Salem Parks Equity & Service Area Report

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SALEM

COLLEGE OF DESIGN
LA 407/507 SPATIAL JUSTICE SEMINAR

UNIVERSITY OF OREGON
CITY OF Salem AT YOUR SERVICE
SCI Sustainable Cities Institute
SCYP Sustainable City Year Program

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About SCI

The Sustainable Cities Institute (SCI) is an applied think tank focusing on sustainability and cities through applied research, teaching, and community partnerships. We work across disciplines that match the complexity of cities to address sustainability challenges, from regional planning to building design and from enhancing engagement of diverse communities to understanding the impacts on municipal budgets from disruptive technologies and many issues in between.

SCI focuses on sustainability-based research and teaching opportunities through two primary efforts:

1. Our Sustainable City Year Program (SCYP), a massively scaled university-community partnership program that matches the resources of the University with one Oregon community each year to help advance that community's sustainability goals; and

2. Our Urbanism Next Center, which focuses on how autonomous vehicles, e-commerce, and the sharing economy will impact the form and function of cities.

In all cases, we share our expertise and experiences with scholars, policymakers, community leaders, and project partners. We further extend our impact via an annual Expert-in-Residence Program, SCI China visiting scholars program, study abroad course on redesigning cities for people on bicycle, and through our co-leadership of the Educational Partnerships for Innovation in Communities Network (EPIC-N), which is transferring SCYP to universities and communities across the globe. Our work connects student passion, faculty experience, and community needs to produce innovative, tangible solutions for the creation of a sustainable society.

About SCYP

The Sustainable City Year Program (SCYP) is a yearlong partnership between SCI and a partner in Oregon, in which students and faculty in courses from across the university collaborate with a public entity on sustainability and livability projects. SCYP faculty and students work in collaboration with staff from the partner agency through a variety of studio projects and service- learning courses to provide students with real-world projects to investigate. Students bring energy, enthusiasm, and innovative approaches to difficult, persistent problems. SCYP's primary value derives from collaborations that result in on-the-ground impact and expanded conversations for a community ready to transition to a more sustainable and livable future.

About City of Salem

The City of Salem is Oregon's second largest city (182,396; 2022) and the State's capital. A diverse community, Salem has well-established neighborhoods, a family-friendly ambiance, and a small town feel, with easy access to the Willamette riverfront and nearby outdoor recreation, and a variety of cultural opportunities.

FIG. 1

Riverfront Park

Image Courtesy: Ron Cooper

The City is known for having one of Oregon's healthiest historic downtowns, hosts an airport with passenger air service, and is centrally located in the heart of the Willamette Valley, 47 miles south of Portland and an hour from the Cascade Mountains to the east and the ocean beaches to the west.

State government is Salem's largest employer, followed by the Salem-Keizer School District and Salem Health. The City also serves as a hub for area farming communities and is a major agricultural food processing center. A plethora of higher education institutions are located in Salem, ranging from public Western Oregon University, private Willamette and Corban universities, and Chemeketa Community College.

Salem is in the midst of sustained, steady growth. As a "full-service" city, it provides residents with services such as police and fire protection, emergency services, sewage collection and treatment, garbage collection, and safe drinking water. Salem also provides planning and permitting to help manage growth, as well as economic development to support job creation and downtown development. The City also provides 2,338 acres of parks, libraries and educational programs, housing and social services, public spaces, streetscaping, and public art.

Salem's vision is a safe, livable, and sustainable capital city, with a thriving economy and a vibrant community that is welcoming to all. The City's mission is to provide fiscally sustainable and quality

services to enrich the lives of present and future residents, protect and enhance the quality of the environment and neighborhoods, and support the vitality of the economy. The City is in the midst of a variety of planning efforts that will shape its future, ranging from climate action planning and implementation, a transportation system plan update, as well as parks master planning.

This SCYP and City of Salem partnership is possible in part due to support from U.S. Senators Ron Wyden and Jeff Merkley, as well as former Congressman Peter DeFazio, who secured federal funding for SCYP through Congressionally Directed Spending. With additional funding from the city, the partnership will allow UO students and faculty to study and make recommendations on city-identified projects and issues.

Course Participants & Description

Undergraduate Students

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LA 407/507: SPATIAL JUSTICE SEMINAR

In this seminar course, students explored the role of parks in creating healthy, livable urban environments and considered the factors that impact equity in park systems. Throughout this exploration, the course explored both spatial questions (“how are park and open space amenities physically distributed and who has access?”) and sociocultural questions (“Whose values and interests are served by parks and the park design and planning process?”). These questions are grounded in a critical examination of societal power dynamics, including assumptions of who constitutes “the public,” and who has a “right to the city.”

Executive Summary

In response to the City of Salem's goal of identifying park service area delineation methods that would facilitate a more equitable and accessible park system for residents, Spatial Justice Seminar students analyzed equity and delineated potential park service areas in Salem.

Throughout the term, students explored what spatial equity meant, reviewed precedent studies, completed observational-based research or spatial-based research on Salem's Park system, and then provided recommendations based on their findings.

The spatial methods observed in the report are Euclidian distance, travel times, street network analysis using Thiessen polygons, and overlaying data. The non-spatial methods observed are surveys, intercept surveys, demographic data, and benchmarking. The most applicable precedent studies include the cities of Los Angeles, California, Fort Collins, Colorado, Eugene, Oregon, and Bellevue, Washington. Precedent studies integrated both spatial and non-spatial methods of data collection to have a comprehensive understanding of disparities in their park system.

Lastly, after applying both observational data and spatial analysis, students found that Salem's largest disparities included park connectivity and equal access to high value amenities. Based on these findings, students recommended to:

- Utilize demographic data in conjunction with spatial methods in displaying park service areas
- Include multiple transportation methods
- Utilize different park service areas for neighborhood parks and community parks
- Focus on provisioning high value amenities to areas that might not have access to them

Introduction

The City of Salem Parks and Recreation Division is preparing to update its citywide parks master plan, last updated in 2013. As part of this process, the parks department recognizes the need to include an equity lens and analysis. The City of Salem is planning to conduct a spatial equity analysis of the Salem parks system to evaluate and uncover any inaccessibility and inequity issues. This will allow City staff to create a parks plan for the future that is inclusive of all Salem residents. Understanding different methods of park service area delineation allows Salem to gain insight on how different demographics access, use, and navigate Salem's parks; determine what barriers exist; and prioritize improvements and land acquisition for new parks.

Salem's park system is comprised of 90 parks and 2,335 total acres. These parks are split into seven different categories. The park categorization is broken down as follows:

- 48 Neighborhood Parks
- 11 Community Parks
- 7 Urban Parks
- 6 Linear Parks
- 4 Special Use Facilities

Introduction (cont.)

- 5 Historical Areas
- 10 Natural Areas (Salem Parks and Recreation 2019)

The City of Salem collaborated with a Spatial Justice course over winter term, 2024. The class explored literature defining spatial justice, different delineation methods of park service areas, precedent studies, and the Salem parks system all while working towards a final spatial equity analysis report at the end of the term. Each student responded to three main objectives: analyze literature about defining park service areas and how that effected equity, review 5-10 precedent studies of cities that are comparable to Salem, and then conduct a spatial analysis of the Salem parks system and deliver recommendations based on their findings.

Salem Parks Planning staff shared information on parks system history, current state, and future goals for space delineation for the parks. This report is a culmination of the goals shared by Salem, an exploration of the different methods for park service area delineation, findings from precedent studies from the students, and the spatial analysis of Salem that each student delivered.

Defining Equity in Parks

Equity in parks is a common goal among many parks systems in Oregon and across the United States. Parks have long been considered an integral part of the urban landscape with a variety of health, climate, community, and economic benefits (Tan 2017). However, access to green space and parkland within most U.S cities is inequal, and minority populations and underrepresented groups often have disproportionately limited access to quality parks and amenities (Wolch, et al. 2005).

While the specific definition of what equity in parks means varies slightly from study to study and parks plan to parks plan, it can generally be defined as: ensuring that all residents within a municipality have safe access to green space or a park that meets their needs, regardless of race, ethnicity, socioeconomic background, age, gender, sexual identity, or any other demographic factor. Park equity is the understanding that all users should feel safe in their parks and have easy, comfortable access to parks that fulfill their recreation needs within the defined service area determined by the parks department. Equity cannot be considered without accessibility because it is defined by “the ease with which a site or service may be reached or obtained” (Nicholls 2001). Equity in parks cannot be achieved without considering physical, spatial, temporal, or other barriers that could diminish a person’s access to a park.

In addition to the literature on the subject, the National Recreation and Parks Association (NRPA) created several standards of park provisioning. One commonly used metric is a standard of 10-acres of parkland for every 1000 residents (Nicholls, 2001). This standard is important and helpful because residents not only need access to parkland and amenities, but to an adequate amount of parkland that meets their needs. Higher levels of park acreage also lead to less

Defining Equity in Parks (cont.)

congestion at parks, which in turn makes parks more comfortable and easier to maintain.

However, many cities are experiencing rapid urban growth, diversifying populations, aging populations, and other factors that should be considered when provisioning parks. The NRPA standard does not account for a number of important equity factors, such as the distribution of parks, which demographics have more or less access to park acreage, or the availability of amenities. Many park planners have started to incorporate this standard with distribution metrics to evaluate who has access to an adequate amount of park acreage. Multiple studies of the Los Angeles parks system, for example, have used a combination of NRPA standards and spatial analysis to evaluate the amount of park acreage available to vulnerable populations, the amount of acreage accessible on foot, and congestions levels at each park (Sister, et al. 2009; Wolch, et al. 2005). This allows municipalities to get much better insights into where parks need to be, who needs parks, and what type of parks and amenities are needed.

There are many different barriers to equity in parks, but this course focused on the spatial distribution of urban parks by exploring different methods of delineating park service areas and the implications of different funding and data collection methods in parks planning. The next section provides a brief explanation of the most common delineation methods.

Delineating Park Service Areas

Gathering data for park service delineation plays a critical role in equitable park provisioning. To understand park service areas park planners must utilize spatial methods and non-spatial methods to understand trends of inequity, park pressure, access points to parks, physical barriers, and the wants and needs of the community.

SPATIAL METHODS

Much of the literature explored in the class focused on spatial methods for analyzing park service area delineation. This usually includes tools like Geographic Information Systems (GIS) and other mapping data. It is common for most service areas to be displayed by using the following data:

Euclidean/radial method: A basic method that creates a rounded buffer around a park of a certain distance, often 1/2-mile or 1-mile. This method does not factor in street or travel conditions and is the equivalent of measuring “how the crow flies”.

Street Networks: This method uses existing street grids, block structures, and transportation infrastructure such as roads, bike lanes, sidewalks, and trails to create a service area based on actual travel time or distance. This allows parks planners to consider major barriers such as busy roads, waterways, lack of infrastructure, inhospitable walking conditions, lack of access points to a park, or lack of tree coverage. Network analysis has gaps in considering traffic patterns, other physical barriers to parks, any

Spatial Methods (cont.)

demographic factors that might inhibit a person from accessing the park, and other permanent or temporary barriers that cannot be seen by satellite imaging.

The image below shows a combination of the Euclidean and street network methods, highlighting how much smaller the service area of a park is when the network method is used.

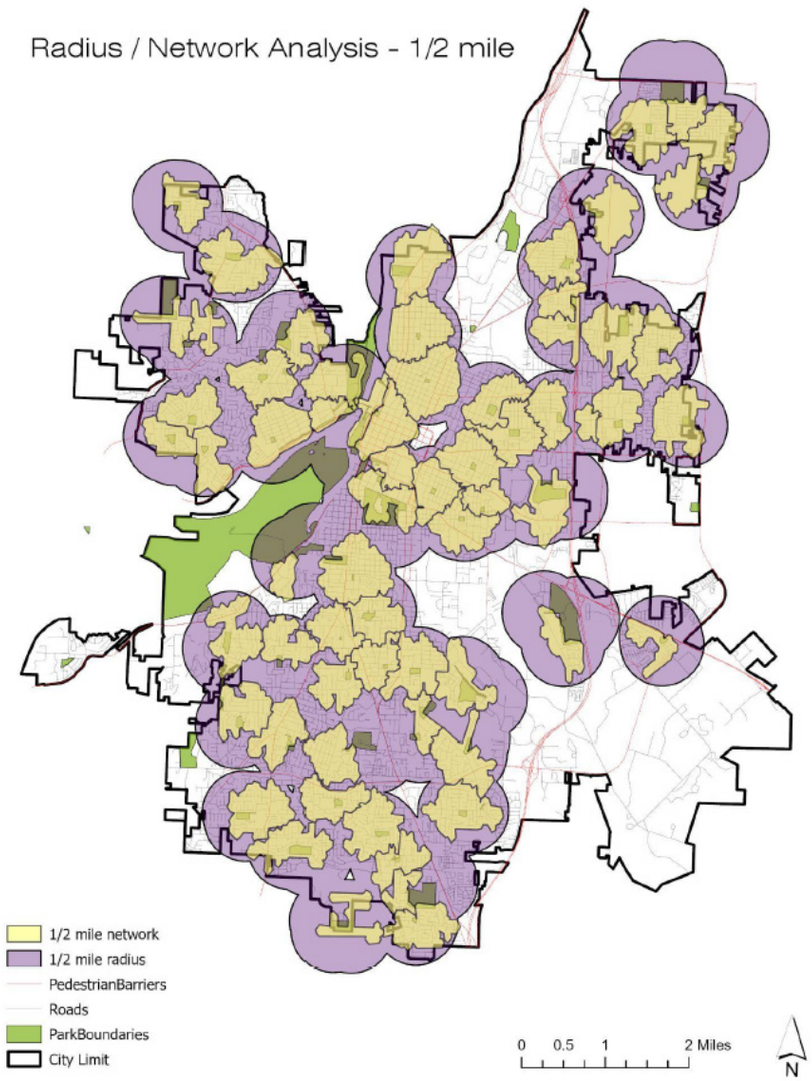


FIG. 1

Radial/Network Analysis

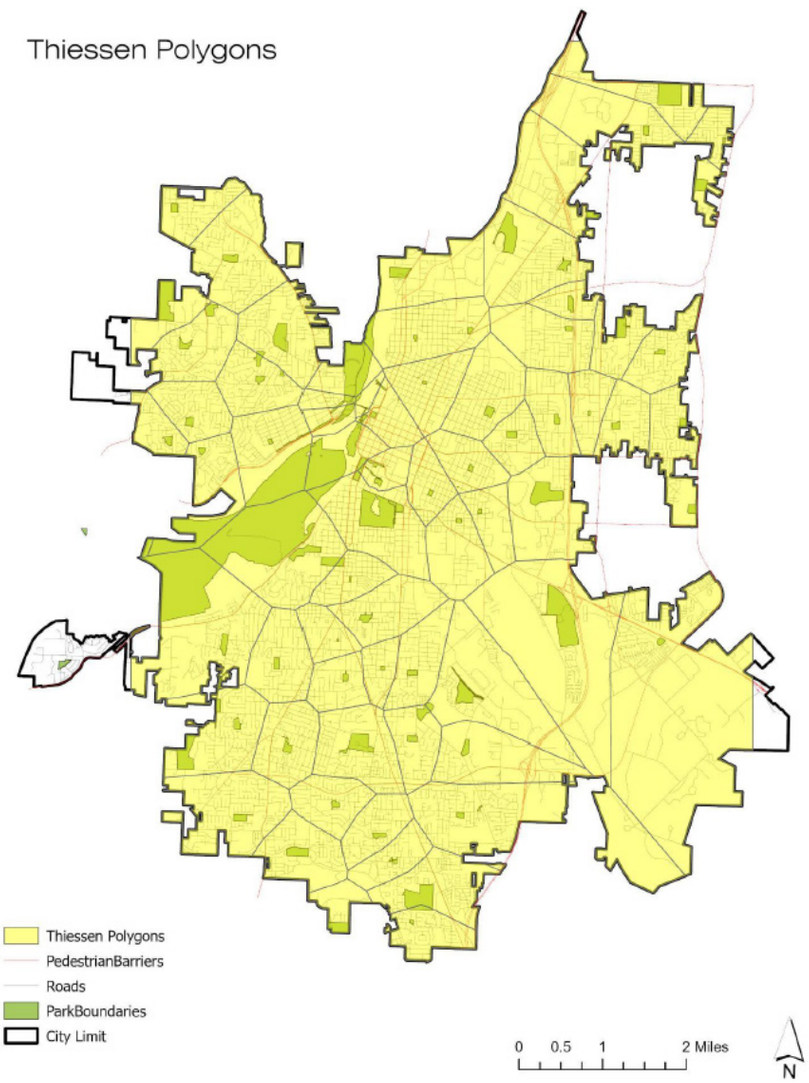
Travel Time: Usually used in conjunction with street network analysis, travel time considers multiple forms of transportation. Walking is the most common form of transportation assigned to this measurement. Travel time analysis has proven to go a step further in evaluating accessibility by highlighting high congestion traffic, major roads, lack of sidewalks, and other spatial barriers and integrating this data with a qualitative analysis as well.

Physical Barriers: Identifying any physical barriers is an important part of spatial analysis. This can be done by utilizing geo-spatial data but also observation-based data collection can show what cannot be picked up on a satellite.

Thiessen Polygon Method: This method is often used to show a more accurate park pressure measurement by including all residents within a city into the service area of the park they are closest in proximity to.

FIG. 2

Thiessen Polygon Method



NON-SPATIAL METHODS

Surveys: An important method of collecting community feedback. This method can be approached by random surveys, targeted demographic surveys, or other methods. However, surveys can skew results by either lack of participation or statistical errors in the sample group.

Community Leaders: Can address groups who face systemic barriers from getting their voices heard. For example, groups who do not use English as their first language or lower socioeconomic status groups who do not have time to attend local government meetings or events.

Benchmarking: A method that often utilizes precedent studies similar to the city, NPRA standard, or statewide standards to compare park system lies in relation to other park systems. It is helpful knowledge but can often perpetuate park systems that are undeserving populations and are not meeting the unique needs of local communities, geographies, or demographics.

Census and Demographic Data: Arguably one of the most important factors in delineating park service areas. Including demographic and Census data into park provisioning consideration allows park planners to address systemic barriers that impact disadvantaged groups, show historical trends, and provisions in a park that are not only equitable but could be just.

Integrating both spatial and non-spatial methods of delineating park service areas is pertinent to get an informative equity analysis. In conjunction, park service area delimitation becomes a tool to address inequity in a park system. This is exemplified in the Shangcheng District where park planners are utilizing mathematical models to give a point system to both qualitative and quantitative data to see where parks need provisioning. The two models included: 1) a maximum coverage model that maximizes the service radius of a park to ensure equitable park allocation and 2) a minimum impedance model to find locations without an existing abundance of parks. Planners are setting out to build these parks built on four principles; “high quality living scene”, “health vitality scene”, “humanistic park scene”, and “landscape ecological scene”. (Shi et al., 2023, pg. 8). The goal of the study was to ensure all residents of the Shangcheng District in Hangzhou, China would have a park within 10 minutes, 15 minutes, and 25 minutes (Shi et al., 2023, pg. 3). Thus, this model defined access to parks and equity surrounding parks specifically on how long it took people to get to them.

“Review of the impact of urban parks and green spaces on residence prices in the environmental health context” by Kaida Chen, Huimin Lin, Shuying You, and Yan Han reviews three main different data collection methods commonly used for parks spatial data collection. The first is, “hedonic pricing, geographically weighted regression, and neural network models’ (Chen et al. 2022, pg. 2). Each way of collecting data posed an issue and the article shows tables representing each problem with a way of collecting data and then a solution (Chen et al., 2022). This is a prime example of why multiple forms of data and analysis are critical to form a full picture of a community’s park system. Using both spatial and non-spatial methods of delineating park service areas and evaluating park services is an excellent way to find gaps, analyze needs, and prioritize solutions.

Precedent Studies

The third portion of this report delves into the precedent studies that each student reviewed as one of their deliverables. The largest commonalities amongst the precedent studies were to define service radius both temporally and spatially. For levels of access, many park plans shared a common goal of having a neighborhood park within a 10-minute walk of all residents of the city.

Examples Include:

- City of Portland: Overlayed demographic data.
- Duluth, Minnesota: Included an equity analysis, defined accessibility both spatially and non-spatially by using the 10-minute walk zone and focusing on surveyor feedback.
- Minneapolis, Minnesota: detailed equity considerations including making prioritization decisions based on areas of historic harms like red-lining and racial covenants
- Gresham, Oregon: Focuses on demographics to delineate park service areas with special attention to historically marginalized groups.
- Hillsboro, Oregon: The comprehensive park plan addresses preserving riparian zones. Similar to waterfront parks in Salem.
- Seattle, Washington: used different standards for parks within denser urban areas, called “Urban Villages”, than less dense areas in order to reduce park burden. “Urban Villages” used a 5-minute walk or 1/4-mile distance while areas outside of them used a 10-minute walk or 1/2-mile distance.
- Lake Oswego, Oregon: while lacking a detailed level of service analysis chapter, incorporates a geographic analysis section that outlines the methods employed to delineate service areas (City of Lake Oswego, 2012). The plan defines “close-to-home” access as a quarter to a half-mile walking distance from an individual’s residence.
- Oceanside, California: Focused on community feedback and engagement see where to allocate services within the community. Used a 15-minute walk or an 8-minute driveshed as opposed to the standard 10-minute walk.
- Springfield, Oregon: The Willamalane uses surveyor feedback.
- Spokane, Washington: Includes detailed definitions for a variety of park classifications.
- San Diego, California: San Diego added layers of transportation access to the standard 10-minute walk metric, instead using a 10-20-30-40 metric. Defined as all residents should be able to access a park using a 10-minute walk/roll, a 20-minute bike ride, or a 30-minute public transit ride for 40-minutes of enjoyable play at the park.
- Springfield, Massachusetts: This park plan focuses on improving existing parks instead of acquisition and looks at alternative modes of accessibility, like public transit improvements and para-transit.

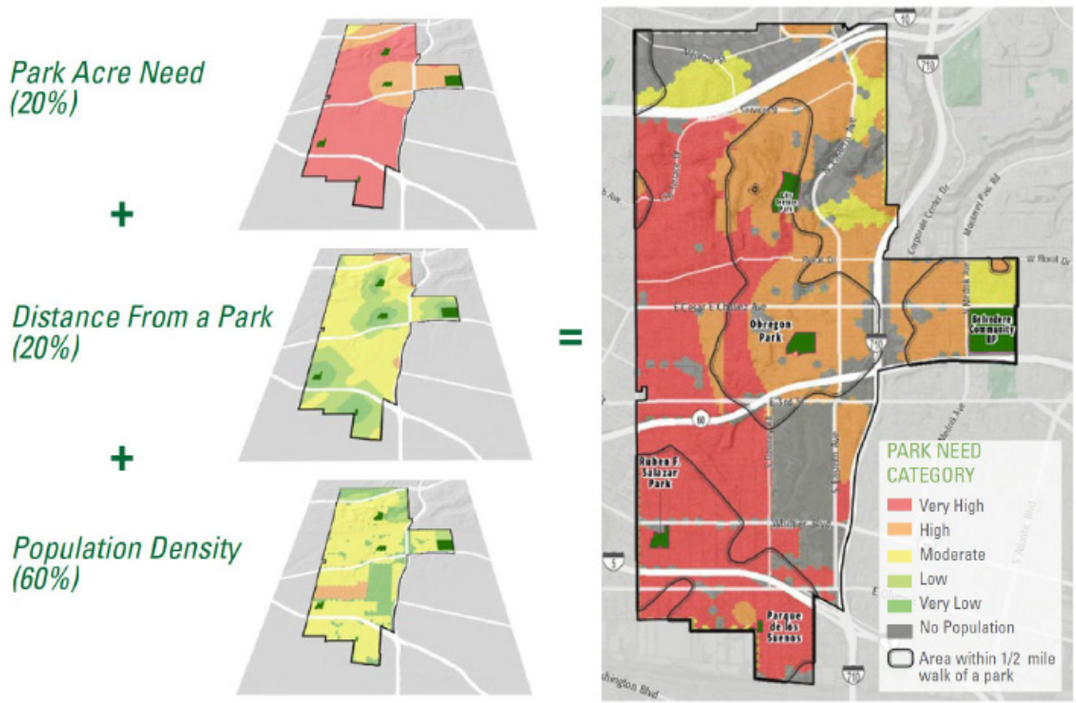
Out of the precedent studies that the students assessed, the following were chosen because of their application to Salem. These precedent studies addressed similar challenges that Salem is hoping to address in a multifaceted approach. From incorporating demographic data, using specific leaders to represent communities, and addressing park pressure, these studies each had

Precedent Studies (cont.)

something that would benefit Salem when considering their park system.

Los Angeles County, California: The Los Angeles Parks Needs Assessment analyzed essential infrastructures to make specific provisions. The county also used a weighted overlay method with three measurements of park access including distance from a park, park pressure, and park acre need. This method allowed a multifaceted and layered understanding of existing inequity in LA's park system and how to best support those who do not have the same access to those parks (LA Countywide Comprehensive Parks & Recreation Needs Assessment, 2022).

Figure 35. Where Are Parks Most Needed?



(This image shows the three maps LA County overlayed and the results of that overlay (LA Countywide Comprehensive Parks & Recreation Needs Assessment, 2022)).

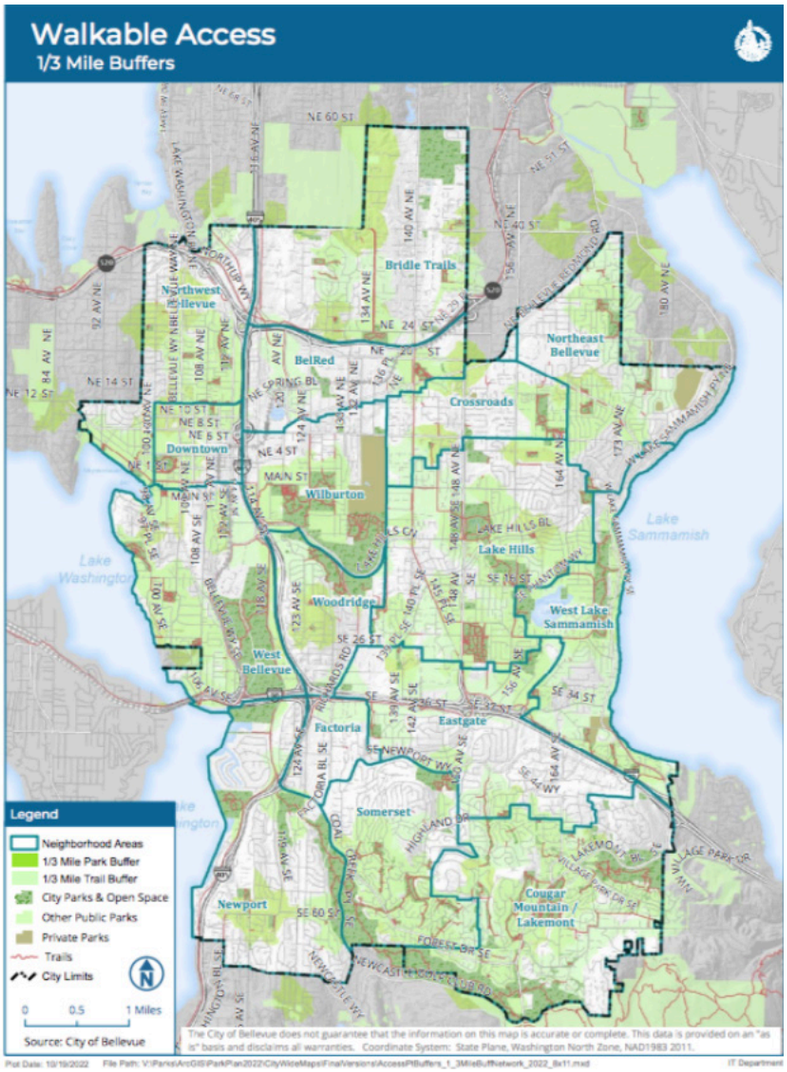
FIG. 3

Los Angeles Park Need Map

Bellevue, Washington: Utilized Washington's SCORP is a non-spatial method to determine quality of service and accessibility for parks. Both Bellevue and Eugene utilize peer cities to benchmark their own park systems (Bellevue Parks and Open Space Plan, 2022). These are places that are like the city in various ways, usually through population size, geographical size, and population density. This is an effective way to measure qualities of park service and access because it showed rather than just an arbitrary average that might not fit a specific geographical location, but it was more tailored and specific.

FIG. 4

Bellevue Walkable Access Map



(An example of a more inclusive mileage time for park service area. Typically, older adults and young children are comfortable walking a shorter distance (Bellevue Parks and City Masterplan, 2022)).

Eugene, Oregon: Eugene acknowledged that park users should not have to cross busy lanes of traffic to access a park, so busy roads were included as a type of pedestrian barrier to access (pg. 25, Eugene Parks Plan, 2018). This plan also used the Statewide Comprehensive Outdoor Recreation Plan (SCORP) to benchmark quality of service. Lastly, the Eugene Park plan also discusses the past choices. Eugene has acknowledged that their public parks have historically catered towards white people and is addressing this by creating affinity groups such as the Black Community Advisory, which advises on projects and specifically provides support on the upcoming Martin Luther King Jr. Park renovation and the Mattie Reynolds Park project.

Fort Collins, Colorado: Had the most specific park classification, which included community parks, neighborhood parks, school side parks, urban parks, plazas, mini parks, and special use parks (ReCreate: Parks and City Masterplan, 2021, pg. 115). More specific park classifications responded to an increasing population and a transition to urban and suburban in different areas of the city.

Common issues that every plan addressed included: increase in population size, rapid urbanization, an increasingly older population, and an increasingly diverse population. While these are very important issues and populations to address, there could be more specific demographics such as race, gender, ethnicity, and class that each city could address. In every plan, population size, rapid urbanization, and population age held the biggest priority in park provisioning.

When considering equity to delineate park services, it seems that a multi-tool approach is best. Precedent studies that overlayed demographic data with Theissen polygons provided the most robust data, allowing for informed decisions on equity.

Findings in Salem

This section includes a synthesis of the preliminary spatial analysis that made up the final part of the students' reports. This includes some general observations about the Salem parks system, such as the distribution of parks throughout the city, the location of major barriers, the connectivity between parks, and the number and location of amenities. Additionally, some students elected to use GIS software to map different methods of spatial analysis in Salem and the maps, analysis of the results, and strengths and weaknesses of each method are also located in this section. Lastly, a summary of the students' recommendations for Salem can be found at the end of this section.

OBSERVATIONAL ANALYSIS

Using both spatial data from ArcGIS and non-spatial data from the Salem Comprehensive Park System Master Plan, several themes had emerged. Salem has an expansive park system with a high acreage and lots of neighborhood parks. Within the 90 parks, there are seven different categories, which is more than the other parks plans that students had reviewed. Salem categorizes its parks into 48 neighborhood parks, 11 community parks, seven urban parks, six linear parks, four special use facilities, five historical areas, and 10 natural areas (Salem Parks and Rec 2019). The term "urban park" that Salem uses is interchangeable with regional park, meaning its service area is the entirety of the city and can include park facilities with a regional draw. Salem also defines "linear parks'' as parks or trails that connect other parks. Having a category for linear parks rather than having a more robust trail system seemed like a way to categorize connectivity in parks in Salem. Students noticed that when looking through the DataSalem map that there were not as many trails connecting parks and no established trail system that connects the city, like in Eugene for example.

The most common type of park dotted throughout the City of Salem is a neighborhood park, which is defined by "local parks serving surrounding residents within walking and biking distance and providing access to basic recreation amenities" (Salem Parks and Rec 2019). Student researchers found that parks in Salem, with the exception of community parks, are distributed unequally.

Salem is surrounded by agricultural lands and the Willamette River runs through the west central part of Salem. City planners took advantage of the river, and there are many parks along it, regardless of category of park. This results in the northwest areas of Salem having the most diversity in parks as well as the highest concentration of parks. While the southwest area of Salem did not have as many parks it still had some diversity, mostly neighborhoods with one community park, but there were several golf courses. Not only does this mean that people living in the south of Salem have more options to recreate, but that recreation comes at a financial cost that many people cannot afford. Golf courses also tend to cause property values to go up, meaning that they are generally nestled in more affluent areas. Although the west side of Salem is less dense, there is a concentration of parks in that area.

While most of Salem has access to neighborhood parks, east Salem has the least amount of parks as well as the least diversity in parks. Seven neighborhood parks and one community park are located east of I-5. There also looked to be less tree coverage and overall greenery (tree coverage, plants, etc.). This could be because of what looked like industrial zoning in this part of Salem, but there were still quite a few residential areas not being served. Interstate 5 is a built barrier for many people who may want to access a different kind of park. It seems that many residents of east, especially northeast Salem, do not have equitable access to parks and are being under served.

While many parks are in west Salem because of their proximity to the Willamette River, students believe that having greater diversity east of the I-5 in Salem would greatly benefit the residents. For example, putting a natural area in the surrounding agricultural land. Another way to ease the disproportionate concentration of parks would be to provide more interconnectivity between parks, specifically to get around the barrier of the I-5. Students suggest more tree coverage as well in the eastern part of Salem.

GIS MAPPING ANALYSIS

A few students chose to use GIS mapping software to analyze the Salem parks system and evaluate different methods of park delineation and equity mapping. This section will present and breakdown each of the maps created, including an evaluation of the strengths and weaknesses for each.

Figures 5 and 6 show what a Euclidean or radial delineation method would look like in Salem. These maps include a 1/4-mile and a 1/2-mile radius around the boundaries of Salem parks. These distances were chosen because a 1/2-mile is considered the distance an average, able-bodied adult person can walk in 10 minutes. However, the 1/4-mile distance is a more conservative metric for slower movers, like children, seniors, and people with disabilities. This metric is referenced in case study literature, as referenced in Section 2.

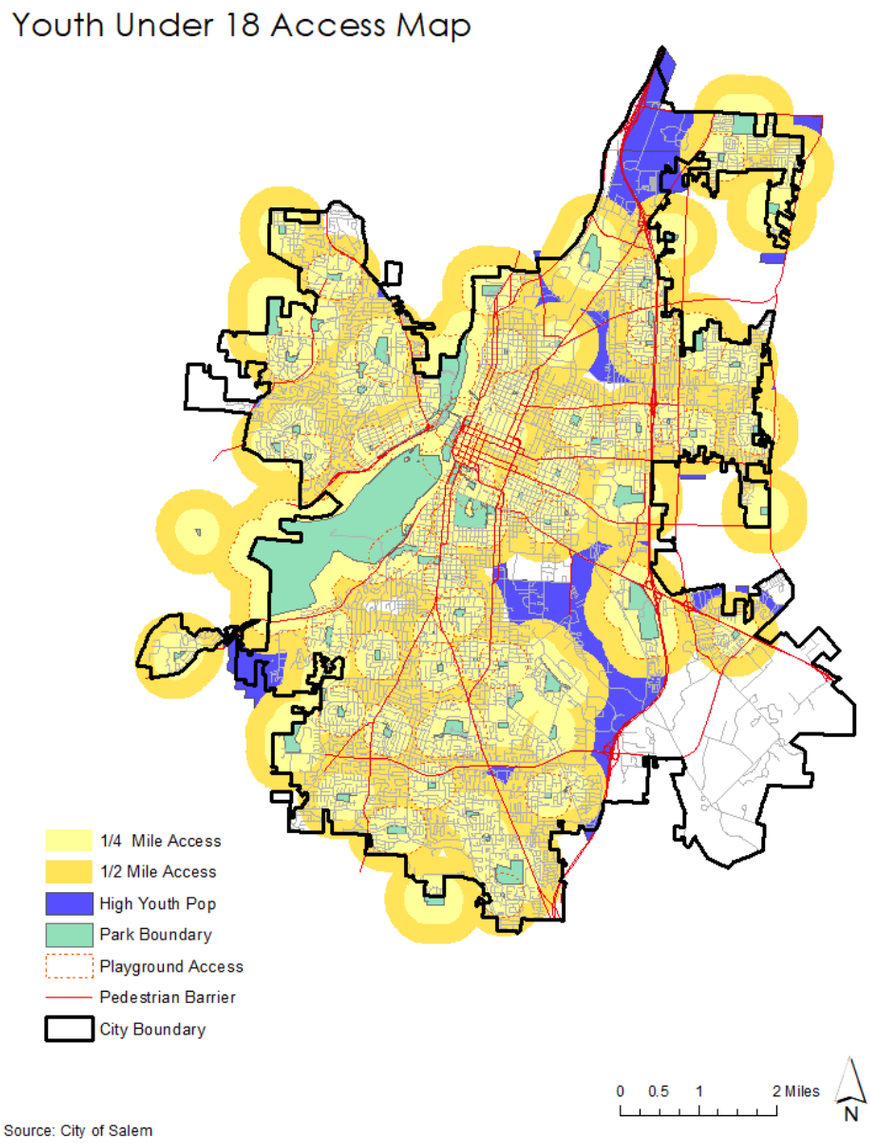
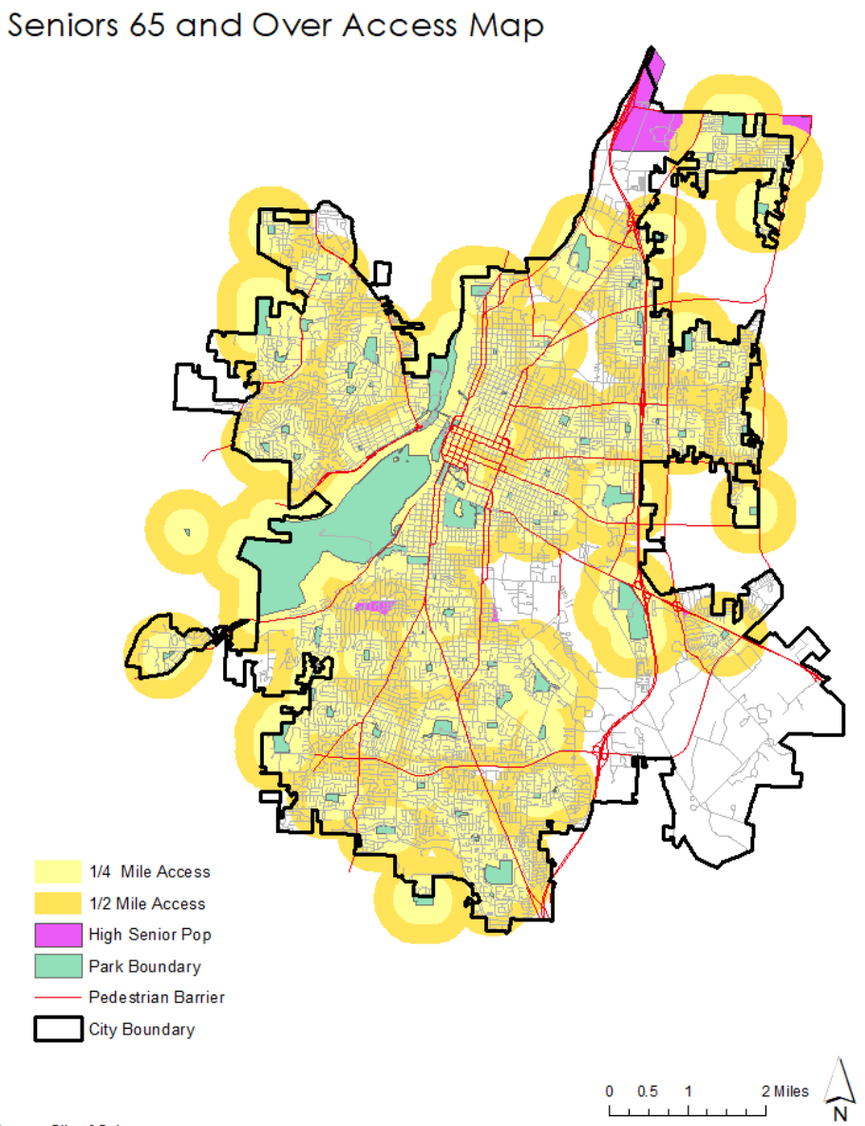


FIG. 5

Youth Under 18 Access Map

FIG. 6

Seniors 65 & Over Access Map



Source: City of Salem

These radii were overlayed with age demographic data, specifically with Salem Census block groups that had a concentration of 25% or more of youth aged 17 and younger (Figure 5) or seniors aged 65 and older (Figure 6) according to data from the 2020 U.S. Decennial Census. This was done to both analyze access to Salem parks for these specific populations that are often targeted in parks planning, and as an example of what equity mapping could look like in Salem. This method could be used to evaluate other population data, and a full list of the demographics the students recommend Salem explores is included in the Recommendations portion at the end of this section.

Additionally, Figure 5: Youth Under 18 Access Map, also highlights parks in Salem that have a playground. This is indicated by a dotted-line around the 1/4-mile radii around these parks. This shows the gaps in service areas for this important amenity in relation to the group who uses it most.

This functions to both highlight service gaps in Salem to playgrounds and as an example of how to evaluate access to specific amenities.

As discussed previously, the Euclidean method for delineation has its issues, many of which are present in this analysis. This method does not account for the pedestrian barriers in Salem, such as the Willamette River, I-5 highway, or other major roadways that are difficult to cross on foot. This method also does not account for park entry points or the existing road network, both of which make the park service areas smaller. This problem is addressed by the next map, Figure 7. Lastly, this method could be further improved by creating a quantity and/or percentage of total residents and members of specific groups that live outside of a park service area and, therefore, lack access to a park.

Figure 7 is a GIS generated map using the network analysis method in Salem.

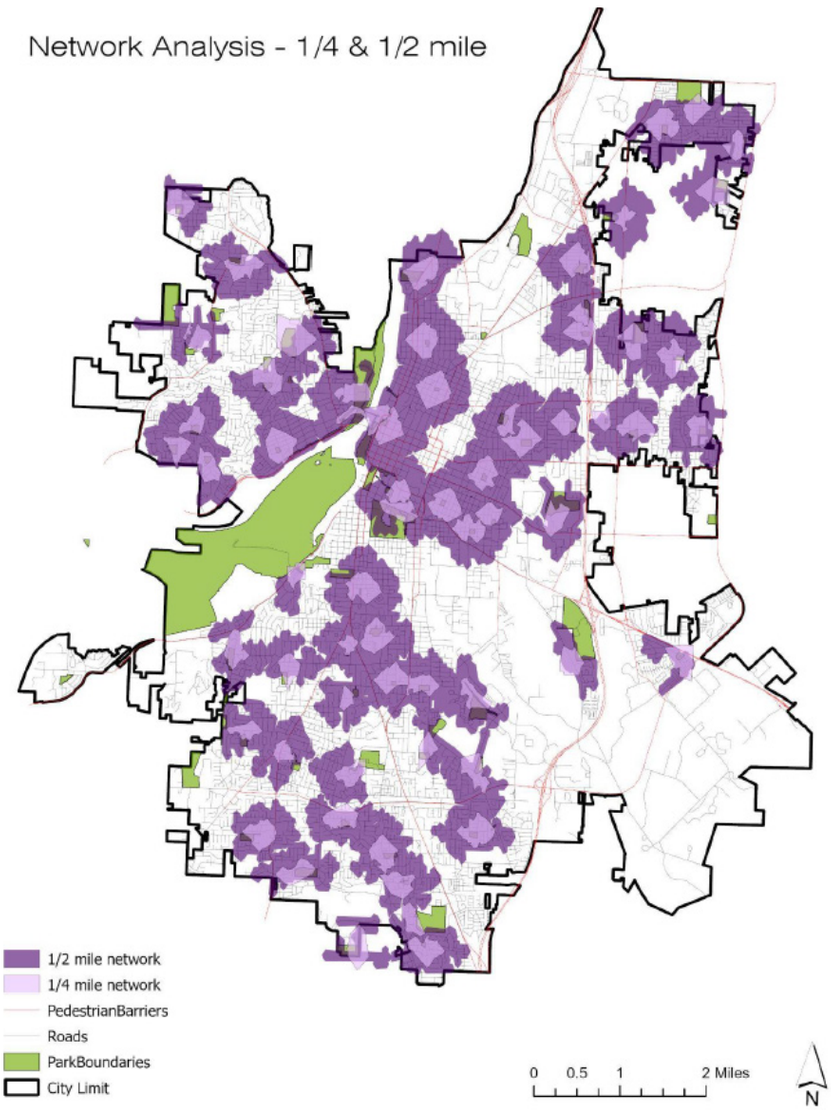


FIG. 7
Road Network Map

The result is a similar, but more detailed analysis than the radial method that uses the road and sidewalk networks and pedestrian barriers in Salem to show how far a person could walk for a 1/4-mile and 1/2-mile to a park. These maps also show this distance from the park entry points, instead of the full barrier. This method is interesting because it shows how much less distance a person can cover when having to navigate block structures and road networks, making the park service areas much smaller than those in Figures 5 and 6. The gaps in service also become much bigger and more apparent. Figure 8 shows this size comparison for a 1/2-mile distance, highlighting the significant difference between the two methods.

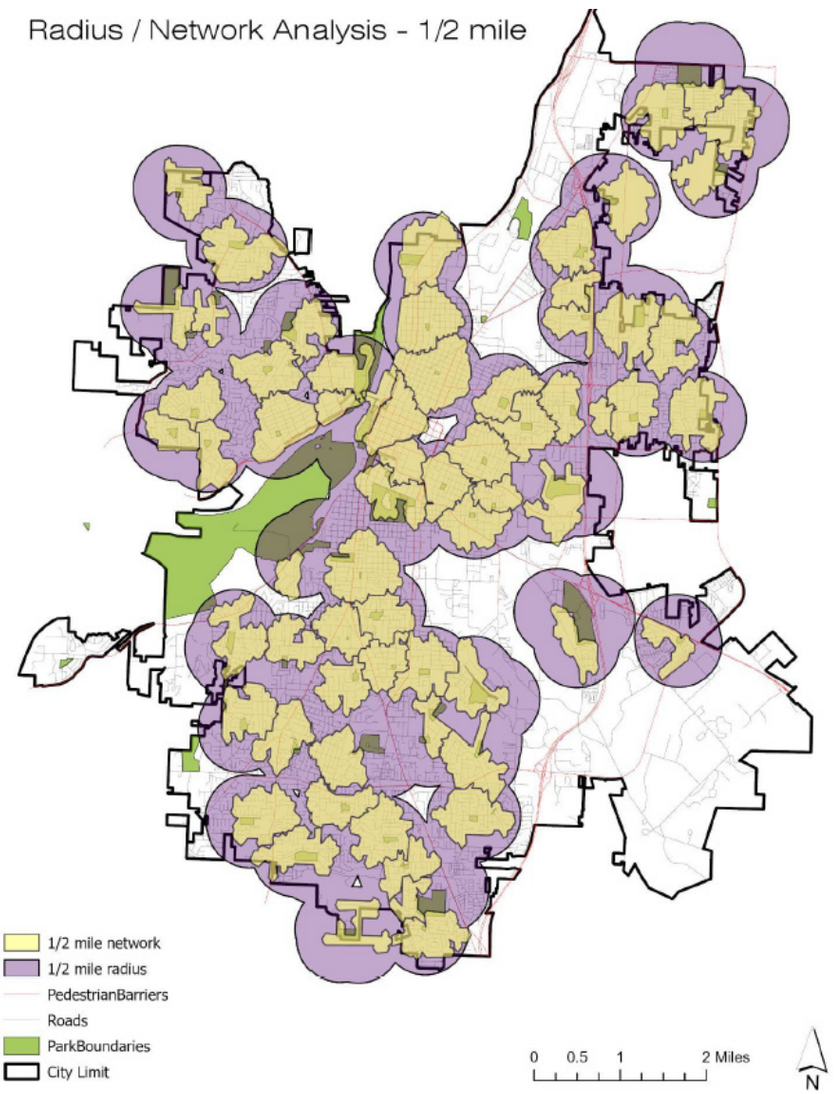


FIG. 8

Radial/Network Analysis

Still, this method does have its issues. For example, all parks only have one entry point, however many parks have multiple, especially for pedestrians. This method could also be enhanced by including different means of transportation, such as determining a 10-minute bike ride service area. Additionally, this method could be overlayed with demographics data to show how many residents live in a service gap.

Another method students used to delineate park service areas and Salem was the Thiessen Polygons method. This method places all residents in a park service area by determining which park each resident in closest too and creating polygons around each park. These polygons are used under the assumption that people will almost always choose the park closest to them to evaluate park congestion or pressure, instead of being used to determine who is and isn't served by a park. Figure 9 shows how this method can be used in Salem.

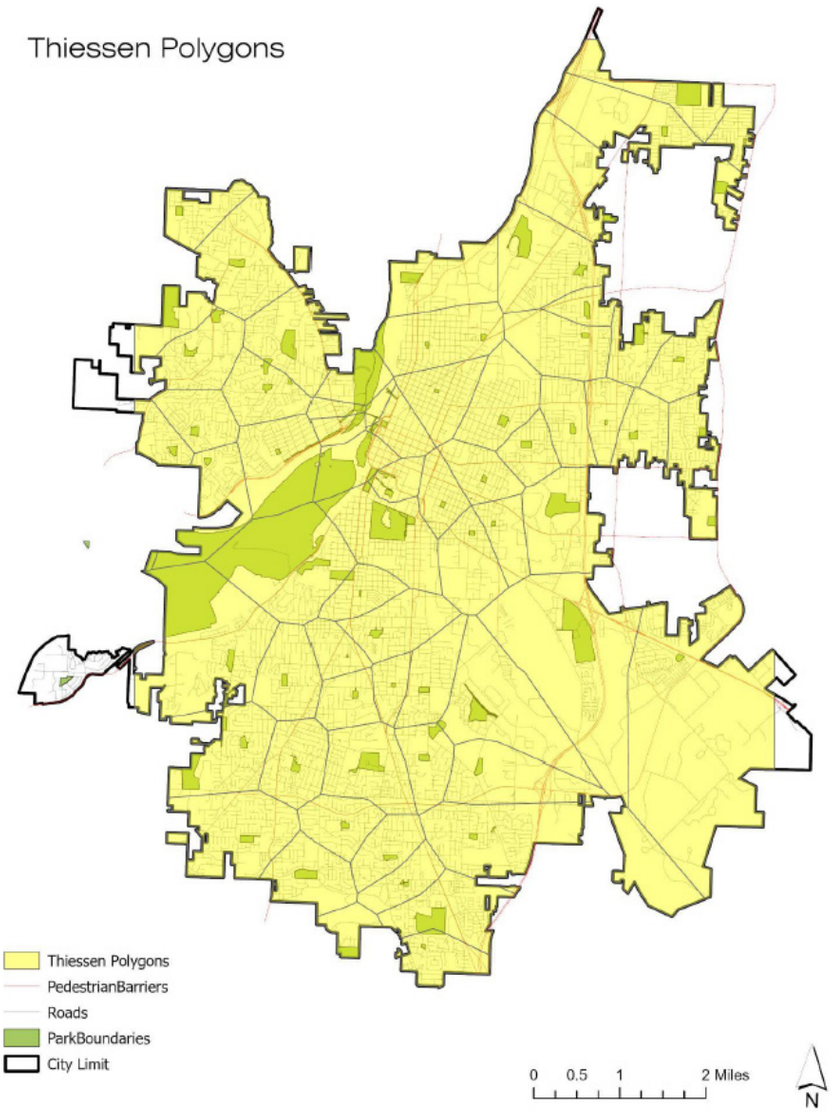
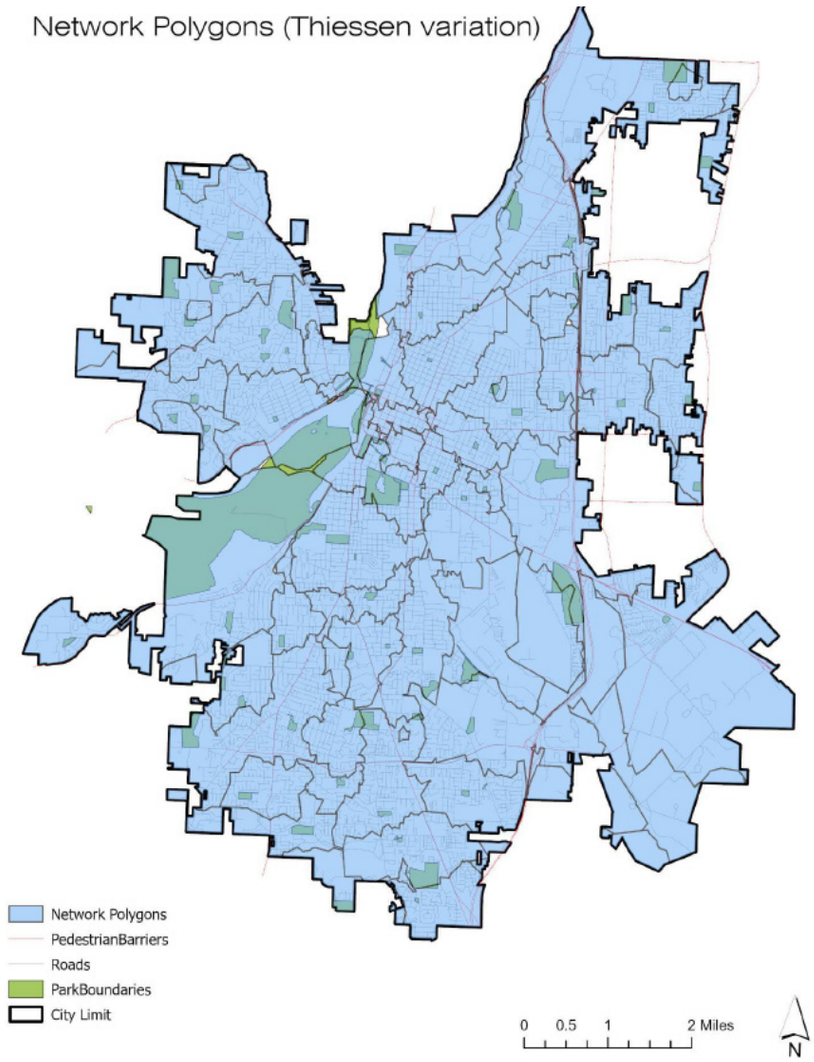


FIG. 9

Thiessen Polygon Method

The next map, Figure 10, takes this Thiessen Polygon method and goes a step further to incorporate principles from the network analysis method. This map delineates park service areas based on the road network to fine tune the barriers between polygons to have a more precise measurement of which residents are closest to each park.

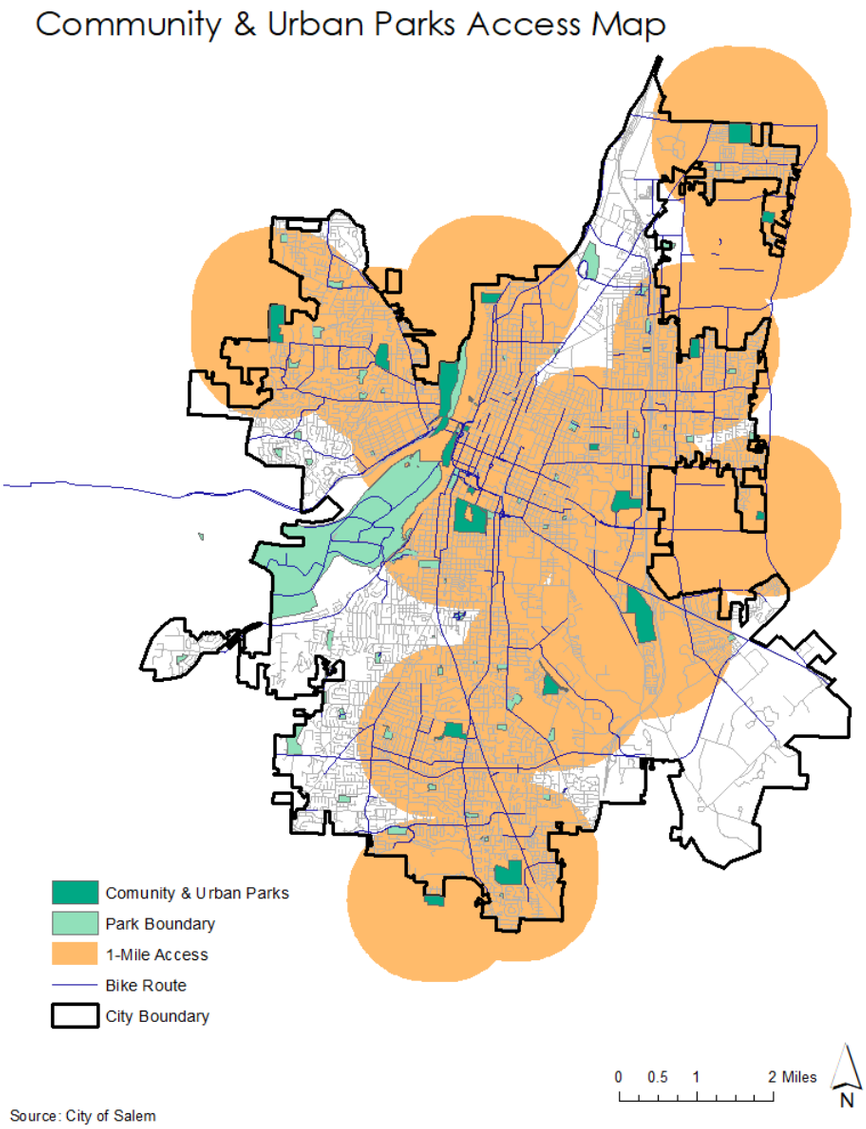
FIG. 10
Network Polygons



The Thiessen Polygon method is very useful for making estimates about park pressure; however, it is limited in its application and is a method that should be used in combination with other analysis methods. These polygons work on the assumption that residents will choose to use the park closest to them, but there are many reasons why residents may not do that. For this reason, polygons are not always an accurate representation of service areas.

The last map students produced using GIS software is a variation of the Euclidean distance that shows a one-mile distance around all of the community and urban Parks in Salem. These park types are designed to accommodate larger portions of the population and are destination

parks with more specified amenities. For this reason, these parks have a larger park service area than the Neighborhood Parks. The Euclidean method works well enough for this delineation because the method of travel is not considered, however, a network analysis could be used for a slightly more nuanced result. This map also overlays the existing bike routes in Salem, to highlight how improved bike infrastructure could give more residents access to a park via a one-mile bike ride. This method highlights some different gaps in park access but also shows that some areas of Salem lack both neighborhood and community park access.



Source: City of Salem

FIG. 11
One Mile Access Map

Overall, the results of this GIS-analysis back up many of the insights from the observational analysis. Salem generally has an even distribution of parks, though there are several gaps in service. The city also lacks access to larger community-wide parks and key amenities, and the parks system's strength is limited by a lack of connectivity among parks. The lack of connectivity is exacerbated by the

many pedestrian barriers, especially the Willamette River and I-5.

These results also highlight why an ideal equity analysis should include multiple forms of analysis. For example, ideally all residents should have access to both a neighborhood park and a larger community or urban park. Having access to enough community park space will help reduce congestion at these larger parks so that residents that use them as neighborhood parks can still enjoy their neighborhood parks in a variety of ways. Therefore, the park service areas for different park classifications should be delineated and evaluated separately. Other examples of what combination of analysis methods the students recommend are in the following section.

Final Recommendations

Based on class analysis and observations, the students recommended that the City of Salem conduct a spatial equity analysis of the Salem parks system that considers the following factors:

1. **Demographic Data**
    a. Overlay Census block group data onto park service areas to identify trends between demographics and park access.
    b. Identify vulnerable populations to add a key equity measurement
    c. Key demographics to consider evaluating include:
        i. Racial/Ethnic minorities
        ii. Health disparities
        iii. Socio-economic status
        iv. Children under 18
        v. Low-income and poverty households
        vi. Persons with disabilities
        vii. Households without a car
        viii. Households in multi-family residences
2. **Transportation Methods**
    a. Use a street-analysis over a Euclidean distance to more accurately evaluate a 10-minute walk service area.
    b. Consider access levels for walking, biking, driving, and using public transit.
3. **Park Classifications**
    a. Consider different sized service areas for different park types and develop a plan that gives all residents access to multiple park types to increase access to a variety of amenities
    b. Metrics to consider for this strategy include:
        i. 1/4-mile to 1/2-mile for neighborhood parks
        ii. 1 to 2 miles for community and urban parks
4. **Amenities**
    a. Identify gaps in equitable access to high value amenities like playgrounds, sports facilities, restrooms, picnic areas, etc.
    b. Develop strategies to ensure that target demographics have access to appropriate amenities, example: youth access to playgrounds
    c. Some priority amenities lacking equitable access include but are not limited to:
        i. Community gardens
        ii. Basketball courts
        iii. Restrooms
        iv. Playgrounds
        v. Trails

Final Recommendations (cont.)

Salem could also overlay multiple spatial factors to highlight areas of most need and help make decisions for park project prioritization. The Los Angeles County Park Plan is a great example of this.

Spatial analysis should be supplemented with surveys, focus groups, and other forms of gathering publics opinion. The City should use a combination of qualitative and quantitative data to evaluate equitable access.

Several students noted a lack of connectivity between parks in Salem, something that the City should consider improving through trail systems, bicycle networks, and pocket parks.

Lastly, Salem staff should define what equity in parks means for Salem specifically and use this definition throughout the plan, not only during analysis but as part of the goals, policies, implementation strategies, community engagement process, and more.

Conclusion

Service area delineation and data gathering methods play a pivotal role in equitable park provisioning. To give the residents of Salem an equitable park system that allows them to have access to green space or a park and to feel safe regardless of regardless of race, ethnicity, socioeconomic background, age, gender, sexual identity, or any other demographic factor is a large undertaking and requires multifaceted data collection methods. The data collection methods observed by students in the Spatial Justice Seminar will be a useful tool in completing an equity analysis in regard to park service areas and park service area delineation.

Students studied both spatial and non-spatial methods. The spatial analysis included travel time by foot, bike or car, street networks, Euclidian distances, park access points and how they relate in Thiessen polygons, and overlay methods using demographic data. These methods allow to park planners remotely gather information about the breadth and quality of service areas. Non-spatial methods for delineating park service areas observed by students included surveys, intercept surveys, observation studies, bench marking and external metrics, Census and demographic data. While taking more time to gather non-spatial data for insight into park service equity and quality that spatial data alone could not be able to give. The Shangcheng District in Hangzhou, China is an excellent example of utilizing spatial and non-spatial data collection methods to create an index scale to score how equitable park service areas area and allows for efficient park provisioning (Shi et al., 2023).

The second deliverable from students explored precedent studies and how they utilize their data to complete park provisioning. While many precedent studies offered insight, the ones that were the most applicable to Salem included Eugene, Oregon, Los Angeles, California, Bellevue, Washington, and Fort Collins, Colorado. Bellevue, Washington utilized community feedback and prioritized walkability to their parks to increase their accessibility (Bellevue Parks and Open Space Plan, 2022). Los Angeles, having a

Conclusion (cont.)

very dense population and high levels of inequity have a large task to tackle when delineating park service area. They opted to use overlay methods of multiple maps that showed trends of inequity that could not be as easily noticed prior. Fort Collins used spatial methods that included time to parks from multiple points. They also carefully chose the cities that they were benchmarking their own parks of based on multiple criteria rather than just one. (ReCreate: Parks and City Masterplan, 2021). Eugene, Oregon acknowledges their historical past of inequity and uplifts Black voices by employing the Black Community Advisory Committee (Eugene Final Parks System Plan, 2018).

Students used observational methods (using tools like Google Maps to do qualitative analysis of Salem) and spatial methods (using ArcGIS data) and found that Salem had an adequate number of parks generally and specifically neighborhood parks, and had a fair amount of land dedicated to park acreage. The distribution of parks and access to large parks could be improved. Lastly, access to amenities and park connectivity are suggested to be prioritized to improve park equity. To begin to tackle this, recommendations offered by students included focusing on including demographic data, to include transportation methods, utilizing different park service areas for neighborhood parks and community parks, and focusing on:

1. including demographic data
2. including transportation methods
3. utilizing different park service areas for neighborhood parks and community parks
4. provisioning high value amenities to areas that might not have access to them

References

Chen K, Lin H, You S, Han Y. Review of the impact of urban parks and green spaces on residence prices in the environmental health context. Front Public Health. 2022 Sep 7;10:993801. doi: 10.3389/fpubh.2022.993801. PMID: 36159304; PMCID: PMC9490231.

City of Eugene. (2018). Parks and Recreation System Plan | Eugene, OR Website. Retrieved February 22, 2024, from www.eugene-or.gov website: https://www.eugene-or.gov/2885/System-Plan

City of Oceanside Parks Recreation Master Plan. (2019). Retrieved from https://www.ci.oceanside.ca.us/government/parks-recreation/parks-and-recreation-master -plan

City of Providence. (2014). Planning Division. Retrieved from City of Providence website: https://www.providenceri.gov/planning/planning2/

City of San Diego. (2021). Parks Master Plan: Parks for All of Us.

City of Steamboat Springs. (2019). Parks, Recreation, Open Space, Trails and Yampa River Master Plan.

Duluth Parks & Recreation. (2022). Essential Spaces: Duluth Parks, Recreation, Open Space & Trails Plan.

Janren Shi, Qiaoyun Guo, Qingwen Lv & Xiumin Zhao (2023) From accessibility of traffic to accessibility of service: the spatial analysis of N-minute service circle of urban park system, Journal of Asian Architecture and Building Engineering, 22:6, 3680-3702, DOI: 10.1080/13467581.2023.2172345

LOS ANGELES COUNTYWIDE COMPREHENSIVE PARKS & RECREATION NEEDS ASSESSMENT. (2016). Retrieved from https://lacountyparkneeds.org/wp-content/uploads/2016/06/FinalReport.pdf

Minneapolis Park & Recreation Board. (2021). Parks for All: Comprehensive Plan 2021-2036.

Oregon Parks and Recreation Department. (2019). 2019-2023 Oregon Statewide Comprehensive Outdoor Recreation Plan.

Parks & Recreation Master Plan | Charleston, SC - Official Website. (2021, October 8). Retrieved February 15, 2024, from www.charleston-sc.gov website: https://www.charleston-sc.gov/2436/Parks-Recreation-Master-Plan

Parks & Recreation Master Plan || Parks & Recreation Master Plan. (2021). Retrieved February 22, 2024, from www.fcgov.com website: https://www.fcgov.com/parksandrecplan/

References (cont.)

Parks and Open Space System Plan. (2022). Retrieved February 22, 2024, from City of Bellevue website: https://bellevuewa.gov/city-government/departments/parks/planning-and-development/parks-open-space-system-plan

Parks, Salem Oregon. (n.d.). Retrieved from Salem Parks and Recreation website:https://www.cityofsalem.net/community/things-to-do/parks#:~:text=Salem%20has%20fo ur%20developed%20community,for%20festivals%20and%20special%20events.

Seattle Parks & Recreation. (2024). Draft 2024 Parks and Open Space Plan.

Sister, Chona, Wolch, Jennifer, and Wilson, John. (2009). Got green? addressing environmental justice in park provision, GEO Journal, 2010, 75:229–248, (DOI): 10.1007/s10708-009-9303-8

U.S Census Bureau. (2020). United States Decennial Survey 2020. Retrieved from https:// data.census.gov/.

Wolch, Jennifer, Wilson, John, and Fehrenbach, Jed. (2005). Parks and Park Funding in Los Angeles: An Equity-Mapping Analysis, Urban Geography, 26:1, 4-35, (DOI): 10.2747/0272-3638.26.1.4

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