A Report on Key Indicators for Establishing Environmental Justice in Transportation Planning in Lowndes County, 2015

This report and accompanying data analysis was completed for the Southern Georgia Regional Commission (SGRC) in Valdosta, GA on May 4, 2015.

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Introduction

Since the 1990s, a growing body of research has documented the environmental hazards and health burdens disproportionally faced by low-income and minority populations. Originally research focused on increased risk to disadvantaged groups due to geographic proximity to environmental dangers such as toxic waste. However, research today also focuses on race and class disparities in access to the benefits of governmentally-funded projects. Environmental justice refers to the right for all individuals to have equal access to a safe, healthy, productive, and sustainable environment, with environment referring to both ecological factors and built infrastructure. Full access to environmental justice means that all individuals are able to participate in shaping their environment, by exercising their political rights and civil liberties. Ideally, an environmentally just society ensures that group and individual identities are respected, and increases community cohesion and empowerment.

Transportation planning increasingly takes key components of environmental justice into account in seeking to create equitable, healthy, and vibrant communities (see Forkenbrock and Schweitzer 1999; Duthie, Cervenka and Waller 2007). In this report, we examine key indicators of environmental justice in Lowndes County. First, we describe the environmental justice guidelines and objectives guiding this study. Second, we review the relevant literature on environmental justice and transportation planning. Third, we identify the geographic location of low-income, minority, and otherwise disadvantaged populations in the county. Fourth, we examine the overlap of these indicators, which demonstrates geographic areas which are particularly disadvantaged. Finally, we discuss our key findings and their implications for transportation planning in the county.

Environmental Justice Guidelines & Objectives

In combination with the Title VI of the Civil Rights Act of 1964, Executive Order 12898, (established in 1994), has defined the Environmental Justice requirements to be adhered to by all federally funded programs. As a recipient of federal funding, the Valdosta-Lowndes Metropolitan Planning Organization (VLMPO) is required to follow the following three major principles of Environmental Justice:

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

The following report is an in-depth environmental justice analysis of critical population categories within Lowndes County, in pursuit of ensuring compliance with EJ requirements by the VLMPO's update to the Long Range Transportation Plan. The analysis will look at vehicular access, English proficiency, age distribution, income and poverty, race, and educational attainment as defined and measured by the U.S. Census. Distribution of these indicators will be assessed at the census tract level using data from the 2009-2013 American Community Survey, and proposals for EJ compliance will result from the examination of such indicators as well as from additional research and review of relevant EJ literature.

Literature Review

Research has repeatedly shown that socioeconomic status and race affect the likelihood that an individual will live near hazardous sites (Bullard 1993; Wilson et al 2012) and increases the barriers to physical activity (Taylor et al 2006; Mohai and Saha 2006). In addition to geographic location, sociologists also point out that "social location" in society affects the social problems that an individual is likely to experience. Social location refers to the status a person holds in society and is influenced by race, income, gender, and other factors (Taylor 2000). Environmental justice takes into account both geographic and social disparities in exposure to society's hazards and access to its benefits.

Data and Methodology

Data for this project comes from the U.S. Census Bureau. We use the 2013 American Community Survey five-year estimates. Most of our data is at the census tract level for Lowndes County. However, we also refer to average estimates for the county in order to put our data in context; in the context of county averages, it is clear which areas of the county need extra

attention in terms of particular indicators. Also, when we examine linguistic isolation among the Latino/Hispanic population in Lowndes County, we use both tract and block-level data to get the best idea of where individuals with low English proficiency are located.

In accordance with Title VI of the Civil Rights Act of 1964, Executive Order 12898, (established in 1994), we are particularly interested in low-income, minority, and other populations that may have historically not been fully included in the transportation process. In Part 1 of analysis, we identify areas of the county which rank high on the following indicators: 1) race (minority populations); 2) age (the elderly); 3) income (those in poverty); 4) vehicular access (those without access to a car); 5) limited English proficiency (linguistic isolation); 6) Limited educational attainment, 7) female-headed households; 8) means of commute to work and time to commute to work.

In Part 2 of analysis, we identify the geographic overlap among indicators. These identify the geographical location within the county of communities affected by more than one key indicator (e.g. linguistic isolation and poverty).

Findings

Part 1. Examination of Key Indicators related to Environmental Justice

Minority Populations

Figure 1. Minority Populations by Census Tract. Lowndes County, 2013 ACS 5-yr estimates

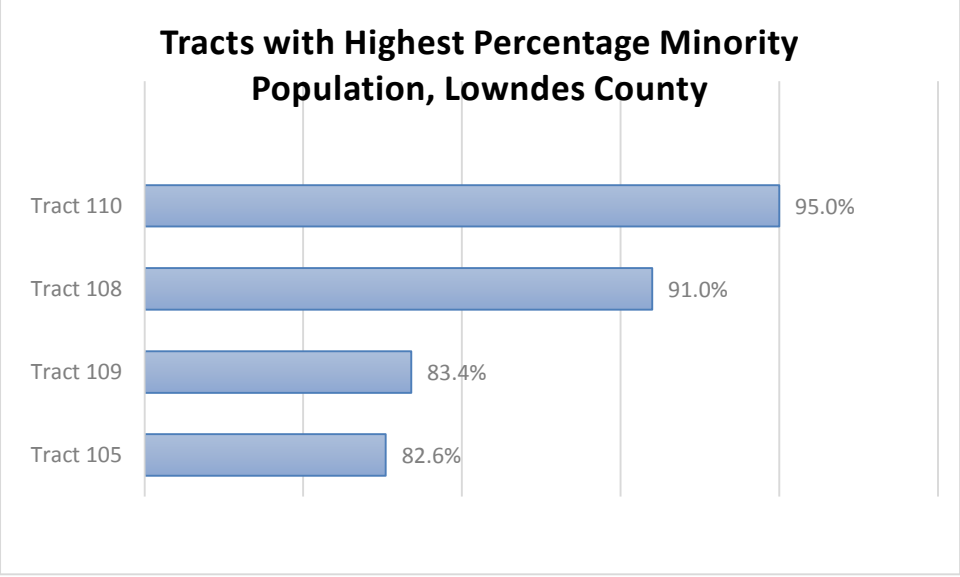


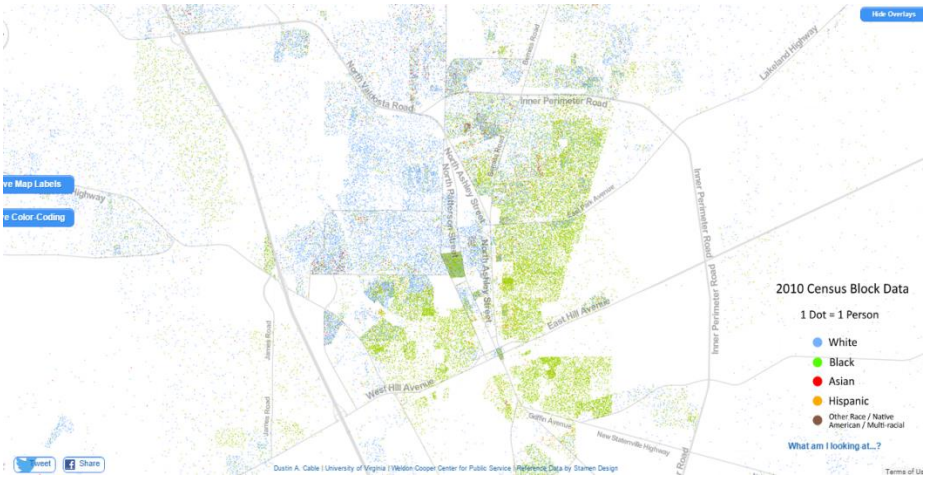
Table 1. Racial Distribution by Census Tract in Lowndes County

Minority Population Percentages by Census Tract in Lowndes County, Valdosta, GA *ACS 2009-2013 "Race" Table B02001*						
Geography	Est. Total	MoE Total	Est. White alone	MoE White alone	% White alone	% Non-White
Lowndes County	111,334	****	64175	+/-464	57.6	42.4
Census Tract 101.01	4623	+/-509	2858	+/-441	61.8	38.2
Census Tract 101.02	5668	+/-453	3667	+/-467	64.7	35.3
Census Tract 101.03	3278	+/-327	2256	+/-300	68.8	31.2
Census Tract 102.01	3309	+/-325	2360	+/-295	82.5	17.5
Census Tract 102.02	11408	+/-612	9416	+/-666	72.2	27.8
Census Tract 103.01	5202	+/-436	3755	+/-375	72.2	27.8
Census Tract 103.02	2794	+/-277	2697	+/-287	96.5	3.5
Census Tract 104.01	1733	+/-191	1504	+/-163	86.8	13.2
Census Tract 104.02	7406	+/-762	1658	+/-376	22.4	77.6
Census Tract 105	4803	+/-455	838	+/-281	17.4	82.6
Census Tract 106.01	5146	+/-498	2363	+/-609	45.9	54.1
Census Tract 106.04	5213	+/-438	3012	+/-311	57.8	42.2
Census Tract 107	3711	+/-381	2885	+/-345	77.7	22.3
Census Tract 108	5472	+/-738	515	+/-225	9.4	90.6
Census Tract 109	1927	+/-256	319	+/-92	16.6	83.4
Census Tract 110	3855	+/-468	185	+/-125	4.8	95.2
Census Tract 111	3316	+/-372	2185	+/-310	65.9	34.1
Census Tract 112	4640	+/-498	3757	+/-401	81	19
Census Tract 113.01	5070	+/-495	2325	+/-326	45.9	54.1
Census Tract 113.02	2390	+/-284	754	+/-179	31.5	68.5
Census Tract 114.01	2156	+/-182	1185	+/-174	55	45
Census Tract 114.02	2250	+/-263	1169	+/-210	52	48
Census Tract 114.03	7817	+/-626	5414	+/-496	69.3	30.7
Census Tract 115	4053	+/-426	3495	+/-397	86.2	13.8
Census Tract 116	4094	+/-357	3603	+/-370	88	12

In evaluating the available census tract information for Lowndes County, Georgia, the following tracts have percentages of non-white populations exceeding 50%, in order from highest percentage of minority population to lowest (above 50%): 95.2% in CT 110, 90.6% in CT 108, 83.4% in CT 109, 82.6% in CT 105, 77.6% in CT 104.2, 68.5% in CT 113.02, and

54.1% in tracts 113.03 & 106.01 each. These "nonwhite" percentages include all individuals identifying as any category other than "White alone," including "Black or African American alone," "American Indian and Alaska Native alone," "Asian alone," "Native Hawaiian and Other Pacific Islander alone," "Some other race alone," and "Two or more races." Across all census tracts, the majority of the population is either white alone or African American alone and holds at least 1000 in the majority whereas the other 5 racial categories do not reach 350 standing alone in any census tract. Table 1 puts the racial distribution by census tract for the county in context, by displaying the counts and percentages of "white alone" for each census tract. The tracts highlighted in gray all are more than 70% minority population.

Figure 2. Map of Minority Populations in Lowndes County, 2010.



This map (Figure 2) was obtained from the Weldon Cooper Center for Public Service at the University of Virginia and offers a colored representation of the divide between primarily white and primarily black populations in the census tracts discussed; the green areas, representing the black populations, match the census tracts outlined as having the highest proportions of non-white populations, and as such, represent the areas critical to ensuring environmental justice.

Upon observing the spatial locations of these high minority census tracts it appears they are all clustered together in the eastern portion of the clustered center area in the county. Due to their predominantly minority populations any efforts by the Valdosta-Lowndes Metropolitan Planning Organization in transportation plans and programs will need to be especially conscious of ensuring that these census tracts are incorporated in the planning and implementation of the 2040 Transportation Vision plan, as well as paying close attention to the equitable distribution of relevant resources.

Elderly Population

Figure 3. Age Distribution and the Elderly by Census Tract. Lowndes County, 2013 ACS 5-yr estimates

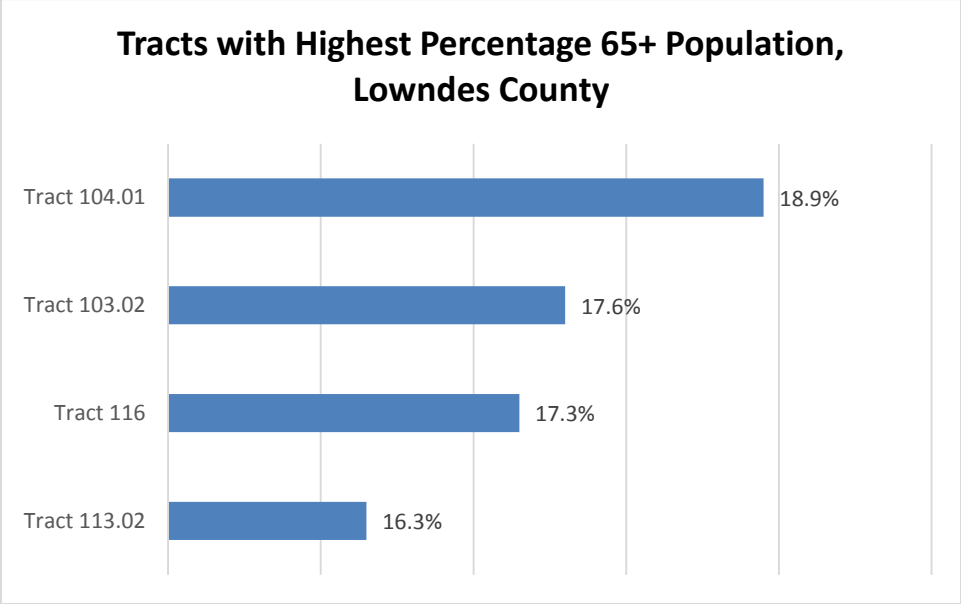


Table 2: Prevalence of 65+ Population within Lowndes Census Tracts, U.S Census Bureau 2013 Estimates

65 years and over			Total population	Percentage
Lowndes County Total Population	Total	Estimate	111,334	10%
Census Tract 103.02, Lowndes County, Georgia	Total	Estimate	2,794	17.6%
Census Tract 103.02, Lowndes County, Georgia	Total	Margin of Error	+/-277	+/-4.3
Census Tract 104.01, Lowndes County, Georgia	Total	Estimate	1,733	18.9%
Census Tract 104.01, Lowndes County, Georgia	Total	Margin of Error	+/-191	+/-2.9
Census Tract 113.02, Lowndes County, Georgia	Total	Estimate	2,390	16.3%
Census Tract 113.02, Lowndes County, Georgia	Total	Margin of Error	+/-284	+/-3.7
Census Tract 116, Lowndes County, Georgia	Total	Estimate	4,094	17.3%
Census Tract 116, Lowndes County, Georgia	Total	Margin of Error	+/-357	+/-3.3
Total Population	Total	Estimate	11,011	70.10%

Looking at Figure 3 and Table 2, it would seem that the SGRC should pay more attention to the Northeastern and Southeastern regions of the county, more so than the other more developed parts of town, in terms of planning for the transportation needs of the elderly population. Considering that there are high numbers of elderly individuals (65+) in census tracts 104.01, 104.02, 116, and 113.02, these tracts should be given high priority in terms of planning for those who may have limited mobility and low income. Table 2 presents the population over 65 for the county as a whole, to put the percentages presented in Figure 3 in context. While only 10% of the population of Lowndes County is over 65 years, the census tracts mentioned have an

elderly population between 15 and 20%. A bus system might be beneficial for these areas, especially if there are individuals in the census tracts who do not have accessible vehicles who need to get around or for the elderly who are not able to drive. To get these people more involved transportation planners could send mailed surveys to these individuals asking them what they feel like they need in their communities because not everyone is able to go to a meeting at city hall. By sending these mail surveys the planners will get enough feedback to know what they need to do in order to better the community for these families and individuals.

Income & Poverty

Figure 4. Poverty Prevalence by Census Tract. Lowndes County, 2013 ACS 5-yr estimates

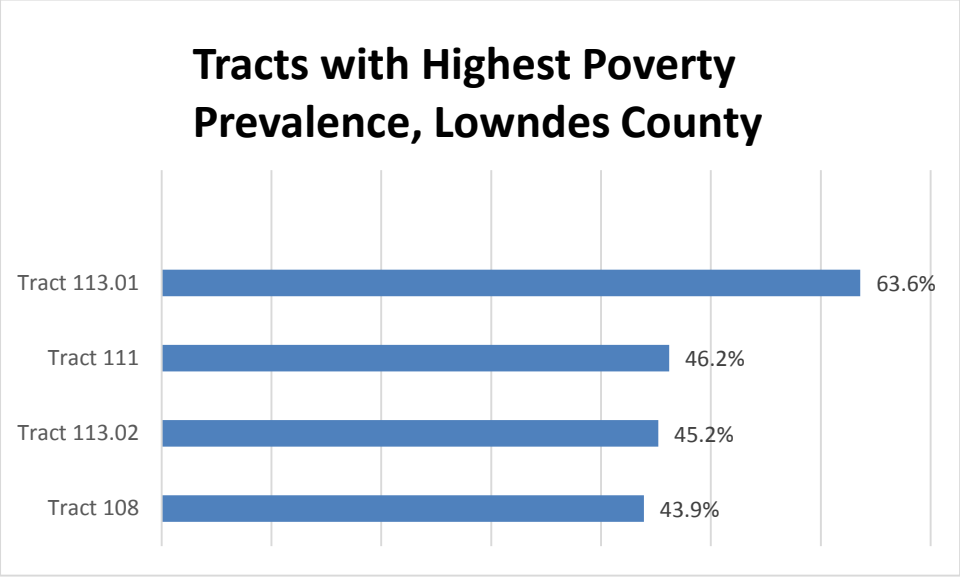


Table 3. Lowndes County Poverty by Census Tract Factfinder.census.gov 2013 ACSS 5-year estimates Table ID S1701		
Census Tract	Percentage	Margin of Error
County Avg.	24.30%	+/- 1.4
113.01	63.60%	+/-5.7
111	46.20%	+/-10.6
113.02	45.20%	+/-9.6
108	43.90%	+/-8.9

Table 4. Lowndes County Income by Census Tract Factfinder.census.gov 2013 ACSS 5-year estimates Table ID S1901		
Census Tract	Income	Margin of Error
County Avg.	$51,068	+/-$1228
108	$25,600	+/-$3460
113.01	$26,109	+/-$4584
113.02	$27,671	+/-$5346
110	$28,271	+/-$4746

Figure 5. Lowndes County Mean Income by Census Tract in the last 12 months (2013)

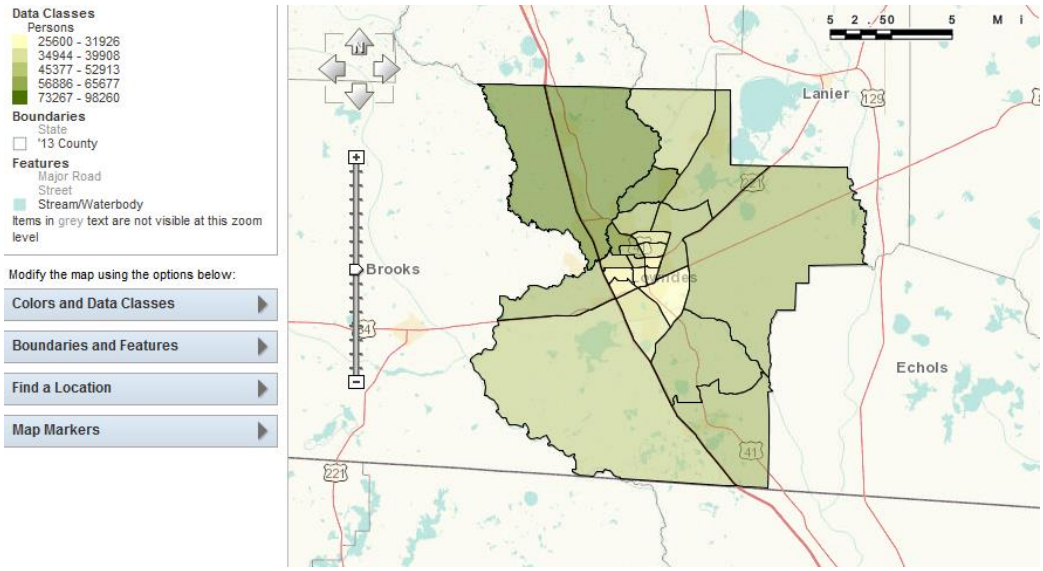
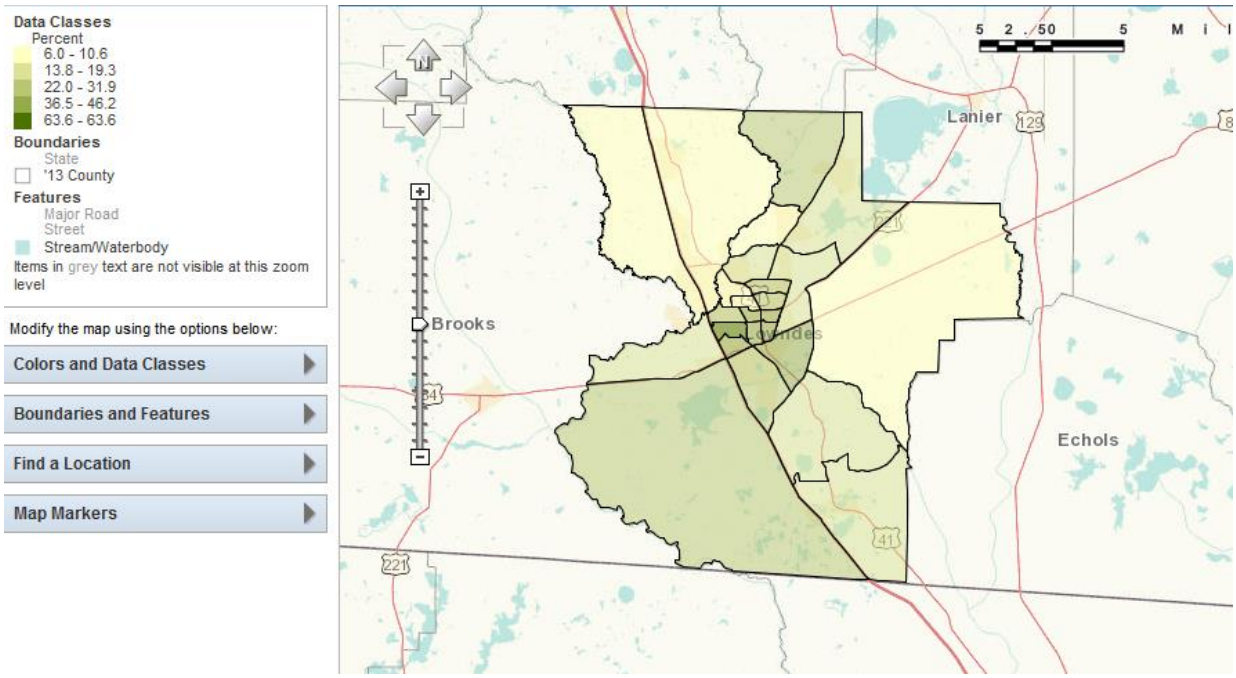


Figure 6. Poverty by Census Tract in Lowndes County in the last twelve months (2013)



When examining the yearly mean income of the different census tracts present within Lowndes County and the number of people at or below the poverty line for these tracts several major patterns do tend to emerge. First of all, as you might expect, there are a few tracts where there is present both the highest poverty rates and lowest mean incomes. This finding is also true for low rates of poverty and high mean incomes, which points towards geographic segregation by economic status. For this study we will be focused on transportation issues associated with low income and poverty.

In these two maps (Figure 5 and Figure 6) the areas that should be focused on become apparent. The center cluster of census tracts have both the highest poverty percentages and the lowest mean incomes. The general trend is that this also becomes more pronouced as you move towards the southeast portion of this central area. The two outliers, the most southwest of all the census tracts and the most western of the central area census tracts, are also visibly pronounced

which represent the non-metropolitan area with the most poverty and where Valdosta State University students may be located.

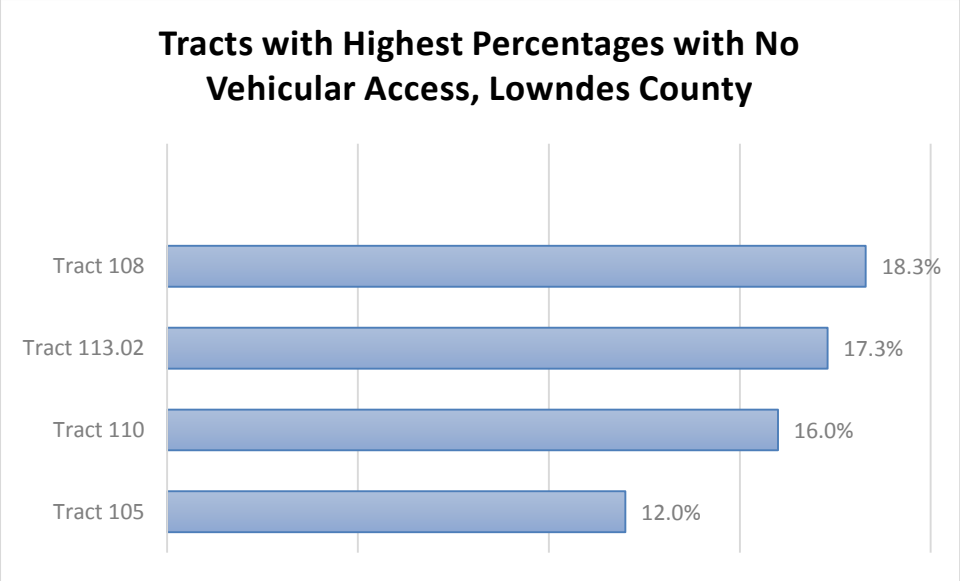
Some of the specific areas that may have problems are tracts 108 and 113.01, as well as a few of the surrounding areas such as 110, 105, and 113.02 which are slightly less troubled. While the percentage of households in poverty for the county as whole is 24%, these census tracts all have over 40% of households in poverty. While the average household income for the county is $51,068, the average income for these tracts is between $25,000 and 30,000. Specifically 108 and 113.01 have the absolute lowest mean incomes of all 25 tracts in Lowndes County and the highest rates of poverty. These two tracts, as well as the other ones listed, are all located in the center cluster of tracts with the numbers being even more pronounced as you approach the southeast corner of this cluster, in general. There are a few other tracts throughout this cluster that do not seem to be in too much of a better condition but the numbers indicate a specific focus should be placed on the original areas mentioned. Another sort of outlier area that could seem to pose a bit of trouble for its citizens is tract 114.03. It is a larger tract that is outside of the central cluster area and appears to have a bit worse of an economic situation than most tracts, although this situation is not as bad as most of the ones in the central cluster.

For all of these areas it is important to keep in mind any situations that may arise from these areas due to them not being able to easily obtain any essential goods or services as well as some other rather critical reasons they may need transportation. It does seem like the use of some sort of public transportation (buses, trolleys, etc.) could easily be administered for some of these severe areas at a nearly minimum cost because the areas that could really benefit from this service are so small and close together that effective strategies/ routes/ etc. could be done rather efficiently. It is not wholly determined whether this is necessary at this point and would of

course require more research but if there was even a slight case made for this type of project it seems that the cost/ benefit analysis would most likely indicate a positive outcome could be found.

Low Vehicular Access

Figure 7. Vehicular Access by Census Tract, Lowndes County, 2013 ACS 5-yr estimates



Differences in vehicular access by census tract can be seen in Figure 7 and in Tables 5 and 6. Figure 7 presents the tracts with the highest percentages of households that do not have access to a vehicle, while Tables 5 and 6 put these percentages in the context of the county as whole, and all census tracts for the county.

Assessing the Lowndes County region regarding access to vehicles and no access to vehicles has yielded the following results. The census tracts that showed the most prevalent areas with no vehicle available are the southeast region of the city, south of Highway 84 near the downtown area (Census Tract 108). Other areas that identify as having no access to vehicles were those just east of Valdosta State University and Ashley Street (Census Tracts 105, 110 and

113.02). These areas can be identified as urban. Comparing those more prevalent areas that were identified as having no access to vehicles to having one vehicle accessible can provide a wider range of those areas that may be in need of a public transportation system. The southeast part of the city (Census Tract 108) had 40% of households with access to one vehicle. The urban area just east of Valdosta State University (Census Tracts 105 and 110) has 39% and 40.5% with one available vehicle, respectively.

Those areas that identify as prominently having access to one vehicle are those areas between Valdosta State University and Northside Drive west of Ashley Street (Census Tract 104.02) at 39.6% of access to one vehicle. Areas surrounding Moody Air Force Base (Census Tracts 101.01) have a vast amount of households that have only one vehicle available (29.6%). Both areas may account for individuals who commute to and from Valdosta State University and Moody Air Force Base.

The vast majority of the populations that had no access to a vehicle were the urban areas surrounding the downtown area. Those areas that had access to one vehicle were in close proximity to the areas identified as having no access to vehicles with the exception of a few (Moody Air Force Base surrounding areas). These areas could benefit from a public transportation system. However, location of occupation and travel time to and from need to be identified to distinguish full benefits of a developing a public transportation system. A cross-tabulation can be ran in order to identify number of persons in the household to distinguish if there are multiple people who are traveling to and from work. Additionally, these urban areas may be identified as having high unemployment. It should be considered if no access to vehicle has a correlation with unemployment. At first glance, these areas could possibly benefit from a

public transportation system. However, factors must be identified and considered before implementation.

Table 5: County Vehicle Accessibility

Lowndes Total No Vehicle	Margin of Error	Lowndes Total 1 Vehicle	Margin of Error
1,649 (3.56%)	(+/-) 426	10,074 (21.74%)	(+/-) 788

Data Source: U.S. Census Bureau 2013 Estimates

Table 6: Census Tract Vehicle Accessibility

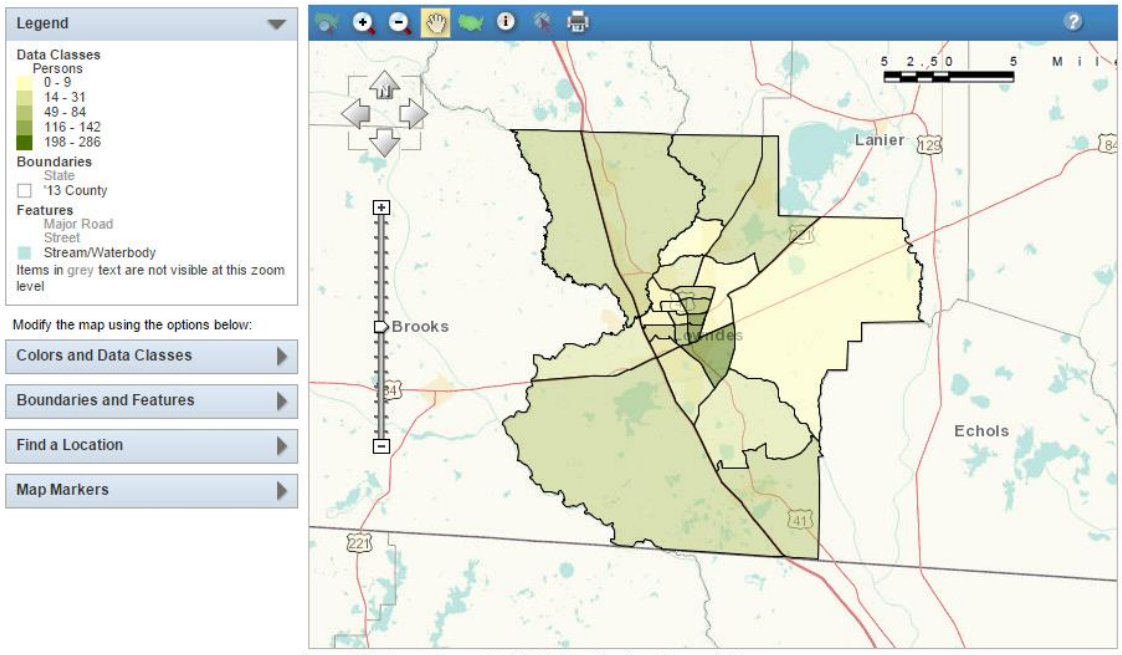
			Total	
			No vehicle available	1 vehicle available
Census Tract 101.01	Estimate	1,849	49	547
	Margin of Error	+/- 253	+/-77	+/-157
Census Tract 101.02	Estimate	2,498	52	324
	Margin of Error	+/- 220	+/-63	+/-123
Census Tract 101.03	Estimate	1,482	9	139
	Margin of Error	+/- 216	+/-15	+/-76
Census Tract 102.01	Estimate	922	65	60
	Margin of Error	+/- 118	+/-56	+/-32
Census Tract 102.02	Estimate	5,124	51	717
	Margin of Error	+/- 457	+/-53	+/-234
Census Tract 103.01	Estimate	2,655	31	617
	Margin of Error	+/- 322	+/-49	+/-228
Census Tract 103.02	Estimate	1,290	0	158
	Margin of Error	+/- 179	+/-13	+/-73
Census Tract 104.01	Estimate	814	6	163
	Margin of Error	+/- 142	+/-9	+/-54
Census Tract 104.02	Estimate	3,168	116	1,255

	Margin of Error	+/- 426	+/-182	+/-296
Census Tract 105	Estimate	2,039	235	810
	Margin of Error	+/- 323	+/-208	+/-167
Census Tract 106.01	Estimate	2,833	81	888
	Margin of Error	+/- 413	+/-82	+/-267
Census Tract 106.04	Estimate	2,584	0	372
	Margin of Error	+/- 254	+/-19	+/-126
Census Tract 107	Estimate	1,501	0	123
	Margin of Error	+/- 263	+/-13	+/-61
Census Tract 108	Estimate	1,567	286	627
	Margin of Error	+/- 335	+/-164	+/-261
Census Tract 109	Estimate	635	31	225
	Margin of Error	+/- 112	+/-32	+/-89
Census Tract 110	Estimate	1,223	198	495
	Margin of Error	+/- 203	+/-118	+/-154
Census Tract 111	Estimate	972	14	271
	Margin of Error	+/- 166	+/-25	+/-114
Census Tract 112	Estimate	2,051	0	287
	Margin of Error	+/- 260	+/-13	+/-99
Census Tract 113.01	Estimate	2,469	66	583
	Margin of Error	+/- 330	+/-47	+/-140
Census Tract 113.02	Estimate	823	142	229
	Margin of Error	+/- 166	+/-88	+/-92
Census Tract 114.01	Estimate	908	15	110
	Margin of Error	+/- 104	+/-24	+/-58
Census Tract 114.02	Estimate	589	16	146
	Margin of Error	+/- 114	+/-26	+/-62
Census Tract 114.03	Estimate	2,772	84	488
	Margin of Error	+/- 364	+/-104	+/-165
Census Tract 115	Estimate	1,670	23	286
	Margin of Error	+/- 200	+/-23	+/-128
Census Tract 116	Estimate	1,903	79	154
	Margin of Error	+/- 228	+/-110	+/-72

Data Source: U.S. Census Bureau 2013 Estimates

The map below depicts the census tracts that do not have vehicular access. The areas of prevalence are shown in the dark green in the center of Lowndes County. These tracts include those areas of downtown Valdosta along with just east of Valdosta State University, along Ashley Street.

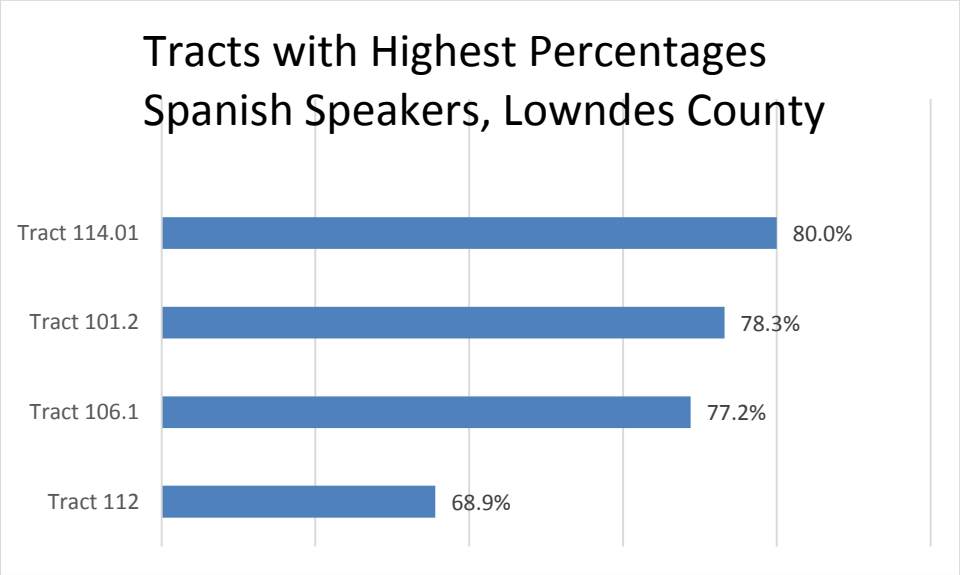
Figure 8. Map of Vehicular Access in Lowndes County, 2010.



Source: U.S. Census Bureau, 2009-2013 5-Year American Community Survey

Linguistic Isolation

Figure 9. Spanish Speakers and English Proficiency by Census Tract. Lowndes County, 2013 ACS 5-yr estimates



The data analyzed for this section of the environmental justice project looks at linguistic isolation. To examine linguistic isolation, we limit the sample to just those who self-identify as Hispanic/Latino, which is the largest ethnic minority group in Lowndes county. We use the questions that ask the respondent to report on the language he/she speaks at home, and his/her proficiency in English.

Figure 9 presents the tracts in Lowndes County with the highest percentages of Spanish speakers. Census Tract 102.2 located in the north-west region of the county has the largest number of population members who speak Spanish with 429 (54.6%). Out of a total of 785 Hispanics or Latinos who speak a language other than English, 278 (64.8%) of the Spanish speakers within that tract speak English "very well" and 151 (35.2%) speak English "well." The tract with the highest percentage of Spanish speakers is located in the south east region in tract 114.02 with 80%, the total population in this tract of members who speak another language is 10.

Census tract 110 located in the North Eastern clustered part of the county has the lower number of members who speak Spanish and do not speak English "at all" with 49 (39.4%) persons out of the 156 total Spanish speakers. Census Tract 116 has 101 Latino or Hispanic persons who speak English "not well." These tracts should be taken into consideration for possible environmental injustice related to transportation decisions in Lowndes County, Georgia. These tracts could be subject to being overlooked when public feedback is solicited for planned transportation projects due to the high number of persons facing language barriers. Therefore, special attention should be given to including these populations in the transportation planning process, by making sure materials are available in Spanish and interpreters are available at public meetings.

Block Level Analysis: Spanish Speakers

The data analyzed for this section of the environmental justice project looks at the linguistic isolation of Spanish speakers in Lowndes County, Valdosta. The secondary data was acquired from the 2000 American Community Survey. The data analyses the linguistic isolation of those who speak Spanish within Lowndes County in Valdosta, Georgia in the corresponding block groups as the Census suggests. The data is being analyzed as part of a collaborate project for the Valdosta-Lowndes Metropolitan Planning Organization (VLMPO) to ensure the 2040 Transportation Vision plan meets the Environmental Justice requirements are stated in Title VI of the Civil Rights Act and Executive Order 12898.

The block group 1 Census Tract 106.01 has the largest *number* of Spanish speakers in the county with 75 persons. Out of this number of Spanish speakers 8 are linguistically isolated. This tract shows the third largest *percentage* of Spanish speakers for census data gathered in the American

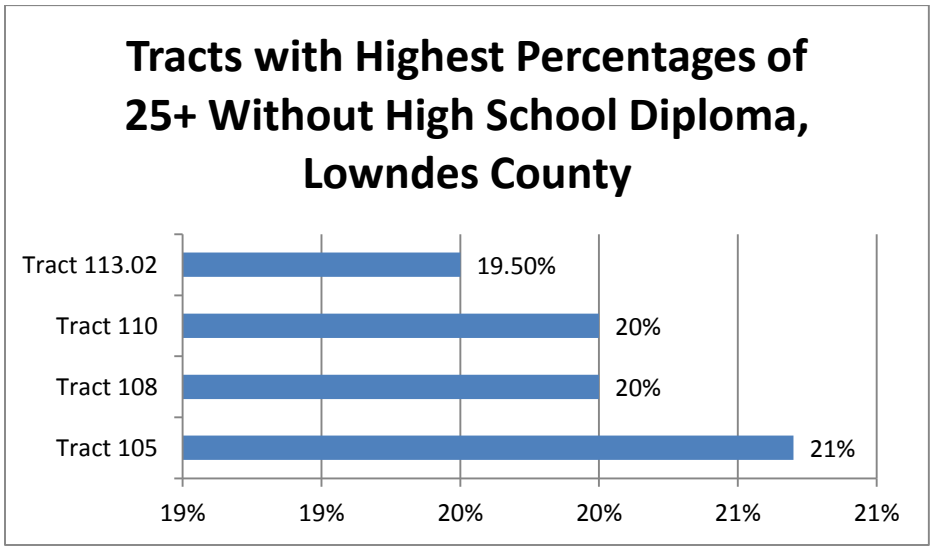
Community Survey 2009-2013. With this comparison it is save to infer that the tract remains constant in the high number of Spanish speakers. The total number of Spanish speakers increased from 104 in 2000 to 129 in 2013 a margin of 25 Spanish speakers.

Tract 114.01 in 2013 had the largest number of Spanish speaker percent with 80 people speaking Spanish. In this tract and year all the Spanish speakers spoke some level of English. In the 2000 data the number of Spanish speakers linguistically isolation was consistent with the data set from 2013 with 0 persons falling in this category.

Nine tracts total showed a decrease in Spanish speaker between 2000 and 2013. Sixteen tracts showed an increase in Spanish speakers. The greatest increase from years 2000 to 2014 occurred in tract 102.02 with 325 more persons in the tract speaking Spanish. The greatest decreased occurred in tract 104.02 losing 51 Spanish speakers.

Low Educational Attainment

Figure 10. Low Educational Attainment by Census Tract. Lowndes County, 2013 ACS 5-yr estimates



Another indicator examined in this analysis is the population of over 25 without a high school diploma or equivalent and where these particular people reside within the county using the U.S. census data and appropriate percentages. The data showed that there are more men than women without a high school diploma or equivalent. By modifying the table within the American Fact Finder data tool within the US Census Data website, we were able to collect the numbers and percentages of those individuals without a high school diploma within specific tracts and within specific age groupings.[2]

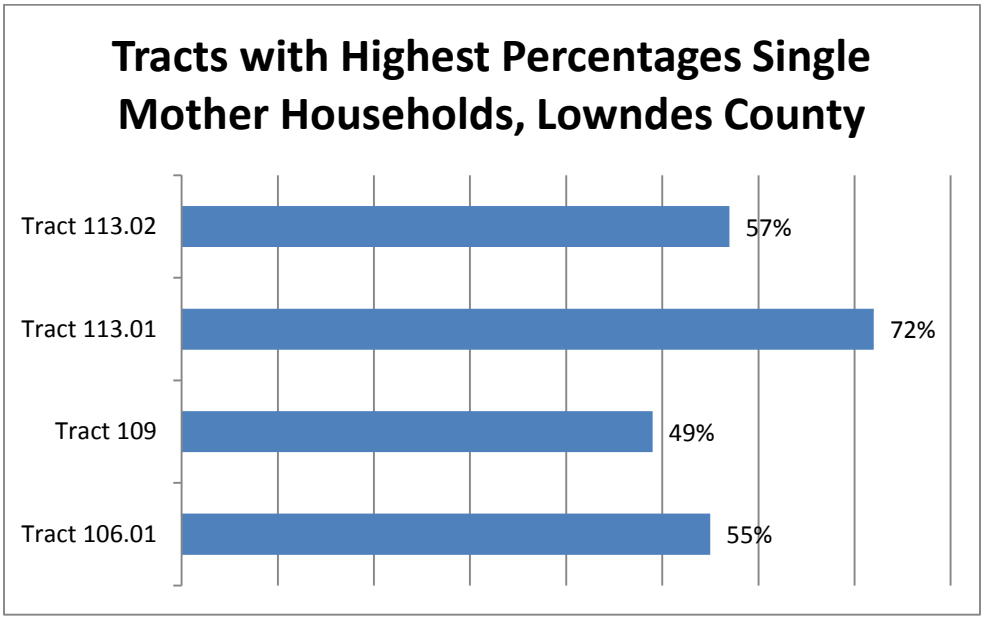
In the table the census tracts are broken down by total and sex. From looking at the table I was able to pinpoint six different census tracts with the highest percentage of 25 and over individuals without a high school diploma. The four tracts with the highest percentages without high school degrees are presented in Figure 10 (tract 113.02, 110, 108, and 105). Other census tracts with high percentages of the population without a degree are 102.1, 105, and 114.02. Census tract 102.1 housed a total of 19.3% of men and women over the age of 25 without a diploma, while tract 105 housed a total of 20.7%. In the 108 census tract 20.4% of men and women do not have a diploma, while 20.2% of individuals do not have a diploma in census tract 110. Census tract 113.02 had a total of 19.5% of men and women without a high school diploma, while 21.8% of individuals did not have a diploma. Out of these total percentages, the percentage of men and women are broken down even more within these census tracts to show the difference in living without a high school diploma. Considering that this environmental justice project focuses on the low income tracts, the SGRC should focus on census tracts such as, 108, 105 and

[2] See the excel document titled "EducationAttainment3."

110. These are the census tracts that (on average) have low educational attainment and individuals in these areas may not have had as much participation in the transportation process in the past as other areas of the county.

Female-Headed Households

Figure 11. Single-Mother Households by Census Tract. Lowndes County, 2013 ACS 5-yr estimates



We also examined the census tracts with the highest percentages of single-mother families (presented in Figure 11). . Since women earn less than men on average, may or may not be receiving child support, and have greater childcare responsibilities in single-parent households, families with single mothers are more likely to be economically disadvantaged than dual-parent households. The tracts with the highest percentages of single mother households were 113.01 with 72%, 113.02 with 57%, 106.01 with 55%, 109 with 49% and 101.01 with 49%. Tract 108 also had a high percentage at 47%. These tracts should be given particular attention in

planning for the transportation needs of children and low-income families, especially in terms of ensuring accesse to medical care, healthy food, and recreational and exercise opportunities.

Commute to Work

Table 7: Average Time Traveled to Work by Census Tract, Lowndes County

Time Traveled to Work		
Census Tract	Time (mins)	Margin of Error
Tract 105	14.7	(+/-)2.1
Tract 108	17.6	(+/-)2.5
Tract 110	20.9	(+/-)8.6
Tract 113.2	13.3	(+/-)1.9

Data Source: U.S. Census Population 2013

Finally, examining means of commute to work and time to commute to work by census tract is also important for transportation planning. First, we identified the tracts with the longest average commute time to work, presented in Table 7 (above). The longest average commute time of any tract in the county was 110, with 20.9 minutes traveled. Tracts 105, 108, and 113.2. were the other top three tracts with the longest average commutes. We also examined the census tracts with the largest percentages having a commute time to work of 60 or more minutes. The census tracts with the highest percentages in this category were 114.03, 102.01, 114.02, and 101. In census tract 114.03, 6.5% of respondents commuted 60 minutes or more to work. In tract 102.01, 5.6% commuted over 60 minutes. In census tract 114.02, 5.4 % commuted 60 minutes or more. In tract 101, 4.7% commuted 60 minutes or more. Census tracts 108 and 110 had the next largest percentages of the population commuting more than 60 minutes. In both census tract 108 and census tract 110, 4.3% of respondents commuted 60 minutes or more.

Summary

As a Transportation Plan is being established and implemented within the Lowndes County/Valdosta jurisdiction, these results should be taken into consideration. Among the variables that were analyzed, there was much overlap in key indicators relevant to environmental justice in transportation planning. This suggested specific areas in need of a transportation system. The areas in the downtown area, along with urban areas along Ashley Street, just east of Valdosta State University, showed a need in all areas (low vehicular access, high 65+ population, high poverty, high minority populations, high female-headed households, long commutes to work, and low English proficiency). All of these indicators represent groups that 1) have historically faced discrimination, 2) have had little access to the transportation planning process, or 3) may have special mobility needs.

Future research should include observations by the researcher to further examine the areas of need. The research can identify if sidewalks, bike lanes, and other beneficial amenities are available. Qualitative and quantitative research can be gathered by conducting a survey in the identified areas to see what community members identify as particular needs

Part 2. Overlap of Indicators

In the second set of findings, we turn to the overlap of key indicators of environmental justice. We found that there was much overlap in key indicators. We were able to make recommendations in terms of the area of the county that should be given particular attention in the transportation planning process.

First, in our analysis, we gave particular attention to the overlap between Spanish speakers and other important environmental justice indicators in the county. Census Tract 108 located in the southeast region of Lowndes County has a Latino/Hispanic population of 387. 117 of them speak only English and the remainder of the Spanish speakers can be broken down by

English proficiency as follows: 154- Speak English "very well;" 61- Speak English "well;"55- Speak English "not well." Tract 108 is the tract with the second highest number of person who fall in the category of speaking English "not well."

This is important because this tract has been found to have an overlap of indicators including high numbers of low-income households as well as high numbers of "no vehicle available." The 55 persons in this tract who speak English "not well" should be taken into consideration for transportation improvements by providing information in other languages, predominately Spanish. With knowledge of previous barriers to collecting data on specific sub-sets of the population, I conclude that the number of Spanish speakers in Lowndes County are likely higher than what it is shown as immigration status of minorities could affect their participation in surveys such as the Census.

We recommend providing information in Spanish regarding any transportation resources or changes within the county. The high numbers of Spanish speakers are spread out throughout the county tracts as well as the levels of English proficiency. Therefore, an effort to provide information in Spanish should be made for all tracts.

Next, we looked at the overlap between poverty and other indicators. In the variables of low income/poverty, language proficiency, and vehicular access, common census tracts affected are also clear. Prevalent areas of low income/poverty are apparent in census Tracts 108, 113.01, 105 and 110. The specific area of 113.01 is the Remerton area which can possibly be accounted for college students predominately living in this area and possibly not claiming any income on the census. Prevalent areas of low language proficiency are 108, 110, 106.04, and 114.03. The Census Tract of 114.03 was puzzling as no other indicators (other than low English proficiency) were significant in this particular area. This area is identified as Clyattville just west of I-75. We

suggest further investigation and observation to be conducted in this area. The Lake Park area was included in this as well. The census tracts of 108, 105, and 110 were prevalent in no vehicular access. In addition, examining commute time to work revealed that the modal category for tract 108 was 15 to 19 minutes, with 40% of respondents. Since 18% of respondents in tract 108 have no access to a vehicle, this suggests that a significant portion of this population may have a long walk to work.

Thus, overall, the areas of 108 and 110 have the strongest overlap of low vehicle accessibility and other key indicators. These areas can be identified as the east urban (clustered center) downtown area. It would be useful to further examine these two census tracts in regards to places of employment, if available, to determine if a public transportation system will benefit them. The three variables of vehicular access, language proficiency, and poverty all show a correlation that could possibly be improved with a transportation plan. The SGRC could possibly provide outreach in these particular communities in order to decipher the actual ways in which they can benefit from a transportation plan. Simply implementing a public transportation plan may not benefit them, but rather better sidewalks and/or bike lanes.

Summary

The census tracts where there is the most overlap in the indicators we are examining are 108 (being the most common), 105, and 110. There are a few more tracts that are also in the center clustered "urban" area of Lowndes County that had overlap in many of the key indicators. In one of these "urban" cluster tracts (113.01) it is difficult to determine what the underlying cause of disadvantage may be because it is very close to the VSU campus and a lot of the bars and restaurants that these students may frequent or work at. This means that the reportedly low income of these areas may be the result of them having to pay for college and having low-

income while they work part-time. Our research suggests there is a genuine need for a public transportation system, such as buses or something similar. Research could also determine if federal funding is available. Perhaps public transportation could be provided very efficiently because areas with the greatest need for public transport options are in relatively small vicinity compared to the whole of Lowndes County.

To conduct outreach to these areas identified as particularly disadvantaged for their input on the discussion a bi-annual meeting with specific focus on these individuals and transportation provided would be useful. Also, it would be useful to allow for an official online discussion board to be open at all times on issues the city government takes under consideration. This discussion board could be advertised for a month before important meetings on transportation projects that will impact individuals in the areas that we have identified. Individuals could also give direct feedback to the website a week or so after the meeting. This would allow people that do not have much time or have a conflicting schedule to participate in the decision-making process. This will also demonstrate to citizens that the government is working to have everyone involved with the decision making processes that are directly impacting them.

Discussion and Conclusions

In observing indicators of vehicular access, English proficiency, age, income, race, and education, our findings illuminate a centrally located population within Lowndes County most likely to be disproportionately disadvantaged for multiple reasons, and as such, should be specifically targeted in ensuring environmental justice measures. Most prominently located in census tracts 108, 110, and 105, and extending less extremely outside, these areas will need to be most vigorously sought out for inclusion in the public involvement process to ensure fair

participation and inclusion, as well as equitable access to all benefits, and minimal negative impacts of new projects.

Further research must involve continued environmental impact studies of all changes to these disadvantaged areas, as there will likely be unaccounted for effects involved in any new developments. Further research would also greatly benefit from exploring such issues of environmental justice as described above at the block level, for both a more extensive analysis and as a continuation to observe impacts made by transportation projects. Limitations of the above analysis that could be addressed in future research may involve not only updating the neighborhood indicators as they have likely changed since the Census collection period of 2009-2013, but additionally, exploration of additional characteristics central to the specified neighborhoods that could contribute to a lack of participation in transportation planning. While our indicators can allow general speculations about the quality of life in these disadvantaged neighborhoods, research at the individual level may shed light on additional factors disparaging these communities or preventing their involvement, such as the frequency of crime in the areas and levels of chronic illness and physical or mental disabilities that could both contribute to a lack of participation.

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