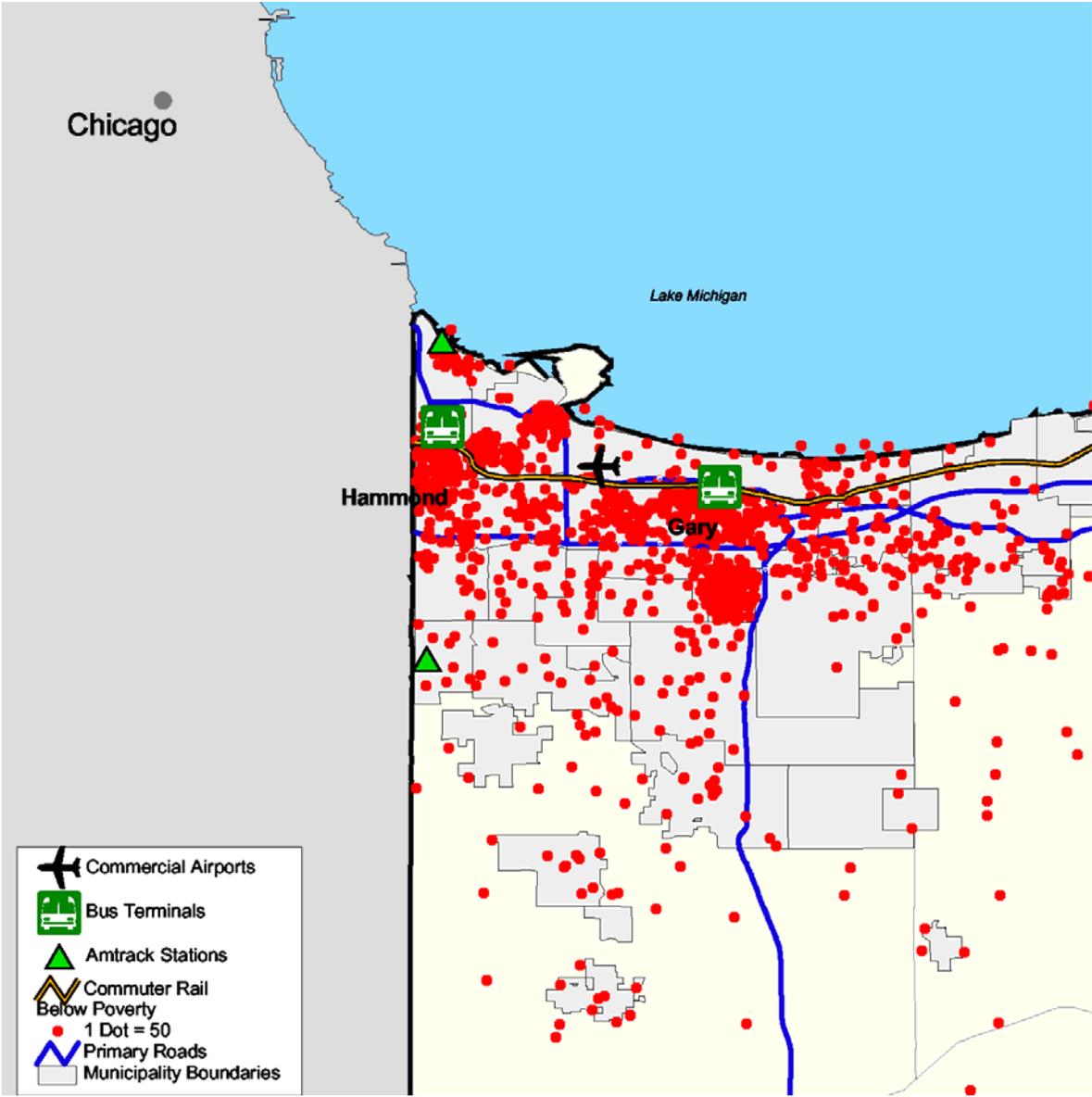
Poverty Quick Facts

- In 2000, 9.2 percent of Indiana's population was under the poverty line;

- The percent of Indiana's population that is under the poverty line has decreased from 1990 to 2000;

- The 10 most populous cities have seen larger decreases in poverty as compared to the statewide average;

- Rural poverty has a more dispersed settlement pattern than urban poverty which is more segregated from non-poverty populations;

- The decrease in poverty could be due to the economic boom of the 1990s; and

- The number of individuals in poverty is larger than the Black population (Indiana's largest racial minority).

Vehicle Availability

The distribution of households with no available vehicle also was mapped and studied (Figures 3.15 and 3.16). In 2000, 168,050 of 2,336,306 or 7.2 percent of households had no vehicle available for use. The distribution is clustered as opposed to disperse, concentrated in the largest cities and not suburban. The map showing percentage of households with no vehicle (Figure 3.16) shows a suburban ring around Indianapolis where the percentages are very low. The counties were divided into three groups: counties with one or more of the ten largest cities in them, counties immediately adjacent to Marion County (Indianapolis), and counties that are neither adjacent to Indianapolis nor have one of the ten largest cities. In the group of counties with the largest cities, 9.1 percent of households had no car. While in the suburban group of counties, the group of counties adjacent to Marion County, only 3.1 percent of households had no car. The percentage of households with no available vehicles in the remaining counties is 6.3 percent. This attribute is a proxy for public transportation dependency.

Figure 3.15 2000 Block Group
No Vehicle Available (One Dot = 50 Persons)
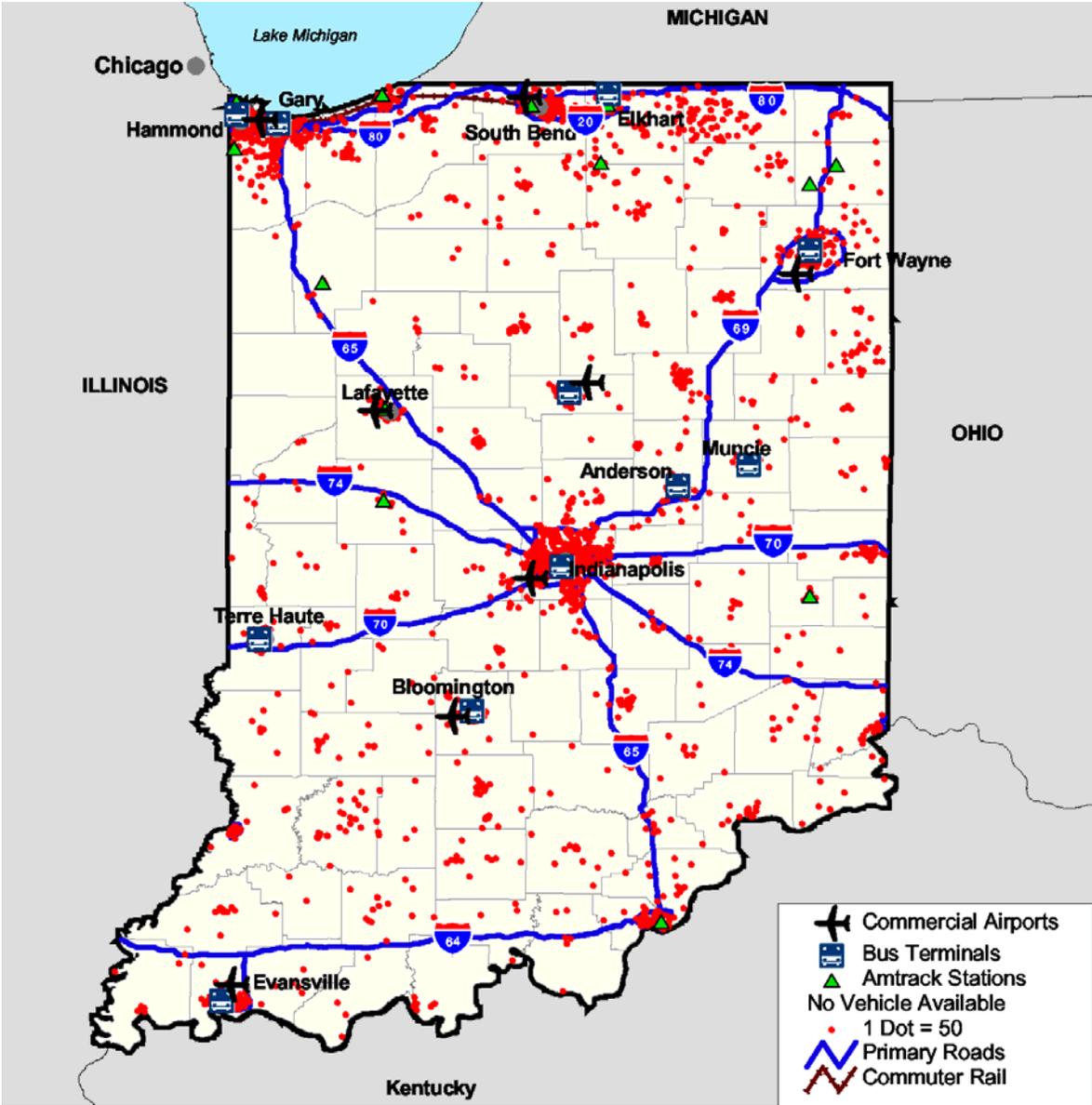
Figure 3.16 2000 County
Percent No Vehicle
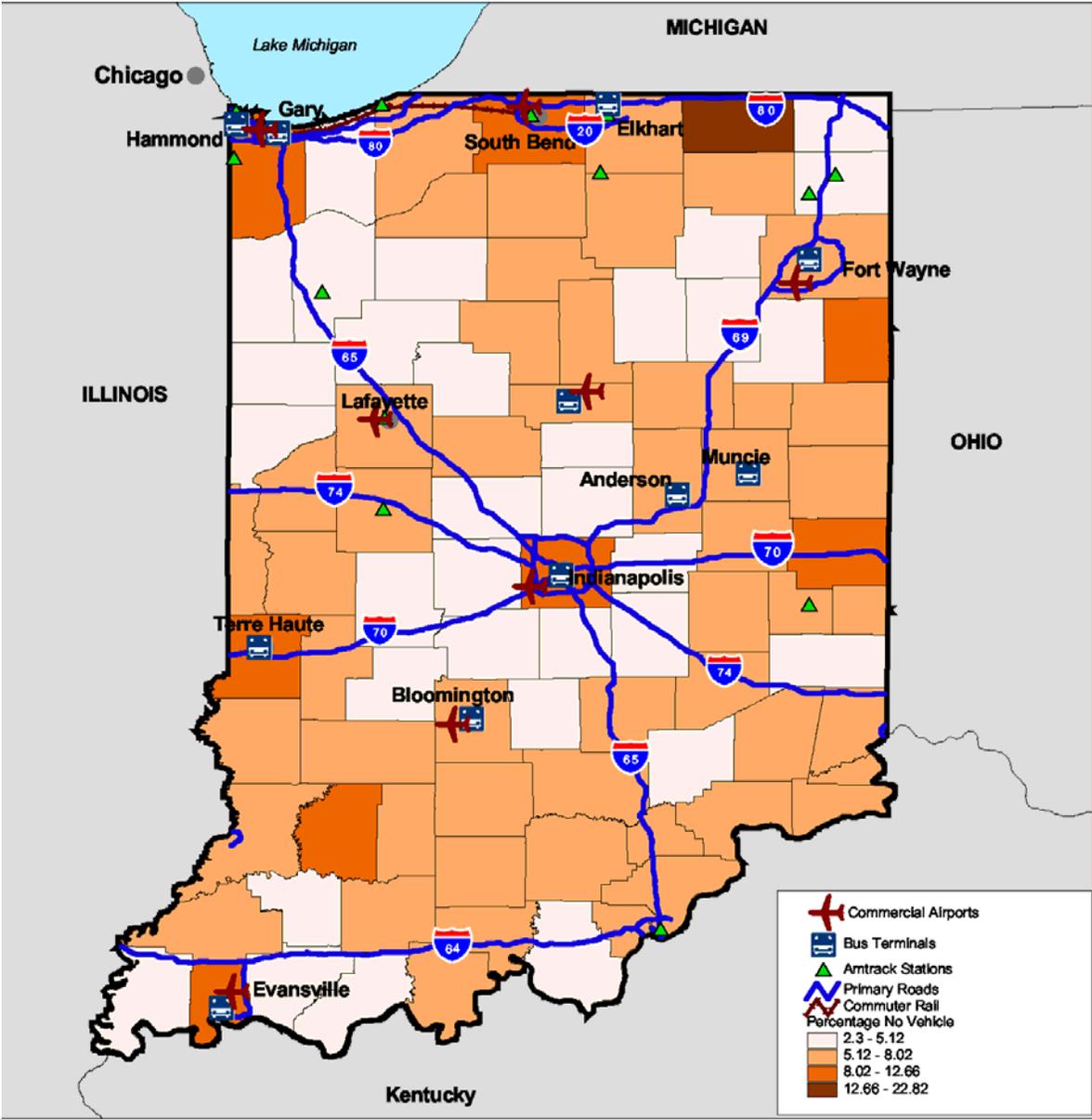
Implications for Transportation

There are many reasons why it is important for INDOT to understand the difference in spatial settlement patterns and growth trends between the special population groups described in this report and the general population. One can be found in the historical framework of environmental justice and another is explained by the different transportation needs and behaviors exhibited by minority and low-income groups.

Historical Oversight

Examining the history of transportation from a national perspective, there have been instances in the past, when minority, low-income, and other disadvantaged groups haven't been given sufficient weight before making transportation policy decisions and investments. In hindsight, some of these investments have been shown to not provide the same benefits to less politically powerful groups as to the White and non-poverty population groups. In fact, some projects in urban areas, have actually provided disbenefits or unintended negative externalities that have disproportionately effected minority and low-income groups. On occasions when these projects were built through minority and low-income neighborhoods, they displaced or split communities; increasing air and noise pollution and introducing new safety concerns. As a reaction to this and other historical events, community groups and environmental justice advocates have organized around these issues; monitoring public investments, including transportation spending and policies. Their work has resulted in court decisions as well as local, state, and Federal policy enactment designed to ensure equal dispersal of benefits and disbenefits of public spending including investment in transportation services. In general, awareness and public understanding of environmental justice has been elevated so that states and local transportation agencies must now give significantly increased attention to the need to protect minority and low-income groups from environmental injustice.

Travel Behaviors and Transportation Needs

Another reason INDOT needs to concern itself with where minority and low-income groups live and their population growth trends is because these groups have needs and behaviors that distinguish them from those of the general public. Most importantly, there is a large difference in how transportation costs affect households of different income groups. Transportation costs as a percentage of average household budgets have risen steadily in the last century. According to a new study by the Surface Transportation Policy Project, "Transportation Costs and the American Dream," transportation costs now make up 20 percent of an average household spending. This average alone would be disproportionately burdensome for low-income households but the reality is that for low-income households the percent spent on household costs is much higher than the average. In fact, "the poorest 20 percent of American households, those earning less than $13,908 (after taxes) per year, spend 40.2 percent of their take home pay on transportation."[1]

This enormous household expenditure on transportation by low-income groups can limit quality of life and have negative impacts on other household decisions like where to live, where to educate children and where to shop.

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[1] Surface Transportation Policy Project (July 2003). *Transportation Costs and The American Dream: Why a Lack of Transportation Choices Strains the Family Budget and Hinders Home Ownership.*

Of these increasing household transportation costs, the largest costs can be attributed to private vehicle acquisition and operations. It is much less expensive for households to utilize public transportation than private vehicles for commuting.[2] However, public transportation is not always conveniently located to available jobs and affordable housing accessible necessary for low-income populations. Furthermore, minorities and low-income populations are less likely to own cars than whites.[3] So either households that could benefit from public transportation must adjust their lives to the financial burden of private car ownership or they must limit their housing and job choices to areas with public transportation. This could explain why blacks and other minorities are disproportionately concentrated in the largest 10 cities; the cities most likely to have public transportation.

Language accessibility is another need that distinguishes minority groups from the general public. Ethnic and racial minorities are more likely than whites to speak English second to another language or not speak English at all. There are two ways this places them at a disadvantage. One is the obvious information barrier. Information about public transportation in the form of schedules, stops and even street signs is almost always in English only formats. The second, is that non-English speaking groups tend to have "little voice in transportation planning because of language barriers or lack of information."[4] So the public vetting of transportation projects is less likely to include or consider non-English speaking groups. For INDOT, the Spanish speaking group is probably the largest non-English speaking constituency. If INDOT can be aware of patterns and trends in the Hispanic population, it can be more sensitive to this issue.

Commuting behavior can be very different for minorities and low-income population groups. Reverse commuting, or commuting from cities to suburbs rather than suburbs to cities in the morning rush hour and vice versa in the evening rush hour, is more prevalent in these groups as is commuting to multiple jobs in a day. Increasing public transportation at night or to places not typically served by public transportation could be a future remedy. As INDOT seeks to provide better commuting options for the state, these patterns should be further studied.

If INDOT is more aware of these and other factors that are different or more important to minority and low-income communities; and the spatial patterns and growth trends that are unique for these groups; then it will be viewed as being more sensitive to its constituents and be able to provide services and investment strategies that better serve the State.

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[2] Surface Transportation Policy Project (July 2003). *Transportation Costs and The American Dream: Why a Lack of Transportation Choices Strains the Family Budget and Hinders Home Ownership*.

[3] Sanchez, Thomas W., Stolz, Rich, and Ma, Jacinta S. (2003). *Moving to Equity: Addressing Inequitable Effects of Transportation Policies on Minorities*. Cambridge, Massachusetts: The Civil Rights Project at Harvard University.

[4] Sanchez, Thomas W., Stolz, Rich, and Ma, Jacinta S. (2003).

■ 3.4 Environmental Justice Analysis of Census Journey to Work Data

This subsection aims to deepen INDOT's understanding of potential transportation-related environmental justice issues within the state. Preliminary Year 2002 Census of the Population data are used to develop a better understanding of the characteristics of various environmental justice population groups.

The following subsets of the population were examined: Non-Hispanic White, Hispanic White, Black, Other, and Poverty. Given that this analysis utilizes preliminary 2000 Census Transportation Planning Package (CTPP) data, a few caveats must be made. While it is expected that population totals presented within this report will be slightly different than that found in the final release of the CTPP, the percentage breakdowns (by race, poverty, and other variables found within) are expected to serve as stronger indicators.[5]

Throughout the analyses, the state is examined at the following levels:

- State;

- County;

- Central Indiana (nine-county Indianapolis metropolitan region);

- Non-Central Indiana;

- High-poverty concentration counties and their respective remaining counties; and

- High and low minority concentration counties.

A county was considered to have a high concentration of poverty if its percent of households below the poverty level was higher than that of the State. A county was considered to have a high concentration of minorities if its percent of non-Hispanic Whites was less than that of the State.

The definition of categories is shown below:

- Central Indiana counties: Boone, Hamilton, Hancock, Hendricks, Howard, Johnson, Madison, Marion and Monroe (Figure 3.17).

- High-poverty concentration counties include: Crawford, Daviess, Decatur, Delaware, Grant, Greene, Howard, Knox, LaGrange, Lake, Lawrence, Marion, Martin, Monroe,

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[5] It should also be noted that during the course of conducting this analysis, it was found that the household vehicle availability by race dataset contained in this preliminary release was erroneous and deemed unsuitable for use at this time. Therefore, any analysis corresponding to this particular dataset has been left out of this report.

Orange, Owen, Pulaski, Randolph, St. Joseph, Scott, Starke, Sullivan, Switzerland, Tippecanoe, Union, Vanderburgh, Vigo, Washington and Wayne (Figure 3.18).

- High minority concentration counties: Allen, Elkhart, Lake, Marion, St. Joseph and Tippecanoe (Figure 3.19).

Figure 3.17 Central Indiana Counties
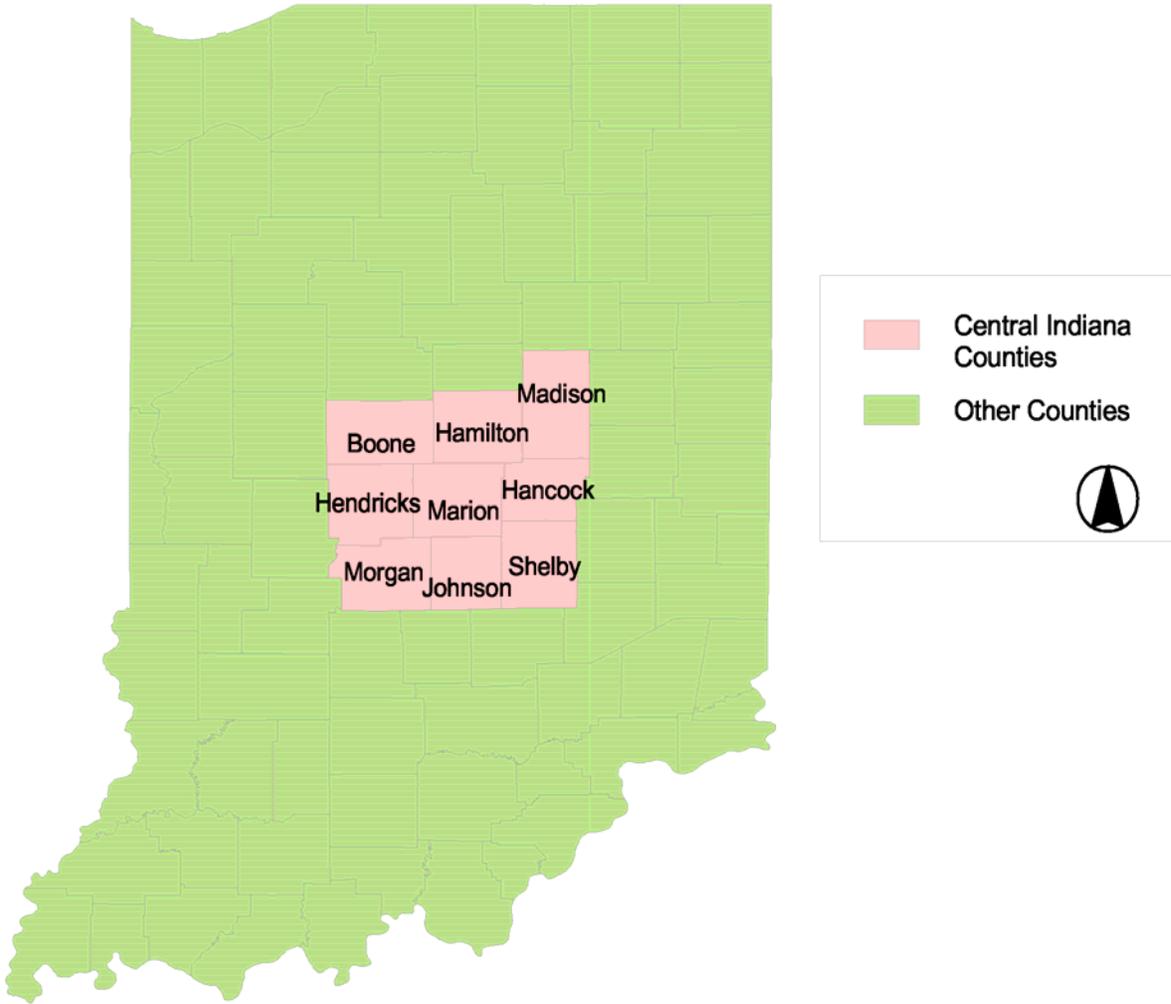
Figure 3.18 Counties of High-Poverty Concentration
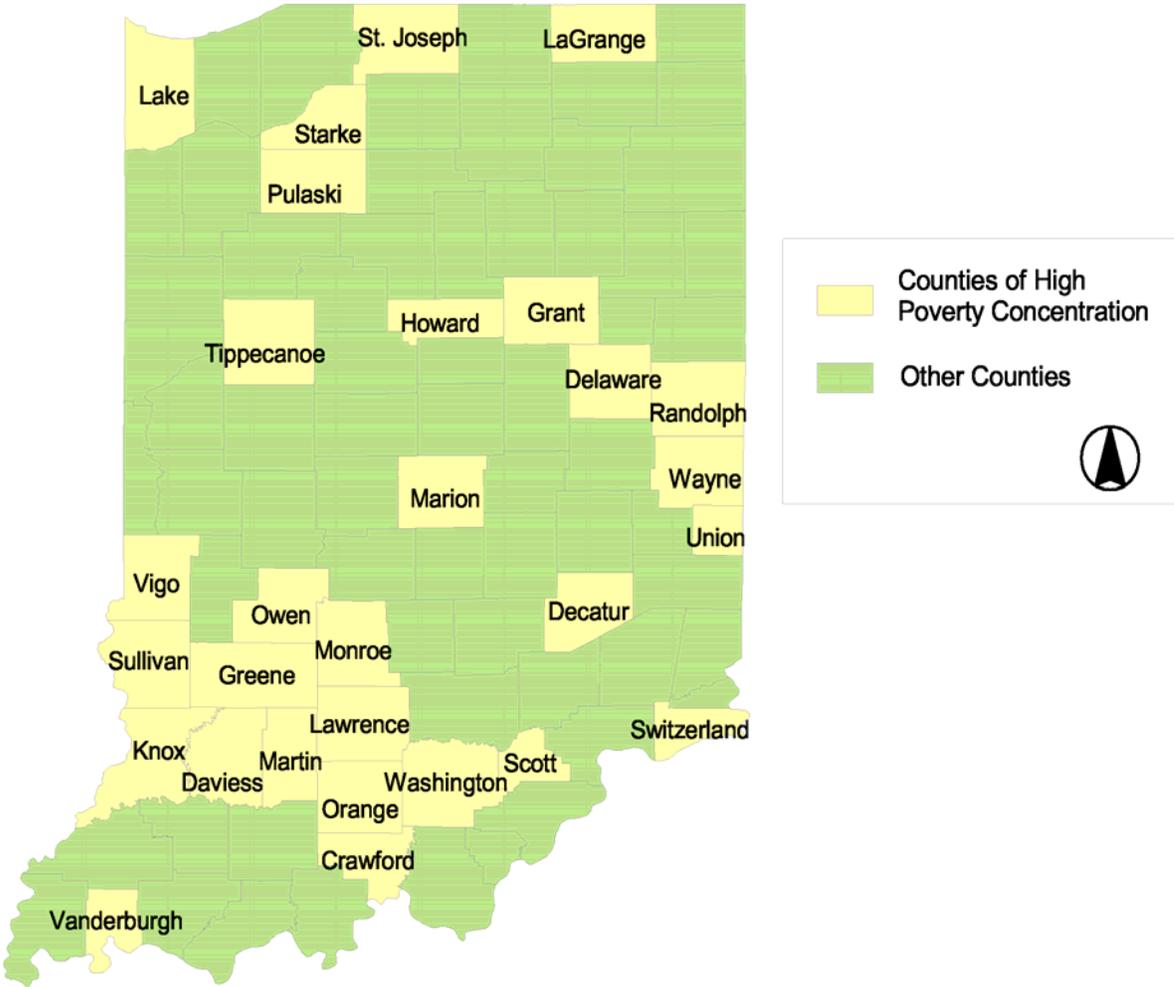
Figure 3.19 Counties of High-Minority Concentration
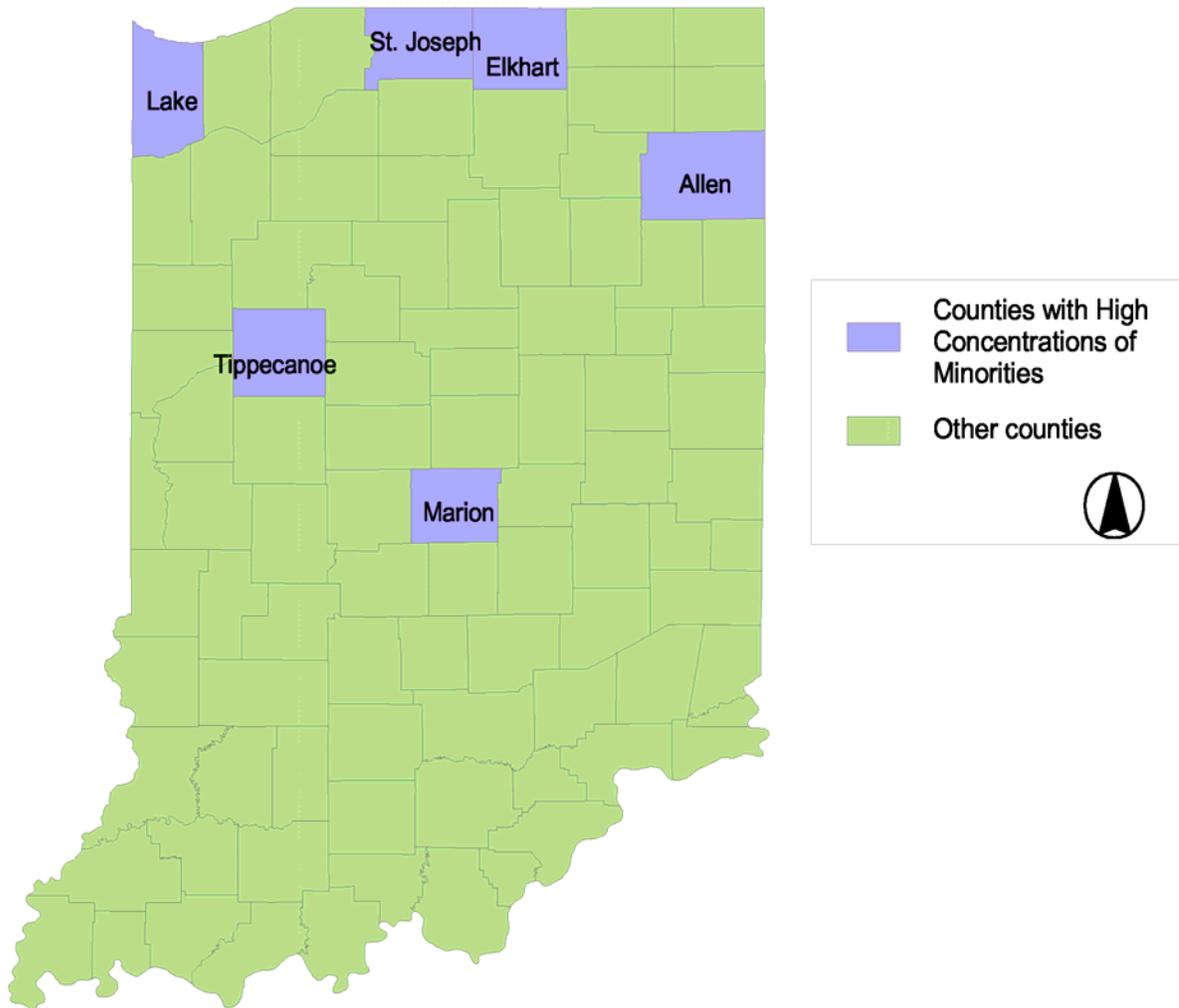
Key Findings

- Most Indiana households have at least one car available.

- Below-poverty households in high-poverty concentration counties are less likely to have a vehicle available than below-poverty households in other counties.

- Of all population segments examined in this analysis, below-poverty households living in high minority concentration counties have the greatest percentage of zero-vehicle households.

- Alternative choices to driving alone are usually carpooling or walking/biking/taxi.

- Statewide, the bus and transit mode shares compose only one percent of all commuters.

- The bus mode share has a high disproportion of Blacks.

- Hispanic Whites are twice as likely to carpool than Non-Hispanic Whites.

- The bus mode share has a high disproportion of commuters from below-poverty households.

- There is no compelling evidence based on this particular data source that any one par-ticular race group systematically experiences a longer commute on a statewide level. Data at a more disaggregate level is required to confirm this finding.

The discussion below present the numerical data supporting each of these findings.

Vehicle Availability

Statewide, most households (93 percent) have at least one car available (Figure 3.20). Two-car households compose the greatest portion of the state's households (40 percent), followed by one-car households (32 percent).

Figure 3.20 Statewide Vehicle Availability
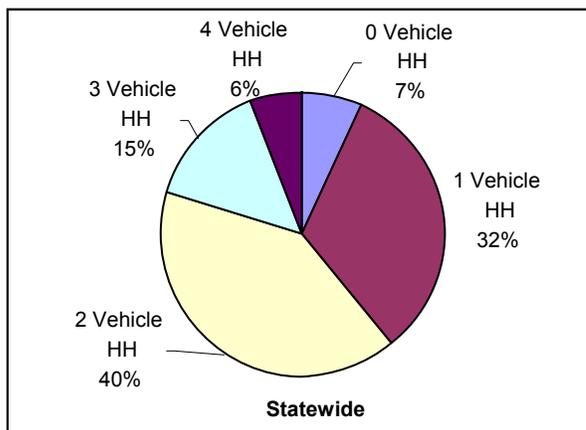
Vehicle Availability by Poverty

Nine percent of Indiana's population is considered to be in a poverty status (Table 3.8). Predictably, vehicle availability varies according to a household's status with respect to the poverty level. As shown in Figure 3.21, 43 percent of above-poverty households on a statewide basis have two vehicles available. Most below-poverty households (48 percent) have one vehicle. Nearly one in four below-poverty households do not have a vehicle available, while only five percent of above-poverty households do not have an available

vehicle. At closer examination as shown in Tables 3.9 and 3.10, these patterns are found to be consistent in both Central Indiana and Non-Central Indiana. These findings also are illustrated in Figures 3.22 and 3.23.

Table 3.8   Vehicle Availability and Poverty Status for All of Indiana

All Counties	Below Poverty	Below Poverty (R)	Above Poverty	Above Poverty (R)	Total	Total (R)
0 Vehicle HH	53,475	32%	111,725	68%	165,200	100%
0 Vehicle HH (C)	24%		5%		7%	
1 Vehicle HH	106,600	14%	646,825	86%	753,425	100%
1 Vehicle HH (C)	49%		31%		32%	
2 Vehicle HH	44,775	5%	901,070	95%	945,845	100%
2 Vehicle HH (C)	20%		43%		40%	
3 Vehicle HH	11,725	3%	327,474	97%	339,199	100%
3 Vehicle HH (C)	5%		15%		15%	
4 Vehicle HH	4,883	4%	128,646	96%	133,529	100%
4 Vehicle HH (C)	2%		6%		6%	
Total	**221,458**	**9%**	**2,115,740**	**91%**	**2,337,198**	**100%**
Total%	**100%**		**100%**		**100%**	

Note: Percentages presented below column headings noted by "(R)" refer to row percentages. Percentages presented along row headings noted by "(C)" refer to column percentages. This convention is followed throughout this report.

Figure 3.21 Vehicle Availability for All of Indiana by Poverty Status
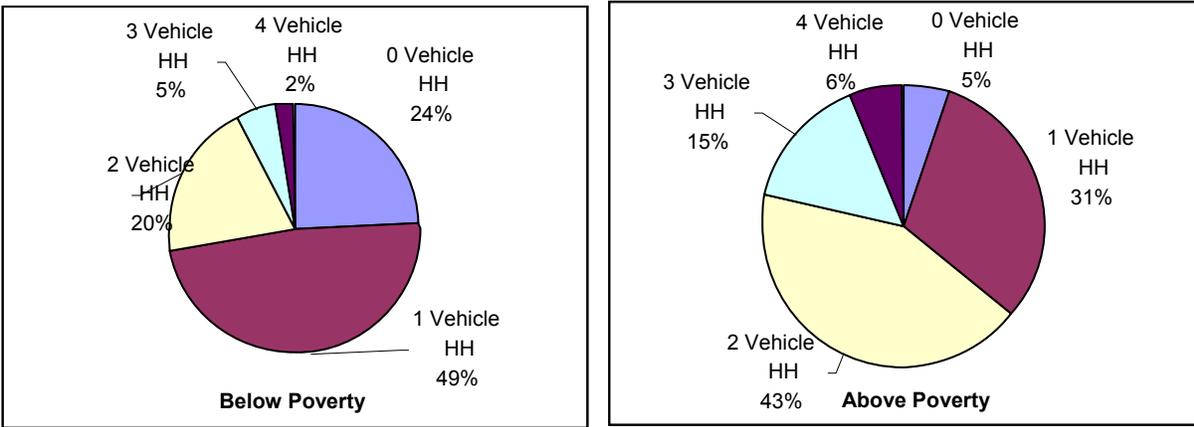
Table 3.9   Vehicle Availability and Poverty Status for Central Indiana Counties

Central Counties	Below Poverty	Below Poverty (R)	Above Poverty	Above Poverty (R)	Total	Total (R)
0 Vehicle HH	14,145	32%	29,710	68%	43,855	100%
0 Vehicle HH (C)	27%		5%		7%	
1 Vehicle HH	25,130	12%	188,835	88%	213,965	100%
1 Vehicle HH (C)	48%		33%		34%	
2 Vehicle HH	10,240	4%	248,740	96%	258,980	100%
2 Vehicle HH (C)	19%		43%		41%	
3 Vehicle HH	2,255	3%	80,260	97%	82,515	100%
3 Vehicle HH (C)	4%		14%		13%	
4 Vehicle HH	939	3%	29,780	97%	30,719	100%
4 Vehicle HH (C)	2%		5%		5%	
Total	**52,709**	**8%**	**577,325**	**92%**	**630,034**	**100%**
Total%	**100%**		**100%**		**100%**	

Table 3.10   Vehicle Availability and Poverty Status for Non-Central Indiana Counties

Non-Central Counties	Below Poverty	Below Poverty (R)	Above Poverty	Above Poverty (R)	Total	Total (R)
0 Vehicle HH	39,330	32%	82,015	68%	121,345	100%
0 Vehicle HH (C)	23%		5%		7%	
1 Vehicle HH	81,470	15%	457,990	85%	539,460	100%
1 Vehicle HH (C)	49%		30%		32%	
2 Vehicle HH	34,535	5%	652,330	95%	686,865	100%
2 Vehicle HH (C)	20%		43%		40%	
3 Vehicle HH	9,470	4%	247,214	96%	256,684	100%
3 Vehicle HH (C)	6%		16%		15%	
4 Vehicle HH	3,944	4%	98,866	96%	102,810	100%
4 Vehicle HH (C)	2%		6%		6%	
Total	**168,749**	**10%**	**1,538,415**	**90%**	**1,707,164**	**100%**
Total%	**100%**		**100%**		**100%**	

Figure 3.22 Vehicle Availability for Central Indiana Counties by Poverty Status

Below Poverty

- 3 Vehicle HH 4%
- 4 Vehicle HH 2%
- 2 Vehicle HH 19%
- 0 Vehicle HH 27%
- 1 Vehicle HH 48%

Above Poverty

- 4 Vehicle HH 5%
- 0 Vehicle HH 5%
- 3 Vehicle HH 14%
- 1 Vehicle HH 33%
- 2 Vehicle HH 43%
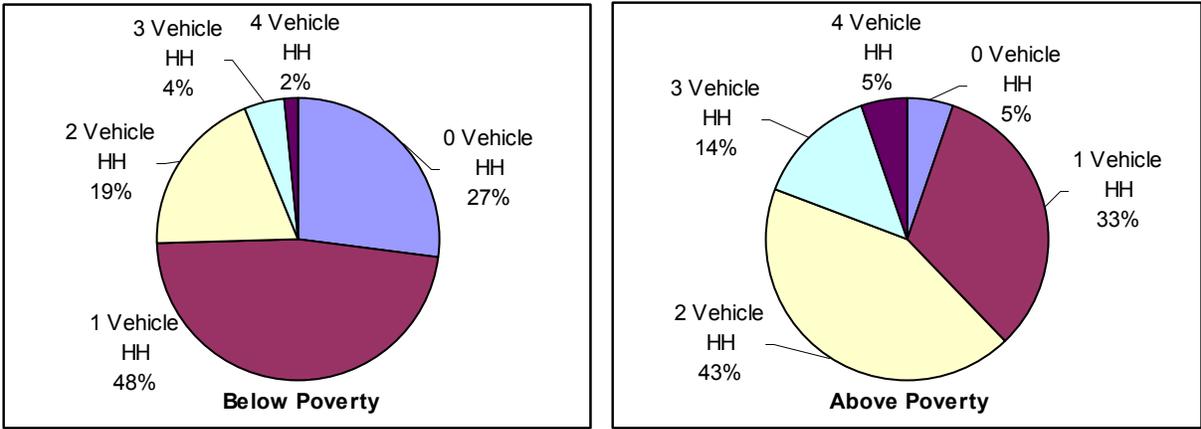
Figure 3.23 Vehicle Availability for Non-Central Indiana Counties by Poverty Status

Below Poverty

- 3 Vehicle HH 6%
- 4 Vehicle HH 2%
- 2 Vehicle HH 20%
- 0 Vehicle HH 23%
- 1 Vehicle HH 49%

Above Poverty

- 4 Vehicle HH 6%
- 0 Vehicle HH 5%
- 3 Vehicle HH 16%
- 1 Vehicle HH 30%
- 2 Vehicle HH 43%
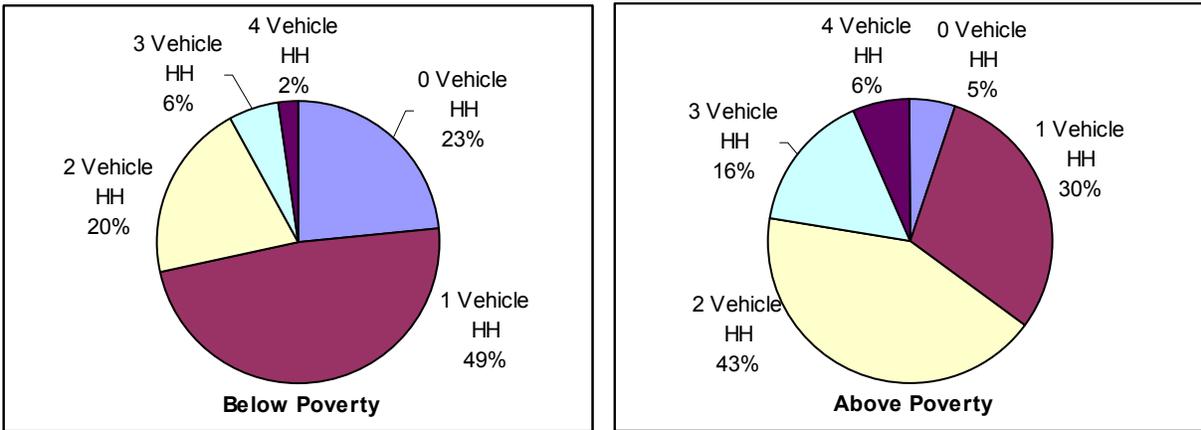
When considering differences between high- and low-poverty concentration counties, disparities in vehicle availability between below- and above-poverty households intensify. That is, the poor living in concentrated poverty areas are less likely to have a car available than the poor living in other areas (Figures 3.24 and 3.25). Within counties of high-poverty concentration, 27 percent of below-poverty households have no vehicles available (Table 3.11). Among counties of low-poverty concentration, 20 percent of below-poverty households have no vehicles (Table 3.12). Within high-poverty concentration counties, 60 percent of above-poverty households reported having two or more cars. Among low-poverty concentration counties, 69 percent of above-poverty households reported having two or more cars.

Figure 3.24 Vehicle Availability for High-Poverty Concentration Counties by Poverty Status

Below Poverty

- 0 Vehicle HH 27%
- 1 Vehicle HH 47%
- 2 Vehicle HH 19%
- 3 Vehicle HH 5%
- 4 Vehicle HH 2%

Above Poverty

- 0 Vehicle HH 6%
- 1 Vehicle HH 34%
- 2 Vehicle HH 41%
- 3 Vehicle HH 14%
- 4 Vehicle HH 5%
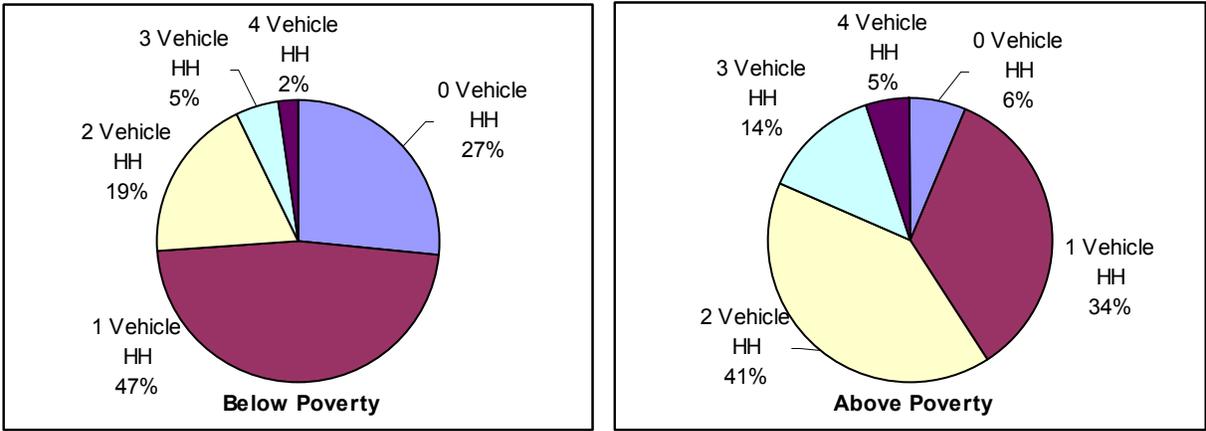
Figure 3.25 Vehicle Availability for Low-Poverty Concentration Counties by Poverty Status

Below Poverty

- 0 Vehicle HH 20%
- 1 Vehicle HH 49%
- 2 Vehicle HH 23%
- 3 Vehicle HH 6%
- 4 Vehicle HH 2%

Above Poverty

- 0 Vehicle HH 4%
- 1 Vehicle HH 27%
- 2 Vehicle HH 45%
- 3 Vehicle HH 17%
- 4 Vehicle HH 7%
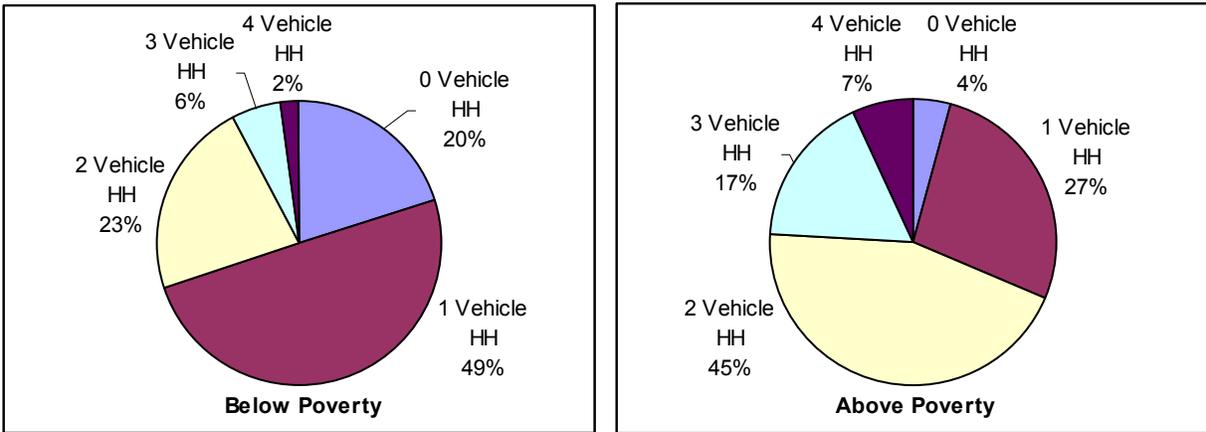
Table 3.11 Vehicle Availability and Poverty Status for High-Poverty Concentration Counties

High Poverty	Below Poverty	Below Poverty (R)	Above Poverty	Above Poverty (R)	Total	Total (R)
0 Vehicle HH	36,100	36%	65,380	64%	101,480	100%
0 Vehicle HH (C)	27%		6%		9%	
1 Vehicle HH	63,890	16%	347,580	84%	411,470	100%
1 Vehicle HH (C)	47%		34%		36%	
2 Vehicle HH	25,355	6%	410,435	94%	435,790	100%
2 Vehicle HH (C)	19%		41%		38%	
3 Vehicle HH	6,705	5%	138,030	95%	144,735	100%
3 Vehicle HH (C)	5%		14%		13%	
4 Vehicle HH	3,193	6%	51,581	94%	54,774	100%
4 Vehicle HH (C)	2%		5%		5%	
Total	**135,243**	**12%**	**1,013,006**	**88%**	**1,148,249**	**100%**
Total%	**100%**		**100%**		**100%**	

Table 3.12 Vehicle Availability and Poverty Status for Low-Poverty Concentration Counties

Low Poverty	Below Poverty	Below Poverty (R)	Above Poverty	Above Poverty (R)	Total	Total (R)
0 Vehicle HH	17,375	27%	46,345	73%	63,720	100%
0 Vehicle HH (C)	20%		4%		5%	
1 Vehicle HH	42,710	12%	299,245	88%	341,955	100%
1 Vehicle HH (C)	49%		27%		29%	
2 Vehicle HH	19,420	4%	490,635	96%	510,055	100%
2 Vehicle HH (C)	23%		45%		43%	
3 Vehicle HH	5,020	3%	189,444	97%	194,464	100%
3 Vehicle HH (C)	6%		17%		16%	
4 Vehicle HH	1,690	2%	77,065	98%	78,755	100%
4 Vehicle HH (C)	2%		7%		7%	
Total	**86,215**	**7%**	**1,102,734**	**93%**	**1,188,949**	**100%**
Total%	**100%**		**100%**		**100%**	

When segmenting the state's high and low minority concentration counties, the same patterns arise as found when segmenting counties of concentrated poverty (Tables 3.13 and 3.14). As seen in Figures 3.26 and 3.27, in high minority concentration counties, differences in vehicle availability between below- and above-poverty households are amplified. Of all segments studied in this analysis, below-poverty households within

high-minority counties have the greatest percentage of zero-vehicle households (29 percent).

Table 3.13 Vehicle Availability and Poverty Status for High Minority Concentration Counties

High Minority	Below Poverty	Below Poverty (R)	Above Poverty	Above Poverty (R)	Total	Total (R)
0 Vehicle HH	26,730	34%	51,180	66%	77,910	100%
0 Vehicle HH (C)	29%		6%		3%	
1 Vehicle HH	44,460	14%	281,715	86%	326,175	100%
1 Vehicle HH (C)	47%		36%		14%	
2 Vehicle HH	16,345	5%	322,815	95%	339,160	100%
2 Vehicle HH (C)	18%		41%		15%	
3 Vehicle HH	3,995	4%	100,600	96%	104,595	100%
3 Vehicle HH (C)	4%		13%		4%	
4 Vehicle HH	1,560	4%	35,330	96%	36,890	100%
4 Vehicle HH (C)	2%		4%		2%	
Total	**93,090**	**11%**	**791,640**	**89%**	**884,730**	**100%**
Total%	**100%**		**100%**		**38%**	

Table 3.14 Vehicle Availability and Poverty Status for Low Minority Concentration Counties

Low Minority	Below Poverty	Below Poverty (R)	Above Poverty	Above Poverty (R)	Total	Total (R)
0 Vehicle HH	26,745	31%	60,545	69%	87,290	100%
0 Vehicle HH (C)	21%		5%		4%	
1 Vehicle HH	62,140	15%	365,110	85%	427,250	100%
1 Vehicle HH (C)	48%		28%		18%	
2 Vehicle HH	28,430	5%	578,255	95%	606,685	100%
2 Vehicle HH (C)	22%		43%		26%	
3 Vehicle HH	7,730	3%	226,874	97%	234,604	100%
3 Vehicle HH (C)	6%		17%		10%	
4 Vehicle HH	3,323	3%	93,316	97%	96,639	100%
4 Vehicle HH (C)	3%		7%		4%	
Total	**128,368**	**9%**	**1,324,100**	**91%**	**1,452,468**	**100%**
Total%	**100%**		**100%**		**62%**	

Figure 3.26 Vehicle Availability for High-Minority Concentration Counties by Poverty Status

Below Poverty

3 Vehicle HH 4%
4 Vehicle HH 2%
0 Vehicle HH 29%
2 Vehicle HH 18%
1 Vehicle HH 47%

Above Poverty

4 Vehicle HH 4%
0 Vehicle HH 6%
3 Vehicle HH 13%
1 Vehicle HH 36%
2 Vehicle HH 41%
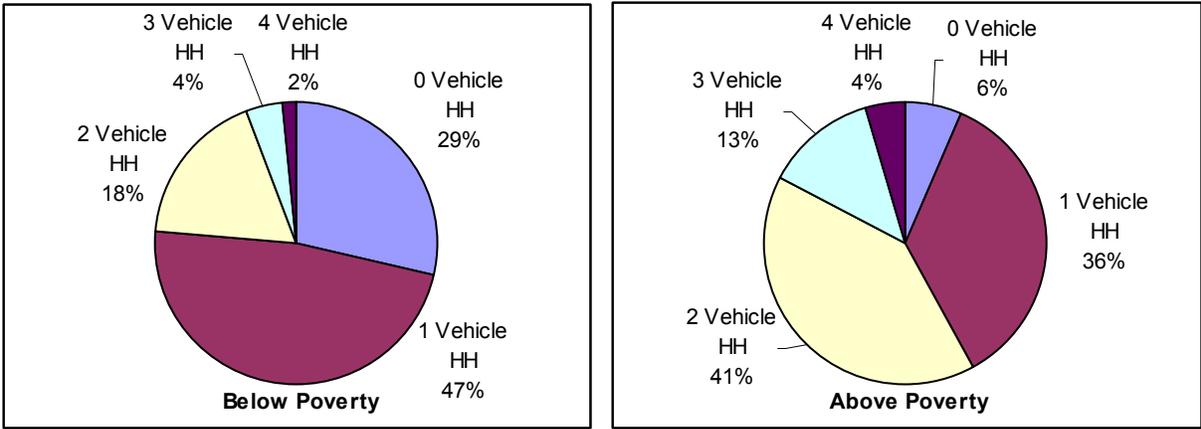
Figure 3.27 Vehicle Availability for Low-Minority Concentration Counties by Poverty Status

Below Poverty

3 Vehicle HH 6%
4 Vehicle HH 3%
0 Vehicle HH 21%
2 Vehicle HH 22%
1 Vehicle HH 48%

Above Poverty

4 Vehicle HH 7%
0 Vehicle HH 5%
3 Vehicle HH 17%
1 Vehicle HH 28%
2 Vehicle HH 43%
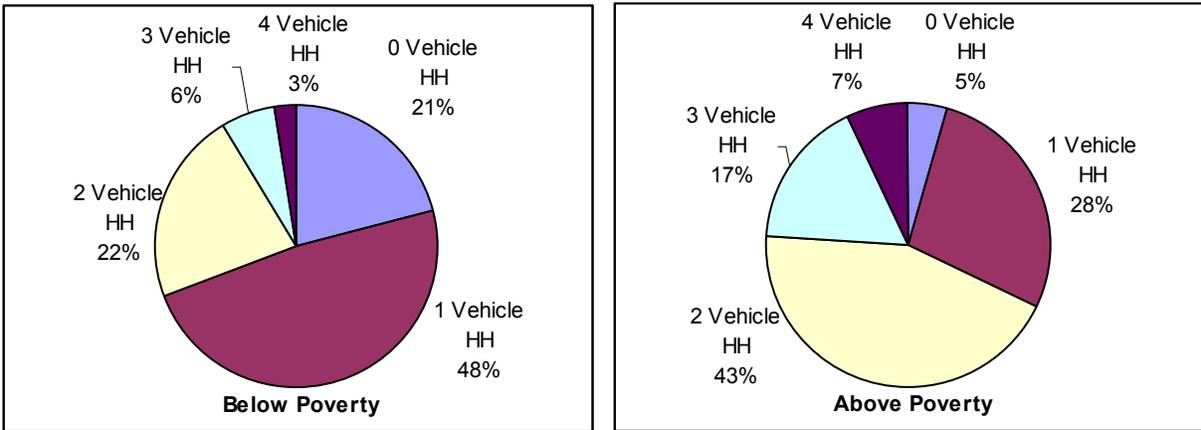
Mode Choice

On a statewide basis as illustrated in Figure 3.28, 82 percent of Indiana's workers drive alone for their journey to work. The second most popular mode is carpools of two, composing nine percent of all workers. Bus and transit account for only one percent of the mode share, while biking, walking and taxi combined compose three percent.

Figure 3.28 Statewide Mode Choice
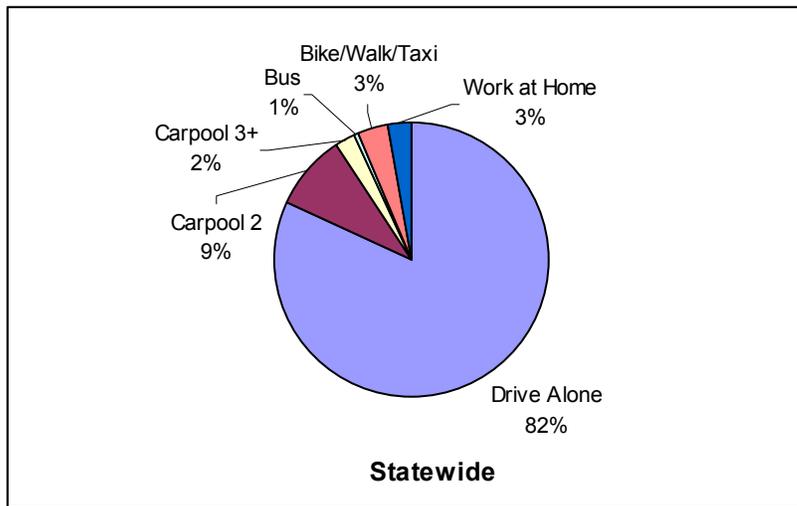
Mode Choice by Race

Statewide, non-Hispanic Whites have the greatest proportion of drive alone commuters among the studied race subsets (Figure 3.29). While 83 percent of non-Hispanic Whites drive alone to work, the drive alone share among Blacks is 73 percent and 69 percent among both Hispanics and other. When considering the composition of the drive alone share, however, the proportion of each race subset is similar to that of the state's overall population (Table 3.15). Carpooling (carpools of two and more than three) is the next predominant mode share, comprising 11 percent of the state's commuters. Between race subsets, Hispanics and Other have the greatest proportion of carpoolers – 22 percent of Hispanics carpool and 21 percent of the subset Other carpool. This suggests that Hispanics and those within the Other subset are twice as likely to carpool than non-Hispanic Whites, of whom 10 percent carpool. Of the modes, the bus share is the most racially disproportioned with respect to the state's population. While Blacks compose 6.5 percent of the state's total population, Blacks represent two out of five of those commuting by bus.

Figure 3.29 Mode Choice for All of Indiana by Race

Non-Hispanic White

Carpool 3+ 2%
Bike/Wlk 3%
Work at Home 3%
Carpool 2 8%
Drive Alone 84%

Hispanic White

Transit 1%
Bike/Wlk 5%
Bus 1%
Work at Home 2%
Carpool 3+ 7%
Carpool 2 15%
Drive Alone 69%

Black

Transit 1%
Bike/Wlk 4%
Bus 5%
Work at Home 1%
Carpool 3+ 3%
Carpool 2 13%
Drive Alone 73%

Other

Bus 1%
Bike/Wlk 7%
Work at Home 2%
Carpool 3+ 6%
Carpool 2 15%
Drive Alone 69%
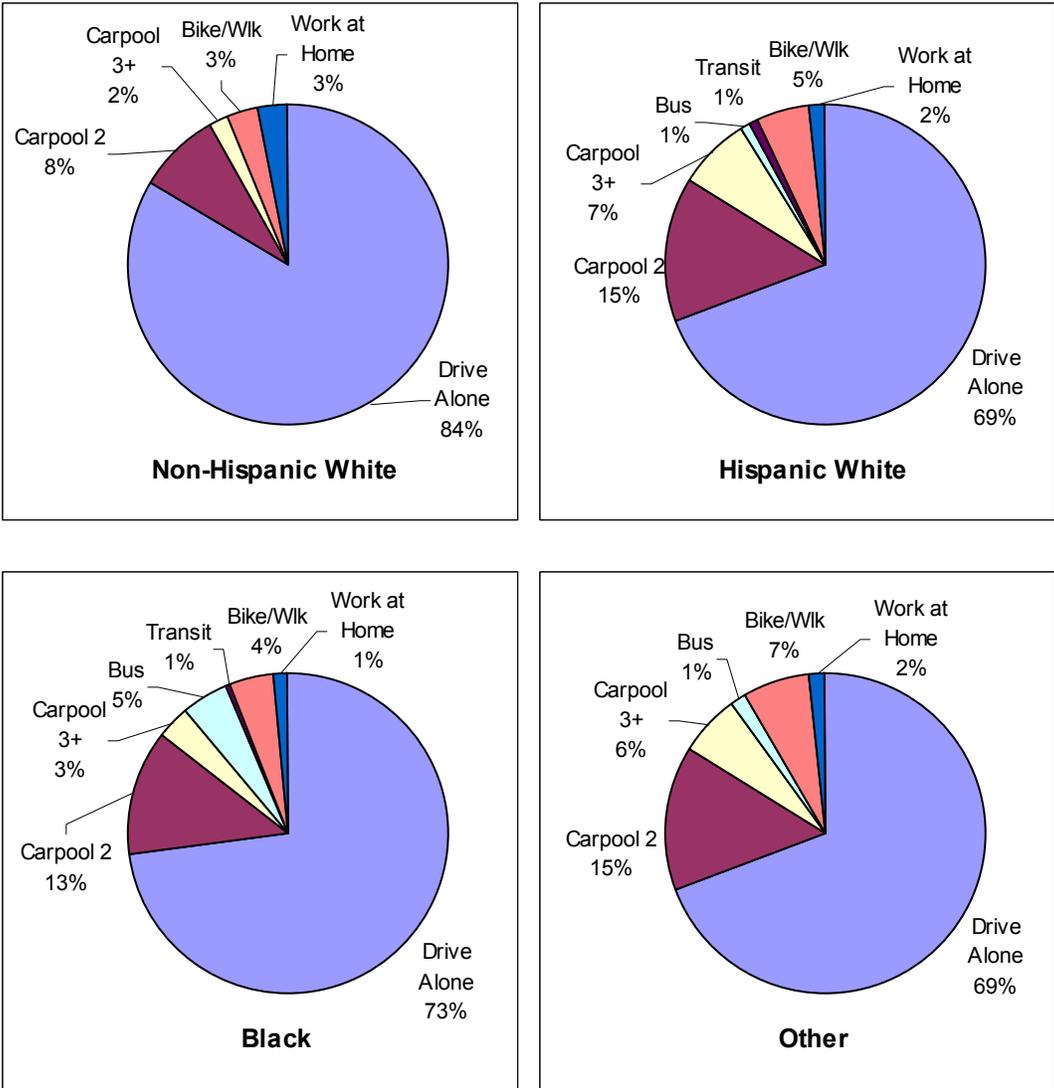
Table 3.15 Mode Choice and Race for Indiana

All Counties	White Non-Hispanic	White (R)	Hispanic	Hispanic (R)	Black	Black (R)	Other	Other (R)	Total	Total%
Drive Alone	2,141,100	90.0%	28,246	1.2%	137,523	5.8%	73,141	3.1%	2,380,010	100%
Drive Alone (C)	84%		69%		73%		69%		82%	
Carpool 2	213,085	82.2%	6,038	2.3%	24,546	9.5%	15,512	6.0%	259,181	100%
Carpool 2 (C)	8%		15%		13%		15%		9%	
Carpool 3	46,150	74.7%	2,893	4.7%	6,198	10.0%	6,528	10.6%	61,769	100%
Carpool 3 (C)	2%		7%		3%		6%		2%	
Bus	10,405	49.3%	419	2.0%	8,758	41.5%	1,522	7.2%	21,104	100%
Bus (C)	0%		1%		5%		1%		1%	
Transit	4,930	71.2%	407	5.9%	1,093	15.8%	497	7.2%	6,927	100%
Transit (C)	0%		1%		1%		0%		0%	
Bike/Walk	80,105	82.0%	2,164	2.2%	8,259	8.5%	7,107	7.3%	97,635	100%
Bike/Walk (C)	3%		5%		4%		7%		3%	
Work at Home	78,725	93.7%	643	0.8%	2,801	3.3%	1,817	2.2%	83,986	100%
Work at Home (C)	3%		2%		1%		2%		3%	
Total Total%	**2,574,500 100%**	**88.5%**	**40,810 100%**	**1.4%**	**189,178 100%**	**6.5%**	**106,124 100%**	**3.6%**	**2,910,612 100%**	**100%**

As shown in Figures 3.30 and 3.31, Central Indiana and non-Central Indiana counties both exhibit patterns similar to that found at the state level. However, the most obvious difference between these geographies is that Hispanics in non-Central Indiana have a greater drive alone share than their Central Indiana counterparts. In non-Central Indiana, 71 percent of Hispanics drive alone, while in Central Indiana, 61 percent of Hispanics drive alone (Tables 3.16 and 3.17). The alternative to driving alone in Central Indiana is usually carpooling. 32 percent of Hispanics in Central Indiana carpool as opposed to 19 percent in non-Central Indiana. Given that Indianapolis has an established bus service, it is not entirely clear why carpooling is the alternative to driving alone instead of to bus. We might speculate that the choice to carpool is related to the commuters' nature of work or due to language barriers that make it more difficult to learn the bus system.

Figure 3.30 Mode Choice for Central Indiana Counties by Race

Non-Hispanic White

Carpool 3+ 1%
Bike/Wlk 2%
Work at Home 3%
Carpool 2 8%
Drive Alone 86%

Hispanic White

Bike/Wlk 4%
Work at Home 1%
Bus 2%
Carpool 3+ 12%
Carpool 2 20%
Drive Alone 61%

Black

Bike/Wlk 4%
Work at Home 1%
Bus 6%
Carpool 3+ 3%
Carpool 2 12%
Drive Alone 74%

Other

Bike/Wlk 4%
Work at Home 2%
Bus 2%
Carpool 3+ 7%
Carpool 2 15%
Drive Alone 70%
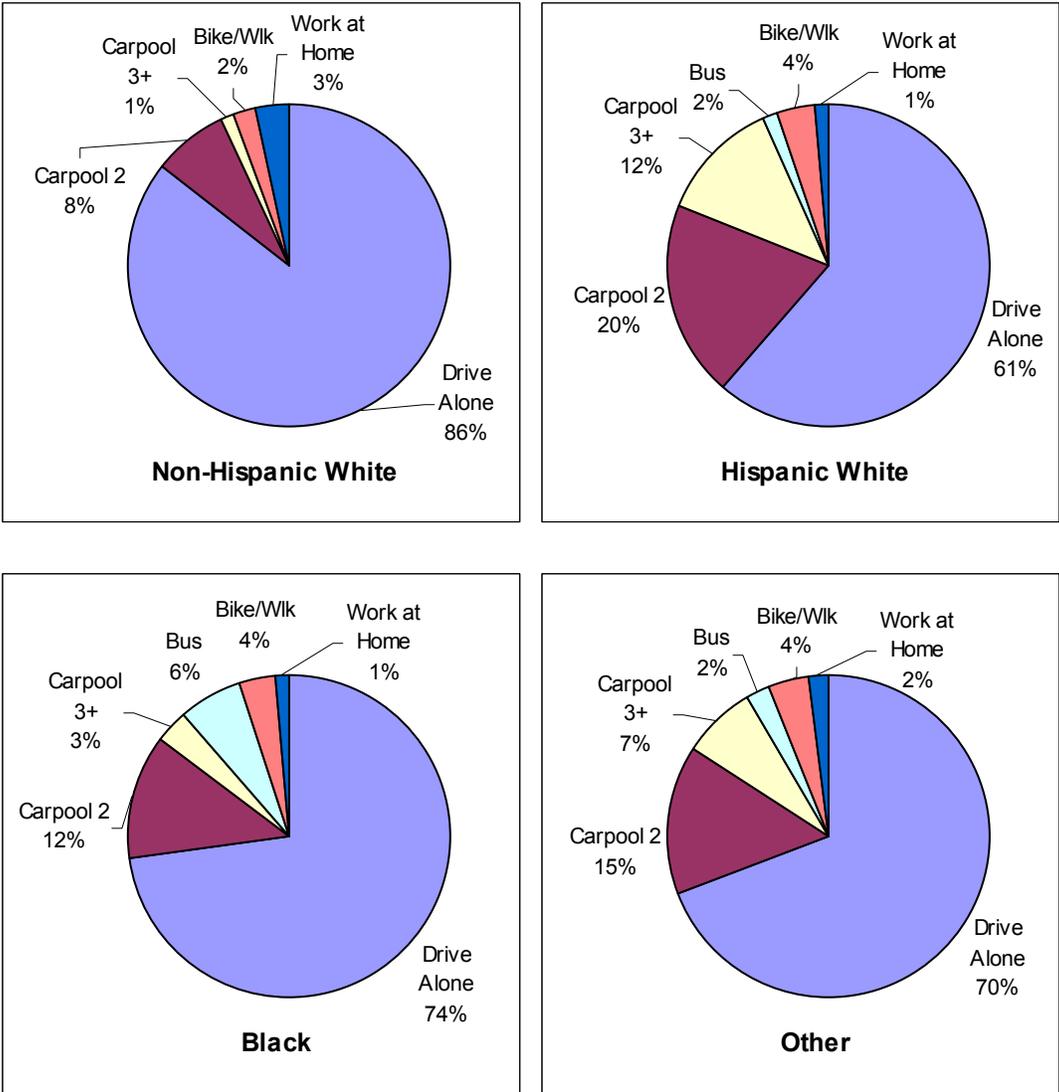
Figure 3.31 Mode Choice for Non-Central Indiana Counties by Race

Non-Hispanic White

Work at Home 3%
Bike/Wlk 3%
Carpool 3+ 2%
Carpool 2 9%
Drive Alone 83%

Hispanic White

Transit 1%
Bike/Wlk 6%
Work at Home 2%
Bus 1%
Carpool 3+ 6%
Carpool 2 13%
Drive Alone 71%

Black

Transit 1%
Bike/Wlk 5%
Work at Home 1%
Bus 3%
Carpool 3+ 3%
Carpool 2 13%
Drive Alone 74%

Other

Transit 1%
Bike/Wlk 8%
Work at Home 2%
Bus 1%
Carpool 3+ 6%
Carpool 2 14%
Drive Alone 68%
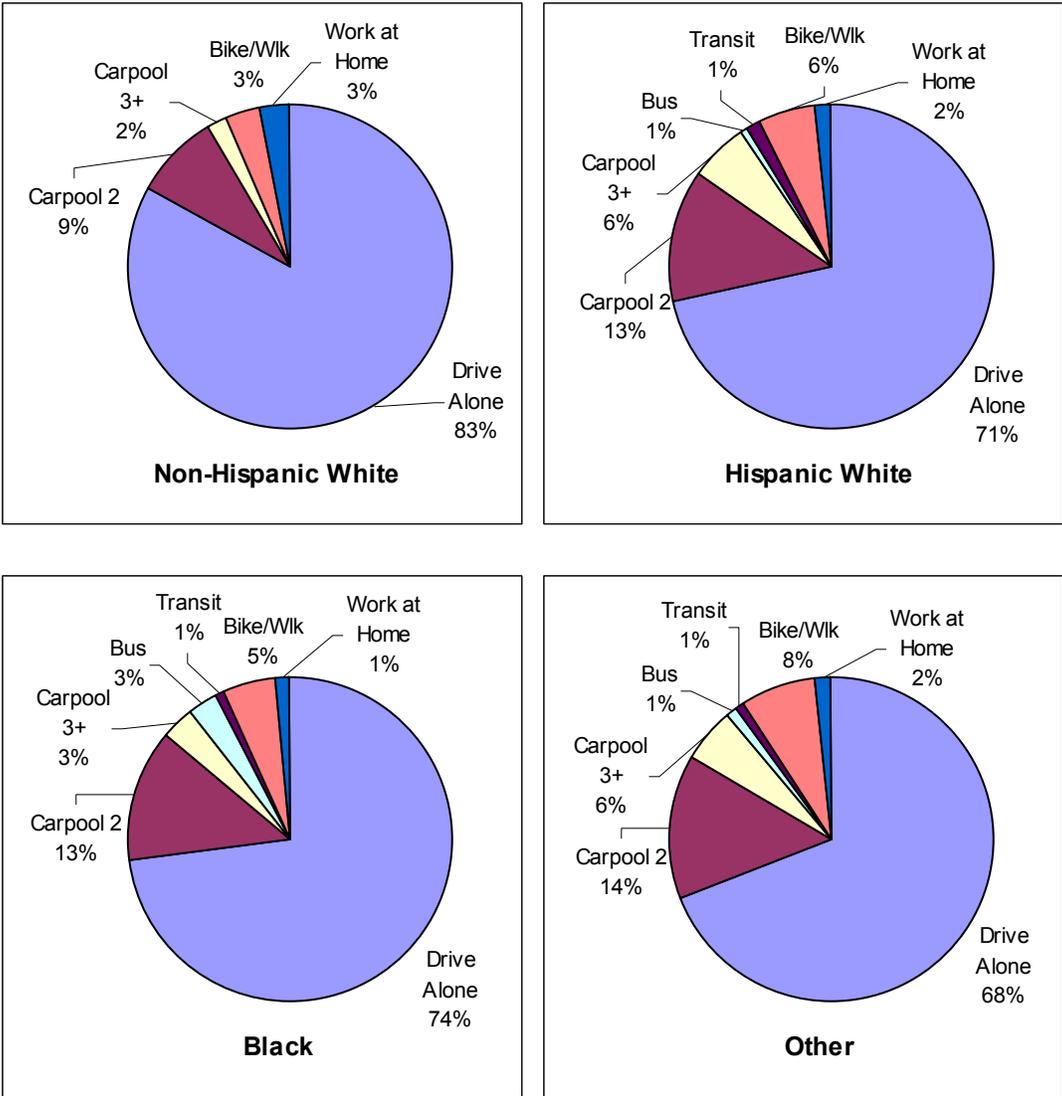
Table 3.16 Mode Choice and Race for Central Indiana Counties

Central Counties	White Non-Hispanic	White (R)	Hispanic	Hispanic (R)	Black	Black (R)	Other	Other (R)	Total	Total%
Drive Alone	568,235	86.2%	5,275	0.8%	64,255	9.8%	21,070	3.2%	658,835	100%
Drive Alone (C)	86%		61%		74%		70%		83%	
Carpool 2	50,565	74.5%	1,698	2.5%	11,029	16.3%	4,555	6.7%	67,847	100%
Carpool 2 (C)	8%		20%		12%		15%		9%	
Carpool 3	9,205	59.6%	1,054	6.8%	2,909	18.8%	2,268	14.7%	15,436	100%
Carpool 3 (C)	1%		12%		3%		7%		2%	
Bus	3,145	32.7%	130	1.4%	5,685	59.1%	655	6.8%	9,615	100%
Bus (C)	0%		2%		6%		2%		1%	
Transit	308	69.5%	0	0.0%	105	23.7%	30	6.8%	443	100%
Transit (C)	0%		0%		0%		0%		0%	
Bike/Walk	15,400	76.4%	339	1.7%	3,114	15.4%	1,309	6.5%	20,162	100%
Bike/Walk (C)	2%		4%		4%		4%		3%	
Work at Home	21,395	91.4%	114	0.5%	1,315	5.6%	589	2.5%	23,413	100%
Work at Home (C)	3%		1%		1%		2%		3%	
Total	**668,253**	**84.0%**	**8,610**	**1.1%**	**88,412**	**11.1%**	**30,476**	**3.8%**	**795,751**	**100%**
Total%	**100%**		**100%**		**100%**		**100%**		**100%**	

Table 3.17 Mode Choice and Race for Non-Central Indiana Counties

Non-Central Counties	White Non-Hispanic	White (R)	Hispanic	Hispanic (R)	Black	Black (R)	Other	Other (R)	Total	Total%
Drive Alone	1,572,865	91.4%	22,971	1.3%	73,268	4.3%	52,071	3.0%	1,721,175	100%
Drive Alone (C)	83%		71%		74%		68%		81%	
Carpool 2	162,520	84.9%	4,340	2.3%	13,517	7.1%	10,957	5.7%	191,334	100%
Carpool 2 (C)	9%		13%		13%		14%		9%	
Carpool 3	36,945	79.7%	1,839	4.0%	3,289	7.1%	4,260	9.2%	46,333	100%
Carpool 3 (C)	2%		6%		3%		6%		2%	
Bus	7,260	63.2%	289	2.5%	3,073	26.7%	867	7.5%	11,489	100%
Bus (C)	0%		1%		3%		1%		1%	
Transit	4,622	71.3%	407	6.3%	988	15.2%	467	7.2%	6,484	100%
Transit (C)	0%		1%		1%		1%		0%	
Bike/Walk	64,705	83.5%	1,825	2.4%	5,145	6.6%	5,798	7.5%	77,473	100%
Bike/Walk (C)	3%		6%		5%		8%		4%	
Work at Home	57,330	94.6%	529	0.9%	1,486	2.5%	1,228	2.0%	60,573	100%
Work at Home (C)	3%		2%		1%		2%		3%	
Total	**1,906,247**	**90.1%**	**32,200**	**1.5%**	**100,766**	**4.8%**	**75,648**	**3.6%**	**2,114,861**	**100%**
Total%	**100%**		**100%**		**100%**		**100%**		**100%**	

The mode choice among different race subsets in concentrated poverty counties demonstrates similar patterns to those found for the State (Figures 3.32 and 3.33). The most significant difference between high- and lower-poverty concentration counties is found in the bus share. Among high-poverty concentration counties, nearly half of the bus share is composed of Blacks. In lower-poverty concentration counties, Blacks compose about 17 percent of the bus share. It should be noted, however, that Blacks compose a smaller segment of the population in lower-poverty concentration counties – just over two percent (Tables 3.18 and 3.19). Therefore, the bus mode share still maintains a high disproportion of Blacks.

Figure 3.32 Mode Choice for High-Poverty Concentration Counties by Race
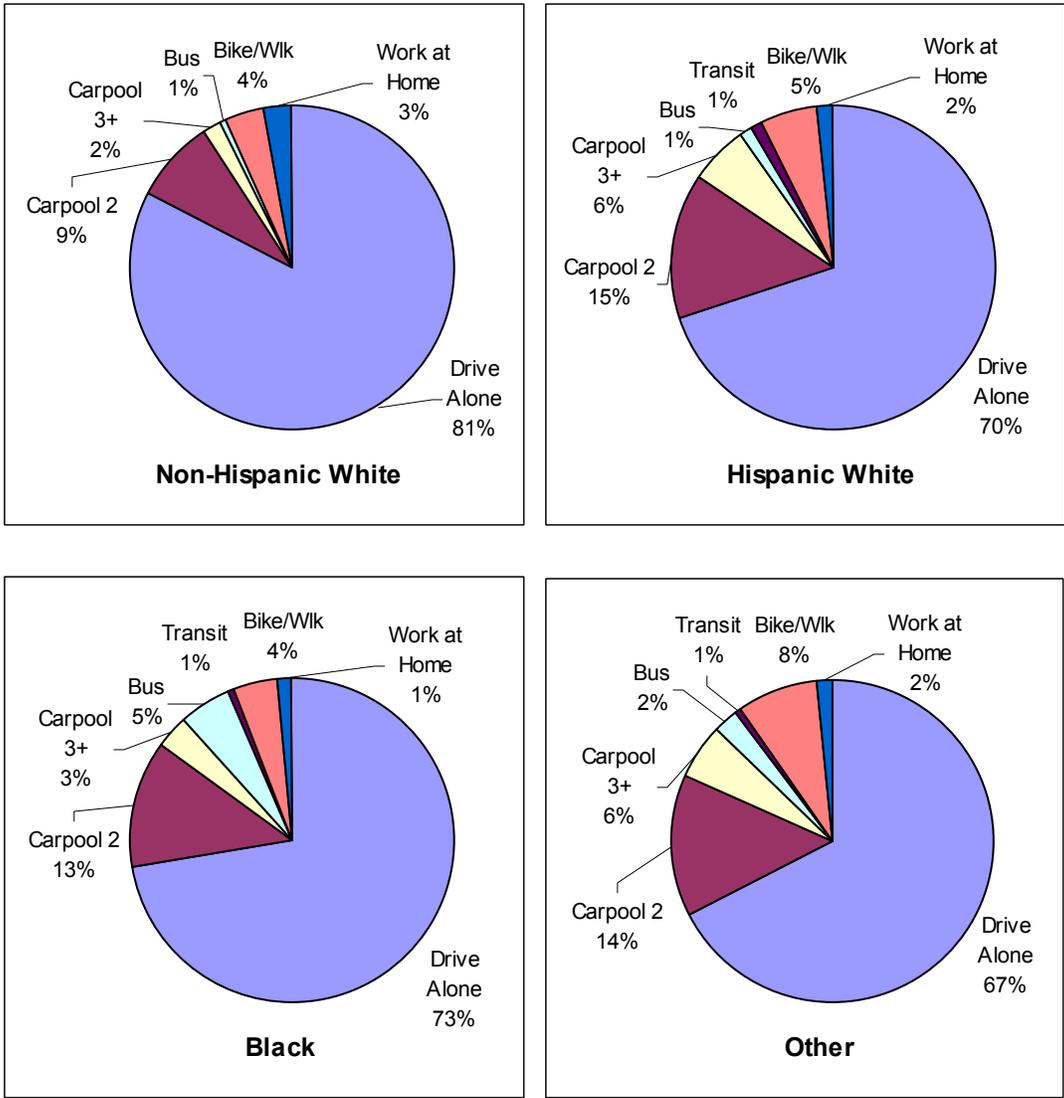
Figure 3.33 Mode Choice for Low-Poverty Concentration Counties by Race

Non-Hispanic White

- Carpool 3+ 2%
- Bike/Wlk 3%
- Work at Home 3%
- Carpool 2 8%
- Drive Alone 84%

Hispanic White

- Transit 1%
- Bike/Wlk 5%
- Work at Home 1%
- Carpool 3+ 9%
- Carpool 2 15%
- Drive Alone 69%

Black

- Bus 2%
- Bike/Wlk 4%
- Work at Home 1%
- Carpool 3+ 3%
- Carpool 2 14%
- Drive Alone 76%

Other

- Bike/Wlk 5%
- Work at Home 2%
- Carpool 3+ 7%
- Carpool 2 15%
- Drive Alone 71%
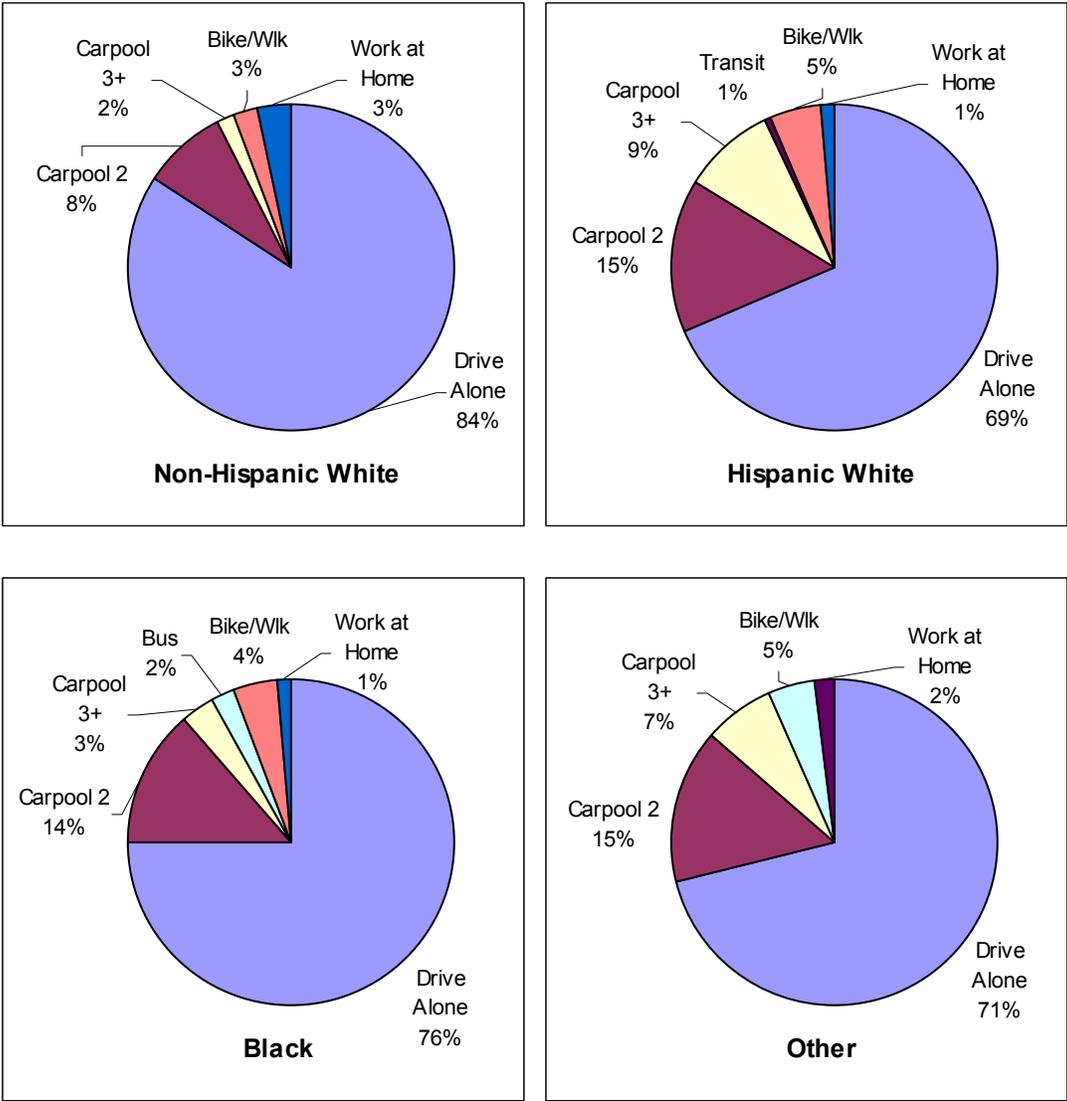
Table 3.18 Mode Choice and Race for High-Poverty Concentration Counties

High Poverty	White Non-Hispanic	White (R)	Hispanic	Hispanic (R)	Black	Black (R)	Other	Other (R)	Total	Total%
Drive Alone	930,225	84.5%	17,358	1.6%	112,011	10.2%	40,736	3.7%	1,100,330	100%
Drive Alone (C)	81%		70%		73%		67%		80%	
Carpool 2	96,235	75.0%	3,624	2.8%	19,873	15.5%	8,546	6.7%	128,278	100%
Carpool 2 (C)	9%		15%		13%		14%		9%	
Carpool 3+	20,670	67.4%	1,435	4.7%	5,079	16.6%	3,471	11.3%	30,655	100%
Carpool 3+ (C)	2%		6%		3%		6%		2%	
Bus	6,980	41.7%	347	2.1%	8,040	48.0%	1,375	8.2%	16,742	100%
Bus (C)	1%		1%		5%		2%		1%	
Transit	3,293	65.3%	304	6.0%	1,004	19.9%	444	8.8%	5,045	100%
Transit (C)	0%		1%		1%		1%		0%	
Bike/Walk/Taxi	42,805	76.8%	1,356	2.4%	6,742	12.1%	4,859	8.7%	55,762	100%
Bike/Walk/Taxi (C)	4%		5%		4%		8%		4%	
Work at Home	32,300	89.6%	437	1.2%	2,325	6.5%	973	2.7%	36,035	100%
Work at Home (C)	3%		2%		1%		2%		3%	
Total	**1,132,508**	**82.5%**	**24,861**	**1.8%**	**155,074**	**11.3%**	**60,404**	**4.4%**	**1,372,847**	**100%**
Total%	**100%**		**100%**		**100%**		**100%**		**100%**	

Table 3.19 Mode Choice and Race for Low-Poverty Concentration Counties

Low Poverty	White Non-Hispanic	White (R)	Hispanic	Hispanic (R)	Black	Black (R)	Other	Other (R)	Total	Total%
Drive Alone	1,210,875	94.6%	10,888	0.9%	25,512	2.0%	32,405	2.5%	1,279,680	100%
Drive Alone (C)	84%		69%		76%		71%		83%	
Carpool 2	116,850	89.3%	2,414	1.8%	4,673	3.6%	6,966	5.3%	130,903	100%
Carpool 2 (C)	8%		15%		14%		15%		9%	
Carpool 3+	25,480	81.9%	1,458	4.7%	1,119	3.6%	3,057	9.8%	31,114	100%
Carpool 3+ (C)	2%		9%		3%		7%		2%	
Bus	3,425	78.5%	72	1.7%	718	16.5%	147	3.4%	4,362	100%
Bus (C)	0%		0%		2%		0%		0%	
Transit	1,637	87.0%	103	5.5%	89	4.7%	53	2.8%	1,882	100%
Transit (C)	0%		1%		0%		0%		0%	
Bike/Walk/Taxi	37,300	89.1%	808	1.9%	1,517	3.6%	2,248	5.4%	41,873	100%
Bike/Walk/Taxi (C)	3%		5%		4%		5%		3%	
Work at Home	46,425	96.8%	206	0.4%	476	1.0%	844	1.8%	47,951	100%
Work at Home (C)	3%		1%		1%		2%		3%	
Total	**1,441,992**	**93.8%**	**15,949**	**1.0%**	**34,104**	**2.2%**	**45,720**	**3.0%**	**1,537,765**	**100%**
Total%	**100%**		**100%**		**100%**		**100%**		**100%**	

As seen in Figures 3.34 and 3.35, when comparing high and low minority concentration counties, there is very little difference in mode share by subset of race. Detailed in Table 3.20, among high-minority counties, from the alternative to driving alone usually is bus. Whereas, among low-minority counties, from the alternative to driving alone usually is carpooling (Table 3.21). This is likely because the high-minority counties identified in this study include the State's more prominent urban areas which tend to have better established bus services.

Figure 3.34 Mode Choice for High-Minority Concentration Counties by Race
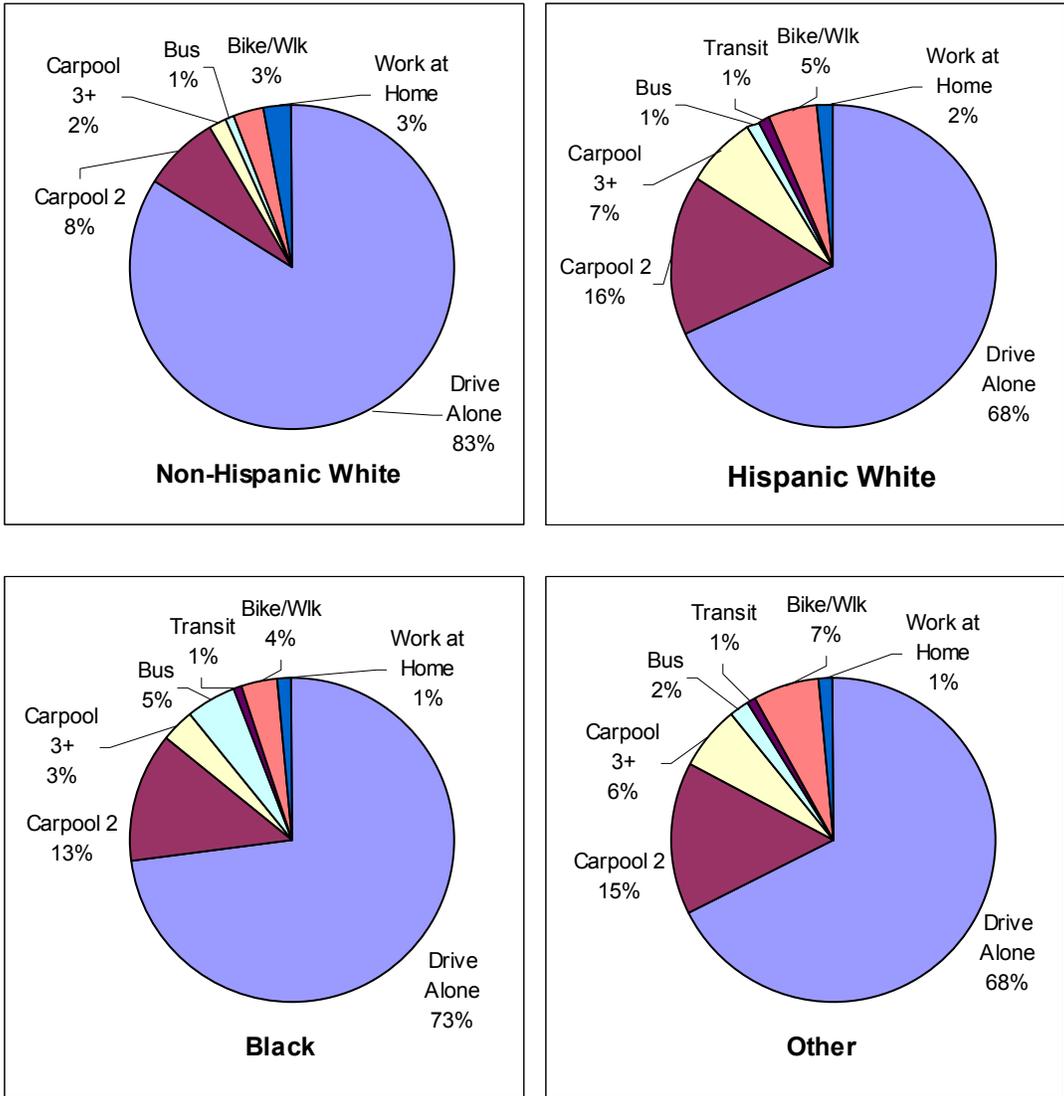
Figure 3.35 Mode Choice for Low-Minority Concentration Counties by Race

Non-Hispanic White

Carpool 3+ 2%
Carpool 2 9%
Bike/Wlk 3%
Work at Home 3%
Drive Alone 83%

Hispanic White

Transit 1%
Bus 1%
Carpool 3+ 7%
Carpool 2 13%
Bike/Wlk 6%
Work at Home 1%
Drive Alone 71%

Black

Bus 2%
Carpool 3+ 3%
Carpool 2 13%
Bike/Wlk 8%
Work at Home 1%
Drive Alone 73%

Other

Bus 1%
Carpool 3+ 6%
Carpool 2 14%
Bike/Wlk 7%
Work at Home 2%
Drive Alone 70%
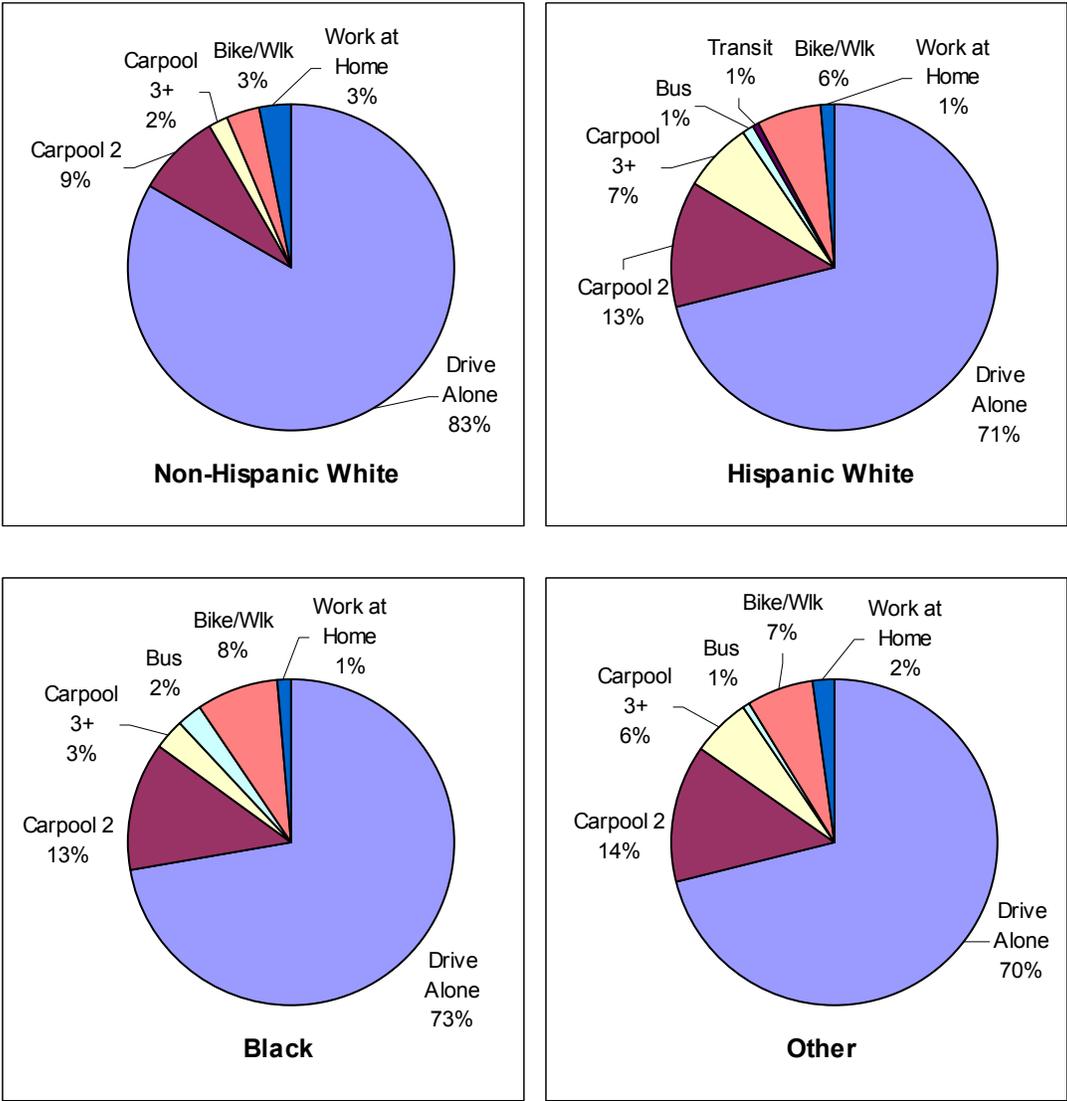
Table 3.20 Mode Choice and Race for High-Minority Concentration Counties

| High Minority	White Non-Hispanic	White (R)	Hispanic	Hispanic (R)	Black	Black (R)	Other	Other (R)	Total	Total%
Drive Alone	706,125	80.3%	17,680	2.0%	113,195	12.9%	42,555	5%	879,555	100%
Drive Alone (C)	83%		68%		73%		68%		81%	
Carpool 2	65,990	66.0%	4,165	4.2%	20,215	20.2%	9,570	10%	99,940	100%
Carpool 2 (C)	8%		16%		13%		15%		9%	
Carpool 3	13,960	55.7%	1,855	7.4%	5,145	20.5%	4,089	16%	25,049	100%
Carpool 3 (C)	2%		7%		3%		6%		2%	
Bus	5,475	36.8%	260	1.7%	7,925	53.2%	1,230	8%	14,890	100%
Bus (C)	1%		1%		5%		2%		1%	
Transit	3,285	65.9%	313	6.3%	974	19.5%	413	8%	4,985	100%
Transit (C)	0%		1%		1%		1%		0%	
Bike/Walk	25,810	70.0%	1,220	3.3%	5,600	15.2%	4,245	12%	36,875	100%
Bike/Walk (C)	3%		5%		4%		7%		3%	
Work at Home	23,760	86.8%	435	1.6%	2,310	8.4%	855	3%	27,360	100%
Work at Home (C)	3%		2%		1%		1%		3%	
Total	**844,405**	**77.6%**	**25,928**	**2.4%**	**155,364**	**14.3%**	**62,957**	**6%**	**1,088,654**	**100%**
Total%	**100%**		**100%**		**100%**		**100%**		**100%**	

Table 3.21 Mode Choice and Race for Low-Minority Concentration Counties

Low Minority	White Non-Hispanic	White (R)	Hispanic	Hispanic (R)	Black	Black (R)	Other	Other (R)	Total	Total%
Drive Alone	1,434,975	95.6%	10,566	0.7%	24,328	1.6%	30,586	2%	1,500,455	100%
Drive Alone (C)	83%		71%		73%		70%		82%	
Carpool 2	147,095	92.4%	1,873	1.2%	4,331	2.7%	5,942	4%	159,241	100%
Carpool 2 (C)	9%		13%		13%		14%		9%	
Carpool 3	32,190	87.7%	1,038	2.8%	1,053	2.9%	2,439	7%	36,720	100%
Carpool 3 (C)	2%		7%		3%		6%		2%	
Bus	4,930	79.3%	159	2.6%	833	13.4%	292	5%	6,214	100%
Bus (C)	0%		1%		2%		1%		0%	
Transit	1,645	84.7%	94	4.8%	119	6.1%	84	4%	1,942	100%
Transit (C)	0%		1%		0%		0%		0%	
Bike/Walk	54,295	89.4%	944	1.6%	2,659	4.4%	2,862	5%	60,760	100%
Bike/Walk (C)	3%		6%		8%		7%		3%	
Work at Home	54,965	97.1%	208	0.4%	491	0.9%	962	2%	56,626	100%
Work at Home (C)	3%		1%		1%		2%		3%	
Total	**1,730,095**	**95.0%**	**14,882**	**0.8%**	**33,814**	**1.9%**	**43,167**	**2%**	**1,821,958**	**100%**
Total%	**100%**		**100%**		**100%**		**100%**		**100%**	

Mode Choice by Poverty

When examining the differences in mode choice between below- and above-poverty household workers, discrepancies are typically found among the drive alone, carpooling and biking/walking/taxi modes. As shown in Figure 3.36, while 83 percent of above-poverty respondents drive alone to work, only 66 percent of below-poverty workers drive alone; constituting a 17 percent difference. Commuters of below-poverty households, who do not drive alone, tend to opt for carpooling. Carpooling comprises 19 percent of below-poverty workers as compared to 11 percent of above-poverty workers (Table 3.22). The other more common alternative for below-poverty workers who do not drive alone is walking/biking/taxi, which accounts for eight percent of all below-poverty workers.

Figure 3.36 Mode Choice for All of Indiana by Poverty Status
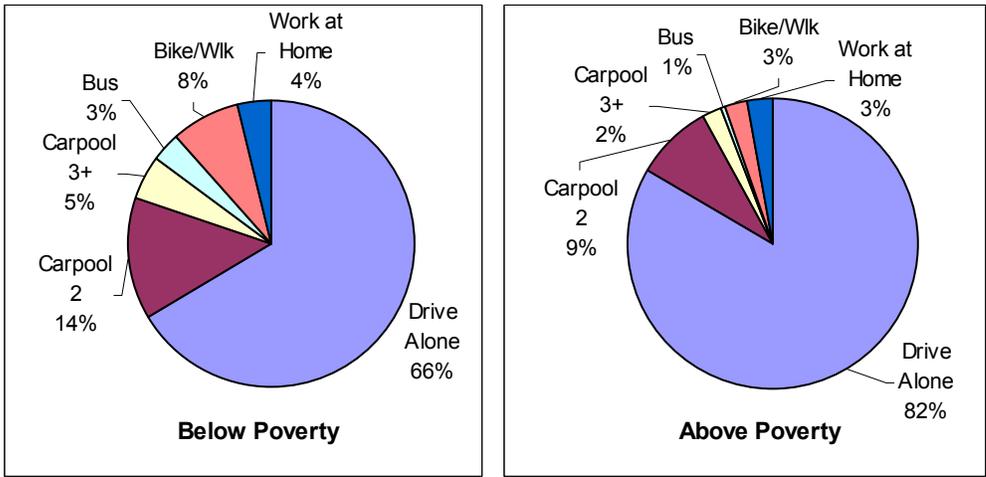
Table 3.22 Mode Choice and Poverty Status for Indiana

All Counties	Below Poverty	Below Poverty (R)	Above Poverty	Above Poverty (R)	Total	Total (R)
Drive Alone	88,380	4%	2,283,965	96%	2,372,345	100%
Drive Alone (C)	66%		82%		82%	
Carpool 2	18,420	7%	239,615	93%	258,035	100%
Carpool 2 (C)	14%		9%		9%	
Carpool 3+	6,852	11%	54,692	89%	61,544	100%
Carpool 3+ (C)	5%		2%		2%	
Bus	4,157	20%	16,408	80%	20,565	100%
Bus (C)	3%		1%		1%	
Transit	325	5%	6,587	95%	6,912	100%
Transit (C)	0%		0%		0%	
Bike/Walk/Taxi	10,092	13%	69,972	87%	80,064	100%
Bike/Walk/Taxi (C)	8%		3%		3%	
Work at Home	5,298	6%	76,989	94%	82,287	100%
Work at Home (C)	4%		3%		3%	
Total	**133,524**	**5%**	**2,748,228**	**95%**	**2,881,752**	**100%**
Total%	**100%**		**100%**		**100%**	

These patterns are found to be consistent when examining Central Indiana, Non-Central and high-minority concentration counties as exhibited in Tables 3.23 through 3.26 and Figures 3.37 through 3.40.

Table 3.23 Mode Choice and Poverty Status for Central Indiana

Central Counties	Below Poverty	Below Poverty (R)	Above Poverty	Above Poverty (R)	Total	Total (R)
Drive Alone	19,770	3%	638,050	97%	657,820	100%
Drive Alone (C)	64%		84%		83%	
Carpool 2	4,735	7%	62,915	93%	67,650	100%
Carpool 2 (C)	15%		8%		9%	
Carpool 3+	2,027	13%	13,364	87%	15,391	100%
Carpool 3+ (C)	7%		2%		2%	
Bus	1,863	19%	7,755	81%	9,618	100%
Bus (C)	6%		1%		1%	
Transit	60	13%	390	87%	450	100%
Transit (C)	0%		0%		0%	
Bike/Walk/Taxi	1,675	9%	16,519	91%	18,194	100%
Bike/Walk/Taxi (C)	5%		2%		2%	
Work at Home	1,010	4%	22,300	96%	23,310	100%
Work at Home (C)	3%		3%		3%	
Total	**31,140**	**4%**	**761,293**	**96%**	**792,433**	**100%**
Total%	**100%**		**100%**		**100%**	

Table 3.24 Mode Choice and Poverty Status for Non-Central Indiana

| Non-Central Counties	Below Poverty	Below Poverty (R)	Above Poverty	Above Poverty (R)	Total	Total (R)
Drive Alone	68,610	4%	1,645,915	96%	1,714,525	100%
Drive Alone (C)	68%		83%		82%	
Carpool 2	13,685	7%	176,700	93%	190,385	100%
Carpool 2 (C)	13%		9%		9%	
Carpool 3+	4,825	10%	41,328	90%	46,153	100%
Carpool 3+ (C)	5%		2%		2%	
Bus	2,294	21%	8,653	79%	10,947	100%
Bus (C)	2%		0%		1%	
Transit	265	4%	6,197	96%	6,462	100%
Transit (C)	0%		0%		0%	
Bike/Walk/Taxi	8,417	14%	53,453	86%	61,870	100%
Bike/Walk/Taxi (C)	8%		3%		3%	
Work at Home	4,288	7%	54,689	93%	58,977	100%
Work at Home (C)	4%		3%		3%	
Total	**102,384**	**5%**	**1,986,935**	**95%**	**2,089,319**	**100%**
Total%	**100%**		**100%**		**100%**	

Table 3.25 Mode Choice and Poverty Status for High-Minority Concentration Counties

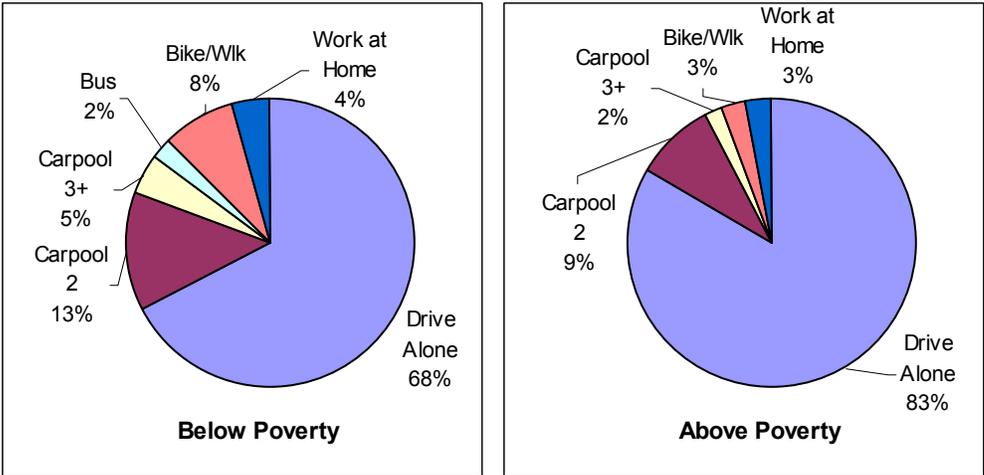| High Minority	Below Poverty	Below Poverty (R)	Above Poverty	Below Poverty (R)	Total	Total (R)
Drive Alone	35,100	4%	841,965	96%	877,065	100%
Drive Alone (C)	62%		84%		81%	
Carpool 2	8,520	9%	90,975	91%	99,495	100%
Carpool 2 (C)	15%		9%		9%	
Carpool 3+	3,160	13%	21,745	87%	24,905	100%
Carpool 3+ (C)	6%		2%		2%	
Bus	2,945	20%	11,635	80%	14,580	100%
Bus (C)	5%		1%		1%	
Transit	249	5%	4,729	95%	4,978	100%
Transit (C)	0%		0%		0%	
Bike/Walk/Taxi	5,245	17%	25,025	83%	30,270	100%
Bike/Walk/Taxi (C)	9%		2%		3%	
Work at Home	1,715	6%	25,025	94%	26,740	100%
Work at Home (C)	3%		2%		2%	
Total	**56,934**	**5%**	**1,021,099**	**95%**	**1,078,033**	**100%**
Total%	**100%**		**100%**		**100%**	

Table 3.26 Mode Choice and Poverty Status for Low-Minority Concentration Counties

Low Minority	Below Poverty	Below Poverty (R)	Above Poverty	Below Poverty (R)	Total	Total (R)
Drive Alone	53,280	4%	1,442,000	96%	1,495,280	100%
Drive Alone (C)	67%		83%		83%	
Carpool 2	9,900	6%	148,640	94%	158,540	100%
Carpool 2 (C)	12%		9%		9%	
Carpool 3+	3,692	10%	32,947	90%	36,639	100%
Carpool 3+ (C)	5%		2%		2%	
Bus	1,212	20%	4,773	80%	5,985	100%
Bus (C)	2%		0%		0%	
Transit	76	4%	1,858	96%	1,934	100%
Transit (C)	0%		0%		0%	
Bike/Walk/Taxi	7,250	14%	44,947	86%	52,197	100%
Bike/Walk/Taxi (C)	9%		3%		3%	
Work at Home	3,583	6%	51,964	94%	55,547	100%
Work at Home (C)	5%		3%		3%	
Total	**78,993**	**4%**	**1,727,129**	**96%**	**1,806,122**	**100%**
Total%	**100%**		**100%**		**100%**	

Figure 3.37 Mode Choice for Central Indiana by Poverty Status

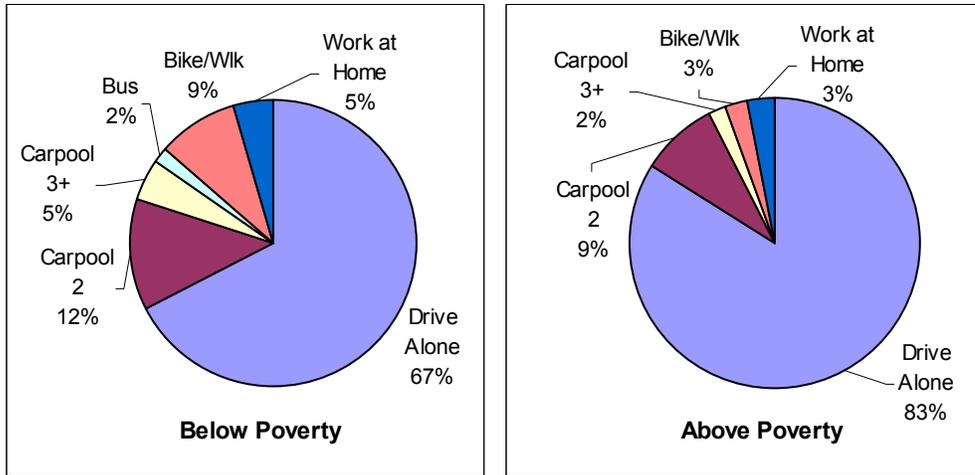Below Poverty / Above Poverty
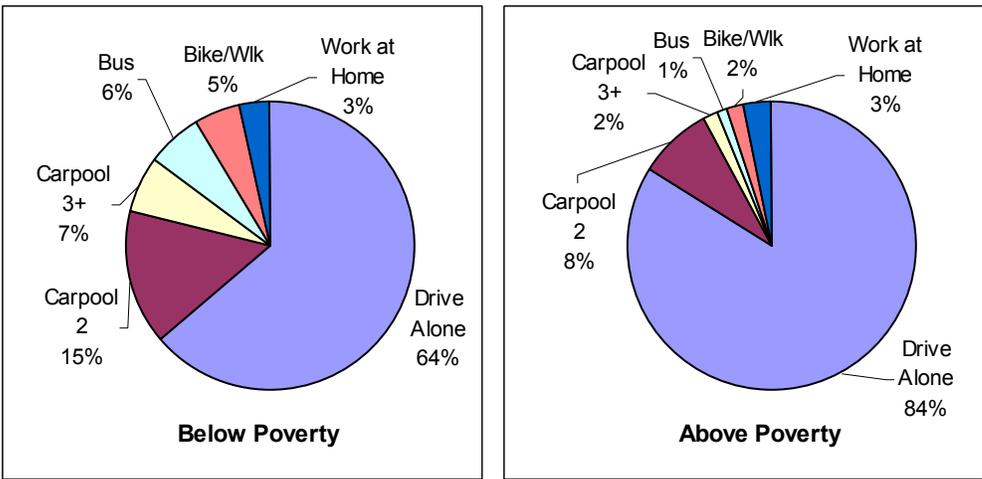
Figure 3.38 Mode Choice for Non-Central Indiana by Poverty Status

Figure 3.39 Mode Choice for High-Minority Concentration Counties by Poverty Status
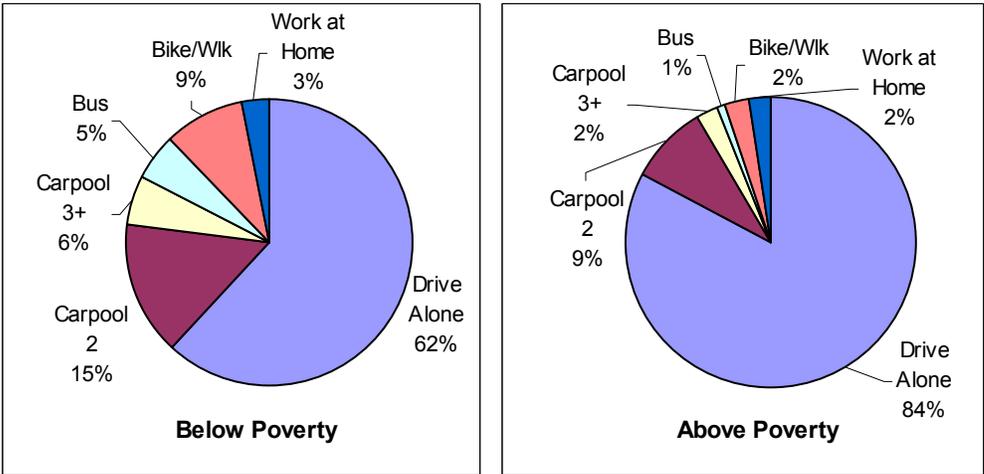
Figure 3.40 Mode Choice for Low-Minority Concentration Counties by Poverty Status

Generally, these trends are also true for high- and low-poverty concentration counties (Tables 3.27 and 3.28). As illustrated in Figures 3.41 and 3.42, however, high-poverty concentration counties exhibit a slightly higher bus and pedestrian mode share than do the remaining counties. This is likely related to the fact that concentrations of poverty-stricken neighborhoods are often found in urban areas where the setting is typically more conducive for bus and pedestrian modes.
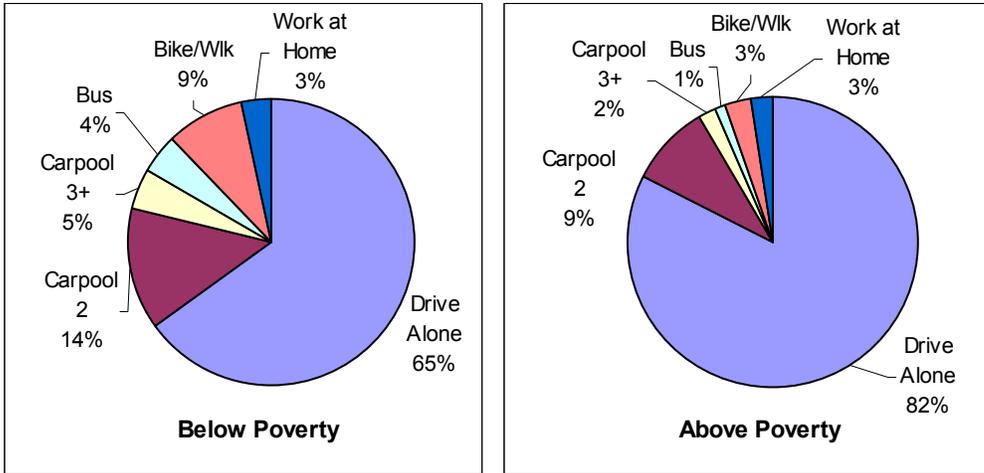
Table 3.27 Mode Choice and Poverty Status for High-Poverty Concentration Counties

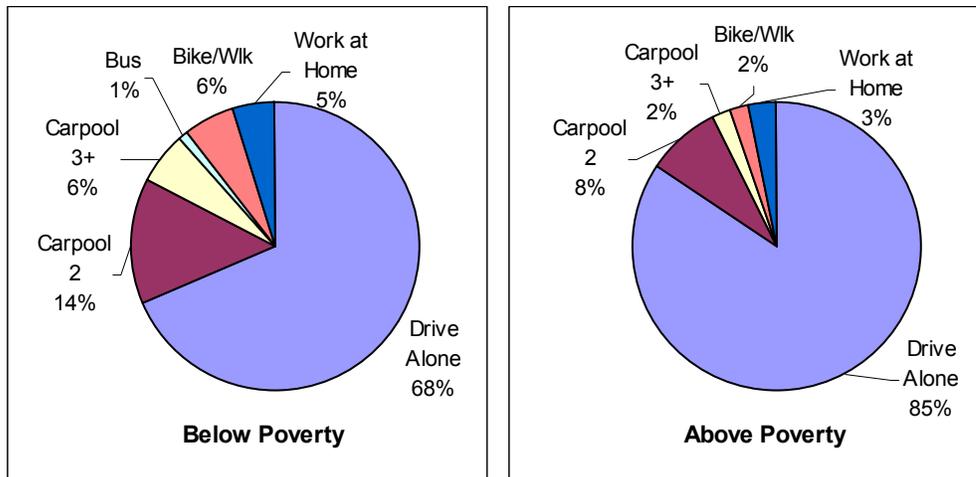| High Poverty	Below Poverty	Below Poverty (R)	Above Poverty	Above Poverty (R)	Total	Total (R)
Drive Alone	53,115	5%	1,040,985	95%	1,094,100	100%
Drive Alone (C)	65%		82%		81%	
Carpool 2	11,195	9%	116,120	91%	127,315	100%
Carpool 2 (C)	14%		9%		9%	
Carpool 3+	3,807	12%	26,657	88%	30,464	100%
Carpool 3+ (C)	5%		2%		2%	
Bus	3,549	22%	12,679	78%	16,228	100%
Bus (C)	4%		1%		1%	
Transit	261	5%	4,766	95%	5,027	100%
Transit (C)	0%		0%		0%	
Bike/Walk/Taxi	7,189	17%	35,244	83%	42,433	100%
Bike/Walk/Taxi (C)	9%		3%		3%	
Work at Home	2,794	8%	31,942	92%	34,736	100%
Work at Home (C)	3%		3%		3%	
Total	**81,910**	**6%**	**1,268,393**	**94%**	**1,350,303**	**100%**
Total%	**100%**		**100%**		**100%**	

Table 3.28 Mode Choice and Poverty Status for Low-Poverty Concentration Counties

Low Poverty	Below Poverty	Below Poverty (R)	Above Poverty	Above Poverty (R)	Total	Total (R)
Drive Alone	35,265	3%	1,242,980	97%	1,278,245	100%
Drive Alone (C)	68%		85%		83%	
Carpool 2	7,225	6%	123,495	94%	130,720	100%
Carpool 2 (C)	14%		8%		9%	
Carpool 3+	3,045	10%	28,035	90%	31,080	100%
Carpool 3+ (C)	6%		2%		2%	
Bus	608	14%	3,729	86%	4,337	100%
Bus (C)	1%		0%		0%	
Transit	64	3%	1,821	97%	1,885	100%
Transit (C)	0%		0%		0%	
Bike/Walk/Taxi	2,903	8%	34,728	92%	37,631	100%
Bike/Walk/Taxi (C)	6%		2%		2%	
Work at Home	2,504	5%	45,047	95%	47,551	100%
Work at Home (C)	5%		3%		3%	
Total	**51,614**	**3%**	**1,479,835**	**97%**	**1,531,449**	**100%**
Total%	**100%**		**100%**		**100%**	

Figure 3.41 Mode Choice for High-Poverty Concentration Counties by Poverty Status

Figure 3.42 Mode Choice for Low-Poverty Concentration Counties by Poverty Status


Below Poverty:
- Bus 1%
- Bike/Wlk 6%
- Work at Home 5%
- Carpool 3+ 6%
- Carpool 2 14%
- Drive Alone 68%

Above Poverty:
- Carpool 3+ 2%
- Bike/Wlk 2%
- Work at Home 3%
- Carpool 2 8%
- Drive Alone 85%

Travel Time

Based singly on this dataset, there is no strong indication that a particular segment of race systematically experiences a longer commute time on a statewide level. Figure 3.43 illustrates each county's average travel time by race, irrespective of mode. Table 3.29 provides Figure 3.43's underlying data as well as the maximum and mean travel time among the subsets. In most cases, the difference between the average and maximum travel time experienced among the subsets is minimal. In 19 of 92 counties, Non-Hispanic Whites experience the longest commute times. Hispanic Whites experience the longest commute in 27 counties, Blacks in 21 counties and Other in 25 counties. Given these findings, however, it should be noted that there are instances in some counties, where a small population of a given race will bias that race's respective average travel time. For instance, in Owen County, the average travel time for Blacks is reported to be 82 minutes, nearly double the County's mean travel time. However, Blacks compose only 10 of the more than 10,000 residents of Owen County.

As previously mentioned, this dataset provides travel time irrespective of mode. Given the earlier finding that some races have a greater tendency to use alternative modes to driving alone than other races, a comprehensive examination of travel time by race would require travel time data disaggregated by both race and mode.

Figure 3.43 Average Travel Times by Race for Each County
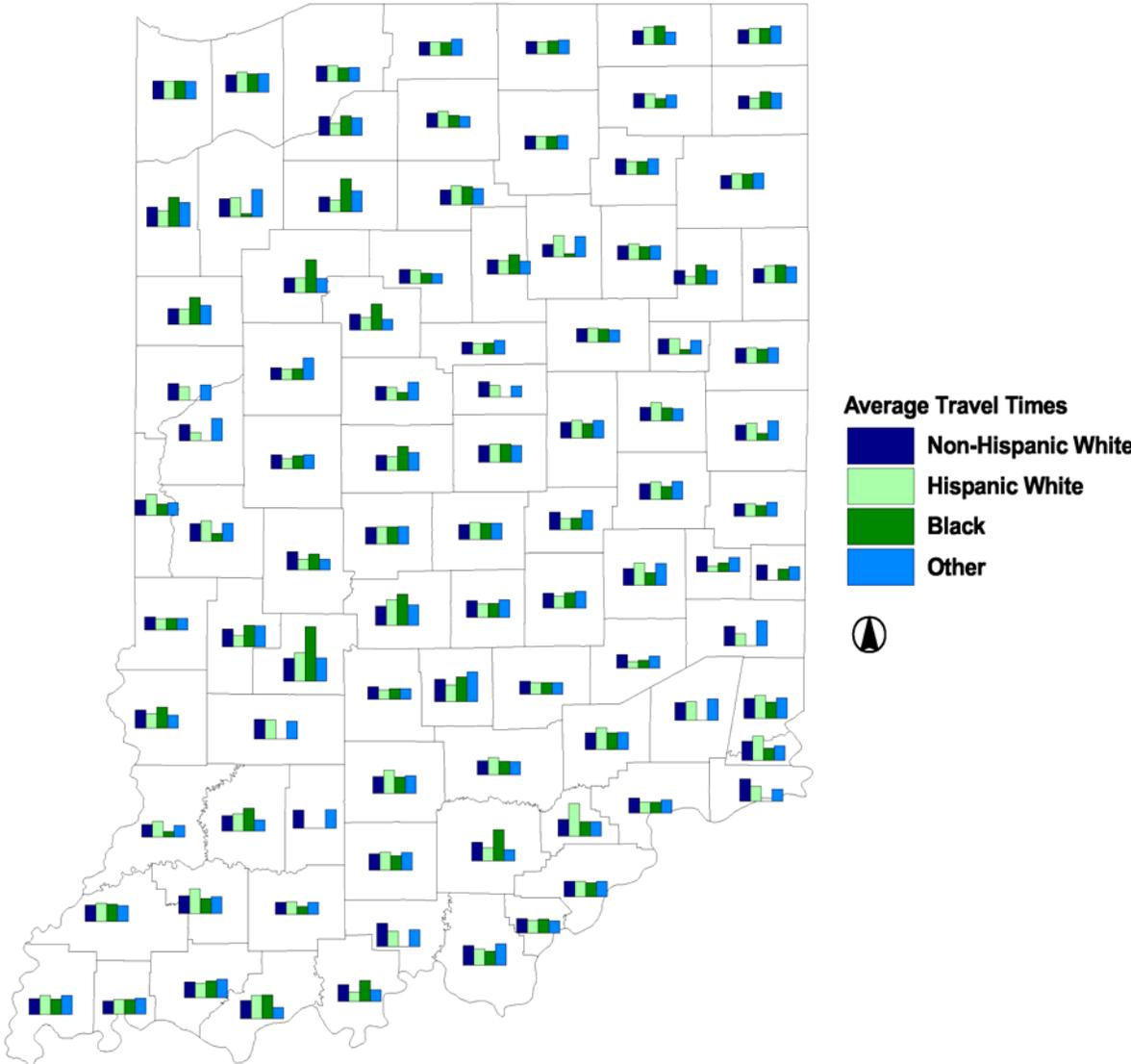
Average Travel Times

Non-Hispanic White

Hispanic White

Black

Other

Table 3.29 County Travel Times (Minutes) by Race and Maximum and Mean Travel Time within County

County	Non-Hispanic White	Hispanic White	Black	Other	Max Travel Time	Mean Travel Time	Longest Commuters
Adams	21.8	25.5	27.0	24.3	27.0	24.7	Black
Allen	20.9	23.2	22.5	24.0	24.0	22.7	Other
Bartholomew	20.0	17.5	18.0	17.7	20.0	18.3	Non-Hispanic White
Benton	23.6	22.8	40.3	28.7	40.3	28.9	Black
Blackford	23.4	23.7	7.0	21.2	23.7	18.8	Hispanic White
Boone	23.2	21.3	36.4	27.3	36.4	27.0	Black
Brown	33.8	25.6	37.2	44.8	44.8	35.4	Other
Carroll	23.9	18.9	39.4	16.1	39.4	24.6	Black
Cass	20.9	19.9	15.0	14.8	20.9	17.6	Non-Hispanic White
Clark	23.1	22.7	20.8	22.9	23.1	22.3	Non-Hispanic White
Clay	26.2	16.3	32.0	31.3	32.0	26.4	Black
Clinton	20.5	19.3	11.7	26.8	26.8	19.6	Other
Crawford	35.6	23.8		25.7	35.6	28.4	Non-Hispanic White
Daviess	23.0	25.9	34.7	16.7	34.7	25.1	Black
Dearborn	30.3	35.8	25.0	31.2	35.8	30.6	Hispanic White
Decatur	20.3	9.5	12.0	17.9	20.3	14.9	Non-Hispanic White
DeKalb	20.0	16.4	26.4	24.4	26.4	21.8	Black
Delaware	20.4	27.3	19.7	18.3	27.3	21.4	Hispanic White
Dubois	18.4	19.5	12.0	18.3	19.5	17.1	Hispanic White
Elkhart	18.8	18.3	19.3	20.6	20.6	19.2	Other
Fayette	23.0	8.6	13.4	21.5	23.0	16.6	Non-Hispanic White
Floyd	22.1	18.9	21.2	18.4	22.1	20.1	Non-Hispanic White
Fountain	25.0	12.9		33.6	33.6	23.8	Other
Franklin	29.8	18.4		38.4	38.4	28.9	Other
Fulton	22.2	28.9	27.1	24.3	28.9	25.6	Hispanic White
Gibson	24.1	27.1	25.4	23.5	27.1	25.0	Hispanic White
Grant	20.1	21.0	19.0	18.1	21.0	19.6	Hispanic White
Greene	29.2	28.6		26.5	29.2	28.1	Non-Hispanic White
Hamilton	25.1	27.6	27.2	25.5	27.6	26.4	Hispanic White
Hancock	26.1	16.6	17.0	29.4	29.4	22.3	Other
Harrison	29.6	25.2	21.2	32.6	32.6	27.1	Other
Hendricks	25.8	26.6	26.5	26.8	26.8	26.4	Other
Henry	24.3	27.3	19.7	27.8	27.8	24.7	Other
Howard	18.3	15.8	16.7	20.5	20.5	17.9	Other
Huntington	20.7	23.9	19.4	20.7	23.9	21.2	Hispanic White
Jackson	21.6	26.2	21.0	20.0	26.2	22.2	Hispanic White
Jasper	27.1	28.8	4.8	41.1	41.1	25.4	Other
Jay	22.3	22.9	21.1	23.0	23.0	22.3	Other
Jefferson	22.3	16.5	16.5	19.8	22.3	18.8	Non-Hispanic White
Jennings	25.5	33.3	25.7	26.3	33.3	27.7	Hispanic White
Johnson	25.4	20.5	20.9	26.4	26.4	23.3	Other
Knox	19.3	23.7	8.8	17.8	23.7	17.4	Hispanic White
Kosciusko	20.4	19.7	19.2	20.5	20.5	20.0	Other
LaGrange	21.0	25.7	27.8	18.5	27.8	23.3	Black
Lake	27.8	27.0	27.9	27.1	27.9	27.5	Black
LaPorte	22.7	23.9	20.2	20.7	23.9	21.9	Hispanic White
Lawrence	25.2	35.2	24.5	27.0	35.2	28.0	Hispanic White
Madison	24.0	26.9	22.2	26.7	26.9	24.9	Hispanic White
Marion	22.8	26.0	24.9	24.9	26.0	24.7	Hispanic White

Table 3.29 County Travel Times (Minutes) by Race and Maximum and Mean Travel Time within County (continued)

County	Non-Hispanic White	Hispanic White	Black	Other	Max Travel Time	Mean Travel Time	Longest Commuters
Marshall	21.9	24.6	18.5	17.1	24.6	20.5	Hispanic White
Martin	27.0			28.0	28.0	27.5	Other
Miami	22.0	20.7	30.0	20.2	30.0	23.2	Black
Monroe	19.1	14.1	16.0	15.8	19.1	16.3	Non-Hispanic White
Montgomery	21.0	15.1	19.7	21.0	21.0	19.2	Non-Hispanic White
Morgan	28.9	38.4	46.6	30.9	46.6	36.2	Black
Newton	30.0	24.1	44.5	36.7	44.5	33.8	Black
Noble	21.9	21.4	14.3	19.9	21.9	19.4	Non-Hispanic White
Ohio	28.6	37.0	18.4	22.0	37.0	26.5	Hispanic White
Orange	24.9	27.3	22.0	26.7	27.3	25.2	Hispanic White
Owen	34.2	43.2	82.0	34.8	82.0	48.6	Black
Parke	26.4	30.8	12.0	27.1	30.8	24.1	Hispanic White
Perry	24.8	13.9	31.3	17.2	31.3	21.8	Black
Pike	26.2	37.0	22.0	25.2	37.0	27.6	Hispanic White
Porter	26.3	30.5	27.8	28.2	30.5	28.2	Hispanic White
Posey	23.8	28.5	23.3	28.4	28.5	26.0	Hispanic White
Pulaski	22.4	17.2	49.5	31.3	49.5	30.1	Black
Putnam	26.7	16.3	23.9	16.4	26.7	20.8	Non-Hispanic White
Randolph	23.3	26.0	10.4	29.5	29.5	22.3	Other
Ripley	26.2	27.8		32.4	32.4	28.8	Other
Rush	25.3	33.9	19.0	33.2	33.9	27.8	Hispanic White
Scott	25.3	49.5	22.0	21.9	49.5	29.7	Hispanic White
Shelby	22.8	18.3	23.2	25.6	25.6	22.5	Other
Spencer	27.5	35.6	36.0	17.1	36.0	29.1	Black
St. Joseph	20.7	20.8	20.0	25.0	25.0	21.6	Other
Starke	29.2	18.4	29.5	26.7	29.5	26.0	Black
Steuben	21.4	23.1	23.1	26.7	26.7	23.6	Other
Sullivan	27.3	22.0	32.0	19.8	32.0	25.3	Black
Switzerland	33.7	22.0		17.8	33.7	24.5	Non-Hispanic White
Tippecanoe	18.1	16.0	17.1	33.5	33.5	21.2	Other
Tipton	22.9	17.8		17.0	22.9	19.2	Non-Hispanic White
Union	23.5		17.0	20.5	23.5	20.3	Non-Hispanic White
Vanderburgh	19.6	21.6	21.6	24.1	24.1	21.7	Other
Vermillion	23.3	31.3	17.0	18.8	31.3	22.6	Hispanic White
Vigo	19.7	17.3	18.0	17.7	19.7	18.2	Non-Hispanic White
Wabash	19.4	32.6	5.5	31.1	32.6	22.2	Hispanic White
Warren	25.5	20.3		23.2	25.5	23.0	Non-Hispanic White
Warrick	23.9	22.3	25.4	28.2	28.2	25.0	Other
Washington	28.2	20.1	47.0	16.6	47.0	28.0	Black
Wayne	19.3	19.1	16.8	21.1	21.1	19.1	Other
Wells	21.0	12.3	29.5	20.9	29.5	20.9	Black
White	22.2	22.1	49.7	21.8	49.7	28.9	Black
Whitley	23.7	19.8	19.5	23.4	23.7	21.6	Non-Hispanic White
State	23.0	24.1	24.2	25.4	25.4	24.2	Other

■ 3.5 Analysis of General Survey Responses from an Environmental Justice Perspective

Data from the market research survey provides more depth to our understanding of EJ issues in Indiana. In this segment of the EJ analysis, we examine differences that exist between EJ and non-EJ populations with respect to household characteristics, travel behavior and attitudes on transportation issues. Respondents were classified as part of an Environmental Justice (EJ) group in cases where the respondent reported:

- Being of a race/ethnicity that is other than white; or

- Being of more than one race; or

- A single person earning less than $15,000 a year; or

- Belonging to a household of two or more people that earns less than $25,000; or

- Belonging to a household of three or more people that earns less than $35,000.

This set of criteria is consistent with that used in the examination of census demographic data with minor differences in the definitions' income components. The demographics analysis qualified individuals as being in the EJ population if they fell below poverty, as defined by the U.S. Bureau of the Census. While the Census definition of poverty varies by region and accounts for other cost of living factors, the more simplified income criteria used for this analysis is dependent only on household income and household size.

The survey method over-sampled EJ populations to ensure adequate representation of both EJ populations and non-EJ populations for the analysis. However, since the survey was conducted via telephone, the segment of population that cannot afford to maintain phone service at home is not represented. However, though the survey could not reach this segment of the state's EJ population, the EJ sample of the survey is large enough to indicate differences between EJ and non-EJ populations.

Table 3.30 presents the survey sample population stratified by race and household income. White respondents represent the largest racial group in the sample, composing 86.5 percent of the surveyed population. Black respondents represent the largest minority racial group, composing 7.4 percent of the total surveyed population. Given that Hispanic and Latino communities are growing in Indiana, it should be noted that this segment of the population is probably slightly under-represented in this survey sample.

The distribution of household income suggests that Indiana has a fairly stable base of middle-income households. Most households earn an annual income of between $50,000 to $75,000, followed by the range of $35,000 to $50,000. No correlation was found between household income and race.

Table 3.30 Cross-Tabulation of Household Income and Race

	Below $15K	$15K-25K	$25K-35K	$35K-50K	$50K-75K	$75K-100K	$100K+	Don't Know	Refused	Total
Black (African-American)	12 (14.46%)	16 (19.28%)	13 (15.66%)	8 (9.64%)	16 (19.28%)	6 (7.23%)	4 (5.13%)	1 (1.20%)	7 (8.43%)	**7.35%**
White (Non-Hispanic)	60 (6.14%)	100 (10.24%)	132 (13.51%)	176 (18.01%)	208 (21.29%)	106 (10.85%)	68 (6.96%)	11 (1.13%)	116 (11.87%)	**86.54%**
Hispanic/ Latino	0 (0.00%)	5 (29.41%)	3 (17.65%)	2 (11.76%)	4 (23.53%)	0 (0.00%)	1 (5.88%)	0 (0.00%)	2 (11.76%)	**1.51%**
Asian/ Pacific Island	1 (10.00%)	0 (0.00%)	2 (20.00%)	0 (0.00%)	1 (10.00%)	2 (20.00%)	2 (20.00%)	0 (0.00%)	2 (20.00%)	**0.89%**
Native American	0 (0.00%)	2 (33.33%)	1 (16.67%)	1 (16.67%)	0 (0.00%)	0 (0.00%)	1 (16.67%)	0 (0.00%)	1 (16.67%)	**0.53%**
Multi-race	3 (15.79%)	1 (5.26%)	6 (31.58%)	2 (10.53%)	3 (15.79%)	2 (10.53%)	2 (10.53%)	0 (0.00%)	0 (0.00%)	**1.68%**
Total	**6.82%**	**11.07%**	**14.08%**	**16.83%**	**20.64%**	**10.27%**	**6.91%**	**1.06%**	**12.31%**	**100%**

Survey Analysis Findings

ANOVA analysis was used to measure statistical difference in EJ and non-EJ survey responses. Statistical significance was based on a 95 percent statistical confidence level. The following sections highlight significant findings with respect to:

- EJ and non-EJ Household Characteristics and Travel Behavior;

- EJ and non-EJ Attitudes on transportation policy issues; and

- Differences among segments of the EJ population.

Household Characteristics and Travel Behavior

Overall survey results indicate that EJ populations are not nearly as mobile as non-EJ populations.

- *Non-EJ households typically have more vehicles available.* Non-EJ households have on average 2.12 vehicles, while EJ households average 1.65 vehicles.

- *Non-EJ households typically have more workers.* Non-EJ households have on average 1.48 workers, while EJ households have an average of 1.33 workers. The correlation between EJ households and households with zero workers is marginally significant. See Table 3.31.

Table 3.31 Cross-Tabulation of EJ Classification and Presence of Workers in Household

	Non-EJ Household	EJ Household
Household with no workers	17.75%	22.73%
Household with at least one worker	82.25%	77.27%

- *EJ households tend to travel less than non-EJ households.* Most EJ households reported traveling less than 10,000 miles in the past 12 months (42.4 percent of EJ respondents), while most non-EJ households reported traveling between 10,000 to 20,000 miles (27.7 percent of non-EJ respondents). See Table 3.32.

Table 3.32 Cross-Tabulation of EJ Classification and Miles Traveled by Household in Past 12 Months

	Non-EJ Household	EJ Household
Traveled <10k miles	26.44%	42.44%
Traveled 10k to 20k miles	27.68%	22.27%
Traveled 20k to 30k miles	19.77%	13.45%
Traveled 30k to 40k miles	(10.06%)	5.88%
Traveled 40k or more	13.22%	9.66%
No response	2.82%	6.30%

- *Non-EJ respondents are more inclined to make long-distance trips more frequently.* Non-EJ respondents reported taking on average 18.5 trips that were greater than 75 miles one-way in the past 12 months. EJ respondents averaged 8.3 trips.

- *EJ respondents rely more heavily on Amtrak for intercity/regional travel.* On average, EJ respondents reported taking Amtrak 4.7 times in the past 12 months, while non-EJ respondents averaged 0.4 trips on Amtrak in the past 12 months.

- *EJ respondents rely more heavily on public transportation.* EJ respondents reported having ridden a bus or train 2.2 times on average in the past 30 days, while non-EJ respondents averaged 0.25 times.

- *Non-EJ respondents tend to drive to work more than EJ respondents.* 70.2 percent of non-EJ respondents reported driving a car, truck or van to work the week prior to the survey. 63.8 percent of EJ surveyed provided the same response.

Areas where EJ and non-EJ respondents do not seem to be significantly different are household size and the frequency of passing through Indiana airports.

Attitudinal Analysis

A significant part of the survey was designed to capture the respondent's attitudes toward transportation policy issues in three dimensions:

- The *importance* of various transportation policies;

- The *priority* that should be placed on various transportation issues; and

- The level of *satisfaction* he or she has with how the state is currently addressing these issues.

The policy issues were placed in one of two categories – traditional policy issues and emergent policy issues. The traditional policy issues are nine broad policy areas that are conventionally tied to INDOT's function, such as highway safety and congestion. Emergent issues correspond to issues that are becoming increasingly relevant to INDOT's function, such as homeland security and open land preservation. There was no significant correlation found between EJ/non-EJ to this categorization of policy issues. Therefore, no distinction of traditional or emergent is made in the following discussion of attitudes on policy issues.

## *Policy Importance Ratings*

Respondents were given a list of various transportation policy issues and were asked to rate each issue's level of importance on a scale of 0 to 10, where:

- 0 means "not at all important"; and

- 10 means "extremely important."

For example, for a given policy issue, if EJ respondents provided an average response of 8.9 while non-EJ respondents averaged 5.2, it can be said that EJ respondents place more importance on that issue than do non-EJ respondents.

EJ and non-EJ respondent importance ratings were significantly different for a number of policy issues. In all cases of a significant difference, EJ respondents rated a given policy issue to be *more important* than the level rated by non-EJ respondents. Below, listed in descending order of difference, are the policies where EJ and non-EJ respondents differed (Figure 3.44):

Figure 3.44   Differences in EJ and Non-EJ Importance Ratings
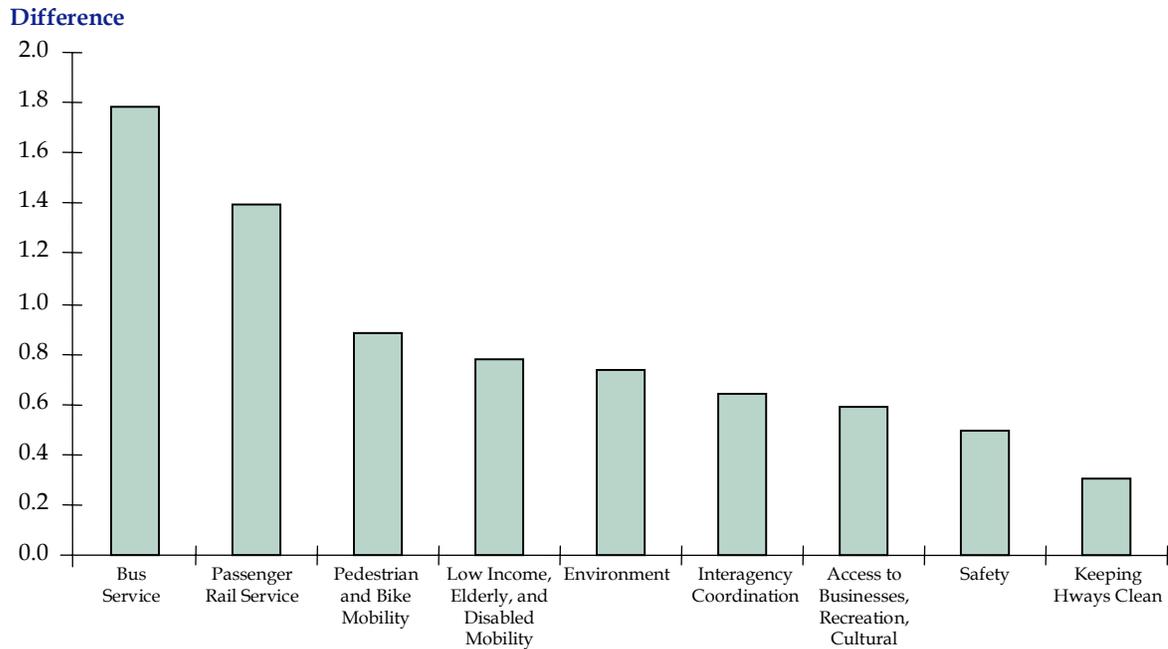
1. Improve bus services (EJ rating: 7.18, Non-EJ: 5.40);

2. Improve passenger rail services (EJ rating: 7.01, Non-EJ: 5.62);

3. Make mobility easier for pedestrians and bicyclists (EJ rating: 7.74, Non-EJ: 6.86);

4. Improve the mobility of low-income, elderly and disabled (EJ rating: 9.00, Non-EJ rating: 8.22);

5. Protect the environment (EJ rating: 8.93, Non-EJ rating: 8.19);

6. Improve interagency coordination (EJ rating: 7.34, Non-EJ rating: 6.70);

7. Improve access to business, recreation and cultural sites (EJ rating: 7.52, Non-EJ rating: 6.93);

8. Improve transportation safety (EJ rating: 8.64, Non-EJ rating: 8.15); and

9. Keep highways clean (EJ rating: 8.72, Non-EJ: 8.42).

Policy Priority Ratings

Respondents were given various transportation policy areas and were asked to rate their thoughts on how well INDOT prioritized these issues. Respondents were asked to provide a rating of 1, 2 or 3 where:

- 1 means "too little attention";

- 2 means "about the right attention"; and

- 3 means "too much attention."

For example, for a given policy issue, if EJ respondents provided an average response of 1.5 while non-EJ respondents averaged 1.8, it can be said that EJ respondents feel that an issue receives less attention by INDOT than felt by non-EJ respondents.

On many issues, EJ and non-EJ respondents have similar perceptions of the appropriateness of focus INDOT places on different policy issues. However, there are some instances where EJ and non-EJ respondents differed. In each of these instances, EJ respondents felt that the issue was given less attention by INDOT than that felt by non-EJ. Policy areas where EJ and non-EJ differed are listed below in descending order of difference:

1. Improving interagency coordination (EJ rating: 1.66, Non-EJ rating: 1.81);

2. Developing the transportation system in ways that protect the environment (EJ rating: 1.53, Non-EJ rating: 1.68);

3. Improving bus services (EJ rating: 1.48, Non-EJ rating: 1.62);

4. Improving the mobility of low-income, elderly and disabled (EJ rating: 1.35, Non-EJ: 1.49);

5. Improving access to business, recreation and cultural sites (EJ rating: 1.67, Non-EJ: 1.81);

6. Making it easier for pedestrians and bicyclists to get around (EJ rating: 1.52, Non-EJ rating: 1.63); and

7. Improving transportation safety (EJ rating: 1.68, Non-EJ rating: 1.77).

INDOT Satisfaction Ratings

Respondents were given statements such as "INDOT builds and expands highways as needed to keep pace with land development." A scale of 0 to 10 was used to assess the respondent's agreement with each statement, where:

- 0 means "disagree completely"; and

- 10 means "agree completely."

For example, for a given policy issue, if EJ respondents provided an average response of 8.9 while non-EJ respondents averaged 5.2, it could be said that EJ respondents are more satisfied with INDOT's performance in that policy area than are EJ respondents.

There were only two areas of significant difference in responses from EJ and non-EJ respondents with regard to their level of satisfaction or dissatisfaction with INDOT's performance. They are the following:

- Building and expanding highways as needed to keep pace with land development (EJ rating: 6.61, Non-EJ rating: 6.20); and

- Keeping state, U.S., and interstate highways, both inside and outside cities, free of congestion (EJ rating: 5.73, Non-EJ rating 5.34)

Closer Examination of Environmental Justice Populations

After establishing differences between EJ and non-EJ populations across the state, we then took a closer look at different segments *within the EJ population*. In particular, we examined whether attitudes within the EJ population reflected possible regional differences.

The greatest differentiator among EJ populations is if respondents reside in a rural or urban setting. It is worth noting that most of the differentiating factors are attitudinal, and not travel behavior.

In fact, the survey results did not find any significant difference in transit use between rural and urban EJ populations, as most would expect. Additionally, rural and urban EJ respondents reported traveling similar amounts over the past 12 months, suggesting that rural respondents reside just as close to or far away from jobs, retail areas, health services, etc., as their urban counterparts. The following are attitudinal differences between urban and rural EJ respondents.

Importance of Issues (0 to 10 with 10 Correlating to "Extremely Important")

- *Urban EJ respondents place more importance on alleviating traffic congestion than do their rural counterparts.* Urban EJ respondents rated this issue as 8.71 on a scale of 1 to 10, 10 being extremely important. Rural respondents rated this issue as 7.88.

- *Urban EJ respondents feel more strongly than rural EJ respondents about improving access to business, recreation and cultural sites.* Urban EJ respondents gave this policy issue an average rating of 7.83 on the scale of importance, while rural EJ respondents averaged a rating of 7.12.

- *Rural EJ respondents, on average, are more concerned about issues of protecting the environment than are urban EJ respondents.* Rural EJ respondents rated this issue at 9.15 in importance, while their urban counterparts responded in an average importance rating of 8.66.

- *Urban EJ respondents place a significantly greater importance on improving bus service than do rural EJ respondents.* Urban respondents averaged an importance rating of 7.76 on this issue, while rural respondents averaged a rating of 6.45.

- *Similar to the issue of bus service, urban EJ respondents placed greater importance on improving passenger rail service than did their rural counterparts.* Urban respondents placed a rating of 7.52 on this issue, while rural respondents provided a rating of 6.40.

- *Rural EJ respondents feel more strongly about the issue of preserving farmland than do urban EJ respondents.* Rural respondents gave this issue an importance rating of 8.50. Urban respondents provided an average rating of 7.85.

Satisfaction with INDOT

- *Urban EJ respondents are less satisfied than rural respondents with how well INDOT manages truck traffic on highways.* Urban EJ respondents averaged a response of 5.79 on a scale of 0 to 10, 10 meaning "agree completely" when given the statement "INDOT keeps truck traffic flowing smoothly on the highways." Rural EJ respondents provided a rating of 6.74.

Household Characteristics

- *The two notable differences between rural and urban EJ households are size and the number of workers in a household.* The average urban EJ household size is 3.07, while for rural EJ households the average is 2.61. Urban EJ households average 1.47 working individuals. Rural EJ households average 1.17 working individuals.

Examining Differences Between Lake County and Marion County EJ Populations

Survey results indicated very few differences in attitude and no differences in travel behavior between Lake and Marion County EJ populations. The survey found that Lake County EJ respondents are less satisfied with how well INDOT manages truck traffic on highways. Lake County respondents averaged a response of 5.07 on a scale of 0 to 10, 10 meaning "agree completely" when given the statement "INDOT keeps truck traffic flowing smoothly on the highways." Marion County respondents provided a rating of 6.64.

On average, Lake County has more workers per EJ household than Marion County. Lake County EJ populations average 1.64 workers per household. Marion County EJ populations average 1.25 workers per household. This is likely to be correlated to Lake County having larger average household sizes (3.07) than Marion County (2.97).

Concluding Remarks

Overall, the survey strongly suggests that Indiana's EJ populations have less mobility than its non-EJ populations. This likely explains why EJ respondents tend to place greater importance on transportation issues than do non-EJ respondents. This may also explain why EJ respondents more strongly feel that INDOT does not place enough priority on certain transportation issues.

A closer look at rural and urban EJ population travel behaviors and household characteristics reveals that the current level of mobility and the need for greater mobility are similar for rural and urban EJ populations. That is, while these two segments of the population share similar transportation needs, strategies to meet these needs will have to be very different given their contrast in settlement patterns (See Demographic Analysis section).

Since 2000 CTPP data will be coming out in the near future, it would be worthwhile to examine this data as it becomes available in the coming months. This data would provide a more comprehensive look at the state's travel patterns and greater insight to differences in journey-to-work characteristics. In particular, it would enrich the findings of this survey by exploring differences in:

- Work locations;
- Trip flows;
- Average travel times/distances; and
- Mode to work (especially the extent of carpooling).

■ 3.6 Interviews

In concert with INDOT staff, Cambridge Systematics identified 16 individuals knowledgeable about environmental justice issues in Indiana, as follows:

- Rose Zigenfus, Evansville Area Transportation Study
- Michael Deering, Indianapolis Metropolitan Planning Organization
- Ken Dallmeyer, Jim Ranfranz, and Steve Strains, Northwest Indiana Regional Planning Commission
- Harold Tull, Louisville, Kentucky Metropolitan Planning Organization
- Dan Avery, Fort Wayne Metropolitan Planning Organization
- Frank Nierzwicki, Bloomington Metropolitan Planning Organization
- Patrick Martin, Terre Haute Metropolitan Planning Organization
- James Hawley, Tippecanoe Area Planning Commission
- Mary Mulligan, City of Gary, Broomfields Coordinator
- Wendy Vachette, Michael Baker Associates
- David Isley, Bernarden-Lochmueller Associates
- Victor Austin, Federal Transit Administration Region 5
- Mary McDonough-Bragg, Federal Highway Administration Resource Center
- Dan Lowery, Indiana University Northwest, Quality of Life Council
- Sandra Leek, Indiana Civil Rights Commission, Executive Director
- Dana Reed-Wise, Indiana Department of Environmental Management

Each person was interviewed either in person or by telephone using the interview guide shown in the accompanying box. These questions were used to provide uniformity in the topics covered, and not as a formal questionnaire. The objective, rather, was to have an informal but nonetheless structured discussion or conversation. The purpose of this sub-section is to summarize the key points or highlights that came out of these interviews.

Interview Guide –
Environmental Justice

Basic Questions

1. What environmental justice-related issues have emerged as a result of existing planning, project development, operating, and maintenance activities? Have concerns been expressed about potential secondary and cumulative impacts? Is environmental justice being raised in any way as an issue that is related to growth management? Is documentation available describing these issues, and is it possible to obtain copies?

2. What existing procedures and approaches are being used to address potential issues of environmental justice? What has been the experience with these methods? What approaches have been successful? What approaches have not been effective? Why?

3. What kinds of actions in terms of project location, design, operating conditions, or impact mitigation have been taken in response to the environmental justice issues that have been raised?

4. What kinds of possible environmental justice concerns could emerge in the future?

5. How should potential considerations of environmental justice be addressed in transportation systems planning and policy development initiatives that are undertaken by the DOT?

6. What additional activities should the DOT consider undertaking in the future with respect to working with various population groups?

7. Are there additional information or analyses that would be worthwhile undertaking?

8. Are there other people with whom we should speak?

Optional Questions

1. How are "environmental justice" populations defined and identified? What data sources are being used?

2. To what degree is "Limited English Proficiency" an issue? Is this coming up in terms of public meetings and other outreach initiatives? Is this an issue with respect to roadway signage and "customer" relations (e.g., airports, drivers licenses, vehicle registration)? What steps have been taken to working with these populations?

3. Have issues related to environmental justice been raised relative to the structure of transportation organizations, the organization of governing boards, or institutional relationships?

Summary of Interview Findings

Less explicit attention, generally speaking, is being given to issues of environmental justice today than a few years ago. At the same time, the underlying legal foundation for environmental justice in the form of Title VI of the Civil Rights Act of 1964 and other statutes remain unchanged. The fundamental concern is the manner in which the benefits and burdens of transportation policy, plans, programs, projects, operations, and maintenance practices are distributed among various population groups, and whether any "protected" groups are disproportionally burdened. There are, however, important exceptions to this observation of decreased attention. In certain geographic areas both of the country and within Indiana, environmental justice remains an important public policy concern. And especially within the subject of air quality, there is a growing rather than a decreasing concern over the health effects of air toxics and ultrafine particulate matter and the potential that people living in close proximity to major transportation facilities may be disproportionally impacted.

The following is a summary and synthesis of the major findings from the interviews conducted as a part of this project.

Comparing examples from within Indiana to leading practice throughout the country, important environmental justice initiatives already have been taken by INDOT and other organizations with respect to outreach, identification of sensitive populations, and examination of the manner in which benefits and burdens are distributed among potentially sensitive populations. These include the mapping of Census data within the I-69 corridor, the use of community impact analysis in the Route 231 Lafayette study, the use of community-based project offices, the involvement by the Indianapolis MPO of schools in community and transportation planning, and NIRPC's use of a nationwide Environmental Justice Planning Challenge Grant to work with the Center for Neighborhood Technology and the Indiana University Northwest Environmental Justice Project.

Environmental justice is not now a major issue on individual projects except in Gary, Hammond, and other urbanized areas in the Northwest. A number of the interviewees, however, indicated that issues of environmental justice likely will grow in significance over time since Indiana's population is becoming increasingly diverse. With some exceptions, "the critical numbers are not there yet." "There are so many other issues overshadowing environmental justice that it is rarely mentioned." "Major transportation projects are located more in rural and suburban portions of the State than in the central cities where minority populations are living."

Environmental justice, except within the Northwest, typically is not raised as an issue in the planning of new or expanded transportation projects. Issues associated with preservation of land resources, historic preservation, and economic development "are driving the environmental process right now." In Indianapolis, "there have been all kinds of community concerns raised about all aspects of transportation, such as congestion, air quality, sidewalks, suburban sprawl. However, while these issues have been raised by specific communities and related to geographic location, the concerns have not been tied specifically to minority and/or low-income populations. In other words, people are not

claiming that projects or programs are discriminatory on the basis of race or income." Except in Northwest Indiana, issues exist that may not be perceived as environmental justice that in other parts of the country would be labeled and addressed as environmental justice. This does not mean that issues of environmental justice do not exist, only that they are not perceived and recognized as issues of environmental justice. "Indiana just has smaller numbers, but the issues are the same as in other parts of the country. If they are not addressed now, then they will become a necessity."

Specific environmental justice issues mentioned in the interviews include highway locations that have divided Black neighborhoods and displaced Black residents, the availability of adequate financing for public transportation services, frequency of bus service, hours of the day during which public transportation services are available, the safe location of bus stops, locating economic development so that it meets the needs of minority and low-income populations, INDOT contracting practices, INDOT hiring and promotional practices, and roadway maintenance practices. These issues exist more in urban than rural areas, but also are present in some smaller and midsized urban areas.

Indiana's population having only a limited proficiency in the English language is growing but to date the need for INDOT to communicate in multiple languages has not been a problem. However, the need to work in different languages and different cultures almost certainly will increase in the future.

Population groups of interest from an environmental justice perspective most commonly are defined on the basis of race, ethnicity, and income. The growing emphasis within INDOT and other government agencies to focus on meeting customer needs is viewed as a very positive development. "Governments have not always recognized citizens as their customers." Adopting a customer-driven perspective, though, brings another change: the desire to examine different segments of the customer market being served by the agency's services. The needs of two additional population groups are important in this regard. The first is the need to adapt highway and public transportation services to meet the needs of an increasing aging population. The second, under the Americans With Disabilities Act of 1990, is the need to ensure that, "No qualified individual with a disability shall, by reason of such disability, be excluded from participation in, be denied the benefits of, or be subjected to discrimination under any program or activity receiving Federal assistance."

Two basic approaches have been taken to identifying environmental justice populations, and thus the existence of potential issues of environmental justice. The first is to define a threshold, such as the statewide or regional average, and then map those areas that are above this threshold by a particular amount. The second is simply to examine the percentage distribution of various population groups independent of any threshold level, and then to use these results as a guide for developing a targeted program of community interaction activities. Experience nationally has shown that threshold-based approaches are less satisfactory.

There is a desire for increased environmental justice training and guidance on the part of regional and local practitioners involved in transportation planning and project development. Too often, a cultural gap exists between professional transportation planners and low-income, racial, and ethnic communities. People, be they from INDOT or a local

community, naturally feel uncomfortable when asked to work cooperatively with one another. In many cases, members of environmental justice communities are either unwilling or unable to attend traditional styles of public outreach meetings. Community impact analysis has been successfully utilized but is not yet widespread or routine practice. Many traditional transportation modeling and planning tools examine populations in the aggregate rather than by factors such as race, ethnicity, age, and gender. How do you evaluate, communicate, and display tradeoffs in impacts between regional and community objectives? How do you determine if the distribution of benefits and burdens among different population groups is proportional? The impacts of transportation on public health are just beginning to be examined and are not yet widely understood, but nonetheless are increasingly being used as the basis of legal challenges. A variety of demographic and spatial analysis tools exist that are not yet routinely applied within the transportation profession.

While those interviewed acknowledged that important steps with respect to environmental justice already had been taken by INDOT, a number of the interviewees at the same time felt that not all of the desired perspectives and viewpoints were either at the table or fully represented. In other words, while these initial steps are important, they are not sufficient. Training needs to be extended into awareness, sensitivity, actions, and even modified decisions. Actions should be taken in the form of the breadth and depth of community involvement activities, the number of projects where issues of environmental justice are examined, the kinds of technical analyses undertaken, the specific performance measures and tradeoffs examined, and the linkage of transportation with community development decisions. Further, the majority of existing environmental justice analyses now are occurring at the project level. Considerations of environmental justice also should be addressed in the development of transportation policies and during the development of systems-level transportation plans and transportation improvement programs.

Finally, a few of those interviewed commented on the evolving mission of state DOTs. Viewed in the context of broad public policy, state DOTs increasingly no longer are viewed as simply road building and maintenance organizations aimed at providing mobility. Rather, the role of a state DOT is to manage capital and operating expenditures on all modes of transportation so that these investments also simultaneously contribute to the achievement of a broad range of economic, community, environmental, recreational, and other public objectives. This same shift in orientation occurs when transportation decisions are viewed from the perspective of meeting customer needs. Customers not only want to purchase mobility with their tax dollars, they want this mobility provided in a manner that is consistent with a high level of community, neighborhood, and environmental quality. Viewed in this broader context, it was observed that transportation decisions should be better coordinated with land development decisions at both the neighborhood and regional scale and that transportation decisions should be made so as to support the needs of Indiana's diverse population groups. Most basically, the principles of environmental justice are consistent with the concept of customer-driven performance measures and decision-making.

■ 3.7 Potential Actions

Given the above findings in conjunction with the findings of both the market research survey and the analysis of year 2000 Census data, the following are actions that INDOT could take to improve the manner in which potential issues of environmental justice are addressed in agency decision-making:

1. Establish a department-wide environmental justice policy.

2. Continue to move towards a customer orientation in all aspects of INDOT's planning and operations. Work to make INDOT friendlier to all of its customers – the general public, elected and appointed officials, businesses, local and regional agencies. Take a human and community view in all aspects of agency decision-making.

3. Assess environmental justice for INDOT policies and system plans. Include measures of environmental justice in the set of performance measures used to evaluate transportation system plans and programs and the ongoing monitoring of agency operations. Examine issues of environmental justice from the top down and not just from the bottom up in terms of project-level planning and design.

4. Move away from using threshold-based approaches to identifying environmental justice populations, relying instead on numbers of different populations and the distribution of populations. Include low-income populations in examination of environmental justice issues.

5. Establish a department-wide working group, including representatives of other state agencies, to identify potentially important issues and to coordinate approaches.

6. Expand the multimodal program orientation of the department, especially with respect to the availability of public transportation services and the means these services can be accessed by persons of limited income.

7. Develop more in-house professional expertise, including consideration of hiring and promotional practices so as to broaden employee diversity.

8. Provide additional training to help mainstream considerations of environmental justice throughout all aspects of planning, maintaining, and operating Indiana's transportation system. This training should extend to MPOs and transit agencies, and include issues associated with working and living in a multicultural environment.

9. Broaden the usage of community impact analysis in developing transportation system plans as well as for project-level planning and design. Learn to understand and work within the informal structures that exist within all communities rather than relying primarily or even exclusively on formal structures. Addressing potential community issues earlier and more explicitly in the planning process reduces the probability of delays being incurred in the later stages of the project development process, and therefore contributes to the objective of environmental streamlining.

10. Broadly communicate to people, organizations, and agencies the opportunities that are available to provide input to the transportation planning process, and the different approaches that can be used in achieving this interaction.

11. A number of the interviewees recommended that INDOT work cooperatively with MPOs to jointly develop guidelines for the conduct of environmental justice analyses, building upon already existing resource materials. While such state-specific guidance would be useful, the absence of this guidance should not be used as a reason for delaying the systematic assessment of potential environmental justice issues. When undertaken in conjunction with training and appropriate technical assistance, a strong argument can be made to, "Just do it."

    The most frequently requested topic for guidance was for a method to determine if the distribution of anticipated benefits and burdens among different population groups achieved the desired degree of proportionality. Unfortunately, measuring the proportionality of impacts raises numerous conceptual and practical problems. There are, at present, no established legal standards or guidance for deciding how to measure the proportionality of the distribution of benefits and burdens for a plan or project.[6] The U.S. DOT and FHWA however, have published standards for approving actions having disproportionate effects on protected groups.

12. Continue to implement the practice of Context Sensitive Solutions, for systems planning as well as for project planning and development. It is common in transportation and environmental planning to speak in terms of "mitigating" potentially adverse impacts. The most commonly recommended approach for mitigating potential issues of environmental justice is through the practice of Context Sensitive Design. Often referred to as "Thinking Beyond the Pavement," this approach increasingly is referred to as Context Sensitive Solutions. The implication of this change in name is that this approach is just as applicable to system and project planning as it is to design. The practice of Context Sensitive Solutions, in fact, is consistent with the concept of environmental stewardship, where the objective is to develop and operate transportation systems so that they contribute to accomplishing desirable community and environmental objectives at the same time that desired transportation objectives are being achieved.

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[6] The most applicable ruling with respect to the issue of proportionality may be that of the U.S. Court of Appeals for the Fourth Circuit in the *Case of Jersey Heights Neighborhood Association versus Glendening*, 174 F.3d 180 (4th Cir. 1999).