What makes an active public realm? Opportunities and challenges for research

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Contemporary cities have more extensive public spaces than ever before. Consider the vast expanses of highways, parking lots, and sprawling floorplans of malls and shopping centers. These are all, technically, available for public use, the habitat for our everyday experiences outside the privacy of our homes, schools, and workplaces. Right outside our front doors, they are by far the most convenient places for physical activity and community engagement. Yet the omnipresence of these spaces does not translate into quality. The vast majority of the public realm does not invite us to spend time within it, develop a sense of place and identity, or travel under our own power to convenient destinations. It is unsurprising that physical activity has declined precipitously in recent decades while our public spaces have become predominantly bleak, utilitarian, and designated for fast and efficient roadways. We have traded well-designed public spaces for well-engineered guideways for private automobiles.

What distinguishes many of the most active, enjoyable, and self-maintaining public spaces is the variety and interaction of their uses, a stark contrast from the ideology of functional separation that has dominated modern land and transportation planning. Consider the Greenwich Village commercial street described by Jane Jacobs, with small shops on the ground floor and a mix of apartments and offices above. Those who live or work in this space have an interest in its maintenance and keep "eyes on the street" simply by virtue of their presence. For shoppers, the street provides an opportunity to purchase goods and services among the backdrop of an interesting social scene and an opportunity for incidental physical exercise, providing a range of public and private goods at hand. Everyday trips meet a handful of practical and emotional needs. Such benefits are not exclusive to dense commercial blocks. A neighborhood street like the Dutch *woonerf* or British *home*

zone is a safe place for children to play and adults to enjoy the outdoors and socialize with neighbors who come and go. The public realm, when it feels safe, inviting and interesting, draws us to engage in social and active recreation on an everyday basis with little additional effort. If we instead spread our homes, work, shopping, recreation and community-building between farther and more exclusive spaces we are simply less likely to manage each activity on a day-to-day basis.

Physical characteristics of public spaces cannot be fully credited with their success or failure. Myriad cultural and economic factors must also conspire to allow a vibrant public realm to emerge. Nonetheless, design creates an important framework for public life and there are notable patterns among successful public spaces that have evolved across numerous cultures. At the scale of cities and neighborhoods these spaces tend to connect a mix of land uses within a walkable distance and offer multiple ways of navigating from one place to another. Cities with short, densely connected streets are often considered both more practical and enjoyable for walking than those with superblocks and a hierarchy of streets leading to disconnected cul-de-sacs. At the scale of streets, successful public realms are often compact and human-scale, allowing people to comfortably communicate by voice or recognize a person on the other side of the street or in the upper story of a building. They tend to be comfortably enclosed by the arrangement of buildings or trees, forming the sensation of outdoor rooms. Their horizontal layouts tend to prioritize access for pedestrians, the most fundamental transportation mode, giving faster bicycles and motor vehicles the ability to share the space, not the right to dominate it.

While these descriptions evoke romantic images of a successful public realm, they are hardly a recipe for successful spaces. Existing literature underscores the importance of both the presence and design of public spaces for physical activity. Yet, the terms with which we measure physical and experiential characteristics of public spaces are vague, and the relationships between them remain difficult to ascertain. Several emerging areas of research could help us better understand public spaces and their role in supporting physical activity.

It will be important to refine our understanding of public space attributes that are most relevant and desirable for encouraging physical activity and related community benefits such as "eyes on the street," increased social interaction, or improved pedestrian safety. However, concisely defining these attributes may require that we embrace normative frameworks. Kevin Lynch's principles of "good city form," for example, identify attributes such as legibility, transparency, and enclosure, though measuring them reliably has proven to be more difficult than expected. Accordingly, the predictive validity of these attributes has

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also been weak. Research investigating how these attributes are manifested in more readily-accessible measurements may help us account for them more efficiently and reliably.

There are also research opportunities in examining how the importance of public space attributes vary across spatial scales. At the macroscopic scales of neighborhoods or cities the mere presence of public spaces and their accessibility for individuals are clearly important. Macroscopic characteristics like street geometry and park size have been well-studied with convenient secondary data assessed in geographic information systems. At a more microscopic scale, design and maintenance characteristics affecting the *quality* of public spaces are conceivably just as important for facilitating their use. Nonetheless, gathering and analyzing data at the scale of individual streets and buildings has been substantially more challenging, traditionally requiring in-person audits, intercept surveys, and interviews with residents and passersby. Innovations in automated image interpretation, architectural-scale geodata, and crowdsourcing using mobile apps and social media create opportunities for more efficient and fine-grained analysis.

Even at the scale of particular streets, there are questions about what matters most for individuals. Is quality of experience affected more by building setbacks, height restrictions and other land use and design policies, or by smaller characteristics controlled by individual landowners and public works agencies? Treasured public spaces include details that compel interest, provide a sense of security, and create an inviting connection between public and private areas. These details may be formally designed and intensively managed, like elaborate façades and well-kept front gardens. Or they may be informal, gritty, and even chaotic, like produce vendors sprawling out into the walkway of a public market. Either is visually engaging, teaches the passerby something about the surrounding landscape, and projects a sense of care and attention to the space. To set policies that promote a vibrant public realm we must better understand which characteristics matter most and who has agency to control them.

Related to issues of scale are decisions about how researchers conceive of their analyses. Are we concerned about how public spaces are configured within communities, or how individuals experience them at the street-level? Neither view is necessarily correct or superior.

They both respond to the varying ways in which public spaces are planned, implemented, maintained and used. Yet, there is an increasing need, and an emerging opportunity, to better understand people's experiences in public spaces. Using actual behavior to measure quality of experience has been predominantly limited to blunt measures such as number of visits, time spent, or travel mode share. Improvements in technology, together with the emergence of individual-level data sourcing en masse, create opportunities for person-level performance metrics that may rely on self-reported data (as collected, for example, in ecological momentary assessments) or physiological indicators that may act as surrogates for personal states such as happiness, stress, and mindfulness. By better understanding what triggers a stressful response we may infer important characteristics of public spaces.

The suggestion of using person-level metrics to evaluate public spaces raises knotty questions about the ability to generalize from human experience. Is it possible to aggregate across individual experiences to identify desirable public space characteristics? Or is the experience of a person, or subgroups such as children, older adults, females, or high-income individuals, so unique that generalizing is not possible or scientifically responsible? We can take cues from marketing researchers who have already indicated that generalizing is difficult and have guided their practice towards the tailoring of products and spaces, from retail shops to restaurants and vacation locations, to specific subgroups. In practice, we expect some aspects of people's experience to be informed by culture and personal context while other aspects may be more universal.

In understanding public spaces and their impact on the human experience we might choose to prioritize diverse uses, active users, economic prosperity, aesthetic unity, or even human happiness. However, we are far from being able to concretely measure most of these outcomes, let alone in efficient and localized ways, while accounting for myriad personal, social and environmental conditions. Research on public space design faces substantial and technological obstacles, many of which are being tackled currently, but with emerging logistical and data management issues. By addressing these obstacles, such research has the potential to help shape one of the most widespread and influential human landscapes for decades to come.