

City of Seattle Community Health & Infrastructure Opportunities Analysis



Photo courtesy of Kaiser Permanente



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I. Introduction

Both nationally and locally health organizations are increasingly looking upstream to the social determinants of health (see Figure 1) to create community wellness, prevent chronic disease, and increase health care effectiveness. Similarly City of Seattle departments, such as Seattle Public Utilities, have begun to look at more holistic, nature-based solutions to infrastructure and programmatic investments that address systems' needs while also improving community and livability benefits.

This report explores opportunities to link expanded access to natural and green areas (e.g., parks, street trees, trails, and natural areas) to improve community health outcomes. The underlying assumption, based on the evidence presented, is that more time outdoors,

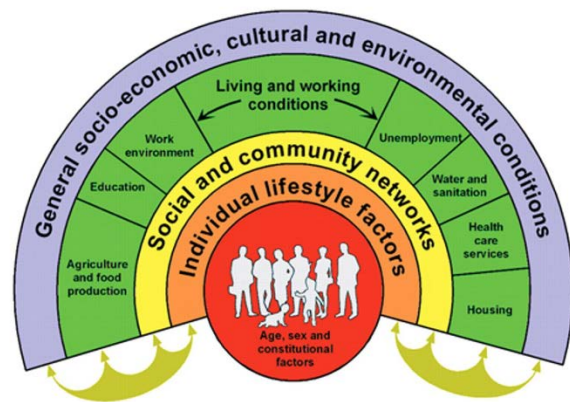


Figure 1. The Social Determinants of Health

especially for communities experiencing health disparities, can improve mental health, physical activity, air quality, social cohesion, and other social determinants of health. Green infrastructure and programmatic investments, defined broadly, will be an important part of many Seattle Public Utilities (SPU) and City of Seattle (City) investments, such as:

- Sanitary and combined sewer overflow treatment;
- Stormwater treatment;
- Flood hazard reduction;
- Climate change and associated sea-level rise;
- Sediment cleanups;
- Food waste recovery and food deserts;
- Parks, open spaces, p-patches, trails, and pedestrian and bike infrastructure;
- Stewardship, volunteer, education, community development, and engagement programs.

How those City investments are designed and implemented with communities can have both positive and negative public health outcomes. They can also link to the work of health organizations or not. To understand these possible interconnections this report strives to:

- Summarize some of the research linking time spent in nature to better health;
- Create a base understanding of Seattle’s community health priorities looking at the Community Health Needs Assessments¹ of local health care providers;
- Identify potential opportunities to link nature to current hospital spending²; and
- Identify other opportunities to link SPU and City green infrastructure and programmatic expenditures to health³.

This analysis is a first step for building connections and partnerships—a snapshot of opportunities—and not meant to stand alone.

II. How Are Nature and Community Health Connected?

There is a lot we know about how greater time in and access to nature contributes to health. There are strong correlations between more time in nature and increased physical activity and improved mental health, social cohesion, and air quality (Hartig et. al., 2014; [Green Cities:](#)

¹ Willamette Partnership reviewed all 13 hospitals and the King County Community Health Needs Assessments. The Affordable Care Act requires that all county health departments, accountable care organizations (called “Accountable Communities of Health in Washington”), and tax-exempt hospitals produce a report about the state of their community’s health and their most important health priorities. Community Health Needs Assessments require community engagement and represent a good sample of a community’s health priorities near and around a hospital or county.

² Nonprofit hospitals are required to report about their annual community benefit expenditures, a requirement to maintain their tax-exempt status. Willamette Partnership reviewed the pattern of community benefit expenditures on community health improvement activities for opportunities to link in access to greenspaces.

³ Willamette Partnership conducted 12 interviews with health leaders from hospitals, University of Washington, conservation groups, and community health leaders.

[Good Health](#) page). Table 1 provides some of the important research and health outcomes linked to nature.

Table 1: Health Benefits of Nature Contact

Health Benefit	Research	Popular Press
Improved Mental Health	Stanford-led study	New Yorker The Atlantic
Increased Physical Activity	Parks Rx, Washington, DC	NPR
Stronger Social Cohesion	Dadvand P, Bartoll X, Basagaña X, Dalmau-Bueno A, Martinez D, Ambros A, et al. 2016. Green spaces and general health: Roles of mental health status, social support, and physical activity. <i>Environment International</i> 91:161-167.	
Improved Air Quality	Portland State trees and health	OPB

There are also important questions remaining about health and nature links. Some of these areas of inquiry include:

- ***How does nature improve health?*** There are strong correlations, but we know little about the mechanisms for health improvement. Theories range from attention restoration to changes in immune system response.⁴
- ***Is there a correct dose of nature?*** We don't know the dose response curve that says which types of nature are important, how much time is needed and how often, and what the health response is to corresponding marginal increases in exposure to nature.
- ***How do different populations respond?*** We suspect Caucasian men in the woods respond differently than African American youth, but how? How does culture affect health response to nature?
- ***How to turn research to action?*** If we know nature improves health, but the knowledge we have isn't baked into planning, assessment, and decision tools, then it is hard to make investment decisions to improve health. There are some ongoing projects to bridge this gap. There is also some work looking into the financial benefits of access to nature and health⁵.

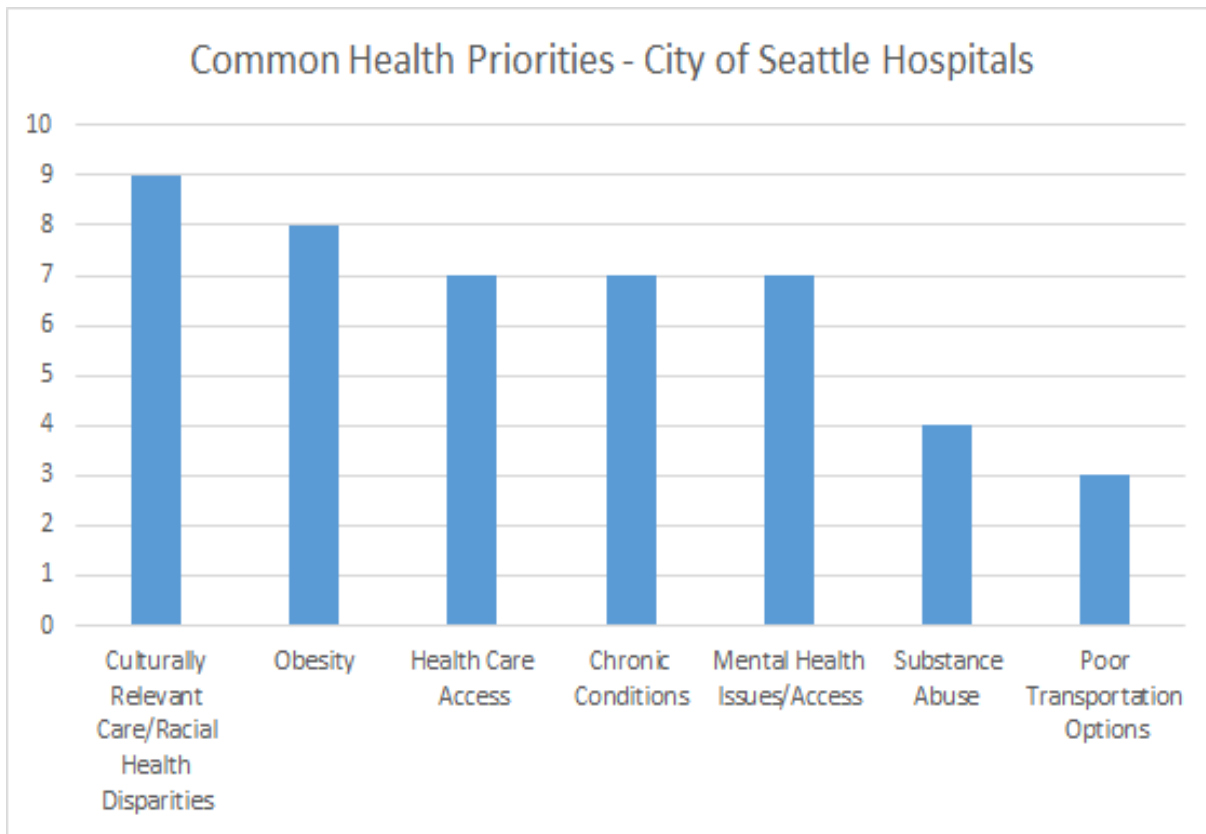
III. What Are the Seattle Community Health Priorities?

Hospitals regularly conduct community health needs assessments, which are used to guide their community benefit spending. This report summarizes the community health needs assessments, including community input, and priorities for Seattle's 13 area hospitals summarized below in Figure 2, Figure 3, and Appendix 1.

⁴ Kuo M. 2015. How might contact with nature promote human health? Exploring promising mechanisms and a possible central pathway. *Frontiers in Psychology* 6. DOI 10.3389/fpsyg.2015.01093.

⁵ Wolf, K. 2016. *Nature's Riches: The Health and Financial Benefits of Nearby Nature*. https://www.naturewithin.info/New/2016.11.Economic_Benefits_of_Nature_in_Cities.KWolf.pdf.

Figure 2: Summarized Community Health Priorities Reported by Seattle Hospitals



The "Y" axis represents number of hospitals, the "X" axis the reported health need.

spend on community health improvements and the percentage of those dollars allocated to community benefits.

Some of the opportunities to link health and nature to current hospital community benefit investments might include:

- Linking time spent outdoors into current physical activity and wellness programming;
- Research into the health benefits of time spent outdoors; and
- Linking biking, walking, and community programming with greenspace.

There are, and will be, additional opportunities, but many Seattle-area hospitals are focused on diabetes prevention and culturally-relevant access to healthcare. Opportunities such as nature-based play or outdoor recreation as treatment for substance abuse may be one or two steps removed from how hospitals have currently articulated their healthcare priorities.

V. Further Linking Community Health Improvement With Nature in Seattle

In addition to reviewing the 13 community health needs assessments (see Section 4 above), Willamette Partnership conducted interviews with 11 health and conservation leaders in Seattle (see Table 2) about potential opportunities to build linkages between public health and more time in nature in the City. Overall, interviewees were excited about City departments exploring how they could better link infrastructure and programmatic investment with public health outcomes. However, since this is an emerging area of focus there were not a lot of specific recommendations. In fact, some of the interviewees were looking back to SPU and the City for leadership on the topic.

Ngozi Oleru	King County Public Health
Kim Wicklund & Victoria Garcia	Group Health/Kaiser Permanente
Kris Ebi	University of Washington, Global Health Department
Jeff Sakuma	Seattle Human Services Department
Phil Hurvitz	University of Washington, College of Build Environments' Urban Form Lab
Emily Bourcier & Carol Cahill	Center for Community Health and Evaluation
Lylianna Allala	Office of Congresswoman Pramila Jayapal
Richard Gelb	King County Department of Natural Resources and Parks
Skip Swenson	Forterra
Steve Whitney	Bullitt Foundation
Seema Mhatre	Odessa Brown Children's Clinic

Summarized below are some common themes that emerged in interviews with Seattle health and conservation leaders:

Asking the “right” questions

As partners think about how to promote health equity outcomes through infrastructure and programmatic investments, the outcomes and framing of that effort will be important. This is a new enough topic and area of inquiry that developing common, shared understanding of what designing infrastructure for health equity means will be important. One interviewee noted that many inequities are connected to the way questions are framed and objectives are defined. For example, the definition of green stormwater management may preclude some actions that could have broader health benefits—a focus on street trees and greener streets could miss an opportunity to redesign parks to treat stormwater and increase physical activity. Or choosing open space equity metrics tied to distance from a residence may bias actions away from greening commuting pathways or workplaces.

Map, Plan for, and Realize Multiple Benefits

Many interviewees recognized the importance of achieving multiple benefits from infrastructure and programmatic investments. The [Communities of Opportunity](#) project, started by King County and the Seattle Foundation, is taking a holistic approach to health that looks specifically to geographic⁷ and cultural needs. One interviewee asked for mapping some of the opportunities to better improve health through greenspace. For example, Forterra’s work around urban land banking near transit has done mapping to try to avoid displacement near new development and target areas based on need.

Two interviewees also asked what level of certainty SPU needed for any decision-support tools to support investment around health equity. The science may not support the specificity available in some hydrologic models but could support better answers than simple “good” or “bad” for health.

How Can Greenspace Investments Compete With the Health Crises Tied to Homelessness and Growth?

The City is in the midst of a boom—increasing the pace of displacement. This in turn is tied to homelessness, mental health, substance abuse, and the perceived and real safety of some open spaces. There are pressing issues about affordable housing, how to create better regional connections as low-income neighborhoods increasingly move toward Auburn and Kent, and the role of open space as density and population increases. Although it may be hard for green infrastructure to compete for attention with these crises, it is an important time to think about how the built environment and access to open space and nature supports health and livability.

⁷ The three starting geographies are SeaTac, Tukwila, Rainier Valley, and White Center/North Highline.

Connecting a Thousand Points of Light

Almost every interview stressed the importance of working interdisciplinary or at least trying to break down silos that exist across organizations and within departments. Many interviewees recognized the good work occurring throughout the City and the need to connect those efforts somehow. The City is part of several broad efforts to advance equity, environment, and health. Some of these initiatives include:

- [Seattle Equity and Environment Agenda](#)
- [Seattle Carbon Neutral Climate Ready](#)
- Accountable Communities of Health ([National](#), [Washington](#))
- [Rockefeller Foundation's 100 Resilient Cities](#)
- [King County Hospitals for a Healthier Community](#)
- [Communities of Opportunity](#) (looking at topics like food access, walkability, green space)
- [Re-think Health](#)
- [Seattle Parks and Open Space Plan](#)
- [Office of Planning and Development comprehensive open space study](#)
- [King County Executive's Land Conservation Initiative Advisory Group](#)

Collaboration allows for different agencies to share data to build a more complete picture and prioritized focus. For example, a project out of the University of Washington combined spatial/GPS data with diet data from King County public health to try to paint a more complete picture of food insecurity and individual traffic to food areas. In addition, the University of Washington Urban Lab is doing some innovative data mapping of Seattle residents' physical activity using GPS.

Working With In-House Expertise

A number of interviewees pointed to some of their in-house teams well positioned to advance work on health and nature. For example, Kaiser's Total Health Program invests in the health of its employees through actions such as living wages, sustainable purchasing, and healthy places for their employees to live. SPU and other City and county departments have in-house equity teams and liaisons who are well-connected to health leaders.

Rooting the Work with Communities

Many interviewees stressed that advancing community health equity in City infrastructure and programmatic investment is more about the process of engaging communities than it is about the siting and design of the investment within the community. Some specific recommendations for community engagement included:

- Co-facilitation with a community member and infrastructure agency representatives;
- Compensating community members for their expertise;
- Ensuring interactions with communities that are relational and not transactional;
- The importance of early engagement;

- Paying attention to disaggregated data (e.g. that city- or zip-code-level data may be too coarse, and neighborhood or block data may be more important); and,
- Continuing to hire more people of color and developing their leadership.

Some of Seattle’s clinics pay for the costs of a community liaison to connect patients to resources in the area. City departments might adopt pieces of this traditional health worker model to better connect with communities.

Different organizations are also suited to play different roles in making partnerships important. Community Based Organizations can help articulate the needs of communities, and the city or statewide NGOs can help network connections and bring in resources and technical capacities.

Finally, as infrastructure or other neighborhood improvements are made, there needs to be vigilance and planning for potential displacement. For example, the Odessa Brown Children’s Clinic in central Seattle has long been the “healthcare home” for several generations in the African American community and other communities of color. As Seattle gets less affordable, families now have to take several bus routes, can’t find parking, and are experiencing other stresses tied to moving further out from Seattle.

Consider the “Users” of Green Infrastructure and Investments

Transportation investments now anticipate who will benefit from possible system improvements and then track who actual users are after investments are made. Some transit projects conduct health impact assessments to look at the positive and negative impacts to health. Green infrastructure and investment projects could apply similar health impact techniques. Using an equity lens, it is also important to consider benefits to renters and not just homeowners.

Another interviewee mentioned the concept of real world role playing games to test out the design and impacts of various infrastructure and programmatic investment options. SPU could work with the community’s role to test who will benefit and how from infrastructure and programmatic investments.

This is slightly unrelated, but several interviewees noted that hospitals own large campuses and have the opportunity to provide greenspace and infrastructure on their own sites. There have been examples where a Seattle hospital installed solar panels to provide electricity out into the neighborhood. Could similar partnerships form with hospitals to provide continuity of greenspace, green stormwater infrastructure for the neighborhood, etc.?

SPU and City as Leaders in Health and Infrastructure

Many of our interviews did not have explicit recommendations for SPU or other City departments. Some actually pointed back to SPU as an important leader in shaping a vision for how infrastructure can advance community health. One interviewee suggested SPU could host

a summit on health, greenness, and infrastructure. The Northwest Environmental Forum, hosted by the University of Washington, will be talking about health and nature connections in the fall. SPU can continue to support those broader discussions.

VI. Initial Conclusions

SPU, the City, and other partners will need to identify next steps in pursuing opportunities to advance health equity through infrastructure investments. Based on interviews, connections to hospital spending priorities, and our own hunches, Table 3 presents some of the possible opportunities from which to seed brainstorming on next steps. This is just a start.

Table 3. Opportunities to Link Infrastructure and Health

Opportunity	Possible actions
Invest in some key partnerships	Connect to Kaiser Permanente, King County ACH, King County Public Health, and other health leaders to help identify and act on opportunities.
Maximize the multiple benefit from natural and surplus lands	Make the most of upcoming redesign efforts to produce health: Road rights of way, repurposing surplus land, upcoming Open Space Plan, urban tree planting efforts, Duwamish cleanup, etc. This includes acquisition/siting, repurposing/design, and programming/maintenance.
Increase access to health through trails & green infrastructure	Expand access to water (lakes and sound); Design vegetated areas as buffers (air, noise, and other stressors) and for complexity (awe, getting away from it all). Use the Equity and Environment strategy for siting and process for access improvements (e.g., siting in EEI focus areas).
Build from community liaison experience to expand support for community leadership	Community liaisons, community healthworkers, and other forms of leaders can be funded and supported to help build bridges between communities and multiple City efforts. Liaisons can also support communities in leading decisions. The City can also build from the Department of Neighborhoods' effort to update involvement processes. How the City moves decisions to communities will have important implications for health equity. More engagement does not necessitate more process, just more coordinated and intentional support for community leadership.
Food waste diversion	There is a lot of good effort to expand urban farming and to limit food waste. If healthy eating and active living are the behaviors we want for health, food efforts and open space efforts should be connected. There also seems to be good opportunity to link food and utility bill security programs so that a household's bills for groceries, electricity, garbage, and water are all part of an equity and poverty reduction strategy.
Provide more	Coordinate City evaluation efforts and increase awareness of the

<p>information</p>	<p>fine-resolution data that is available to support decision-making. That evaluation should provide both quantitative and qualitative data to inform decision-making for different audiences and purposes. Multi-benefit opportunity mapping was asked for in the interviews. The audiences for the information need to provide some clarity on what level of certainty is needed to make decisions.</p>
<p>Changing definitions of greenspace to include more opportunity for health</p>	<p>Expand the definition of green infrastructure to include spaces that promote physical activity and relaxation. If part of the purpose of open space is to advance health, clearing blackberry becomes part of maintaining those health values.</p>
<p>Engage with Schools</p>	<p>School programs and campuses have a lot of opportunities to improve health: greening school yards to improve air quality, stormwater runoff, and improve physical activity; engaging with school-based health centers to expand health in the community; and, using school facilities as community open space areas and centers for community programming.</p>
<p>Your Thoughts Here:</p> <p>LET'S THINK OF MORE IDEAS TOGETHER</p>	

Appendix 1: Community Health Needs and Nature Links by Hospital

Hospital	Community health need with a nature link	Opportunity
Virginia Mason	Environmental quality (air); Built environment (food, physical activity, transportation access)	Trees to reduce asthma ⁸ ; better access to improve physical activity; better programs to increase social connections
King County (HHC)	Asthma, diabetes, health into schools, physical activity, culturally relevant programs, health inequities	Better access to increase physical activity and improve mental health; programs to improve maternal health; programs for multiple cultures and languages
Group Health/Kaiser	Physical activity, linguistic isolation, noise	Southeast Seattle focus; culturally relevant programming; better access to improve physical activity
Highline Medical Center	Lack of public spaces for physical activity, health disparities, behavioral health	Increase number of public green spaces, especially for physical activity purposes
Seattle Children's Hospital	Child health and development, chronic conditions, asthma	Trees to reduce pollution, improve access to outdoor recreation facilities and natural areas outside the city, incentives-based physical activity program.
Overlake Hospital Medical Center	Culturally relevant programs, poor transportation	Outdoor programming for diverse communities, possibly school-specific.
Seattle Cancer Care Alliance	Tobacco, Latino outreach, access to care, youth engagement	Integrate park access with healthcare access initiatives, engage Latino community in health and outdoor activities.
St. Francis Hospital	Elderly and minority health needs, chronic conditions, obesity	Greater and more equitable access to outdoor opportunities for physical activity.
Swedish First Hill/Cherry Hill	See HHC priorities	See HHC entry.
Swedish Ballard	Depression, substance abuse, obesity, care access for vulnerable populations	BUILD Health Challenge goal of "working toward cleaner air, safer streets, greener parks, and more affordable housing."
Swedish Edmonds	Obesity, suicide rates	Integrate greenspace community programming with mental health and physical activity initiatives
Swedish Issaquah	Transportation, homelessness, elderly health needs, teen anxiety rates	Community seminars about using greenspace to reduce anxiety; ensure access to parks is included in new transportation plans
Swedish Cancer Institute	Cancer care access, cancer risk factor prevention	Integrated greenspace access hospital outreach program
MultiCare Auburn	Cultural relevance of care, same as HHC	Multilingual greenspace programming and resources
NW Hospital & Medical Center	Cardiovascular disease, cancer, access to culturally relevant care	Use nature to bridge gap between doctors and community organizations of increasingly diverse area

⁸ Trees can both reduce (e.g., reduce particulate exposure and temperature) and increase (pollen counts) asthma. The research is mixed on best practice.

Appendix 2: Seattle Hospital-Community Partnerships From Community Benefit Reports

Partnering Organization	Health Care Partner
Communities Putting Prevention to Work Initiative	VA Mason
King County Food and Fitness Initiative	VA Mason
Healthy King County Coalition	HHC
CDC-funded Community Transformation Grant	HHC
CDC-funded Partnership to Improve Community Health	HHC
Medical Legal Partnership for Children (MLPC)	Seattle Children's
ACT! Program	Seattle Children's
Health Coalition for Youth	Seattle Children's
Healthy Kids, Healthy Communities	Seattle Children's
Children's Crisis Outreach Response System (CCORS)	Seattle Children's
The Center for Children with Special Health Care Needs	Seattle Children's
BUILD Health Challenge Grant	Swedish Ballard
Peer Bridger program at Narcos and Harborview	Swedish Issaquah
Seattle Indian Health Board	Swedish Issaquah
Muckleshoot Clinic	Swedish Issaquah
Snoqualmie Nation Clinic	Swedish Issaquah
Sea Mar	Swedish Issaquah
Consejo	Swedish Issaquah
Asian Counseling and Referral Service	Swedish Issaquah
Auburn Valley YMCA	MultiCare Auburn
Community Transformation Grant	MultiCare Auburn
SNAP-Ed Health Outcomes	MultiCare Auburn
MultiCare Family Wellness Workshops	MultiCare Auburn

Appendix 3: Seattle Community Benefit Spending by Hospital

Rank	Hospital	% of Total Community Benefit Allocated for Community Health Improvements
1	Franciscan Health (all locations)	33.6%
2	Overlake Medical Center	25.2%
3	MultiCare Health System (all locations)	14.8%
4	Group Health	6.42%
5	Seattle Children's Hospital	4.9%
6	Swedish Medical Centers (all locations)	4.69%
7	Seattle Cancer Care	.01%
8	Virginia Mason	?
9	NW Hospital & Medical Center	?

Rank	Hospital	Total Allocated for Community Health Improvement
1	Franciscan Health	\$156 M
2	MultiCare Health System	\$27.5 M
3	Seattle Children's Hospital	\$8.67 M
4	Swedish Medical Centers	\$6.67 M
5	Overlake Medical Center	\$6.21 M
6	Group Health	\$6.03 M
7	Seattle Cancer Care	\$50,000
8	Virginia Mason	?
9	NW Hospital & Medical Center	?

Appendix 4: Community Health Needs by Hospital

