Transforming Schoolyards to Parks

Community :: Action :: Research

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Background

Program of Research & Studies

Creative projects need creative research

Pooja Tandon, MD, MPH, Seattle Children's Hospital & University of Washington
Pooja brings the perspective of pediatrics and public health in informing the research design and measures.

Kathleen Wolf, PhD, University of Washington
Kathleen has expertise in the human dimensions of urban greening, a social science perspective and research on human health.

Cary Simmons, Trust for Public Land
Cary brings his experience in community engaged park development and his work is informed by experiences of other TPL green schoolyard sites.

Team Science Approach

Our three-year project was funded by the Robert Wood Johnson Foundation through the Interdisciplinary Research Leaders program, which supports efforts that are primed to influence health equity.

The collaboration between Seattle Children's Hospital, the University of Washington, and the Trust for Public Land represents a ***broadly engaged team science*** approach that includes transdisciplinary researchers and community experts as equal and authentic partners.

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Robert Wood Johnson Foundation

Support for this research program was provided in part by the Robert Wood Johnson Foundation. The views expressed here do not necessarily reflect the views of the Foundation.

Key collaborators, field team & analysts

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Qualitative research support

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University of Washington
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Culture of Health

Our project supports the goals of the Culture of Health Initiative, supported by the Robert Wood Johnson Foundation.

We are Interdisciplinary Research Leaders fellows, one of 15 teams in the 4th cohort of the initiative.

Our project was focused on the need for parks in communities and premised on extensive research about nature access and human health.

Other teams in the cohort addressed rural water systems, household heat adaptations, household financial literacy, healthcare of incarcerated individuals and more.

Parks: Not Just *Nice to Have*

Physical and mental health benefits:
- Physical activity
- Healthy weight status
- Improved mental & behavioral health

Other benefits:
- Cognitive and academic outcomes
- Community health and social cohesion
- Increased resilience to climate change

Many marginalized communities in the U.S. that face health disparities also suffer from poor access to quality green space

1/3 of all Americans live without access to a park within a 10-minute walk (1/2 mile) of home

Schoolyards: An Underutilized Resource

Land acquisition for public parks is expensive, or land may not be available in many communities.

Schoolyards are a major spatial resource in all U.S. communities and often underutilized, especially in communities that suffer from low access to green space and high rates of poor health.

This is a scalable solution: **Opening schoolyards to the public would serve 37 million people in the U.S. who currently do not have access to parks.**

There are abundant stories that green schoolyards build stronger community bonds, improve student academic performance, and provide health benefits . . . ***Could research help us to better understand the benefits?***

> *"We realized that we could actually close [the parks] gap for the whole city by activating underutilized public school properties [for] after school hours and on weekends . . . . and to improve those places during the school day for students."*
>
> Cary Simmons, Trust for Public Land

Trust for Public Land

The Trust for Public Land (TPL) Community Schoolyards program has renovated nearly 300 public school playgrounds and outdoor spaces over the last 20 years.

Tacoma, Washington will receive six schoolyard updates from TPL and partners in 2021-2024.

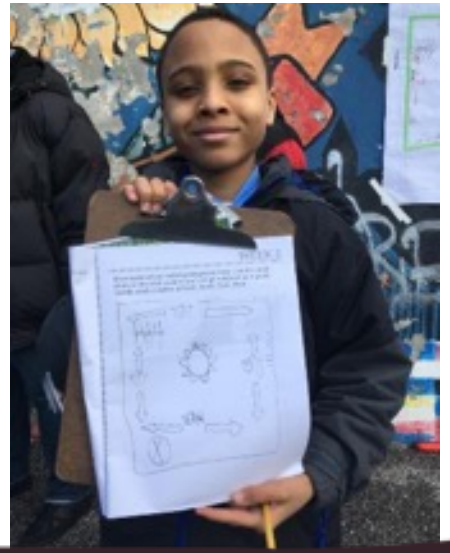
Core Principles

TPL's schoolyard program is based on **three fundamental principles**:

1. Schoolyards must be designed for the community and by the community
2. Schoolyard spaces should be shared – open and accessible to the entire neighborhood after school hours and on weekends
3. Transformed schoolyards are green, in many cases transforming spaces that looked like parking lots into more park-like spaces with trees, community gardens, and public art

Transforming
Schoolyards
to Parks

Transforming Schoolyards to Parks



Transforming Schoolyards to Parks

A Park Gap in South Puget Sound

Project Site: Tacoma, Washington

- Third largest city in Washington State (pop: 220,000)
- Industrial port city with diverse economic bases (maritime trade, military, healthcare, financial services, aerospace)
- Despite its scenic Puget Sound setting and robust park system, Tacoma has the largest gap in park access statewide, primarily in the south end and eastside neighborhoods
- Renovating six schoolyards will provide park access to more than 15K people

A Unique Research Opportunity

$1.5M grant from Kaiser Permanente - enabling Trust for Public Land staff to lead participatory design workshops in six pilot schools, then support projects design and construction

This work provides a unique opportunity for our team to explore research questions . . .

Does a green schoolyard transformation in elementary school lead to improvements in students' school performance, well-being & physical activity?

Research to Fill the Knowledge Gap

Discover how community-based schoolyard greening projects can contribute to positive child development, health and well-being

Add to the **evidence base on the potential health benefits of nature** contact at schools, which could help inform additional similar community development initiatives in Tacoma and across the U.S.

Provide a basis for the **creation of important standards of measurement and evaluation** for organizations working to create greener schoolyards in cities across the country

Promote a Culture of Health nationally by **demonstrating the role community voice and the built environment** can play in advancing health equity

Overview of Studies

We Investigated:

1. **Impact of participatory design process on students**
   Tools: Student surveys and teacher interviews

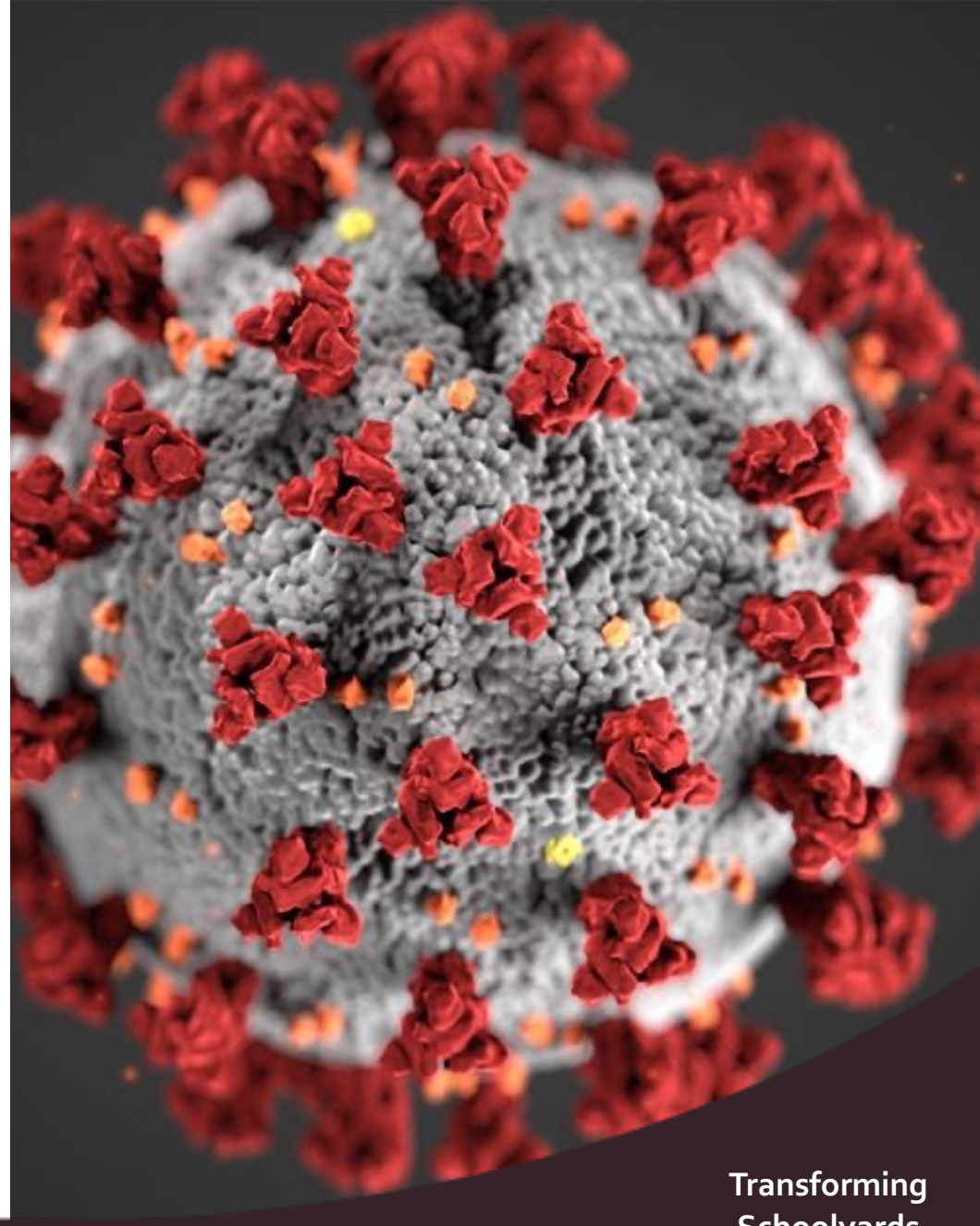
2. **Effect of schoolyard transformations on physical activity and play behaviors**
   Tool: SOOPEN (System of Observing Outdoor Play Environments in Neighborhood Schools)

3. **Walkability of schoolyard sites & nearby built environment (within 10-minute walk)**
   Tool: MAPS-Mini

4. **Engaging young community members & outdoor public space use**
   Tool: Youth Participation Action Research (YPAR)

Impact of COVID on Research

- **Limited School Access:** Research took place during the COVID-19 pandemic, which affected our approach and access to schools and students
- **Community Health Challenges:** Pandemic compounded pre-existing health challenges, leading to lingering long-term implications at the individual and community level
- **Greater Attention to Nearby Nature:** Reinforced importance of close-to-home nature and need for investment in research and infrastructure in communities (such as eastside Tacoma)



Park Access during the Pandemic

- Aims: study relationships between **park access, physical activity and mental health for children and parents** during the COVID-19 pandemic
- Nationally representative survey
- Sample included 500 parents of children ages 6-10 years, and 500 parent-child dyads of children ages 11-17 years

Park access was associated with better mental health among children and parents, and more parent physical activity and parent-child co-participation in outdoor activity during the COVID-19 pandemic

Hazlehurst, et al. 2022.
BMC Public Health 22, 1.

Measures:

- Park access: "park that you can safely walk to within 10 min of your home?"
- Child mental health: Strengths and Difficulties Questionnaire (SDQ)
- Parent mental health: The Patient Health Questionnaire-4 (PHQ-4)
- Parent physical activity: International Physical Activity Questionnaire
- Child physical activity and parent co-participation in outdoor activity

Participatory Design Research

Elementary Students & Positive Psychology

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Does a green schoolyard transformation in elementary school lead to improvements in students' school performance, well-being & physical activity?

Participatory Design

- TPL staff led **6–8-week participatory design process in 3rd-grade classrooms** with lessons covering basic environmental education, design, teamwork, and equity/inclusion.
- Design **workshops engaged children in the imagining and planning process** and included content about the options for schoolyard greening and the importance of physical activity outdoors.
- **Community members** who live near the school **provided feedback** in coordination with local PTA and neighborhood groups.

Research Aims

1. To learn what impact the design experience might have on young children

2. To enhance the social-emotional learning that is now in the curriculum

3. To explore positive psychology outcomes

Our Hypotheses

The community schoolyard intervention design processes will lead to **positive psychology outcomes** (such as self-efficacy, optimism, school membership) in students who attend the **intervention schools compared to** students in the **control school**.

Methods

Surveys:

Administered to 3rd grade students in 2 intervention and 1 control school

Pre and post participatory design curriculum

Measures focused on positive psychology outcomes including: teamwork, co-vitality, school membership

Pretested, age-appropriate, and constructed using validated tools

Required 20 minutes to complete

Results

- Scores on all constructs were positively skewed, possibly a ceiling effect in the response scale

- **Several patterns of response were observed:**
- In the pre-test the control school students registered higher initial responses than the intervention students on multiple constructs
- At the post-test control school students again indicated higher scores
- Compared to the control group, significantly lower scores at baseline were found for the intervention group for Gratitude, Optimism and School membership

Participatory Design Research

Qualitative Study with Teachers

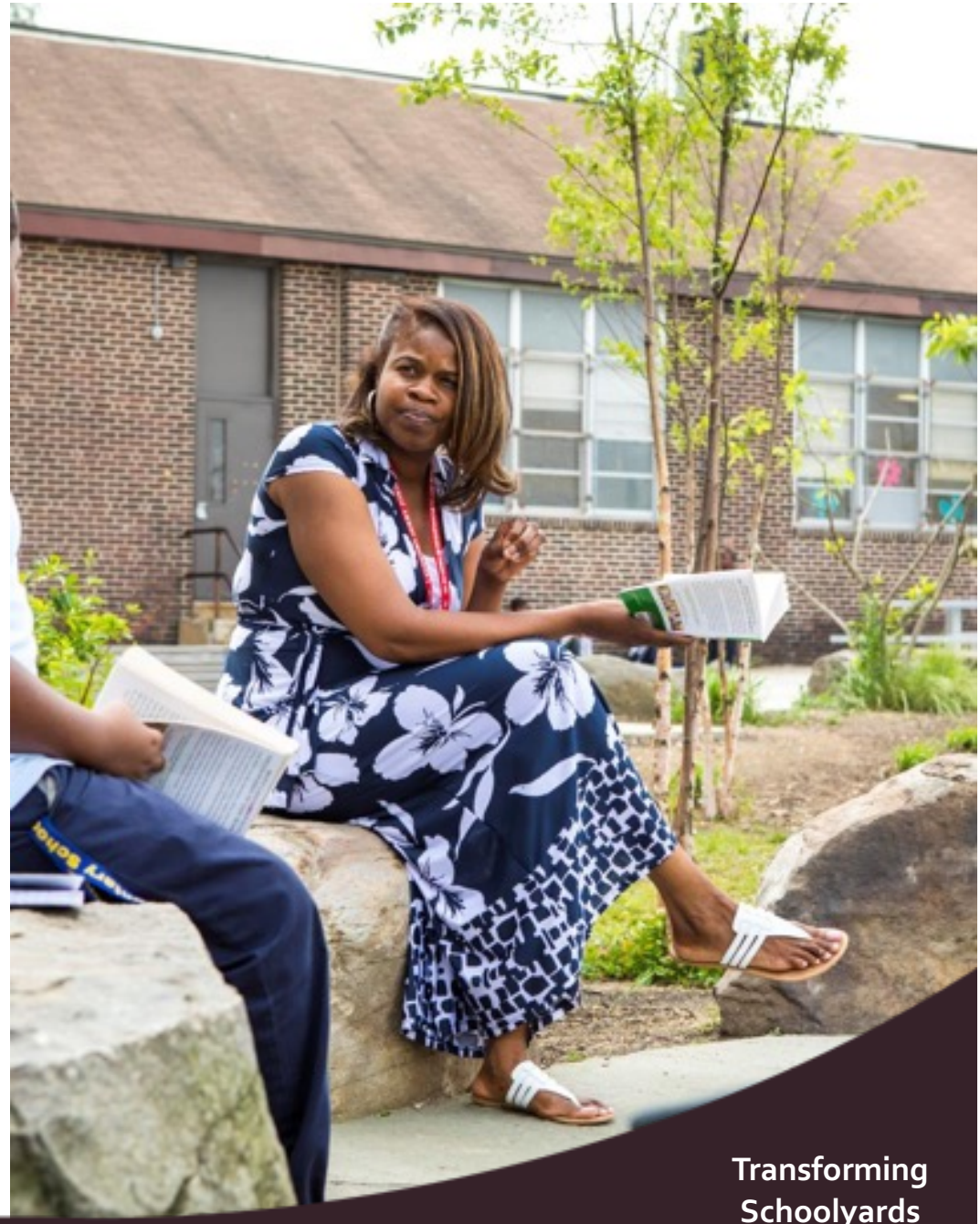
Qualitative Study with Teachers

Aim: First-hand insights & observations from the third-grade teachers whose students contributed to schoolyard design

To Learn About: Student and teacher experience with participatory design & observed changes in student learning and development during the intervention period

Methods:

- Four teachers were interviewed 3 weeks after end of design workshops
- Data were collected and analyzed by team members using methods of qualitative interviewing, codebook development, coding and synthesis that conform to the Standards for Reporting Qualitative Research



Results

Four themes from the qualitative data:

Design engagement and emotional connection

Collaboration & belonging

Change agency in students

COVID and classroom challenges

Evaluating Physical Activity

Implications for Community Health

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Research Aims: Full Study

1. **Aim: Study changes in levels of schoolyard use, physical activity levels, and social interaction behaviors from pre to post schoolyard renovation**
   - By children during school hours
   - By community members after school hours

2. **Aim: Examine whether physical activity and social interactions vary by schoolyard areas/features, age, gender, or group size from pre to post schoolyard renovation**

[redacted]

Hypothesis: levels of physical activity and prosocial behaviors will be higher, and antisocial behaviors will be lower after schoolyard transformation to community park

Research Aims: Baseline Study

1. **Aim: Describe current levels of schoolyard use, physical activity levels, and social interaction behaviors**

   - By children during school hours
   - By community members after school hours & evenings

2. **Aim: Examine whether physical activity and social interactions vary by schoolyard areas/features, age, gender, or group size**

[redacted]

Hypothesis: Levels of physical activity and prosocial behaviors will be higher, and antisocial behaviors will be lower, in zones of the schoolyard characterized by greenspace or natural elements compared to those primarily having impervious surfaces

Methods

- **SOOPEN** (System of Observing Outdoor Play Environments in Neighborhood Schools): a new tool for measuring activity levels using groups as the unit of analysis
- **Momentary time sampling technique**: observers do "systematic and periodic scans of groups of individuals and contextual factors within predetermined target areas"
- **Group data**: size, gender and intergenerational composition, physical activity intensity, pro/antisocial behaviors
- **Target area:** observed for type, accessibility, usability, school supervision, presence of organized physical activity, presence of type of equipment provided by school, presence and type of coverage from the sun or rain

Methods

- Two observers per school, per shift
- Data collection during recess, after school, evening and weekend hours
- Baseline: Observations May 9-24, 2022 – 6 trained observers & August 1-13, 2022 - 4 trained observers
- Post-construction: Anticipated in spring 2023

Results - Baseline

	Recess	Afterschool	Evenings and Weekends
Total number of groups observed	833	92	54
Activity Level			
Sedentary	295 (36%)	22 (24%)	23 (43%)
Walking	376 (45%)	49 (53%)	26 (49%)
Vigorous activity	159 (19%)	21 (23%)	4 (8%)
Social Interactions			
None	335 (40%)	47 (51%)	21 (39%)
Pro-social, verbal	288 (35%)	25 (27%)	24 (44%)
Pro-social, physical	183 (22%)	20 (22%)	9 (17%)
Antisocial, verbal	7 (1%)	0 (0%)	0 (0%)
Antisocial, physical	12 (1%)	0 (0%)	0 (0%)

After hours/weekends: **85% of scans had no individuals/groups observed**

Evaluating Community Walkability

Physical & Social Environments – The 10 Minute Walk

Research Purposes

Parks access, community use and physical activity are complex equations. As part of a schoolyards to parks transformation project, what are the influences on non-motorized park access

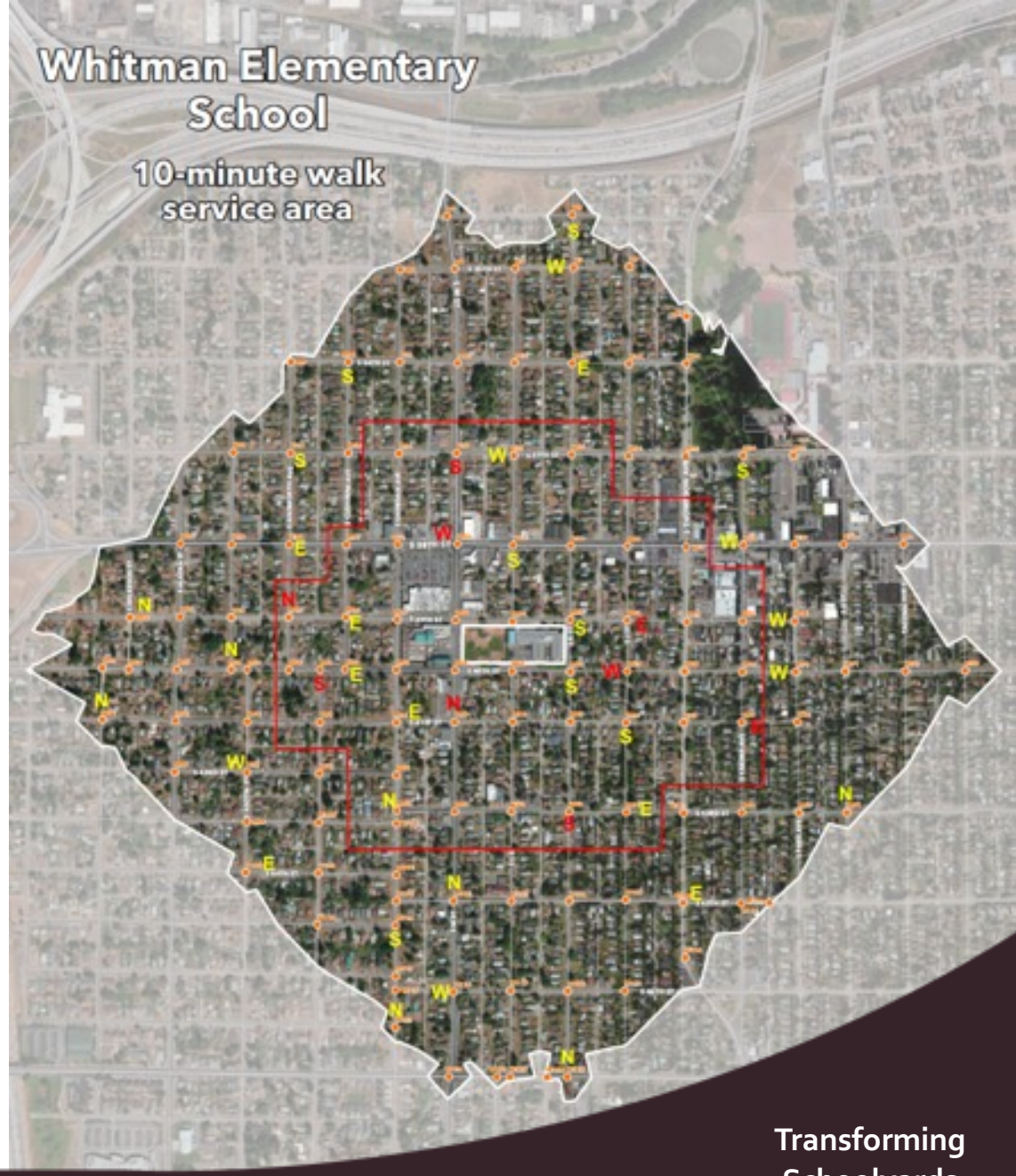
1. **Understand walkability and mobility conditions that encourage or discourage non-motorized access to parks within a 10 minute walk.**

2. **What are the physical conditions of place that influence walkability?**

3. **What are the social dynamics of place that influence walkability?**

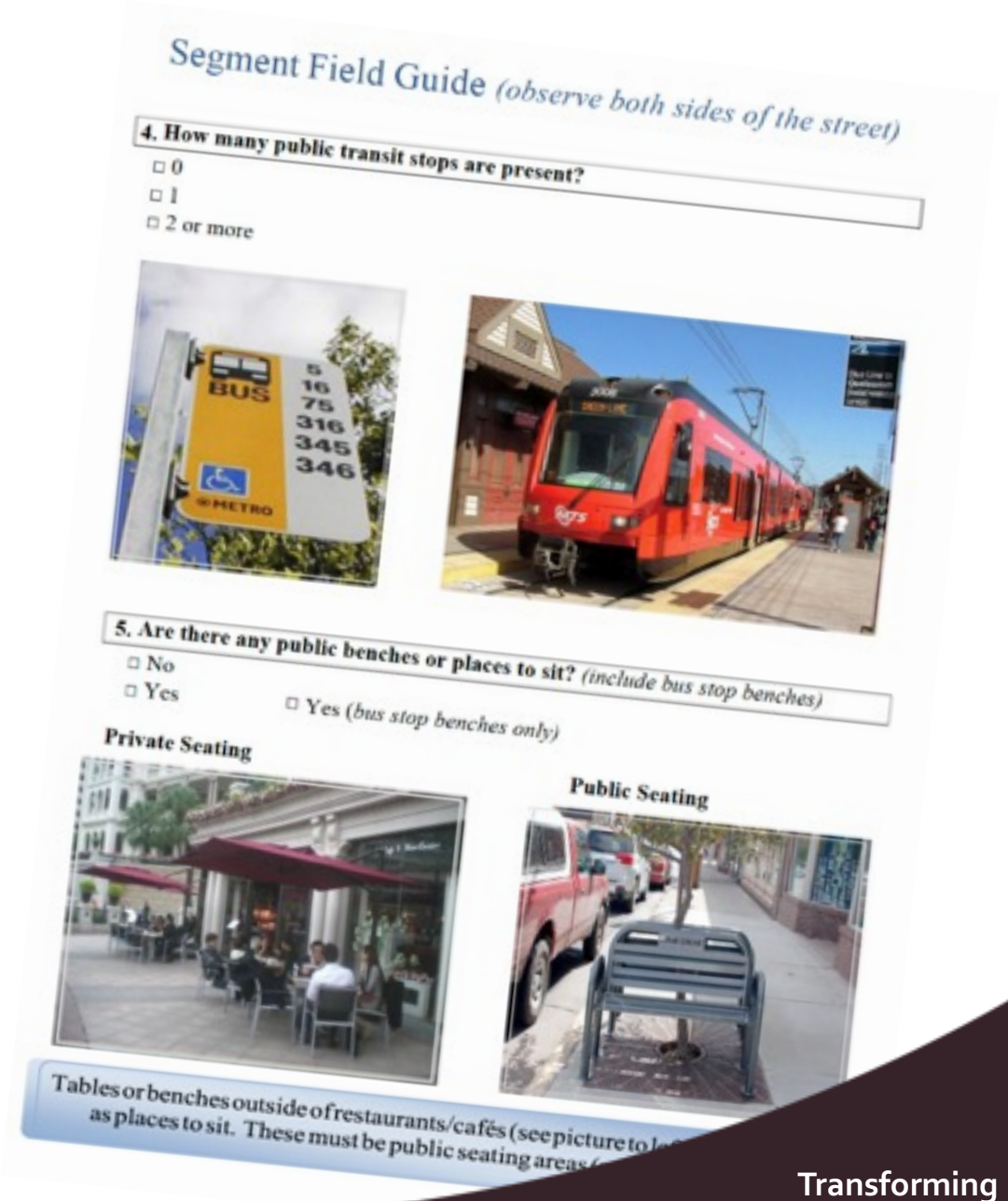
Methods

- Identify schools, 2 in underserved communities, 3rd in more affluent community
- Map 10 minute walk zones for each
- Randomly select blocks for data collection, with higher density sampling near schools



Methods

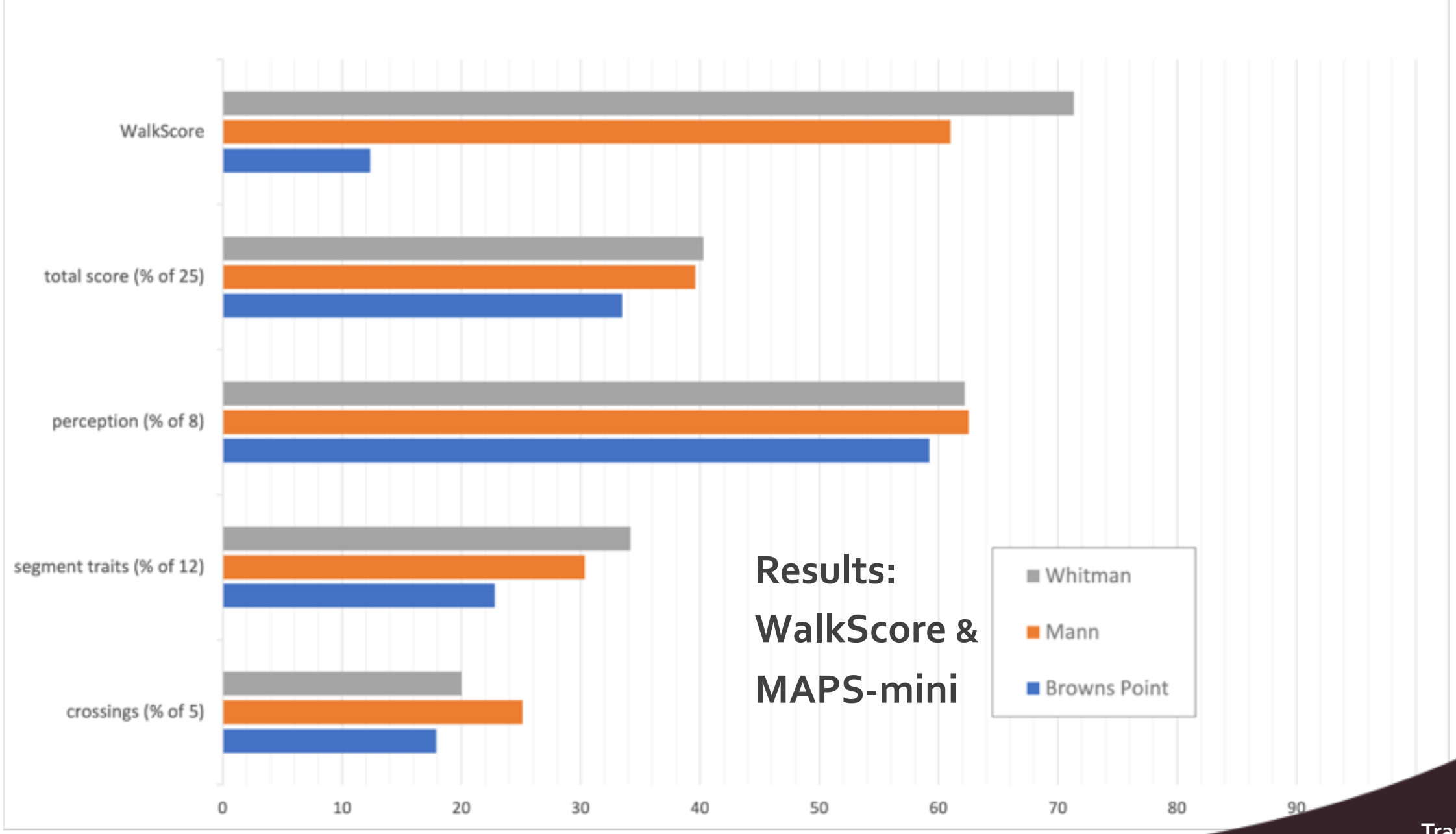
- MAPS-Mini – validated tool
- Data collection in field by trained volunteer observers (considered using Google Maps)
- Field guide pre-tested with extended research team. Fine tuned for regional use
- Digital data entry in field
- Follow up field reliability scores



Transforming Schoolyards to Parks

Results

- Total scores across 25 parameters x 3 school communities
- Subscores
  - *neighborhood perceptions*
  - *road segments*
  - *crossings safety*
- Compared to WalkScore (Redfin)



Results: WalkScore & MAPS-mini

Results and Conclusions

- Total scores were calculated (25 possible)
- Subthemes of place perceptions, physical traits, and in-street crossings

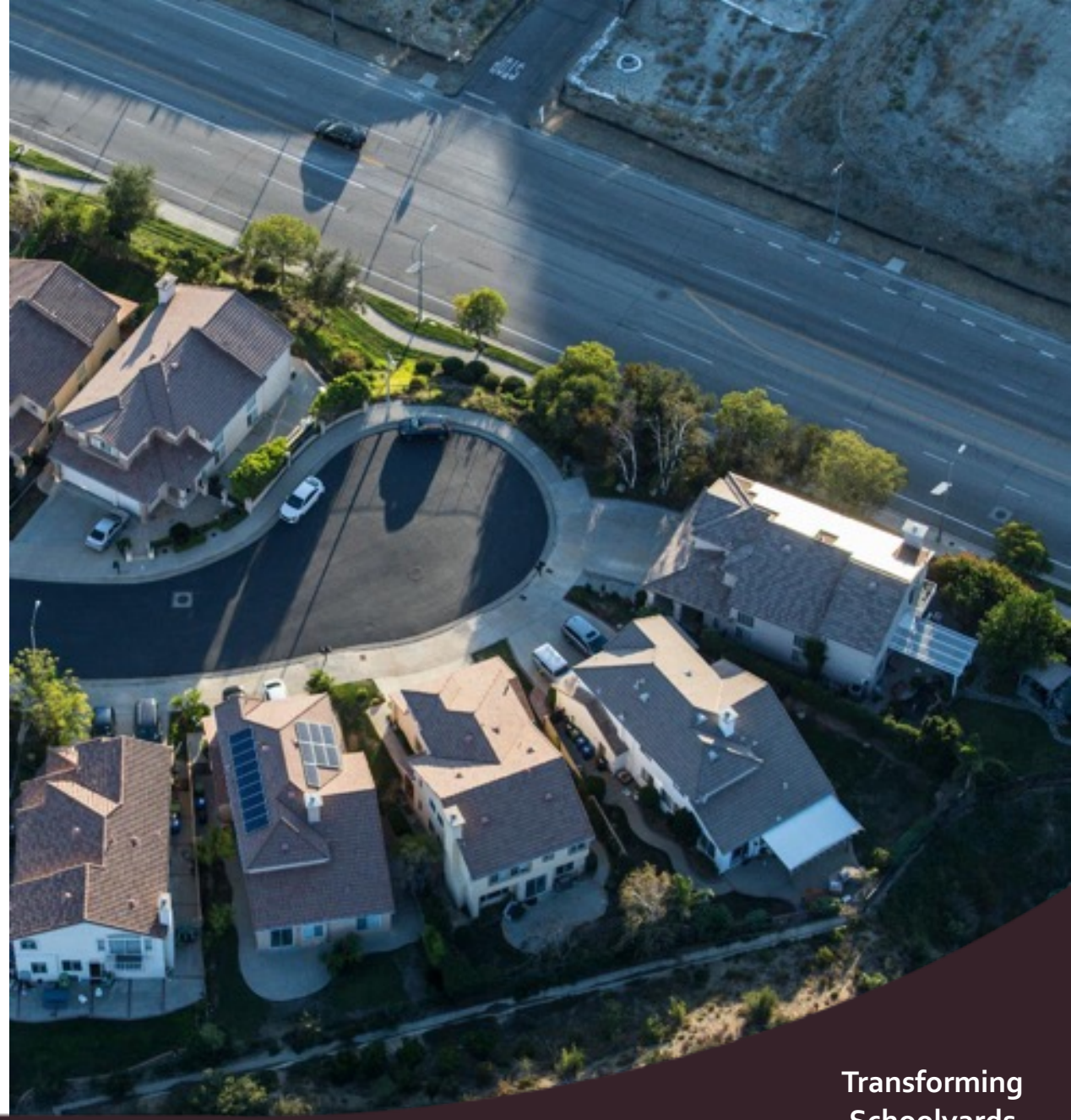
Results show need for improvement.

Place perceptions being most positive

More physical improvements investment

Most affluent school's neighborhood is least walkable

- May be due to more current urban planning favoring cul-de-sacs, while less affluent neighborhoods are older and have street grid which enables more connections and choices in walkability.



Social Audit

Aim: To assess the social conditions of a neighborhood for current or historic social dynamics that influence how comfortably people move about the neighborhood without a vehicle

Methods?

- Walking interviews
- Analysis of historic materials (e.g. redlining)
- Reported crime records
- PhotoVoice
- Engage local residents' & homeowners' organizations

Youth & Everyday Places

Youth Participatory Action Research pilot study

Purposes

Explore how youth engage with their nearby outdoor spaces – an exploratory process of youth participatory research

1. Engage a set of voices that are rarely engaged in planning discussions
2. Better understand relationships with, & meaning, of nearby places
3. Provide family resources during COVID, a time of emotional & fiscal challenge

Let's Get Healthy.ca

Methods

- Youth Participatory Action Research, qualitative data collection
- Keystone program of the Tacoma Boys & Girls Club
- 8 person youth team interviewed friends and family members & asked them to share pictures
- All materials shared with project team for analysis

Interview Questions

1. Where are the outdoor spaces in the neighborhood where youth spend time?
2. What spaces feel safe/unsafe?
3. What are the outdoor space teens would design?

Results

pictures from interviews

Sheridan Elementary

Eastside Community Center

7 Eleven store

Results

Analysis of interviews, pictures & videos

1. Spend time at: schools, parks, malls/stores, back of house, rundown houses
2. Activities: chill, play sports, shop, what friends want, what parents allow
3. Clean & safe is important, not ‘sketchy’

Team Science Reflections

Complex :: Engaged :: Collaborative

- a project of engaged interdisciplinary science AND schoolyard transformation
- providing authentic ways for those most impacted by a problem to be part of guiding research and science
- expand schoolyard transformations as a tier one solution to America's park equity gap

Community Connected Research

People

Lessons learned from our engaged team science approach:

1. Discover additional skill and knowledge sets & recruit (highly valued) collaborators
2. Offer training & mentoring opportunities for younger professionals & scholars
3. Make time to connect personally as a team – food, beverages & time outside

Process

Lessons learned from our engaged team science approach:

1. Engagement with stakeholders to inform research questions & science method, then report results
2. Clarity of tasks, timelines & primary responsibilities, yet continued flexibility
3. Patience & persistence! in working across multiple institutions (e.g. IRB, subcontracts)
4. Appeals to funders to be flexible and responsive

- parks are important for health & equity
- schoolyards transformations = community parks
- research as a engaged process of learning & understanding
- team science builds partnership & engages community for parks development

Questions/Comments/Suggestions?