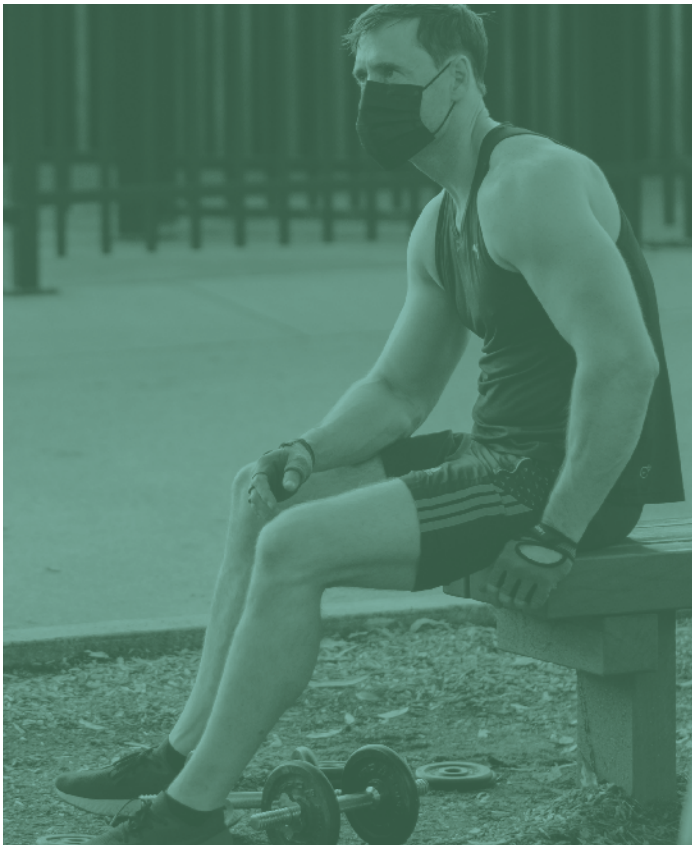
PUBLIC SPACE EVALUATION



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CONTENTS

INTRODUCTION

Public spaces are critical to life in cities. The COVID-19 pandemic underscores the importance of parks, trails, and sidewalks for physical, mental, and emotional health and well-being during stay-at-home and safer-at-home orders (Samuelsson, Barthel, Colding, Macassa, & Giusti, 2020). Limited ability to travel has shifted mobility patterns and increased need for local, accessible, and safe public spaces in every urban neighborhood. There is an increased urgency in the need to understand if our public spaces are adequately serving all communities across cities. Many studies have shown that low-income and Black and Latino communities already face limited greenspace access in cities across the US due to the historical legacies of racial discrimination, as well as limited and inequitably distributed resources (Boone, Buckley, Grove, & Sister, 2009; Rigolon, 2016; Rigolon & Németh, 2018b). These inequities in urban public spaces have far-reaching impacts because public spaces offer many benefits to neighborhoods by providing opportunities for social connections, lowering temperatures, creating spaces for physical activity, offering health-related information, and serving as refuge sites during extreme weather events.

In this report, we synthesize literature on how public spaces are evaluated to understand if our frameworks and methods allow us to assess whether our parks, libraries, and playgrounds are meeting the many goals we have for these important urban spaces. We address the following questions:

1. Who supports the evaluation of urban public spaces, and why?
2. What kinds of methods and measures are used to assess the benefits and costs of public spaces?
3. What drives decisions to conduct public space evaluations at specific sites or across systems of public spaces?
4. To what extent do municipalities include public space assets as a factor in larger community development?
5. How do new directions in evaluation approaches have potential to improve public space evaluations?

This synthesis is a companion report to the January 2020 report, *The Benefits and Costs of Urban Public Spaces*, commissioned by the William Penn Foundation, and we followed a similar approach. Our report synthesized prominent research on urban public space evaluation from multiple fields, focusing on American cities from 1990 to the present. We partnered with the Schuylkill Center to include a practitioner perspective on evaluation (see Appendix).

We considered many types of public spaces based on whether the public views the space as public space, and if it is managed for different uses by different social groups (Varna & Tiesdell, 2010).

Our typology of public spaces is as follows:

Quintessential public spaces (spaces designed to be used by the public): Parks, trails, libraries, plazas, playgrounds

Natural public spaces (natural spaces that are accessed by the public): Beaches, rivers, forests

Public right-of-way (portions of public spaces that are accessed by the public as a part of their daily transportation): sidewalks, streets, parking lots, transit stops

Privately owned but publicly accessible: privately owned parks, malls, schools/universities with public space, arts and cultural institutions and spaces

Undefined space (spaces that are not intentionally designed for the activities that take place there): vacant land (e.g. community garden in an undeveloped lot), parking lots (e.g. weekend food or flea markets)

While we included these types of public spaces in our literature search, quintessential public spaces were overrepresented in the evaluation literature, including libraries, parks, and the built environment. We also found that most evaluations were designed for specific objectives in certain public spaces (e.g. physical activity in parks), and that evaluations were often conducted by a single discipline (e.g. public health evaluation examined parks and the built environment; library sciences evaluation examined libraries). Our report aims to highlight the potential for novel evaluation frameworks that are synergistic, holistic and address the multiple goals we have for our public spaces.

KEY TAKEAWAYS

Key Finding #1

The majority of public space evaluation frameworks assess a limited number of benefits associated with urban public spaces compared to what many communities, practitioners, and policymakers hope their public spaces will deliver. Public spaces have potential to create opportunities for making social connections, exercising free speech, increasing economic activity, lowering temperatures, enhancing biodiversity, providing spaces for physical activity, offering health programming, and providing shelter during storms or extreme heat events. Increasingly, cities are seeking to improve equitable access to public spaces in all urban neighborhoods. The fields with the most extensive evaluation frameworks dedicated to public spaces are public health (physical activity in parks and the built environment) and library sciences (literacy outcomes). While these evaluation frameworks provide valuable information about certain benefits that specific types of public spaces provide, they do not provide a complete portrait of public spaces and their impacts on communities.

Key Finding #2

Basic statistics — like the numbers of public libraries or proximity to parks — are inadequate measures of the value of public spaces. There has been an increase in the number of qualitative metrics for demonstrating how public spaces build community trust, encourage physical activity, and enhance quality of life more generally. Qualitative approaches may provide a better assessment of certain types of public space characteristics, such as quality of park infrastructure or how users from different social groups may experience public spaces differently. However, these qualitative frameworks may not provide the type of information required for current business models that seek more quantitative evidence. There have been efforts to develop methods to quantify the contributions of public spaces, such as economic valuations of library services or the specific public health benefits of physical activity conducted in parks, and this information may be used to advocate for resources. Such hard data should be contextualized with personal accounts or lived experiences of these numbers to fully illustrate the impacts of public spaces on a community.

Key Finding #3

New directions in public space evaluation are changing the way parks, libraries, and built environments are assessed and include new technologies such as smartphone applications and data analytics; new priorities such as the diverse perspectives of the public who use these spaces; and new areas of interest such as the ecological aspects of public space. These new approaches may improve available data on public spaces to provide more timely and comprehensive information to managers and practitioners who need to make decisions about the development and management of public space systems. The adaptation of commonly used tools — such as the System for Observing Play and Recreation in Communities (SOPARC) — in order to provide more accurate data on a diversity of users and uses. Additionally, multiple initiatives to engage the community members in evaluation promise to provide stewards with the information they need to advocate for high quality and equitable public spaces in every neighborhood.

KEY GAPS

Key Gap #1

There are few simple self-report measures to assess a public space's economic, health, or social benefits or costs. Such measures would allow communities to generate data in order to advocate for their local public spaces and the specific types of benefits they want (e.g. social, health, environmental) and to have more of a voice in urban space planning. There have been several recent efforts to engage the public in park evaluation (see Kaczynski et al.'s 2012 Community Park Audit Tool (CPAT), and studies on how to engage the public to conduct the evaluations (see Speller and Ravenscroft (2005)); however, these efforts have yet to develop a simple self-report tool that both provides the same type of validity and reliability as research tools and addresses the concerns of the public intended to use them. Recent technological innovations and frameworks allow community members to engage in evaluations and present opportunities for better centering the voice of the public in these evaluations. However, many of these tools have a specific application, such as park access or acoustic environment. There is a need for tools that include a more comprehensive suite of social, economic, and health outcomes and allow users to set the priority outcomes within the evaluation framework.

Key Gap #2

Few evaluation frameworks include a comprehensive assessment of the impacts of urban public spaces within and beyond their borders. Instead, most urban public space evaluation research focuses on specific types of activities (e.g. physical activity) in specific types of public spaces — primarily parks and libraries. These audits target activities that are conducted within the boundaries of public spaces. Understanding the broader impacts of their public spaces and how their investments — whether monetary or through volunteer labor — benefit their communities is a key interest of many public space stewards seeking to advocate for their public spaces. Further, there is a need to evaluate the potential for negative impacts, such as increased property values and residential or commercial displacement. The work of several nonprofits and foundations may begin to address this gap through new tools that are designed to evaluate the impact of public spaces in neighborhood revitalization (e.g. the Knight Foundation's "Toolkit: How to Measure Progress Toward Downtown Revitalization and Engaging Public Spaces"). However, the research team did not uncover any widely used evaluation tools that include a neighborhood or citywide perspective on urban public spaces and how they are managed or used to meet a suite of goals, including economic development, public health, and climate resilience.

Key Gap #3

While there is considerable research on public space governance and management, there is little peer-reviewed literature on the experiences of conducting parks assessments or on the challenges of using the assessments to guide future decisions about park development. Our conversations with practitioners revealed the importance of having more research on practitioner and community implementation of evaluation frameworks, as well as an assessment on the outcomes of the evaluation efforts and how they shape urban public space management and maintenance. Most of the literature we reviewed focused on the development and performance of tools, yet even practitioners with training in how to conduct assessments may still face barriers once they start audits in the field. Further, the tools that have been developed and tested by researchers will require ongoing customization and adaptations, as well as resources to implement. Lack of adequate resources to conduct evaluations is a common concern for practitioners. Regardless of how well an evaluation tool is designed, if there is a dearth of resources available for implementation of the tool, robust analysis will not be possible. This may result in organizations implementing evaluations at smaller scales with the understanding that the results cannot be viewed as comprehensive nor robust.

QUESTIONS

1) WHO SUPPORTS THE EVALUATION OF URBAN PUBLIC SPACES AND WHY?

Public space evaluations are conducted to assess return on investments, improve the management of and advocacy for public spaces, advance our understanding of the role of public spaces in public health outcomes or civic engagement, and enhance public involvement in the evaluation of their local parks and libraries. Government agencies and foundations provide financial support for the evaluation of different types of public spaces.

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Federal agencies, such as the National Science Foundation, National Institute of Health, the Arts and Humanities Research Council, and the National Library of Medicine, have supported evaluations in parks, the built environment and libraries. State agencies, such as the Department of Education, and city agencies, such as Parks and Recreation Departments, have also funded evaluations. Additionally, there have been a number of evaluations in all public space types that have not received funding.

Researchers, professional associations, government agencies, and community members all conduct evaluations of urban public spaces. In this section we

describe how different stakeholders conduct evaluations in different types of public spaces, focusing on libraries, built environments, and public spaces since these are the types of public spaces most often addressed in the evaluation literature.

Researchers have well-developed approaches to the evaluation of libraries and environments for physical activity, and their evaluations are typically implemented within a specific site or sites, rather than across a full system (of libraries or parks) or across different types of urban public spaces (i.e. evaluation tools are often tailored for one type of public space, such as parks, libraries, or streets).

Libraries: There are diverse evaluation initiatives in the library sciences, with the most common evaluations focusing on literacy outcomes, an initiative that gained momentum in the U.S. during the 1990s as response to concerns of illiteracy nationwide (Celano & Neuman, 2001). Evaluation frameworks have emphasized return on investment (ROI), and there are recent calls for frameworks that go beyond ROI to assess personal and community life. There are additional evaluation efforts to assess library usage, user experience, and navigation of libraries to locate different resources. Some recent trends in library evaluation include testing user experience models in the library sciences (e.g. Datig, 2015) and using geographic information systems (GIS) to map user activities in libraries (Mandel, 2010). There are also initiatives to develop novel and alternative valuation models that capture the non-monetary aspects of libraries, such as building community (e.g. Kelly, Hamasu, & Jones, 2012).

Recent reflections on library evaluation suggests that libraries have done poorly on efforts to quantify and communicate their value, and there is a need for stronger evaluation frameworks to make the case for public libraries, particularly during periods of fiscal austerity. Basic statistics, like the numbers of public libraries, fail to adequately capture their value, and there has been an increase in the number of qualitative metrics for demonstrating how libraries build community trust, contribute to quality of life, etc.

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However, these qualitative frameworks may not resonate with current business models that seek more quantitative evidence. Government agencies

and professional associations have developed some ROI calculators that try to calculate the monetary benefit to their communities (e.g. Library Research Service, Maine State Library, APA Library Value Calculator), but Jaeger and colleagues (2011) suggest that this approach could be expanded by quantifying the number of jobs and social services applied for and received to better show the real economic value of libraries.

Parks and Built Environment: There is a longstanding interest in evaluating parks and built environments for physical activity and public health outcomes. These evaluation measures have focused on usage, levels of physical activity, and park characteristics (Evenson, Jones, Holliday, Cohen, & McKenzie, 2016; Tester & Baker, 2009). There are detailed review articles that trace the development of these tools for parks and public spaces, revealing their interdisciplinary origins in health, behavioral science, exercise science, city planning, and leisure studies (e.g. Evenson et al., 2016; Rigolon & Németh, 2018b; Sallis, 2009). There are several research trends that seek to make the use of current tools more efficient and less burdensome for researchers and practitioners, while retaining their quality and reliability. Several studies seek to replicate observation-based surveys using social media and big data applications (Edwards et al., 2013; Rigolon & Németh, 2018b; Taylor et al., 2011). Additionally, researchers are responding to critiques that well-established tools fail to adequately represent certain populations — particularly low-income individuals and people of color, unhoused individuals, and youth — and are inattentive to pervasive inequalities in park use. There are multiple efforts to expand and refine existing tools to better reflect the diversity of users (e.g. low-income, communities of color) (Floyd, 2012; Floyd, Taylor, & Whitt-Glover, 2009; Kaczynski, Stanis, & Besenyi, 2012).

There are multiple efforts to expand and refine existing tools to better reflect the diversity of users (e.g. low-income, communities of color)

Additionally, there is interest in developing tools that involve the public in park evaluation as a way to engage the public in urban public space use and maintenance (Gallerani, Besenyi, Stanis, & Kaczynski, 2017; Kaczynski et al., 2012; Speller & Ravenscroft, 2005; Svendsen, 2013).

Professional associations, government agencies, foundations, and community members also conduct public space evaluations; however, their evaluation tools are very likely under-represented in peer-reviewed literature because their target audience is practitioners, policymakers and funders, rather than researchers or academics. Examples from key agencies and organizations in the US are provided on the following page.

Professional associations evaluate the state of public spaces at a city or national level, mostly with an eye towards public accessibility. For instance, the National Parks and Recreation Association (NPRA), which serves park professionals, has multiple initiatives that assist park agencies in evaluating their own park systems. The NRPA Park Metrics provide benchmark data on national park trends to help agencies improve their management and planning.

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The NRPA also includes an Agency Performance Review, based on their Agency Performance Survey (1,053 park and recreation agencies responded from 2017-2019), which provides a summary of key findings from the NRPA Park Metrics. This summary is a comprehensive collection of benchmarks on budgets, staffing, and facilities, which may be used to guide conversations about parks and recreation in individual communities. The NPRA cautions against using the benchmarks as national standards because they acknowledge that different agencies and communities have different needs, interests and funding mechanisms. NPRA also conducts Park Pulse Surveys that poll the public on a diverse array of themes such as health, assembling in public spaces, and pollinators. These surveys also include topics such as current events and impacts such as vacationing in local parks during COVID-19 and virtual recreation programming. Each poll surveys 1,000 adults and aspires to capture the perspectives of a cross-section of Americans.

The American Library Association (ALA) provides guidance for libraries seeking to include performance measurement and evaluation tools to measure the outcomes of library services, plan for future initiatives, and better advocate for libraries. The Public Library Association (PLA), a division of the American Library Association, created an initiative in 2015 called "Project Outcome" to encourage and help public libraries conduct their own performance measurements. Their online evaluation tool is free for public libraries and focuses on key outcomes, such as knowledge, confidence, application, and awareness. Their website also includes resources for guiding public library staff on using library assessment data, library user surveys, and measuring quality using the Public Library Association Project outcome performance measurement tool, as well as tools for calculating the monetary value of library materials and services.

Government agencies evaluate park systems and libraries to monitor visitation and use and to calculate ROI. For instance, The Institute of the Museum and Library Services (IMLS), which is the primary source of federal support for national libraries and museums, has a robust evaluation program. IMLS hosts a comprehensive website that provides evidence-based evaluation resources to help museums and libraries better document the performance of their programs.

Foundations have taken an increasing interest in evaluating public spaces in recent years. The Gehl Institute has published a series of reports that address public spaces, including their Inclusive Healthy Places Framework funded by the Robert Wood Johnson Foundation. This framework serves as a tool for "evaluating and creating healthy, inclusive public spaces that support health equity." Additionally, Gehl collaborated with the J. Max Bond Center and Transportation Alternative to measure and evaluate the New York City Public Plaza program with respect to the quality of public life and social justice. Their framework includes 74 metrics for measuring economic impacts, as well as equity, access, inclusion, and participation. Finally, the Gehl Institute, in partnership with San Francisco's City Planning Department and Copenhagen's City Data Department, has also developed a public life data protocol to create "a shared international language" for collecting objective and quantifiable data on how people interact with public spaces. These data can be used for planning and community organizing or for evaluation. Additionally, the Knight Foundation recently released two reports focused on downtown revitalization and public spaces. The complementary reports provide a detailed literature review on metrics that have been developed to measure community recovery as well as a toolkit that practitioners can implement in their downtowns and public spaces.

Foundations have become increasingly interested in civic engagement and its connections with the public sphere and public space. A recent example

is the *Assembly: Shaping Civic Life* report published by the Center for Active Designs (CfAD) through funding from the Knight Foundation, which is part of a research initiative to investigate how design impacts civic engagement. CfAD highlights the important role that public space can play in shaping civic engagement by addressing its four dimensions: collective civic identity or how individuals value public spaces, participation in public life or how public spaces facilitate social interactions, stewardship for public spaces, and informed local voting. As part of this project, CfAD published *Civic Design Guidelines* for individuals and groups to use to transform their public spaces through place-based design.

The *Reimagining the Civic Commons* initiative has received $40 million in funding from foundations (Knight Foundation, Kresge Foundation, Rockefeller Foundation, JPB Foundation and William Penn Foundation) and additional local matching funds, seeking to improve engagement, equity, environmental sustainability, and economic development through the revitalization of public spaces.

The initiative has published a "new system of measurement for public spaces and nearby neighborhoods" and has provided tools kits for individuals and communities to "reimagine" public spaces based on their social, environmental, and economic impacts. They hope to increase engagement in public life and stewardship by extending the use of their tool kits.

Community members conduct evaluations to improve their local spaces. These community-based tools are designed by community groups for use by community members. For example, New Yorkers for Parks (NY4P), a non-profit park advocacy group in New York City, worked with Bronx REACH CHAMPS, led by the Bronx Community Health Network, to create a Citizen's Guide to Measuring Park Use. This guide, which is based on SOPARC, is written for community members to be able to conduct the survey in their local parks to provide valuable data and evidence to support advocacy with local decision makers. There are additional approaches, such as participatory action research (PAR), that seek to center the voices and experiences of research participants (i.e. public space users) and to disrupt the power dynamics between researchers and research participants. One of the goals of such researcher-community participant partnership is to generate knowledge for action and to promote mutual learning.

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Clark and colleagues (2009) outline such an approach to evaluating urban public spaces and highlight the benefits afforded by including multiple perspectives in the research process, yet also underscore the time burden placed on community volunteers.

2) WHAT KINDS OF METHODS AND MEASURES ARE USED TO ASSESS THE BENEFITS AND COSTS OF PUBLIC SPACES?

There are five main methods used in public space evaluations:

1. **Direct observation:** The majority of measures use direct observation; these measures have been tested and are well established. This approach is time intensive, and many fail to address issues of equity and/or exclude certain users. Examples of different observation-based tools are included in Table 1.

Active Living Research, an organization dedicated to translating research into practice to promote opportunities for physical activity, provides a detailed summary of available tools for collecting data on streets, parks and community settings.

2. **Web audit:** Web audits are a convenient approach for collecting information on parks, such as acreage or facilities, because it can be done remotely; however, information available on the web may be limited or out of date. Few studies used a web audit, and those that did included other methods.

3. **Interviews and surveys:** This approach may include intercept surveys, neighborhood surveys, observation mapping, and field surveys. They provide a detailed way to learn about user experiences and perceptions; however, these tools are time- and resource- intensive, and may exclude certain users.

4. **GIS and spatial analysis:** Some approaches use publicly available spatial data (e.g. Census data) on socioeconomic, crime, and other data at neighborhood and site scales, as well as characteristics of the built environment

of public spaces (such as number of access points, length of pathways, and percent of park perimeter protected by fencing). Individual characteristics are scored and weighted for the analysis framework used to calculate an overall score. Drawbacks of this approach include the use of technical methods that may make the evaluations less accessible to the public. Furthermore, many physical aspects measured have the potential to be positive or negative facets of the space and may need additional qualitative insight.

5. **Remote sensing/Social media:** This method reflects the momentum of big data analytics and is intended to be a low-cost rapid assessment technique. However, there are several drawbacks. Not all environmental features can be observed in aerial/satellite imagery, nor do all public space users participate in social media. Further, private companies may not make relevant data available to researchers.

The majority of measures used to evaluate physical activity and environments collect quantitative data for analysis. Brownson and colleagues (2009) provide a comprehensive review of these measures through a critical assessment of the benefits and tradeoffs of perceived (e.g. interview or self-administration), observational (e.g. SOPARC), and archival methods (e.g. GIS-based). They indicate that using multiple modes of assessment improves the outcomes but also point to several limitations in these measures. For instance, many variables are only hypothesized to influence outcomes of interest, such as physical activity. Additionally, there are measurement gaps, such as the fact that GIS measures on park acreage or distance to parks don't adequately capture the quality of a park. Finally, the measures reviewed don’t adequately distinguish among park users from different social groups. There is a need to expand measures to include social and cultural dimensions, as well as measures of the policy determinants of built environments.

There are also multiple studies of park use and physical activity that rely on qualitative methods, as reviewed in McCormack and colleagues' (2010) article, which provides the first synthesis of qualitative research on the physical and social environments in parks. Their synthesis highlights how qualitative approaches provide a better assessment of park quality, which may not be captured well by quantitative data or approaches. Library evaluations also include a number of qualitative methods, including interviews and observations, as well as diary studies and focus groups.

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These qualitative methods allow library stewards to understand the user's mindset in terms of library spaces.

TABLE 1. OBSERVATION-BASED TOOLS

SETTING	TOOL	REFERENCE
Physical Activity	PEAT: Path Environment Audit Tool	(Troped et al., 2006)
	ROUTES: Research on Urban Trail Environments	(Spruijt-Metz et al., 2010)
	BRAT-DO: Bedimo-Rung Assessment Tool-Direct Observation	(Bedimo-Rung, Gustat, Tompkins, Rice, & Thomson, 2006)
	CPAT: Community Park Audit Tool	(Kaczynski et al., 2012)
	EAPRS: Environmental Assessment of Public Recreation Spaces	(Saelens et al., 2006)
	PARA: Physical Activity Resource Assessment	(Lee, Booth, Reese-Smith, Regan, & Howard, 2005)
	POST: Quality of Public Open Space Tool	(Broomhall, Giles-Corti, & Lange, 2004)
	QUINPY: QUality INdex of Parks for Youth	(Rigolon & Németh, 2018a)
	SOPARC: System for Observing Play and Recreation in Communities	(McKenzie, Cohen, Sehgal, Williamson, & Golinelli, 2006)
	SPACES: Systematic Pedestrian and Cycling Environmental Scan instrument	(Pikora et al., 2000)
	SPEEDY: Sport, Physical activity and Eating behaviour: Environmental Determinants in Young people	(van Sluijs et al., 2008)
Libraries	Visual traffic sweeps	(Given & Archibald, 2015)
	BCPAF: Benchmarks Curricular Planning and Assessment Framework	(Feldman, 2010)
	PET: Program Evaluation Tool	(Campana et al., 2016)

3) WHAT DRIVES DECISIONS TO CONDUCT PUBLIC SPACE EVALUATIONS AT SPECIFIC SITES OR ACROSS SYSTEMS OF PUBLIC SPACES?

Public space evaluations are conducted within specific sites and across systems of public spaces (e.g. municipal park systems). The types of questions and objectives that stewards develop for the evaluation determine whether the project is carried out at the site or system scale. In the approximately 50 articles reviewed, more than half of the studies researched across an entire city or an entire system, and almost half were site-specific studies. Overall, researchers, community members, officials from parks and recreation departments, librarians, and the United States Forest Service are conducting evaluations on public spaces at both the site and system scales. Different questions are asked at different scales.

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In site-specific studies, questions test different methods of evaluation, whereas system-wide studies tend to evaluate the characteristics of public spaces. For instance, Kim's (2018) site specific study asked "Can social media data provide real-time and valuable insights about public space uses more effectively and promptly [than traditional methods of evaluation]?" to test a new method. Additionally, in site-specific studies, researchers use a single site to evaluate phenomena that might be experienced at larger scales, such as "How do youth experience engagement with their public spaces and might their increased knowledge of their own public spaces increase their engagement with those spaces?" (Gallerani et al., 2017). In studies that evaluate public spaces at the city scale or across a system, questions tend to focus on characteristics of the types of public spaces rather than how specific interventions have impacts on users of public spaces. For example, Brown and colleagues (2014) asked "What physical activities are associated with different park types and do some types of parks offer more (or less) physical health benefits to the community?"

Stewards are using many different methods to conduct their evaluations at both scales. These methods include conducting surveys utilizing Public Participation Geographic Information Systems (PPGIS), System for Observing Play and Recreation in Communities (SOPARC), and Quality of Urban Public Experience (QUPE). These methods are used across a wide range of objectives and disciplines to evaluate public health benefits, perceptions of trails, preferences among different social groups, park usage, and the spatial distribution of recreational opportunities (Armstrong, 2000; Donahue et al., 2018; Gilliland, Holmes, Irwin, & Tucker, 2006; Gobster, 2002; Troped, Whitcomb, Hutto, Reed,

& Hooker, 2009). Additionally, researchers are developing evaluation tools themselves. Bedimo-Rung and colleagues developed the Bedimo-Rung Assessment Tools (BRAT) to measure the physical, social, and policy environment of parks by incorporating direct observation, informant interviews, aerial photography, GIS, and archival data in site-specific contexts (Bedimo-Rung et al., 2006).

4) TO WHAT EXTENT DO MUNICIPALITIES INCLUDE PUBLIC SPACE ASSETS AS A FACTOR IN LARGER COMMUNITY DEVELOPMENT EVALUATIONS?

Stakeholders have different definitions of community development, but most agree that it centers on increasing community capacity to make self-determined changes in their geographically-defined community. Achieving increased capacity takes a variety of forms — many of these forms hinge on residents forming connections with one another and leveraging collective power with government and other institutions to improve their quality of life (Kretzmann & McKnight, 1996; McKnight & Kretzmann, 1996). Community development can also take the shape of built environment assessments, improvements, and plans, as these conditions impact economic and social circumstances linked to capacity building.

Public spaces such as parks, trails, libraries, and community gardens are classified as “assets” in the prevailing asset-based community development model, as they provide 1) paths for communication between government, institutional, and informational authorities and their constituents, 2) the backdrop for neighbors to connect with one another and build coalitions, and 3) jobs, in addition to the typical benefits of space to exercise and enjoy nature. These facilities are located in communities, however mostly controlled by outside forces and funding from local governments (Asu & Clendening, 2016; Kretzmann & McKnight, 1996; Mason et al., 2011). As communication resources, parks and libraries are common sites of public notices, flyers, and meetings led by outside-of-community agencies, such as developers, universities, and government entities, in addition to intra-community organizations like neighborhood associations. Community gardens and smaller neighborhood parks are often sites of informal social interactions between area residents, facilitating casual information sharing and relationship building.

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Lastly, libraries are staffed by workers with diverse skill sets, from security and custodial to librarians. Some cities, such as Philadelphia, have workforce development partnerships that employ community members in libraries and parks as seasonal workers.

Evaluating public space for planning and community development purposes often hinges on contextualizing hard numbers, such as crime rates and area median income, with "thick data," or personal accounts of neighborhood stakeholders about the role a public space plays in the community. For example, two vacant lots in different neighborhoods with similar economic, educational, crime, and homeownership profiles may serve as an impromptu park and gathering space in one neighborhood and a site of short dumping in the other, depending on cultural and other hard-to-quantify factors. This local knowledge is only available from members of the community who bear witness to the spaces each day, and is best captured through assessments that include community engagement methods (e.g. Newell, Picketts, & Dale, 2020) rather than relying on quantitative data such as crime rates.

Many evaluations also depend on the overarching goals and priorities of the larger effort within which they are completed and the role public spaces play in moving forward on goals within that framework. For example, research on the impacts of an open streets event in Chicago based on Bogota's *ciclovía* — during which non-motorized transport is excluded from streets for periods of time to encourage walking and biking — examined how public space access and community development strategies could be leveraged to improve public health outcomes (Mason et al., 2011). An additional example is business improvement districts, whose goals are to create more revenue for their member-businesses by enhancing the public realm. The Center City District in Philadelphia, for instance, manages several parks within their boundaries. They released a consultant-produced plan for the City Hall Courtyard in 2017 that focused on re-working the space to be better suited for 1) a crossroads between the transit lines below programming the space and 2) creating a destination that will draw visitors, who will presumably spend money at area member-businesses (WRT, 2017).

Community development measurement tools that specifically focus on public space are uncommon, and many organizations draw on different evaluation tools to assess their public spaces. For instance, measurement tools that examine health outcomes and community revitalization may include the number and condition of neighborhood parks and libraries (Success Measures, 2020 ; Valerio, 2018). Additionally, funding sources for programs including community development assessments can impact the approach used to evaluate public spaces. For example, projects funded through the Wells Fargo Regional Foundation's grant program are given access to the "Success Measures" evaluation resources to collect data and evaluate the funded program. Success

Measures is designed to evaluate the results of community development programs and draws on a participatory framework and 350 data collection instruments. While the tool is not specifically for public space evaluation, it may be used by organizations to measure the results of community development programs that address libraries, parks, and other public spaces.

Increasingly, researchers, practitioners, funders, and residents are embracing ways to contextualize a public space within their community development frameworks.

Increasingly, researchers, practitioners, funders, and residents are embracing ways to contextualize a public space within their community development frameworks. These frameworks consider how the role of public space intersects with social infrastructure, capacity-building, health, economic development, environmental conditions, and other community socioeconomic and political circumstances. For instance, some do-it-yourself public space measurement frameworks exist, such as the one produced by *Reimagining the Civic Commons* (RCC), allowing community organizations to download spreadsheets pre-loaded with formulas and instructions on how to record and evaluate data on the social impacts of public spaces. In this tool, its evaluation lens focuses on social conditions of "increasing economic segregation, social isolation, and distrust" and how public space can mitigate these conditions. Its funders — among them the Kresge Foundation, the JPB Foundation, the Knight Foundation, the William Penn Foundation — each have a mission of addressing socioeconomic equity and environmental conditions in urban communities in some combination, so the lens of RCC tools follows suit. This tool's evaluation lens focuses on social conditions surrounding a specific park, rather than a strictly-numbers economic analysis or a system-wide evaluation, both of which would likely be outside of the capabilities of often volunteer-based community organizations.

Evaluation also has the potential to be a community development activity itself.

Evaluation also has the potential to be a community development activity itself. For example, if community residents are hired to work together to create a rubric for grading area libraries and then employed as data collectors, this serves dual purposes of job creation and building social cohesion, both community development goals.

5) HOW DO NEW DIRECTIONS IN EVALUATION HAVE THE POTENTIAL TO IMPROVE PUBLIC SPACE EVALUATIONS?

The increasing interest in public spaces has led to the development of new tools and ways of measuring how public spaces benefit cities. Researchers, city officials, community leaders, and citizens have tried to address multiple limitations in traditional evaluation approaches by better representing the diverse group of users in public spaces, making evaluations faster and less expensive to administer, and including new features of public spaces, such as environmental quality. These new directions adapt existing tools and incorporate new technologies, sources of data, and data analytics.

IMPROVING EXISTING TOOLS

Researchers have adapted existing tools or developed new tools to include information that prior tools lacked. For example, the SOPARC tool is a commonly used tool for assessing physical activity in public spaces, but is limited in its ability to address race/ethnicity, contextual conditions, (such as the time of day or day of the week), or the settings of the public space, where the design of the space may make it easier or more difficult for the observer to clearly see users engaged in different activities (Marquet et al., 2019). Marquet and colleagues adapted SOPARC by adding race, income, and gender. They compare and contrast the existing SOPARC tool and the modified tool and find that the SOPARC tool becomes more unreliable and complicated when

observers try to accurately characterize racial and ethnic characteristics or distinguish among different levels of physical activity, particularly in certain settings, such as crowded playgrounds. They point towards the need to improve the SOPARC protocol to adequately assess the diversity of park users and uses, a critical data need for designing and managing parks that are accessible and equitable. Additionally, some researchers are finding ways to make evaluations easier and less expensive to administer than traditional techniques that require considerable time, expertise, and resources to conduct.

Additionally, some researchers are finding ways to make evaluations easier and less expensive to administer than traditional techniques that require considerable time, expertise, and resources to conduct.

Geremia, Cain, Conway, Sallis, & Saelens (2019) conducted a study using shortened versions of the Environmental Assessment of Public Recreation Spaces tool (EAPRS). EAPRS has been used to examine whether the number of park features or a combination of park size, distance, and number of features in a park relate to an increased likelihood of using parks for physical activity (Geremia et al., 2019). The researchers in this study devised shortened versions of the EAPRS tool. The original EAPRS tool consisted of 688 items within the evaluation. The research team devised an "Abbreviated" version of 177 items and a "Mini" version of 37 items. They conducted a study on 40 parks in San Diego that compared the results of the original EAPRS and the shortened EAPRS tools. The results show that both the Abbreviated and Mini versions of the EAPRS tool were just as accurate as the original. Shortened versions of EAPRS make it more feasible to use park observations in research and practice (Geremia et al., 2019).

SMARTPHONE APPLICATIONS

Researchers have developed smartphone applications that evaluate public spaces. These apps offer an engaging and empowering way to incorporate direct observations from citizens within the community.

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The importance and purpose of this participatory method is the ability for community members to be involved with the evaluation and decision-making process (Lercher & Schulte-Fortkamp, 2003). The Environmental Sound Experience Indicator index is a smartphone application that engages community members to measure the acoustic soundscapes in public spaces (Aspuru, García, Herranz, & Santander, 2016). This app allows community members to not only measure qualitative sound data but also answer a questionnaire that captures more information about users' perspectives on public space. The method creates valuable dialogue between community members and the authorities, who can in turn adapt their planning process to improve or preserve the environmental conditions of public spaces (Aspuru et al., 2016).

Hemminki and colleagues (2016) developed a smartphone application that used crowd replications to evaluate human activity in public spaces. Crowd replication is a low-effort, easy-to-implement and cost-effective mechanism for quantifying the uses, activities, and sociability of public spaces (Hemminki et al., 2016). Crowd replication combines mobile sensing, direct observation, and mathematical modeling. The researcher follows and observes people moving in the space, replicating their trajectory and activities on a general level using the app (Hemminki et al., 2016). This allows researchers to capture behaviors of large populations in public spaces, which can be used to understand how the public utilizes and navigates the space. The digital divide can limit the utility of smart phone evaluations by skewing participation, since only those that can afford a smartphone can participate in the study. Researchers must offer the necessary equipment for more accurate results and to include a diverse group of participants.

ENVIRONMENTAL EVALUATION

Measuring the natural environment has become an essential aspect of the evaluation of public spaces because certain types of public spaces — such as parks, natural forested areas, and waterways — have potential to provide a host of environmental benefits for urban neighborhoods such as stormwater runoff mitigation or providing "park cool islands."

Measuring specific environmental outcomes of different public spaces provides valuable information to practitioners and stewards seeking to enhance the environmental benefits of their public spaces while continuing to deliver social, health, and economic benefits to community members.

By using satellite and thermal technologies, Xu and colleagues (2019) investigated how microclimates impact park users' experience and opinions on the parks using the Multi-Agent System (MAS) in which it detects changes in micro-weather patterns and human behavior throughout the park (Xu et al., 2019). They found that park users' movement through the park can be predicted by understanding microclimates within the space. For example, people may tend to take shadier paths on warmer days. People's activity modes are of great guiding significance to the design of public spaces.

Mishra and colleagues (2020) introduced a tool that evaluates urban blue spaces —including public lakes, lagoons, canals, fountains, and waterways — because there was no existing tool that directly evaluated blue spaces. By taking components from existing evaluation tools used in urban and transport planning, landscape architecture and management, urban design and public health, they established the BlueHealth Environmental Assessment Tool (BEAT). BEAT enables comparable assessment of environmental aspects and attributes that influence access to, use of and health-promoting activities in blue spaces (Mishra et al., 2020). Botero and colleagues (2014) examine how public users' recreational activities impact the quality of beaches. They developed the Index of Environmental Quality in Tourist Beaches (ICAPTU) to evaluate the beach quality and provide a decision-support tool for coastal management. They drew on multiple methods of evaluation, including interviews with beach users on coastal scenery and safety and security, focus groups with experts on degree of urbanization and the Q-sort method to assess the organization of tourist beaches, and environmental attitudes.

PUBLIC PARTICIPATION

Public participation is important for closing the gap between government aims and citizens' needs in public spaces (Langer, Decker, & Menrad, 2017). Public participation has the potential to make evaluation efforts more representative of the diverse users of public spaces.

> **Public participation has the potential to make evaluation efforts more representative of the diverse users of public spaces.**

Additionally, researchers are developing new evaluation tools that the public can use to assess their own local parks and public spaces. Kaczynski and colleagues (2016) and Oliphant et al. (2019) developed a measurement tool for public parks, known as ParkIndex, to bring researcher, planner, and community member input into a single framework to develop a metric for park access that includes factors like proximity and park quality. ParkIndex is a National Institutes of Health-funded study to create an evidence-based tool that assists citizens and professionals in understanding and using information regarding community park access and use (Oliphant et al., 2019).

In addition to including the public in data collection, new tools allow the public to evaluate the tools themselves. Kaczynski and colleagues (2012) developed a user-friends tool (CPAT) to enable diverse stakeholders to audit community parks for physical activity.

> **Kaczynski and colleagues (2012) developed a user-friends tool (CPAT) to enable diverse stakeholders to audit community parks for physical activity.**

A secondary aim was to examine community stakeholders' reactions to the process of developing and using the new tool. This case study asked participants to measure the validity of the Community Park Audit Tool, showing positive reactions from the community stakeholders who participated in the process along with impressions of tool being accurate and reliable for measurement. Future use of the CPAT can facilitate greater engagement of diverse groups in evaluating and advocating for improved parks and overall healthy community design (Kaczynski et al., 2012).

CONCLUSIONS

Over the last few decades, policymakers and planners have increasingly valued the way that public spaces enhance quality of life in urban neighborhoods. During COVID-19, open public spaces like parks, trails, and waterways have become critical resources for promoting physical and mental health.

Policymakers and communities are recognizing the value of their public spaces for the benefits that they provide in allowing people to safely recreate while socially distanced.

The pandemic has also highlighted the benefits that are taken away due to limited resources, such as the inability to open public pools in the summer or the continuation of library services in the time of an extended building closure.

Public space evaluation tools have been honed to address specific, high-priority needs over time, such as improving literacy outcomes through libraries or increasing physical activity to address pervasive public health concerns. Increasingly, there is a need for comprehensive yet flexible evaluation tools that capture the full value of public spaces, including the social, economic, health, and environmental benefits that they provide, within and beyond the boundaries of the physical spaces. This information is critical for being able to advocate for urban public spaces as the long-term impacts of the pandemic will likely yield less municipal funding for the maintenance and management of public spaces and exacerbate inequities in those public spaces across cities.

New directions in public space evaluation, including greater attention towards the diverse users of parks, playground, trails, and libraries; new technologies for capturing different aspects of public space; and new ways to engage the public in evaluation show promise for addressing the limitations in current methods of evaluation. These new directions also motivate new evaluation approaches that reveal a more comprehensive assessment of the value of public spaces for urban neighborhoods that will help cities, communities, and residents to advocate for neighborhood parks, libraries, trails, and community centers.


APPENDIX

This report on public space evaluation is a companion report to a previously produced report entitled "The Benefits and Costs of Urban Public Spaces," and we followed a similar approach. We developed a typology of urban public spaces. While most definitions of public space indicate that they are publicly owned and free for the public to use, this definition of the quintessential public space (e.g. a public library) doesn't adequately reflect contemporary perspectives or use of public space (e.g. community garden on vacant land). We developed a typology of public spaces to reflect the public's point of view to guide the subsequent literature search. The following types of public spaces were included in the literature search: public parks, libraries, recreation centers, playgrounds, community centers/civic centers, gardens, trails, plazas, schoolyards, public pools, rivers, beaches, parking lots, public right of way (e.g. sidewalks, spaces under highways/transit station), schools or universities with public spaces, churches/religious institutions (if they function as a community center that is free and accessible to the public), arts and cultural institution spaces (if they function as a community center that is free and accessible to the public).

Our research on evaluation included two components: 1. Literature synthesis of peer-reviewed research on public space evaluation; 2. Engagement with public space practitioners with recent evaluation experience in Philadelphia, PA.

1. Literature Synthesis: We conducted a literature search of peer-reviewed research on evaluation frameworks for urban public spaces using Google Scholar and Web of Science. We selected key articles that were published in high profile outlets in their respective fields (e.g. public health, library science). We targeted review articles and perspective pieces to provide an assessment of different evaluation tools. We also conducted targeted searches to uncover areas that weren't well represented in our initial searches because of different language used in those subfields (e.g. valuation and return on investment of public libraries). We selected 90 articles for in-depth review and examined the literature to address our research questions.

2. Practitioner Engagement: Schuylkill Center for Environmental Education (SC): We partnered with the Schuylkill Center to include a practitioner perspective on evaluation. SC conducted a city-wide assessment of approximately 450 parks in Philadelphia in 2016, and the results of their assessment are at https://naturephl.org/. January-February 2019 we met twice with two of the public space stewards, Elisa Sarantschin and Allison Gibson, who conducted the assessment and currently maintain the NaturePHL website. The first meeting addressed the development of the survey tool and the second meeting elaborated on their experiences implementing the assessment.

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