

Exposing Areas Vulnerable to Food Insecurity in Denver, Colorado

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Food insecurity is when a person does not have access to the foods they need to sustain a healthy level of nourishment. It can be caused by a lack of access to or a limited availability of nourishing foods. For example, an area that mainly provides grocery access through convenience stores may be able to supply a family with their basic grocery needs, but the quality and variety of those groceries is going to be much lesser than what would be available at an actual grocery store. The long term effects of food insecurity can cause serious health problems, such as an increased risk of experiencing obesity, type 2 diabetes, heart disease, and other chronic illnesses.¹ Examples of factors that could influence food security can include socioeconomic status, income level, race/ethnicity, transportation access, and employment status, among others. The purpose of this creative project was to investigate the overlap between food insecurity and race.

The concept of race is widely accepted to be a social construction, meaning it is not something that is naturally occurring or true. Its significance has been created by people and its context can depend on the political and social structures present at any given point in history. In the US, race continues to have a very real effect on a person's status as a "fundamental concept that has profoundly shaped, and continues to shape, the history, polity, economic structure, and culture of the United States".² This idea, that racism in the US is a form of systematic discrimination, is the basis for critical race theory (CRT).

The book *Critical Race Theory: An Introduction* by Richard Delgado and Jean Stefancic discusses various schools of thought when it comes to CRT. One school of thought, the realists or

¹ Healthy People 2030. 2020. "Food Insecurity." Health.gov. Office of Disease Prevention and Health Promotion. 2020. <https://odphp.health.gov/healthypeople/priority-areas/social-determinants-health/literature-summaries/food-insecurity>.

² Omi, Michael, and Howard Winant. (1986) 2014. *Racial Formation in the United States*. 3rd ed. New York, Ny: Routledge, 106.

economic determinists, see the hierarchy of race as something that dictates a person's access to the privileges of society and “determine who gets tangible benefits, including the best jobs, the best schools, and invitations to parties in people’s homes”.³ When applying this school of thought to food insecurity, an overlap between race and food access quickly emerges.

A person’s potential to be vulnerable to food insecurity has been shown to be strongly affected by their race. According to the U.S. Department of Health and Human Services, research into food security in 2020 revealed that “predominantly Black and Hispanic neighborhoods may have fewer full-service supermarkets than predominantly White and non-Hispanic neighborhoods” and that “Black and non-Hispanic households were over 2 times more likely to be food insecure than the national average”.⁴ Race has been shown to have a disproportionate impact on food access, and that is just considering one of the factors that affects food security. When considering other factors, such as class and access to public infrastructure, the risk of becoming vulnerable to food insecurity becomes much more imminent.

For my final creative project I designed a set of maps using ArcGIS Pro that explore the intersection of race, class, transportation access, and food insecurity in Denver, Colorado. The purpose of the maps is to expose the specific areas in Denver which are more vulnerable to food insecurity. The vulnerable areas were identified by comparing the geographic distribution of factors that influence food insecurity, such as race, low income qualification, and the distance traveled to reach a grocery store in Denver. The data used to create them was mainly sourced from the 2020 US Census, as well as the databases ReferenceUSA and the Living Atlas. The

³ Delgado, Richard, and Jean Stefancic. 2001. *Critical Race Theory: An Introduction*. New York: New York University Press, 17.

⁴Healthy People 2030, “Food Insecurity”.

intent of sourcing the majority of data from the 2020 US Census was to achieve a strong statistical representation of the population's demographics.

In the final map layout (attached at the end of this document), there are two main maps: the map at the top of the page shows the distribution of grocery stores in Denver and includes a buffer zone in yellow that shows the accessible distance to a grocery store. The definition of "accessible distance" is within a ten minute walk to a grocery store or a five minute walk to a transit stop (e.g. bus or train) that passes by a grocery store. The map at the bottom of the page connects the distribution of racial minorities per census tract, defined by using the census category of "percent some other race alone [besides white] or in combination with other races or ethnicities", and the distribution of low income qualification per census tract. The thing that stands out visually in this map is the strong correlation between the qualified low income census tracts and the higher percentage of racial minorities in those same tracts. This exposes how the city is strongly segregated according to income and race.

When the two maps are compared, the areas in Denver that are most vulnerable to food insecurity are revealed. These areas are outside of the accessible distance to a grocery store and overlap with the low income qualification/high percent of racial minorities census tracts. The specific neighborhoods are Northeast Park Hill, Gateway, Ruby Hill/South Platte/Overland, Hampden/Kennedy, Fort Logan, and Marston. In a greater sense, the map also reveals how food insecurity disproportionately affects people of color and people qualified as low income, especially when taking into account the strong overlap between these two groups in Denver.

The map has been submitted to a state-wide map competition being hosted by the Denver GIS Department. It is hoped that the City of Denver will be able to use this information to provide these groups with increased accessibility and availability of grocery stores.

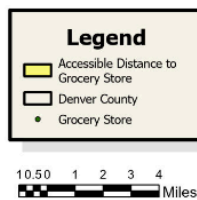
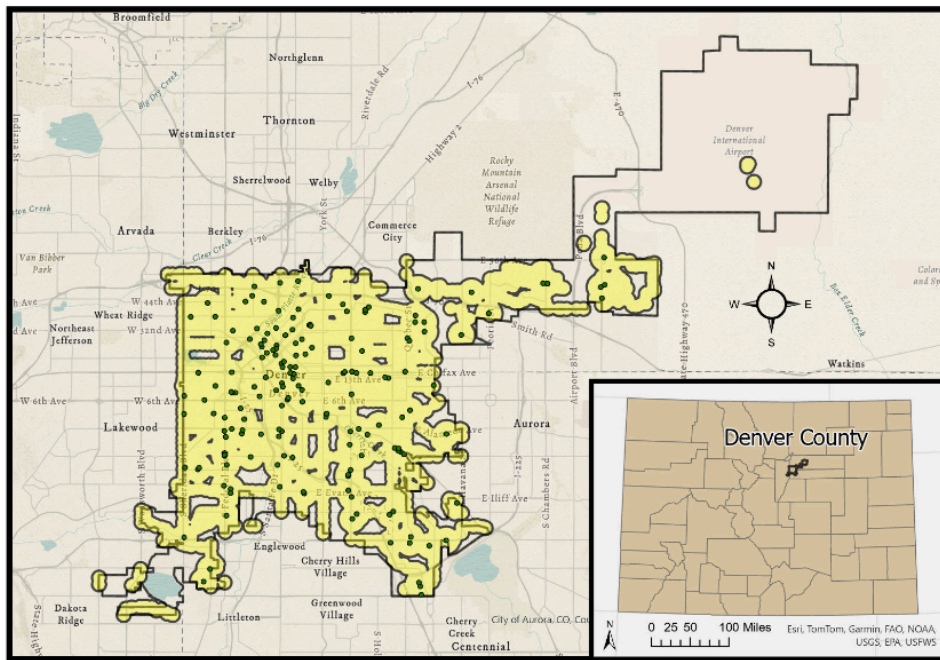
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Omi, Michael, and Howard Winant. (1986) 2014. *Racial Formation in the United States*. 3rd ed. New York, Ny: Routledge.

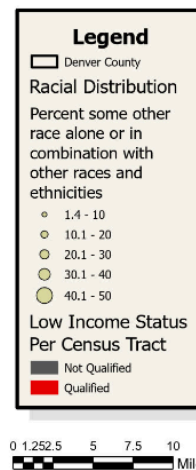
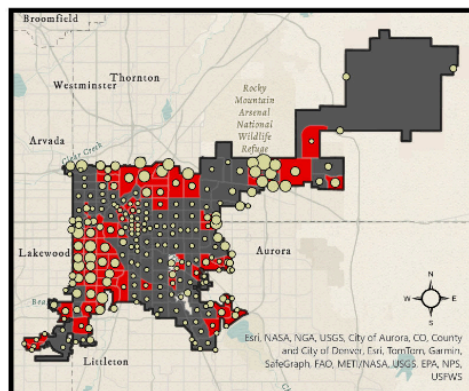
Areas Vulnerable to Food Insecurity Denver, CO - 2020



In the map above, the places outside of the accessible distance - highlighted in yellow - are areas in Denver at a higher risk of experiencing food insecurity. 'Accessible distance' is defined as within a 10 minute walk to a grocery store or a 5 minute walk to a transit stop that stops near a grocery store. When compared to the map below, the northeast and southwest segments of the county indicates an intersection between lack of food accessibility and high levels of both low income and high concentrations of racial minorities.

Racial minorities are more likely to be impacted by food insecurity, especially when living in a low income neighborhood with poor access to public transportations and grocery stores. It is the hope that this information will be used by the City of Denver increase the availability and access to healthy foods in these neighborhoods.

Spatial Reference:
Datum: NAD 1983 UTM Zone 13 N
Projection: Transverse Mercator
Central Meridian: -105.0000



Data was sourced from the 2020 US Census, the Living Atlas, ReferenceUSA, and the CDC's PLACES: Local Data for Better Health.

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