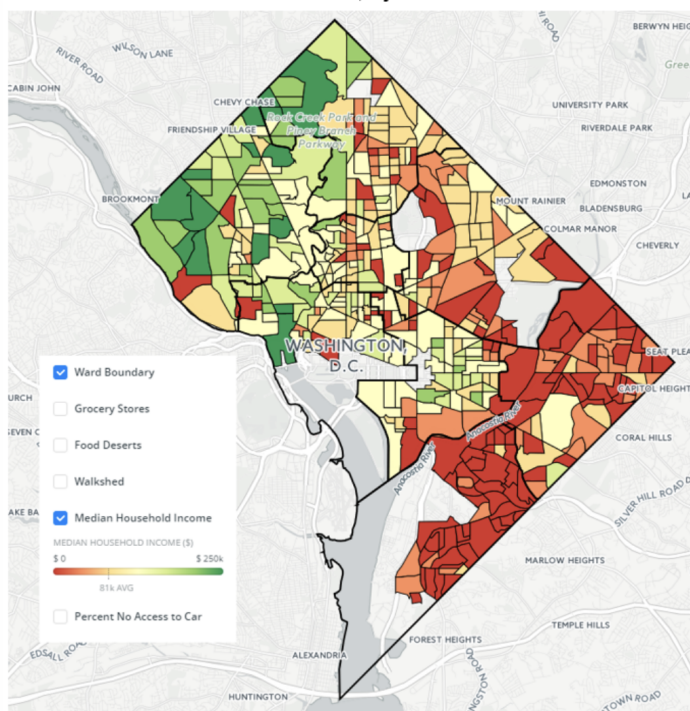


Abstract

According to the CDC, food deserts are “areas characterized by poor access to healthy and affordable food, which may contribute to social and spatial disparities in diet and a diet-related health outcome” (CDC, 2009). In the case of D.C., there is a correlation with the location of grocery stores, age, and income. It is evident from the Multi-Criteria Evaluation of

the map that places in the Eastern section of D.C. are lacking access to affordable food. East of the Anacostia is known for high density of minority groups, lower incomes,

Median household income in D.C., by Census tract



Source: ACS 2015 estimates; D.C. Policy Center

Intro

Food deserts refer to geographic areas where people have limited access to healthy food, a problem that affects millions of Americans every year (Smith, 2021). This multilayered issue is promptly seen across D.C. It involves the spatial distribution of grocery stores in combination with household income,

family size, access to public transportation, and age (Smith, 2021), as well as institutional racial land-use practices (Yu, 2021). Food deserts are concentrated in the areas of D.C. with lower household incomes, bigger families, lack of transportation, and where there is a higher density of

minority groups. Finding by GIS specialist, Randy Smith, discovered that “food deserts make up about 11 percent percent of D.C.’s total area (6.5 square miles), and are concentrated in the neighborhoods of Anacostia, Barry Farms, Mayfair, and Ivy City” (Smith, 2021). Going further, 82% of these food deserts are located in Ward 7 and 8 (Smith, 2021).

The spatial race divide in D.C. remains prominent and is highly related to the locations of food deserts. D.C., known as ‘Chocolate City’, was once a majority-black lived city (Dee, 2021). In the early 2000s, gentrification started making its way through D.C. The city went from having a 70% black population in 1970, to 46% in 2019 (Dee, 2021). Wards seven and eight, referred to as East of the river, have historically been lived by black residents, which remains true. Yet the density has grown larger because they are being pushed out from the Eastern parts of D.C. Median household incomes in Ward 7 and 8 are just above or below the federal poverty line which is at \$45,469 (Smith, 2021). D.C. has 49 grocery stores and only two of them are located in Wards 7 and 8 (N.A, 2021). With a lack of median household income, there is an apparent lack of car ownership (Smith, 2021), and with grocery stores not being near how are the people in wards seven and eight supposed to get their groceries? With low median income, lack of transportation, and lack of grocery stores, wards 7 and 8 are subject to having food deserts.

Methods

When starting this assignment, I wondered how influential are factors like proximity to grocery stores, and median household income is when analyzing food deserts. The methods for doing so were based on my research, as well as lots of work in ArcGISPro. In ArcGISPro I downloaded data from the Census bureau, open data, and class data. After processing all of it I made two multi-criteria evaluations. The first looked at age, median household income, and proximity to grocery stores. These were all scaled to give each a certain importance, the outcome produced numbers representing what the MCE asked. The second did the same though included average household size which changed the weights of each criterion and gave a slightly different view to the map.

Results

With my research into food deserts in D.C., the results made complete sense. The majority of food deserts were located within wards 7 and 8, where there are larger populations of minority groups. The results of the Multi-Criteria Evaluation range from 0-1. The higher the number indicates the presence of food deserts. If you look towards the Western section of D.C the MCE is closer to 0 and the colors are lighter, you can also visually see a higher density of grocery stores. What you can't see, but is scale into the MCE, is there is a higher median income, older ages, and shorter proximity to grocery stores. Overall, the finding confirmed what I researched in that lower-income neighborhoods, like those in wards 7 and 8, have a higher chance of being in a food desert.

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Food Deserts in Washington, D.C.

According to the CDC, food deserts are "areas characterized by poor access to healthy and affordable food, may contribute to social and spatial disparities in diet and diet-related health outcomes" (CDC, 2009). In the case of D.C. there is a correlation with the location of grocery stores, age, and income. It is evident from the Multi Criteria Evaluation of this map that places in the Eastern section of D.C. are lacking access to affordable food. East of the Anacostia is known for poorer standards of living with lower incomes and a high density of minority groups in comparison to Western D.C. This means that minority groups are the ones who are facing the greatest economic challenges. This map primarily represents food deserts within D.C. based on the weighted sum of income, age, and distance from grocery stores. High values represent the presence of food deserts with lower income and younger residents.

Symbology

 Grocery Stores

MCE

Age, Income, Distance to Grocery Stores

-0.085526 - 0.158137

-0.158138 - 0.203386

-0.203387 - 0.249479


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
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
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-0.404242 - 0.552074

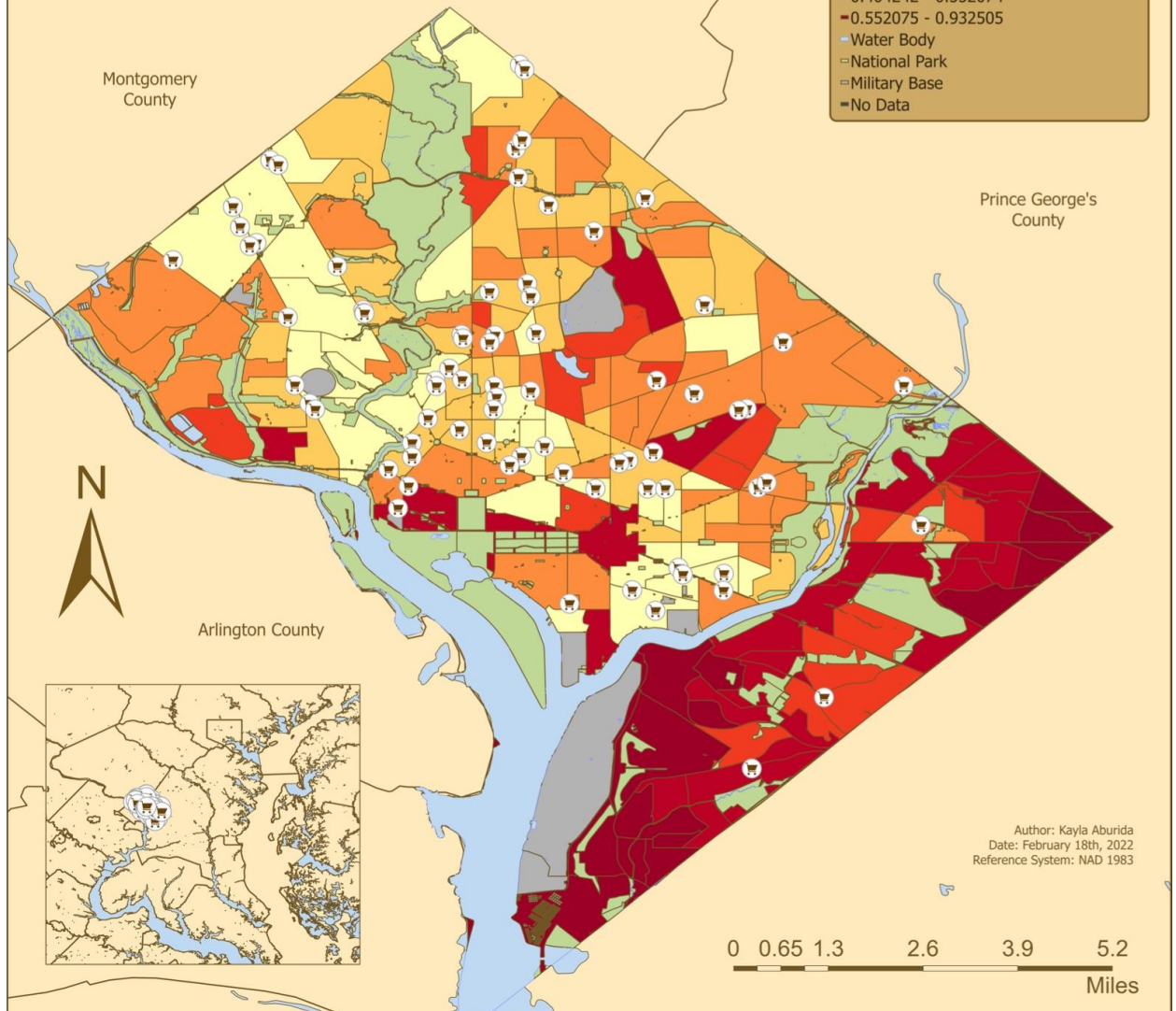
-0.552075 - 0.932505

 Water Body

 National Park

 Military Base

 No Data





Food Deserts in Washington, D.C.


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
This map primarily represents food deserts within D.C. based on the weighted sum of income, age, household size, and distance from grocery stores. High values represent the presence of food deserts with lower income, younger residents, and larger households.

Symbology

 Grocery Stores

 Water Body


 National Park


 Military Base


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
MCE


Family size, Income, Age with Proximity to Grocery Stores


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
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
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 0.367574 - 0.417901

 0.417902 - 0.472541

 0.472542 - 0.562191

 0.562192 - 0.650685

 0.650686 - 0.859045

