

University of Nebraska - Lincoln

DigitalCommons@University of Nebraska - Lincoln

---

Environmental Studies Undergraduate Student  
Theses

Environmental Studies Program

---

2021

## Distribution of Green Spaces in Omaha, Nebraska

Sofia Gavia

Follow this and additional works at: <https://digitalcommons.unl.edu/envstudtheses>



Part of the [Environmental Education Commons](#), [Natural Resources and Conservation Commons](#), and the [Sustainability Commons](#)

Disclaimer: The following thesis was produced in the Environmental Studies Program as a student senior capstone project.

---

This Article is brought to you for free and open access by the Environmental Studies Program at DigitalCommons@University of Nebraska - Lincoln. It has been accepted for inclusion in Environmental Studies Undergraduate Student Theses by an authorized administrator of DigitalCommons@University of Nebraska - Lincoln.

DISTRIBUTION OF GREEN SPACES IN OMAHA, NEBRASKA

An Undergraduate Thesis Proposal

By Sofia Gavia

Presented to

the Environmental Studies Program at the University of Nebraska-Lincoln

In Partial Fulfillment of Requirements

for the Degree of Bachelor of Science

Major: Environmental Studies

Minors: Community and Regional Planning & Spanish

Thesis Advisor: Dr. Zhenghong Tang

Thesis Reader: Professor Belinda Fowler

Lincoln, Nebraska

Date: April 2021

# DISTRIBUTION OF GREEN SPACES IN OMAHA, NEBRASKA

Sofia Gavia, B.S.

University of Nebraska-Lincoln, 2021

Advisors: Dr. Zhenghong Tang and Professor Belinda Fowler

## **Abstract:**

The distribution of parks often depends on the races, ethnicity, and socioeconomic class of a community's households. Parks and green spaces provides community residents recreational opportunities, economic benefits, and improves community public health. The unequal distribution of parks and green spaces in a city is a social issue found across the country. Limited research has been done on the relationship between green spaces and park access and social justice in Omaha, Nebraska. This study discusses whether there is a difference in how parks are distributed in Omaha, NE in terms of social justice and equitable distribution. Research is done using geospatial analysis, historical records review, and a case study of Omaha's peer city, Oklahoma City, Oklahoma. A history of redlining has left Omaha divided. Communities of color and low-income households live farther from larger community parks.

# Table of Contents

<b>INTRODUCTION .....</b>	<b>5</b>
PURPOSE OF THE STUDY .....	5
RESEARCH QUESTIONS .....	5
OVERVIEW OF THE STUDY .....	6
BACKGROUND INFORMATION .....	6
<i>Study Area</i> .....	7
<b>LITERATURE REVIEW .....</b>	<b>9</b>
THE RELATIONSHIP BETWEEN PARKS AND ENVIRONMENTAL JUSTICE .....	9
PARKS AS MITIGATION EFFORTS .....	10
THE FUTURE OF URBAN GROWTH .....	11
<b>METHODOLOGY .....</b>	<b>12</b>
BACKGROUND INFORMATION .....	12
<i>GIS Analysis</i> .....	12
<i>Historical Records Review</i> .....	13
<i>Case Study</i> .....	14
APPLICATION OF METHODS .....	14
<i>GIS Analysis</i> .....	14
<i>Historical Records Review</i> .....	15
<i>Case Study</i> .....	15
<b>RESULTS .....</b>	<b>16</b>
GIS: MAPPING OMAHA’S PARKS .....	16
HISTORICAL RECORDS OF OMAHA, NEBRASKA .....	21
<i>A History of Redlining</i> .....	21
A LOOK AT OKLAHOMA CITY, OKLAHOMA .....	23

**DISCUSSION.....24**

**CONCLUSION .....27**

FUTURE RECOMMENDATIONS.....29

**REFERENCES .....30**

**Table of Figures and Tables**

**Figure 1:** Distribution of ZIP Codes within Douglas County into different regions of Omaha. West Omaha is represented by blue dots, North Omaha is represented by green dots, South Omaha is represented by red dots, and East Omaha is represented by a yellow dot. Purple X’s represent ZIP Codes that were omitted (they represent other regions). Adapted and modified from Witte (2019).  
..... 8

**Figure 2:** Omaha Park Distribution Map. This map contains only one layer with the location of parks in Omaha. .... 18

**Figure 3:** Omaha Park Distribution Map. This map includes two layers. One layer shows the location of parks in Omaha and the second layer shows Census Tracts highlighting the predominant race and ethnicity in the population..... 19

**Figure 4:** Omaha Park Distribution Map. This map includes two layers. The first layer shows the location of parks in Omaha and the second layers shows the median household income of an area in the past 12 months. .... 20

**Figure 5:** Home Owner’s Loan Corporation (HOLC) Residential Security Map for the city of Omaha in 1935. Also known as a “Redlining” Map..... 22

# **Introduction**

## **Purpose of the Study**

Recent attention on social justice issues has brought to light the equity problems in access to green spaces. For this study, social justice is defined as the fairness in the distribution of resources in society (Burton, 2001). Equity is promoted by ensuring that a city provides a range of services and investments to its residents. Urban areas are continuously growing into more dense and populated cities, further highlighting the disparities in equitable green space distribution and access. City planners are accepting the integrating of green spaces as part of the urbanization process (Loughran, 2018). Researchers note that additional green space improves community public health (Jennings et al., 2017), sustainable land use (Anguluri, 2017), and addresses equitable distribution (social justice) across different social groups (Jennings, 2019). The presence of green spaces provides recreational opportunities for city residents. Green spaces create an opportunity for nearby businesses to develop a presence in the community by promoting their business to patrons and engaging with the activities associated with parks and recreational areas. Inequities related to green space distribution is highlighted in areas across the United States with racial and ethnic diversity and low-income.

## **Research Questions**

In the United States the location of parks and green spaces often depends on the racial and ethnic diversity and socioeconomic status of households in a neighborhood. This study is interested to see if there is a difference in how Omaha, Nebraska allocates resources (i.e. parks and green spaces) across the different regions (North, South, West, and East). This paper looks to answer the following questions:

- Does the distribution of parks vary across the different regions in Omaha, Nebraska in terms of social justice and equitable distribution?
- Is there an absence of parks in communities of color and low socioeconomic status in Omaha?

## **Overview of the Study**

Limited research has been done on the relationship between green space distribution and social justice in Omaha. A GIS analysis, historical records review, and a case study of Omaha's peer city in Oklahoma City, Oklahoma, will be components of this research. Omaha has a history of discriminatory practices related to housing and the way city planners historically designed communities. The City of Omaha accounts the addition of green spaces and parks in future growth plans as part of the 2016 Master Plan. This study examines current and future plans for equitable distribution of parks across different social groups. Consequently, the city's urban growth can put stress on the landscape and may compromise environmental quality (Jennings, 2012). Environmental quality and social justice are connected issues. While environmental conservation seeks to improve quality of life of inhabitants, it does not consider the effects across different social groups (Burton, 2001). When there is good environmental quality then the benefits (good quality of life) are distributed to all social groups. It is important to assess the current state of the city's parks and master plan for the future.

## **Background Information**

Urban green spaces are shared areas like gardens, parks, greenways, and other areas with grass, trees, and shrubs (Jennings, 2019). The benefits of green spaces are becoming more known. Initiatives to implement more green spaces are happening to improve community health and safety,

promote individual health, and encourage sustainable communities (Jennings et al., 2017). Disparities in access and equitable distribution of green spaces impact public health and reveal how exclusionary housing in the United States was planned. It is common to find the remaining traces of redlining, a discriminatory practice that limited housing (blocked residents to purchase homes and caused high density housing) in particular areas based on the resident's race or ethnicity. Neighborhoods that had more access to green spaces rated well, while neighborhoods that had little to no access to green spaces ranked poorly.

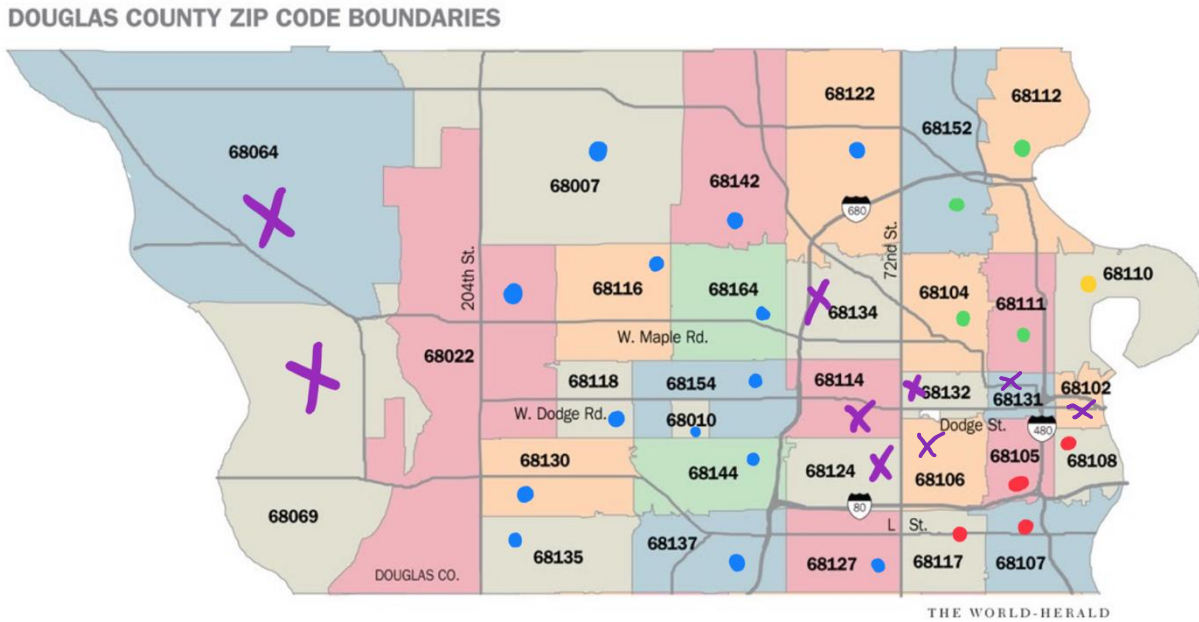
Poorly rated neighborhoods were more likely to be placed near negative infrastructure, such as coal plants, landfills, and other industrial development (Rigolon, 2018). Infrastructure such as coal plants and landfills expose people to harmful air pollution that can result in health problems. Development of new infrastructure can also disrupt communities and displace families (Thacker, et al., 2014). Negative infrastructure is more likely to be placed in neighborhoods that rate low and contain populations of color, are more racially diverse, and consist of low-income households. These factors indicate that race, ethnicity, and socioeconomic status, play a role in community planning decisions for placement of good and bad infrastructure (Rigolon, 2018). Alternatively, positive infrastructure that does not emit harmful air pollutants are often located in areas that do not reflect minority ethnic groups or low-income families. In recent years the practice of discriminatory redlining has stopped being overtly practiced, however equality in communities and neighborhoods is still being impacted by the actions of the past (Rigolon, 2018).

### ***Study Area***

The study looks at four regions in Omaha—North, South, West, and East. These four regions are defined in Figure 1. Omaha has many small neighborhoods that are categorized into different regions (North, South, West, and East). They are categorized based on similar



characteristics and using Census data. Each region has distinct characteristics that separate them from one another. Neighborhoods have their own households, schools, hospitals, crime rates, and geography (Beaber, 2018).



**Figure 1:** Distribution of ZIP Codes within Douglas County into different regions of Omaha. West Omaha is represented by blue dots, North Omaha is represented by green dots, South Omaha is represented by red dots, and East Omaha is represented by a yellow dot. Purple X's represent ZIP Codes that were omitted (they represent other regions). Adapted and modified from Witte (2019).

## **Literature Review**

### **The Relationship between Parks and Environmental Justice**

City planners across the United States are implementing strategies to increase the number of urban green spaces in park-poor neighborhoods (areas where green space is scarce or poorly maintained) (Wolch et al., 2014). Planners are now considering the physical and social environment when planning cities to improve health equity (Jennings et al., 2017). This is done through the application of accessible features such as green spaces, public transportation, and having a city layout with less environmental burdens (Jennings et al., 2017). Creating green spaces in park-poor neighborhoods helps bring the community together and provides opportunities to socialize and build relationships.

Urban green spaces offer a common space for people to gather and participate in social activities, thus influencing the relationships of the community. The quality of urban green spaces also influences the relationship people have with the space. Quality features include the absence of vandalism, physical barriers (e.g. large branches), litter, tire or furniture dumping, etc. Additional features that promote activity in urban green spaces are shade trees that provide a relaxing environment, recreational opportunities, access to the park by having nearby transportation options, and accessibility to good sidewalks and ramps (Jennings, 2019). Developing a shared identity can bring pride into the community and play a role in public health, the local economy, and environmental justice (Jennings, et al., 2017). Environmental justice is defined as the right to ethical, balanced and responsible uses of land and renewable resources in the interest of a sustainable planet for humans and other living things (Ramirez, 2019). The presence of parks can help address some aspects of environmental justice because it teaches

community members about environmental stewardship. It exposes people to the outdoors, providing opportunities for education, exercise, and engagement. These activities encourage community residents to advocate for better environmental planning in their city and enhances equitable distribution of parks and green spaces.

## **Parks as Mitigation Efforts**

Lack of access to green spaces can result in people feeling the effects of urban heat island, “On the one hand, complex environment combinations created due to densification of cities and towns create an effect of Urban Heat Island (UHI), and on the other impervious surfaces intensify the UHI effect by replacing the vegetative cover.” (Anguluri, 2017). Urban Heat Island is caused when cities have little vegetation cover and solar radiation is absorbed by the concrete and asphalt from buildings and roads. Added vegetation to the landscapes provides habitat for local wildlife and urban forests can help mitigate the effects of climate change, for example keeping temperatures down by providing shade and other services (Wolch et al., 2014).

It is vital that city planners address the lack of natural vegetation and begin viewing access to green space as an equity issue. Trapped heat increases air conditioning costs, the likelihood of heatstroke and dehydration, and other public health issues. These conditions have a greater impact on people of color and those with low-incomes (Phillips, 2020). Climate change will intensify high temperatures in urban cities. There is a link between redlining and those most vulnerable to suffering from rising temperatures (Phillips, 2020). Being aware of the disparities in heat exposure and planning policies can allow for planning efforts to be more equitable and address longstanding social injustices (Wilson, 2020).

## **The Future of Urban Growth**

Urban cities are now confronted with the consequences of fast growth. Cities must learn how to balance the modern world growth and the natural world while addressing social justice issues in their communities (Loughran, 2018). Cities can position themselves in their comprehensive plans, to lead initiatives to build more green spaces, provide jobs, training, and help expand the city's greenery. With the development of more green spaces in park-poor neighborhoods; more jobs will be created to maintain the new parks. Additionally, new parks will bring businesses wanting to take advantage of the new location, thus improving the community's economy. The implementation of trees and other vegetation will create habitat and will moderate temperatures by providing shade and cooling the area. Being near trees and other greenery can improve mental health. Parks serve as a public setting and allows for patrons to be in social settings. Research shows that individuals that have social capital are less likely to have mental health challenges (Jennings, 2019). The combination of green spaces and social settings make it possible for individuals to participate in physical activity and build social connections with other park patrons (Jennings, 2019).

# **Methodology**

## **Background Information**

Methods to conduct this research include the Oklahoma City, OK case study, a historical records review, and a geospatial analysis. Case studies provide real-life examples that demonstrate research findings in action. In Rigolon (2018), a case study is done in Denver, Colorado to analyze factors that shaped inequities to park access. The city's policies, initiatives, and planning strategies were analyzed to share insight on residential geographies and park funding and planning. Additionally, Rigolon (2018) also utilized geospatial analysis to calculate the mean acres of parks including Census tracts with different demographics. This approach will be applied to this research. In Nicholls (2001), GIS resulted to be a reliable tool to in visualizing and measuring levels of accessibility and equity.

Peer reviewed journal articles indicate that a historical records review (i.e., past maps, comprehensive plans) are an appropriate approach for research investigating distribution of parks and green spaces. Given that there isn't much information regarding equity and distribution of green spaces in Omaha, sourcing archival data will help supplement any missing information with key findings that can give an overview of relevant work. A search on key terms such as green space, public spaces, redlining, and environmental justice can provide relevant search hits that can contribute to the research topic (Fors, 2015).

## ***GIS Analysis***

GIS is commonly used in environmental planning due to its ability to identify and define geographical and seasonal variability (Campos, 2012). Nicholls (2001) conducted a case study utilizing GIS to measure the accessibility and equity of parks. In the study it was discovered that

a benefit of GIS is “...the ability to overlay different kinds of information for a specified geographic area (e.g. distributions of facilities and natural resources, transportation networks, and demographic data) so that spatial relationships between them may be assessed.” (Nicholls, 2001).

The GIS analysis in this study will be done through using the GIS software ArcMap. Information on demographics such as race, ethnicity, and income will be collected using the U.S. Census database. The Omaha Public Parks and Recreation Department is a source of information regarding the location of parks in Omaha. All relevant data was entered into the GIS as overlaying shape-files in the same geographic projection and coordinate system (Nicholls, 2001). GIS is capable of mapping differential access to parks on a large scale (Rigolon, 2018). This approach will contribute to answer the question of how park distribution varies across the Omaha regions.

### ***Historical Records Review***

Data archival is a research method of collecting data that already exists. The collected data is complete and is not subject to change, thereby being fixed data (Rabinowitz, n.d). The reason for using archival data is there is little data available specific to the City of Omaha, any original data will help find accurate results. For the purpose of this study, sources of archival data (a.k.a. historical records review), includes master plans from the Urban Planning Department of the City of Omaha. Redline maps will also be used to determine if there is an overlap between poorly rated neighborhoods and limited or no access to parks. The data collected provided information on the geographical location of parks and the history behind the rating of neighborhoods.

The most recent Omaha Master Plan acknowledges the disparity in green spaces across the city of Omaha and states the need to build an interconnected park and open space plan (Fahey, 2000). There is an Environmental Elements section that addresses the long-term environmental health and sustainability of the City of Omaha (Suttle, 2010).

## ***Case Study***

A case study approach in our methodology will allow to obtain in-depth information of a real life problem and further analyze it to context of park distribution in a city (Rigolon, 2018). The city chosen for the case study is Oklahoma City, OK, the peer city of Omaha. Oklahoma City released their most recent master plan in 2015, identifying parks and recreation, environment, and sustainability as key topics to cover (City of Oklahoma, 2015). Oklahoma City's biggest concern is ensuring that rural areas are preserved, and its urban neighborhoods are maintained to equal standards to its rural counterparts. The city intends to diversify park funding in order to improve services for park maintenance and create employment opportunities in underserved neighborhoods.

## **Application of Methods**

### ***GIS Analysis***

The purpose of using GIS in this study is to provide visualization of the park system in the City of Omaha and provide spatial information. The maps created were made with the [ArcGIS online](#) web mapping feature. A base map of Omaha, Nebraska was prepared by ArcGIS. The shapefile used of Omaha's parks was made by the Omaha Parks Department and accessed through the Douglas County GIS [website](#). Additional layers were added via the living atlas feature on ArcGIS online. The layers added were "ACS Race and Hispanic Origin Variables- Boundaries" and "ACS Median Household Income Variables- Boundaries". Both layers were provided by the United States Census Bureaus' American Community Survey (ACS). The "ACS Race and Hispanic Origin Variables- Boundaries" layer shows the population broken down by race and Hispanic origin from data collected in 2020. The "ACS Median Household Income Variables-

Boundaries” layer shows the median household income by race and age of the householder based on data collected in 2020.

### ***Historical Records Review***

A historical records review led to the review of a 1935 Home Owner’s Loan Corporation (HOLC) Residential security map (a.k.a. a redlining map) for the city of Omaha. The map shows historical neighborhood boundaries and ratings. An analysis was done on the map to see if any traces of redlining are seen in the city’s current neighborhoods. Additionally, a review of the [Omaha Master Plan](#) from the Omaha Planning Department was conducted to determine the current and future plans of the city’s park and green space system in relation to community demographics.

### ***Case Study***

The reason Oklahoma City was selected for the case study was because Oklahoma City is a peer city of Omaha. Peer city status means that the two cities are undergoing similar trends or challenges. Comparing peer cities help provide context to city planners and policy makers when making decisions. For the case study on Oklahoma City, OK a review was done on the [Oklahoma City Master Plan](#). The purpose reviewing the master plan was to identify any similarities and differences between the Oklahoma City and Omaha plans. While revising the Oklahoma City Master Plan there was a focus on identifying plans regarding green spaces, park systems, equity, and future land use. Another source used to analyze Oklahoma City was a study done by Skraastad (2006). Skraastad (2006) researched whether Oklahoma City’s parks were distributed equitably among its citizens.



## **Results**

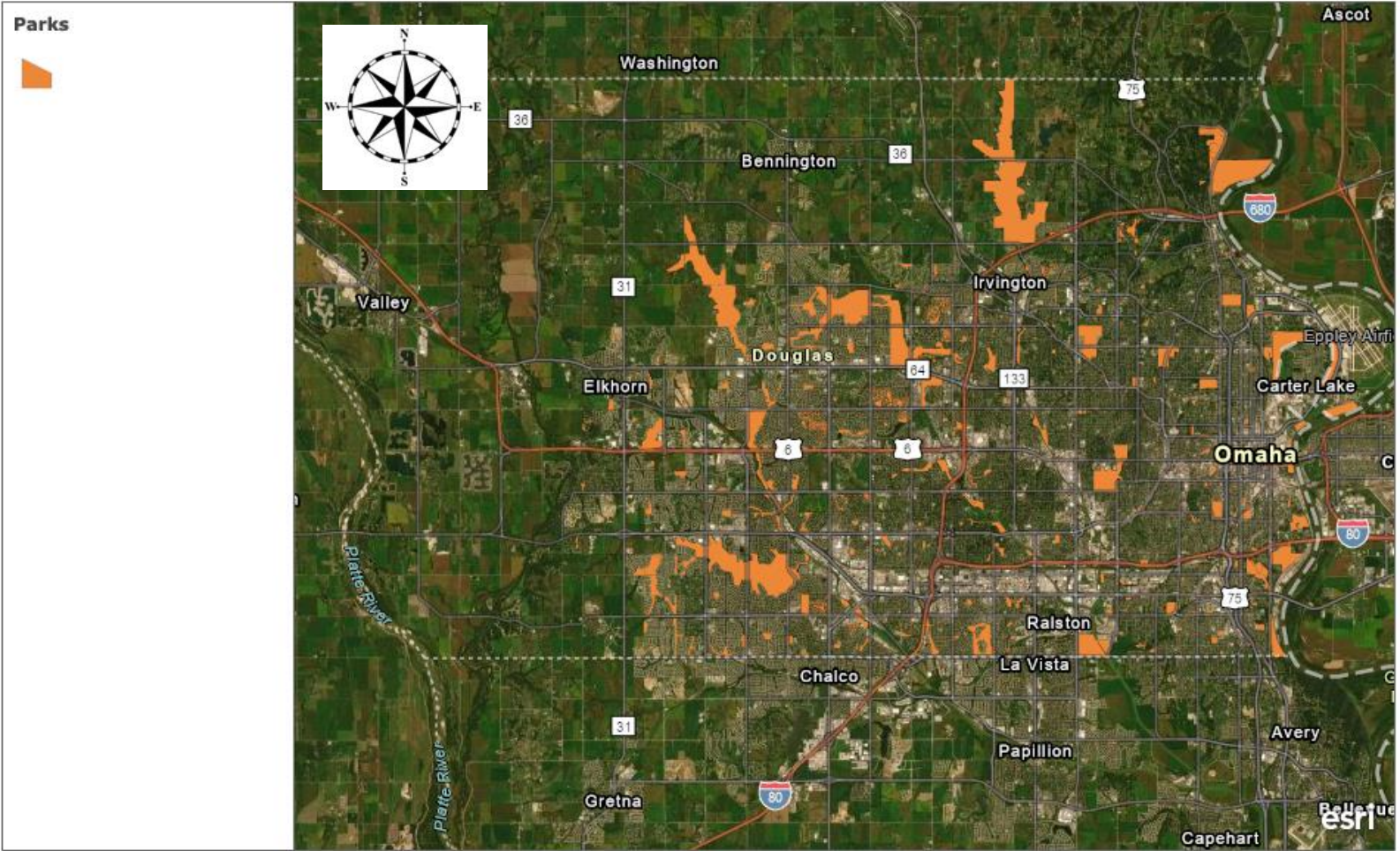
### **GIS: Mapping Omaha's Parks**

A comparison of the Omaha Park Distribution Map that has the race and ethnicity layer (Figure 3) and the HOLC “Redlining” Map (Figure 5) reveals that traces of segregation remain in the city. Figure 3 visualizes the relationship of parks to the predominant race and ethnic groups across the regions in Omaha. The outcome is that the majority of the population in North Omaha identifies as Black or African American. East Omaha’s Census tracts shows a dominating presence of White and Black populations. While in South Omaha the majority identifies as Hispanic or Latino. In the rest of the regions including West Omaha the population is dominantly White, non-Hispanic. When put next to Figure 5 the highlighting of “C” and “D” rated neighborhoods align with the regions where there is a dominating minority race and/or ethnicity in Figure 3. Similar results are found when Figure 3 and Figure 5 are compared to the Omaha Park Distribution with the Median Household Income layer (Figure 4). The regions where the majority of residents earned less than \$62,800 in the past 12 months are North, South, and East Omaha. The Census Bureau bases median household income figures on the distribution of the total number of households and families including those with no income.

**Table 1:** Number of parks and total park area of each region in Omaha

	<b>North Omaha</b>	<b>South Omaha</b>	<b>East Omaha</b>	<b>West Omaha</b>
<b>Number of Parks</b>	40	38	9	151
<b>Approximate Total Park Area (Acres)</b>	1,314.79	961.42	720.54	8,193.21

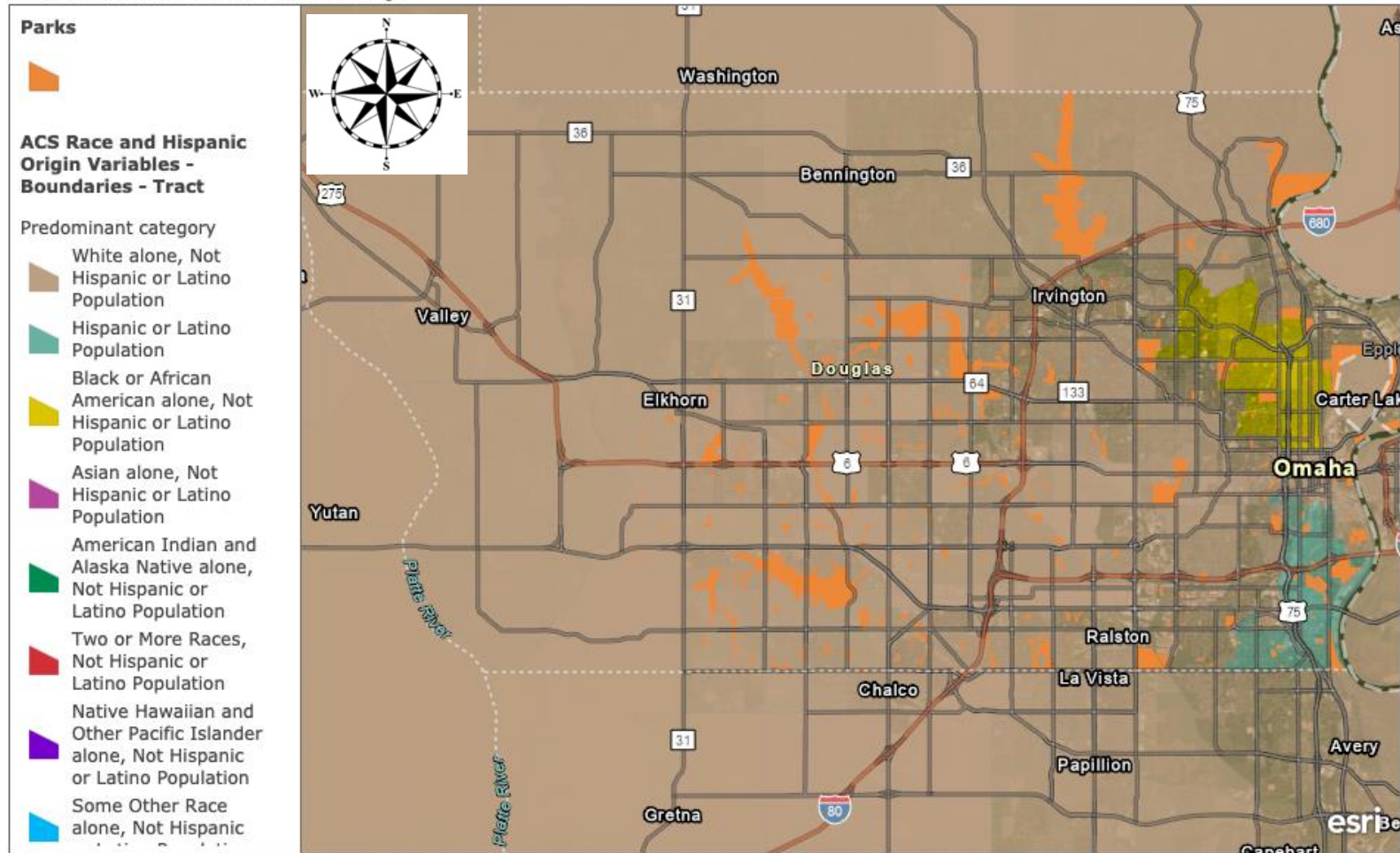
**Omaha Park Distribution Map**



Earthstar Geographics | County of Douglas, NE, Iowa DNR, Nebraska Game & Parks Commission, Esri, HERE, Garmin, SafeGraph, METI/NASA, USGS, EPA, NPS, USDA

**Figure 2:** Omaha Park Distribution Map. This map contains only one layer with the location of parks in Omaha.

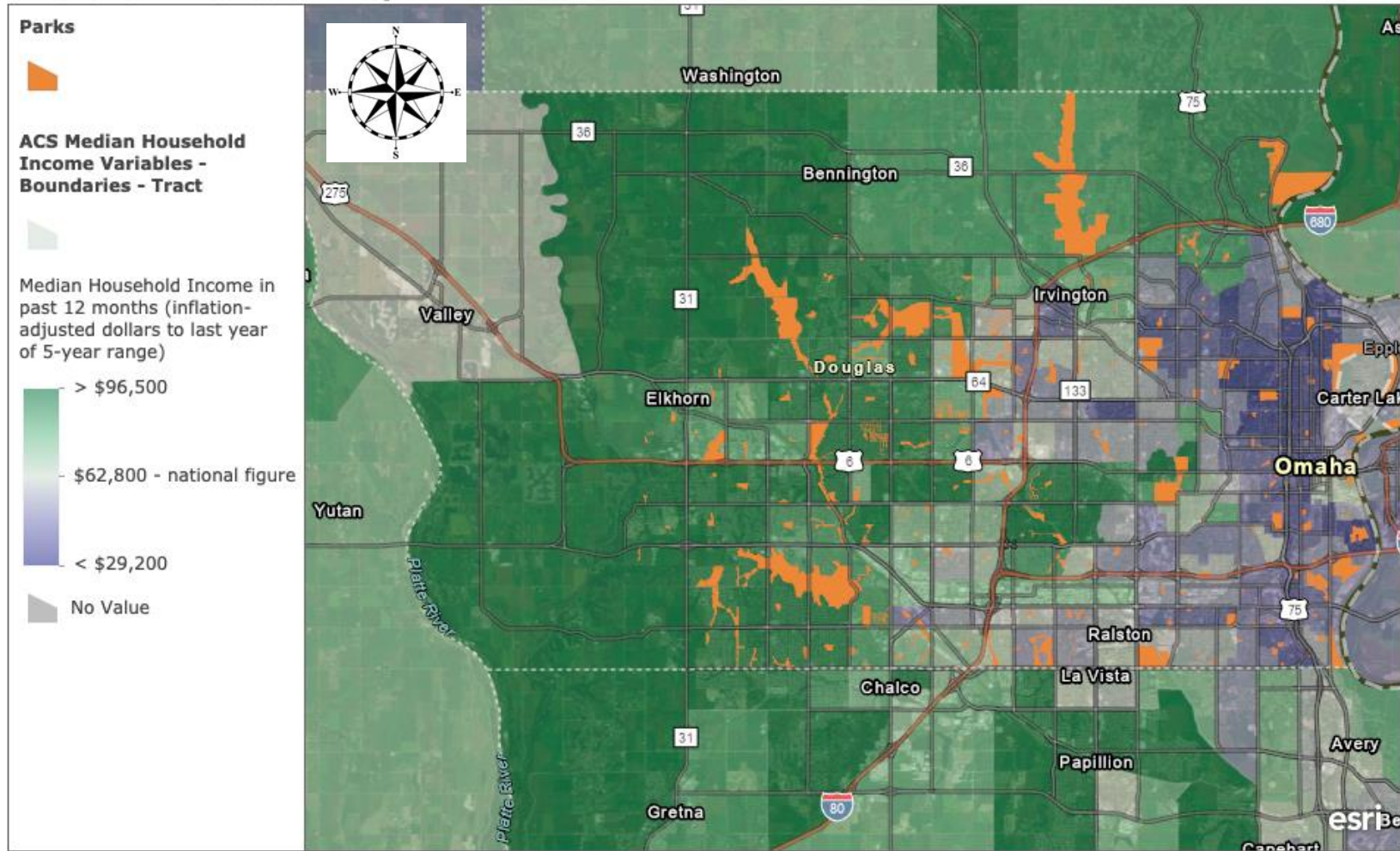
### Omaha Park Distribution Map



Earthstar Geographics | County of Douglas, NE, Iowa DNR, Nebraska Game & Parks Commission, Esri, HERE, Garmin, SafeGraph, METI/NASA, USGS, EPA, NPS, USDA

**Figure 3:** Omaha Park Distribution Map. This map includes two layers. One layer shows the location of parks in Omaha and the second layer shows Census Tracts highlighting the predominant race and ethnicity in the population.

### Omaha Park Distribution Map



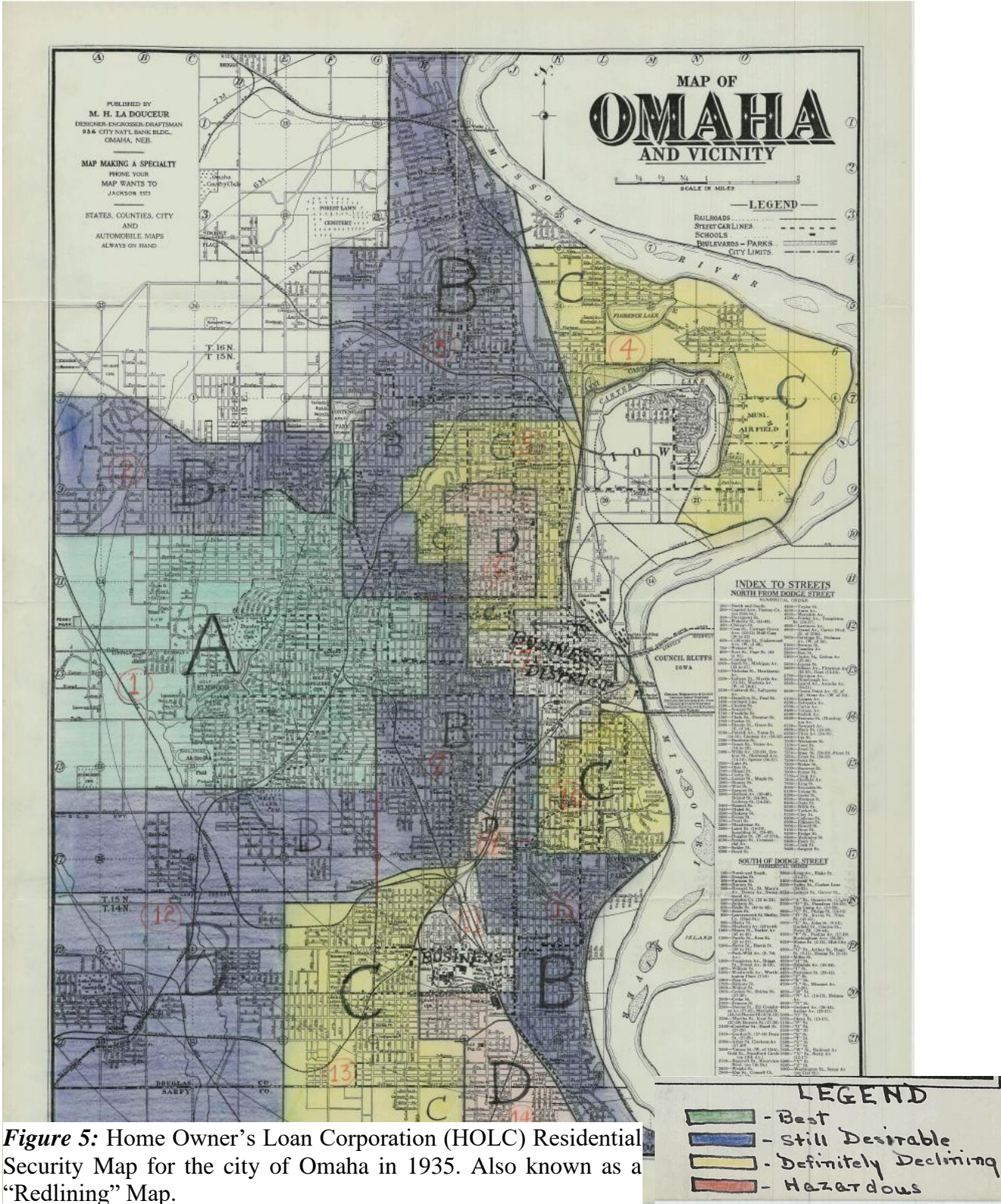
Earthstar Geographics | County of Douglas, NE, Iowa DNR, Nebraska Game & Parks Commission, Esri, HERE, Garmin, SafeGraph, METI/NASA, USGS, EPA, NPS, USDA

**Figure 4:** Omaha Park Distribution Map. This map includes two layers. The first layer shows the location of parks in Omaha and the second layers shows the median household income of an area in the past 12 months.

## **Historical Records of Omaha, Nebraska**

### ***A History of Redlining***

During 1935 to 1940 the Home Owner's Loan Corporation used data and evaluations done by local real estate professionals (includes lenders, developers, and real estate appraisers) across the country. These real estate professionals were to give a neighborhood a grade that reflected mortgage security. The highest grade assigned was an "A"—deemed minimal risks for banks and other mortgage lenders and the lowest grade was a "D"—they were considered a high risk for lenders. These grades were based on the history of sale, rent prices, the race and ethnicity, and socioeconomic class of the residents. Looking at Figure 4, we are able to see how Omaha was rated by real estate professionals in 1935. The areas rated as "Definitely Declining" and "Hazardous" are located what is to now be North, South, and East Omaha.



**Figure 5:** Home Owner's Loan Corporation (HOLC) Residential Security Map for the city of Omaha in 1935. Also known as a "Redlining" Map.

## **A Look at Oklahoma City, Oklahoma**

A case study of Oklahoma City was done to analyze what actions the city is taking to provide equitable access to green spaces throughout the city. Oklahoma has a history of local leadership wanting to make the city more attractive and modern. Several plans have been made to improve access to recreational facilities. Their most recent plan is the *Plan OKC* which addresses a wide range of development goals including an increase in green spaces.

The Oklahoma City Parks and Recreation department has set goals to establish an urban forestry program. The purpose of the urban forestry program is to minimize UHI effect. An increase of tree canopy coverage will help mitigate the effects of extreme heat and reduce city temperatures. In executing the plan, they will measure and monitor tree canopy coverage. Additionally, a problem the city has faced in maintaining public parks is a lack of funding. A solution that was proposed was to diversify park funding by building partnerships with private businesses and non-profits. Through partnerships Oklahoma City is sharing park maintenance costs and allowing for private businesses and non-profits to build relationships with the communities they serve.

Through the city plan, *Plan OKC*, goals include equitable access to green spaces. To ensure there is an appropriate level of access to parks, the city plans to make all current and future residential home locations within walking distance to a park or at a maximum one to two mile radius. Urban parks and other green spaces will be connected through linkages (i.e., bike trails, overpasses, etc.) to neighborhoods and commercial areas. As Oklahoma City continues to grow a balance between the suburban and rural regions of the city needs to be kept. To ensure good quality of life an increased number of green spaces will be placed in high density areas to make it less overwhelming and provide plenty of space for recreational activities.



## **Discussion**

The result of the study reveals that the distribution of parks does vary across the different regions in Omaha. The number of parks in West Omaha are greater than the other three regions. The absence of parks is evident in areas with high concentrations of Black, Hispanic, or Latino ethnicities. The median household income of these households is below the national figure (\$62,800). The results support previous peer-reviewed research that discovered that green spaces are least likely to be zoned in neighborhoods that are predominantly of a minority race or ethnicity and/or of low-income. Communities with racial and ethnic minorities and low-income households tend to live closer to smaller parks and farther away from parks with more opportunities for recreation.

One of the limitations of this study is that parks were not distinguished from community parks and neighborhood parks. Community parks are meant to be accessible to the entire city, they offer features such as lakes or athletic fields. Alternatively, neighborhood parks are smaller and accessible mostly to nearby residents, have smaller features and less recreational opportunities overall. An initial investigation on the Omaha park system shows that North, South, and East Omaha mainly have neighborhood parks, with the exception of a few athletic fields and gardens. The shapefile used for the geospatial analysis of Omaha parks also included the Omaha Henry Doorly Zoo and Lauritzen Gardens, which require an entrance fee. These opportunities are located in South Omaha and entrance fees can be economic barriers for the primary demographic groups living in the immediate area. In North, South, and East Omaha where the majority of the population are lower income it would be difficult for these households to access parks that charge a membership or an entrance fee.

These communities are deprived of green spaces due to a history of redlining and city planners choosing to locate positive infrastructure (parks) and negative infrastructure in certain spaces. The location of infrastructure often depends on the race, ethnicity, and socioeconomic class of communities and neighborhoods. The city's history of segregation and redlining remains prevalent today as there is still a cluster of Black households in North Omaha. The rating system used in the redlining maps made it impossible for residents from "Hazardous" and "Definitely Declining" neighborhoods to receive an extension of credit from lending institutions. By basing the acceptance of mortgages and loans on the neighborhood rating, Black residents were denied the opportunity to become homeowners or maintain their homes.

A limitation of using census tracts in the geospatial analysis is that it leaves room for ambiguity. It only represents the predominant social group and does not take into account other populous social groups. Census tracts provide a superficial estimate of a small area and do not provide a deep review like Census blocks. As a result accessibility to parks can be equitably distributed to racial and ethnic minorities and those of low socioeconomic class.

The city of Omaha experienced fast growth in the past years with the annexation of neighboring suburbs. The Omaha Master Plan mentions the city plans to expand further in the coming years. The city will only be able to expand to the West since the city meets state lines and abuts the Missouri River in the East. Omaha will need to consider adding parks, green spaces, and linkages to existing and future annexed neighborhoods while ensuring there is equal access for different social groups. A variety of parks, that provide different services like hiking trails, pools, athletic fields, etc. need to be placed across the city to make them equally accessible to residents.

Cities like Oklahoma City, OK also face equity problems in park distribution. Reviewing the Oklahoma City Master Plan provided an outside perspective to cities similar to Omaha are

experiencing and implementing in order to address inequities in park distribution. Oklahoma City planners' solution includes diversifying park funding and improving park maintenance across the city. Research done on the spatial equity of parks in Oklahoma City by Skraastad (2006) reveals that equity is not reached by only looking at race, ethnicity, and socioeconomic class. In Skaraasad's (2006) research results, a history of infill development led to neighborhoods with racial and ethnic diversity and low-income households were located near parks and green spaces. While White high-income households were more likely to have less access to nearby parks and green spaces. When assessing equity an assessment needs to be done on the needs of the residents. This means that planners and city zoning officials need to actively seek feedback from residents when implementing future master plans.

## **Conclusion**

This study examined the distribution of parks in Omaha. Using a geospatial analysis, a historical records review, and a case study of Oklahoma City (Omaha's peer city), the study looked to discover if there was a variation in the distribution of parks across the different regions of Omaha. The regions identified were North, South, West, and East Omaha. The regions represent different populations, ethnic groups, and socioeconomic classes in the city.

- In North Omaha there is a cluster of Black residents and the median household income of the region is below the national figure.
- The neighboring region, East Omaha, is smaller in area compared to the other three regions. Its population is primarily White, and the median household income is below the national figure.
- In South Omaha there is a concentration of Hispanic or Latino residents and the median household income is below the national figure.
- In the western region of the city the population is dominantly White, and the median household income is above the national figure.
- The results share that the regions vary in the race, ethnicity, and socioeconomic class.

Upon analyzing the GIS maps (Figures 2, 3, and 4) a relationship was identified between the number of parks and race, ethnicity, and socioeconomic class. Regions that are primarily of a minority race or ethnicity and that are also of low-income have less parks than West Omaha. City growth occurs in West Omaha and is therefore newer compared to the other three regions. There is a history of White families moving away from communities that are being integrated by families of color. Local government practices like redlining and segregation left racial minorities limited

to housing in a specific area, while White, high-income families moved away to the suburbs. This push to the suburbs left city planners to build parks in the wealthier White neighborhoods. However, as the city of Omaha continues to annex existing neighborhoods the access equity gap will continue to widen. The Omaha Master Plan the city identifies that there is a lack of neighborhood parks in West Omaha. City planners must account for these existing park systems when developing master plans to ensure that there is equal distribution of parks across all regions.

As the city plans for the future the Omaha Master Plans includes plans to create an equitable park system and connect the city. The plan is not clear on how it intends to address equity or how it will improve the presence of parks and green spaces. The case study done on Omaha's peer city, Oklahoma City, shows how other cities are approaching equity in their park systems. The Oklahoma City Master Plan lays out a detailed plan on how the Oklahoma City Parks and Recreation Department will improve the park system and local economy. Key steps include making all homes located within a walking distance of a park and green spaces and investing more public-private partnership funding for maintaining parks across the city.

This study provides the base for future research on the Omaha park system. Limited by the distinction of community and neighborhood parks it is not possible to answer if the park system is equitable. An assessment on the quality of park services should be conducted to see if quality of parks is equal across the neighborhoods of Omaha. The number of parks vary in the city. The distribution of parks across the regions depends on the race, ethnicity, and socioeconomic class of the communities and neighborhoods. Omaha's planners need to revisit and consider creating of parks, green spaces, and recreational opportunities within reasonable walking distance of existing households and future neighborhoods. These spaces should be open and accessible to all social groups within the Omaha community.

## **Future Recommendations**

- Omaha's planners need to revisit and consider creating parks, green spaces, and recreational opportunities within reasonable walking distance of existing households and future neighborhoods.
- The Omaha Master Plan needs to include detailed steps on how the city can ensure the equitable distribution of parks and green spaces in the city.
- Additional research can be done to investigate how economically accessible community parks are in Omaha.
- An assessment on the quality of park services should be conducted to see if quality of parks is equal across the neighborhoods of Omaha.

## **References**

- Anguluri, R., & Narayanan, P. (2017). Role of green space in urban planning: Outlook towards Smart cities. *Urban Forestry & Urban Greening*, 25, 58 - 65. doi:10.1016/j.ufug.2017.04.007
- Beaber, B., Starkey, T., & Bowen, M. (2018, September 20). *Omaha Divided*.  
<https://omahasocialproject.com/stratification-social-class-and-race/sections-of-omaha-2/>.
- Burton, E. (2001, April). The compact city and social justice. In *Housing, Environment and Sustainability, Housing Studies Association Spring Conference*.
- Campo, A. G. (2012). GIS In Environmental Assessment: A Review of Current Issues And Future Needs. *Journal of Environmental Assessment Policy and Management*, 14(01), 1250007. doi:10.1142/s146433321250007x
- City of Oklahoma City. (2015). Plan OKC: planning for a healthy future okc. [http://planokc.org/wp-content/uploads/2020/04/planokc\\_Final\\_20201210.pdf](http://planokc.org/wp-content/uploads/2020/04/planokc_Final_20201210.pdf)
- Fahey, M. (2000). Omaha Master Plan (pp. 1-46, R, ep.). Omaha, NE. Retrieved from <https://urbanplanning.cityofomaha.org/images/stories/Master%20Plan%20Elements/Concept%20Element.PDF>
- Fors, H., Molin, J. F., Murphy, M. A., & Bosch, C. K. (2015). User participation in urban green spaces – For the people or the parks? *Urban Forestry & Urban Greening*, 14(3), 722-734. doi:10.1016/j.ufug.2015.05.007
- Jennings, V., & Bamkole, O. (2019). The Relationship between Social Cohesion and Urban

- Green Space: An Avenue for Health Promotion. *International Journal of Environmental Research and Public Health*, 16(3), 452. doi:10.3390/ijerph16030452
- Jennings, V., Baptiste, A., Jelks, N. O., & Skeete, R. (2017). Urban Green Space and the Pursuit of Health Equity in Parts of the United States. *International Journal of Environmental Research and Public Health*, 14(11), 1432. doi:10.3390/ijerph14111432
- Jennings, V., Johnson Gaither, C., & Gragg, R. S. (2012). Promoting environmental justice through urban green space access: A synopsis. *Environmental Justice*, 5(1), 1-7. doi:10.1089/env.2011.0007
- Loughran, K. (2018). Urban parks and urban problems: An historical perspective on green space development as a cultural fix. *Urban Studies*, 57(11), 2321-2338. doi:10.1177/0042098018763555
- Nicholls, S. (2001). Measuring the accessibility and equity of public parks: A case study using GIS. *Managing Leisure*, 6(4), 201-219. doi:10.1080/13606710110084651
- Omaha's Holc map (ca.) 1935*. (n.d.). The Union. <https://www.u-ca.org/redline>.
- Phillips, S. (2020, January 24). Study: Redlining Intensifies the Impact of Climate Change in Urban Areas. Retrieved from <https://www.alleghenyfront.org/study-redlining-intensifying-the-impact-of-climate-change-in-urban-areas/>
- Rabinowitz, P. (n.d.). Collecting and Using Archival Data. Retrieved November 24, 2020, from <https://ctb.ku.edu/en/table-of-contents/evaluate/evaluate-community-interventions/archival-data/main>
- Ramirez-Andreotta, M. (2019). Environmental justice. In *Environmental and Pollution Science* (pp. 573-583). Academic Press.
- Rigolon, A., & Németh, J. (2018). What Shapes Uneven Access to Urban Amenities? *Thick*



- Injustice and the Legacy of Racial Discrimination in Denver's Parks. *Journal of Planning Education and Research*. doi:10.1177/0739456x18789251
- Skraastad J., P. D. (2006). *Spatial Equity of Parks in the Oklahoma City Metropolitan Area* (Doctoral dissertation, Oklahoma State University).
- Stothert, J., & Bench, B. (2016). *Omaha Suburban Park Master Plan* (pp. 1-50, Rep.). Omaha, NE. Retrieved from [https://parks.cityofomaha.org/images/1\\_Plan\\_Narrative\\_2016.pdf](https://parks.cityofomaha.org/images/1_Plan_Narrative_2016.pdf).
- Suttle, J. (2010). *Omaha Master Plan - Environment Element (Rep.)*. Omaha, NE. Retrieved from <https://urbanplanning.cityofomaha.org/images/stories/Master%20Plan%20Elements/EnvironmentElement2010.pdf>.
- Thacker, S., Adshead, D., Fay, M., Hallegatte, S., Harvey, M., Meller, H., ... & Hall, J. W. (2019). Infrastructure for sustainable development. *Nature Sustainability*, 2(4), 324-331.
- Wilson, B. (2020). Urban Heat Management and the Legacy of Redlining. *Journal of the American Planning Association*, 86(4), 443-457. doi:10.1080/01944363.2020.1759127
- Witte, E. (2019) *Zip Code Distribution by Region within Douglas County* [Image] Theses/Capstones/Creative Projects. 71. [https://digitalcommons.unomaha.edu/university\\_honors\\_program/71](https://digitalcommons.unomaha.edu/university_honors_program/71)
- Wolch, J. R., Byrne, J., & Newell, J. P. (2014). Urban green space, public health, and environmental justice: The challenge of making cities 'just green enough'. *Landscape and Urban Planning*, 125, 234-244. doi:10.1016/j.landurbplan.2014.01.017.