

**I-66 CORRIDOR STUDY  
WESTERN KENTUCKY TO MISSOURI  
BALLARD / McCRACKEN COUNTY - ITEM # 1-23.00**

**APPENDIX 3 - ENVIRONMENTAL JUSTICE ANALYSIS**

***Prepared for***

*Kentucky Transportation Cabinet (KYTC) – Division of Planning*

*Kentucky Transportation Cabinet (KYTC) – District 1*



*Missouri Department of Transportation (MoDOT)*



***Prepared by***

*Parsons Brinckerhoff Quade & Douglas, Inc.*



***In Association With:***

***Qk4***

***Third Rock Consultants, LLC***

***Cultural Resource Analysts, Inc.***

***Fuller, Mossbarger, Scott & May***

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## 1.0 INTRODUCTION

This report presents an overview of specific community characteristics relating to Environmental Justice (EJ) for the I-66 Corridor Study – Western Kentucky to Missouri Project area. The data used in the report comes primarily from the U.S. Census Bureau, but also from field and mapping observations. The information and results are intended to assist the Kentucky Transportation Cabinet in making informed and prudent transportation decisions in the study area about the likelihood of encountering potential disproportionate consequences on one or more Environmental Justice communities and/or groups of communities as a result of the proposed new I-66 corridor.

This analysis specifically addresses the requirements of *Executive Order 12898: Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations* (signed on February 11, 1994). Executive Order 12898 states:

*“...each Federal agency shall make achieving environmental justice part of its mission by identifying and addressing, as appropriate, disproportionately high and adverse human health or environmental effects of its programs, policies, and activities on minority populations and low-income populations...”*

This report outlines the portions of the study area in Kentucky, Missouri and Illinois that may be considered under the guidelines for addressing Environmental Justice.

## 2.0 WHAT IS ENVIRONMENTAL JUSTICE?

The Executive Order directed all agencies, including the U.S. Department of Transportation (USDOT), with addressing concerns for EJ populations (minorities and the low-income) in all transportation decision making. Increasingly, elderly or aged communities are also becoming part of the EJ analysis as well. In fact, KYTC has policies that specify inclusion of elderly or aged populations in the EJ analysis.

EJ however was not a new concern that emerged in 1994. The principles EJ embodies have their roots in the Title VI of the Civil Rights Act of 1964 and prior civil rights legislation. Today, because of the increased importance and evolution of full and equitable analysis and treatment in the transportation planning process, EJ is perhaps best described as a matter of increased awareness of the full effects and impacts of transportation decisions on the human environment. The three fundamental EJ principles that the U.S. Department of Transportation (DOT) outline in its process when it put EJ regulations into place include:

1. To avoid, minimize, or mitigate disproportionately high and adverse human health or environmental effects, including social and economic effects, on minority populations and low-income populations.
2. To ensure the full and fair participation by all potentially affected communities in the transportation decision-making process.
3. To prevent the denial of, reduction in, or significant delay in the receipt of benefits by minority populations and low-income populations.

## **3.0 METHODOLOGY and DEFINITIONS**

### **3.1 Methodology**

Data for this analysis was collected from one primary source, the 2000 U.S. Census Data. Other information such as field surveys / observations and mapping were also used. The 2000 U.S. Census Data used in the analysis includes data available from the Census Bureau's American Fact Finder internet data query program - [http://factfinder.census.gov/servlet/BasicFactsServlet?\\_lang=en](http://factfinder.census.gov/servlet/BasicFactsServlet?_lang=en).

All primary information comes from 2000 Summary Files 3 (SF 3) and includes the following specific data items:

- P1 - Total Population
- P6 - Race
- P8 - Sex by Age, and
- P87 - Poverty Status data for 1999 (the latest year available for this data)

Additional information used to refine minority, low-income and elderly populations comes from 2000 Summary Files 1 (SF 1) and includes the following specific data items:

- P7 – Race (Total Population)
- P12 - Sex by Age (Total Population)

U.S. Census data is arranged according to geographic unit. For this study, data for the entire study area is presented at the national, state, county, and census tract levels. Because the area of analysis is over 50 miles in length, spans three states, numerous counties and takes into account a corridor that is ½ mile in length, the Census Tract level was determined to be the most appropriate unit for analysis. For tracts identified as being affected by an alternative corridor under consideration and as having a minority, low-income, or elderly population greater than the statewide average, additional data was collected to the block group and block level (excluding low-income populations since data is only available to the block group level).

According to the U.S. Census Bureau, the definition of census tracts, block groups, and census blocks is as follows:

**Census Tract** – “A small, relatively permanent statistical subdivision of a county or statistically equivalent entity, delineated for data presentation purposes by a local group of census data users or the geographic staff of a regional census center in accordance with Census Bureau guidelines. Census tracts generally contain between 1,000 and 8,000 people. Census tract boundaries are delineated with the intention of being stable over many decades, so they generally follow relatively permanent visible features. However, they may follow governmental unit boundaries and other invisible features in some instances; the boundary of a state or county is always a census tract boundary.”

**Block Group (BG)** – “A statistical subdivision of a census tract. A BG consists of all tabulation blocks whose numbers begin with the same digit in a census tract. BGs generally contain between 300 and 3,000 people, with an optimum size of 1,500 people.”

**Census Block** (or referred to as simply block) – “An area bounded on all sides by visible and/or nonvisible features shown on a map prepared by the Census Bureau. A block is the smallest geographic entity for which the Census Bureau tabulates decennial census data.”

The data was compiled into spreadsheets by Census Tract, stratified by County and by State and checked with corresponding maps of the various alternative corridors to determine likely area areas of impact(s) in the study area.

### **3.2 Definitions**

For the analysis, definitions compatible with guidelines from various sources including the U.S. DOT’s Federal Highway Administration (FHWA), the Kentucky Transportation Cabinet (KYTC) (and other similar KYTC projects), the Census Bureau and standard transportation planning practices were all used.

The 2000 Census data on race, which was asked of all people, were derived from answers to long-form questionnaire Item 6, and short-form questionnaire Item 8. The concept of race, as used by the Census Bureau, reflects self-identification by people according to the race or races with which they most closely identify.

Minority (non White / Caucasian) individuals were defined themselves as those being Black or African American, American Indian and Alaska Native, Asian, Native Hawaiian and Other Pacific Islander, some other race, or a mixture of minority races. Some other race included all other responses not included in the defined race categories. Respondents providing write-in entries such as multiracial, mixed, interracial, or a Hispanic/Latino group (for example, Mexican, Puerto Rican, or Cuban) in the "Some other race" write-in space are included in this category.

Since race information is self-reported, there is an element of error and perhaps under reporting that may be introduced into the data, especially by persons of mixed race.

Therefore, to be more inclusive of minorities in the analysis, the definition of “Minority” for this analysis will be all persons other than those who self identified as White or Caucasian. Although this may overestimate slightly the actual number and percentages of “minorities” if applied on a statewide basis, the overestimation on a tract basis and for only a few tracts in question is rather insignificant.

Low-income is defined in U.S. DOT Order (5610.2) as “a person whose median household income is at or below the Department of Health and Human Services (HHS) poverty guidelines”. A low-income population is “any readily identifiable group of low-income persons who live in geographic proximity, and, if circumstances warrant, geographically dispersed/transient persons ...”

Specifically, the 1999 poverty data were used to derive answers to long-form Census questionnaire Items 31 and 32, the same questions used to derive income data. The Census Bureau uses the federal government's official poverty definition, which is an offshoot of the Social Security Administration (SSA) original poverty definition of 1964, which federal interagency committees subsequently revised in 1969 and 1980. The Office of Management and Budget's (OMB's) Directive 14 prescribes this definition as the official poverty measure for federal agencies to use in their statistical work.

The specific poverty thresholds are revised annually to allow for changes in the cost of living as reflected in the Consumer Price Index (CPI-U). The poverty thresholds are the same for all parts of the country -- they are not adjusted for regional, state, or local variations in the cost of living. The poverty status of families and unrelated individuals in 1999 was determined using 48 thresholds (income cutoffs) arranged in a two dimensional matrix. The matrix consists of family size (from 1 person to 9 or more people) cross-classified by presence and number of family members under 18 years old (from no children present to 8 or more children present). Unrelated individuals and 2-person families were further differentiated by the age of the reference person (RP) (under 65 years old and 65 years old and over).

To determine a person's poverty status, one compares the person's total family income with the poverty threshold appropriate for that person's family size and composition. If the total income of that person's family is less than the threshold appropriate for that family, then the person is considered poor, together with every member of his or her family. If a person is not living with anyone related by birth, marriage, or adoption, then the person's own income is compared with his or her poverty threshold.

Populations by Age (Elderly) Elderly populations (age 62 or above in this analysis) are not specifically recognized under the definition of an Environmental Justice community. However, the U.S. DOT specifically encourages the early examination of potential populations of the elderly, children, disabled, and other populations protected by Title VI of the Civil Rights Act of 1964 and related nondiscrimination statutes.

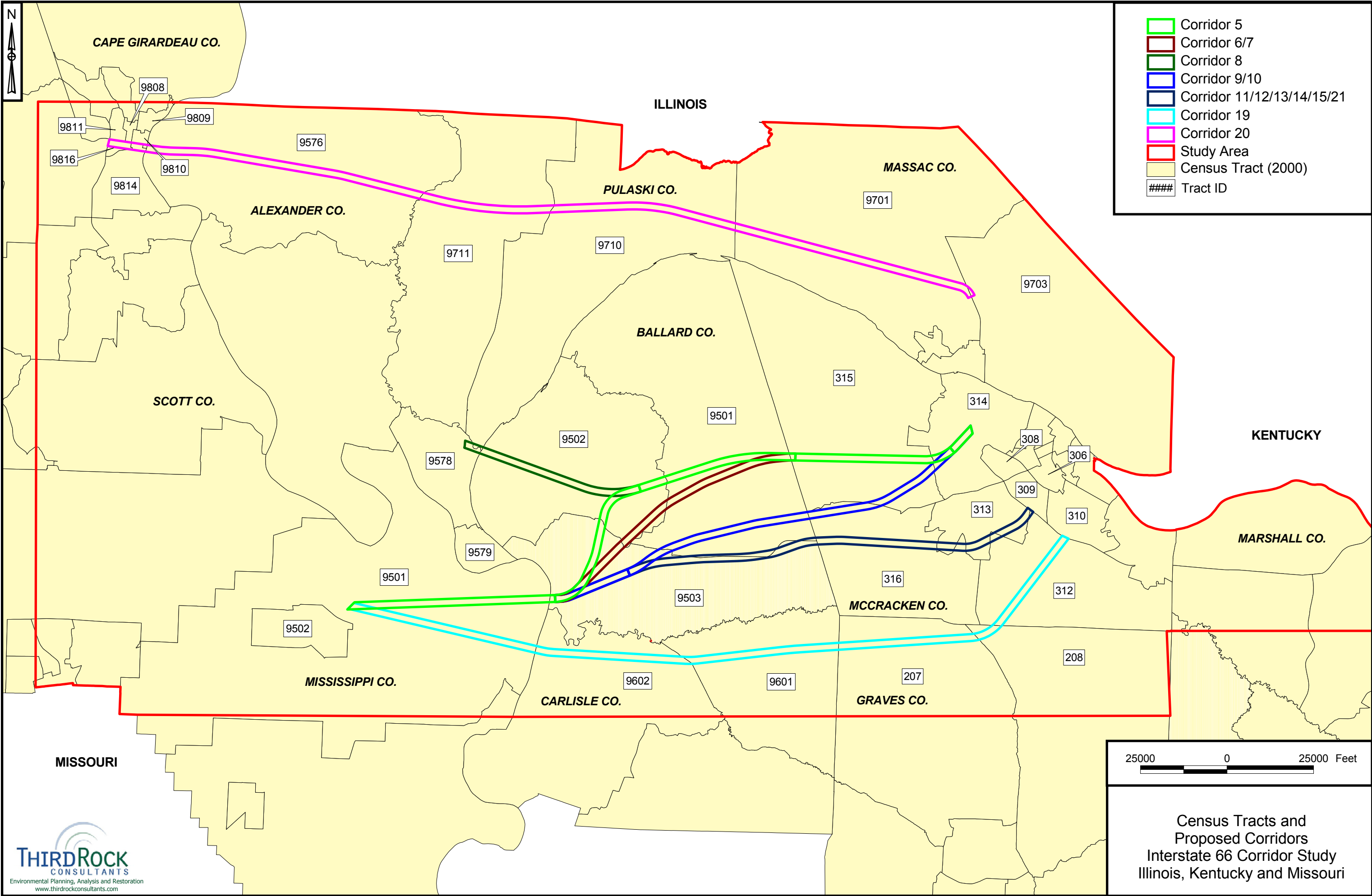
The data on age, which was asked of all people, were derived from answers to the long-form questionnaire Item 4 and short-form questionnaire Item 6. The age classification is based on the age of the person in complete years as of April 1, 2000. The age of the person usually was derived from their date of birth information. Their reported age was used only when date of birth information was unavailable. For the analysis, aged was defined as all individuals who were age 62 years or older.

## **4.0 CENSUS DATA**

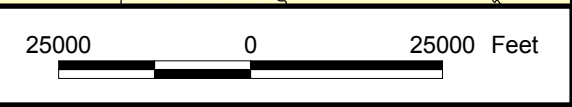
The I-66 Corridor Study – Western Kentucky to Missouri project study area is over 50 miles long and spans three states and multiple counties. It includes Ballard, Carlisle, Graves, and McCracken counties in Kentucky, Cape Girardeau, and Mississippi County in Missouri, and Alexander, Massac and Pulaski counties in Illinois. In Kentucky, there are three affected census tracts in Ballard County, two each in Carlisle and Graves County, and five in McCracken County for a total of twelve tracts. In Missouri there are five affected tracts in Cape Girardeau County and one in Mississippi County for a total of six tracts. In Illinois, there are two affected tracts each in Alexander and Pulaski County respectively and one in Massac County for a total of five tracts.

The following map displays the affected tracts and the alternative corridors that cut across or near each tract.

- Filename: p:\2000\0396-pbq-d-ballard-166\mapping\gis\census\_map.apr Layout: census\_tracts-Map By: las On: March 7, 2003



- Corridor 5
- Corridor 6/7
- Corridor 8
- Corridor 9/10
- Corridor 11/12/13/14/15/21
- Corridor 19
- Corridor 20
- Study Area
- Census Tract (2000)
- ##### Tract ID



Census Tracts and  
Proposed Corridors  
Interstate 66 Corridor Study  
Illinois, Kentucky and Missouri

## 5.0 ENVIRONMENTAL JUSTICE SUMMARY

The data was compiled into spreadsheets by census tract, stratified by county and by state and checked with corresponding maps of the various alternative corridors to determine likely area areas of impact(s) in the study area. The following sections summarize the potential impacts to minority populations, low-income populations, and elderly populations for Kentucky, Missouri, and Illinois.

### 5.1.1 Minority Population Analysis

To determine areas of high minority populations, the percentage of minorities in a census tract was compared to the statewide average minority percentage. Census tracts that were higher than the statewide average were then analyzed at the block group and block level to locate the minority populations in relation to the proposed corridors. Table 1 lists the potential minority concentrations and the corridors that could impact these populations. Some census tracts had higher than the statewide average of minorities, but there was no specific concentration within the census tract. These census tracts are listed in the table, but do not show a specific concentration. Also, data for Kentucky is not shown in this table since there are no census tracts in the study area in Kentucky that contain percentages of minorities that are above the Kentucky statewide average of nine percent.

**Table 1: Minority Population Analysis Summary**

Location		Statewide Average Minority %	Census Tract Minority %	Specific Minority Population Concentration	Specific Minority Population %	Corridor Impacts	
Missouri	Cape Girardeau County	13	Tract 9810	14	-	-	Corridor 20
			Tract 9814	41	900	17	Corridor 20
			Tract 9816	21			Corridor 20
	Mississippi County		Tract 9501	15	160 (Wilson City)	45	Corridors 5, 6/7, 9/10, 11/12/13/14/15/21 and 19
Illinois	Alexander County	25	Tract 9578	54	In and near Cairo, Illinois	-	-
	Pulaski County		Tract 9711	44	58 (Ullin, Illinois)	32	Corridor 20

From the data available for minority populations, the greatest potential for impact appears to be in Cape Girardeau County, where Alternative 20 ends and near Wilson City where several of the corridors terminate.

### 5.1.2 Low-Income Population Analysis

The procedure for identifying low-income populations is similar to that for the minority analysis. The percentage of persons below the poverty level for each census tract



affected was compared to the statewide average. Census tracts higher than the statewide average were analyzed in more detail to determine specific locations of low-income populations. Table 2 lists the census tracts with percentages of persons living below the poverty level that are greater than the statewide averages. For some census tracts, it was possible to identify specific low-income populations. These populations and the corridors they affect are also shown on the table.

According to Table 2, Corridor 20 may impact some low-income populations where it ends in Cape Girardeau County. Also, there appear to be specific low-income populations in Wyatt, Union City, and Mound City which could all be potentially impacted by Corridor 20.

**Table 2: Low-Income Population Analysis Summary**

Location			Statewide Average % Below Poverty Level	Census Tract % Below Poverty Level	Specific Low-Income Population Concentration	Specific Low-Income Population %	Corridor Impacts
Kentucky	Ballard County	Tract 9503	16	16	-	-	Corridors 5, 6/7, 9/10, 11/12/13/14/15/21
	Carlisle County	Tract 9602		19	-	-	Corridor 19
Missouri	Cape Girardeau	Tract 9808	12	28	155 and 254	51 and 40	Corridor 20
		Tract 9810		33	365	41	Corridor 20
		Tract 9814		36	407	48	Corridor 20
		Tract 9816		24	403	32	Corridor 20
	Mississippi County	Tract 9501		15	178 (Wyatt and Wilson City)	21	Corridors 5 and 19
Illinois	Alexander County	Tract 9576	11	23	-	-	Corridor 20
		Tract 9578		29	-	-	Corridor 8
	Pulaski County	Tract 9710		24	291 (Mound City)	41	Corridor 20
		Tract 9711		26	-	-	Corridor 20

### 5.1.3 Population by Age Analysis

Elderly populations (age 62 or above in this analysis) are not specifically recognized as an Environmental Justice community based on the legal definition. However, the U.S. DOT specifically encourages the early examination of potential elderly populations. For this analysis, the identification of elderly populations was determined by comparing statewide elderly population percentages to elderly population percentages at the

census tract level. Census tracts with elderly population percentages higher than the statewide average are listed in Table 3. Also, when possible, specific locations of elderly populations within the census tracts were identified and are listed in Table 3 along with the corridors that could potentially impact these populations.

Based on the data shown in Table 3, both Kentucky and Missouri have several locations of high elderly populations. In Kentucky, these populations are located in La Center, Wickliffe, the northeast section of Carlisle County, and Paducah. In Missouri, Corridor 20 could impact elderly populations near the end of the corridor in Cape Girardeau.

**Table 3: Population by Age Analysis Summary**

Location		Statewide Average Elderly (Age 62+) %	Census Tract Elderly %	Specific Elderly Population Concentration	Specific Elderly Population %	Corridor Impacts
Kentucky	Ballard County	15	20	78 (La Center)	96	Corridor 5
			18	-	-	Corridors 5, 8, and 6/7
			18	34 (Wickliffe)	24	Corridors 5, 6/7, 9/10, and 11/12/13/14/15/21
	Carlisle County		21	75	53	Corridor 19
			22	-	-	Corridor 19
	Graves County		15	-	-	Corridor 19
			18	-	-	Corridor 19
	McCracken County		16	60	17	Corridor 11/12/13/14/15/21
			19	36 and 82	61 and 91	Corridors 5 and 9/10
16		-	-	Corridors 5 and 9/10		
Missouri	Cape Girardeau	14	21	125	24	Corridor 20
			14	73	19	Corridor 20
			19	179	24	Corridor 20
	Mississippi County		21	-	-	Corridors 5 and 19
Illinois	Alexander County	14	17	-	-	Corridor 20
			19	-	-	Corridor 8
	Massac County		15	-	-	Corridor 20
	Pulaski County		21	-	-	Corridor 20
			19	-	-	Corridor 20

## 5.2 Conclusions

In order to determine which corridor is the most desirable from an Environmental Justice standpoint, a summary table of impacts by corridor (Table 4) was compiled from the previous analysis. The populations identified in Table 4 were determined based on additional analysis for census tracts with percentages of minorities, low-income, or elderly residents greater than the statewide averages.

**Table 4: Summary of Minority, Low-Income, and Elderly Population Impacts by Corridor**

Corridor	No. of Specific Minority Populations Potentially Affected	No. of Specific Low-Income Populations Potentially Affected	No. of Specific Elderly Populations Potentially Affected	Total Number of EJ Populations Potentially Affected*
Corridor 5	None Found	1	4	5
Corridor 6/7	None Found	1	3	4
Corridor 8	None Found	1	3	4
Corridor 9/10	None Found	1	3	4
Corridor 11/12/13/14/15/21	None Found	1	2	3
Corridor 19	1	1	2	4
Corridor 20	2	5	4	11

\*EJ populations in this analysis include minority, low-income, and the elderly (age 62+)

On a corridor basis, the most concern seems to be for Alternative Corridor 20, as it cuts across tracts in Cape Girardeau, Alexander, Pulaski and Massac counties respectively. In terms of EJ analysis this corridor has the most potential for adverse impacts on minority, low-income, and elderly populations when compared to the other corridors under consideration. Most of the minority, low-income and elderly populations that Corridor 20 would potentially adversely impact are limited to the termination point of Corridor 20 in Cape Girardeau.

All other corridors rank low in their likely respective impacts. However, since all corridors utilizing the river crossing south of Wickliffe, Kentucky pass through Mississippi County, Missouri there is potential for some adverse impacts across the county, especially in Census Tract 9501.