UNDERSTANDING PARK USERSHIP
An Examination of the Role of User Studies in Park Planning

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“Things that are important are tabulated, things that are unimportant aren’t. If parks and park users are ever to have influence, we need to start counting.”

– Peter Harnik, Director for City Park Excellence

This thesis is dedicated to the members my family who have continuously supported me throughout my education and to the memory of those who always did.
Browse through a few books about any famous park and one is likely to find photos of perfectly landscaped lawns, lush plantings, and beautiful pieces of public art. Park users, it would seem, are absent, or background to the landscape. Yet these spaces were created to be enjoyed by people, and it is park users who give life and meaning to these places. Planners have increasingly recognized that successful open spaces are those that are well-used by people (Francis, 2003). Still, the users of public parks often go overlooked. New York City spends millions of dollars maintaining, improving and expanding its parks and public spaces, yet very few planners understand exactly how these spaces being used, and by whom. According to my estimates, in New York City studies of park users today are routinely conducted in less than 4% percent of all city parkland.1

User studies, or user analyses, as they are often called, refer to the regular, systematic practice of collecting of information directly from park users. This includes a wide variety of techniques such as counting, surveying, interviewing, observing, and other methods. Planning can be a data-driven field, and planners are increasingly recognizing the value of usership metrics in evaluating urban parks and informing park planning. In 2009, Central Park completed its most comprehensive user study in over 100 years. The newly built High Line and Brooklyn Bridge Park have also taken to regularly measuring and studying their usership. The recent increase in these

1. This estimate was calculated by computing the combined acreage of Central Park, Brooklyn Bridge Park, Bryant Park, and the High Line as a percentage of total acreage of New York City parkland.

Abstract:

This thesis examines the role of user studies in park planning. Cities spend millions of dollars maintaining, upgrading, and expanding urban park systems. Yet the physical design and upkeep of public spaces alone does not make for good parks; it is the users of public spaces that create vibrant, successful urban spaces. However, few park managers actually understand who the users of the public space are, in part because finding the answer is not considered a priority. Increasingly, planners have conducted regular user surveys as a method to understand park usership. While this process is challenging, data collected about park users collected through counts, surveys, interviews, observations, and many other methods provides extremely valuable information that cannot be learned through other methods. This information can guide decision making and inform park planning in many ways. Historical records establish that different forms of user analyses have long played a valuable, if underappreciated, role in understanding and shaping urban parks. This thesis uses visitor data collected at Brooklyn Bridge Park and interviews with planners to demonstrate how the information learned through user studies can be used to recognize important equity issues, design flaws, or conflicting uses, in addition to identifying possible solutions. The evidence suggests that user studies produce the most valuable findings when they are conducted regularly, combine several methods of data collection, and are used to supplement traditional methods of interacting with park constituents. While user studies can be extremely valuable in evaluating public spaces and guiding future improvements, lack of resources and inflexibility in the planning process impedes their value. Because each public space is unique, studies of usership are more appropriate at a park-specific level, although some findings may translate into generalizable knowledge. In order to make the most of user studies, the planning process needs to recognize not only the value of continuing evaluation, but the fact that evaluation can reveal unanticipated findings that require flexibility. Overall, performing regular studies of park usership is a valuable planning tool for all types of parks that should be prioritized and warrants public funding.

Key Words:

User Studies; User Analysis; Park Planning; Public Space; Demographics; Surveys; Observation; Evaluation

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tools makes this an opportune time to examine the role of these techniques in the planning process. This thesis addresses the question “Are user studies an effective tool in park planning?” In finding the answer, it is important to ask: Can these user studies provide planners with practical information that can’t be learned from traditional methods of interacting with park users? How can this inform decision making and park management strategies?

In order to answer these questions, this thesis primarily uses user data collected from Brooklyn Bridge Park and interviews with park planners. Data from the 2011 Brooklyn Bridge Park user study represents the type of information that can be collected from park users. Unobtrusive observations of park users in Brooklyn Bridge Park are used to supplement this existing dataset. Interviews with planners help to explain how this data is then used to inform the planning process. Data from Central Park user studies is used to offer valuable comparisons, in addition to a historical perspective about the use of park studies that can’t be gained from a new park. Interviews with the sociologists who worked on these user studies help to give context to their value. Finally, research of historic park records is a key methodology for understanding how user studies have traditionally played a role in the planning process.

**Early Beginnings – Establishing the Role of User Studies:**

For a more detailed history of user studies as a tool in Park Planning, see Appendix A.

The limited existing literature on user studies has presented case-studies of user studies to demonstrate the value these can have a management tool. Yet these have relied only on examples from the small, but growing number of user studies conducted since 1970s. Many of the techniques employed in these studies are not new; some have existed since the 19th Century. A more thorough review of the history of user studies is used to understand how these tools have traditionally been used to inform park planning.

Fredrick Law Olmsted, famously credited with the design for Central Park, was very concerned with who would use the park, and how. Starting in 1863, Olmsted placed “park keepers” at all Central Park entrances, who noted how many visitors entered by what gate, using what mode of transportation, and during which month. This practiced continued in Central park for a decade, after which it would be an entire century before any effort would be taken to count the park’s users. Olmsted’s writing suggest that he also employed first hand observation of park users in New York and Brooklyn to get a sense of who was using the park. Similar user counts were conducted in Brooklyn parks until at least 1864.

Although not commonplace, park reports from scattered American cities show that user studies continued to be used as park management practice in the 19th and early 20th Century. In Saginaw Michigan, city officials compared attendance records between 1915 and 1916 to identify a decline in usership and the possible causes. In Buffalo, NY, another city with an Olmsted park system, park managers used observation of park visitors in 1881 to identify unanticipated trends in usership which then indicated what types of physical improvements were needed.

User counts in New York City seem to have been
forgotten around the turn of the century, when the five boroughs were consolidated into “The City of Greater New York” in 1898. Parks reports from the early 20th Century demonstrate how the physical condition of parks was studied almost exclusively, with little consideration of users. In one influential survey of Central Park from 1927, the landscape architect devoted an entire chapter of the report to the park’s insect population, but only made a few obscure remarks on how the park was used by people.

User studies in New York were rediscovered in the 1960s, following the end of Robert Moses’ 26-year reign as Parks Commissioner. The Parks Association of New York City conducted surveys of park users in 1962 in order to identify problems and solutions of the city’s parks. The concept of “privately owned public spaces,” introduced by the 1961 ordinance, prompted a great deal of interest in the design of public spaces and their use. Urbanist William Holly Whyte began studying users of public plazas in 1969, eventually leading to the creation of The Project of Public Spaces in 1975, and the publication of his famous work, “The Social Life of Small Urban Places” in 1980. Whyte popularized and expanded upon the methods of studying users that had been used for nearly a century, and is often considered the “grandfather” of the study of human behavior in urban settings. Importantly, Whyte identified the “gap” in the planning process where the design of public spaces was not being evaluated:

“This is the gap. Rarely will you ever see a plan for a public space that even countenances the possibility that parts of it might not work very well: that calls for experiment and testing, and for post-construction evaluation to see what works well and what doesn’t… There are few [existing spaces] that could not be vastly improved, but rarely is an evaluation undertaken” (p.34).

Whyte’s work and the Project for Public Spaces helped launch a series of user studies in plazas and parks across New York City. Notably, Central Park began to once again study its users in 1976 in an effort to address the deteriorating conditions in the park. These efforts eventually led to the formation of the Central Park Conservancy in 1985, and subsequent user studies in 1982 and 1985. These studies set precedents in park usership studies by looking at demographics, perceptions, trends of usage, and change in visitation. The 1985 studied named continual studies of use as the number one recommendation for the park, finding that they were an “invaluable tool for planning.”
An Emerging Methodology - The Limited Literature on User Studies

One of the difficulties encountered by planners and park managers was that there was no methodology for conducting user studies. Although historical records show that user studies in one form or another have been used since the mid-19th Century, there was virtually no literature explicitly discussing the role of this information in planning until the late 1970s. Dr. William Kornblum confirms the lack of information as challenge, recalling that when he first conducted Central Park's users studies in the mid-80s that “there was no methodology” available for conducting the study. William Whyte's appendices to “The Social Life of Small Urban Spaces” and his foundation's book “Film in User Analysis,” both published in 1979, are some of the first guides on collecting user information.

The same year, the National Recreation and Park Association published “Park Planning and Design: An Evaluation Approach,” written by planner David Reed and Texas A&M Professor Richard Perdue. The book, which serves as a practitioner’s “how-to guide” to park design evaluation, is significant in that is emphasizes the evaluation of parks, and it serves an important early example of a guide that explicitly addresses the role of user analyses is a crucial element in park evaluation:

“A preoccupation with design and management materials or techniques cannot be allowed to override such fundamental questions as who uses a park, for what purposes, in what observable patterns; and how that park is related to the cultural and ecological fabric of the community or region. Otherwise, parks in America will continue to be characterized as abused, overused, ill-conceived, badly organized and misunderstood” (Reed, 1979, p.2)

Importantly, the authors identify the ever-present “preoccupation” with park design and management that overlooks the social component to public spaces. Their guide outlines a four-step model for park evaluation which includes: 1) Identification of a problem and study site, 2) Information Collection and Analysis, 3) Synthesis and Evaluation, and 4) Findings, Conclusions and Recommendations. Their information collection section includes a regional analysis, user analysis, a management analysis, and a resource analysis. Not only does this guide acknowledge the role of a “user analysis,” their “regional analysis” considers the relationship of the park with its surrounding context. The description includes a thorough guide that includes the collection of demographic data as well as identifying a “user service area.” These important elements are often overlooked in studies that only consider data within the parks borders.

In describing the user analysis, the authors acknowledge that over the ten years prior, it was efforts of “social scientists” that led to “more sensitivity on the park of designers and manager to the users of buildings and spaces.” They describe “a gap between designers, managers, and users” “best described as the lack of an appropriate ‘social rationale’ on the part of the design or management process”. The authors assert that this social rationale “must incorporate a fundamental understanding of user needs, preferences, and behavioral patterns” (Ibid, p. 12). This notion elegantly and explicitly describes the social element that had been missing in park planning, and continues to be undervalued. This study describes user analysis as a means of achieving this social rationale, and thereby makes a case for user analysis as a key management tool.
for public spaces. Their report offers one of the earliest discussions on user analyses as a way of determining suitability. “From this analysis, an essential task must emanate: to determine the suitability of the park based on its ability to sustain visitor use, given the constraints and potentials as identified through analysis of the other data parameters.” By recognizing “other data parameters,” the authors acknowledge how user data should be considered in light of the “regional analysis,” further underscoring the point that public spaces must be considered in light of their environments. In the guide to performing a user analysis, the study explains the fledgling beginnings of this type of study: “The field of user research is only beginning to develop a complete understanding of its own methodological requirements. … It has been suggested, therefore that design evaluations employ multiple research methods to determine user requirements” (ibid. p.14).

According the authors, these multiple methods include 1. Prepare a demographic profile of park users 2. Identify behavioral patterns, obtain visitation records, and perform systemic observation. 3. Conduct a direct interview of users, 4. Employ participant observation, and 5. If possible, obtain information on those leisure behavior patterns outside the park. This impressively comprehensive approach represents the first attempt at establishing a methodology to user research, and correctly identifies that a variety of quantitative and qualitative methods provide the best results. Although this guide provides many detailed examples of the types of information that should be collected, it is largely theoretical and does not offer in depth case studies where their methods had been applied.

Just three years later in 1982, the Project for Public Spaces published its own methodology in a book entitled “User Analysis: An approach to Park Planning and Management” written by Kathleen Madden. In this handbook, Madden presents case studies from the National Park Service (NPS) to demonstrate the implementation of user analysis techniques, with the Director of the NPS noting “we have found such techniques to be useful both in identifying user needs and in suggesting oftentimes low cost approaches for meeting those needs” (Madden, 1982, p. vii).

The 1982 handbook represents the most significant attempt at explicitly producing a methodology for user studies by categorizing and describing different types of data collection techniques and using case studies to demonstrate their application and worth. These case studies also document “how significant improvements can be made in meeting visitor needs…. through simple, low-cost changes in design and management” (ibid, p. ix). Their definition of user analyses includes on-site observation, interviews, surveys and filming. Madden explains why understanding use is essential to the administration of urban parks:

User analysis grows out of the point of view that it is important to understand how a park is actually used and to identify both its problems and its potential before any redesign or improvements are made. Once “use” is understood, park management can make decisions to discourage or encourage such use through design or management decisions (ibid, p. 1)

Here, Madden effectively establishes the role of user survey as a tool in the management of urban parks. This idea echoes the sentiments previously made by Reede and Whyte, suggesting a small but growing consensus in the planning field that understanding use is essential element to planning for public spaces. Yet Madden notes that the usage evaluation she describes is an uncommon practice:
Unfortunately, adequate evaluation of use is seldom undertaken as part of the current design, planning, or management processes for parks. This is due in part to a lack of information about the value of use evaluation and to the scarcity of information about how to perform such an evaluation. (ibid, p. 2).

Here, Madden attributes the lack of user studies to the fact that park managers do not understand the value of evaluation as a management tool, and have little information at their disposal guiding them as to conduct one. These two issues are critical. The use of evaluation techniques in park planning continues to be undervalued, as evidenced by the relatively few user studies that are ever undertaken on a regular basis. This position is evolving, due in part to the advocacy of organizations such as the Project for Public Spaces. Additionally, the scarcity of information persists as a planning issue. Since the publication of this document in 1982, there have been hardly any readily available guides produced on how to produce user analyses, despite recent calls for their use. This issue will be further discussed with difficulties and limitations in conducting user studies. Madden draws a crucial comparison between a comprehensive user study and the data occasionally collected by park managers:

> Even though park managers sometimes conduct research on park visitor preferences, attitudes, and satisfaction levels, this kind of information does not usually reflect people's actual behavior in a park and is therefore limited in how it can be applied to day-to-day design and management decisions (ibid, p. 2).

This important distinction confirms the need for a variety of data collection, asserting that planners cannot rely on satisfaction levels and preferences, which (while easily collected) are limited in their usefulness. Madden also underscores the problem posed by the ever-present issue of only design-focused thinking:

> Often, even when information on user analysis techniques is available, funds are allocated solely for physical improvements and not for an evaluation of problems and use prior to design. This situation is unfortunate because understanding park use can be relatively simple and inexpensive compared to the costs of constructing inadequate or inappropriate improvements. (ibid, p. 2).

This “unfortunate” situation persists, where resources are allocated to design and maintenance, with little to no consideration paid to evaluation. This underscores Whyte’s point, where he asserts that the success of public spaces is always assumed, and rarely is an assessment undertaken. Here, Madden logically makes the case for evaluation by arguing that its cost and effort is far outweighed by the cost of the “inappropriate” construction that results from poor understanding of user needs.

Madden offers an important word of warning about conducting user studies which cautions against improper use of the user analysis:

> “Please note that the guidelines offered here are not suggested for a one-time, in-depth study of a park. To be successfully incorporated into park planning and management, user analysis must be an on-going process, continually feeding back information to decision makers, and become an integral part of any park improvement effort” (ibid, p. 4).

This emphasizes the importance of having consistent data over the life of the park, rather than a snapshot at any given time. It is important to consider that user analyses are being discussed as a regular management tool, not as a one-time diagnostic report.
Madden’s study provides a thorough and fairly comprehensive overview of performing a user analysis, which includes an overview of the entire process, with instructions on developing a workplan. The second section deals with a variety of case studies which demonstrate the techniques. Each case study tells the story of a park that used data to effectively inform design on policy recommendations. The last section offers detail descriptions of a variety of user analysis techniques, with instructions on “why when, and how to employ each technique.” The techniques described include: General Observation, Trace Measures, Activity Mapping, Counts, Tracking, Informal Interview, Guided Interviews, Time-Lapse Film, and Documentary Film. Significantly, Madden also categorizes the “usage problems” planners are likely to encounter into 4 categories: Underuse, Overuse, Misuse (Abuse), and Conflicting Use. Defining these terms allows planners to better identify the trends revealed by user analyses. Today, these categories can still accurately be used to identify what can collectively be called “unintended uses.” Although the descriptions of some of Madden’s techniques are outdated, such as the use of Super 8 Cameras in time-lapse photography, many of the procedures such as questionnaires have not changed much in the last 30 years. While the directions may be obsolete, techniques like time lapse photography remain valid. However, the list in this guide is not exhaustive; notably it does not include analysis of surrounding neighborhoods and local context, which Reed had so strongly emphasized. Neither study suggests methods such as mapping where park users live to identify spatial patterns, since this would have been extremely difficult with the technology available at the time.2

In 1984, influential urban planner Kevin Lynch contributed to the discussion of user studies shortly before his sudden passing later that year. The third edition of his book “Site Planning” devotes an entire chapter to user analysis, to reflect “recent marked expansion of the field” (p. vi) While not specific to public spaces, Lynch recognizes the importance designing places to fit human purposes, and outlines the importance of studying human behavior in space, which had “been systematically pursued for less

2. For a discussion of spatial patterns, see Appendix C.
than twenty years” in 1984 (ibid, p.67). Lynch discusses the challenges of planning for a multitude of users, especially when the users are distinct from the client, have different levels of influence or are simply unknown. He advocates for a multifaceted approach that uses demographic analysis of users as well as interviews and direct observation, which he describes as a “rich source of objective data.” Although Lynch states that “the resulting data can bear on capacities, preferences, habitual actions, cyclic changes, and latent environmental problems or success,” he concedes that “data analysis is tedious and can produce less than would be justified for the effort” (p.86). Lynch explains that “the site planner has neither the time nor the resources to investigate [all users]” and “the designer may be unwilling to conduct such a thorough analysis” (p. 69, 84).

The Project for Public Spaces published a guide “How to Turn a Place Around,” which further advocated for user data, particularly observations, claiming “observations enable you to quantify what would otherwise be regarded as intuition or opinion” (PPS, 2000, p.51). This guide offers an in-depth workbook for evaluating public spaces, including strategies such as behavior mapping, counting, tracking, trace measures, interviews, and questionnaires: “Once you know what to look for, you’ll see that there are myriad clues that indicate whether a public place is working or not. We have developed a range of techniques for identifying and interpreting those clues, which range from asking a few relatively simple questions to a conducting a detailed public space audit” (ibid, p.78)

The Project of Public Spaces outlines “collection of on-site data” as part of a user-based process that includes analysis of data, which translates into implementation plans, highlighting the link between collecting data and implementing plans that responds to it (PPS, 2000). This workbook provides a fairly comprehensive overview of the different methods to obtain user data, with instructions for planners.

In 2001, William Kornblum, who has conducted the Central Park user studies since the 1980s, co-authored a publication for the Urban Institute called “Public Use of Urban Parks: A Methods Manual for Park Managers and Community Leaders,” in which the authors “introduce park managers to various data collection methods and data uses.” In this book, the authors advocate for the collection and analysis of user data, explaining that “Today, park leaders need to collect analyze, and interpret findings [from data] in order to effectively manage their park systems” (Kornblum, 2001, p.3). To this end, this guide outlines several methods for collecting data, with in-depth descriptions and examples of each. Furthermore, the authors address challenges that face park planners, such as how to overcome their lack of expertise by outsourcing the user study to consultants. To date, this work represents the most comprehensive and up-to-date methodology for conducting user studies.


In recent years, several planners have addressed the value of information about park users, calling for the implementation of user studies as a regular planning tool. In the 2001 book, “Great City Parks,” the Executive Director of the Bryant Park Corporation Daniel Biederman argues that “user counts are the only form of profit and loss account that exists in park management.” (Tate, p.31) Given the fact that Bryant Park is run by a private management company, albeit a non-for-profit one, it should be no surprise to hear
usership substituted for profit as an indicator of success. It is interesting to note that many of the user analyses techniques discussed here are commonly employed by businesses in the private sector to understand their customers or clients. Retail stores, for example, commonly collect zip-codes and other information from their customers, which are used to determine which products are most popular among certain demographics. Analyzing and understanding their customer base allows them to target marketing, locate new stores, and improve their products. Landscape Architect and Professor Alan Tate describes the privately managed restoration of Bryant Park as “an object lesson in the patient, persistent and professional application of sound business principles in the public realm” (p.31). These “sound business principles” include the counting and analysis of its users, as would be done for customers in almost any business.

Peter Harnik, the Director of Center for City Park Excellence, published an article in 2005 with a title that boldly asserts “If You Don’t Count, Your Park Won’t Count.” Harnik recognizes the growing demand for more data, explaining “Writers and researchers on urban park systems have been calling for greater usership data collection for some time” (p.17). In the article, he raises the questions:

“How many people visit the parks in your city? Do they go once a year for a festival, or every day to walk the dog? Do they prefer a park with a playground or one with benches by the lake? How long do they stay? What would make their experiences better?” (p.8)

These questions serve as examples of the types of information that can be learned through user studies. Yet despite the growing demand for this information, these studies are rarely performed: “With a few exceptions, your mayor does not know the answers to these questions” (p.8). While many park departments may know the number of people in attendance of events such as concerts or fitness classes, this article explains that this information alone is inadequate because those users “are only a tiny fraction of residents and visitors who make general use of the entire park system” (p.8). This reinforces the idea that user studies must be a regular management tool because visitor counts only at special events fail to capture the vast majority of park users. Harnik identifies two common problems why this type of analysis is seldom undertaken. The first is the great difficulty posed by the sheer size and complexity of urban parks. As most parks have multiple entrances with users arriving by different methods, estimating attendance is not easy. The second major problem is that:

“All park managers aren’t all that interested in knowing the answer. A profit-making business counts its customers (and surveys them, which is something different) so that it can make a variety of decisions that might increase its profitability. Most park managers feel that since they aren’t in the profit business counting is an expense and a headache they can dispense with. This attitude is wrong” (ibid, p. 8)

As others have noted, many planners simply do not see the value in collecting this type of information. Harnik emphasizes that planners can learn from the private sector, explaining that “[usership] numbers help managers assess the success of operation, give clues as to how they can perform better and provide benchmarks for excellence and goals to aspire to” (p. 8). This emphasizes the role of user counts in systematically measuring the performance of parks. Additionally, he explains this data informs many other elements of park planning and management:
“Knowledge of how, when and where people use parks is essential in guiding managers in directing staff time, funding and a hundred other decisions” (p.17). Not only is studying usership important for measuring park performance, these numbers can inform a variety of day-to-day management questions, such as allocating staff.

Harnik’s paper does not provide a complete how-to guide, but it does offer a detailed discussion on the value of survey and counts, with some examples of their implementation. His article asserts that surveys, either mail, telephone, or in person are easier to administer than counts and are “good mechanisms for getting need, satisfaction, and trend data for parks” (p.17). “In a study of the nation’s 50 largest cities, the Trust for Public Land found 11 which conducted user surveys” (p. 17). All of these were done outside of the park, meaning they also incorporated non-users. However, this study found that surveys outside of the park are limited in that “people do not recall their park experiences very well” and tend to overstate their use (p.12). Actual counts of park users are less common, as Harnik noted that this has become a “lost art.” Nearly none of the park departments in his research made an substantial effort to count users, and some managers he contacted “were surprised at the suggestion of counting users in an open park and believed that it cannot be done” (p.12).

In 2005, The Urban Institute advanced the discussion of user studies in an article called “Understanding Park Usership,” by researcher Chris Walker. This article was one of three short studies focused “on a new and broader view of the roles parks can play in urban communities” (p. 11). To understand the value of user studies, the Urban Institute conducted four such studies in urban settings, concluding that “Our experience illustrates that usership surveying is a potentially valuable tool for parks managers and suggests ways that different types of surveys could be helpful” (ibid, p.1). This article provides more proof that user studies are valuable management practice, explaining that these techniques can be more helpful than the way in which park managers commonly engage their constituency:

“Most parks managers already take advantage of public meetings and formal hearings to obtain input from the community, but collecting information systematically from and about park users can do more. We are not talking here about data purely for research, or to support formal outside evaluation. We are talking about data to help managers take effective action—in designing investment, programming, and outreach strategies, and in monitoring their results” (ibid, p.1).

While public hearings and meetings are common strategies for community engagement throughout many areas of planning, this type of data collection provides a different level and type of information that can be more useful to park planners. The link between this information and “effective action” is critical; user-data should be used to inform management decisions.

Walker explicitly outlines the valuable types of information to be learned by determining the who, how why and what” of park usership:

1. Data on who uses a park can be compared with data on the wider communing surrounding the park, to see whether some groups are being missed…

2. Data on how people use a park can identify which facilities are being over-, under-, or mis-used, facilitating decisions about park investment
strategies…

3. Data on why community members do not use a park can guide direct outreach efforts and identify areas and types of services that need to be improved or changed…

4. Data on what park features visitors value can help resolve conflicts among groups… (Walker, 2005).

Each of these questions has important implications for a variety of different planning and management issues. The answers provide crucial data on both theoretical and practical concerns such as social equity, infrastructure investments, outreach, and resolving conflict. Walker gives a brief overview of some different methods for collecting user data, including counting, observation, closed-opened questions, open-ended questions, and notably focus groups. The inclusion of focus groups departs somewhat from what is generally considered part of a user-study, since this is more similar to the type of community meetings that typically occur in planning. Yet Walker asserts that this approach makes sense for “exploring attitudes and opinions in depth for [specific] groups of park users” (ibid, p.3). This brief contains examples from four usership studies in urban parks conducted by the Urban Institute in the late 1990s in order to help inform improvement strategies funded by their Urban Parks initiative. In this process, the researchers realized the broader applications of the surveying tools. As Walker explains, “This experience had the added benefit of illustrating the broader potential of surveying as a tool for parks managers for day-to-day decision making and problem solving” (ibid, p.4). The 4 case studies provide evidence of how surveys can do more than inform improvements; they are also a valuable management tool.

Recognizing The Relationship to the Community - Applications for User Studies

Recently, planners have stressed the importance of comparing data collected from user analysis with data from the surrounding community. Chris Walker argues that “many important questions require combining usership survey data with other types of information,” emphasizing the value of context that is provided by outside information such as census records (2005, p.4). Looking at census data is an important method of identifying any groups that may be missing: “Information about park users and non-users can be compared to census bureau information about the community at large to determine if all ethnic and age groups are being represented” (p.12). This echoes Walker’s notion of collecting “who” information on park users. Performing these types of comparisons can empirically measure how equitable and inclusive these spaces are. While this approach uses data and modern technology, there is nothing new about the notion of measuring a park’s inclusiveness; Olmsted’s 19th Century observations that “Jews and Gentiles” shared the park served the same purpose. Studying demographic user information can also reveal how the neighborhood population is changing, which has serious implications for the park’s design. This study suggests “comparing the results [of park surveys] to recent census data,” could potentially provide “a strong evidence of a misalignment of parks facilities with the changing demographics of [a] neighboring community” (Walker, 2004, p.1). Because demand for parks and specific park features are largely dependent on the community that surrounds them, analyzing demographics is an important part of assessing needs and demands: “Analysis of broader changes in the city or metropolitan region as a whole can
help parks managers understand the changing demands on an entire park system” (ibid, p.4). Knowing that the population is growing in a particular neighborhood, for example, would inform planners to expect an increase in usership in a local park.
Case Study – Brooklyn Bridge Park

In January 2008, construction officially began on transforming 1.3 miles of abandoned industrial piers on Brooklyn's East River waterfront into Brooklyn Bridge Park. The park, designed by Michael Van Valkenburgh, represents the largest park to be built in the borough since Prospect Park. Brooklyn Bridge Park continues to be constructed in phases, and construction is expected to continue through 2013 as funding sources are identified. When the first parts of the park first opened to the public in the summer of 2010, park managers undertook an effort to survey park visitors in order to better understand how the new park was being used. In the summer of 2011, I worked for Brooklyn Bridge Park to help coordinate their second-ever park-wide intercept survey campaign, which collected over 1,200 survey responses from park users between June and August. These surveys collected demographic information, reasons for visiting, preferences, addresses, open-ended comments, and general information from park users. In addition, the Brooklyn Bridge Park user study included three days of user counts that estimated a weekday attendance of 15,000 and a total weekend attendance of over 60,000. Throughout this surveying campaign and during subsequent site visits, I systematically observed park use. This body of data represents a unique opportunity to examine how information collected through a user study can be used to inform the planning and management of a park that is simultaneously being planned, constructed, and used by the public.

Understanding Equity – the Role of Demographics in Brooklyn Bridge Park

One of the most valuable applications of the user survey is to determine how equitable the public space is by collecting demographic information about visitors. According to Kevin Lynch, “the first step in user analysis is a demographic analysis” (1984, p. 69) As Bill Kornblum elaborates, “there's always the question of equity; is everyone getting a fair chance to be there? How do we know that? Well, we look at the [demographics of visitors] to see if [groups] are underrepresented.” As planners have noted, it is important to look at these demographics in comparison to the surrounding population. Because mapping visitors shows that park users are unevenly distributed over the city, it is more meaningful to look at the area directly surrounding the park for a more complete sample. Brooklyn zip code 11201 encompasses the neighborhoods immediately surrounding the park, including Cobble Hill, Downtown Brooklyn, Brooklyn Heights, and Vinegar Hill. This zip code provides the largest sample size of survey respondents: 309. Since hundreds of residents from all over 11201 use the park, it should follow that visitors from this area are representative of all demographic groups from this area. Comparing the population of this area with those park visitors from this area reveals if any groups are underrepresented.
Ethnicity

Data from the survey shows that visitors from the surrounding areas accurately reflect the diversity of those communities, with a near-perfect correlation. Whites made up 63% of all park users from the neighborhood, which is 62% white. 13% of local visitors were Black and 10% were Asian, compared to 14% and 9% of the communities, respectfully. Together, the smallest groups: visitors of mixed-race and Hispanics represented 15% of local users, and 14% of the community. The only nominal difference was that the park recorded comparable percentages of mixed-race visitors and Hispanics, while the US Census indicates that there are more Hispanics than Mixed-Race residents. Considering that visitors of “mixed race” include a variety of ethnicities and the US Census Bureau considers “Hispanic” to be an ethnicity that can include any race, it is unlikely that these small discrepancies are significant. This data provides evidence that there are no racial groups underrepresented in the park.
Education

Similar to Ethnicity, Educational Attainment of local visitors closely resembles the education of surrounding community. 38% of local visitors reported having a graduate degree, matching the 37% of local residents. 44% indicated having a 4-year degree, compared to 36% of the local residents. 8% of local visitors indicated a 2-year degree, which matches 9% of the neighborhood. Only local residents with High School Degrees showed nominal underrepresentation, with 10% of visitors compared to 18% of residents. This slight discrepancy might be expected, as surveys did not approach visitors who appeared under 18, which likely included most young High School graduates.
Comparing the gender of park visitors demonstrates a notable imbalance. While the surrounding community is a virtual even split of 52% women and 48% men, women visitors from the surrounding areas outnumbered men 61% to 39%. This closely follows the overall trend, where women make up 58% of all users. Interestingly, at Pier 6 where the most playgrounds are located, women outnumber men 65% to 35%. As William Whyte and many other planners have noted, the presence of women is an indicator of perceived safety. The Planners at Brooklyn Bridge Park have interpreted this trend as indication of success. As Ellen Ryan explained:

“Not to be sexist, but I think about [William] Holly Whyte’s words. He said that women have a higher threshold for the kinds of spaces they go to. So, you can really judge the success of a public space by the number of women that feel comfortable going there. I’m going to take the high road and say that [the number of women] is a good thing.”

High percentages of women have consistently been documented as a positive indicator of safety, and sociologist Kristin Lawler described this as a “legitimate” measure of safety. (PPS, 2000) (Francis, 2001)

Age

When we consider age, the survey yields some important findings with major implications for the park. Because children were not surveyed, it necessary to consider only the ages of the adult population for an accurate comparison. Survey results reveal that 26% of local park visitors are between 18 and 29, which corresponds to the 25% local community. It appears that 30–49 year olds make up the largest percentage of adult visitors, at 61%. This group also makes up the largest percentage of the neighborhood, though at a lower 44%. The next group, 50-64 year-olds, make up 18% of the community and a similar 11% of local visitors. The most significant underrepresentation comes from seniors 65 and older, who make up 13% of the local population, but just 2% of local park users. This trend is not limited to users from the surrounding community; Total park use among seniors is also low, at just 2% of all adult visitors. This trend can also be observed in the previous year's survey, which reported in 2010 that a total of “3% [of users] were over 65.” This provides some further evidence that that this may be a real trend, and not the result of survey error.

2010 Census records show that 15% of Brooklyn's population is over 65. Clearly, census records do not explain the small percentage of senior visitors. This begs the question if the underrepresentation of seniors in urban parks is a widespread trend, or if there is something unique about Brooklyn Bridge Park that is failing to attract seniors, or worse, deterring them from visiting. Some sociological studies have identified age as a barrier to park usership, suggesting that this might simply be a common occurrence in urban parks: “People over 50 years of age were less likely...
to have visited a park in the last year” (Payne, 2001). To help answer this question, publically accessible data from the 2011 Central Park Usership Study provides a useful comparison. According to this study, park users over the age of 65 comprised just over 15% of summer usership. For context, this aligns closely to the population of Manhattan, of which seniors made up 16% in 2010. This helps provide more context to low percentage of users in Brooklyn Bridge Park. Had the same underrepresentation been observed in Central Park, it might be evidence of common trend. Instead, these numbers suggest that this phenomenon may indicate something about Brooklyn Bridge Park.

While the parks are notably different, both are regional parks that draw residents from around New York City, so these numbers should be more or less comparable. More user data from nearby parks in Brooklyn, especially the adjacent Brooklyn Heights Promenade, would provide more meaningful context to the low Brooklyn Bridge Park numbers. Unfortunately, as we’ve seen, these statistics are rarely tabulated. A Prospect Park User Study was performed in 1998, which would provide an interesting, if outdated comparison. However, the results of this study are not publically available online or in print. As Ellen Ryan brought up, ticket sales at the Brooklyn Botanic Garden may be another potential source, since seniors are given discounted tickets. Based on what can be ascertained from demographic information and Central Park’s study, it seems fairly evident that seniors may be underrepresented in Brooklyn Bridge Park. This presents a challenge to the park’s planners, whose goal is to “To provide year-round passive and active recreation opportunities for residents of all ages of Brooklyn, New York City, and beyond” (Brooklyn Bridge Park Conservancy, my emphasis).

When presented with this evidence, managers of Brooklyn Bridge Park were surprised, and rightly asked, “Why?” The survey only offers information on the seniors that did use the park, so it remains limited in its use to explain why some seniors are not coming. Focus groups, targeted telephone or mail surveys are some ways in which park planners can start to answer this important question. If attracting more seniors to the park is identified as a priority, the survey does shed some light on their preferences. As William Kornblum explains, “Who’s represented there could have to do with what’s available for them, and what appeals to them. So we need to know what they would like to do, within limits.” Aggregation of user preferences shows that seniors ranked “Arts,” “Signage,” “Food and Drink,” and “Astronomy” as their most favored park features. More
user information, including statistical regression, could be extremely valuable in determining what features would make the park more appealing to seniors.

The lack of seniors has also manifested itself in other ways detectable by user studies. While demographic information is not collected at programs, Park Program Director Alison Hughes explained that poor attendance records from “Gentle Stretch” – a weekly free fitness program specifically marketed towards seniors – show that this event was unpopular. As a result, Hughes explained this will program will not return next year. While the questionnaire did not specifically ask about fitness classes, seniors ranked “sports facilities” as one of their least-desired features, suggesting that this demographic may prefer more passive activities. As one senior noted on the questionnaire: “Keep this a low impact park: no sports facilities.” Some sociological studies have also documented this preference. One 2002 study found that older adults were more likely than their younger peers to prefer “nature based recreation” over “fitness or organized recreation” (Payne, 2002). While the Conservancy noted that they were hesitant to declare seniors underrepresented in the park, they did recognize how this information could be used to inform their programming efforts. Director of Development Richard Lloyd instantly imagined potential strategies for increasing senior attendance by “demonstrating our fitness classes in nearby senior centers,” or “a shuttle to Pierrepont Street [where a senior center is located].” However, they recognized the limitations of programming in reaching certain groups: “Even if we got the Glenn Miller Band to play, there are some that wouldn’t come.” Although park programming is only one aspect to engaging seniors in the park, it is evident that the user study provides important lessons on who is being missed, and what different groups prefer. As Lloyd noted, “I think this [study] will cause us to revisit our programming plan.”

Several other factors are worth considering when trying to improve senior use of the park. Given what surveys reveal about shade in Brooklyn Bridge the park, this may be one contributing factor. Members of this population may be especially sensitive to heat and sunlight: “Older adults are particularly vulnerable to the negative effects of the summer heat” (Berndt, n.d.). This could be one possible reason why seniors are more likely to visit Central Park, where a seat in the shade is much easier to come to by. Accessibility may also be a contributing factor. Unlike Central Park, which is accessed by many entrances at-grade with nearby subway stops, Brooklyn Bridge Park can only be accessed at certain entrances, because the BQE forms a barrier from Brooklyn Heights. Access to Brooklyn Bridge Park requires over a ¼-mile walk from the subway to the waterfront, oftentimes down steep hills and across dangerous intersections. Poor accessibility in this unique location could be one reason why seniors appear underrepresented in this particular park. Interviews and focus groups with seniors could confirm whether or not sun and accessibility are actually issues of concern. The park planners are currently in the process of installing an ADA-compliant ramp from Brooklyn Heights to the park, which will cut the travel time from the subway down by providing a more direct route. Additionally, the Department of Transportation is working to improve pedestrian safety at the intersections at park entrances. If accessibility is indeed inhibiting senior use of the park, then managers could use
demographic statistics before and after these improvements to measure what effect these improvements have had on accessibility, expecting to see a rise in senior visitation.

Another factor worth considering may be the way in which the park handles outreach. Ellen Ryan explains that the park’s outreach campaign largely relies on the internet and social media, including the park’s website, Facebook, Twitter, and coverage in local blogs. While these methods are low-cost and easy for the park to maintain, research has suggested that these methods are least likely to reach senior citizens. A 2009 study found that only 33% of Americans over the age of 65 are internet users, and just 8% use social media, compared to 85% and 76% of 18 to 24 year-olds, respectively. If increased outreach to senior citizens is identified as a goal, then the park may also need to reconsider its outreach strategy, such as providing paper copies of event calendars around the community in addition to posting the online version.

**Income**

Another interesting discrepancy in park users was evident in household income. High-income residents, in this case those indicating household incomes in excess of $100,000 a year, make up 29% of visitors from the surrounding area. This faithfully represents the local community, which is 30% high-income. This data can be used to assuage fears expressed by the media and the community that the park would only ever be used by the ultra-wealthy. As the New York Observer sensationalistically put it, “Before you know it, this’ll just be another Gramercy Park under lock and key, with admission reserved solely for the Brooklyn elite” (Chaban, 2011). Data collected from actual park users is perhaps the only way to repudiate these kinds of claims. When taken as a whole, 19% of all park users are high-income, which is slightly less than the New York City percentage of 24.3%. These numbers provide evidence that accusations of elitism are overblown, especially given the fact that all ethnic groups are proportionally represented. Although the usership data suggests that the city’s wealthiest are not overrepresented in the park as feared, the visitor income data does not perfectly reflect the community. The only significantly underrepresented income group was the lowest income bracket. Visitors with the lowest household incomes – those under $25,000 – comprised just 11% of visitors, while they represent 29% of the local area. Citizens in the 25,000–60,000 range made up 26% of local visitors, while they make up 23% of the local population. Users in the 61,000 – 100,000 range made up 34% of local visitors and...
18% of the community. (Because the local income data is collected at slightly different income categories, the middle income groups are imperfect comparisons). This disparity suggests that low-income users may be underrepresented in the park. While the planners at Brooklyn Bridge Park expressed that they found it surprising that income would play a role in visitation, several studies have noted this same trend: “…studies have indicated that the poor participate in public park and recreation programs at a lower rate than the general population” (Scott, 1994). Research suggests that factors outside of the park’s control, such as transportation costs, distance and leisure time, contribute to this trend (ibid). Other factors identified in Scott’s study, such as fear of crime, are likely not applicable to these circumstances, since Brooklyn Heights is generally regarded as a safe neighborhood (New York Magazine, 2008). Income data was not collected in the previous 2010 Brooklyn Bridge Park survey, so a comparison over time is currently not possible. Future surveys of income will reveal if this is a sustained trend that would require further study. (Any future studies would do well to use a $75,000 cutoff rather than $60,000 to produce a more accurate comparison with census data). Household income data was not part of Central Park’s 2011 user analysis, so it is unclear if low-income underrepresentation represents a citywide trend where low-income residents are simply less likely to visit urban parks. Scott’s research claims that “income was a strong predictor of responses to the changes that planners and programmers could make to reduce constraints to park usage,” meaning that the park’s staff can potentially reach this demographic through specific changes to park programming. Targeted surveys and focus groups could help determine if there are issues in this demographic that the park can address, such as lack of information or different types of activities.

What’s clear from this information is the immense value that user surveys can have in identifying underserved populations and strategies to address these equity issues.
The Role of Observation – Examples from the Brooklyn Bridge Park Greenway

“You can see a lot by just looking” – Yogi Berra

Kevin Lynch noted that “The camera is a very useful record, but the experienced designer may do as much by sitting quietly at the scene, looking for something interesting and revealing. There is no substitute for this sympathetic experience of real places in action” (Lynch, 1984 p. 86). In Brooklyn Bridge Park, direct observation of visitors was never an official part of the surveying campaign, and the park staff has indicated that the park’s designers have not done an official evaluation since the park opened. However, observation of public use has been an important way in which planners have evaluated the park, if unintentionally. Additionally, systematic observations have the potential to shed light on several design issues facing the park.

One of the design features of Brooklyn Bridge Park is the park’s greenway which stretches the length of the park, connecting Old Fulton Street at Pier 1 to Atlantic Avenue and Pier 6. The greenway was designed as two parallel paths: the west for pedestrians and the east for bicyclists. On the park’s master plan, the distinction is quite clear, and they read as two parallel paths. Yet observation of the use of the greenway reveals that this design has not been successful.

The desire to separate bicycle and pedestrian traffic may appear trivial, but it is based on very real safety concerns. Conflict between the different users groups was made evident at a 2011 Prospect Park Alliance hearing, where nearly 100 emotional park-goers “gathered to slam reckless street users and alert city officials of possible solutions to the free-for-all” on Prospect park’s roads where right-of-way is often unclear (O’Neill, 2011). The Brooklyn Paper counted at least five serious crashes in Prospect Park between cyclists and pedestrians in nine months, some of which were near-fatal (ibid).

To ensure safety along the Brooklyn Bridge Park Greenway, the designers separated it into two lanes, which are demarked by a row of paving stones that line the center of the greenway. To prevent bicyclists from speeding, rows of perpendicular paving stones are placed as “rumble strips” in the east lane. Both lanes are gravel, rather than asphalt, which also prevents high speed cycling. While the designers clearly took measures to ensure the separation of bicycles and pedestrians, a visual evaluation of park users design reveals that it has actually has the opposite effect. Interestingly, observations of bicyclists reveal that when using the path, they will simply ride to the right, avoiding the bothersome rumble strips by riding in the pedestrian path, navigating around pedestrians when necessary.
Almost without exception, when a bicyclist in their correct lane approaches the rumble strips, he or she will swerve into the pedestrian lane, choosing to cross the single row of paving stones that separate the lanes rather than ride over the four rumble strips that are each three pavers wide. This phenomenon can be observed over and over. Pedestrians, it seems, will sometimes stay in their lane, but often walk indiscriminately on both lanes. In some cases they are undoubtedly avoiding the bicyclists in the south lane. Other times it appears that pedestrians take little notice of the difference, especially when heading north, suggesting a general preference for walking to the right. While the paths are distinct on paper, the only physical delineation is a sign with a picture of a bike and a pedestrian at either end. Other than that, the two lanes are indistinguishable, with the notable exception of the rumble strips. If bicyclists realize the distinction between the two paths, they usually disregard it. It is clear through observation that the bike lane design has been unsuccessful, with the observed trends representing both a misuse and a conflicting use which jeopardizes safety in the park.

Brooklyn Bridge Park's offices are located within the park, meaning that all the staff experiences the park on a daily basis. Even though no official observation was part of the park's usership study, members of the park staff explained they commonly made their own observations of park use, which informed their work. When asked if they had learned anything from spending time in the park, Leigh Trucks, project manager for the Brooklyn Bridge Park Corporation, explained:

“I really, really, constantly observe how people are using our Greenway. To me, that is the one thing that is always in the back of my head. And how can we improve usage between all the users groups. It's such a major thoroughfare in the park,” adding:

[I've learned that] “Bikers don't necessarily like to stay on the bike side. And pedestrians also like to wander across the whole thing. From a safety perspective it is concerning. We want to make sure people are safe. It makes you realize that even more generally, even with signage and cobblestones and the like, you can’t control people’s preferences. It’s something that we’re still working on. When you plan something on paper, it’s easy to say ‘that’s the bike side,’ ‘that’s the pedestrian side’”

It’s evident that first hand observation played a major role in identifying this concerning and unanticipated misuse of the Greenway. Interestingly, the park does annually count the number of visitors using the greenway to monitor its use, but these raw numbers only document that greenway is well-used, and do not indicate that it is largely misused. Now that observation has identified this trend, counting the number of users and also noting the percentage that are improperly using the path would provide the park’s planners with hard numbers to quantify and substantiate the misuse. These numbers would serve as important benchmarks to measure the progress of future interventions.

In order to identify solutions for the design problem, planners can learn a great deal from systematic observations. For example, many of the answers to this design problem may lie in observing usership trends along the bike path. At the end of Pier 1, the greenway’s design changes drastically as the finished portion of the greenway meets the temporary portion. The temporary greenway is a simple asphalt path, which is painted to mark the different lanes. Here, paint is the only distinction between the paths, which are clearly labeled. Pictograms of bicycles are painted directly on the asphalt, and a dashed line separates the two
directions of bike traffic. Observations of this part of the
Greenway reveal very different trends in usership than in
the finished section. Surprisingly, bikers in the temporary
section will ride in the correct lane, and pedestrians tend
to stay on their side. An interesting phenomenon can be
observed where the paths meet. More often than not, a
biker who has been incorrectly riding in the pedestrian lane
will revert to the bike lane when entering the temporary
path. It seems that given the option between two paths that
are barrier-free, people will choose the path that clearly is
marked for them. It’s worth noting that the temporary bike
is actually narrower than the permanent one. Strangely
enough, these observations suggest that this temporary path
functions better than the completed one.

The change in the design is simply a product of the
phasing of the park; the asphalt section was intended as an
interim connection. Yet this design change can provide an
extremely useful experiment in determining the reasons
behind the misuses and conflicting uses observed on
permanent bike path. As Kevin Lynch explains,

“The classic means of uncovering causal
links is the experiment, in which a
single design variable is changed, while
all others are held constant, and the
ensuing condition is then compared with
the original condition. Following this
model, our analyst would make a single
modification in a setting and then see how
the behavior changes.” (Lynch, 1984, p.90)

In the case of Brooklyn Bridge Park, the temporary bike
path serves as a single variable change, in what Lynch calls
a “natural,” experiment where a design has been changed
for reasons other than experimentation. In this naturally
occurring experiment, the setting and the bike riders
remain constant. Although it has been modified in two
ways, we may look at the design changes to the bike path as
the single variable to be tested.

Using Lynch’s notion of a naturally occurring
experiment, we can conclude from these observations that
it is the design of the physical bike path that is causing
the misuse, and not the setting or the bike riders. Because
both the signage and rumble strips were changed, it is
difficult to say to what extent element contributes to misuse,
although both likely play an important role. However, we can
conclusively say that this combination of these features
caus ed positive behavioral change on the temporary bike
path. This knowledge can then be used to inform the future
(re)construction of the bike path. Further experiments in
which only one variable changes could be used to measure
the effect of each individual design intervention. This
example perfectly illustrates the potential value of targeted
user observations as a tool to inform the planning of the
park.
The evidence about the bike lane corroborates claims raised at community meetings about Brooklyn’s Prospect Park. “I know bikers will respect rules if they’re more clearly marked,” said cyclist Johanna Clearfield (O’Neill, 2011). Even users of Brooklyn Bridge Park suggested this idea; one visitor left a comment “Need signs regarding bicycle riding.” This example demonstrates how observations can be used to evaluate suggestions raised by surveying and traditional community meetings. Together, these types of information form a body of evidence that makes a strong case for a particular type of improvement - in this case, clear markings. These findings are likely not specific to the local context of Brooklyn Bridge Park, which means the observations made here could potentially be useful to any urban parks with Greenways. Dr. Lawler explained “Those findings are absolutely generalizable to any park with bike lanes. Every park in America should know about that!”

_from information to implication: the issue of shade in brooklyn bridge park_

When aggregated, 10% of the comments made by the sample of park visitors had to do with the issue of sun or the lack of shade, far more than any other subject. Extrapolating this sample to the entire usership means that this would be a complaint for approximately 1,500 visitors on any given weekday and 3,000 visitors on a Saturday or Sunday. The survey reveals a significant concern of park users with many implications3. As mentioned later, this information was not brought up through traditional channels for community input, which speaks to the value of talking to directly to users. The park’s planners noted this same issue was raised by survey respondents the previous year, indicating that this was not a concern limited to the summer of 2010. Project Manager Leigh Trucks explains that this information has already informed their decisions: “We did respond to [the issue of shade]. That actually was a direct change. We added more umbrellas and we are actually constructing these massive shade sails that span the long ends of all three fields.” This example demonstrates the connection between the user study and direct action, where information collected from users has resulted in changes to the park’s physical design.

While the surveys are critical in identifying this concern at a parkwide level, observations of park users can reveal more nuanced information. The issue of shade also manifests itself in the way park visitors use the space, which is evident in observed trends. Visually identifying and understanding these trends in use can provide planners with specific areas for improvement. As the SEQR technical manual describes, “Shadows on sun-sensitive uses, such as botanical or landscape attractions, swimming pools, or benches, may affect use of an open space. This information may be noted during [a] field survey” (SEQR p.7-12) Observations of the park benches north of the Brooklyn Ice Cream Factory at Pier 1 during the summer reveal that at nearly every hour of the day, these two benches are occupied by multiple users, often with families and strangers sitting close together. Open seats on these benches are quickly filled, and when these benches are at capacity, some visitors have been observed sitting on the ground across from them. In comparison, summer observations made at the dozens of benches lining the Atlantic Avenue entrance show that despite the vast

3 For the implication of this finding on the park’s demographics, see the chapter Understanding Equity. For the implication of this finding on visualizations of park use, see the subheading Visual Representation of Parks
amount of seating, these benches remain almost completely empty. This phenomenon cannot be explained by user counts, which show that both Pier 1 and Pier 6 are well-used, with Pier 1 receiving only marginally more visitors per acre. Using information from the survey, an analysis of shade provides the answer behind this trend. A simple shadow model for the Summer Solstice, June 21st shows that the benches next to the Brooklyn Ice Cream Factory are in constant shade from 11:30am to 6:00pm, due to the adjacent structure. By comparison, the June 21st sunlight model shows that benches at Atlantic Avenue are exposed to constant sunlight during these same hours. Because of their east-west orientation and position against bushes, they receive no shade during the summer. The shadow model shows that bushes abutting the benches would have to be approximately 14 feet tall to provide adequate noontime shade.
shade for the north-facing benches. Because of the position of the sun, the south-facing benches will never receive any shade from the bushes after 8am at any point during the year. Canopy structures or umbrellas would be the only way to shade these areas.

This example demonstrates how observation of park users informed by user comments can provide valuable, detailed information to guide physical improvements. This observation and simple shadow study reveal that the Pier 6 entrance benches would be an appropriate location for the additional umbrellas, and that the area next to the Brooklyn Ice Cream Factory would be appropriate for more seating. As a low-cost alternative, some of the benches at the Pier 6 entrance could be relocated to the Brooklyn Ice Cream Factory, where they would likely be more frequently used. This type of planning was advocated by William Whyte, who suggested that plaza seating be portable until it was clear where people wanted to sit: “Benches and chairs don’t have to be [fixed]. With sturdy wooden benches… some simple market research can be done to find out where and in what grouping they work best. People will be very quick to let you know” (p.34). As Whyte also noted, sun exposure was just one factor that contributed to usage patterns; future observation would be needed to gauge the success of improvements by measuring the increase in usership.

The observations that informed this analysis were made during the summer. It is worth considering that this trend may not be evident in cooler months, where it is plausible that benches in constant sunlight could be a more popular choice. Observations of user behavior, combined with data about the park’s usership during cooler months, could establish the need for these benches and help guide any improvements. Planners could find, for example, that benches in the sun are more popular in the fall, when park usership is at 25% of its summer attendance. This type of information could inform improvement strategies, such as relocating 75% of benches into the shade, where demand for them is greatest.

This type of shadow analysis is not a new technique. In preparing park’s Environmental Impact Statement (EIS), a compete shadow study was performed on all planned structures within the park to assess the impact of shadows on the park’s open spaces. As part of this analysis, the study includes the shadows cast by the Brooklyn Ice Cream Factory building. The EIS discloses that this is the only significant shadow cast by a structure during the height of summer, which helps explain the popularity of this particular area. While the type of large-scale analysis performed in the EIS reveals the adverse impact of shadows, a more micro-scaled study guided by user preferences can employ similar methods to identify targeted improvements that actually take advantage of the shadows.

Use of Data for Fundraising – Examples from the Brooklyn Bridge Park Conservancy

As others have noted, user information can play an important part in justifying funding for public parks. This is evident in the case of Brooklyn Bridge Park, whose
programming efforts are funded by the not-for-profit Brooklyn Bridge Park Conservancy (BBPC). This public programming is dependent on fundraising, in which user data plays an essential role. Information on where users came from provided the evidence that Brooklyn Bridge Park is not simply a local park. This information has been crucial in applying for funding. Director of Development Richard Lloyd explains:

“I’ve used [the results of our user survey] for a number of different grants and proposals to different foundations where it’s really helpful to have concrete numbers to explain who our users are. It’s very easy for people to think that this is just a local park. The numbers that we have can demonstrate that it’s not just a local park; it’s really, in fact, a regional park. People come from all parts of Brooklyn, all parts of Manhattan, and visitors come from around the world”

The survey results show that 76% of visitors are from outside the local neighborhood, including 32% who came from outside Brooklyn, and 18% who came from outside of New York City. These numbers substantiate claims that Brooklyn Bridge Park is truly more than a neighborhood park, and being able to cite this evidence has been significant in justifying grant funding.

In addition to grant funding, Brooklyn Bridge Park has teamed up with organizations and companies to sponsor public programs. Their most well-attended event is “Movies with a View,” where thousands of park users gather on Harbor View Lawn for a weekly free outdoor movie, sponsored by the cable television channel “SyFy.” Lloyd explains how user demographic information has played a role in this important sponsorship:

“Besides seeking money, [I’ve used the numbers] for reporting back to organizations that have funded us. Like the SyFy people, who do the movies [program]. Every year we give them a report… [One] thing they’re very interested in is who are people are, this is, who uses the park. [SyFy] know[s] what their demographics are, and they were really interested in seeing how their demographics matched up with our demographics.”

Businesses commonly use data to understand their customer demographic. This example shows how parks can use this same information to identify sponsors whose demographics align. BBPC Director of Programming Alison Hughes explained that SyFy has been trying to diversify its predominantly male audience, so being able to demonstrate the park’s split of gender has demonstrated how SyFy’s contributions to free programming support their company’s goals.

In one interesting example, first-hand observation of usership, rather than demographic statistics, played a part in fundraising efforts. Richard Lloyd explained, “One of our funders wasn’t interested in supporting us for a long time because they saw us as a Brooklyn Heights group and thought the park would be a Brooklyn Heights Park.” The Conservancy had brought the potential donor down to the park to see how it was being used by children on school days.
trips. Only after seeing first hand, school trips of inner-city children learning about the marine life in the East River, did this donor “have an ‘aha’ moment where they realized this was not just Brooklyn Heights.” “[Seeing] our educational programming I think is what turned them around,” explained Lloyd. In this scenario, first hand observations dispelled preconceived notions about the park’s users.

**Different Types of User Input — User Surveys compared to Alternative Methods of Input**

Data collected from counts, surveys and interviews are just some ways that Brooklyn Bridge Park interacts with park users. To understand the value of usership studies, it is important to compare the information from user studies from the information from these other sources. In addition to the user study, the park has a dedicated “Community Advisory Board” composed of local community members who meet bi-monthly. These members are chosen with consultation with local elected officials. The park also works with different community groups, such as its partnerships with “Friends of Jane’s Carousel,” who operates the carousel, and “Metro Beach Sports,” which organizes tournaments on the Pier 6 Volleyball Courts. Additionally, park board meetings are open to the public, where anyone can offer comment. Many community groups take advantage of this option, including vocal community groups who are opposed to the park’s plan. As planners have noted, collecting information directly from users in the park can often be more useful than these other types of user feedback. Brooklyn Bridge Park Conservancy Director of Development Richard Lloyd noted that he felt in some community meetings, “You basically got the same people turning up. You didn’t really get the voice of the average park user,” and felt confident that the park survey represented “actual users.” Director of Programming Alison Hughes pointed out that the members of community advisory groups “really had to seek those meetings and positions out, whereas the survey is more random.” Many of those interviewed expressed some doubt that some of the members of the community groups actually spent time in the park. Said Lloyd, “I would go so far as to say some of the people that were most vocal during those [planning] stages – I’m not even sure how much they use the park.”

William Kornblum noted that surveys have an equalizing power in that each user is given an equal say and consideration. By comparison, community groups represent only certain interests. For example, Kornblum explained “some park users are highly organized and vocal about their needs,” such as athletic teams. Therefore, these users have a unified purpose and leaders to speak for them. Casual, more passive users, especially those who may be new to the park, “may be less organized, but their needs are no less valid.” Surveying users levels the playing field because it allows even the unorganized users to be heard. Professor Kornblum described how this was an important issue in Central Park. In one particular area, the park management was struggling on how to maintain the grass, which constantly needed to be reseeded. The problem, he explained, had to do with dog-owners. However, the dog-owners were not organized, and no one was speaking on their behalf, even though counts revealed that they represented a significant constituency. Kornblum had calculated that “Overall, 18% of visitors to the Park come with a dog on its leash” (2011, p.24). This data informed them that this represented a significant overlooked constituency. As a result, the Central Park
Conservancy helped organize a group of dog owners to represent the needs of this population at discussions. Meetings and interviews with dog owners resulted in compromise. This example demonstrates how user counts are important in identifying the less vocal community groups, but community groups still play an important role in advocating for user needs. This is a reoccurring issue in Central Park, where well-organized and vocal groups advocate for active uses. Central Park consistently uses data to assess the majority of users, with the New York Times explaining, “New Yorkers don’t use Central Park to exercise. Although runners and bicyclists seem ubiquitous, most people – 85 percent -- go to the park for passive activities like “thinking” and “wandering,” according to an exhaustive survey by the Central Park Conservancy” (Griffee, 2011). This is not to suggest that the active users are less important or their needs should be disregarded. However, it is important for park planners to be able to recognize the discrepancy between their entire constituency and the members that have the most influence.

While meetings and surveys reveal different, important types of concerns, that is not to say that these concerns are not shared by both types of users. Users might take issue with the way the park is funded, but that doesn’t mean they wouldn’t enjoy it, or think it’s beautiful. Certainly some of the people who object to the park’s management decisions at board meetings could note on surveys that they found much to enjoy in the park. Professor Kornblum explained, “When you do a survey, you engage people differently; you’re engaging them as a user, not as a community stakeholder.” Because they take place in the actual space rather than a board room, surveying provides an outlet for user concerns that relate to specific design concerns. While much of the discussion in community meetings involves the park’s funding and management strategies, the survey comments bring up a different level of concerns. The Brooklyn Bridge Park questionnaire collected 163 comments, many of which addressed micro-level problems or improvements such as “lock on the gate is too low; children open and run out of playground,” “more trash cans,” “more umbrellas by water play area” “[we need] signs directing to the subway,” or “smaller dogs can sometimes squeeze through the gate’s bars [in the dog run].” As planners as far back as the 1960s noted, park users can often suggest very practical, low cost improvements. Yet this level of information is rarely discovered at community meetings. This is not to say that one type of input is better than the other. However, it is clear that both types of information are potentially useful to park planners in different ways.

The park is now working with a community group who has passionately argued against the red stones in the dog runs, even getting attention from the local press. Apparently the red stones have the unexpected effect of turning dogs’ feet pink. Ellen Ryan explained, “Is it survey based? No. Is it feedback based? Yes. So, we are now looking at some replacement stones.” Interestingly, this concern did not appear in the comments of the survey, but was brought to the parks attention through a dedicated group of frustrated pet-owners. Leigh Trucks explained “It’s toeing the line with the people nearby who directly constituents and care about the stone in the dog park, versus when we survey and count, they’re coming from all over, they’re not necessarily here every day; they might come once a month,

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it might be their first time.” It seems that for assessing the needs of specific interest groups, community organizations of dedicated users still play an important role where user surveys fall short. However, this problem likely could have been identified through user observation before the community rallied around it. On the first day of the summer surveying, an experienced survey administrator had asked someone looking for the dog run, “Do you have a white dog? If so, avoid the dog run; it will turn his feet pink.” Clearly anyone who regularly observed dog owners would identify this problem almost immediately.

Community advisory meetings continue to provide levels of information that cannot be learned from park user studies. Ellen Ryan noted that the Community Advisory Council had been extremely helpful in providing feedback on a specific proposal. When asked how this type of user input differed from the survey information, Ryan explained, “I think the input [from the Community Advisory Council] is more nuanced and more in-depth. You can't get that from a survey instrument, you get that through a demonstrated long term relationship and a commitment on the part of these individuals.” Yet the community advisory council is not a comprehensive source of user input. The open-ended questions in the user survey showed many comments had to do with the lack of shade in the park, by far the number one concern of park users. Yet, Ryan explained that “[shade] is not something that comes up in the Community Advisory Council at all, amazingly enough. I know I've seen that on surveys.” Richard Lloyd pointed out that “Something like shade is a good example of people really experiencing something in the park, rather than just thinking 'this is what we want.'” Clearly, considering multiple types of user-input is a more comprehensive approach that reveals different types of information. As Ryan explained, “I think there is room for both kinds of feedback.”
Spatially Mapping Users – The Role of User Studies in Understanding Patterns

(For a more detailed discussion, see Appendix C)

One unique feature of the Brooklyn Bridge Park study is that it includes addresses and zip codes of the survey respondents – a feature I advocated for in the survey-design process. Only Central Park’s 2011 study had previously recorded where visitors lived, using this information to produce a map of visitors, aggregated by Manhattan neighborhoods. With census data, this enabled the park planners to determine how many “visits per resident” it received from each neighborhood, and quantify that the park was more heavily used by the Upper West Side than the Upper East Side by a factor of 13 visits-per-resident, for example. In Brooklyn Bridge Park, addresses of all New York City visitors were geocoded to visually map park usership. This information allowed park planners to better understand which neighborhoods were represented within the park. This topic has been at the forefront of planner’s minds. Alison Hughes explained that “[Geographically] diversifying our audience is important… A few years ago, we weren’t hitting any of those zip codes in the depths of Brooklyn.” In the case of Brooklyn Bridge Park, planners are looking to ensure that users not only represent all demographic groups, but different part of Brooklyn, as part of their goal to create a regional park. Richard Lloyd explains that:

“Our [visitor] numbers have been strong enough that it really hasn’t been like ‘boy, there’s nobody in this park, let’s find a way to activate it?’ I think it’s been more, ‘how can we broaden our base so we know we’re reaching all of Brooklyn?’ That’s where the educational programming came in.”

Geographic information about park users is extremely useful in determining what parts of Brooklyn are being reached. The sample size of 315 addresses (25% of all survey recipients) show residents visiting from all parts of Brooklyn, including Coney Island and Bay Ridge. The 1,082 zip codes collected provide a more complete sample of visitors aggregated on a much larger level. Zip Code maps show that visitors in the survey sample represented every Zip Code in Brooklyn.

Querying this data to look for spatial trends has the power to answer questions about the park’s usership. Richard Lloyd explained how educational programming was developed in attempt to bring in neighborhoods across Brooklyn. However, Lloyd explains it has been difficult to gauge the success of these efforts:

“The hope is that the kid from Red Hook who discovers the park on a school education class, then on some weekend brings his friends or brings his family down to the park. We like to think that’s happening; that’s a hard thing to really prove. I don’t know how you document that conclusively. … It would nice to be able to substantiate this in some way”

Spatially mapping the results of the survey can start to document this. Mapping the zip codes of visitors who indicated they heard about the park through a school trip provides a map of neighborhoods where school trips have introduced visitors to the park. Although the sample size of these users who provided a zip code is rather small (26), this maps reveals that school trips have brought visitors far far-off parts of Brooklyn like Canarise and Bensonhurst. (Incidentally, Red Hook is missing) This matches what planners know about their educational programming; “Our educational programming is very diverse; it’s people from all over Brooklyn” explained Lloyd. Ellen Ryan suggested
Visitors who discovered the park through a **School Trip**

Data: Brooklyn Bridge Park 2011, Department of City Planning 2010, ESRI

Map by Alex Wallach

Understanding Park Usership
that mapping park users could help identify which neighborhoods were being missed, explaining, “When I look at [the map] and see more Upper West Side than [parts of Brooklyn]… it gives us a challenge, I think.” While further user surveys could help provide a more complete sample of visitors, this demonstrates the applications of mapping users can have in starting to answer questions about park users.

While mapping park users is rare, the Mayor’s Office of Environmental Coordination does produce open space maps of each borough, calculating areas that are “Well-Served” by parks and “underserved” by parks. For example, the city has identified Red Hook as an area that is already well-served by parks, which may help explain the relatively low numbers of users from this area, despite its proximity to the park. Red Hook is a little over a mile south of Pier 6, yet it accounted for fewer visitors than farther neighborhoods such as Sunset Park, Borough Park, or Crown Heights which have been identified as “underserved by parks.” These maps begin to give some context to the user maps from Brooklyn Bridge Park by informing planners where they shouldn’t expect to see many visitors.

Visual Representation of Parks: Learning from Imagery of Park Users

Visual representations of park users, both photographs and manufactured illustrations, can have an important role in user studies. Actual imagery of park users can sometimes be used as substitute for observations, or artistic renderings can represent intended uses. Not only do historic photographs of parks provide evidence of how use has changed, these images tell us a little about how parks have been viewed. Today, many books on parks will feature photographs of landscapes completely devoid of people. William Whyte noted that many images and renderings of parks are taken from viewpoints that people rarely experience (1980). Even Mark Francis argued in “Urban Open Space” that “spaces sometimes are designed to be viewed as abstract art forms with few human amenities. This design culture is reinforced by journal and design award programs that promote design excellence with photographs of landscapes without people” (p. 13). Yet this wasn’t always the case. As we’ve seen, Olmsted was very concerned about the role of the park users in the mid-19th Century. As a result, depictions of Central Park from this era depict park users, with the park landscape as background. Throughout history, there are similar examples of these images, often with reoccurring themes. For example, images of park users interacting with swans in Central Park can be repeatedly seen in etchings, paintings, early postcards, and stereograms. Not only do these images all emphasize the user; as we’ve seen, this historical imagery can be used to understand how the park’s use has changed or remained the same. “Historical Analysis is one useful way to address issues of user needs and conflicts” (ibid,
In the case of Central Park, modern day photos of the ice rink virtually mirror Currier and Ives lithographs, informing us how the park is still being used in the manner it was designed. This level of information cannot be learned from photos of empty landscapes.

In the case of Brooklyn Bridge Park, historical imagery shows only an industrial waterfront before it was reclaimed for recreation. However, much can be learned from studying future visual depictions of users. Examining future renderings of park use can be valuable in understanding intended uses. While these renderings are generally artistic in nature, they do represent an imagined or intended use in planned sections, and this can be contrasted with the actual use in built sections. In Brooklyn Bridge Park, certain renderings of the future unbuilt sections often show park users exhibiting usage patterns that do not match actual observed usage. For example, a rendering of Pier 6’s future marsh shows users happily sitting out in the sun during the summer; yet actual usage patterns do not reflect this pattern. In actuality, users throughout the park can overwhelmingly be found where there is shade. Observations of park users during the summer reveal that wherever there is shadow cast, there are almost always people huddled underneath it, with relatively few people sitting directly out in the sun, save for the sunbathers. While this trend may be less evident in cooler months, it has significant implications for the park’s features for much of the year. The issue of shade was also the number one complaint raised by visitors in the questionnaire. Plans for the marsh at Pier 6 show a popular seating area at the end of the path, surrounded by low foliage – in direct sunlight. However, the markedly different current usage patterns of the park suggest that this Pier 6 seating area will be sparsely used during the warmest months. If these trends persist, it is unlikely to draw the crowds pictured and become the lively place that the designers have imagined. While certainly user observations post-construction could easily confirm any underuse, using observations and renderings to anticipate it beforehand allows planners to be proactive and take steps to mitigate design issues pre-construction. By contrast, a rendering of the Pier 3 passive lawn depicts users picnicking in the shade of trees near dense plantings. This more closely corresponds to actual usage of the built areas, suggesting these areas should be used as intended in the summer. Again, post-construction observations could effectively be used to test this theory. It is important to consider that the pattern’s observed usage do not always reflect its intended usage. Brooklyn Bridge Park has already drawn on data from its user studies to preemptively adjust its future designs. Vice President of Executive Partnerships Ellen Ryan explained “There are now canopies and shade structures [in the plans for Pier 5] at the Peninsula.” Using observations and comments to identify usage inconstancies in future renderings can be incredibly useful in addressing comparing observed usage trends to imagined or anticipated uses can reveal important discrepancies and design challenges.
design challenges, especially in the planning process before construction has begun.

**The Need for Continuing Evaluation - The Future of User Studies in Brooklyn Bridge Park**

Many of the harshest criticisms of the park cannot yet be evaluated because large sections have simply not yet been built yet. The Project for Public Spaces offered the following critique of the park’s design, forecasting how it believes several areas will be underused:

“The plan’s many rigid features will preclude the park from supporting a range of activities and responding to user demands. …Without real attractions to draw people, many of the piers, especially the ones that do not contribute to circulation, will quickly become magnets for negative activity. Another deadly touch, the large berms in the middle of the plan, will suffer a similar fate. Meant to act as sound attenuating devices, the berms hide secluded pathways, void of any reason for human use, they will not only be extremely dull but will also feel unsafe” (Project for Public Spaces, n.d.)

Obviously the park’s designers and planners feel differently. But at this point, these design issues raised are purely theoretical, so planners can only speculate whether these spaces will be successful based on what we know about urban spaces. Once these areas are realized, each of these criticisms could easily be evaluated through user studies. Without any user information, it will be impossible to refute these claims. Future rounds of observations, user counts and interviews will be required to monitor whether this bleak future of negative activity, dullness, and danger is ever realized. As the park continues to expand, it will be important to continue analyzing park use in consideration of these “predicted” design problems. Although the Project for Public Spaces made these statements based on an older park plan that may not reflect more recent design changes, such criticism of the park’s design further necessitates continued evaluation of park use.

In Brooklyn Bridge Park, future studies will be important tools as the park expands and new features are added. Ellen Ryan expressed that the survey instruments need to account for new circumstances. For example, the creation of a Membership Program “needs to be addressed in the [upcoming] survey,” she explained, in order to assess what percentage of visitors are aware of the new program. Up-to-date information on park users will be important as new facilities, such as the carousel, a temporary pool, and athletic fields attract different types of users. Trucks explained that new features “will bring a whole new constituency.” Planners have indicated that forthcoming user studies will allow them to understand how their constituency is evolving as the park develops. Future data will also be important in analyzing the park’s continuing programming efforts. Comparing data from just since the park has been opened has been useful in monitoring changes in attendance. Richard Lloyd explained “Over the long run, [surveys are] something that I would like to see done not just once and dropped – to have real statistical
data that you can compare from year to year I think is very helpful.”

The Current Framework for Urban Park Evaluation in New York City

Given the value of user studies, it is important to consider the current framework for performing them in order to understand the planning process. Although full-fledged user studies for evaluating parks only occur in in a few parks managed by conservancies, several agencies and organizations in New York City do acknowledge the role of the user in planning for open space in different aspects. The current framework is a patchwork of limited approaches that evaluates the performance of parks by only physical conditions, studies users for purposes other than park planning, limits user input to the pre-construction phase of park planning, or performs user studies only in the case of buildings. By drawing upon each of these limited methods, a framework for planning can be developed that effectively employs user studies to evaluate parks and inform the park-planning process.

The NYC Parks Inspection Program—A Design-Centric Approach

Gathering information about park use is now in growing demand for political and budgetary reasons: William Kornblum explains,

“Measures of public use are in ever more demand. Political leaders in the city want hard facts and figures about park use in order to justify budgets and expenditures. It is not enough to just argue that Central Park and public spaces like it are vital to the city’s life. ‘Show us the numbers’ say the city’s leaders (but make sure it does not cost too much to gather them)” (2011, p.23)

In a world of limited of public funding and budget cuts for public services, planners increasingly need to justify the expenditure for public parks. User data is one way in which planners can empirically quantify and demonstrate the value of urban parks, and this information can be used to better allocate increasingly scarce resources.

In New York City, measuring the performance of public services has a priority to ensure transparency and accountability in spending. Additionally, the Bloomberg administration has put an emphasis on the use of data to make decisions:

“Across City government, agencies use data to develop policy, implement programs, and track performance - and each month, our Administration shares more and more of this data with the public at large” (Office of the Mayor, 2012).

Currently, the city’s parks are examined under the Parks Inspection Program (PIP), which according to the city, is a “comprehensive, outcome-based performance measurement system that generates frequent, random, and detailed inspections of our parks and playgrounds” (NYC Parks Department). The PIP includes a list of rating determinations, which include litter, glass, graffiti, weeds, lawns, water bodies, trails, athletic fields, horticultural areas,
play equipment, paved surfaces, benches, fences, sidewalks, and safety surfacing. Depending on the inspector's evaluation of the features on this checklist, the park is given a rating of “Unacceptable” or “Acceptable.” While this is described as a “comprehensive” evaluation, it considers only the condition of physical elements and disregards the park’s users. For example, as long a park bench is free of damage, does not require paint, and isn’t missing any slats, it makes no difference if anyone ever sits on it. This represents the type of design-preoccupied approach to park management that planners such as Reed have argued against. Benches, as a metaphor for parks as a whole, have a “social rationale”; they are designed to be used by people. It does the city no service to continuously repair a bench that will never be used or constantly vandalized. As planners have noted, the better (and more cost-effective) approach would be to study park use to understand why the bench goes unused and vandalized, and address these issues, perhaps by relocating it to a more popular location where it’s more visible. While the type of physical condition analysis is useful in allocating resources towards maintenance, it does little to explain the value justify the expenditure for parks or provide a meaningful evaluation of their success.

The Mayor’s Office of operations runs “CPR Agency Performance Reporting, which “represents a collection of critical performance measures from more than 40 City agencies” (nyc.gov). As a result of the Park Inspection Program, the performance of the NYC Department of Parks and Recreation is evaluated on indicators such as the condition and cleanliness of the parks and recreation centers, in addition to the number of comfort stations in service, the number of trees planted, the number of public service requests received, and the number of felonies in the 20 largest parks. Because the collection of user data is so limited, “attendance at outdoor Olympic and intermediate pools” and “total recreation center attendance” are the only measures of usership considered as indicators. (At the time of writing, these two indicators show a slight performance decline and a neutral performance, respectively). As Harnik had noted, these limited indicators only represent “a tiny fraction” of all parks users. Notably, this evaluation does not include numbers from the few New York City parks that do collect user information, likely because these parks are mostly managed by conservancy groups independent of the Parks Department. More indicators of park usership could help provide a more comprehensive, meaningful evaluation to rationalize public funding for parks. This would bring the Parks Department more in-line with other city services such as the Department of Homeless Services, the Department of Education, the Department for the Aging, the Department of Health and Mental Hygiene, and the New York Public Library, which all use actual numbers of citizens served as indicators of their performance.

User studies have already demonstrated their value in justifying city resources for public spaces in the case of Privatley Owned Public Spaces (POPS). Whyte’s 1979 study of usership in several POPS essentially exposed that the City had been awarding lucrative air rights bonuses to developers and occasionally receiving little more than empty swaths of concrete in return. Because developments with POPS were awarded with Floor Area Ratio (FAR) bonuses long before they were ever built or used by people, the City had no way of ensuring that it was receiving a public amenity of equal value in exchange. Whyte’s user
research informed design guidelines to ensure that new public spaces warranted the concession of valuable air rights. The resulting guidelines attempt to ensure that these spaces will be well-used and successful, so that the city gets the most “bang for its buck,” so to speak. In the same way, user studies can be used to guide the allocation of city resources on public parks by identifying those that are the most successful and the ones that need help.

*User Analysis in the Environmental Impact Statement – A Limited, Reactive Approach*

Interestingly, user studies are included as part of the methodology in preparing a City Environmental Quality Review (CEQR). In the very specific circumstances when a park would be directly affected by an action that requires discretionary action from the city, a CEQR would be legally required in order to assess any adverse impacts on the park. In the assessment of “Open Space” impacts, the SEQR technical manual describes:

“In some cases — particularly when an open space would be directly affected — it may be necessary to conduct a user survey to understand more fully the potential impacts on the users of the open space. User surveys may take the form of systematic interviews or observations of the users” (CEQR, p.7-11).

The CEQR technical manual provides valuable guidance on user studies, such as the type of information to collect, methodologies on obtaining information, and how to interpret the information to determine the adequacy of the open space: “Use the data gathered in the tasks above to provide an evaluation of the study area’s existing open space conditions relative to the open space needs of the study area users. The assessment should include a quantitative and qualitative assessment, using the following guidance…” (CEQR, p.7-12). Here, the manual even makes the link to the needs of the surrounding areas, and advocates for both quantities and qualitative methods.

Clearly, the city recognizes this value of user information when assessing the impact of development on parks, and the CEQR manual provides a fairly comprehensive methodology for performing a user study. However, this study would only be triggered only in very specific instances to evaluate the impact of development, and has nothing to do with improving parks. Even though the user-study in CEQR demonstrates how the city can use information about park visitors to guide their decisions, this information is only used to speculate on the impact of development, not guide park planning. Regardless of its intent, the CEQR Technical manual provides a free guide to performing a user study, many aspects of which could certainly be adapted in an ongoing tool for park management.

*User Analysis in the Post Occupancy Evaluation – Precedents in Architecture*

The Post Occupancy Evaluation, or POE, is a concept in architecture employed since the 1960s where buildings are evaluated following occupancy to ensure they are meeting user needs and used correctly:

“Post-occupancy evaluation is based on the idea that better living space can be designed by asking users about their needs… Information from occupants about their response to buildings was gathered through questionnaires, interviews, site visits, and observation; sometimes the information was linked to the physical assessment of a building. The lessons from these studies were intended to convey what design elements work well, what works best, and what should not be repeated in future buildings” (National Research Council,
While these strategies are traditionally used to evaluate buildings, they are easily adapted to landscape architecture, such as parks. In the advances in methods to identify user needs, landscape architect Mark Francis explained “most significant is the use of the post-occupancy evaluation (POE) as a way to assess if human use and design intentions are in fact successful” (2003 p.65). In the case of landscape architecture, the methods to asses user needs include “archival research, observation, behavior mapping, interviews, environmental autobiography, mapping, participation, photography, aerial photo analysis, GIS and CAD” (ibid). While the tools for a POE are well-established in the field of architecture, evaluation of public spaces is uncommon, as many others have noted. As one employee in the Department of City Planning explained, “there is a tendency to build and move on, without any evaluation.” Yet the concept of a Post Occupancy Evaluation is extremely relevant to parks, since their design and programming is likely more flexible than that of buildings. The College of Design of North Carolina State University prepared a POE of “Kids Together Park” in 2005, using observations and interviews to identify features that were successful and those that needed improvement. This example demonstrates how the methodologies of architectural Post Occupancy evaluation can easily be translated from architecture to urban parks.

Community Participation in the Design Process – The Current Application of User Studies

Many organizations and projects such as People Make Parks, a project to get people involved in the design of parks, have advocated for community participation in park planning, often using techniques such as surveys to collect information. People Make Parks offers free guidance on a variety of participatory tools, in addition to case studies where community input has helped shape park design. With the help of Partnerships for Parks and the Open Space Alliance, such user studies have recently been conducted by the NYC Parks Department in McCarren Park, Fort Washington Park, and Far Rockaway Beach in anticipation of redesigns. These examples demonstrate how surveying can reveal important design suggestions based on community needs. While these and the available online case studies offer valuable examples of how user data can inform the park planning process, they focus solely on user-input for design features in the planning process, with little to no attention paid to user input once the space is completed. People Make Parks outlines instructions on how park users can get involved in design, but once the park design or redesign is completed, the only steps listed for community stakeholders after the initial design are “celebrate the opening” and “care for the park,” with no recognition of evaluation (People Make Parks). A common assumption throughout these types of studies is that if spaces are designed with input of users, they will be successful and user-friendly. However, this ignores two important realities: First, the users giving input reflect the values of a certain group at a certain point in time; parks may be used by
different constituents who did not provide input, and the users and needs will change over time. Secondly, just because users suggested a particular design feature, it does not guarantee that it will be successful or used as intended. These organizations advocate for user-input in design process, but overlook the value of user-input in evaluating the success of the design. This is likely because communities are only ever engaged in the initial initial planning and design process. On the other hand, user input can also play an important role in the post-construction evaluation of public spaces. Many of the methods advocated by these

Organizations such as People Make Parks advocate for tools to gather user input in the initial design process. Many of these tools could be adapted for ongoing evaluation.

### Moving Forward - Application of Modern Technology to User Studies

Because so many of the guides on performing user studies are out-of-date, technology has quickly outpaced the literature on the subject, warranting a discussion of how advances in technology can contribute to user studies. Technology promises to make collecting and analyzing user information easier, although limited access to some technology will pose an issue for some park planners.4

To accomplish the community analysis, Harnik suggests “Computerized geographical information systems (GIS) can also be used to find the demographics of a quarter-mile buffer (or more or less) around the park” (2004, p.12). This demonstrates the application of technology into analyzing this information.5 Harnik’s study offers several other examples of using technology to count users, such as “beam technology” to count pedestrians as they break a beam of light, and “blob technology” which uses cameras to digitally track users. This technology continues to be explored. A study from the University of California Berkley successfully used such a video tracking system to digitally record use of public space with “fairly accurate” results (Yan, p.1). Their software analyzed how many people visited a plaza, where they walked, where they sat and for how long. The information was then used to compute the probability that a visitor would chose to sit at a certain location given the amount of people at that location, creating a behavior model. Such technology has numerous applications in evaluating how public spaces are used. The Berkley studied explained “We have obtained important statistical measurements about users’ behavior,

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4. For more detail, see the section on limitations.
5. See the section “Spatially Mapping Users,” & Appendix C.
which can be used to evaluate architectural design in terms of human spatial behavior” (Yan, p.1). This is a significant improvement over the tedious time lapse video of 30 years ago, which involved watching each reel of film and manually mapping how the spaces were used. In 1979, Whyte’s 6 ½ hours of film required 100 man-hours in front of a film viewer.

Photography has been a method for estimating park use in different ways. In 1984, aerial photographs of Central Park’s great lawns during a Sunday concert were used to estimate attendance at this event. However, shadows made the manual counting of certain areas difficult. Today, photography is still the best tool for estimating attendance in large events (Watson, 2001 p. 105). Yet significant improvements have been made from counting heads in black and white photos. Modern crowd estimation employs remote-sensing technology to perform counts. One method breaks up hi-resolution panoramic images into a 3-dimensional grid, and then uses a sampling method to create a spatial distribution model based on density to estimate the total attendance (Goodier, 2011). This type of system has been used to estimate attendance at Washington DC’s National Mall during political rallies. It is interesting to note that crowd counts at the National Mall have become so contentious that the Park Service no longer publically releases the numbers, which speaks to the weight given to the counts as an indicator of a particular rally’s success. Regardless, the numbers from these high-tech estimations are used by park planners to keep crowds safe by managing traffic, event personnel, and emergency response. The aerial photos are sometimes taken by balloon, but need not be so high-tech. Brooklyn Bridge Park could be easily photographed from the bridge, the Brooklyn Heights Promenade, or several tall buildings. The same could be said for many urban parks. These types of technologies have the potential to make user counts easier and more accurate, which has important implications for park managers.

Even low-tech technologies can facilitate user studies and analysis. Comments from surveys can be aggregated using free online “word cloud” generators which visually represent all the words with a size proportionate to its frequency. In recent years, this has become a common tool for getting an overview of large texts (Gambette, 2010). A word cloud can be used to quickly identify the most common words in the responses, which is helpful in looking for common themes among hundreds of...
A “Word Tree” application developed in 2010 takes this a step further by creating a graphic that also visualizes the relationship of certain words based on their “semantic distance” (ibid). For example, a word cloud for Brooklyn Bridge Park shows that “shade” is one of the most common words from the open-ended questionnaire, but the word tree also identifies that “water” and “fountain” are common words frequently used together. These tools can help planners quickly sort through a great deal of text and identify key words to look for. Once “water fountains” is automatically identified as a common phrase by the word tree, a search command for this phrase in the survey results reveals that park users are asking for more water fountains, especially at Pier 1.

Planners are just only just beginning to examine how social media can be used to understand urban spaces. Increasingly, tech-savvy visitors “tweet” about their activity in parks, or “check-in” to parks using social media applications such as FourSquare and Facebook, often with reviews or tips for other visitors. These general impressions and descriptions may seem of little value, but Kevin Lynch had asserted that “it is revealing to ask…for an open-ended description of a place in order to evoke [a user’s] perception, feelings, and knowledge of [a space]” (1984, p.93). Together, these check-ins and comments provide a psychological perception of the park. Four Square “check-ins” have X and Y coordinate data, allowing them to be geocoded onto a map of the park. Mapping check-ins to certain areas could allow planners to visualize hubs of activity with public spaces, which would otherwise require hours of manual behavior mapping. Social media represents an entirely untapped wealth of information about park users that continues to be explored.
User Studies in other Disciplines – The Challenge of Finding Generalizable Results

While park-specific user studies continue to be rare, a growing body of research in the fields of public health and sociology has explored the relationship between people and parks, many using unobtrusive observation and interviews as methodology to make policy and design recommendations. Much of these studies have paralleled the rise of qualitative methods as a social science research tool since the 1970s. (Loseke et al, 2007). While public health studies have been able to document that park visitation is associated with better health and that interventions to the built environment can affect behavior, the relationship between park design and physical activity is not well understood. (Floyd et al., 2008) (Potwarka et al., 2008) (Shores et al., 2008). For example, some studies have used observation of park users to suggest that baseball fields are associated with physical activity of park users, while other studies have found no relationship testing the same variables (Floyd et al., 2008)(Shores et al., 2008). Similarly, sociological studies of park use have found interesting, but mixed results. While these studies about park visitation have attempted to explore the social and equity issues of park visitation, a consensus has not been reached. (Payne et al., 2002) Likely the reason why this emerging body of research has yet to provide any conclusive results is that each park presents its own unique conditions that are not always generalizable. It is certainly plausible how a sociological study of park users in a passive, easily accessible park in older neighborhood could find that age was not a barrier to usership while a study conducted in an active, inaccessible park in a younger neighborhood could find the opposite. When considering urban parks, many of these studies have looked at design features or the demographics of users as the variables. However, this overlooks many of the variables such as the park's local and temporal context. Although each of these studies individually have identified important issues for their study areas, there are simply so many variables to consider that it is difficult to draw widely generalizable conclusions from any one park study. For example, one study conducted in Cleveland's parks in 1994 found that fear of crime was a significant deterrent among low-income citizens (Scott). This was a valuable finding for the City of Cleveland at that time; however, conditions in mid-90s Cleveland wouldn't necessarily explain the underrepresentation of low-income visitors in 2011 Brooklyn. Dr Lawler explains that certain findings are generalizable, while others are not. Findings in a study of a small neighborhood park may translate to similar neighborhood parks in other cities, but “there's only one Central Park.” When asked why it was important to understand park usership William Kornblum explained that “it’s hard to answer in a global way,” because each park would have its own reasons for assessing its usership based on its goals, concerns, and circumstances. Kevin Lynch noted that “most findings are partial or refer to specific situations” (Lynch, 1984, p.67). Local context is important, and planners need to recognize what makes their situation unique and be wary of making assumptions based on site-specific studies. For example, a 1990 book “Park Planning Guidelines” uses 1970s studies in Pennsylvania to make sweeping statements such as “Park satisfaction increases with age” (Fogg, p.5). While studies of usership may produce some findings that are not widely generalizable,
they nevertheless remain a valuable tool at identifying important trends the local level.

The growing body of research on physical activity in parks has provided some useful instruments for studying park users, such as the Environmental Assessment of Parks and Recreational Spaces (EARPS) instrument, and the System for Observing Play and Recreation in Communities (SOPARC), both created by the Robert Wood Johnson Foundation in 2005 and 2006, respectively. These tools for systematically evaluating the built environment and observing public behavior are publicly available online, and provide standard methodologies for researchers studying the link between behavior and the environment. While both tools were designed to standardize physical activity research, either could be applied as tools for performing park-specific user studies.

Community Engagement – A Side Effect of User Studies

In addition to the immense amount of information that can be learned through user surveys, it is also worth noting that the collection of data itself has the added benefit of engaging community members. Because data collection is an immense undertaking, it involves the effort of volunteers and students to serve as survey administrators, counters, interviewers, observers, or data-coders. In the 2010 Central Park Study, Dr. Lawler noted that many of her students who participated in the project were “working-class kids from the Bronx and rural upstate New York, [who]…tended to see Central Park from a distance, and most said they had never thought very much about it” (Kornblum & Lawler, 2011, p.25). The act of leaning about park and studying it users “made them feel part of the park and through it, of the city – in the words of one student discussing her field experience, “I felt like such a New Yorker!” (ibid, p.25). These students supplemented a staff of “well over one hundred local volunteers… all of them avid park users” (ibid, p.24). Even in the case of Brooklyn Bridge Park’s much more limited 2011 user count, volunteer groups from “New York Cares” were brought in to conduct gate counts. This diverse group came from all over the city, and most admitted that they had never been to the park before, or had only seen small parts of it. Interestingly, the counting effort served as a way of introducing many New Yorkers to the park, many of whom were very eager to learn about all that it had to offer. Not only do park counts provide useful statics, they can advance the park’s mission by engaging with community members:

“When community members like the students come to know a park – its history,
its use patterns, its value, its pathways – they make real the promise parks as public spaces. They connect. … *It’s not only the data itself that aids the parks movement, but its collection as well*” (ibid, p.25, my emphasis).

While the primary purpose of park counts is to enhance our understanding of usership patterns, the experience of survey coordinators reveals that this technique can also have the unexpected benefit of increasing community engagement.

Who needs a user analysis? – When Conducting User Studies is Appropriate

While some interviewees have suggested that today, “Central Park doesn’t have to do outreach” and therefore understanding the usership isn’t very important since visitors will come regardless, studies conducted in the 1970s and 80s clearly demonstrate how user studies played an important role in the park’s revitalization and provided important benchmarks to empirically measure the park’s progress. While user analyses may play a diminished role in a more successful park, these studies provide the evidence that park is indeed successful, and provide valuable information to monitor and continue this success. Dr. Lawler expressed that while it was “probably true” that user studies in established, successful spaces like Central Park were less important than in new or struggling parks, she noted that she would “never want to rank those priorities,” explaining that “things in the world can change so quickly,” that data from user studies could serve as an indicator of alarming changes. As William Kornblum asserted,

“Would it be useful to know how many people actually visit the park each year? Or is that question itself a diversion into needless quantitative speculation? If the park welcomes x million or y million persons yearly who cares? As long as they enjoy their visits and find what they came for in the park, why bother counting them? It turns out that the question is important for theoretical and practical political reasons” (Kornblum, 2011, p.1, my emphasis)

Evidently, counting usership produces practicable findings, even in parks that are regarded as successful. While these the difference between x million and y million may immaterial in evaluating the park’s success, the difference can have implications for the allocation of resources, the need for maintenance, and the justification for funding.
Limitations, Challenges, and Recommendations

Although planners are increasingly appreciating the value of user studies as a management tool, there are several limitations and challenges that must be considered.

Certain biases in the surveying process should be considered. Surveyors were instructed to obtain a random sample by asking each visitor they encountered, or when the park was crowded, every third person. Since the respondents were selected manually, the survey sample represents the individual biases of the survey administrators, who likely leaned towards surveying those they felt most comfortable approaching. One surveyor described how he avoided male park visitors whose lack of attire made him uncomfortable using a policy of “No shirt, no survey.” The park’s most infamous unclothed user, known to all of the survey administrators as the “Banana hammock Man,” was never given a survey due to such bias. Surveys were instructed not to chase anyone down, which certainly resulted in an underrepresentation of joggers and bicyclists in the survey. Leigh Trucks explained that “The number of bikers was low, from what we observed anecdotally.”

Non-English speakers presented a challenge as well. Although the survey was made available in several languages using the imperfect Google Translate, it would have been difficult for surveyors to identify a language they do not speak, and instruct the park visitor to fill out the form without a common language. As a result, there is likely an undercount of non-English speakers, especially international visitors from non-English speaking countries.

The actual information collected from users was sometimes inaccurate, due in part to their varying interpretation of the questions, or mistakes when completing the forms. For example, some users provided contradictory information, such as indicating that they had entered the park via entrances in locations they claimed to have never visited. Some respondents, especially first timers, apparently did not know the difference between “Pier 1” and “Pier 6” and “Main Street.” Although administrators were trained to help with questions, park surveys must be careful not to assume too much knowledge. The most common source of misunderstanding involved the mode of travel. This seemingly straightforward question revealed interesting lessons about interpretation. In all cases, park visitors walked into the park, so those who walked from the subway were instructed to select “subway” as their primary mode of transit. This was a point of confusion for many. Comparing travel choice with the home address reveals interesting complications. For a resident from Queens that arrived in Downtown Brooklyn by subway, went shopping, had lunch, and then walked to the park, they might logically indicate that they walked to the park. According to the survey, it appears that they had walked from their home address in Queens. The survey instrument was designed with the assumption that park users came to the park from their home. This did not accurately account for more complicated trips such as babysitters that visited the park after picking up children, office workers who visited from their place of work, or those that used multiple modes of transportation. These complex issues highlight the limitations of survey instruments in understanding travel choice, and speak to the clarity that is needed for them to be properly understood.

Coding the data from the completed paper surveys
to a digital format introduced the possibility for error. Although coders were instructed to input the information as faithfully as possible, sometimes information was lost in the process due to illegibility or coder bias. In one example, a visitor wrote “Movies with a View FTW,” using internet shorthand slang “For The Win,” to express a love of this event. A coder, not recognizing the acronym, transcribed this as just “Movies with a View,” essentially removing all meaning from the comment.

As many have noted, a critical problem that results in so few user studies is simply that park planners aren’t interested in obtaining the information. With many physical maintenance issues at hand, many park planners don’t see the value in devoting time and resources to studying their usership. While many planners may acknowledge value of user data on an academic level, it is easy to see how some practitioners may be reluctant to divert the time and resources from pressing issues such as maintain the landscaping, repairing park equipment, ensuring public safety, or organizing events, among a hundred other tasks. While some undoubtedly do not recognize the value of user studies, the larger problem is that the study of users is simply not prioritized in the planning process.

As William Kornblum and others have noted, there is no one general reason why this information is valuable because each park is unique. In some cases, user studies may be important in identifying design problems, conflicting uses, equity issues, public perceptions, user preferences, unanticipated trends, or all of the above. For this reason, case studies of parks that have performed user studies provide some of the best evidence of its value. Urban Open Space (2003) provides a guide to case studies that “provides a uniform and comparable way to document and evaluate landscape architecture projects and issue” (Francis, 2003, p9). Recent calls for user studies have employed case studies from urban parks across America in order to demonstrate not only the techniques for obtaining answers, but the importance of asking the questions. Familiarity with case studies is one way in which planners can recognize the value of collecting user information, especially when the findings are transferable from one park to another: “continued research in the form of new case studies is needed to show how user needs can effectively be translated into design” (Francis, 2003, p.75). However, case studies consistently demonstrate that each user analysis finds different results with different implications. This means for many parks, the proof is in the pudding; the purpose of a user study can best be explained with the results. Therefore, planners must have some faith that performing user studies is a valuable management tool that will yield useful information. Evidence from Brooklyn Bridge Park, Central Park, and the examples currently available proves that this is the case. The growing body of literature suggests that planners increasingly understand the value of this data.

One of the biggest difficulties park planners face is the general lack of information available on the subject. Guides on conducting user analyses are still scarce and difficult to find, just as Madden had noted in 1982. It is worth noting that Madden’s fairly comprehensive guide is now 30-years-old, out-of-print and less than 90 copies are available in print throughout the world, stored mostly in university architecture libraries (WorldCat.org). Works such as Whyte’s “Social Life of Small Urban Spaces,” offer insight on the value of user studies for evaluation, but are
limited in their methodologies and woefully out-of-date. Dr. Korblum explained that there was a lack of methodology when he began studying users in the mid-80s, and guides on this type of research continue to be scarce. At the time of writing, the most recent and comprehensive guide by Korblum himself, published by the Urban Institute in 2001, is not available for download or purchase. (The publications department has not responded to phone calls about obtaining copies.) According to WorldCat, only 6 print copies are publicly available in libraries around the world. Other resources such as How to Turn a Place Around (2001), are more readily available for purchase, but less comprehensive. Organizations such as the Project for Public Spaces, People Make Parks, and New Yorkers for Parks do offer some free online resources and guides, but many of these focus on the role of users in the pre-construction design phases. Very few of these guides provide a complete discussion of all of the different techniques in user analysis, and new technologies outpace the literature. The technology needed to use word clouds to analyze comments, or digitally analyze time lapse video, for example, had not been developed when the last guide was published over a decade ago. More could be done to ensure that planners have access to the information needed to perform user analyses. For example, digitalization of print resources as e-books could dramatically improve planners’ access to the scarce available information on this subject. Additionally, a more recent comprehensive guide to performing user studies is due.

Related to the lack of information is the lack of comparable data. Even when parks are able to perform a user study, it can be difficult to find comparable results to give context to the results. When looking at the data for international users, Ellen Ryan pondered “I’m trying to think of one other Brooklyn Attraction that posts numbers like this.” The 2011 Central Park study is available for comparison, but few other relevant park studies are readily available. The Brooklyn Bridge Park data has generously been released for the purpose of this thesis, but at the time of writing, is not publically available. Dr. Lawler suggested one strategy would be institutional knowledge-sharing through a “Parks Solidary Group,” where park managers could share relevant findings of their research with other parks that may lack the resources or expertise to perform their own studies. Information sharing between parks would also give more context to the data collected. Not only would this help other parks learn the value and procedures behind user analyses as tool, comparisons between parks would allow managers to understand if observed trends are part of larger, regional patterns.

As others have noted, an important limitation is that park user studies are difficult to perform. Upon hearing the results of the Brooklyn Bridge Park user count, Parks Commissioner Adrian Benepe noted “that it is very difficult to do a good count and congratulated the Park on its efforts” (BBPC, 2011, p.5). As previously discussed, the nature of large urban parks makes it challenging to obtain a total number of users. Developing technology has the potential to make counts easier and more automated. Evidence shows that less arduous techniques such as surveying users and observing public use can also yield informative results to inform policy. While the use technology and different techniques can facilitate the collection of this information, the difficulties can never be fully overcome. For user studies to be employed, planners have to decide that the value of
the information outweighs the difficulty in collecting it.

Even when user studies are completed, a critical issue is that some park planners simply don't have the time, expertise, technology, or resources to fully analyze their findings. With so many responsibilities, it is easy to imagine how analysis of the information could be overlooked. Unlike the year-round user study at Central Park, Brooklyn Bridge Park ceased its survey at the end of its summer season, and park's planners moved on to other pressing projects. As Ellen Ryan explained, “at the end of the summer, we move on to the Pier 1 RFP, and before you know it we’re planning next year’s calendar. It would be really instructive to see in the six months that have passed [since the survey] if have we addressed anything.” Leigh Trucks acknowledged “I have to admit, since you did that summary [at the end of the summer], I didn't actually go back and look at each [comment].” With so many other tasks to attend to, some of the results of the survey were shelved at the end of the summer. While it is clear the park’s planners recognized and responded to the demand for shade, the park simply did not have the resources to read all 163 comments. It’s clear that first hand observations played a role in identifying misuse in Brooklyn Bridge Park, yet observations were not made an official part of the study. This would have required training surveyors what to look for, and would not have been feasible with such a limited staff. Because of the immense amount of surveys administered and the time-consuming process of coding them, some surveys could not be coded by the end-of-the-summer deadline, and are not included in the data. Because of funding and staff shortages, there were no student-interns to input the data once the summer ended.

In some cases, the park had collected the data, but didn't have the ability to fully analyze it. For example, although the park had all the demographic statistics of their users, the comparison to the surrounding neighborhood was not performed. Although the planners at the park were likely capable of performing such an analysis themselves, it would have required a close reading of the available literature on the subject to identify this as a valuable analysis technique, not to mention the time-consuming and difficult process of mining for the correct census data. This type of statistical analysis is not typically part of the work that park planners do. While all of the interviewees noted that the maps helped to illustrate where users were coming from, neither the Brooklyn Bridge Park Corporation nor the Conservancy has the GIS software required to produce these maps themselves. In lieu of this software, the park previously relied on manually analyzing spreadsheets of zip codes- a far more difficult process. Because the park does not have regression software or expertise in statistics, the park had relied on a math professor from a local university to perform a regression of the user-preferences for the previous year. Although this regression had not found any significant results, with that professor unavailable, they were unable to perform a regression the following year. Nor did they have the time and resources to devote to locating similar data for comparison, research on the subject of park usership, or historical precedents of their findings. For example, historical research would have revealed that new parks have faced and addressed the issue of shade as far back as the 19th Century. While there is clearly much to be learned from studying park usership, in the case of Brooklyn Bridge Park, limited time, expertise, and resources to analyze such a large and complicated dataset somewhat
hampered their ability to draw meaningful conclusions from it. This is not to suggest that Brooklyn Bridge Park did not do a good job. On the contrary, as Adrian Benape noted, the amount of information collected is truly impressive given its resources and the fact that they are simultaneously managing the ongoing construction of the park. “I wish we had someone here to do this all year round,” confessed Leigh Trucks. Because parks have limited resources and expertise in user analysis, in nearly all cases, strategic partnerships with universities, or organizations such as the Project for Public Spaces, were vital in implementing user surveys.

Perhaps the most critical limitation is that the planning process is often inflexible, and doesn’t effectively allow for the implementation of changes identified by the user study. Even when strategic design improvements are identified, it can be difficult to implement them. As Leigh Trucks expressed:

“The one limitation of doing these surveys every year is that, we can get the data, but the actual capital planning of the new parts of the park takes such a long time that it’s really hard to analyze survey results from last summer and be completely reactive to that, because [our capital program] is almost set in stone at that point. I think the primary benefit [of the surveys] would be toward the programming side of things rather than the actual capital construction.”

This clearly demonstrates why the link between user data and implementation is often difficult. Because funding for construction is “set in stone” years prior, it hard for the park to be responsive to changes identified by user information, such as the need for shade, or the misuse of the Greenway. While capital planning is inflexible, Trucks identifies park programming as a more responsive approach to addressing user input because it is far easier to adjust year-to-year. While programming may be an effective response to targeting demographics, physical improvements are needed to respond to design problems. This problem of redesign was identified by William Whyte, who claimed that no space is ever planned with the possibility that some parts of it might not work very well. As a result, physical improvements are often difficult, even when specific improvements can be identified.

I don’t think reading [survey] comments about water fountains would trigger a 20% Increase in water fountains; I don’t think there’s that direct impact, whether that’s good or bad. It’s just that planning takes so long.

The fact that the planning process is so long and takes places years before the spaces will ever be used means that the park cannot easily respond to user data. This is not to suggest that every comment should result in a design change. However, the park’s planning process means it cannot easily adapt to address the most important design issues. This is evident in the park’s difficulty in replacing the red stones in the dog run, correcting the misuse of the Greenway, and providing enough shade. While user studies, observations, and even community meetings are crucial in identifying these problems and offering possible solutions, the park is somewhat handcuffed by its own planning in its ability to react. The park has completed the important first step of evaluation, but it has struggled with how to implement solutions. This issue is by no means unique to Brooklyn Bridge Park; every planned space faces this same issue of how to effectively respond to evaluation. In order for parks to be responsive to user needs, the planning process will need to recognize the possibility of change.
As the Project of Public Space advocates, design is “never finished” (PPS, 2000 p.76). This means that capital planning for parks needs not only to understand the need for continuing evaluation, but the need for contingency plans in the event that designs aren’t working as expected.

Interestingly, the parks in New York City that are regularly surveying their users are those run by conservancy groups. This means that the vast majority of city parks do not collect any user information on an ongoing basis, including those that could most use it. Yet many of the difficulties encountered by conservancy groups, such as technological and expertise limitations, would not be shared by the public sector. Unlike conservancy groups, the city is well-suited to perform GIS analysis or compare census data. The Parks Department has more resources at its disposal, such as its dedicated team of parks inspectors. Additionally, an agency surveying multiple parks already has the benefit of equivalent data sets by which to compare data. Yet in New York City, park studies are rarely publically funded.

Dr. Kristin Lawler has advocated for publically funded park studies, arguing that “Parks should be publically funded and research should be a part of everything that they do,” explaining that “[research is] absolutely just as important as operation and maintenance.” For all of these reasons, the public sector may the most appropriate party to collect and analyze this information. Some governments do use public funding to study users on a more city-wide basis. Peter Harnik explained that “The city which probably does the best overall job of assessing its park visitation is Portland, Oregon. Portland has consistently examined its park system on a yearly basis, and it is now undertaking an even more comprehensive assessment of parks’ users habits and attitude” (Harnik, 2004 p.5). This should be no surprise to urban planners, who often look to Portland as something of a model for innovative planning ideas. The City of Portland’s Bureau of Parks and Recreation has “taken park monitoring to a new level,” explains Harnik. They perform observational surveys, intercept (in-person) surveys, focus groups, and telephone surveys. In their efforts to monitor overall government performance, the city has identified six comparable cities against which to compare data (ibid). The City of Portland represents a best-practice in city-wide user studies that demonstrates the use of public funding. For increased public funding, city park departments would have to first need to recognize the value of collecting user information as a management tool.
Conclusion

Urban park planners are charged with the maintenance, improvement, and expansion of public spaces - a constant and overwhelming task. Yet these crucial functions cannot be allowed to overshadow the implicit goals behind these tasks. Parks are not just museums for grass and flowers; the physical upkeep of urban parks is important because it achieves the social goals of providing successful, democratic, accessible spaces that make cities livable. Urban parks are where social goals are manifested in physical spaces. Therefore, it is imperative to always consider this “social rationale” behind these spaces. It is only through evaluation of public spaces that planners can judge the success of their efforts. Understanding how parks are used by the public is a critical part of this evaluation. Directly studying park users can reveal important information about usage that can’t be learned through community meetings. Park studies work best when they employ a variety of qualitative and quantitative methods that inform one another. The evidence suggests that user surveys cannot replace traditional methods of community outreach such as public forums, but they can effectively supplement these methods by offering different types of information.

The findings from user studies have important implications, as they reveal equity issues, design flaws, and conflicting uses, among a variety of other problems. User data can also offer practicable solutions to these issues. Linking these findings to implementation, however, is often difficult because the planning process is often too rigid to effectively respond to evaluation. The planning process needs to recognize the value of evaluation, in addition to the need for unanticipated changes, such as redesigns. Park planners, especially those who manage a single park, often lack the time, resources, and skills to effectively make sense of the findings, which highlights the importance of partnerships with universities, volunteers, city governments, and other parks. Given the value of user studies in producing useful information and the amount of resources required to conduct them, publically-funded parks departments may be best equipped to conduct widespread user studies.

Urban Planning can learn from other fields which already recognize the value of user data and evaluation. Businesses in the private sector regularly study their customer base to grow their business. Architects use post occupancy evaluations to learn from their buildings. Sociologists study public spaces to understand social equity issues. Landscape Architects study what features of public spaces are most popular. Public health officials look at behavior in public space to understand trends in physical activity. The unique interdisciplinary nature of Urban Planning makes it the perfect field to tackle the complicated issue of understanding park usership.
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Appendix A: The Forgotten History of Park User Studies.

As the first “grand open space” specifically designed for public use (Rogers et al 1987, p.7), the creation of New York City’s Central Park in the mid-19th Century provides a logical starting point for understanding how the users of planned public spaces have been studied. Prior parks in Europe and the United States had not often been expressly designed for public use, and there is little documentation of their usership. Even before the idea for Central Park had been proposed, the use of counts and observations of users in public spaces played a role in establishing and documenting the need for a grand urban park. Horticulturist and Landscape Architect Andrew Jackson Dowling, who is sometimes credited with the idea for a grand New York Park, wrote in 1848 of a curious phenomenon occurring in the New York’s large cemeteries: “Dowling, based on *personal observation*, noted that while some no doubt went to ‘to twine the votive garland,’ most went simply to enjoy themselves in a natural setting” (Stern, 1999, p.82, my emphasis). In “New York 1880,” contemporary historian Robert Stern describes how “nearly sixty thousand people visited Greenwood [cemetery] between April and December of 1848,” making it “immediately popular as a park, attracting crowds of pleasure seekers from both Brooklyn and Manhattan” (ibid).

These early personal observations and records of attendance provided evidence about the unanticipated use of public space. This surprising information about the users of Brooklyn’s Greenwood Cemetery represented an unfulfilled need for urban parks, one that did not go unnoticed by New Yorkers. In 1853 the state legislature authorized the purchase of Central Park site and began plans for a large...
urban park to meet this need.

Central park’s famed designer, Fredrick Law Olmsted, often credited as the father of American Landscape Architecture, designed many celebrated parks in New York City and around the country. Although he was primarily responsible for the physical design of the landscape, Olmsted was very much concerned with the users of the park, and how it would be used. His writings make it clear that he saw public parks as a means to accomplish social and moral goals.

“[Olmsted] lays out the political and philosophical case for public sparks in terms of … great moral imperatives: [including]…, the need to advance the cause of civilization by the provision of urban amenities that would be democratically available to all.” (Le Gates, 2010, p. 302)

Olmsted’s writings suggest that he viewed public parks not a simply places of designed landscape; he placed great emphasis on the park user, and envisioned parks as inclusive, democratic places. Olmsted was also very concerned about how the park would be used, stating
“[New Yorkers] will need to be trained to the proper use of [the park], to be restrained in the abuse of it, and this can be best done gradually, even while the Park is yet in process of construction” (Stern, 1999, p.108). This establishes how the park’s designer has specific intended use in mind, and took efforts to ensure that it would be used properly. To ensure “proper” use, the park’s commissioners enacted a set of rules that governed the public’s use of the park, prohibiting uses that Olmsted saw as incongruent with his vision of the park (Stern, 1999). While the “proper” use of public parks was (and continues to be) debated, observations of park use from the period suggest that the park was being used as anticipated. In 1893 author Mariana Van Rensselaer described the park users as “decorous, law-abiding, rule-respecting throngs [that] now fill Central Park of a Sunday afternoon in spring, - throngs much larger and of much more motley composition than were anticipated in the [eighteen] fifties” (ibid, p. 109) This account demonstrates how observations substantiated that the park was being used as intended. Her observation “larger and more motley” demonstrates that observations of park users can be revealing, in this case suggesting that the park’s users were more numerous and diverse than had been anticipated.

While some doubted that the experiment of a democratic park would be successful, Olmsted’s writings suggest that he also used first-hand observation of park users to test these ideas. In his 1870 “Public Parks and the enlargement of Towns,” Olmsted describes his observations of park users:

“You may thus often see vast numbers of person brought closely together, poor and rich, young and old, Jew and Gentile. I have seen a hundred thousand thus congregated, and I assure that though there have been not a few that seemed a little dazed, as if they did not quite understand it, and where, perhaps, a little ashamed of it. I have looked studiously but vainly among them for a single face completely unsympathetic with the prevailing expression of good nature and light-heartedness” (Le Gates, 2010, p. 306)

This account demonstrates how Olmsted used first-person observations of ushership to evaluate the success of his parks and to confirm that they were truly being used the way he had intended. In this way, he uses information collected from visits to dispel criticism that a democratic park could not function.
In addition to first-person observations of users, the early managers of Central Park also used quantitative measures to understand the visitors of the park. “From the park’s inception [in 1863] until 1873, its managers kept a gate-by-gate count of the visitors as they entered. The record of those years shows that even before construction was completed; it was receiving ten million visitors a year” (Rogers et al 1987, p.23). Skeptics originally doubted that the park would become a successful public space, and Olmsted “knew he had to have hard facts to allay these fears. He stationed a “park keeper” at every entrance, part of whose job was to monitor public behavior and to compile exact counts of those entering the park during day or night” (Kornblum, 2010, p.1). These numbers help substantiate the qualitative observations that the park was well-attended and in that one respect, successful. Consistent data over this decade allowed to the park's managers to track the percentage change in annual visitation from year to year, noting a rise from 4,326,500 visitors in 1863 to 10,060,159 in 1873. Records show that the rates of usership fluctuated, with slight decline over certain periods, but without any more information, it is difficult to make useful inferences from this data or ascertain the reason for these changes. Comparing this information to census records, we can note the park received over nine visitors per New York City resident in the year 1870, making it extremely popular. Records of visitors were kept for each gate on a monthly basis, and even included their mode of transportation: pedestrian, equestrian, or vehicle. “Velocipedes” were counted beginning in 1869. This information allowed the management to identify certain spatial and temporal trends. For example, while May was the most popular month for equestrians, vehicles and velocipedes, the most pedestrians arrived in August. Pedestrians accounted for the most park visitors, and while the gate at 59th St and 5th Ave was the most popular in February, In August the most visitors were arriving through the gate at 59th and 8th Avenue (Board of Commissioners, 1870). These early numbers are significant in that they represent the first effort to gather statistical information about park users. However, this practice was short-lived: “Systematic counts of people entering the park ceased in 1873 and were never resumed as management practice” (ibid, page 23). Likely the panic of 1873 and the subsequent depression made it difficult to allocate the resources required to conduct gate counts. After this practice ceased, it would be an entire century before any further substantial effort would be made to understand park users in Central Park.

Although it is unclear exactly how Olmsted and the park managers interpreted and used these statistics, it is interesting to note how modern scholars have interpreted this data to understand how the park was historically used. In “The Park and the People,” modern scholars have used carriages as a substitute for household income to argue that the park was primarily used by the upper-classes, and did not achieve the democratic ideal in its early days (Rosenzweig, 1992). This provides an interesting example of how user studies can yield important findings for future generations, not to mention providing benchmarks for current use.

In Brooklyn, then a separate city with its own parks departments, gate counts at public parks continued until at least 1894, when the Brooklyn Parks Commissioner noted that:

“There were 10,859,898 visitors during the
year. There were 2,694,825 on Sundays, 1,822,070 on concert days. The largest number of visitors was on Sunday, June 10th, numbering on that day 207,704. The average number of bicycles passing through the Park in pleasant weather averaged 2,000 per day. In January there were 77,035 carriages, 5,384 equestrians, 387,756 pedestrians, 16,341 sleighs. In February…” 

(p. 64)

This example shows how others level of user data collected, in this case transportation mode by month, can enhance the understanding of the park’s use. This level of information allowed the park’s management to identify the park’s peak period, when demand would be the greatest. As the park’s police force for all of Brooklyn at the time numbered only 100 men (ibid, p.63), no doubt this information would have been useful in allocating park staff. The data collected also details attendance at “Sunday School picnics,” “family parties,” “private school picnics,” and “public school picnics” across the park system. Mode choice provides context to the park’s statistics on vehicular accidents, and informed park management how its users were reaching the park.

The report suggests that this information was used to substantiate the need for new bicycle infrastructure in Brooklyn. The document explains “the bicycle riders of the city, who are very numerous, early in the year requested the Department to construct a bicycle road from the Park to Coney Island” (ibid, p.9, my emphasis). This led to the creation of a new bicycle path, “the first one of the kind,” down Ocean Parkway. This demonstrates how data about user’s transportation choices gave credibility to community needs and justify physical improvements. The practice of conducting user-counts in the city of Brooklyn likely ceased with the 1898 consolidation with greater New York.

New York Decline and Examples from Around the Country – User Studies in Action

Although park managers in New York were no longer collecting information about the park’s users, parks like Central Park continued to be studied from a design-centric perspective. On July 19th 1927, landscape architect Hermann Merkel was hired by the Commissioner of Parks to conduct a “complete survey” of Central Park. Three months later he published “Report on Survey of Central Park with Recommendations,” which would later be called the Merkel Report. In this 69-page document, Merkel describes the condition of the park in meticulous detail; he catalogs the physical condition of each part of the park, noting the soil, plantings, lawns, fences, pathways, trees, and even includes a report on the park’s insect population prepared by entomologist Dr. E. P. Felt. However, if Merkel so much as encountered another human being during his fieldwork, he makes no mention of it in his report. It would seem as though the park’s insect population was more carefully studied than the park’s human population. This study represents the prevailing design-minded method of thinking about public spaces. Although this was considered to be a “complete survey,” it only focused on the physical design aspects of the park and overlooked many of the social aspects. This tendency to study the park without those that use it is one that continues to this day.

Considering that Merkel was trained in landscape architecture and the much of the park’s resources would be devoted to the upkeep and maintenance of the deteriorating physical landscape, it’s no surprise to see such a study completely focused on physical design. Although Merkel did not study park users, he does offer some cryptic remarks
on the park's use, suggesting some conflict between actual use and intended use:

“If this purpose is to be retained and the Park restored as nearly as possible, and if it is the intention of your administration to do so, as I believe it should be, it will be necessary to take certain measures with the view of restraining the public from habits which have been formed gradually, and I suppose at first almost imperceptibly, and to withdraw from public encroachment certain areas for all time, and others for such time as may be found necessary in order to refit them for future use.” (Merkel, p. 4)

Merkel points out that the park was chiefly designed for passive, and not active uses, and advises the park managers to adopt restrictions against “public encroachment” of “active” uses. Presumably Merkel is referring to the growing call for athletic fields. Due to the demand for active recreation space, parks officials had opened the north meadow to cricket matches in 1885, contrary to the Olmsted and Vaux Plan. Although Merkel argues against encroachments to Olmsted’s vision, he does acknowledge the need for playgrounds, which he describes as “greatest recreational need existing today in New York City… which the shortsightedness of former City planners has prevented from being established” (ibid, p.17). Although it’s not clear how Merkel assesses this need, in order to address it Merkel recommends setting aside several small parcels of land, which he describes as “the ultimate concession” (ibid. p. 17). This highlights the important conflict between preservation of the intended design and adaptation to changing user needs – a conflict that continues to present-day. Although in 1927 Merkel used his own judgment on what Central Park ought to be to determine what uses should be permitted, today planners have used information collected from user studies to more empirically address this same issue.

The only exception to the dearth of user studies in early 20th Century New York City seems to be the case of playgrounds, which began appearing throughout the city starting around 1910 thanks to the Playground Movement. Interestingly, because these reformers believed that playgrounds required constant supervision, a staff of playground monitors kept detailed records of attendance at the city’s few playgrounds. This was likely done to help justify the spending of city tax revenue on playgrounds, which up until then had been provided exclusively by private charitable organizations.

To find significant examples of early park user studies, it is necessary to look outside New York City. Although far from commonplace, writings from several parks departments across the country suggest that limited user studies were occasionally conducted as a management practice. For example, the 1916 “Annual Report of the Commissioner of the Parks and Cemeteries” from the town of Saginaw, Michigan includes a report estimating the attendance of athletic games played that year, citing the total number of 74,000 visitors as indication that “everything was pulled off in good shape” (p.9). The report also includes attendance at the city’s public pool, explaining:

“The record of attendance was kept by one of the attendants keeping count of the persons entering the pool on an automatic counter. As this person had other duties to attend to, the figures as shown on the summary of my weekly reports for the Natatorium [indoor pool] are small rather than large, but for comparison with last year, they are about as accurate as last year’s figures” (p. 83).

These numbers, when contrasted with comparable figures...
from the previous year, allowed the city to identify trends in usership:

“The attendance this year was smaller than last year by 15,810, and the total amount collected for the use of the pool evenings and for rental of suits, towels, and lockers was less than last year’s receipts by $161.65. The small attendance this year was due to the rainy cold weather, and the torn-up condition of the Johnson Street Bridge and the walk along Mary Street” (p. 83).

This instance represents a significant example of data being used to understand usership trends. The park managers used comparable data sets to detect a decline in usership, and then used other information to help explain the reasons behind this decline. In this case, the decline could be attributed to forces beyond the park’s control: inclement weather and poor accessibility. Identifying the reasons behind these trends allow the park managers to determine if alarming trends would require action on the part of the commission. Once the reasons behind the trend are identified, subsequent counts could be used to confirm if fine weather and road improvements would actually result in the expected rise in usership.

While the example from Saginaw demonstrates how quantitative numbers were used to track changes after time, other park systems employed qualitative observations of park use to identify trends. While Olmsted had used observations about who was using the parks to dispel criticism, some park managers were using observations about how parks were being used to identify problems in the park’s design and assess the needs of its users. This is made explicitly clear in another Olmsted-designed park in Buffalo, New York, where the 1881 Annual Commissioner’s Report noted:

“On fine days in mid-summer about 5,000 persons enter the Front [Park], more than half of whom are on foot. On such occasions the few benches provided do not accommodate one-tenth of those who may wish to sit down, so, of necessity, most of them squat or recline on the grass, chiefly along the crest of the bluff overlooking the lake and the river. As the plantations of this Park are all of only a few years growth, there is no shade in any part of the grounds. Some house, with at least the simplest accommodations for resting awhile in the shade, is much need by the visitors on foot… [T]he necessity for more land to fully accommodate the public at the point are already fully apparent to the most casual observer” (p.43-48, my emphasis)

Here, the Buffalo Parks system used a different approach than that in Saginaw, noting, “No regular record of the daily number of visitors of the Park has been kept” (p.25). Instead, observations made during field visits revealed unanticipated trends in park use, such as visitors squatting in the grass. In this case, it was “fully apparent” through first-person accounts that the design flaws in Front Park, notably lack of seating and shade, required attention of the commission. This knowledge couldn’t have been learned through gate counts, which only would have indicated high numbers of users. The information gained through these site-visits was used to inform recommendations for physical improvements.

20th Century Decline and Revival – The Loss and Rediscovery of User Studies as Management Practice

In 1934, the New York City Parks Department was streamlined under a single commissioner, Robert Moses, who led the department until 1960. This period was characterized by large-scale physical improvements in Central Park and expansions and re-design of parks
around the city. This type of top-down planning involved little input from constituents, occasionally prompting community opposition. The role of user studies reemerges in the 1960s and 1970s with the emergence of grassroots and non-profit organizations devoted to public places. As an early example, The Park Association of New York City, (now New Yorkers for Parks) reintroduced user studies to park planning by conducting a random survey of park users in September 1962, as a “helpful guide for user action,” acknowledging that “the best possible experts on the subject [are] the people who use them” (Rogers, A., 1962, p. 4). This represents an important trend in bottom-up oriented planning that heavily relied on citizen input. It also recognizes the value of interviews as an effective approach to park management: “The statements are useful not only in showing what is right and wrong about the City’s parks, but also in setting forth a whole range of ideas -- most of them completely practical -- on what people want in their parks” (ibid, p. 4). In this study, the association notes that this type of information was lacking: “up until the time of the survey there had been no reliable information available on citizen desires in park design, and the object of this survey was to fill this gap as an aid to better park design in the future” (ibid, p.5). Interestingly, the study had sought to collect information about “particular items of design,” but in talking to New Yorkers, they accidentally made a more important discovery: “In the quest for [design] information, it turned out that the committee had completely missed the overriding thought in most people’s minds about parks in New York City: People who live in New York City are afraid to use their parks” (ibid, p.6). In the summary that follows, the Parks Association is able to richly describe safety concerns and suggestions from across the city, using actual quotes from park users. This key realization about safety, initially missed by the committee, demonstrated the usefulness of interviews as a planning technique. In addition to safety, the report provides more quantitative results of a questionnaire of changes favored by New Yorkers, allowing them to identify the specific elements of park design that were most preferred, such as “more drinking fountains,” “less paved areas,” “benches facing greenery,” and “grassed areas for sitting” (ibid). This is supplemented by hundreds of comments and suggestions, categorized by each park studied. While it’s not known if the Parks Department, no longer under Moses’ control, took these suggestions to heart, this study proved that interviews with actual parks users was a valuable pursuit with the potential to uncover unexpected and useful information.

The concept of “Privately Owned Public Spaces,” introduced by the 1961 Zoning Ordinance brought much more attention to the design of public spaces. For the first time, public spaces were not primarily created for public enjoyment, but rather for valuable zoning bonuses that allowed developers to build larger buildings in exchange for public space. While this important turning point introduced the city to hundreds of new public spaces, there was no incentive for their developers to ensure these spaces were well-designed or well-used. As a direct result, while working for the New York City Planning Commission in 1969, urbanist William Holly Whyte, began to “wonder how newly planned city spaces were actually working out,” a topic which “had never been studied before” (pps.org). Whyte is often considered the “grandfather” of the study of human behavior in urban settings, and was instrumental in founding the Project for Public Spaces (PPS) in 1975.
The Project for Public Spaces was founded on an ideology contrary to the top-down planning of the previous era; Whyte believed that “design should start with a thorough understanding of the way people use spaces, and the way they would like to use spaces” (pps.org, my emphasis). This created a “mini-revolution” in the planning process that emphasized the importance of studying people.

One of the Project for Public Spaces’ earliest publications was a 1977 study of Greenacre Park by a young college graduate named Amanda Burden. As a popular public space, PPS thought it was an ideal study ground to learn about what makes spaces successful. Their study goals included:

1. To identify the spectrum of people who come to the park.
2. To understand how Greenacre Park is currently being used by visitors.
3. To understand how different design features affect the use of the park” (Burden, 1977, p.4)

Burden’s Greenacre park study is one of the first to explicitly study park users in an effort to understand the relationship between users and the physical design of public space. The report explains:

“Our methodology is based on the premise that by looking at how people respond to a built environment one can determine which design features do or do not satisfy user needs. Through systematic unobtrusive observation of people’s activities within a space, we can determine how a space is being used and analyze how this use relates to the design of the space” (ibid, p. 4)

This provides an early example of how talking to park users is included as part of a methodology for understanding park users. In an attempt to identify what made the park so successful, the Greenacre study uses counts, observations, and interviews to more completely understand who used the park, how, and why. The study is also significant in that it closely relates the park’s use to its design. While the report analyzes the physical design of the park in great detail, each element is considered in relationship to the park’s use.

William H. Whyte’s most famous work, The Social Life of Small Urban Spaces, published in 1980, validates observation, or “people watching” in conjunction with informal interviews as a way to understand public places. These methods had not been tried in American Cities, “[In 1970], direct observation had long been used for the study of people in far off lands. It had not been used to any great extent in the U.S.” (p.10). Whyte employs time-lapse photography as a method of observing users, introducing technological aids to understand park users and offering an appendix of instructions on how to recreate this type of study.
of analysis. (PPS also published a book, “Film in User Analysis” the same year, with detailed instructions on using Super-8 cameras to perform time-lapse photographic analysis) Perhaps the most important finding in Whyte's work was demonstrating that the amount of open space or the amount of benches were not correlated with usership, as might be expected. This proved the important role of high quality design in public spaces. This challenged the “if you build it they will come” mindset that posited any public space would attract people. As an example, Whyte discusses sitting spaces in great detail, explaining the poor relationship between sitting space and park users is because not all sitting space is the same: “[under the current policy], a foot of concrete ledge counts for as much as a foot of comfortable bench space” (p.27). Observations about what types of sitting spaces worked were then used to inform design regulations on for benches: “The 30-inch figure [incentivized in the new zoning] is thoroughly empirical; it is derived from a ledge at 277 Park Avenue, the minimum-depth ledge we came across that was consistently used on both sides” (p.31). Whyte uses the wealth of information he discovers through his observations to build a case for user analysis as a planning technique:

“This is the gap. Rarely will you ever see a plan for a public space that even countenances the possibility that parts of it might not work very well: that calls for experiment and testing, and for post-construction evaluation to see what works well and what doesn’t… There are few [existing spaces] that could not be vastly improved, but rarely is an evaluation undertaken” (p.34).

Whyte's work made a strong argument for future user analyses in plazas, yet this gap persists as the lack of evaluation proves a reoccurring issue in planning. While The Social Life of Small Urban Spaces demonstrated that observation could be a used as a valuable tool to identify design improvements, Whyte studied only small pocket parks and plazas that could be easily observed. However, the same principles and techniques can be adapted for larger urban parks.

In 1976, concern over the deteriorating conditions in Central Park led to a grass roots movement headed by prominent New Yorkers to save the park. With the support of several foundations, Columbia University’s Center for Government Studies conducted a study of Central Park directed by Professor E.S. Savas that included the first user study of the park in a century. Looking beyond the issue of restoring the park's physical conditions, Savas and others raised important questions about the park's constituents and their needs, questioning whether the park's purpose would remain suitable for a changing population of New Yorkers. They asked “What should be the role of the Park in the year 2000? If the residential population of Manhattan continues to decline, and the business-office population grows, does that herald a different use pattern for the Park?” (p. xi). Rather than automatically attempt to restore the park as it was, the authors are cognizant that a changing constituency may have different needs than those imagined by Olmsted over a century prior. In 1970s New York, the fate of Manhattan's residential population was uncertain; the island had lost nearly 30% of its population since 1950 (US Census). Echoing the conflicts of use Merkel discussed 50 years prior and imagining life in 21st Century, they questioned whether the park's passive design would still be appropriate, asking “In the more distant future, will communications technology, automation, and modern
transportation combine to produce such sedentary habits that opportunities for active and vigorous recreation will be in greater demand than the more passive pleasures for which Central Park was designed?” (p. xi). While there would have been no way for the park’s caretakers to understand the need of its future users, (or who they might be) in raising these questions they recognize the importance of understanding the surrounding neighborhoods. The study reinstated the practice of gate counts, and used weekday and weekend numbers to provide the first estimates of the park’s usage since Olmsted’s era. The study also introduced qualitative methods by performing exit-interviews with visitors as they left the park. The numbers, which amounted to an estimated 13 million annual visits, provided an important baseline by to which to someday measure the park’s progress. The interviews provided insight as to which parts of the 843 acres were the most popular, when the peak visitor periods were, and gave a demographic profile of the park’s visitors. Interestingly, the study of the “usage and users” compiled by Columbia business professor Donald E. Sexton found that “the majority of the Park visitors are male [and] more than 40% of visitors are between 16 and 30 years old, [with] about 30% of the Park visitors spend[ing] their time primarily south of 66th Street” (p. 2-1). Professor Sexton’s research included revelations about who was not using the park: “New Yorkers who do not visit the Park are relatively older…” (p. 2-1). Evidently it was important to understand who was being left out, and why. The 1973 study is unique in that it sought to understand not only who was not using the park, but the all-important question of why. To this end, Sexton’s study conducted 650 random telephone interviews with residents of New York City to “determine characteristics of Park users and non-users and elicit attitudes” (p.2-3, my emphasis). This represents a rare incidence of a user study reaching into the community beyond the boundaries of the park to consider those who aren’t visitors. The phone interviews revealed that the most common reasons for non-visitation included lack of time, difficulty of reaching the park, and safety, with “more than one third of the telephone respondents … dissatisfied with Central Park due mainly to issues of safety, noise or cleanliness” (p.2-1). The study uses interview data to conclude, “Although the facts are subject to varying interpretation, the common perception is that Central Park is not very safe” (p.1-7). This informs the park’s managers about areas needing improvement that might not have been apparent by only talking to those who visited the park. As studies would link safety to female visitorship, this information also gives important context to the demographics of the park.

Interestingly, Sexton notes that the results from the phone interviews could have been “weighted by sex, age, race, income, and residence” but this analysis was never completed “due to budget constraints” (p.2-3). He also attributes lack of funding as the reason why interviews could not be conducted at all Park gates. The fact that limited resources diminished both the collection and analysis of this data is an important one, as this is a reoccurring issue today.

The 1985 Central Park User Study - Setting Precedents in Studying Park Users

When the movement to restore Central Park grew into the Central Park Conservancy in 1985, Elizabeth Barlow Rogers compiled the “Management and Restoration Plan” in 1987. While this report studied the physical
conditions of the park, it also included an in-depth “user
census” compiled by CUNY Professor William Kornblum,
which built upon the work that Sexton began in 1973. An
earlier 1982 study by professor Kornblum had used the 1973
numbers as a benchmark. By performing the same analysis
a decade later, he was able to show “a ten percent increase
over 1973 in the number of people on major lawns.” This
positive change provided evidence that the park was steadily
improving. This is especially apparent when considering
that the population of Manhattan and New York City had
dropped approximately 7% and 10%, respectively, during
this same period (US Census). The 1982 study went beyond
user counts:

“[The researchers’] intention was not
only to obtain an overall census of Park
users but also to ascertain their patterns
of coming, going, and roosting within the
Park. To do this, they divided the Park
into ten sectors, each of which was “swept”
by teams of two trained observers during
four distinct time periods… On each
sweep, people were counted and notes
were made of their demographic character,
their precise location and their activities”
(Rogers, p. 24)

It is clear that the study used not only quantitative data,
but qualitative data from observations to develop a more
complete understanding of who used the park, and how
they used it. Just as Olmsted had done a century prior,
planners noted the demographics of the users to test if the
park was actually the democratic place it was designed to
be.

“Park users closely reflect the city’s ethnic
and racial demographics: 55 percent are
White, 20 percent are Black, 19 percent are
Hispanic and 6 percent are Asian… The
demographic similarity of the Park and the
city as a whole in 1982 represents the most
significant development in the 10-year
period between studies. In 1973, blacks
and Hispanics were underrepresented in
the Park. The new racial parity indicates a
basic change in the way the Park is being
used, one that brings it closer to fulfilling
Olmsted’s democratic ideal” (ibid, p.24).

This eloquently demonstrates how demographic
information compared to demographic information in
the city as a whole could be used to test the Olmstedian
ideal. Groups like the Central Park Conservancy, often
led by White, upper-class citizens, have sometimes been
criticized for preserving the best parks for the wealthy.
Without demographic information about the park users,
this is a difficult claim to prove or refute. In this case,
user data could be used to refute this accusation, and
demonstrate substantial improvement had taken place
since the Conservancy had taken over. Importantly, this
study compares the data to the surrounding area to identify
groups that are underrepresented:

“The one remaining disparity between
the Park’s population and that of the
surrounding city is the underrepresentation
of women… One reason is that there are
more organized sports for men. …Women
show up…where they are supervising
young children. ….As it turns out, this
sexual imbalance is common in many
urban public places. Women are more
likely than men to remain at home during
their leisure hours. In any case, other
studies have show that women have an
average of 10 hours a week less free time
than men (Vanek, 1974). Finally women
tend to feel more vulnerable in public
places are less likely to use any park early
and late in the day” (ibid, p.24)

It’s clear that study allowed the Central Park Conservancy
to identify the sexual imbalance, and some possible
explanations. While they noted some national trends
to help explain this phenomenon, the sexual imbalance
suggests that park is still perceived as unsafe. At this time,
William Whyte argued “If a plaza has a markedly lower than average proportion of women, something is wrong” (1980, p.18). With this in mind, the sexual imbalance served as an indicator that women likely feared for their safety in the Park. And with good reason too; two years after this study, 28-year-old Trisha Meili became famous as “The Central Park Jogger” when she was brutally raped and beaten on April 19, 1989, raising attention to the issue of safety in the park. Safety is recognized as a concern, and the managers turn to interview data to qualify the perception of safety.

Although the sexual imbalance indicated strong concerns, even in the ’80s some improvement was made evident through the user-interviews: “The perception [is] that the park is safer now than it used to be. In 1973, 13 percent of those interviewed said they thought the Park was ‘safer than two years ago’; in 1982, 30 percent thought so” (ibid, p.30). This study demonstrates the value of gender statistics as an important indicator of perceived safety. Even today, the managers of Bryant Park, once a notorious drug den, constantly monitor the number of women using the park (Gardner, 2010). This study reveals that once these concerns are identified, information from other sources such as interviews can be used to measure these issues and track change over time. Because crime was identified as such a prevalent issue, the 1982 study used interviews as a tool to better understand the this complex issue, noting the places within Central Park that visitors said they most avoided, which included Conservancy Garden, the North Meadow and the Harlem Meer. This provided specific areas for targeted improvements. Importantly, this also demonstrates how interviews can be used in large urban parks to identify spatial trends in certain areas.

This study is also significant in that it uses data collected about users to identify design changes that are required, explicitly showing the link between data collection and identifying the need for physical improvements. “Approximately 2 percent of the visitors are physically handicapped – a percentage that translates to upwards of 1,000 handicapped people on an average Sunday. This number eloquently confirms the need for barrier-free facilities” (ibid p.24).

One of the most interesting aspects of this study is how it employs user-data to address the question of the park’s purpose. The question of active versus passive uses has been a debate in Central Park dating to its inception. In the 1920s, Merkel strongly opposed the introduction of active uses, while in the 1970s, activists pondered whether the park’s passive design was still appropriate for a changing city. To help address this question, the studies in the 1980s attempted to analyze data on park use to determine if the park was still meeting the needs of its constituents. This involved a complex system of categorizing uses: “The standard dichotomy of ‘passive versus active’ recreation hardly begins to describe the way people use Central Park. When visitors were asked what they did in the Park, their answers required more than 60 coding categories” (ibid. p 24). The resulting statistics proved that 80% of users participated in passive uses and 20% participated in active uses, with no significant difference between weekends and weekdays. These statistics are used to demonstrate that, rather than being obsolete, Central Park is still being used in the way it was intended: “The striking fact is that virtually all of the most popular activities were observe in Central Park today were going on in it before the turn of the
Importantly, this study uses this data to acknowledge the fact the needs of these passive users have been overlooked. “Because the large constituency of [the 80 percent of visitors who use it for passive activities] is unorganized and less vocal than other interest groups, their needs have been insufficiently taken into consideration in the past” (ibid, p.24). Here, the researchers draw a critical distinction between the vocal interest groups and the majority of users, finding that the most organized groups aren’t necessarily representative of the majority of park users, or advocating for their needs. This highlights the value of user data in identifying who comprises the majority of users; a theme that continues to be important. While the statistical data proves that the majority of users are passive, the study uses observation data to establish that the need for more recreation space. “To grasp … the very real needs…for more vigorous forms of recreation… one needs to observe the existing sports areas of Central Park today. The Park’s playing fields are reserved to capacity during the most…prime hours” (ibid. p.26, my emphasis). While the 80% statistic demonstrates that the vast majority of users come to the park to participate in passive uses, observations suggest there is still a strong demand for active space. Rather than simply supply more active space to meet this demand, the managers are able to employ usage statistics and observations about athletic fields to inform their decisions: “These popular [active] sections of the Park are vibrant with activity some of the time but seem forlorn and vacant at other times because they are ‘off limits’ to the general visitor, whose schedule of Park use is less precise but whose overall need is greater” (ibid, p.26).

Although observations are used to confirm a need for active recreation throughout the city, usage statistics allow the park managers to empirically identify passive recreation as the “greater need,” and prioritize the allocation of space. This clearly demonstrates how user data can be effectively used to balance competing interests.

Because historical statistics of the parks use are not available for comparison, the study employs an interesting qualitative method by juxtaposing historical photos of park users with present-day photos to compare how the uses have changed. This technique is used to demonstrate, in the case of Central Park, the uses are remarkably similar and little has changed: “The uses of Central Park have remained constant over the last 125 years” (ibid, p. 25). The park’s managers use this to visually document how the park continues to be used in the way it was designed, and how it still meets the needs of those that use it. While this method is not quite as precise as the statistics, it uses historical photographs as a substitute for usage observations. This approach allows planners to visualize and understand how uses have changed when no formal count data is available. While in Central Park the same uses could be photographed a hundred years apart, this would not necessarily be true for other public spaces that have experienced change. The role of photographs to understand park users is discussed later.

The 1985 study is significant in that considered the effect of space, mapping trends in use over the park’s acreage to understand which areas were most heavily used for passive and active uses. These activities were also mapped over time, creating a complete picture of the park’s daily rhythm: “The data compiled by the user studies of Central Park prove an hour-by-hour views of the ebb and flow within its borders. It is a remarkable human ballet…” (ibid, p. 27) This acknowledged that not all areas of the
park are used the same, and enabled the managers to detect important patterns in usage, such as when the athletic facilities reach capacity, which times and locations are the most popular for families or solitary visitors, and when the peak use occurs. As the park struggled with overuse as “of the most pressing problems” and sought to “improve the least visited areas,” (ibid p. 21) this information was crucial in identifying which areas were underused and overused. Data from interviews and observations was used in conjunction to help explain these trends and shed light on the reasons behind these patterns.

Given the wealth of information derived from this user study and its implications for the park’s restoration plan, it should be no surprise that the authors of the study named “User Studies as a Routine Practice” as their number one recommendation for the park. In the section of “Goals, Priorities, and Recommendations,” the authors eloquently recognize the value of conducting user studies as standard practice:

More important than any single recommendation derived from the recent user studies of Central Park is the recognition that user studies themselves are an invaluable tool for planning. They should once again become a routine management function in Central Park. This is the best way to assess the needs, desires and attitudes of the Park’s constituency on a continuing basis (ibid, p. 31, My emphasis).

True to this notion, the Central Park Conservancy continues to conduct user studies on a somewhat regular basis, with the most recent and comprehensive report published in 2011. While this clearly establishes the value of user studies as a planning tool in Central Park, they have infrequently been conducted elsewhere as a routine function.

Appendix B: Supplemental User Data from Brooklyn Bridge Park

The 2011 Brooklyn Bridge Park User Study included much user data that is not discussed in this thesis, either because the results were not determined to be especially meaningful, there was not enough context to draw significant conclusions, or because it was not clear how the information could be used to inform the planning process. A sample of the results from that data is presented here in the hope that it may yet produce meaningful findings or provide valuable comparisons for future research.
25% of park visitors come from zip code 11201

8% of park visitors come from other local neighborhoods
   25% live nearby

32% of park visitors come from other parts of Brooklyn
   33% are local residents

14% of park visitors come from other parts of New York City
   65% are Brooklynites

9% of park visitors come from other parts of the United States
   79% are New Yorkers

12% of park visitors come from other countries
   88% are Americans
International Visitors to Brooklyn Bridge Park
Summer 2011

<table>
<thead>
<tr>
<th>Country</th>
<th>Visitors</th>
</tr>
</thead>
<tbody>
<tr>
<td>France</td>
<td>18</td>
</tr>
<tr>
<td>Germany</td>
<td>17</td>
</tr>
<tr>
<td>Australia</td>
<td>7</td>
</tr>
<tr>
<td>Netherlands</td>
<td>7</td>
</tr>
<tr>
<td>Spain</td>
<td>6</td>
</tr>
<tr>
<td>United Kingdom</td>
<td>7</td>
</tr>
<tr>
<td>Belgium</td>
<td>4</td>
</tr>
<tr>
<td>Canada</td>
<td>4</td>
</tr>
<tr>
<td>Finland</td>
<td>4</td>
</tr>
<tr>
<td>Italy</td>
<td>4</td>
</tr>
<tr>
<td>Russia</td>
<td>4</td>
</tr>
<tr>
<td>Trinidad &amp; Tobago</td>
<td>3</td>
</tr>
<tr>
<td>Argentina</td>
<td>2</td>
</tr>
<tr>
<td>Brazil</td>
<td>2</td>
</tr>
<tr>
<td>China</td>
<td>2</td>
</tr>
<tr>
<td>Guyana</td>
<td>3</td>
</tr>
<tr>
<td>Jamaica</td>
<td>3</td>
</tr>
<tr>
<td>Sweden</td>
<td>3</td>
</tr>
<tr>
<td>Austria</td>
<td>3</td>
</tr>
<tr>
<td>Barbados</td>
<td>3</td>
</tr>
<tr>
<td>Colombia</td>
<td>3</td>
</tr>
<tr>
<td>Denmark</td>
<td>3</td>
</tr>
<tr>
<td>Haiti</td>
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<tr>
<td>Ireland</td>
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<td>Israel</td>
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<tr>
<td>Mexico</td>
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<tr>
<td>Norway</td>
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<td>Poland</td>
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</tr>
<tr>
<td>Puerto Rico</td>
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<tr>
<td>Senegal</td>
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<tr>
<td>Singapore</td>
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<td>Slovenia</td>
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</tr>
<tr>
<td>South Korea</td>
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<tr>
<td>Switzerland</td>
<td>3</td>
</tr>
<tr>
<td>Togo</td>
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</tr>
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<td>Total</td>
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</table>

<table>
<thead>
<tr>
<th>Country</th>
<th>Percentage of Int'l Visitors</th>
</tr>
</thead>
<tbody>
<tr>
<td>France</td>
<td>0%</td>
</tr>
<tr>
<td>Germany</td>
<td>0%</td>
</tr>
<tr>
<td>Australia</td>
<td>0.01% - 0.93%</td>
</tr>
<tr>
<td>Netherlands</td>
<td>0.94% - 1.85%</td>
</tr>
<tr>
<td>Spain</td>
<td>1.86% - 2.78%</td>
</tr>
<tr>
<td>United Kingdom</td>
<td>2.79% - 3.7%</td>
</tr>
<tr>
<td>Belgium</td>
<td>3.71% - 4.63%</td>
</tr>
<tr>
<td>Canada</td>
<td>4.64% - 6.48%</td>
</tr>
<tr>
<td>Finland</td>
<td>6.49% - 16.67%</td>
</tr>
</tbody>
</table>

Legend:
- Europe
- North America
- South America
- Oceania
- Asia
- Africa & Middle East
BROOKLYN BRIDGE PARK USER COUNT

Saturday, July 9th 2011 & Sunday, July 10th 2011

Over 100 volunteers from New York Cares and One Brick monitored all park entrances and exits from 8:00am to 10:00pm

It was a beautiful, 78 degree, partly cloudy weekend with regular programs but no large-scale events
BROOKLYN BRIDGE PARK USER COUNT

Saturday, July 9th 2011

30,131 Visits

- Pier 6: 26%
- Pier 1: 55%
- Main St: 19%

Sunday, July 10th 2011

33,277 Visits

- Pier 6: 29%
- Pier 1: 54%
- Main St: 17%

Visitorship has more than doubled since last summer, when we estimated 10,000 - 12,000 on a weekend day.
BROOKLYN BRIDGE PARK USER COUNT

Volume Over Time

Saturday, July 9th 2011

3,975 – 5:15pm

Sunday July 10th 2011

6,380 – 4:30pm
Are you a parent or caregiver?

- Pier 1: 27% Yes, 73% No
- Pier 6: 27% Yes, 73% No
- Main St: 34% Yes, 66% No

Are your children with you?

- Pier 1: 25% Yes, 75% No
- Pier 6: 6% Yes, 94% No
- Main St: 47% Yes, 53% No
Understanding Park Usership

**Income**

- Under $25,000: 19%
- $25,000-$60,000: 33%
- $61,000-$100,000: 31%
- $100,000+: 17%

**Race**

- White: 52%
- Black: 10%
- Asian: 11%
- Hispanic: 11%
- Native American: 0%
- Mixed Race: 7%

**Pier 1: Income**

- Under $25,000: 17%
- $25,000-$60,000: 20%
- $61,000-$100,000: 34%
- $100,000+: 39%

**Pier 1: Race**

- White: 50%
- Black: 15%
- Asian: 11%
- Hispanic: 11%
- Native American: 0%
- Mixed Race: 8%

**Pier 6: Income**

- Under $25,000: 27%
- $25,000-$60,000: 36%
- $61,000-$100,000: 16%
- $100,000+: 13%

**Pier 6: Race**

- White: 62%
- Black: 8%
- Asian: 9%
- Hispanic: 15%
- Native American: 0%
- Mixed Race: 6%

**Main St: Income**

- Under $25,000: 15%
- $25,000-$60,000: 38%
- $61,000-$100,000: 30%
- $100,000+: 17%

**Main St: Race**

- White: 48%
- Black: 10%
- Asian: 12%
- Hispanic: 22%
- Native American: 8%
- Mixed Race: 0%
Understanding Park Usership
Understanding Park Usership

**Popularity Index: 50-64**

- Recreation
- Outdoor Movies
- Children’s Events
- Playgrounds
- Food and Drink
- Astronomy
- Sports Facilities
- Dog Runs
- Horticulture
- Historic Boats
- Signage
- Ice Rink
- Book Readings
- Weekend Events
- Daytime Events
- Evening Events

**Popularity Index: 65 or Over**

- Recreation
- Outdoor Movies
- Children’s Events
- Playgrounds
- Food and Drink
- Astronomy
- Sports Facilities
- Dog Runs
- Horticulture
- Historic Boats
- Signage
- Ice Rink
- Book Readings
- Weekend Events
- Daytime Events
- Evening Events
Appendix C: The Role of Spatial Data

This paper explores the role of spatial data in understanding park usership by analyzing the spatial data collected from park users in the course of the 2011 Brooklyn Bridge Park user study. While this research is directly related to the subject of this thesis, the following paper is an independent document prepared for an advanced GIS class. This research was completed after the thesis was defended, and has not been reviewed by the thesis jury. It is presented here only as an informational supplement to expand the on section “Spatially Mapping Users – The Role of User Studies in Understanding Patterns” and illustrate the practical and theoretical uses of spatially analyzing park usership.
The Role of Spatial Data in UNDERSTANDING PARK USERSHIP

Alex Wallach
Advanced GIS
Spring 2012
Introduction

New York City spends millions of dollars, maintaining, upgrading and expanding its park system, but how these spaces are used is not well understood. Studies of park users, either through surveys, counts, and observations, are routinely conducted in just 4% of City parkland. Yet planners are increasingly realizing the value of user information in informing the park planning process. My thesis explored the role of user studies in the park planning process, and found that data collected about users can be extremely useful in identifying underrepresented demographics, dangerous misuse, and design problems that may otherwise go unnoticed. This project examines the role that spatial data about park users can play in understanding park usership. Of the few parks that study their usership, only the Central Park Conservancy collects spatial data about where users live. Analyzing spatial trends in usership can shed light on how neighborhoods are served by public space. It is generally though that neighborhood parks attract visitors within a short walking distance, but this is not well documented. Nor is the effect of larger, regional parks. This is crucially important as planners attempt to ensure that all neighborhoods are well served by open space. The City Environmental Quality Review (CEQR) manual has developed a methodology for identifying neighborhoods that are considered well-served and underserved, but without studying park users, this cannot be tested. In addition to the need for open space, this has implications for development, since “underserved” neighborhoods have lower thresholds for new construction before open space assessments would be required. Identifying how neighborhoods use parks is especially important to park planners of regional parks, who work to ensure that their spaces serve a wide audience.
Literature Review

Studies of park usership have a long, and often overlooked history. When Central Park was first opened in 1863, Frederick Law Olmsted kept detailed gate counts to and used first-hand observations to better understand who was visiting the park and how it was being used. Data included how many users entered at every gate, during which month, and using what mode of information. Park keepers also collected some spatial information, keeping records of attendance at the different park entrances. This information allowed planners to begin to understand how different neighborhoods were using the park by comparing visitors at entrances in Midtown, the Upper West Side, the Upper East Side, and Harlem. However, this fell out of practice in 1873 after just one decade of counts, and it would an entire century before any New York park would undertake a serious comprehensive study to understand how it was being used.

| Table of the Number of Visitors at each entrance of the Park for each month during the year. |

| FEDESTRANTS. |

<table>
<thead>
<tr>
<th>Months</th>
<th>58th and 6th ave.</th>
<th>72nd and 5th ave.</th>
<th>79th and 6th ave.</th>
<th>86th and 9th ave.</th>
<th>93rd and 6th ave.</th>
<th>99th and 9th ave.</th>
<th>106th and 10th ave.</th>
</tr>
</thead>
<tbody>
<tr>
<td>January</td>
<td>49,352</td>
<td>6,480</td>
<td>20,880</td>
<td>12,454</td>
<td>1,190</td>
<td>51,406</td>
<td>25,335</td>
</tr>
<tr>
<td>February</td>
<td>33,661</td>
<td>3,401</td>
<td>8,827</td>
<td>6,431</td>
<td>1,353</td>
<td>27,261</td>
<td>16,409</td>
</tr>
<tr>
<td>March</td>
<td>23,037</td>
<td>4,273</td>
<td>6,391</td>
<td>5,783</td>
<td>1,44</td>
<td>19,102</td>
<td>16,614</td>
</tr>
<tr>
<td>April</td>
<td>60,990</td>
<td>10,713</td>
<td>8,682</td>
<td>2,45</td>
<td>11,301</td>
<td>55,610</td>
<td>31,135</td>
</tr>
<tr>
<td>May</td>
<td>54,471</td>
<td>10,679</td>
<td>8,379</td>
<td>3,666</td>
<td>11,750</td>
<td>42,592</td>
<td>54,550</td>
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<tr>
<td>June</td>
<td>92,041</td>
<td>21,563</td>
<td>12,979</td>
<td>3,084</td>
<td>56,131</td>
<td>78,683</td>
<td>78,668</td>
</tr>
<tr>
<td>July</td>
<td>116,206</td>
<td>22,063</td>
<td>17,598</td>
<td>5,161</td>
<td>62,660</td>
<td>71,850</td>
<td>100,622</td>
</tr>
<tr>
<td>August</td>
<td>76,219</td>
<td>54,254</td>
<td>18,464</td>
<td>5,650</td>
<td>49,604</td>
<td>88,224</td>
<td>102,545</td>
</tr>
<tr>
<td>September</td>
<td>68,298</td>
<td>17,959</td>
<td>19,380</td>
<td>4,770</td>
<td>26,229</td>
<td>89,990</td>
<td>65,150</td>
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<tr>
<td>October</td>
<td>67,708</td>
<td>10,012</td>
<td>7,818</td>
<td>3,886</td>
<td>19,410</td>
<td>57,124</td>
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</tr>
<tr>
<td>November</td>
<td>43,145</td>
<td>7,888</td>
<td>5,154</td>
<td>2,571</td>
<td>20,960</td>
<td>16,858</td>
<td>19,256</td>
</tr>
<tr>
<td>December</td>
<td>22,409</td>
<td>4,874</td>
<td>3,637</td>
<td>1,486</td>
<td>17,616</td>
<td>8,199</td>
<td>7,578</td>
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<tr>
<td>Totals</td>
<td>714,497</td>
<td>102,079</td>
<td>134,925</td>
<td>58,316</td>
<td>279,101</td>
<td>320,792</td>
<td>351,726</td>
</tr>
</tbody>
</table>

The one notable exception to this lack of user studies was the opening of Central Park's Heckscher Playground in 1926. When multimillionaire philanthropist August Heckscher proposed donating the first playground to the park, opponents argued that Central park was not the best
location for a playground because it couldn’t serve the children of poor who needed it most, and who mainly lived in tenement districts far south of the Park. Interestingly, Heckscher was well aware of this fact; he was already funding local playgrounds in poor neighborhoods, and simply wanted to place a playground in view of the city’s wealthiest residents in hopes that they too would donate money for playgrounds. When the controversial playground in Central Park eventually opened to massive crowds, urban planners collected spatial information from visitors in order to understand how the park was being used by surrounding neighborhoods. This early study provided interesting and unexpected results:

“Unlike most urban playgrounds, which drew children from the nearest blocks, Heckscher playground attracted 90% of its children from more than a mile away. More residents of a single block in working-class Yorkville, three-quarters of a mile away, used the Heckscher Playground than the residents of the wealthy eastern perimeter.”

This early example of a spatial study of park users proved that the distribution of visitors did not follow the expected pattern. This finding suggested that poorer families were more in demand of playgrounds, and travelled distances to reach them.

Much of the research on public space usership was sparked by William Holly White in 1979, who demonstrated that observation and interviews of plaza-users could reveal important flaws in their design. In the 1980s and 1990s, many parks, especially those with conservancies, began studying park users through counts, surveys, observations, and interviews. After 100 years, Central Park once again began conducting gate counts. While many parks have begun to use demographic information to understand if certain groups are being underrepresented in public spaces, very few have looked at spatial trends to determine if certain neighborhoods are being underserved by parks. In the 1976 study of central park, the researchers produced crude hand-drawn maps of Manhattan and noted how many telephone interviews were conducted in each part of the island in attempt to understand any spatial differences in the interview responses.
Subsequent studies of Central Park in 1985 and 2011 recorded what parts of Manhattan visitors came from, and used population data to determine at what rates different areas used the park. The 2011 report of Central Park usership represents the most substantial effort to map spatial patterns in park usership. This research used year-round data of park visitation to estimate the annual number of park visitors for each area. However, this study used large aggregated areas like “The Upper West Side,” which did not provide fine-grain neighborhood-level results. The smallest-level geography that the data was collected was by Zip Code. Because the results were aggregated by such large areas, the data was limited to raw numbers of total visitation and “Visits per Resident,” or VPR. This type of analysis permitted park planners to understand which neighborhoods were most served by the park—information which could be used in their programming and outreach efforts.
Figure 9.5 - MANHATTAN RESIDENTS IN CENTRAL PARK
Estimated Total Annual Visits and Visits per Resident (VPR) by Neighborhood
Figure 9.6 - MANHATTAN RESIDENTS IN CENTRAL PARK
Estimated Total Annual Visits and Visits per Resident (VPR) by Zip Code

(Note: * indicates fewer than 50,000 estimated annual visits)
Case Study: Brooklyn Bridge Park

In January 2008, construction officially began on transforming 1.3 miles of abandoned industrial piers on Brooklyn’s East River waterfront into Brooklyn Bridge Park. The park, designed by Michael Van Valkenburgh, represents the largest park to be built in the borough since Prospect Park. Brooklyn Bridge Park continues to be constructed in phases, and construction is expected to continue in through 2013 as funding sources are identified. When the first parts of the park first opened to the public in the summer of 2010, park managers undertook an effort to survey park visitors in order to better understand how the new park was being used. In the summer of 2011, I worked for Brooklyn Bridge Park to help coordinate their second-ever park-wide intercept
survey campaign, which collected over 1,200 survey responses from park users between June and August. The collection of this data was an enormous undertaking, and required every response to be administered by a surveyor, and then manually coded. Yet these results represent only a small sample of the park’s usership, which was estimated through park counts at 15,000 visitors every summer weekday, and 30,000 visitors on a summer Saturday or Sunday. These surveys collected demographic information, reasons for visiting, preferences, open-ended comments, and general information from park users. I advocated that the park also collect geographic information from park users to better understand spatial usage trends. Just as in Central Park, the Brooklyn Bridge Park survey asked residents for their Zip Code, and received 1,192 responses, with 979 Zip Code responses in New York City. The overall numbers of visitors were joined to shapefiles of NYC Zip Codes, which provides a large sample of aggregated data. In order to perform a more fine-grain analysis, the Brooklyn Bridge Park Survey asked for actual addresses of park users, collecting 317 addresses, 264 of which were located in the five boroughs. These were geocoded using LION, creating individual separate points for each visitor. Although this sample is smaller, each of these points contains all of the data collected during the survey. This allows attributes to be queried, and enables a more detailed analysis beyond visits per zip code. This unparalleled body of data represents a unique opportunity to examine neighborhood-level spatial trends in park usership and test the city’s methodology for assessing well-served and underserved areas.
Zip Code Analysis

First, the total sample of usership data was analyzed by Zip Code, presented in a pie chart below. In the spreadsheet of coded responses, “IF” statements were used to count the number of Zip codes in specified ranges that corresponded to geographies such as Brooklyn, New York City, New York State, etc. Those who listed their residence as international countries were given a dummy Zip Code of “0” so they would not be omitted with “no data” responses. Next, the table of New York City Zip code usership was joined to a shapefile of current NYC boundaries to produce a map that would visualize usership in all of New York City. This is more comprehensive than the Central Park study, which only mapped Manhattan visitors. Unlike that study, however, this map only displays the amount of visitors recorded in one summer of surveying, rather than an estimate of annual visitors. Because Brooklyn Bridge Park only has user data for one summer, they are currently unable to accurately estimate annual usership. As a result of the sample size, some zip codes, mostly in parts of Queens, The Bronx, and Staten Island recorded zero visitors. Future studies will add to the sample size, and be provide a more complete picture of park use within the city. Through

![Pie Chart of Residence](image)
interviews with the managers of Brooklyn Bridge Park, it became clear that this information was extremely valuable. They explained that in order to apply for grants and solicit donations, they had to prove that they were more than just a local park for Brooklyn Heights. Park managers explained that being able to prove that over 75% of all visitors (and over 70% of New York City visitors) come from outside the park’s Zip Code is extremely valuable in demonstrating how Brooklyn Bridge Park also serves as a regional park.

In order to produce a more meaningful choropleth map of usership, these numbers needed to be normalized. Following the precedent of the Central Park study, the amount of visitors per Zipcode was normalized by the population of the Zipcode. Population was not recorded in the 2010 census by Zip code, so the Identity tool was used on census blocks to conform them to the zip code boundaries. A proportional split was used to estimate population in each truncated census block group, followed by a spatial join to the Zip code which summed the population of all underlying block groups, or parts thereof. This produced a fairly accurate estimation of the population of each Zip code. Because the amount of recorded visits was so small compared to the population, the data is normalized as recorded visits per 10,000 residents, rather annual visits per resident, as in the Central Park Study. The results (right) do not differ greatly from the raw numbers simple because Zip Codes have similar populations. However, this map does show that usership is highest in northern and western parts of Brooklyn, and especially in Zip codes directly east of the park.
To take the methodology of the Central park study further, the next step involved using spatial statistics to perform a Hot Spot Analysis (Getis-Ord Gi*) of New York City Zip Codes, based on the number of recorded visits. This analysis identified a hotspot that included most of the Zip Codes in Brooklyn, with the most statistically significant clustering in Zip Codes closest to the park. This confirms what the park managers said, that the park is predominantly a regional park for Brooklyn. Similarly, the Zip code analysis shows that 68% of all visitors are from Brooklyn.
Zip Code Hotspots

- < -2.58 Std. Dev.
- -2.58 - -1.96 Std. Dev.
- -1.96 - -1.65 Std. Dev.
- -1.65 - 1.65 Std. Dev.
- 1.65 - 1.96 Std. Dev.
- 1.96 - 2.58 Std. Dev.
- > 2.58 Std. Dev.
Citywide Point Analysis

Because the Zip code maps and hotspot analysis looked at the city in large, somewhat meaningless aggregated areas, the next step was to analyze the citywide visitor point data (right) in order to produce a more detailed service area for the park that could be used understand neighborhood-level patterns and test the city’s methodology for identifying well-served areas. Simply mapping this data proved extremely valuable to park managers. When the visitors who indicated they walked to the park were displayed spatially, we reasonably expected to see only points within 1 mile of the park. Instead, so-called “walkers” came from all parts of the city, including Far Rockaway and The Bronx. Anecdotally, we know that this is not the case. However, this unexpected trend revealed that questions were not being interpreted the way the planners had imagined. For example, if someone rode the subway from The Bronx, then walked for 10 minutes to the park, park managers would consider this a subway trip, since subway was the primary mode of transit, and everyone needs to walk from the subway exit to the park. Yet in these cases, the visitor often indicated that they walked. Other cases were more complex. What about a visitor who lives in Far Rockaway, drives to work in downtown Brooklyn, takes the subway to a deli in DUMBO on their break, and walks to the park to eat their lunch? They might logically state that they had walked to the park, yet the data makes it look like they walked from Far Rockaway, since that is all the information available. In this way, mapping out park visitors revealed important limitations of the park data. The park managers were very eager to understand how users were accessing the space; yet these maps show that the answer is far more complex that the numbers makes it appear.

Spatial statistics confirm that the point data of visitors exhibits a high degree of clustering. To perform a hotspot analysis, these points were spatially joined to Census blocks, the smallest level geography available. The Getis-Ord Gi* was then performed on the census blocks, based on the total number of visitors from each block. The resulting analysis revealed a large, circular hotspot centered on the park that incorporated all of northwest Brooklyn and parts of lower Manhattan.
Advanced GIS

GiZScore

- < -2.58 Std. Dev.
- -2.58 - -1.96 Std. Dev.
- -1.96 - -1.65 Std. Dev.
- -1.65 - 1.65 Std. Dev.
- 1.65 - 1.96 Std. Dev.
- 1.96 - 2.58 Std. Dev.
- > 2.58 Std. Dev.
The Hotspot reaches about 5 miles into Brooklyn, in all directions from the park. Interestingly, the distant Upper West Side and Upper East Side showed some statistically significant clustering of usership, which is apparent from looking at the point data. Cold spots appear where they might be expected, in the most distant parts of Queens, in the east Bronx, and in Staten Island. While the boundaries of this hotspot analysis are not dictated by zip code boundaries, this city-wide analysis still reveals broad citywide trends, rather than neighborhood-level use.

**Local Point Analysis**

In order to provide a more nuanced spatial analysis that would reveal how the park served Brooklyn neighborhoods, I next ran the Getis-Ord Gi* only on points located in the borough of Brooklyn, again spatially joined to census blocks. The resulting hotspot analysis (right) showed a hotspot centered on the park that stretched along the east river waterfront from about the Brooklyn-Battery-Tunnel one mile to the south, and to the Brooklyn Navy Yard one mile to the north. Rather than extending 1 mile to the east and forming a circular area, the hotspot extends nearly three miles into Central Brooklyn, all the way to Parkside Avenue at the southern edge of Prospect Park. As might be expected, Cold spots are in the most distant parts of Brooklyn farthest from the park. The one notable exception to this trend is the cold spot at the waterfront neighborhoods of Williamsburg and Greenpoint, just two miles north of Brooklyn Bridge Park, and just .5 miles from the edge of the hotspot.
Hotspot Analysis and Underserved Neighborhoods

Once I had performed a local hotspot analysis that identified an area that is well-served by Brooklyn Bridge Park, I wanted to see if there was any correlation to neighborhoods considered by the CEQR manual to be underserved by parks. According to the manual, these areas were identified as neighborhoods with the highest population density and the greatest distance to parkland. However, it is not exactly clear how this analysis was performed, since the city’s neighborhood boundaries (available through Bytes of the Big Apple) excludes all large parks. For example, if acres per residents was calculated along these boundaries, areas like the Upper West Side appear devoid of parkland because Central Park is not included in its boundaries. The boundaries of these underserved areas are also not available for download as shapefiles, and can only be viewed as individual .pdf maps, all oriented at different scales and angles. In order for these neighborhoods to be overlaid on the map of Brooklyn (right), each .pdf document had to be individually converted to a .jpg format, imported into ArcMap, georeferenced, and on-screen digitized. This allowed the 13 “underserved” neighborhoods in Brooklyn to be visualized in relation to one another on the same map with Brooklyn Parks, rather than 13 piecemeal maps that were difficult to read.
These underserved neighborhoods are scattered throughout Brooklyn, with most of them in areas with little statistical significant Brooklyn Bridge Park usership. However, the three closest neighborhoods to Brooklyn Bridge Park all relate to the Hotspot analysis. Greenpoint overlaps with the coldspot at Greenpoint/Williamsburg, indicating that parts of this underserved area are also underserved by Brooklyn Bridge Park. On the contrary, Gowanus overlaps with the hotspot, suggesting that parts of this neighborhood are well served by Brooklyn Bridge Park. Most noticeable is Crown Heights, where practically every census block, and much of the surrounding ones, are included in the hotspot. This suggests that this entire “underserved neighborhood” is well served by Brooklyn Bridge Park. This is extremely valuable information to the park’s managers, who work to ensure that the park provides equitable space for diverse users, especially those in neighborhoods where park space is lacking. In interviews with park mangers, they repeatedly named the Red Hook neighborhood as area they would like to see better represented in the park, since it was a poorer neighborhood in close proximity to the park. Managers experienced frustration that visitorship from Red Hook remained low, and saw this as a challenge to their outreach strategy. The point data shows that visitorship sharply declines on this side of the Brooklyn-Battery Tunnel. However, the hotspot analysis and CEQR open space maps tell a very different story. First of all, Red Hook is not a coldspot by any means; it is split between nonsignificant area and the hotspot, where usership is significantly clustered. More importantly, the CEQR open space maps identify Red Hook as an area that is actually well-served by parks, due its close proximity to the 58-acre Red Hook Recreation Area. (Other well-served areas, mostly in distant parts of Brooklyn, were not mapped) This suggests that Red Hook should not be a neighborhood of concern for park managers. Instead, park resources would likely be better devoted to engaging neighborhoods such as Gowanus and Crown Heights, which are defined as underserved, and in close proximity to the park. The spatial analysis shows that the park is already reaching these areas. Neighborhoods like Greenpoint present a greater challenge, and may be better served by other, closer parks. It is undoubtedly a
positive thing that residents of Crown Heights are taking advantage of all Brooklyn Bridge Park has to offer. Knowing this, the next logical question raised by this analysis would be, “is Crown Heights really underserved by parks?” Given that this data shows residents from this area are significantly using Brooklyn Bridge Park, and the neighborhood is just blocks from Prospect Park, it may be that Crown Heights is simply not as undeserved as previously believed. This analysis of actual user data suggests that the city’s methodology may have erroneously identified this neighborhood as underserved by open space. Further research of this neighborhood, including user data from nearby Prospect Park, could be used to address this question, since the “underserved” designation has important implications for the future of development of this neighborhood.

Hotspot Analysis and Transportation Access

The hotspot analysis reveals that factors besides distance play a role in park visitation. Williamsburg and Crown Heights are approximately the same distance from the park, yet the former shows extremely low use, and the latter the opposite. Overlying subway lines over the spatial analysis helps to explain this trend. Brooklyn Bridge Park is most easily accessed by the A,C,2 and 3 trains, and is not far from the F line. (Other lines, such as the 4, 5, R, B, and G, stop quite far from the park, although they pass underneath it). The map on the right shows how the A,C,2,3, and F lines all traverse the hotspot area. Residents in hotspot areas like Crown Heights can easily reach the park directly by the A,C,2, or 3 lines in about 3 stops, while residents from coldspots like Williamsburg would need to transfer trains with about 8 stops, or switch to a bus to make the same journey. Access to public transportation helps to explain the spatial trends in park usership. While it’s evident that people use parks that are closest to them, this suggests that people are willing to travel to use larger, regional parks when public transit is easily accessible. This means that the city should also consider transit access to parks when determining which neighborhoods are well-served. Additionally, convenient transit routes may be part of the solution to ensuring that every New Yorker has access to open space, in addition to creating more parkland.
Recreating the CEQR Well-Served Area

Now that the hotspot analysis revealed the area that is most well-served by the park, I wanted to see how this compared to the city’s methodology for determining well-served neighborhoods, as defined by the CEQR manual. According to this manual, well-served areas are identified by census blocks that are located within walking distance (.25 miles) from a park entrance. In the case of Brooklyn Bridge Park, there are just three main entry points to the park because the Brooklyn-Queens Expressway (BQE) forms a barrier the length of the park. While each pier technically has more than one entrance, these are essentially adjacent to one another, and for the purposes of this analysis, are considered as one entrance. To determine walking distance, a street network was built using only walkable streets in Brooklyn. Entry points were then snapped to the streets, and loaded as facilities. Using distance as impedance, a service area of .25 miles was created from each park entrance. Although the network only included streets that crossed under the BQE, the service area expands in all directions from roads, sometimes assuming that someone could walk cross it in some locations, resulting in a slight overestimation of a .25 mile walk. Census blocks that intersected the service area polygon were selected to form the city’s definition of a “well-served areas.” The resulting multipart polygon (right) is an extremely limited area. Because of the unique site conditions of Brooklyn Bridge Park, this area does not include parts of Brooklyn Heights directly adjacent to the park because they are located too far from an entrance. Even this overestimation greatly underestimates park use from surrounding areas, which are much further than .25 miles from the park.
Comparing Methodologies with Actual Usage

To contrast how the hotspot method and CEQR walking distance method estimated the park’s service area, these methods were compared to simple distance buffers of the park. When compared to distance from the park, the CEQR definition of a well-served area covers about the same area as .25 mile buffer, with the notable exception of the central area which is too far from park entrances. A 1 mile buffer from the covers the same amount of area north-south as the hotspot, but it does not account for the irregular shape of the hotspot, which expands three miles east into Brooklyn. In order to compare these three methods, the areas of highest significance in the hotspot were made into a polygon that represented the area that was well-served by the park.
The map shows a heat map based on a GIS score (GiZScore) that categorizes areas based on their deviation from the mean. The color legend indicates different standard deviation ranges, with areas in red indicating the highest deviation and areas in blue indicating the lowest deviation. The map is labeled as "Advanced GIS."
To judge how well each of these methods determined the park’s service area, I selected the point files that intersected each polygon and compared how well each method represented the park’s total users. In this case, “total users” refers to all New York City users that could be mapped.

No matter which geography was chosen, a general pattern emerged where the service area included more frequent users than infrequent ones. This pattern demonstrates that frequency of visitation was negatively correlated with distance to the park. Everyday visitors are likely to live very close by, frequent visitors are likely to live in surrounding areas, and occasional or first-time visitors come from all over the city. This data can help similar parks model where they are likely to draw visitors.

The CEQR method captures just 13% of all city visitors. However, given its limited range, it does account for a large portion of everyday users, at 40%. It captures just 15% of weekly users, 10% of monthly users, and just 5% of users who said they’ve been to the park “a few times.”

The one mile buffer does significantly better, capturing 41% of all users and 62% of everyday users. This method far surpasses the CEQR model for identifying weekly users, capturing 66%, compared to just 15%. Weekly visitors are undoubtedly a key component of the park’s constituency, and this demonstrates the extremely limited approach of the CEQR method. The 1-mile buffer captures 38% of monthly users, and 24% of occasional users.

The Hotspot method provides the most comprehensive method of identifying the park’s service area, accounting for 50% of all New York City users. This method does only marginally better than the 1-mile buffer in capturing 64% of everyday users, and 75% of weekly users. The biggest advantage of the hotspot method over the buffer is that it captures more monthly and occasional users, at 48% and 41% respectively. To capture the same area as the hotspot using a buffer, a distance over three miles would be required. While a three mile buffer of the park would include at least as many users as the hotspot area, it would not produce an accurate service area of the park because it would include many areas with no statistical significant usership, like Red Hook.
as well as areas such as southern Greenpoint, were the lack of usership was statistically significant. While a one mile buffer does a fairly accurate job of capturing the most frequent users, buffers at larger distances would incorporate more and more statistically insignificant areas. This suggests at greater distances from the park, usership cannot be explained by distance alone, since other elements, such as alternative parks and transportation accessibility play a factor.

The larger the service area, the better a job it did on capturing less frequent users. While the expansive hotspot area virtually captured the same number of everyday users as the far smaller 1 mile buffer, it incorporated significantly more causal users missed by the 1-mile buffer method. In lieu of a user survey, a similar regional park could use a 1-mile buffer to fairly accurately identify the service area from which it would draw most of its everyday users. Identifying areas with more occasional users is harder to do without performing a hotspot analysis, because larger buffers would provide less accurate results. While the CEQR method identified a surprising amount of everyday users given its small size, it missed many frequent users of the park, and is too limited to provide a real picture of the areas served.

**Identifying Spatial Patterns of Use**

Currently, due to ongoing construction, the three open parts of the park are not continuous. Because these different parts of Brooklyn Bridge Park are so different and so far apart, I wanted to see if there were discernible spatial patterns in the way the different places were used. The previous hotspot analysis assumed that the park use was homogeneous. To perform this analysis, I separated the points into three files, depending on whether the survey was administered at Main Street, Pier 1, or Pier 6, and ran a Getis-Ord Gi* analysis on each. The resulting hostpots, color-coded on the right, show that the different parts of the park are in fact more popular in some neighborhoods than others. Main Street’s visitor hotspot was shifted more towards DUMBO and Fort Greene, with another in Crown Heights, east of Prospect Park. Pier 1, the main part of the park, had a hotspot centered on Brooklyn Heights, with others in Crown Heights and Bed-Stuy. Pier 6’s hotspots were
markedly different, shifted more Cobble Hill, Carroll Gardens, Gowanus, and Park Slope on the west side of Prospect Park. These neighborhood differences show how Brooklyn Bridge Park functions as a series of neighborhood parks, and suggest that people generally will use the part of the park closest to them - although some smaller hotspots are not closest to the corresponding part of the park. This information can inform programming and outreach efforts of the park’s managers. For example, these findings suggest that events targeted towards Gowanus residents may be best held on Pier 6, while events targeted towards Bed-Stuy residents should be held at Pier 1.

**Finding Comparable Results**

One of the greatest difficulties faced by planners when analyzing the results of usership studies is that there is little comparable data available to give context to their findings or measure their park’s performance against other parks. However, in the preparation of the Environmental Impact Statement (EIS) for Brooklyn Bridge Park in 2003, planners did perform a spatial analysis of the users of Riverbank Park on the Hudson River at 138th Street, as well as North Park, at the north end of the Battery Park City esplanade. These parks were likely chosen for the EIS because they are regional waterfront parks that were deemed to provide good estimations for Brooklyn Bridge Park’s use. Now that the park is constructed, this data should offer comparable results to Brooklyn Bridge Park. Although the data on user distance in these two parks was graphed by individual distance bands (right), rather than cumulatively, it does give some context to the data from Brooklyn Bridge Park. In the case of Riverbank Park, approximately 42%\(^1\) of all users came from within one mile of the park. In the case of North Park, the figure is approximately 33%\(^2\). Unfortunately this data does not indicate how the distances were measured, either along a network, or as-the-crow-flies. Assuming the more likely scenario that the numbers are 1 mile buffers, we can compare this to the 1 mile buffer around Brooklyn Bridge Park, which accounts for 41% of all recorded users (in New York City). This number is extremely close to the results of the

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1 Estimate from Chart: calculated by adding 33% at .5 miles and 9% at 1 Mile.  
2 Estimate from Chart: calculated by adding 23% at .5 miles and 10% at 1 Mile.  

Alex Wallach
FIGURE 3: Riverbank Park
Percent of Users by Distance

FIGURE 4: North Park
Percent of Users by Distance

Brooklyn Trip Origins

<table>
<thead>
<tr>
<th>Zip Code</th>
<th>Distance from Zip Code to Park (Miles)</th>
<th>PROMENADE</th>
</tr>
</thead>
<tbody>
<tr>
<td>11201</td>
<td>0.2</td>
<td>49.8%</td>
</tr>
</tbody>
</table>

SOURCE: BROOKLYN HEIGHTS PROMENADE,
Riverbank Park study, and slightly greater than North Park, allowing us to cautiously conclude that Brooklyn Bridge Park’s usership is consistent with other regional waterfront parks, particularly Riverbank Park. Had the percentage of Brooklyn Bridge Park users coming from within 1 mile been significantly higher, it would indicate the park users tend to come from close by, and vice-versa. Although the 1 Mile Buffer is not the most accurate method for determining which areas are well served by the parks, this method provides comparable results when the park’s usership is compared to other parks.

The data can also be compared to a study of the adjacent Brooklyn Heights Promenade, also prepared to estimate park use at Brooklyn Bridge Park in 2003. The analysis reported that 49.8% of Promenade users from Brooklyn originated their trip in Zip Code 11201. This is differs from the Zip Code level of analysis of Brooklyn Bridge Park, which reveals that 35.8% of all Brooklyn visitors came from Zip Code 11201. This data confirms that Brooklyn Bridge Park attracts a greater percentage of users from farther parts of the borough than the Brooklyn Heights Promenade - a desirable result for the planners of the Park.

**Conclusions and Further Research**

In the case of Brooklyn Bridge Park, the city’s methodology for determining well-served areas did not provide an accurate service area. This method may be more appropriate for smaller neighborhood parks, with many entrances, but it did not account for many of Brooklyn Bridge Park’s visitors, who traveled from farther reaches of the city. This analysis also raises questions about the city’s somewhat ambiguous methodology for identifying underserved areas, since this does not take into account transit accessibility to regional parks. Further research is needed to determine if areas like Crown Heights are truly underserved. This analysis demonstrates that in the case of regional parks, proximity alone does not explain spatial usership patterns; access to transit and availability of other parks also plays a role. Although every park’s usership will reflect different patterns, the results of Brooklyn Bridge Park’s user distribution may be helpful service areas for other regional
waterfront parks. Mapping users of parks is the most accurate way to define a “well-served” area, and identify neighborhoods for outreach, as well as neighborhood preference for certain parks. This information can be used to more accurately assess the impact of new development of on open space, and inform park outreach strategies for expanding and diversifying the attendance of urban parks. As park user studies become more and common as management techniques, this information about park usership will continue to benefit city planners. Technology such as GIS and spatial analysis has a valuable role to play in interpreting this data, and new applications for technology continue to be discovered. For example, planners are just beginning to understand the value of social media in understanding how people interact with space. Visitors who “check in” to public parks start to create a behavior map, a technique traditionally used in Post Occupancy Evaluations, to understand how public spaces work. Further research in this growing field will continue to enhance our understanding of urban parks.