



The
Wilderness
Society

Connecting People to Parks in King County:

Transit-to-Parks GIS
Analysis Update

2022





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About The Wilderness Society

The Wilderness Society was founded in 1935 to preserve the country's fast-disappearing wilderness. Since then, we have worked with local communities to protect the wild places people love. As a national advocacy organization, The Wilderness Society works to unite people to protect wild places and public lands across the country to realize a future where people and wild nature flourish together, meeting the challenges of a rapidly changing planet. We also strive to ensure that all people can benefit equitably from these places that we all care about.

About Urban to Wild

We believe that access to nature and a healthy environment is a human right. Parks and public lands are powerful tools of change. We recognize that access is not equitable for people of all races, genders, immigration status, ability and income levels. To pursue our commitment to inspire people to protect wild places, parks and public lands, it is essential that everyone, including Black, Indigenous and communities of color, immigrants and refugees, and people with disabilities can access, enjoy and feel welcome in these places. Through policy advocacy and community partnerships, we work to close the gaps that prevent people from enjoying nature; make nature more welcoming, inclusive and safe for all to enjoy; connect communities to nature in meaningful ways and develop the leaders of tomorrow; and support transformative, community-led work.



Land Acknowledgment

The Wilderness Society recognizes Native American and Indigenous Peoples as the longest serving stewards of the land. We respect their inherent sovereignty and self-determination and honor treaty rights, including reserved rights.

We acknowledge the historic and ongoing injustices perpetrated against Indigenous Peoples and are committed to being more conscientious and inclusive, and working with Indigenous Peoples to advance the establishment of trust and respect in our relationships. We seek the guidance of Native American and Indigenous Peoples to effectively advocate for the protection

of culturally significant lands and the preservation of language and culture. We strive to support actions that respect the priorities, traditional knowledge, interests and concerns of Native American and Indigenous Peoples to ensure a more just and equitable future.

In King County, we acknowledge that our work takes place on the occupied, traditional land of the Coast Salish people.

Acknowledgments

The Wilderness Society would like to thank several organizations and individuals for the contribution of their expertise to the development of this update, primarily Matt Stevenson from CORE GIS as the GIS analyst and cartographer. We would also like to thank our partners from King

County Department of Natural Resources and Parks and King County Metro for their insights and feedback on a draft report. Finally, The Wilderness Society would like to acknowledge the Bullitt Foundation, which is a key supporter of the Urban to Wild program in Seattle.

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Executive Summary

At The Wilderness Society (TWS), we believe that access to nature is a human right. Whether it be your local green space, a national park or a wilderness area, we believe that everyone, regardless of income level or background, should have meaningful access to nature. However, more than 40% of King County residents - an estimated 900,000 - do not have nearby access to a park, with large discrepancies across the county. Transit is one solution that can help close some of those gaps.

In 2019, TWS's Urban to Wild (U2W) program conducted a [transit-to-parks mapping analysis](#) that revealed inequities in transit and green space distribution in King County. Since the release of the original report, we have experienced a global pandemic which has upended lives and affected the state of transit, outdoor recreation patterns and the social landscape. These changes, along with new program and policy efforts to increase access to transit and the outdoors, has led to this updated report that uses recent data.

This update shares new maps and revised recommendations to drive U2W advocacy priorities. Specifically, the maps highlight areas in south Seattle and south King County that have poor transit access to parks and experience many cumulative health, environmental and sociodemographic impacts. These Priority Areas are mostly located in southeast Seattle, Burien, Tukwila, SeaTac, Des Moines, Renton, Kent and Federal Way. To increase equitable access to nature, focused attention should be dedicated to these Priority Areas.

Recommendations also include running an awareness campaign on existing routes to parks; working across sectors and with partners to create safe and welcoming transit and parks systems; preparing for future climate change and public health impacts by improving the transit-to-parks network and investing in parks and open space; testing out potential pilot routes that efficiently bring residents to scenic parks that are close to home; and increasing and sustaining funding to make these efforts possible.

We hope to use the findings of this report to advance our vision that everyone can experience nature in meaningful ways. We look forward to working with King County and community partners to leverage the region's transit and parks systems to equitably connect residents to nature.

Purposes of this Update

- 1** Revise transit-to-parks maps from the 2019 report with recent health, environmental sociodemographic and transit data.
- 2** Highlight areas for action in current King County program and policy efforts using the revised maps and data.
- 3** Call attention to still-relevant recommendations from the 2019 report and highlight new opportunities to increase equitable access to parks, including incorporating findings from our King County Equitable Access to Parks Community Needs Assessment.



Background

In 2019, TWS conducted a first-of-its-kind geographic information system (GIS) analysis on equitable transit access to parks to support the launch of our U2W program in the greater Seattle region and to build on work to connect people to parks via public transit. The 2019 analysis layered transit data, park locations and demographic characteristics to highlight areas with poor transit access to parks and high concentrations of impacted populations. We found that areas in south King County, where many residents are people of color and face overlapping burdens, also have worse transit access to parks. Based on this analysis, we recognized the need to focus our attention and advocacy towards cities in south King County.

It is important to note that the 2019 project was a data-driven analysis with no substantive community engagement informing the data used and methodology developed. Recognizing that future phases of this work would need to involve community input, we set our sights on a complementary qualitative component to better understand community needs and preferences around transit access to parks. In 2021, TWS partnered with King County Parks and ECOSS on a Community Needs Assessment to learn from these community perspectives (described on page 9).

The 2019 analysis was an effort to gain a baseline understanding of where King County has good transit access to parks and where there are gaps.

Much has changed since 2019 to inform the 2022 update including a global pandemic, King County Metro (Metro) transit policy updates, increasing governmental focus on environmental justice, more data on climate change effects and shifting demographic patterns. The challenges the region has faced have highlighted existing social and environmental inequities that present opportunities for realizing our vision of equitable access to nature and public lands.

The following sections provide relevant background information on some of the drivers of this update and highlight projects that TWS has worked on since the release of the 2019 report.

Reasons for This Update

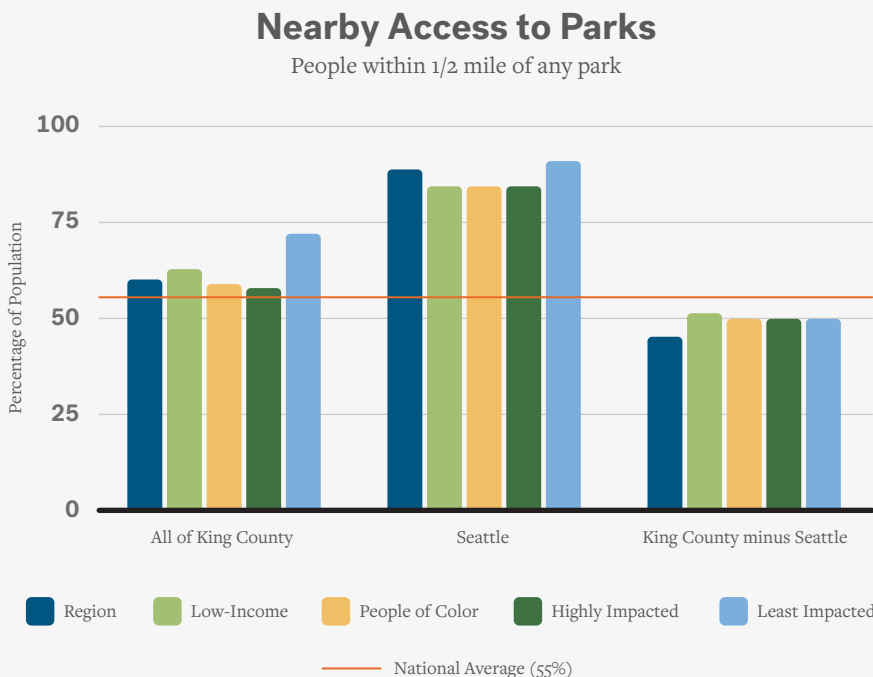
COVID-19 Effects on Outdoor Recreation and Transit

When the pandemic hit in 2020 and being indoors with others became risky, people turned to the outdoors for safe recreation opportunities. A [recent study](#) reported a 20% increase in outdoor recreationists during the pandemic. However, the majority of new recreationists were white with higher incomes, while the people who stopped recreating during the pandemic were more racially diverse, had lower incomes and lived in more urban areas. Like many other social inequities exacerbated by the pandemic, outdoor recreation has become more divided in a time when it is most needed.

The state of transit also changed drastically across the country. Metro suffered [significant impacts](#) including budget shortfalls and staffing shortages due

to COVID-19, as well as reduced ridership. With public health and equity in mind, Metro adjusted service levels to meet the needs of essential workers. Optional services like [Trailhead Direct](#) were put on hold in 2020. Trailhead Direct started up again in 2021, but enduring COVID impacts reduced its capacity and suspended the pilot route to Cougar Mountain, which served south King County. Despite challenges and uncertainty posed by COVID, Metro passed a series of [critical policy changes](#) in 2021 that will influence public transit investments over the coming decade, ensuring transit investments go where they are needed most. This equity- and sustainability-centered approach is grounded in the [2020 Mobility Framework](#), which was co-created with the community through Metro’s Equity Cabinet and other outreach. The framework was built around the shared vision of mobility as a human right that allows communities and individuals to access the opportunities needed to thrive.

Figure 1 | Nearby Access to Parks



King County is slightly above the national average for nearby access to parks, but there are large discrepancies depending on where in the county you live. Eighty-eight percent (88%) of Seattle residents can reach a park within 1/2 mile, but just 45% of the rest of King County can.

Populations who are “least impacted” by having 3 or fewer of the 23 cumulative impact indicators described in the maps below tend to have better nearby park access than those who are “highly impacted” by at least 10 indicators. In King County minus Seattle, the discrepancies are smaller, but all population groups have worse access than the national average of 55%.



King County Equitable Access to Parks Community Needs Assessment

Experiencing a pause in King County’s Trailhead Direct service and guided by the county’s [commitment to equity and social justice](#), King County Parks (Parks) took the opportunity to learn about community needs and preferences around visiting parks via transit, which had not been done to inform initial service development. Parks teamed up with TWS and ECOSS, who had all collaborated before on Trailhead Direct partnerships and outreach.

The [Community Needs Assessment](#) provided valuable insight into future Trailhead Direct service, transit-to-parks opportunities and advocacy priorities for TWS and community organizations. The project team collaborated with 11 community partners¹ to co-design an online survey and 6 community-led roundtable discussions. All partners and roundtable participants were compensated for their time and knowledge, and the project culminated in a series of recommendations for King County, outlined on the right. Ongoing TWS advocacy priorities will be guided by these community-sourced recommendations as we continue to collaborate with partners on making these spaces more accessible, welcoming and inclusive.

¹ Community partners included: Living Well Kent, ECOSS, GirlTrek, Golden Bricks Events, YMCA BOLD & GOLD, Young Women Empowered, Latino Outdoors, Outdoor Asian, Partner in Employment, Disabled Hikers and African Young Dreamers Empowerment Program International.

Recommendations we heard from our partner-led roundtables and community survey include:

NON-PUNITIVE VISITOR SUPPORT

Participants expressed the need for more staff on buses and in parks that are not rooted in policing and punitive measures.

FREE AND REDUCED COSTS

Community ideas included guided events with subsidized fares, “free transit day” to encourage public transit use and systemic reform to remove this financial barrier altogether.

DETAILED AND INCLUSIVE INFORMATION

Community members are looking for more detailed, accessible and inclusive information that helps them prepare and plan for their trips to parks and on transit.

CO-DESIGN WITH COMMUNITY

Community members shared an interest in working with public agencies to help design spaces that work for their communities.

HIRE FOLKS FROM BIPOC COMMUNITIES

To invest in communities and encourage residents to utilize parks and transit, participants recommended hiring staff from within those communities.

INTER-COUNTY AND -AGENCY COORDINATION TO ADDRESS SYSTEMIC ISSUES

Successes and challenges of increasing safety, security and belonging in one department can be shared across departments and other decision-making entities.

AVAILABILITY AND ACCOUNTABILITY OF LEADERSHIP

Community members would like more opportunities to interact with King County leadership and decision makers.

COMPENSATE COMMUNITY PARTICIPATION

Participants in this project appreciated getting compensated for their leadership and knowledge, a practice which King County should continue.

What would encourage you to go to parks, trails and natural areas in King County more often?

more events
more amenities
better accessibility
better park maintenance
feeling safer at parks
more info at the park
lower costs people to go with
more ecological diversity
more trip planning info
bathrooms

Who responded to our survey?

483

respondents

Nearly **40%**

identified as BIPOC,
with 8% preferring not to say

65%

identified as female
vs. 50% countywide

52%

identified as white
vs. 66% countywide

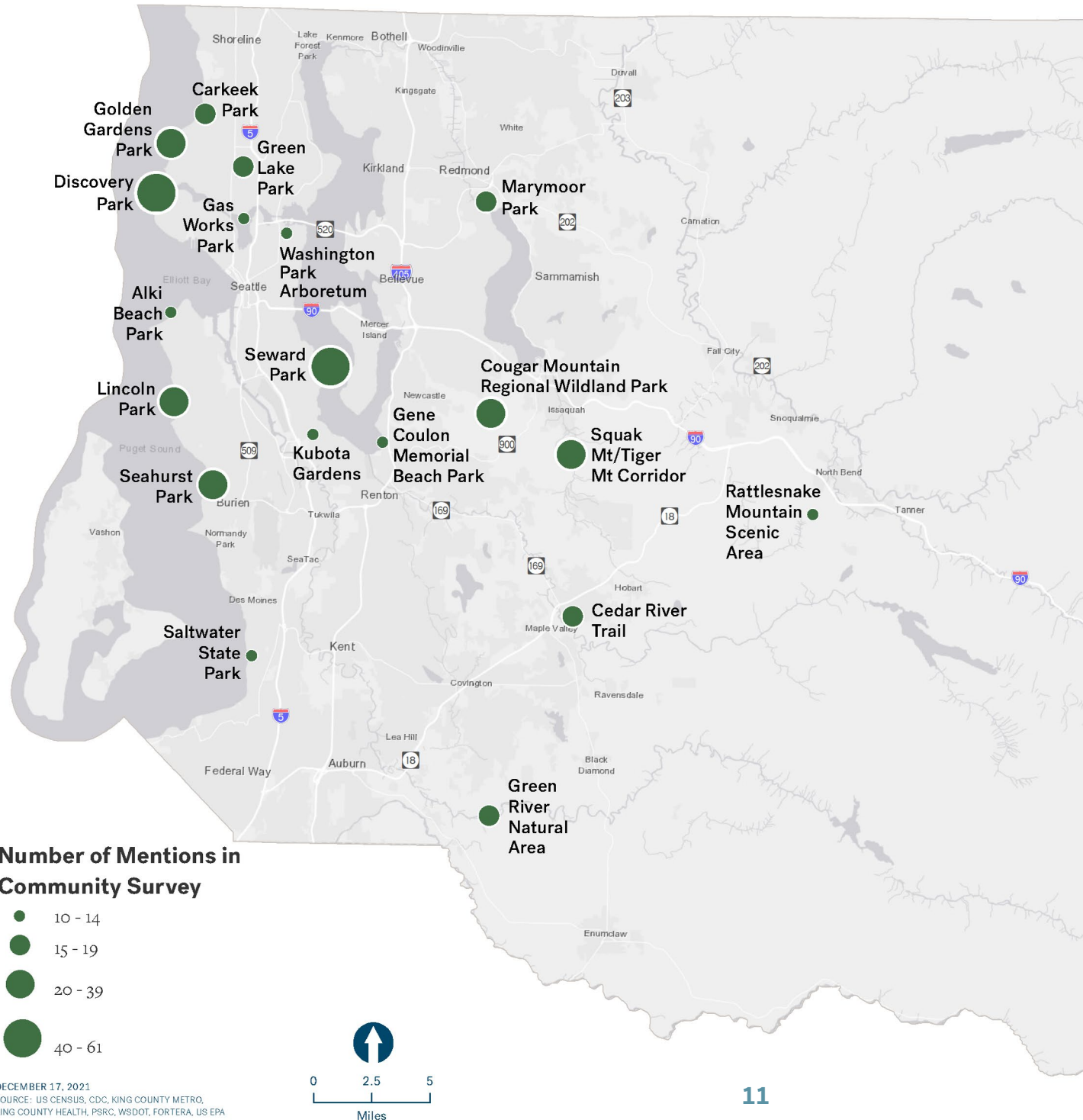
15%

identified as Black
vs. 7% countywide

45%

aged 26-45
vs. 32% countywide

Figure 2 | Desired Park Destinations: Where People Want to Go



Desired Park Destinations: Where People Want to Go

In the Community Needs Assessment survey, participants were asked which three parks in King County they would like to visit more often. Figure 2 shows the most frequently mentioned parks from the 483 survey participants. Respondents overwhelmingly want to visit larger, regional parks in the county. When asked why they chose these parks, participants noted water access, scenic views and opportunities to explore nature and relax.

These parks were mentioned most frequently, in order:

1. Seward Park
2. Discovery Park
3. Cougar Mountain
4. Squak/Tiger Mountain
5. Seahurst Park
6. Golden Gardens Park
7. Lincoln Park

2022 Transit-to-Parks Map Series

Similar to the 2019 analysis, TWS mapped the intersections of transit, parks and people. The goal was to visually demonstrate which areas of King County have poor transit access to parks and high concentrations of people experiencing multiple burdens. These areas, called Priority Areas, present critical opportunities for increased advocacy and investments around equitable transit to parks (see [Appendix C](#) for methodology details). Figure 3 below shows the layering process in our analysis.

Figure 3 | Layering Categories

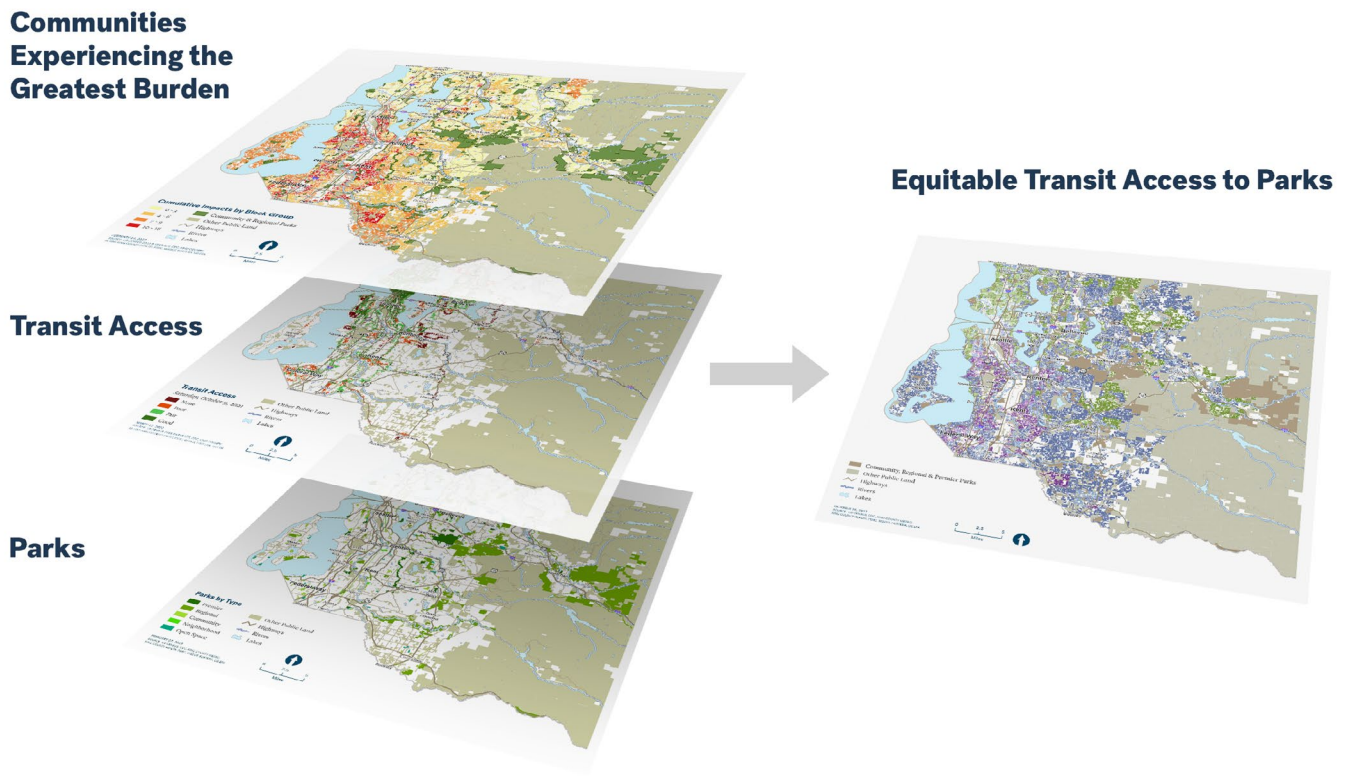
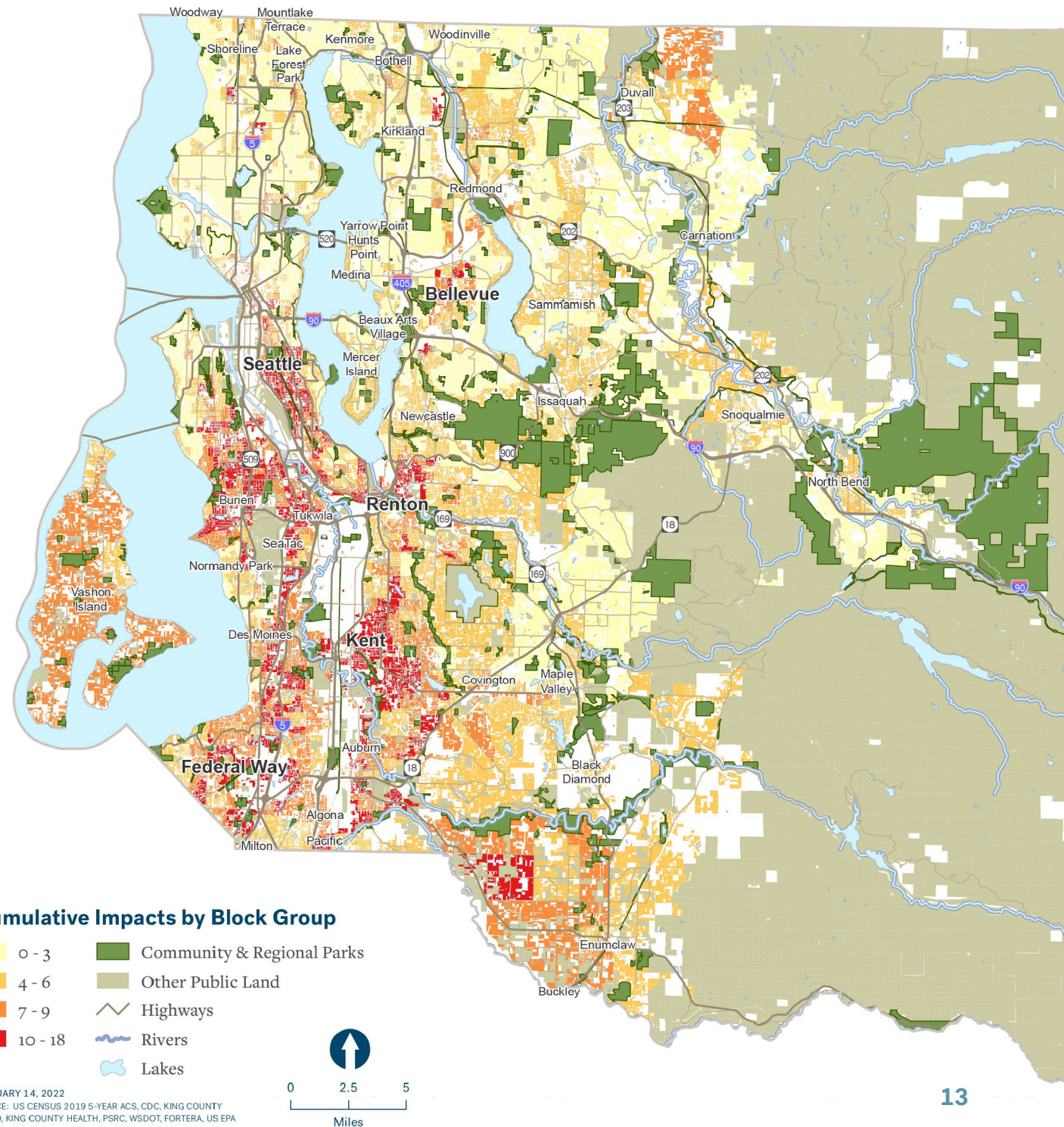
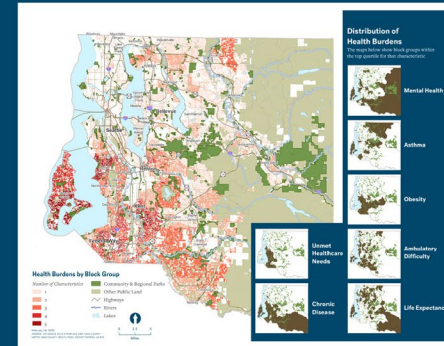


Figure 4 | Communities Experiencing the Greatest Burden

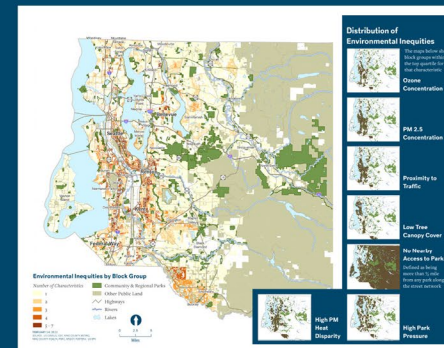


Communities Experiencing the Greatest Burden

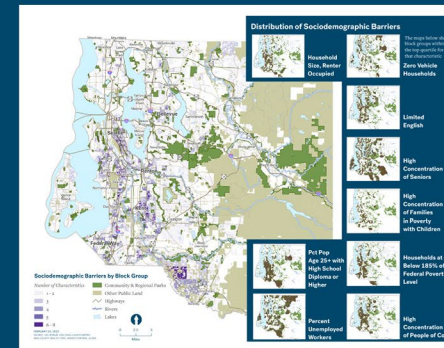
Distribution of Overlapping Health Burdens, Environmental Inequities, and Sociodemographic Barriers



Distribution of Health Burdens



Distribution of Environmental Inequities

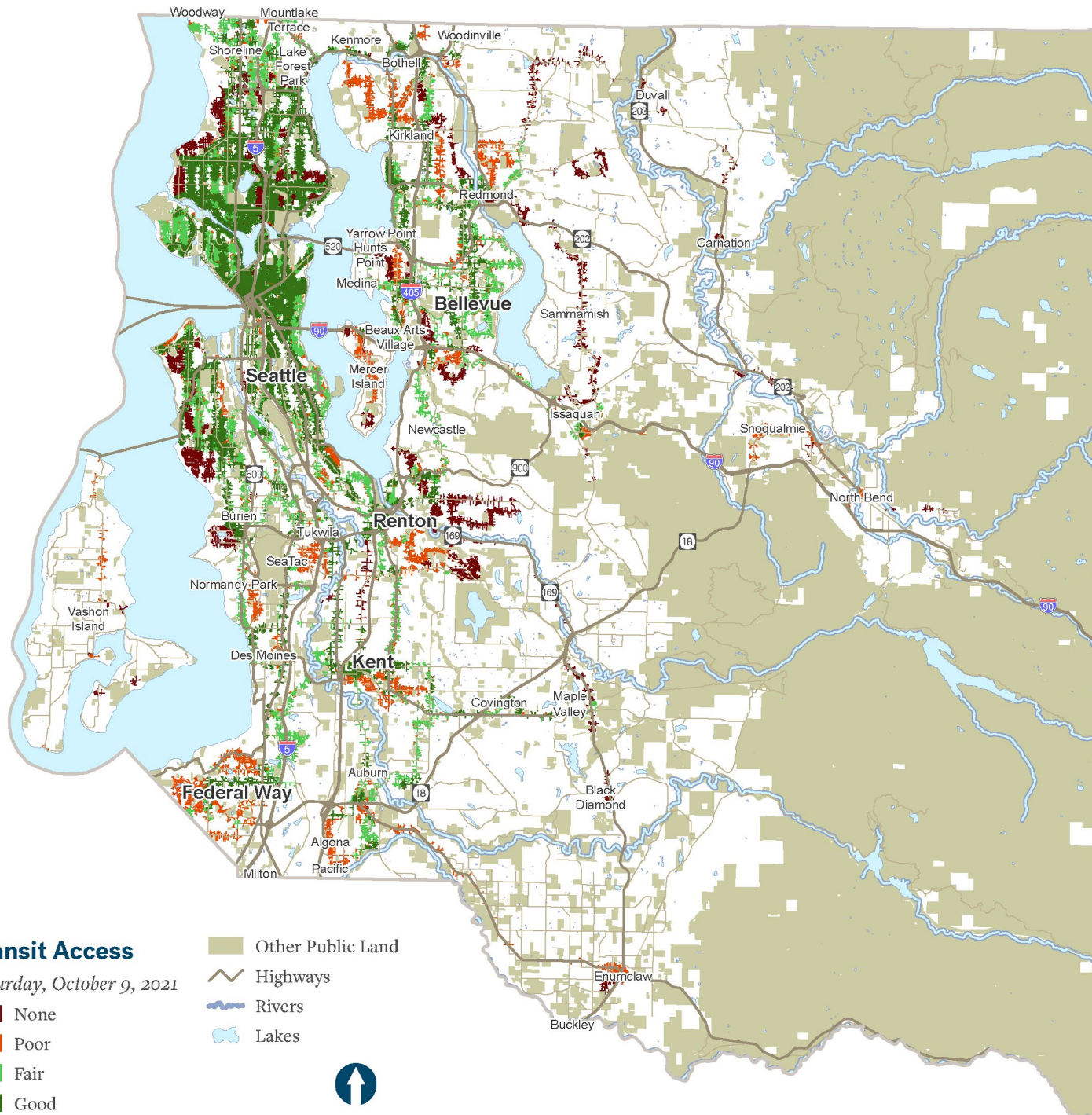


Distribution of Sociodemographic Barriers

This map shows the distribution of seven health burdens, seven environmental inequities and nine sociodemographic barriers (see [Appendix A](#) for each individual map). Block groups in red are in the top quartile for at least 10 of the 23 total indicators. The updated map uses data from 2021, includes more indicators than the 2019 version (see [Appendix C](#) for the full list of indicators) and removes uninhabited areas. General patterns remain the same from the 2019 map, though this updated map is more helpful for looking at site-specific trends.

Communities experiencing the greatest burden are concentrated in south Seattle and south King County, particularly southeast Seattle, Burien, Tukwila, SeaTac, Des Moines, Renton, Kent and Federal Way.

Figure 5 | Transit Access



Transit Access, Saturday October 9, 9:00-11:00 am

This map shows transit access and frequency on a Saturday morning. Green lines represent areas within ¼ mile of a transit stop with frequent service (a bus coming every 15 minutes or less), and red lines show bus lines that do not run at all in this modeled time window. Although Saturday morning can be a popular time to visit a park, this map demonstrates how long someone could wait for a bus in areas with poor transit access.

The four categories of transit access are defined as follows:

None: No transit trips leave from the stops within the two hour window

Poor: Trip frequency is 30 minutes or more

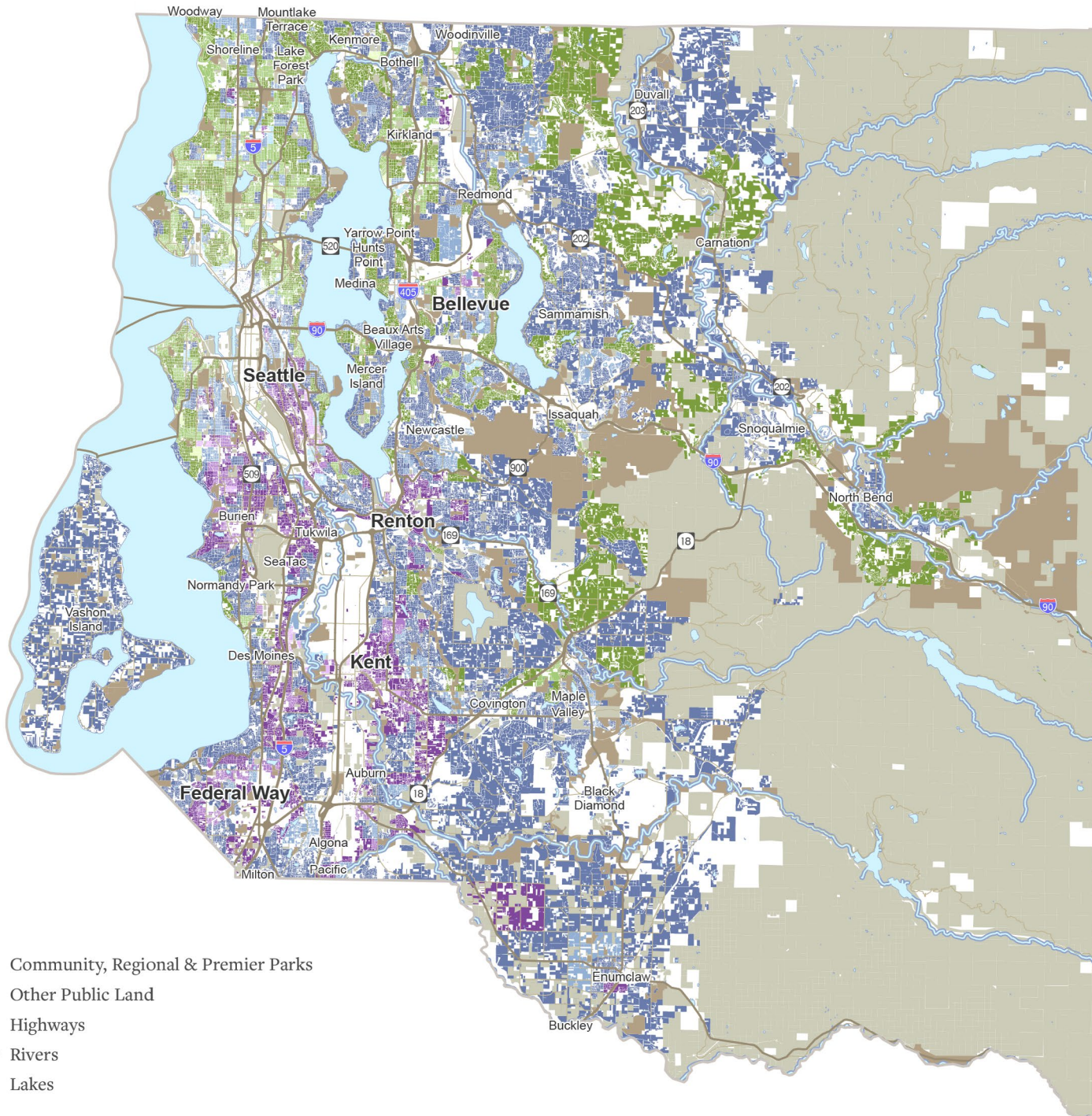
Fair: Trip frequency between 15-30 minutes

Good: Trip frequency is less than 15 minutes

This map was created using 2021 data downloaded from the Metro database in General Transit Feed Specification (GTFS) format.

Most of Seattle has good transit access on Saturday mornings, but buses don't run frequently in many parts of south King County.

Figure 6 | Equitable Transit Access to Parks



Equitable Transit Access to Parks

Modeled using transit data from Saturday, October 9, 2021

Total Population by Category of the Equitable Transit Access to Parks Index

Transit Access to Parks

Good	32,049	96,976	19,202
Moderate	87,053	245,084	230,175
Poor	277,683	704,329	502,951
	High	Moderate	Low

Cumulative Impacts

Transit access to parks is defined as follows:

Good: Able to reach at least two Community or Regional parks, including one Premier park*, within 30 minutes from doorstep to park

Moderate: Able to reach some combination of Community, Regional and Premier parks within 30 minutes, but not up to Good standard

Poor: No transit access to parks (unable to reach any Community or Regional parks within 30 minutes)

Cumulative impact levels are defined as follows:

High: Block group is in the top quartile for cumulative impacts (10 or more)

Moderate: Block group is in the middle two quartiles for cumulative impacts (4-9)

Low: Block group is in the lowest quartile for cumulative impacts (3 or fewer)

*Community parks are 10-100 acres, Regional parks are over 100 acres, and Premier parks are a subset of Community and Regional parks that contain at least one of each of the following: passive amenity, active amenity, trail, picnic table, and restroom.

This map represents a combination of the previous two maps with park locations also included. The areas in dark purple show the Priority Areas that have poor transit access to parks and experience many cumulative health, environmental and sociodemographic impacts.

Priority Areas are concentrated in southeast Seattle, Burien, Tukwila, SeaTac, Des Moines, Renton, Kent and Federal Way and comprise almost 13% (278,000) of King County's population (shown in dark purple).

The areas with moderate-high cumulative impacts and moderate-poor transit access to parks comprise 60% (1.3 million) of the county's total population (shown in dark purple, dark blue, medium purple and medium blue).

67% of Community and Regional parks are inaccessible via frequent transit on the weekend.



Potential New Transit Routes to Parks

Metro operates a wide range of programs to meet the community’s mobility needs, from fixed route service such as Bus Rapid Transit to other on-demand services including Via to Transit and Community Ride. Trailhead Direct was launched as a pilot program shuttle service with multiple routes and destinations, with the Mount Si and Issaquah Alps routes now part of Metro’s sustained service. Given the community’s interest in using transit to access parks and outdoor experiences, Metro, Parks and other entities can consider future pilot programs to meet rising demand and community need.

Based on our Community Needs Assessment findings, Metro, Parks and other relevant agencies could consider investing in more pilot programs that, if successful, could become part of Metro’s sustained service in the future.

Figure 7 and **Figure 8** show two examples of potential pilot bus routes that would reach Seward Park, Discovery Park, Golden Gardens Park and Carkeek Park with either slight adjustments to existing routes or a new dedicated shuttle service. Access to nature doesn’t have to mean hiking in the wilderness—experiencing nature close to home can be equally as meaningful and more reachable. Transit routes like Figures 7 and 8 can create connections to many amazing parks that residents want to visit.

Both of these examples connect to a light rail station, creating potential access points for anyone along the light rail line. These routes could be turned into city versions of Trailhead Direct.

Additional potential pilot routes for King County’s and partners’ consideration can be found in [Appendix B](#).

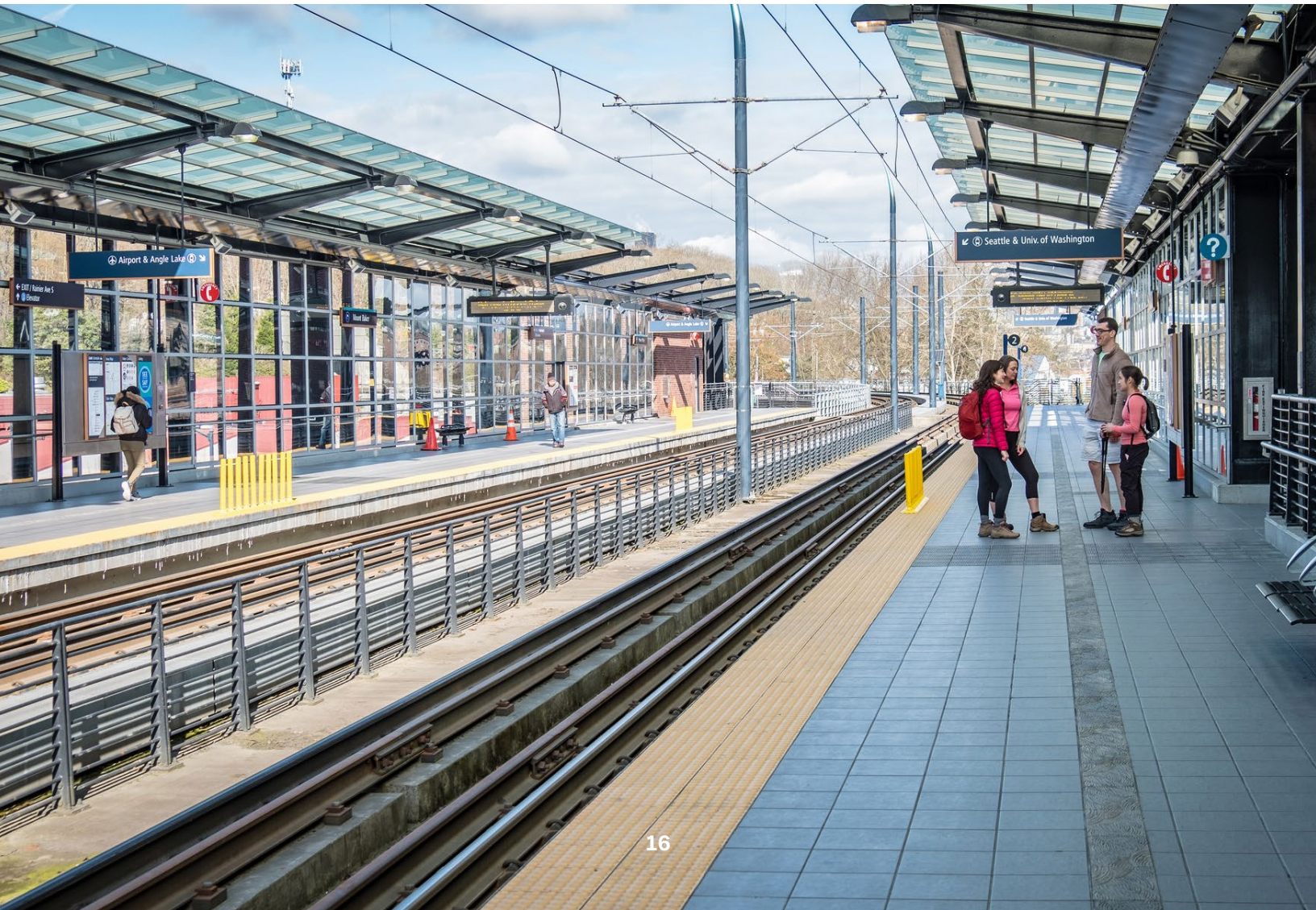
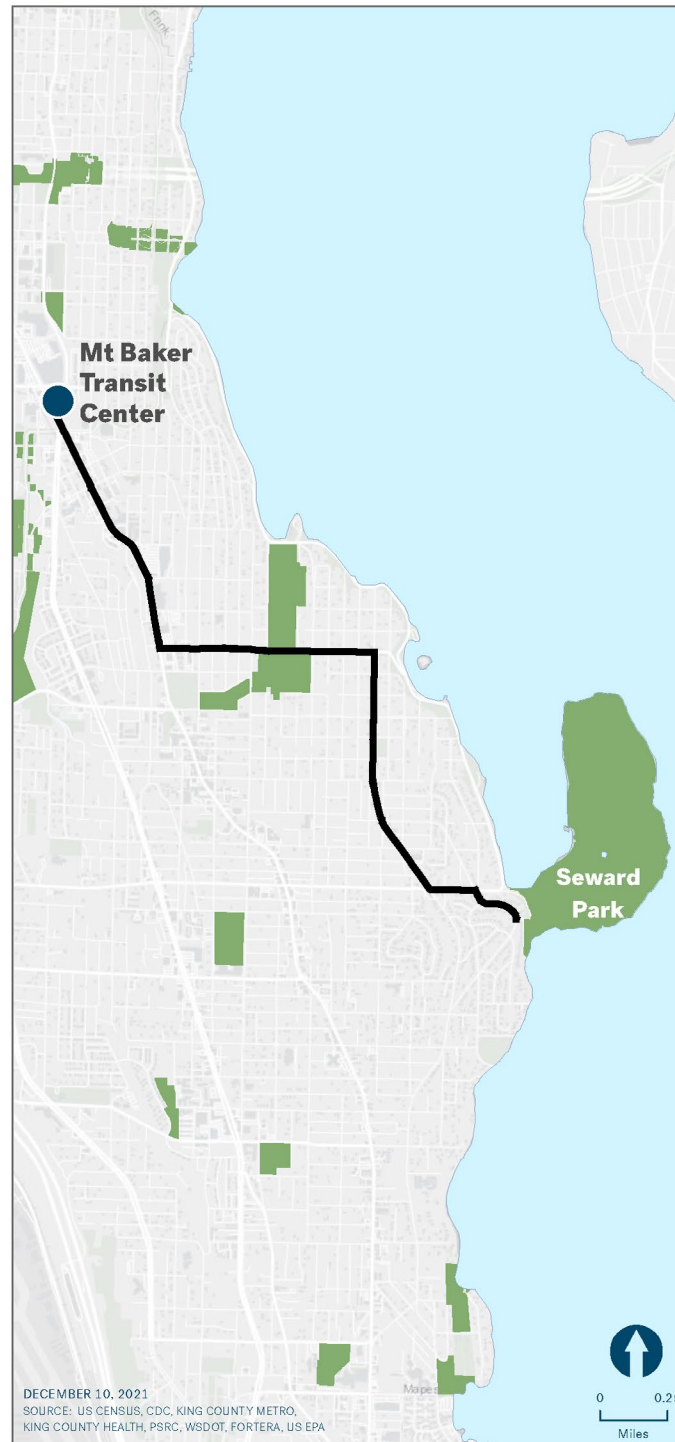


Figure 7 | Mount Baker Transit Center to Seward Park



Mount Baker Transit Center to Seward Park

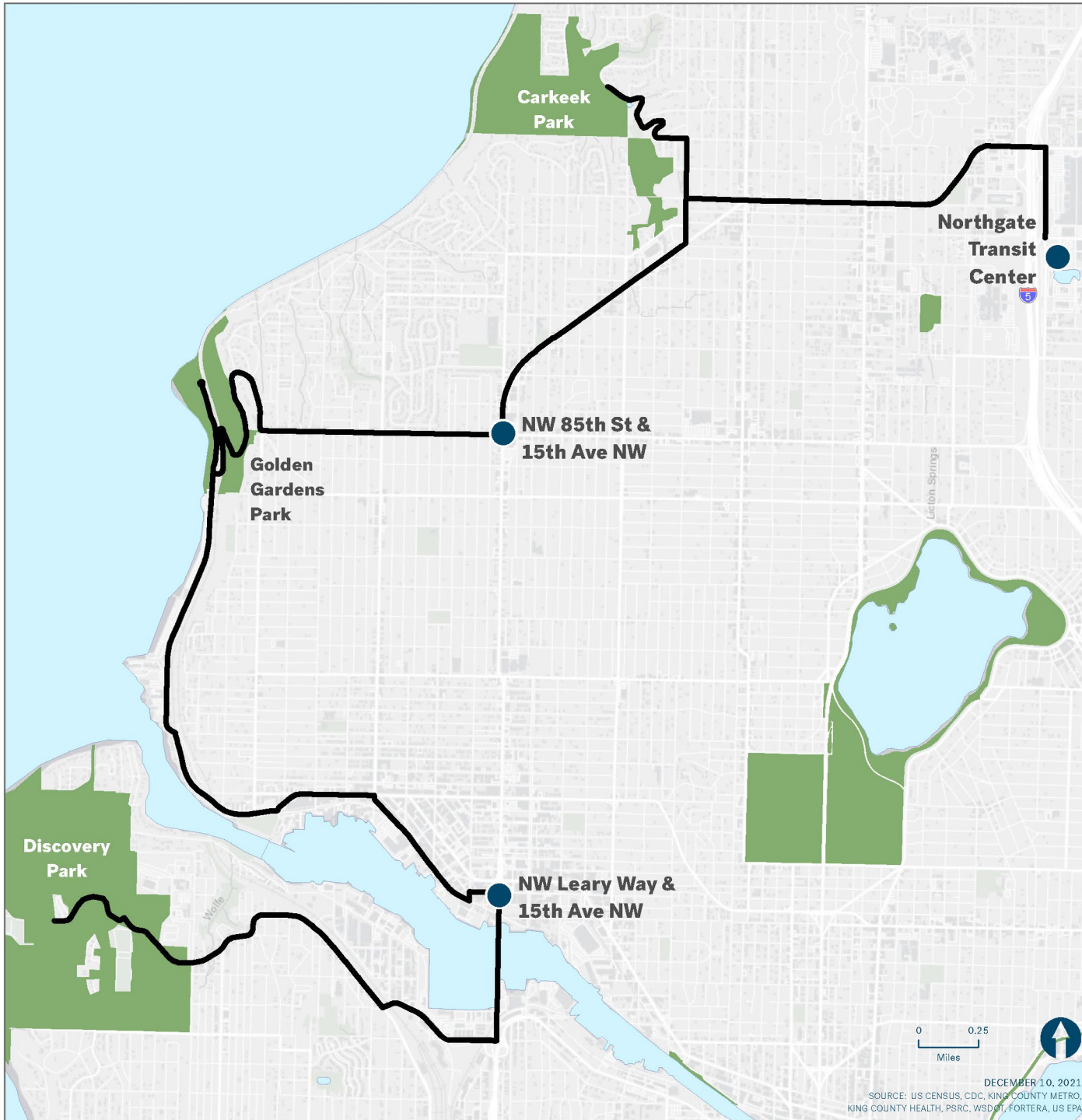
Current Route (left)

Riders can take Route 7 from the Mt Baker Transit Center to S Genesse St and Rainier Ave S, transfer to Route 50, then have to walk 6 minutes to get into the park

Proposed Route (right)

A modification to Route 50 or an entirely new route with direct service from the Transit Center to the park could cut the total travel time by more than half

Figure 8 | North Seattle Loop



North Seattle Loop

Proposed Route

This route would originate and terminate at the Northgate Transit Center and connect Carkeek Park, Golden Gardens Park, and Discovery Park. There would be a stop between Carkeek and Golden Gardens, at NW 85th St & 15th Ave NW, and an additional stop between Golden Gardens and Discovery at NW Leary Way & 15th Ave NW.

Recommendations

The updated maps in this report highlight opportunities to increase transit access to parks in places that need it most. The following section details some recommendations to do so. Many of the recommendations from the [2019 report](#) are still relevant, which are included here along with some new recommendations inspired by recent efforts like the [Community Needs Assessment](#) and Parks’ Safety, Belonging, and Inclusion community conversations as part of the [2022 Open Space Plan](#). TWS looks forward to collaborating with King County and many other partners to advance the recommendations outlined below.



1 Focus transit-to-parks investments in Priority Areas.

To align with Parks’s and Metro’s equity-centered approach and commitment to “go where the needs are greatest,” future transit-to-parks investments should be directed to areas that have poor transit access to parks and more overburdened populations (dark purple areas in [Figure 6](#)). According to our analysis, these areas are concentrated in southeast Seattle, Burien, Tukwila, SeaTac, Des Moines, Renton, Kent and Federal Way and consist of almost 13% of the county’s total population.

Some specific opportunities to equitably improve the transit-to-parks network include:

- Modify existing routes to stop at parks and make these routes available on weekdays and weekends. Choose routes that connect to frequent transit hubs and centers of activity to encourage more people to use them. Focus on dark purple areas in [Figure 6](#).
- Implement pilot programs to urban parks that community members want to visit, such as Seward Park, Seahurst Park and Discovery Park (see [Figure 7](#), [Figure 8](#) and [Appendix B](#)). Work with community groups to support pilot program implementation and evaluation. Focus on dark purple areas in [Figure 6](#).
- Prioritize south King County in future Trailhead Direct service and reinstate the Cougar Mountain route as soon as possible.



2 Increase and sustain investments in parks and transit systems to create more equitable, responsive, safe and welcoming services.

Creating more equitable, responsive and safe parks and transit systems will require increased funding and investment to support priority programs and initiatives. Looking ahead, both Parks and Metro will require levies to support the ongoing operations of Parks and bold priorities like the [Land Conservation Initiative](#) and realize [Metro Connects](#), Metro's vision to improve mobility services in King County over the next 30 years.

Some specific opportunities to increase and leverage funding include:

- Secure passage of necessary levies to support parks and transit operations. The King County Parks Levy will be back on the ballot in 2024 to support the next six years of county parks operations. Metro Connects is only partially funded and will cost more than \$28 billion to realize the 2050 network.
- Address funding gaps related to King County's Land Conservation Initiative, which will require \$3-4 billion over the next 30 years. Creative approaches like increasing the use of bond financing to pull forward \$150 million to launch this effort is critical, as well as increasing funding over the long term through important programs like the [Conservation Futures Program](#).
- Secure and leverage state and federal grant funding to support transit and park investments, looking towards recent state transportation investments, federal infrastructure dollars and other anticipated climate-related investments funded by the state's Climate Commitment Act, as well as federal climate action.
- Collaborate across agencies and communities to secure regional funding and partner on projects and improvements. Work with elected leaders to gain support on funding opportunities.

3 Strategically communicate information and opportunities to increase accessibility and improve inclusivity of parks and transit systems.

Utilizing creative communications strategies not only increases the accessibility of parks and transit systems, it can also improve how welcoming these systems are for highly impacted populations and other target audiences.

According to our analysis, light and medium purple areas have the greatest potential for an awareness campaign because they already have good-moderate transit access to parks and are home to highly impacted populations (see [Figure 6](#)). Focus on downtown Seattle and parts of southeast Seattle, White Center and Burien. Light blue and green areas also show areas with good transit access to parks. If people knew about transit opportunities, they might leave their car at home and take the bus. Places in Seattle like Capitol Hill, Green Lake, West Seattle and many sections of north Seattle have many opportunities to easily connect people to parks.

Some specific opportunities to communicate information more equitably include:

- Run awareness campaigns to highlight existing routes to parks and increase use of these specific routes among impacted populations. Focus on light and medium purple areas in [Figure 6](#).
- Increase signage on buses and in parks in multiple languages.
- Put virtual tours on park websites so visitors can do self-guided tours ahead of time to prepare.



4 Foster collaboration among departments, agencies and community groups to create welcoming and safe parks and transit systems.

Our Community Needs Assessment shows that safety is paramount for park and transit users, particularly BIPOC communities, women and people with disabilities. In general, people want parks and transit to be clean and well maintained, have visible but non-punitive visitor support, have more information about park visitation and have resources available in multiple languages.

Some specific opportunities to foster cross-sector collaboration include:

- In advance of a new parks levy, conduct a comprehensive parks needs assessment in King County to measure overall park quality including data on amenity presence, prevalence and condition. Work with community groups to assess community needs and ultimately inform future park investments and priorities. Look to the [Los Angeles County Parks Needs Assessment](#) for an exceptional model.
- Partner with community-based organizations to co-design spaces with communities and provide programming and other support services to meet local needs.
- Build on Metro’s [Safety, Security, and Fare Enforcement \(SaFE\) Reform](#) effort to center BIPOC voices and make transit safe and welcoming for all.
- Maintain high park and transit quality to encourage visitation, especially at parks with water views.
- Conduct proactive and ongoing community engagement and host activities at local parks and public spaces tailored to highly impacted populations.

5 Prepare for future climate change and public health impacts by improving the transit-to-parks network.

Our collective experience navigating the COVID pandemic and living with the uncertainty of climate change calls for bold investments in public resources that make our communities more resilient. Parks provide unique opportunities to connect with one another and reap tangible health and well-being benefits. Transit provides critical mobility infrastructure that keeps our region connected and moving.

Some specific opportunities to support climate resilience and public health include:

- Continue to equitably invest in the parks and transit systems and prioritize new park and transit investments to “go where the needs are greatest” while sustaining adequate levels of service across both systems.
- Partner with local public health agencies to leverage health benefits of parks and provide opportunities for safe outdoor recreation and a range of experiences.
- Continue to engage with the [King County Strategic Climate Action Plan \(SCAP\)](#) to connect green space and transit to climate solutions, and leverage system resources to mitigate climate change impacts, such as urban heat.
- Forge strategic partnerships with community-based organizations to promote transit-to-parks routes and develop complementary programming.

Conclusion and Next Steps

King County has a well-established parks system and a quickly growing transit network. Agencies within the county are moving towards more equitable access and inclusion, especially for communities experiencing the greatest burden. However, there are still large gaps in transit access to parks in south King County, particularly southeast Seattle, Burien, Tukwila, SeaTac, Des Moines, Renton, Kent and Federal Way. Priority Areas experiencing the greatest cumulative impacts and poor transit access to parks make up almost 13% (277,683) of the county's population. Areas with moderate-high cumulative impacts and moderate-poor transit access to parks comprise 60% (1.3 million). Parks themselves are not always reachable; 67% of Community and Regional parks are inaccessible via frequent transit on the weekend.

Since 2019, TWS and partners have taken more steps towards a connected transit-to-parks network that equitably serves King County communities. Through this GIS update and the [King County Equitable Access to Parks Community Needs Assessment](#), we have gained additional insight into where parks are needed most and what community members want to see in their parks and transit systems. We have learned the importance of safety and sense of belonging in these spaces, as well as physical access. The Community Needs Assessment was the qualitative tool that was missing from our first GIS analysis, but now complements this update as we use both quantitative and qualitative data to push for better access to parks and transit.

We recommend that King County consider implementing pilot routes to local parks. Because of the Community Needs Assessment, we now know which parks many residents want to visit. A program like Trailhead Direct, but for urban parks, could provide easy connections between transit hubs and multiple parks. Additionally, existing routes could be modified slightly to stop closer to a park entrance.

Other recommended next steps include conducting a comprehensive parks needs assessment to inventory parks and amenities countywide and gain broader community feedback. The [Los Angeles County Parks Needs Assessment](#) is an exceptional model

for collecting community feedback and inventorying parks, which King County should adapt to this region. Additionally, the County could implement an awareness campaign to advertise the many routes to parks that already exist, focusing on areas with highly impacted populations. Collaborating across sectors to leverage the transit-to-parks network can help support climate and public health goals.



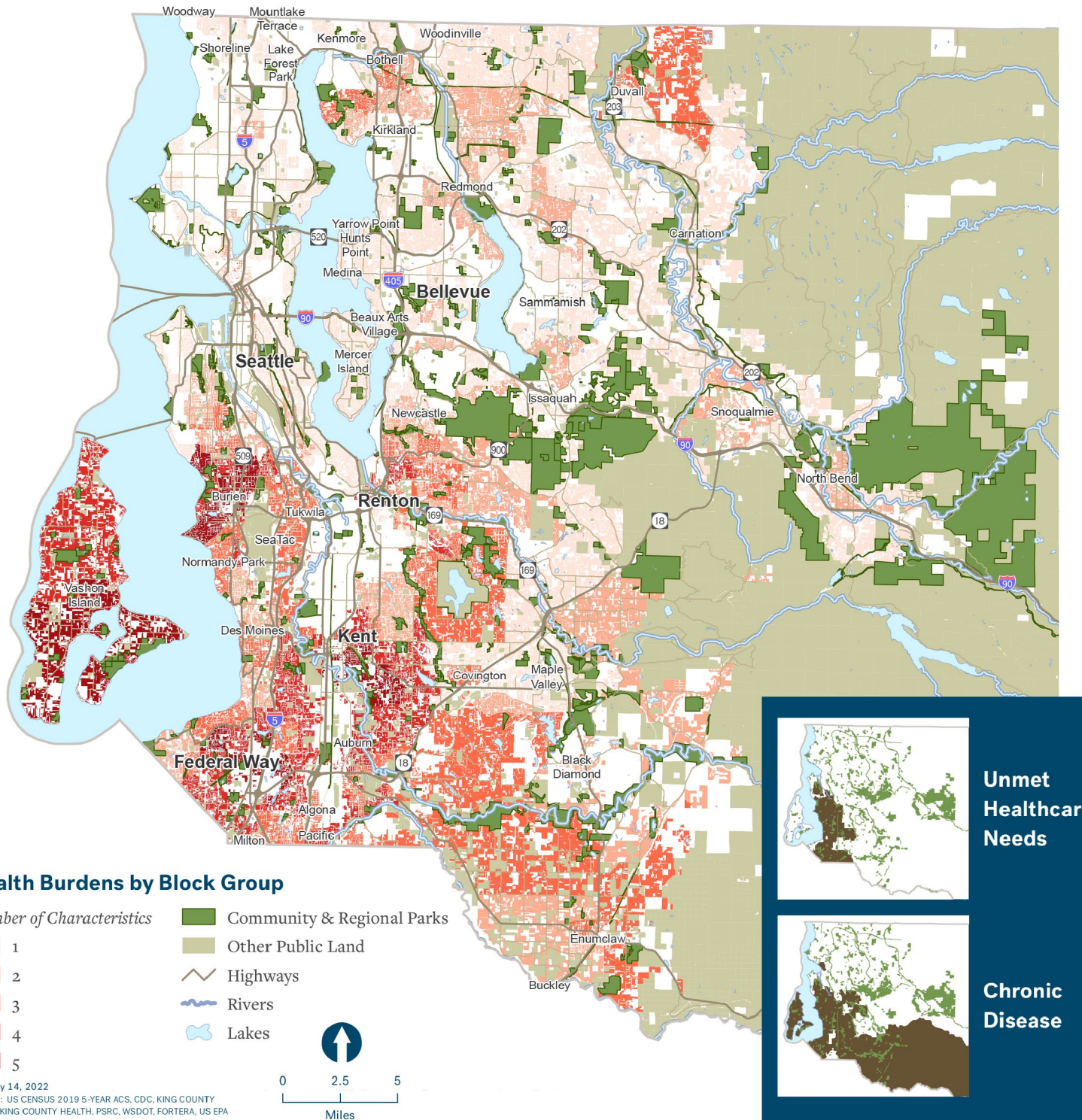
As we saw in the Community Needs Assessment process, people want to be involved in the decision-making processes that affect them. King County should continue to engage community partners around ways to expand the transit-to-parks network and make these spaces more safe and inclusive. Community members have a lot to say, and the best decisions will be made with their involvement.

We hope to continue this work with King County and other partners and utilize our combined resources to increase access to parks for all residents. Nature should be available to everyone, regardless of background, and transit solutions can help make this a reality.

Appendix A

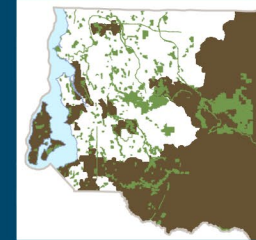
Supplemental Maps

Figure A-1 | Health Burdens

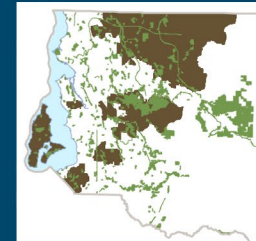


Distribution of Health Burdens

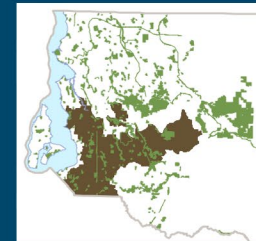
The maps below show block groups within the top quartile for that characteristic



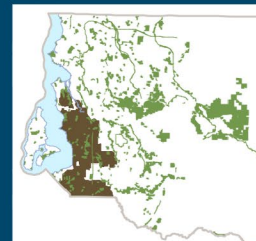
Mental Health



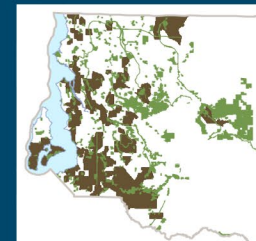
Asthma



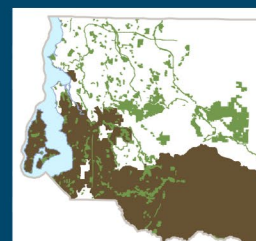
Obesity



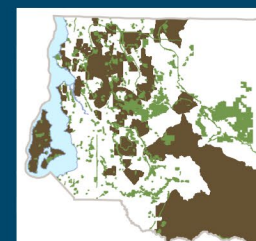
Unmet Healthcare Needs



Ambulatory Difficulty



Chronic Disease

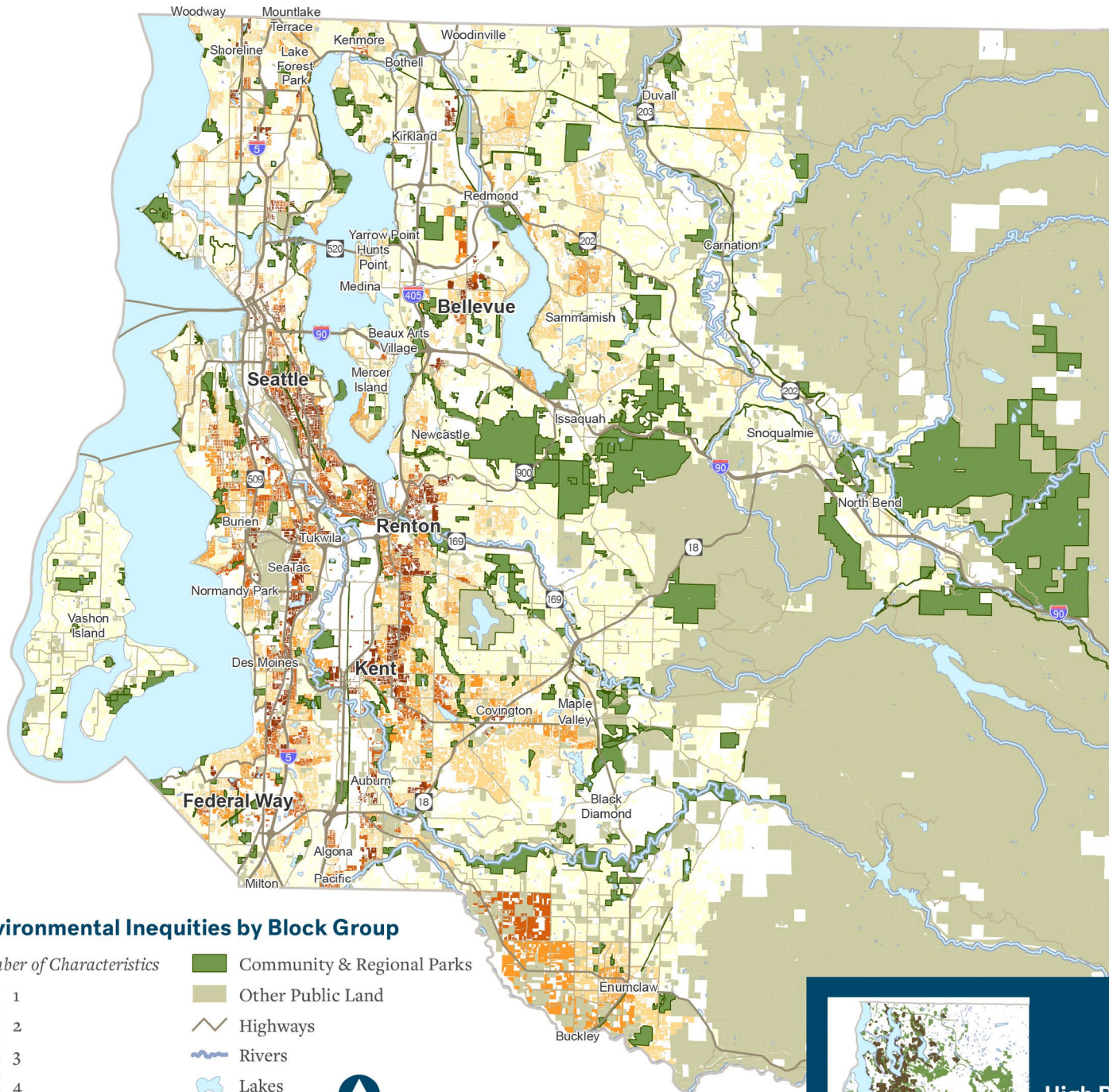


Life Expectancy

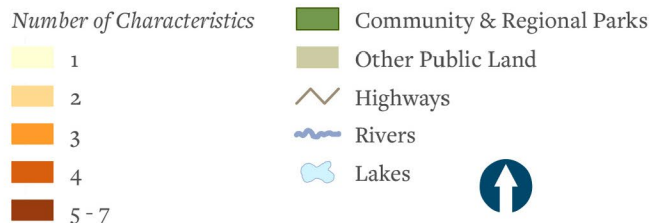
This map shows the layering of seven health burdens. The populations experiencing the greatest cumulative health burdens live in south King County, particularly Burien, Kent, Federal Way and Vashon Island. In contrast, there are few overlapping health burdens in Seattle and the Eastside.

Compared to the 2019 version, this update adds unmet healthcare needs and chronic disease.

Figure A-2 | Environmental Inequities



Environmental Inequities by Block Group



FEBRUARY 14, 2022
 SOURCE: US CENSUS, CDC, KING COUNTY METRO,
 KING COUNTY HEALTH, PSRC, WSDOT, FORTERA, US EPA

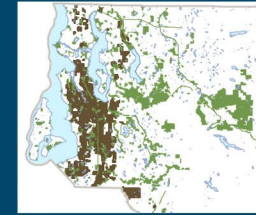


Distribution of Environmental Inequities

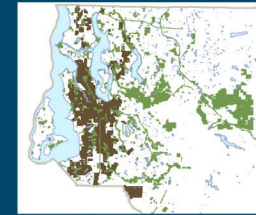


The maps below show block groups within the top quartile for that characteristic

Ozone Concentration



PM 2.5 Concentration



Proximity to Traffic

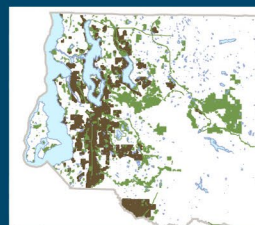


Low Tree Canopy Cover

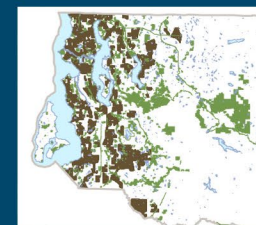


No Nearby Access to Parks

Defined as being more than 1/2 mile from any park along the street network



High PM Heat Disparity

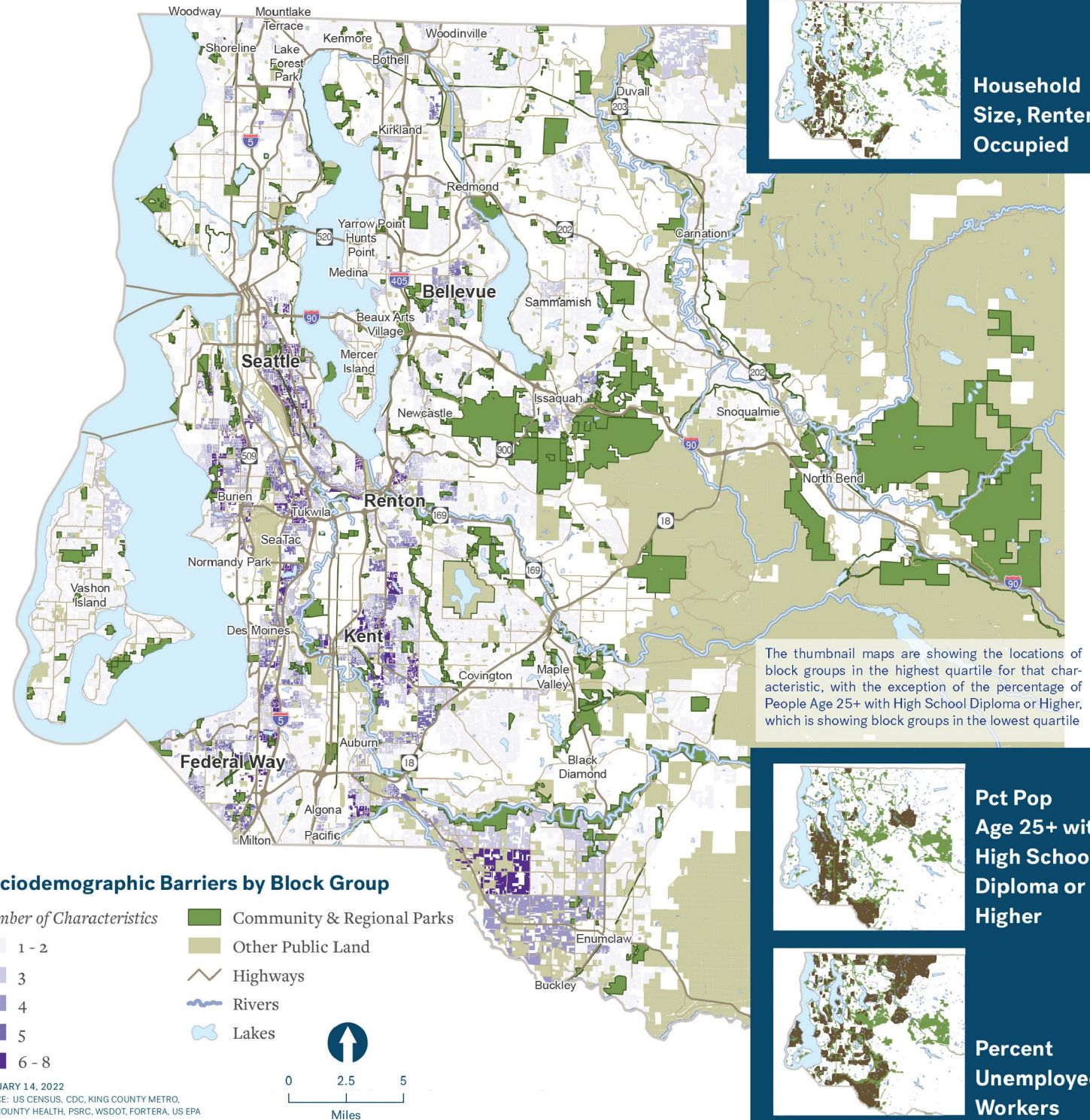


High Park Pressure

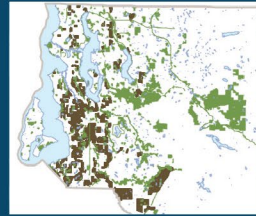
This map shows the layering of seven environmental inequities. The populations experiencing the greatest cumulative environmental inequities live in southeast Seattle, SeaTac, Renton, Kent and parts of Bellevue. In contrast, there are few overlapping environmental inequities in Seattle and the majority of the Eastside.

Compared to the 2019 version, this update adds urban heat disparities. The data was collected by [CAPA Strategies' Heat Watch](#) program on July 27, 2020. As climate change intensifies, green space and trees can help cool neighborhoods and provide places of respite.

Figure A-3 | Sociodemographic Barriers



Distribution of Sociodemographic Barriers



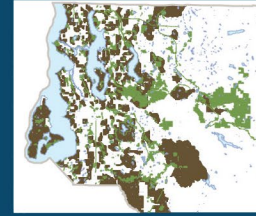
Household Size, Renter Occupied



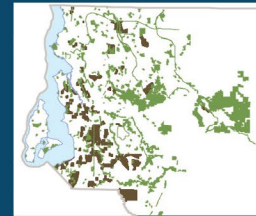
Zero Vehicle Households



Limited English



High Concentration of Seniors



High Concentration of Families in Poverty with Children

The thumbnail maps are showing the locations of block groups in the highest quartile for that characteristic, with the exception of the percentage of People Age 25+ with High School Diploma or Higher, which is showing block groups in the lowest quartile



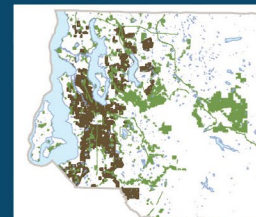
Pct Pop Age 25+ with High School Diploma or Higher



Households at or Below 185% of Federal Poverty Level



Percent Unemployed Workers



High Concentration of People of Color

The maps below show block groups within the top quartile for that characteristic

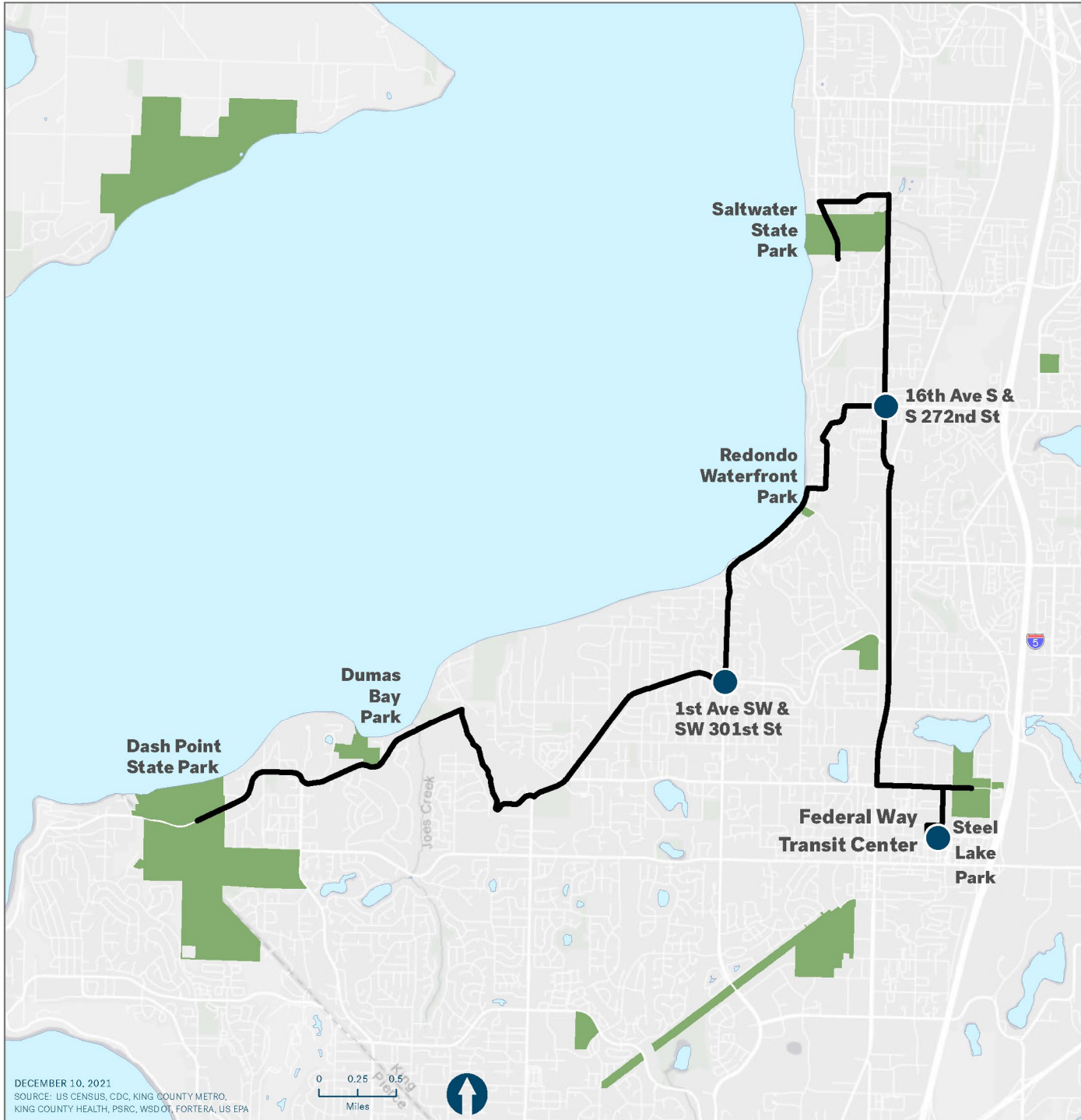
This map shows the layering of nine sociodemographic barriers. The populations experiencing the greatest cumulative sociodemographic barriers live in southeast Seattle, White Center, Tukwila, SeaTac and Kent. In contrast, there are few overlapping environmental inequities in Seattle and the majority of the Eastside.

Compared to the 2019 version, this update adds household size of renter-occupied units, educational attainment and unemployment. We changed “high concentration of children” to “high concentration of families in poverty with children” to emphasize the acute needs of families in poverty, and changed the income threshold from 60% of King County median income to 185% of the federal poverty level to match the metric in the [WA State Health Disparities Map](#).

Appendix B

Additional Potential New Pilot Routes

Figure B-1 | South King County Loop

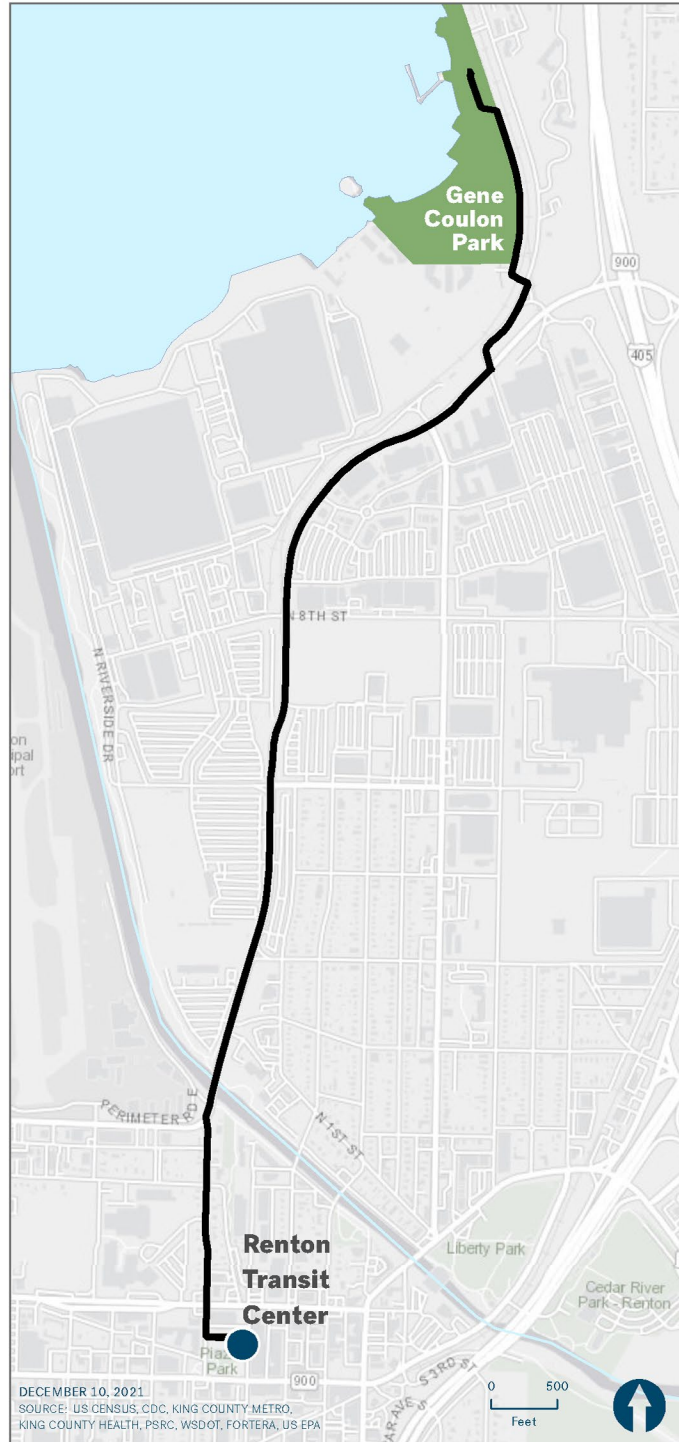
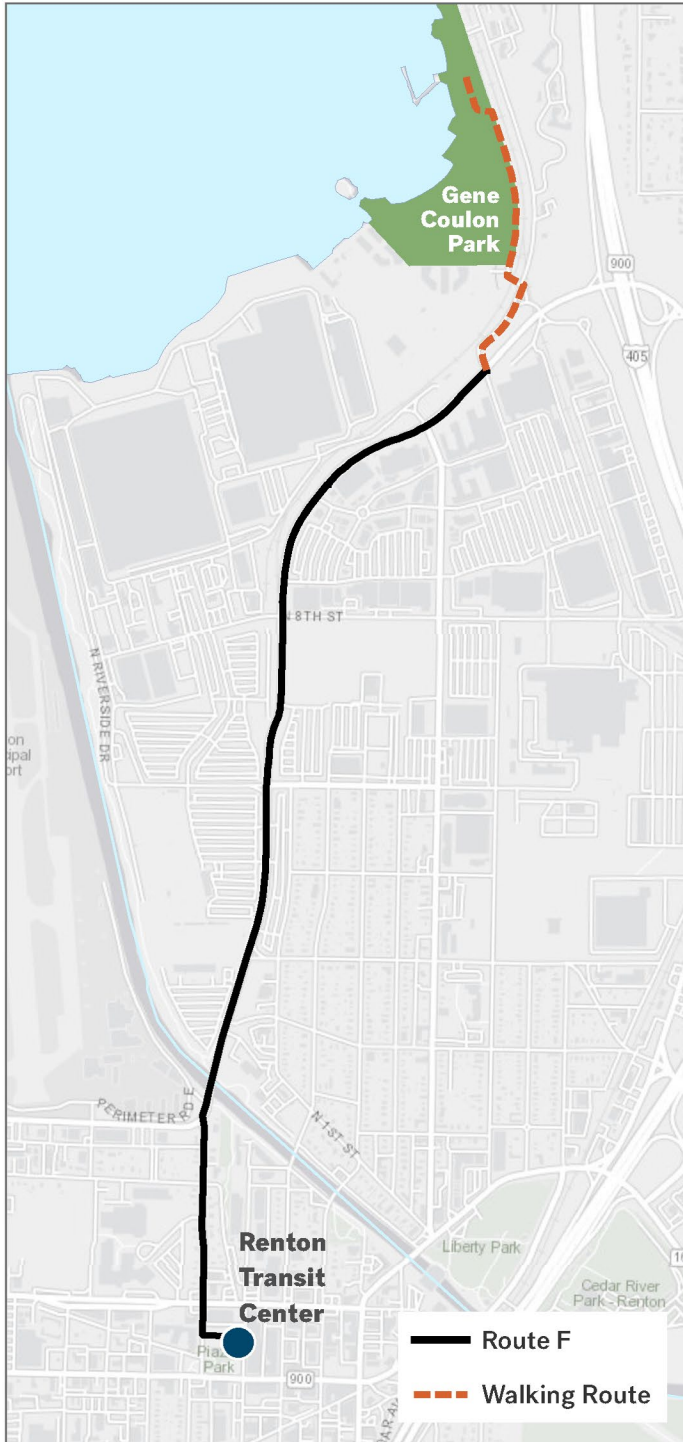


South King County Loop

Proposed Route

This route would originate and terminate at the Federal Way Transit Center and connect Steel Lake Park, Saltwater State Park, Redondo Waterfront Park, Dumas Bay Park, and Dash Point State Park. There would be a stop between Saltwater State Park and Redondo Waterfront Park, at 16th Ave S & S 272nd St, and an additional stop between Redondo Waterfront Park and Dumas Bay Park, at 1st Ave SW & SW 301st St.

Figure B-2 | Renton Transit Center to Gene Coulon Park



Renton Transit Center to Gene Coulon Park

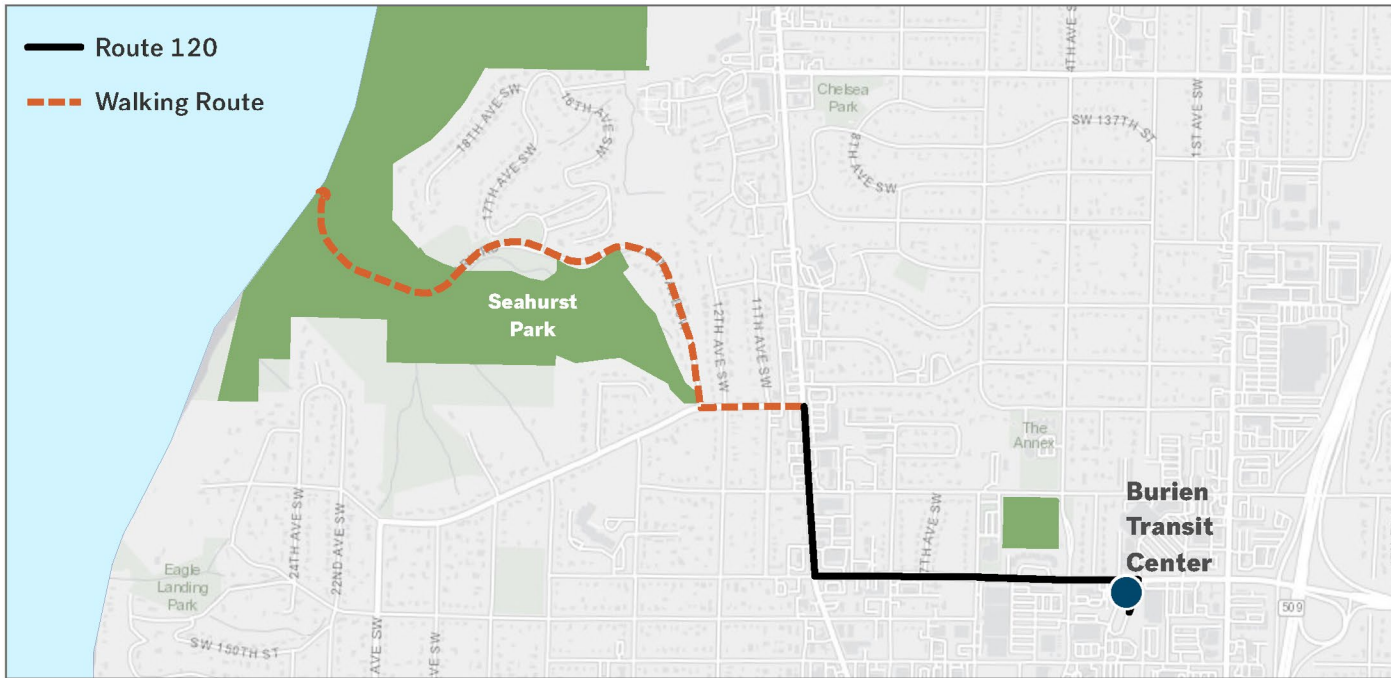
Current Route (left)

Riders can take Route F from the Renton Transit Center to Garden Ave N, then have to walk a little over half a mile to reach park facilities

Proposed Route (right)

An extension to Route F could be added to take riders all the way to the parking lot adjacent to the beach

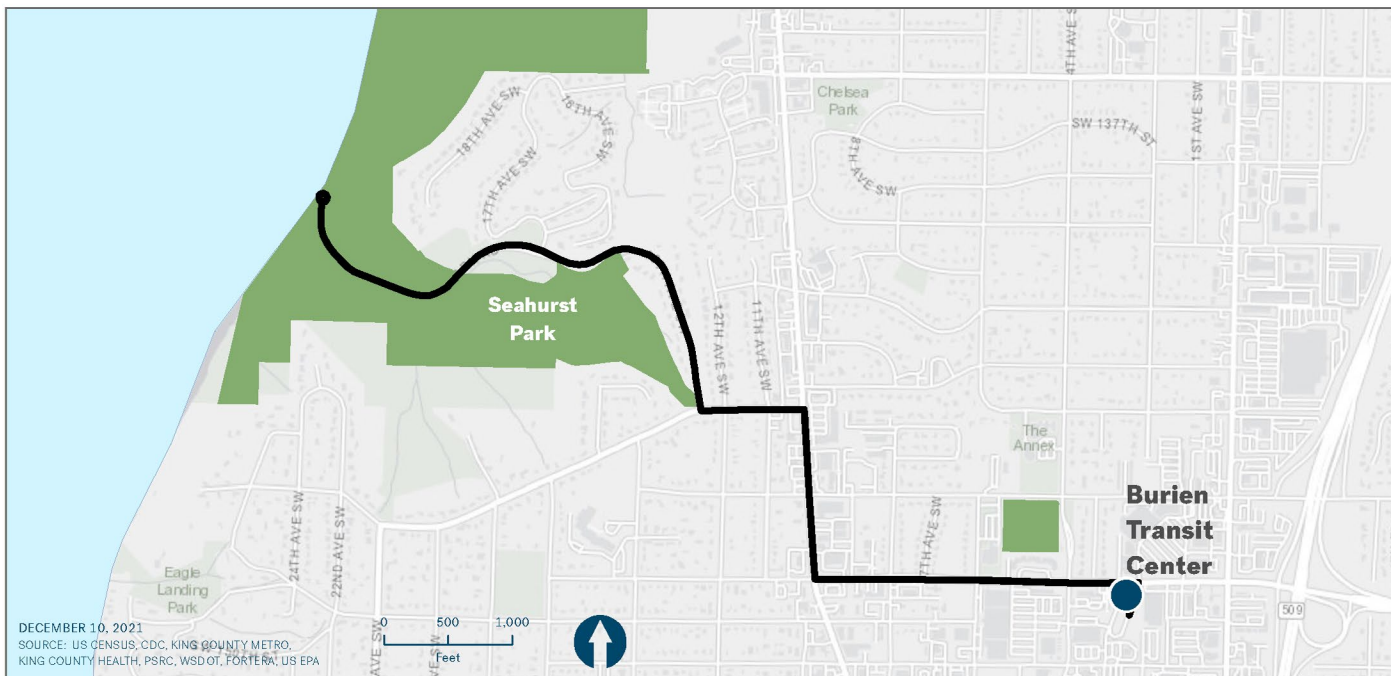
Figure B-3 | Burien Transit Center to Seahurst Park



Burien Transit Center to Seahurst Park

Current Route

Riders can take Route 120 from the Burien Transit Center to SW 144th St and Ambaum Blvd SW, then have to walk more than 20 minutes to get into the park



Proposed Route

A shuttle or extension to Route 120 could be added to take riders all the way to the parking lot adjacent to the beach

Appendix C

Methodology

Data Acquisition

We obtained our parks and open space dataset from the Puget Sound Regional Council (PSRC), which maps the boundaries of all public parks within Snohomish, King, Pierce and Kitsap Counties, as well as their constituent cities.

The transit data was downloaded from the Metro database in General Transit Feed Specification (GTFS) format and includes all transit routes, stops and their frequencies of service across the county. This dataset includes all King County Metro bus, Seattle Streetcar and King County Water Taxi service, as well as Sound Transit Link light rail service and some, but not all, Sound Transit Regional Express bus service. This data defines King County Metro Transit service and includes, but is not limited to, schedule and associated geographic data.

We acquired the environmental data from the [EPA's EJSCREEN mapping tool](#).

Tree canopy data was obtained from the King County 2016 tree canopy dataset.

The sociodemographic data came from a variety of sources. We used the U. S. Census Bureau 2015-2019 5-Year ACS data at the block group and tract level. Health datasets were requested from King County Health (KCH) and are reported by custom geographies maintained by KCH.

When a dataset was not reported by block group, we projected the characteristic of the reporting area to all the block groups within.

Parks Classifications

We classified each park in King County as one of four types based on acreage, according to the PSRC guidelines in the [Regional Open Space Conservation Plan](#) (Table 1).

Table 1: Parks Classifications

Park Type	Acreage
Neighborhood	Less than 10
Community	10-100
Regional	More than 100
Open Space	Publicly inaccessible

In the transit analysis, we only consider Community and Regional parks because residents are likely to see these as more worth a bus trip than Neighborhood parks. Amenities also shape the desirability of parks. However, we lack sufficient data to pinpoint the quantity and quality of specific amenities in each park. We obtained basic amenity data for King County, Seattle and Bellevue parks, and did case-by-case research for Community and Regional parks in other jurisdictions. Using the available amenity data, we included a fifth classification called "Premier parks" as a subset of Community and Regional parks. Premier parks contain at least one of each of the following: passive amenity (open space, forest, view), active amenity (opportunity for spontaneous and/or organized physical exertion such as playgrounds and sports courts/fields), trail, picnic table and restroom. Due to the range of amenity options, an individual is likely to find an activity of interest at any Premier park. Having amenities of interest encourages park visitation and Premier parks best encompass the presence of diversified amenities given our available datasets.

Transit Classifications

Using GTFS data on frequency of transit service, we classified all service areas in King County on a scale of “None” to “Frequent” (Table 2).

We use PSRC’s [Regional Transportation Plan](#) to define transit service areas as within a quarter-mile walk of a bus stop. For example, all areas that are located within a quarter mile of a bus stop with service every 20 minutes are classified as having “Fair” service. The map is modeled using transit data from Saturday, October 9, 2021 from 9-11am.

Table 2: Transit Classifications

Classification	Wait Time
None	No buses within 2-hour window
Poor	31+ minutes
Fair	16-30 minutes
Frequent	15 minutes or less

Defining Impacted Populations

We recognize that societal factors benefit certain populations over others, so we selected 23 group characteristics to constitute “highly impacted populations” based on relevant literature and similar studies (Table 3). The 23 characteristics fall into 3 broader categories: health, environmental and sociodemographic factors. These characteristics represent potential health and environmental burdens that may be mitigated by access to green space, and sociodemographic factors that may increase barriers and limit participation in community decision-making processes. By choosing these populations, we focus our analysis on those who could benefit the most from increased access to parks via transit.

Table 3. Cumulative Impact Indicators

Health Burdens	Environmental Inequities	Sociodemographic Barriers
Mental health [^]	Ozone concentration ^{**}	Zero vehicle households ^{**}
Asthma [^]	PM2.5 concentration ^{**}	Limited English [*]
Obesity [^]	Proximity to traffic ^{**}	Seniors [*]
Ambulatory difficulty ^{**}	Low tree canopy cover [^]	Families in poverty with children [*]
Life expectancy ^{**}	No nearby access to parks ¹	Low income ^{**}
Unmet healthcare needs [^]	High park pressure ¹	People of color [*]
Chronic disease [^]	High afternoon heat disparity	Renter household size [*]
* Reported at block group level ** Reported at tract level ^ Reported at King County-specific geography 1 Original analyses conducted by CORE GIS and TWS		Education ^{**}
		Unemployment ^{**}

Each of the broader categories has seven to nine indicators nested within it. To prioritize the most highly impacted areas in our analysis, we selected the block groups within the top quartile for each indicator. For example, all 1,421 block groups in King County were placed in descending order based on the number of people of color who live there, then the top 25% of block groups on the list were pulled out.

Layering Categories

The final goal of the mapping effort was to produce a combination map that highlighted areas with impacted populations who lack adequate transit access to parks. We call these areas Priority Areas because they present the greatest opportunity for investment. To qualify as having good transit access to parks, a person must be able to reach at least two Community or Regional parks, including at least one Premier park, within 30 minutes from doorstep to park¹. We define good access to green space as having a choice of multiple recreation options that take a reasonable amount of time to reach. We added the demographics layer to highlight populations with high cumulative impacts that also have poor transit access to parks. This allowed us to see the Priority Areas where targeted investments would have the greatest impact due to a lack of transit-to-parks connections and concentrations of populations experiencing cumulative impacts (Figure 6).

Mapping Transit Access to Parks

This analysis required a summation of the four segments of the journey:

travel walking/rolling from home to the transit stop, time **waiting** for transit, time **riding** transit and time **walking/rolling** from the second transit stop to the park.

The home-to-stop walking/rolling duration was calculated using the distance between the block group centroid and the nearest transit stop along the King County street grid for Saturday morning, then dividing by the average walking speed of three miles per hour. Time spent waiting at the stop and travel times were included in the GTFS data. We were not able to obtain comprehensive spatial data for the locations of park entrances to serve as the destination points for the final stop-to-park segment. To estimate the potential closest access points, we used a GIS tool called “Near” to move the centroid of each park to the nearest bus stop. Next, we used the Near tool again to assign the park centroid/nearest bus stop location to the closest boundary of the park. Finally, we ran Near a third time to position the point on the closest street to the park boundary.

The fourth and final leg of the journey was calculated using the distance from the second bus stop to that reassigned park entrance. Below is an example for Juanita Beach Park (park outlines are bright green, bus stops are blue and our modeled park entrance is the yellow dot).

¹ In the Community Needs Assessment survey, we asked participants how long they would be willing to ride the bus to a park. Respondents indicated closer to 30 minutes than an hour, so we reduced the time threshold to 30 minutes to qualify for good transit access to parks. The 2019 version defined good access as being able to reach two Community or Regional parks and one Premier park within 45 minutes, which felt too long based on survey responses.

