

Transportation and Social Equity as a Way to Alleviate Poverty

The Case of Low-Income Neighborhoods in
Savannah, GA

Vishanya F. Forbes¹, Dr. Deden Rukmana²





What is Social Equity?



- It's a term that implies a calculation of fairness, rights and justice.
- Fair access to livelihood, education, and resources. Full participation in the political and cultural life of the community and self determination in meeting fundamental needs.
- Is considered the corner stone of society, and it cannot be maintained for a few at the expenses of many.



Research Backstory



- Aimed at discovering identifying factors contributing to obesity.
- Face to face interview questionnaires (Surveys) were conducted over a period of two(2) years in Chatham County, GA neighborhoods by Dr. Deden Rukmana. (2013 and 2014)
- There was a total of 424 surveys that were entered and cleaned from the raw data.
- Categories (Perceived General health status, Physical activities, community environment, walking assessment, individual and interpersonal supports and constraints, etc.)



Statement of Problem



- The lack of reliable and affordable transportation in the low-income neighborhoods of Savannah, GA, enhances severe health issues and makes it difficult for these residents to access the basic opportunities offered by society. (Food, Jobs, Education, Healthcare)
- The politics associated with transportation planning in urban neighborhoods hinders transportation equity and facilitates poverty.
- Residents are boxed into Food Deserts and forced to develop unhealthy eating habits.



Research Questions



- How is the social equity of residents living in the low-income neighborhoods of Savannah, GA affected by urban transportation planning?
- How do communities/neighborhoods shape health practices and determine the overall social equity of the community/neighborhood?
- How is social equity of the poor determined by their access to good public transportation?



Literature Review



- *The politics of Transportation Policies*

Studies assessing equity in urban transportation plans conducted by (Mark & Brian, 1999), (Kirstin & Thill, 2011), and (Manaugh, Badami, & El-Geneidy, 2015) all showed how urban transport policies are biased towards certain neighborhoods and why equity is necessary for transportation planning. For this reason, transportation policies are characterized by a wide range of incommensurable impacts. They highlight how the service level of public transits varies based on the sociodemographic characteristics of the neighborhoods that they administer these services to.

- *Going the distance without reliable and affordable public transportation*

The lack of affordable and reliable public transportation in low-income neighborhoods can cause the poor to become stranded and stuck in poverty as showed in scholarly articles produced by (Blumenberg & Agrawal, 2015), and (Hamrick & Hopkins, 2012). Low-income individuals have limited access to opportunities that may lift them out of poverty, and also to nutritious food, which results in poor diets which may lead to obesity and diet-related diseases



Data Description



- There are six (6) low income neighborhoods across which the data was retrieved. A total of 424 residence surveyed .
 - Kayton/Frazier Homes
 - Hitch Village/Fred Wessels
 - MLK Neighborhoods
 - Yamacraw Village
 - West Savannah Neighborhoods
 - Blackshear Homes.



TABLE SHOWING THE DIFFERENT CATEGORIES OF DATA COLLECTED



Categories	Survey Year	Total Number of Respondents
First year Respondents	Year 1 (2012)	311
First Time Respondents From Second Year	Year 2 (2013)	37
First Time respondents Who answered second Year Survey	Year (2013)	21
Second time Respondents	Year (2013)	55



Data Analysis

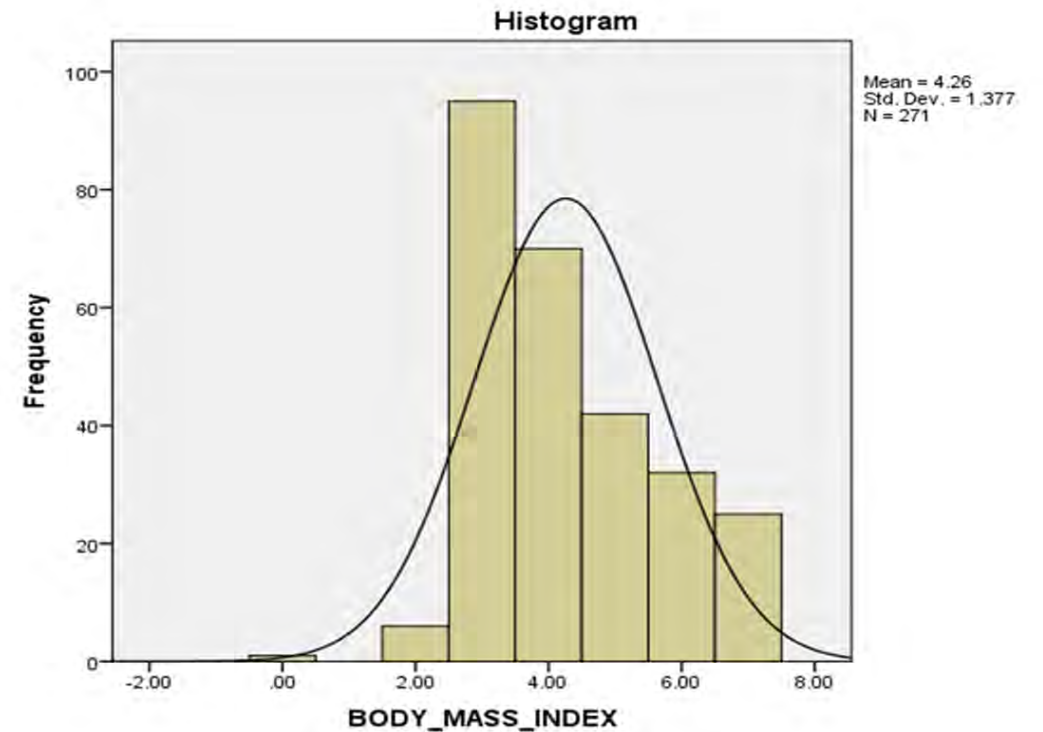


Table Showing Descriptive Statistics Of Body Mass Index For First Year Respondents (2012)

Histogram Showing Normal Curve Of BMI For First Year Respondents (2012)

BODY_MASS_INDEX

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Very Severely Underweight	1	.3	.4	.4
	Underweight	6	1.9	2.2	2.6
	Normal	95	30.5	35.1	37.6
	Overweight	70	22.5	25.8	63.5
	Obese Class I	42	13.5	15.5	79.0
	Obese Class II	32	10.3	11.8	90.8
	Obese Class III	25	8.0	9.2	100.0
	Total		271	87.1	100.0
Missing	System	40	12.9		
Total		311	100.0		





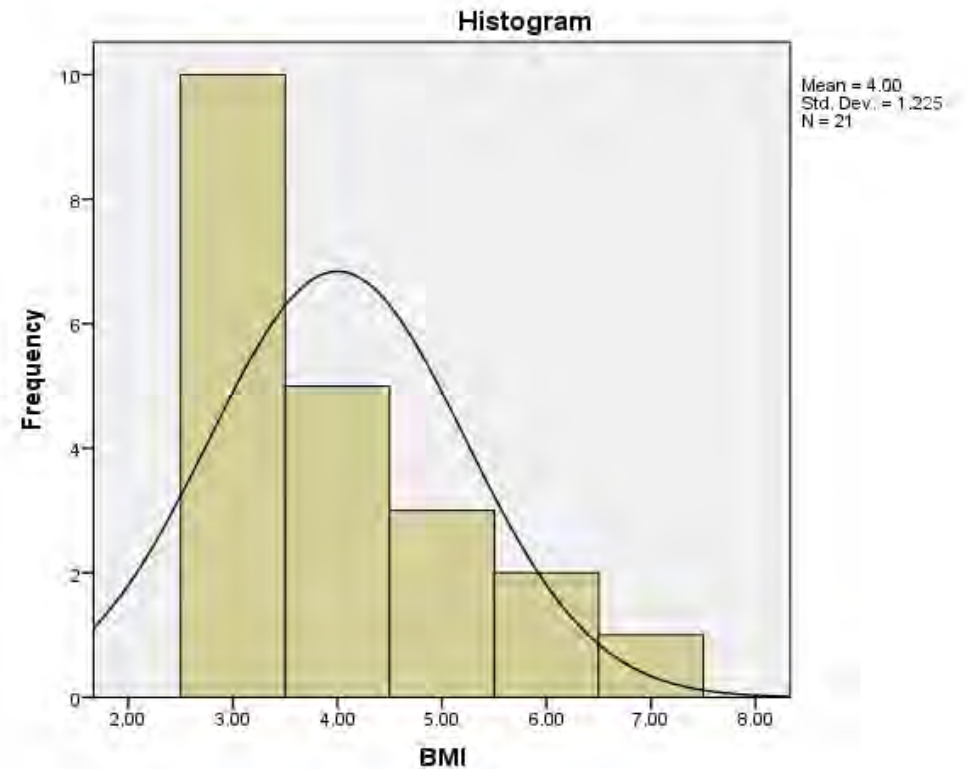
Data Analysis



Table Showing Descriptive Statistics Of Body Mass Index For First Time Respondents In (2013)

		BMI			
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Normal	10	47.6	47.6	47.6
	Overweight	5	23.8	23.8	71.4
	Obese Class I	3	14.3	14.3	85.7
	Obese Class II	2	9.5	9.5	95.2
	Obese Class III	1	4.8	4.8	100.0
	Total	21	100.0	100.0	

Histogram Showing Normal Curve Of BMI For First Time Respondents (2013)

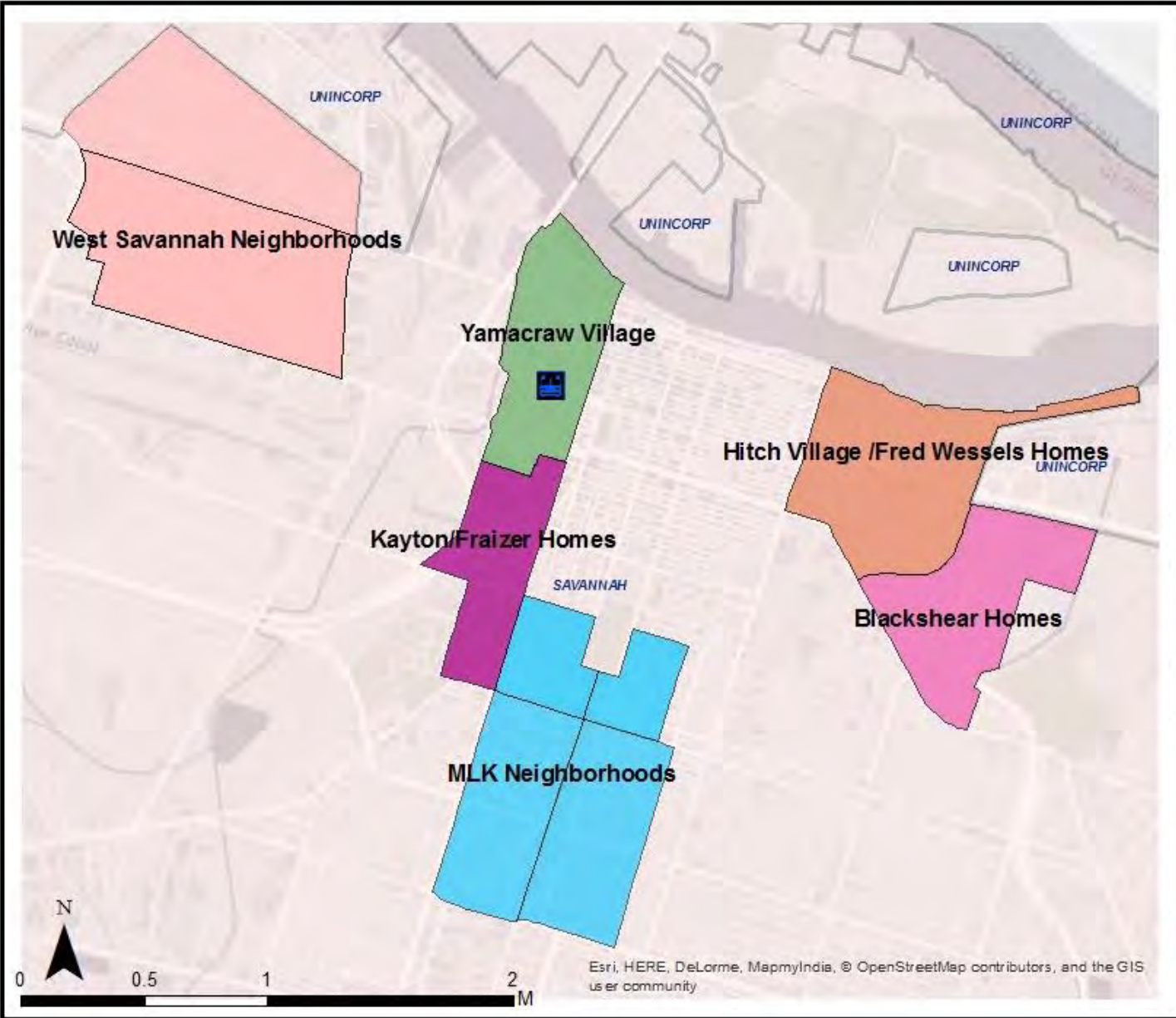




Using GIS To Tell Our Story

1. What is the average distance travelled by residents in low-income neighborhoods to the closest bus stop?
2. What is the average distance travelled by residents in low-income neighborhoods to the furthest bus stop.
3. How many bus routes are made available throughout low-income neighborhoods in Savannah, GA and What is the total number of Bus stops In and around low-income neighborhoods?
4. Do most low income residents travel more that a half mile radius to the closest bus stop from their home?

Geographic location of the low-income neighborhoods surveyed



SERIOUSLY IMPRESSIVE



Legend

- Multimodal Center
- Municipal Boundaries

Savannah Neighborhoods

Low-Income Neighborhoods

- Hudson Hill/Bayview
- Yamacraw Village
- Hitch Village/ Fred Wessels Homes
- Kayton/Frazier Homes
- Blackshear Homes
- East Victorian
- Metropolitan
- Thomas Square
- West Victorian District
- West Savannah Neighborhoods

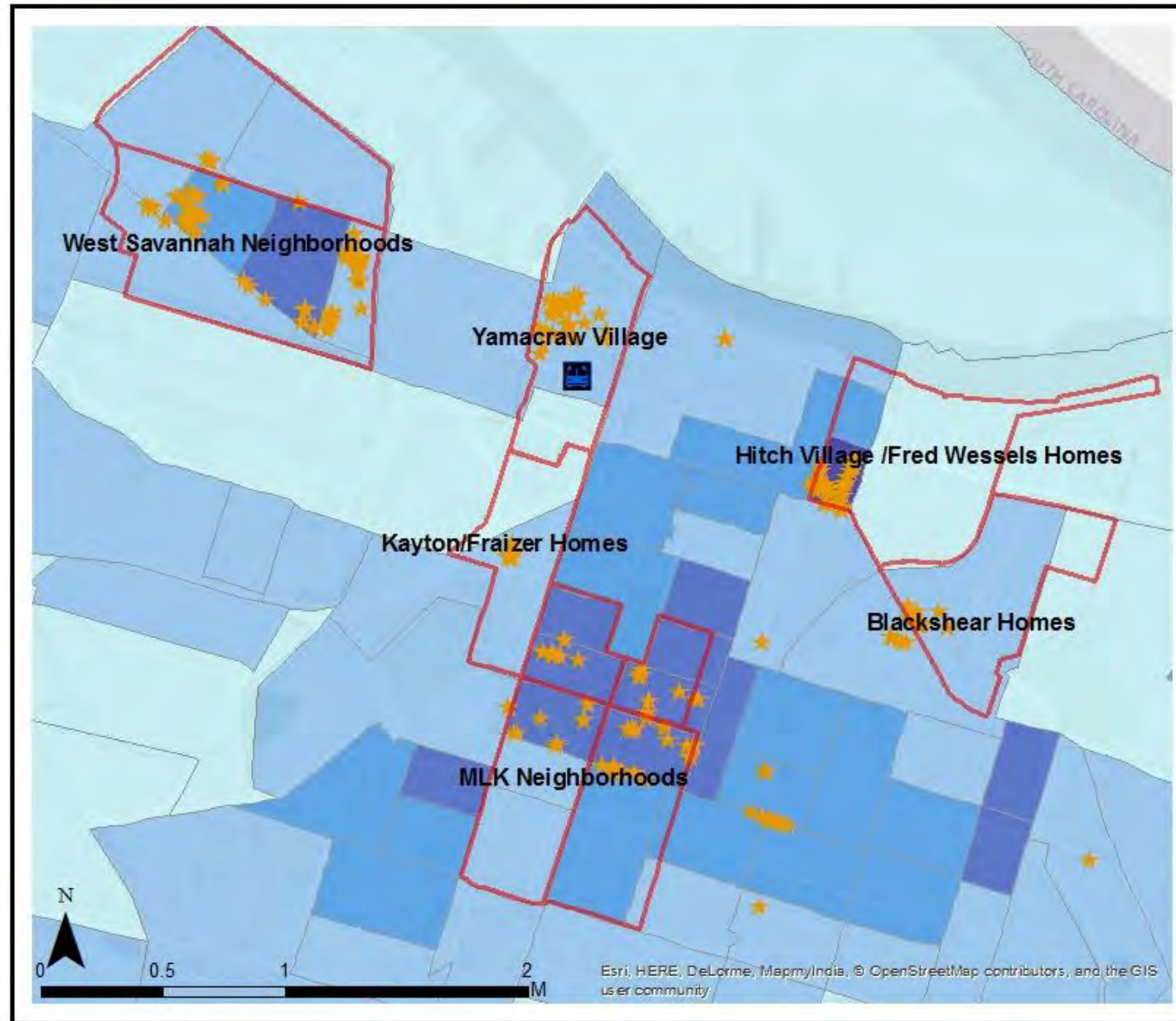
Study Area Map

Transportation and Social Equity: The case of Low Income Neighborhoods in Savannah, GA

Sources: SAGIS, RS&H

Creation Date: 8/02/17

Concentration of poverty within the six(6) low-income neighborhoods surveyed.



SERIOUSLY IMPRESSIVE



Legend

- Multimodal Center
 - Savannah Neighborhoods
 - Low Income Residents
- POVERTY / ACRES**
- No Persons
 - 1 - 3 persons
 - 4 - 6 persons
 - 7 - 10 persons
 - 11 - 26 persons

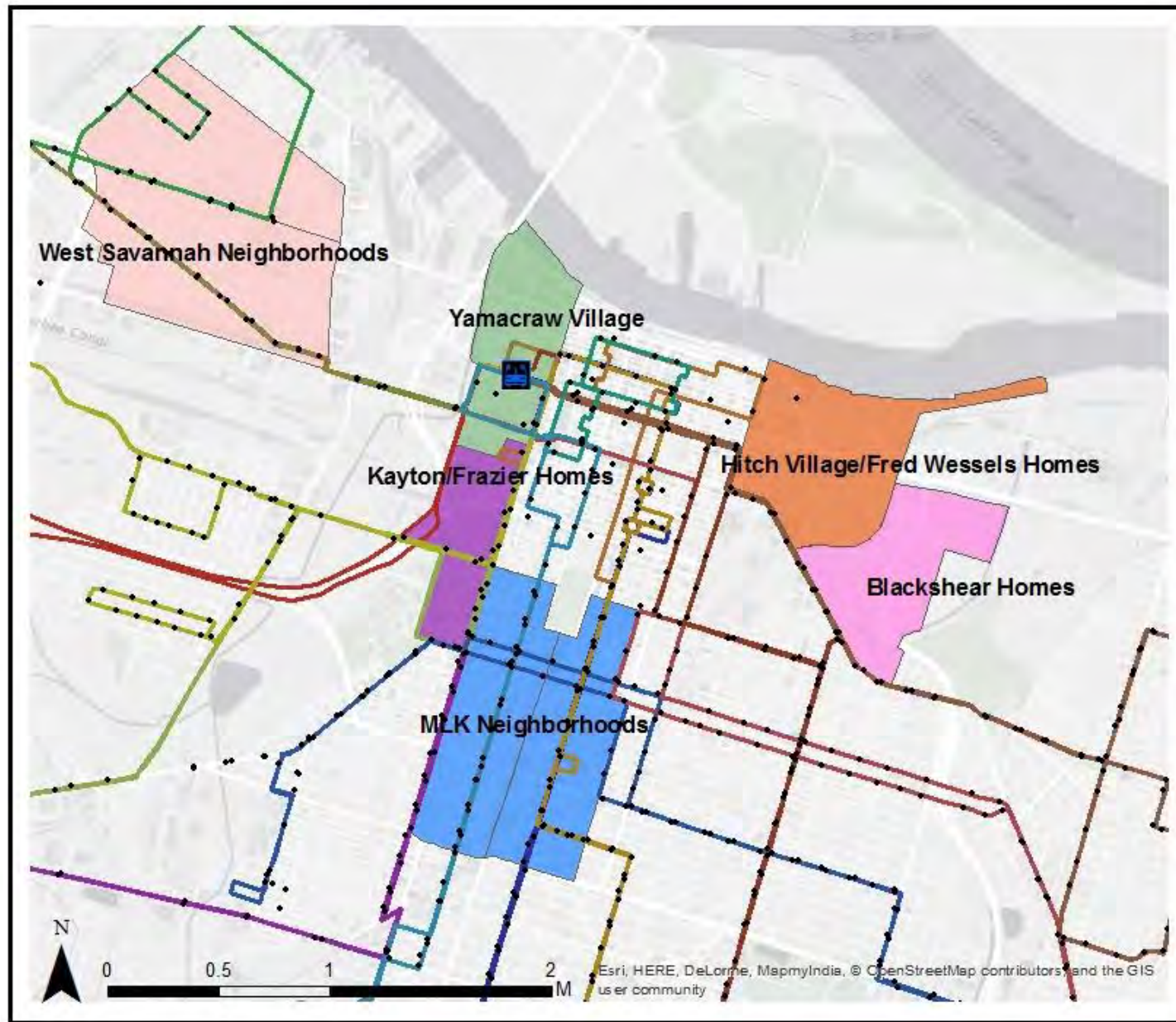
Poverty Concentration within Study Area

Transportation and Social Equity: The case of Low Income Neighborhoods in Savannah, GA

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Bus stops and bus routes available to low-income residents.

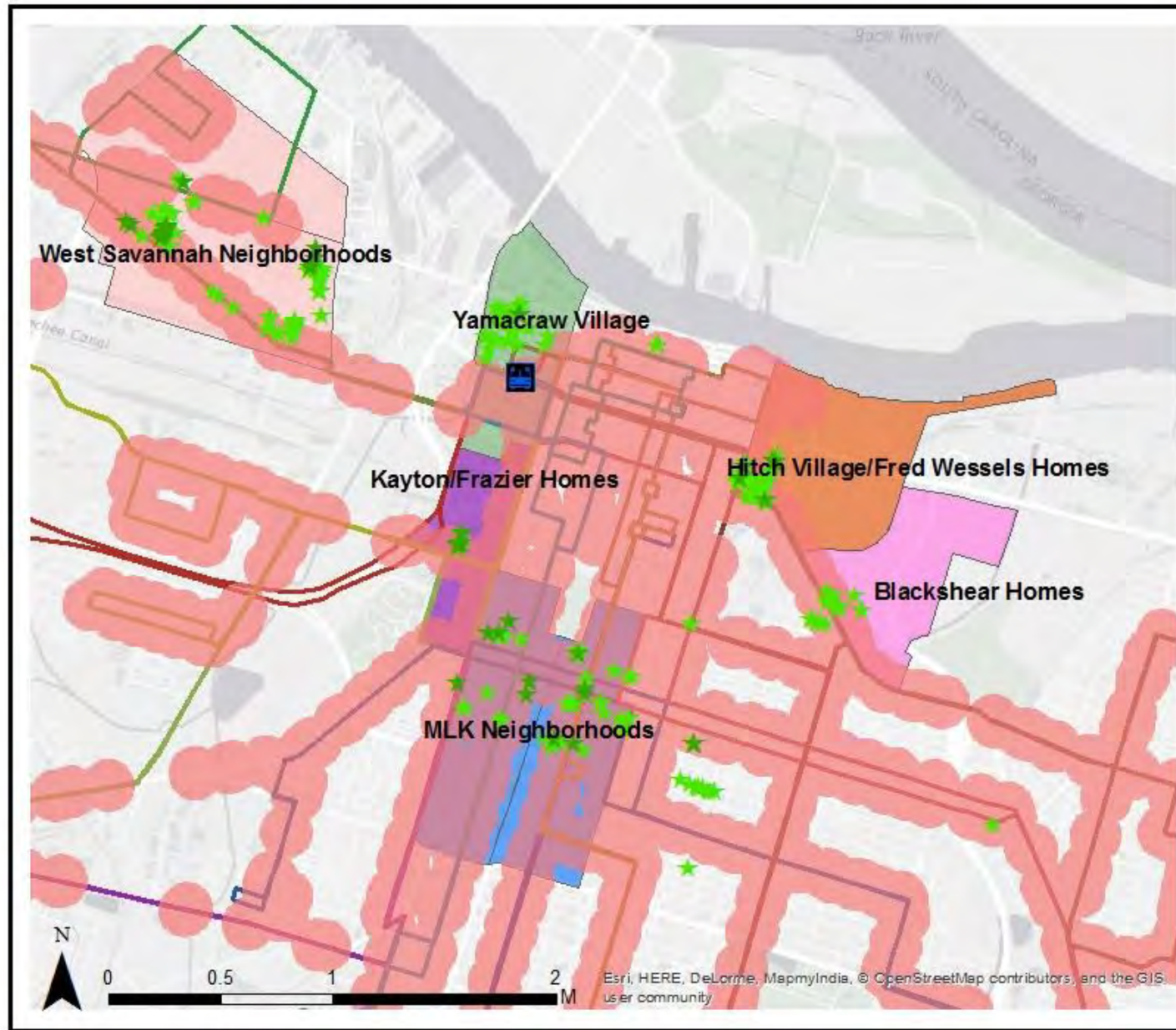


- Legend**
-  Multimodal Center
 -  Bus Stops
- Bus Routes**
-  Garden City_Augusta_Ave
 -  Abercorn
 -  Airport Express
 -  Barnard
 -  Candler
 -  Cross Town
 -  East Savannah
 -  Henry
 -  Liberty Shuttle
 -  MLK Jr Blvd - Westlake Apts
 -  Silk Hope
 -  Skidaway Island - Coffee Bluff
 -  Skidaway-Sandfy
 -  Tiger Shuttle
 -  University Express
 -  W. Gwinnett - Cloverdale
 -  Waters
 -  West Chatham
 -  dot Express Shuttle

Public Tranist Coverage Within Low-Income Neighborhoods
 Transportaion and Social Equity: The case of Low Income Neighborhoods in Savannah, GA

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Quarter of a mile buffer showing coverage of public transit in Savannah, Chatham County

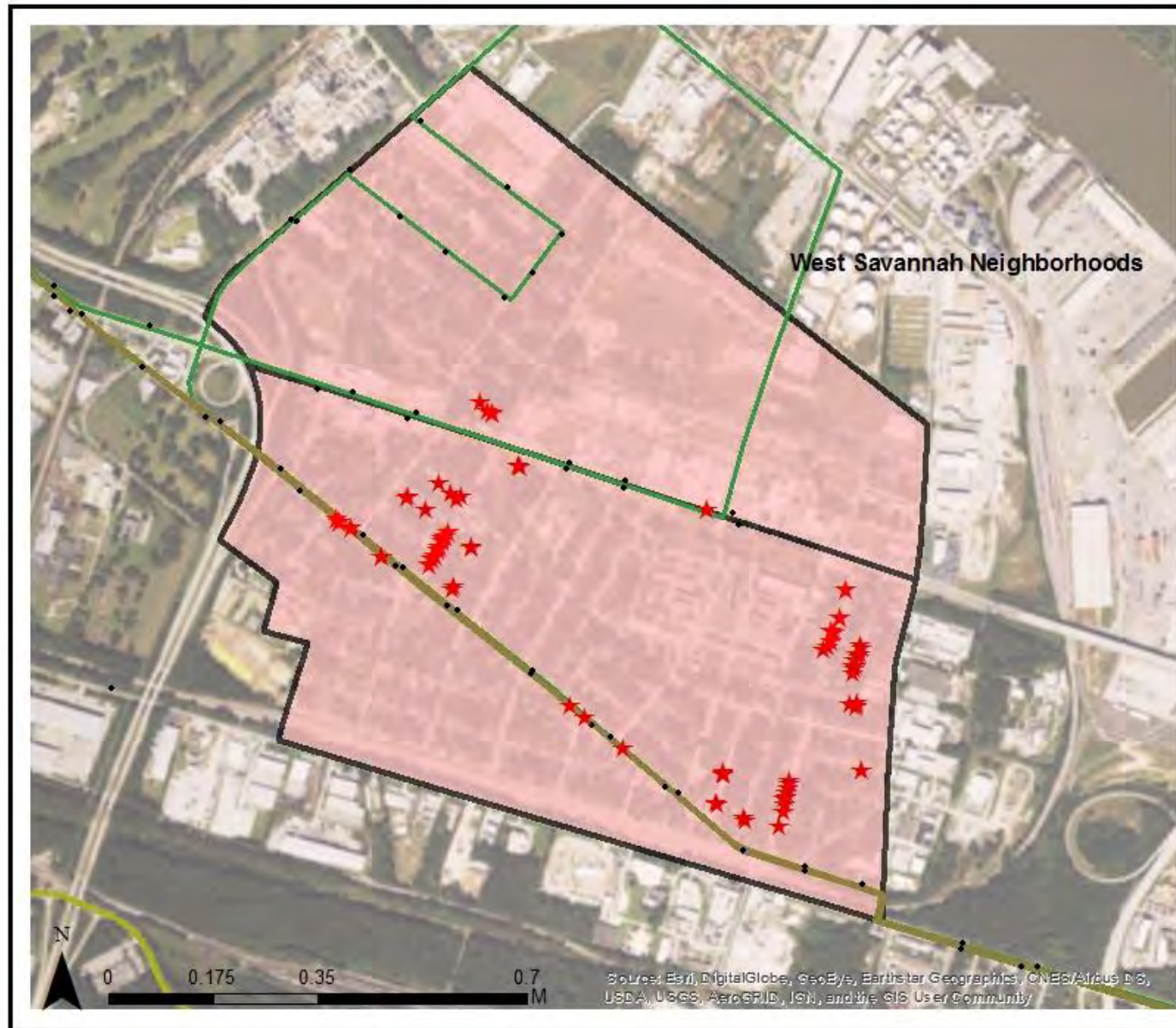


- Legend**
- Multimodal Center
 - Low Income Residents
 - Quarter Mile Bus Stop Coverage
- Bus Routes**
- Garden City_Augusta_Ave
 - Abercorn
 - Airport Express
 - Barnard
 - Candler
 - Cross Town
 - East Savannah
 - Henry
 - Liberty Shuttle
 - MLK Jr Blvd - Westlake Apts
 - Silk Hope
 - Skidaway Island - Coffee Bluff
 - Skidaway-Sandfly
 - Tiger Shuttle
 - University Express
 - W. Gwinnett - Cloverdale
 - Waters
 - West Chatham
 - dot Express Shuttle

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The average distance travelled from low income residents' home to the closet bus stop.



- Legend**
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 -  Candler
 -  Cross Town
 -  East Savannah
 -  Henry
 -  Liberty Shuttle
 -  MLK Jr Blvd - Westlake Apts
 -  Silk Hope
 -  Skidaway Island - Coffee Bluff
 -  Skidaway-Sandfly
 -  Tiger Shuttle
 -  University Express
 -  W. Gwinnett - Cloverdale
 -  Waters
 -  West Chatham
 -  dot Express Shuttle

Distance to the Nearest Bus Stop- West Savannah Neighborhoods

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Legend

- Multimodal Center
- Low Income Residents
- Bus Stops

Bus Routes

- Garden City_Augusta_Ave
- Abercorn
- Airport Express
- Barnard
- Candler
- Cross Town
- East Savannah
- Henry
- Liberty Shuttle
- MLK Jr Blvd - Westlake Apts
- Silk Hope
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- University Express
- W. Gwinnett - Cloverdale
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- dot Express Shuttle

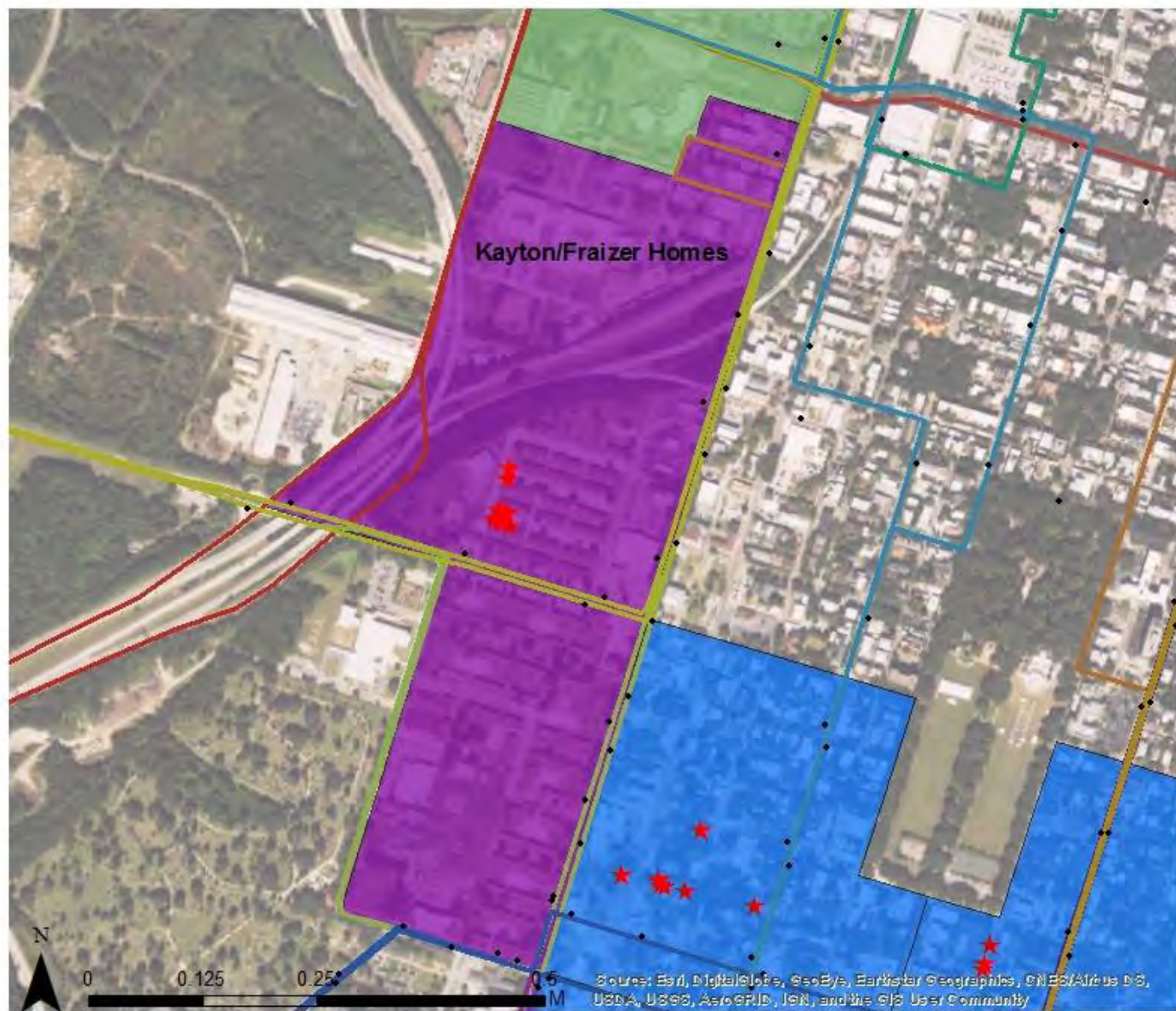


Distance to the Nearest Bus Stop-Yamacraw Village

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Creation Date: 8/02/17



Legend

- Multimodal Center
- Low Income Residents
- Bus Stops

Bus Routes

- Garden City_Augusta_Ave
- Abercorn
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- MLK Jr Blvd - Westlake Apts
- Silk Hope
- Skidaway Island - Coffee Bluff
- Skidaway-Sandfly
- Tiger Shuttle
- University Express
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- Waters
- West Chatham
- dot Express Shuttle




Distance to the Nearest Bus Stop-Kayton/Frazier Homes

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Sources: SAGIS, RS&H

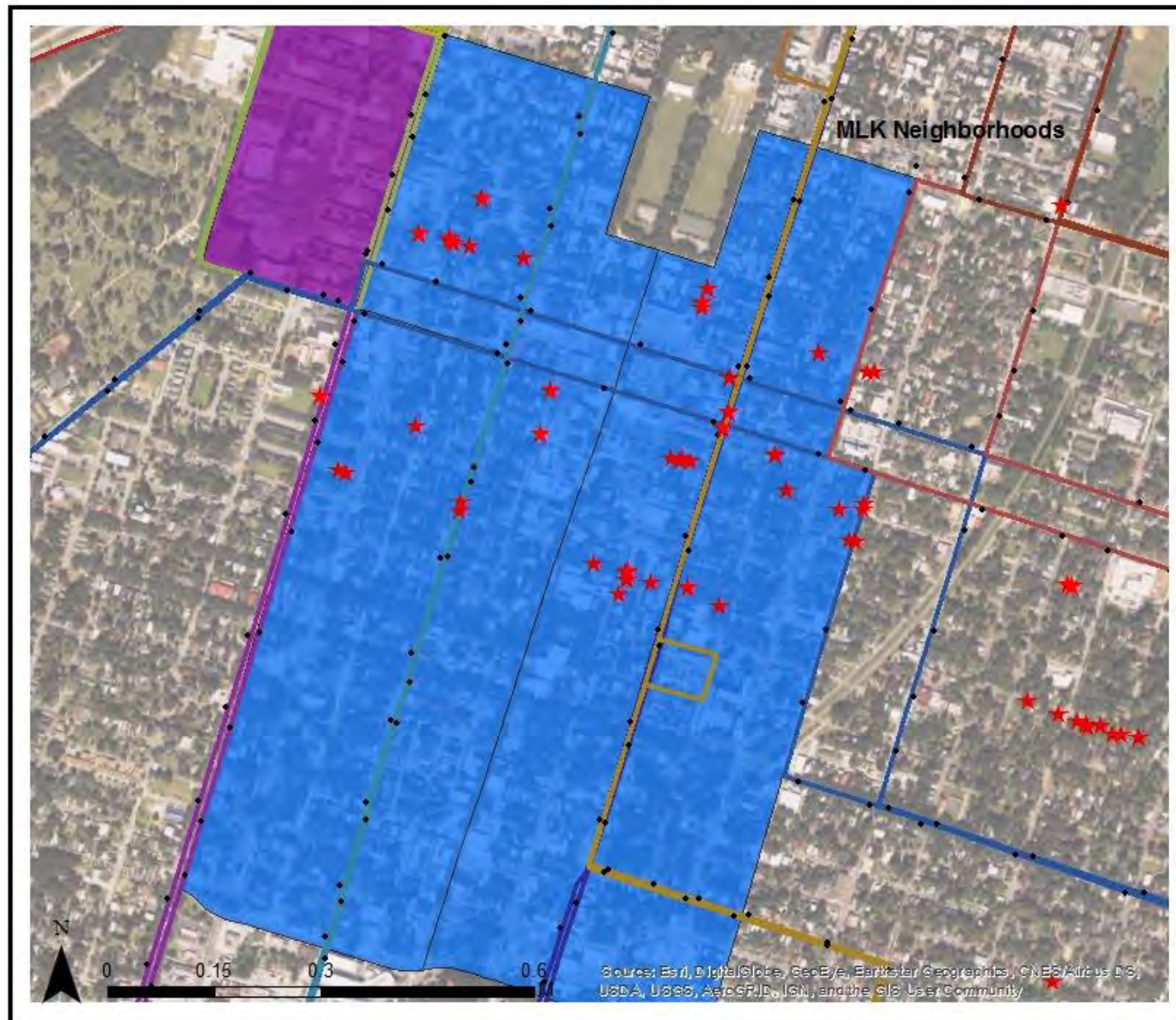
Creation Date: 8/02/17

Legend

-  Multimodal Center
-  Low Income Residents
-  Bus Stops

Bus Routes

-  Garden City_Augusta_Ave
-  Abercorn
-  Airport Express
-  Barnard
-  Candler
-  Cross Town
-  East Savannah
-  Henry
-  Liberty Shuttle
-  MLK Jr Blvd - Westlake Apts
-  Silk Hope
-  Skidaway Island - Coffee Bluff
-  Skidaway-Sandfly
-  Tiger Shuttle
-  University Express
-  W. Gwinnett - Cloverdale
-  Waters
-  West Chatham
-  dot Express Shuttle

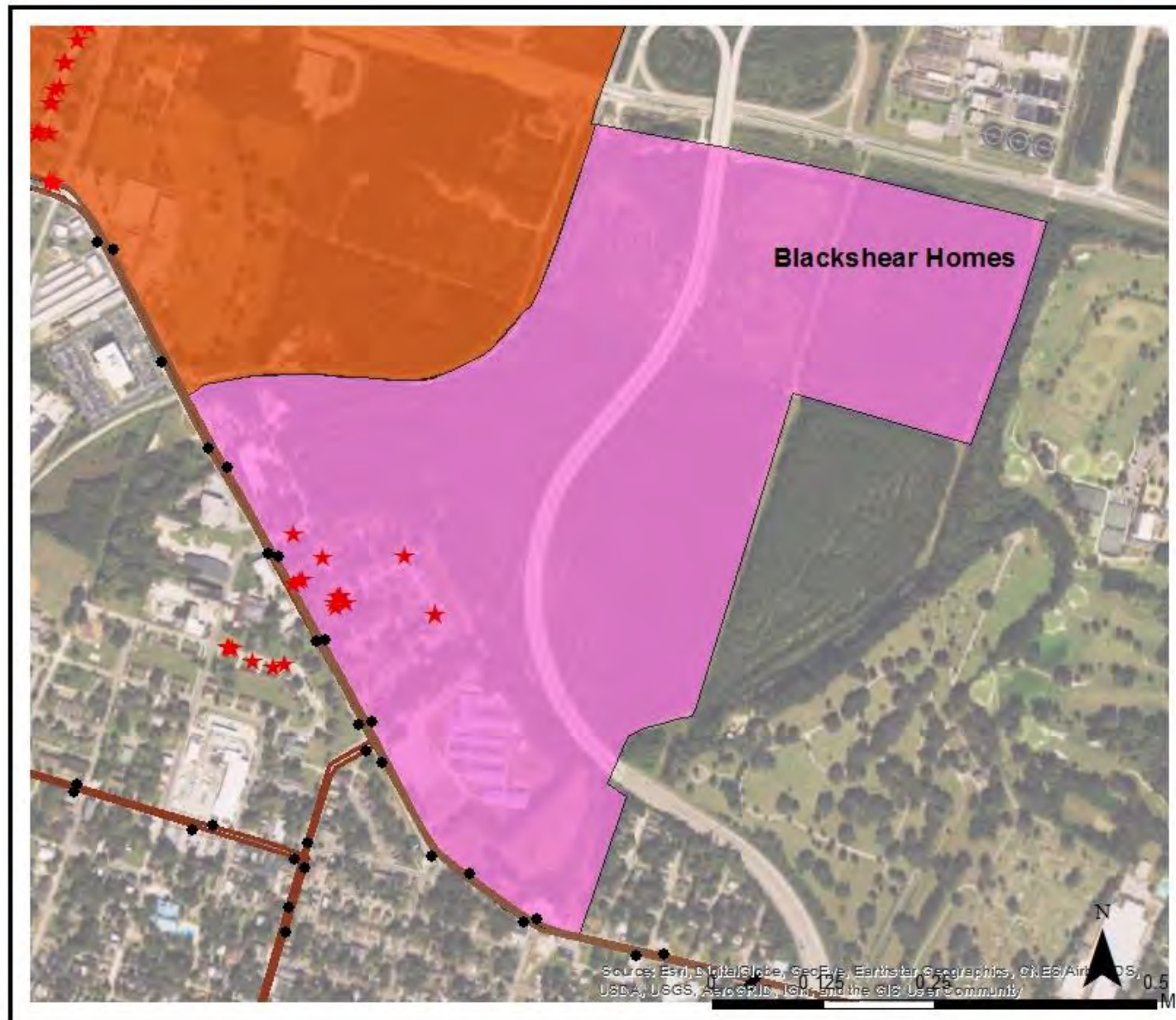


Distance to the Nearest Bus Stop-MLK Neighborhoods

Transportation and Social Equity: The case of Low Income Neighborhoods in Savannah, GA

Sources: SAGIS, RS&H

Creation Date: 8/02/17



Legend

- Multimodal Center
- Low Income Residents
- Bus Stops

Bus Routes

- Garden City_Augusta_Ave
- Abercorn
- Airport Express
- Barnard
- Candler
- Cross Town
- East Savannah
- Henry
- Liberty Shuttle
- MLK Jr Blvd - Westlake Apts
- Silk Hope
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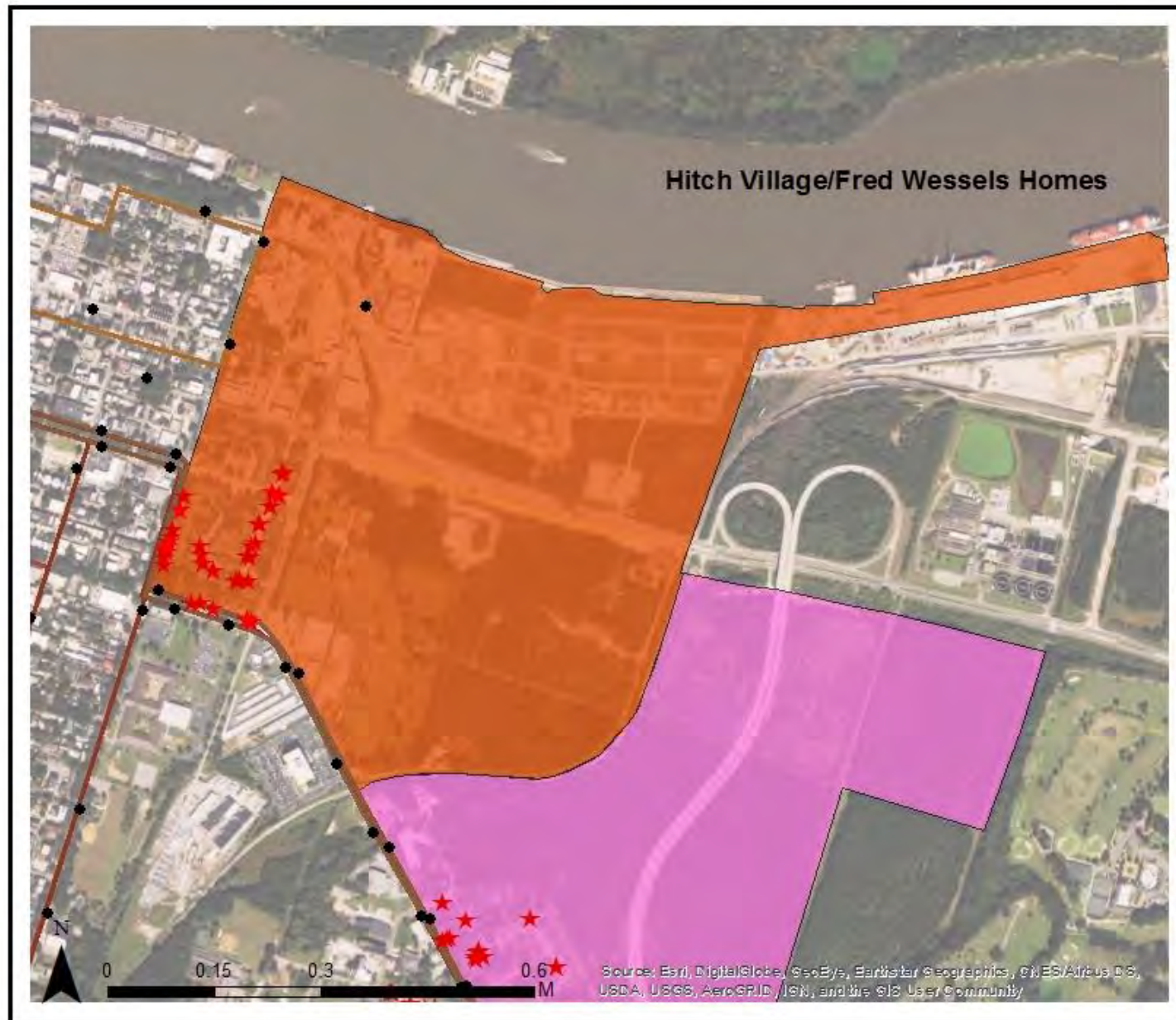
Sources: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community

Distance to the Nearest Bus Stop-Blackshear Homes

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Sources: SAGIS, RS&H

Creation Date: 8/02/17



Legend

- Multimodal Center
 - Low Income Residents
 - Bus Stops
- Bus Routes**
- Garden City_Augusta_Ave
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 - Airport Express
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 - Skidaway-Sandify
 - Tiger Shuttle
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 - West Chatham
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Distance to the Nearest Bus Stop-Hitch Village /Fred Wessels Homes
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Visualization by GIS

- The Chatham Area Transit has **1526** bus stops along the bus route coverage shown in map 3.
- 59 of which are located in and the around the low-income neighborhoods of Savannah mentioned earlier.
- That is 3.85% availability to resident living in these Low-Income neighborhoods.

Visualization by GIS

- There are over 23 routes operating daily throughout Chatham County, however, only 7 routes are easily accessible from these low-income neighborhoods.
- To answer the final research question most of the low income residents do travel more than a half mile radius in order to access the closest bus stop.
- Shortest commute to a bus stop 0.012miles
- Longest commute to a bus stop 1.15miles

Table Showing Near Spatial Calculation Results The Average Distance Travelled By Low Income Residents In Each Neighborhood

Low-Income Neighborhoods in Savannah, GA	Closest Distance travelled by a resident (linear units)	Closest distances travelled by a resident (Miles)	Furthest distances travelled by a resident (Linear units)	Furthest Distance travelled by resident (Miles)
Yamacraw Village	63.9400	0.01211	3182.79984	0.602803
Kayton/Frazier Homes	1009.6944	0.19123	4366.559999	0.826999
MLK	80.8896	0.01532	8010.9744	1.51723
Hitch Village/Fred Wessels	252.8592	0.04789	3364.4688	0.63721
West Savannah	1893.5664	0.35863	3297.6768	0.62456
Black Shear Homes	1352.3136	0.25612	2072.4528	0.39251

Indication of Findings

- The findings show that both bus routes and bus stops need to be expanded in and around the low-income neighborhoods of Savannah, GA.
- The need for self sufficiency
- If poor people acquire access to reliable and affordable public transportation that is in close proximity to their homes, social equity wouldn't be characterized as an incommensurable case and the need to maintain social equity of the haves may no longer need to come at the expense of the have-nots.

The Next Step

- In the process of conducting a spatial analysis of bus stop conditions within Savannah, GA.
- Variables (Canopy, Sidewalks, Bus stop furniture, signs)- 15 of 23 routes completed
- Frequency
- Weekend routes

Aims

- Share data with CAT, SAGIS, and HUD

References

- Blumenberg, E., & Agrawal, A. W. (2015). Getting Around When You're Just Getting By: Transportation Survival Strategies of the Poor. *Journal of Poverty*, 355-378.
- Hamrick, K. S., & Hopkins, D. (2012). The time cost of access to food – Distance to the grocery store as measured in minutes. *Electronic International Journal of Time Use Research*, 28-58.
- Kirstin, W., & Thill, J.-C. (2011). DO TRANSIT-DEPENDENT NEIGHBORHOODS RECEIVE INFERIOR BUS ACCESS? A NEIGHBORHOOD ANALYSIS IN FOUR U.S. CITIES . *Journal of Urban Affairs* , 43-63.
- Manaugh, K., Badami, M. G., & El-Geneidy, A. M. (2015). Integrating social equity into urban transportation planning-A critical Evaluation of Equity objectives and measures in transportation plans in North America. *Transport Policy*, 167-176.
- Mark, G., & Brian, T. (1999). Reconsidering Social Equity in Public Transit. *Berkeley Planning Journal*, 13(1), 6-27.

References

- Bollens, S. A. (1997). Concentrated Poverty and Metropolitan Equity Strategies. Board of Trustees of the Leland Sandford Junior University Stanford Law and Policy Review.
- Chaufana, C. D. (2012). It's a full time job being poor': understanding barriers to diabetes prevention in immigrant communities in the USA. Routledge, 147-158.
- Criden, M. (2008). The Stranded Poor: Recognizing the Importance of Public Transportation for Low-Income Households. Washington.
- Fitchen, J. M. (1995). Spatial Redistribution of Poverty through Migration of Poor People to Depress Rural Communities. Rural Sociology, pp. 181-201.
- Garrett, M. T. (1999). Reconsidering Social Equity in Public Transit. Berkeley Planning Journal, 13(1), 6-27.
- Litman, T. (2016). Evaluating Transportation Equity. 50-65.
- Manaugh, B. E.-G. (2014). Integrating Social Equity into Urban Transportation Planning.

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Questions?

“Where there is injustice for one, there is injustice for all.”
~*MLK*