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Forest Park Ecosystems Services Inventory: An Exploratory Study

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Abstract

This report presents both qualitative and quantitative survey data concerning resident perceptions of ecosystem services in Portland's Forest Park. Focus group best practices and ecosystem services in urban parks literature are reviewed. Representative focus groups were conducted to ascertain local awareness and understanding of the urban wilderness area's ecosystem services, identify concurrent challenges and measure interest in a potential interpretive center. Individual surveys were also administered in order to connect issues with demographics and recreational use information. Regression analyses were conducted to examine related park usage, access and economic trends.

While the study is preliminary, the results reveal opportunities for future study. Such studies should further build an understanding of the complex factors that influence park users' engagement, stewardship and place values associated with Forest Park, which will in turn promote more accurate valuation of ecosystem services and better-informed decisions about future management intensity.

JEL Classifications: Q20, Q23, Q26, R00
Keywords: Portland, Oregon, Forest, Park, Ecosystem, Wilderness

I. Introduction

Within the city limits of Portland, Oregon lies an unusually large urban wilderness park and community asset. Forest Park is a contiguous 5,200-acre natural area that is home to over 100 native bird species and more than 50 mammals. The greater Forest Park ecosystem in northwest Portland's Tualatin Mountains, consists of Forest Park, more than 1,100 acres of natural areas owned by Audubon, Metro and the Forest Park Conservancy, as well as over 8,600 acres of private land. Over 50 miles of trails traverse these woods.

Originally Forest Park was proposed in Portland's master park plan of 1903, which was created by the well-known Olmsted brothers. Forest Park was established in 1948, after many decades of vulnerability to logging, exploration and development. In the 1940's, Portland's City Club members organized to protect multiple tracts of forest totaling over 4,000 acres, many of which were abandoned tax lots and/or contained second growth forests. Over the years, additional land acquisitions have increased the park's size.

This essential ecosystem connects to coastal mountain natural areas to the west and provides a wildlife corridor and watershed buffer across eight miles of rolling hills and creeks. This intact wilderness area provides many important ecosystem services within an urbanizing metropolitan area that was home to an estimated 2.3 million people in 2013. Providing fresh water, clean air and recreational opportunities are just a few of these precious ecosystem services.

In recent years, ecosystem services have come to be recognized as valuable, yet often difficult to monetize or safeguard. There are four main classes of ecosystem services, and they are all evident in Forest Park. Supporting services support basic ecological functions and sustain life. Provisioning services provide materials and goods, including food and fiber. Regulating services maintain stable ecological conditions over time. Cultural services include recreation, inspiration and restorative time in nature.

We have reason to believe that little research has been done explicitly on Forest Park's ecosystem services. To help close this gap, Portland State University was asked by the Forest Park Conservancy to design a focus group study and quantitative survey in order to gather data about citizen's awareness and understanding of the park's ecosystem services. The project was

implemented jointly by two classes, including a graduate level Economics of Sustainability (EC 522) course and a blended level Economics of Cost Benefit Analysis (EC 427/527) course.

This report contrasts and presents two distinct types of social science research. Focus groups capture qualitative and conversational information, reflecting values, beliefs and attitudes from group members participating in a collective and focused discussion. Quantitative survey data reflect demographic data, opinions, values and behavior choices from self-reporting individuals. We also conduct linear regression analyses to examine how responses to different questions relate to one another. Alone, the survey does not render enough information to make properly informed decisions for the future of Forest Park, but gives the reader strong supporting details to either set a foundation or build on other findings.

Together, the report tries to create a cross-spectrum "snapshot" of perceptions and awareness of ecosystem services and park challenges. Preliminary conclusions include a sustained need for more research before any long-term policy is changed, particularly given that this is in a fragile wilderness area. Many ongoing needs and opportunities are identified as well. There is a great sense of pride in this nationally recognized park and a desire for increased stewardship and more maintenance.

II. Ecosystem Services in Urban Parks

In recent years, increasing attention has been paid to the role ecological systems play in creating and sustaining human well-being. Among other services, ecological systems purify air and water, regulate temperature, provide food and raw materials, and offer unique recreational experiences to visitors (Bateman, et al., n.d; Brown, Bergstrom & Loomis, 2007; de Groot, et al., 2002; Dobbs, et al. 2011; Goulder & Kennedy, 1997; Hassan & Scholes, 2005; Jim & Chen, 2009; McPherson et al., 1997; Trust for Public Lands, 2008; Tyrväinen, 2001). Although there is broad agreement on how to categorize ecosystems services and a variety of estimating techniques available, the process of valuing these services is still evolving.

Categories of Ecosystem Services

The Millennium Ecosystem Assessment (MA), which unites the work of more than 1,300 researchers from 95 countries, divides the human benefits derived from ecosystems into four types

of "ecosystem services": supporting, provisioning, regulating and cultural services (Hassan & Scholes, 2005). Supporting services consist of the ecological functions that sustain all other ecosystem services, namely "primary production, production of oxygen, and soil formation" (Hassan and Scholes, 2005, p. 27). Provisioning services supply the material goods people receive from ecosystems, including food, lumber, and clean water. Regulating services provide the stable ecological conditions necessary to human well-being, such as climate regulation, clean air, erosion prevention, and mitigation of diseases. Cultural services provide humans with intangible benefits, such as clarity of mind, meditation, reflection, recreation, and the beauty of nature.

Valuing Ecosystem Services

To date, researchers attempting to estimate the dollar value of ecological assets have employed four types of valuation techniques: revealed preference, stated preference, production function, and replacement cost methods (Brown, Bergstrom & Loomis, 2007). Revealed preference and stated preference methods estimate households' willingness to pay for ecosystem services that are not normally traded in markets (Brown, Bergstrom & Loomis, 2007). Willingness to pay approximates value by measuring the dollar amount a household would give up in exchange for access to an ecosystem or a particular ecosystem service. Revealed preference methods rely on the behavior of households to estimate willingness to pay through realized costs. For example, researchers may rely on time and travel cost expenses incurred in visiting a natural area as a representation of the "price" of access. The method then uses these costs to deduce a minimum willingness to pay for an individual.

In stated preference studies, individuals reveal their willingness to pay for continued access to an ecosystem through surveys. This method, which includes contingent valuation and choice experiments, is most commonly used to value environmental services (Tyrväinen, 2001). Stated preference methods can be used to value "any good or service, real or imagined" (Brown, Bergstrom & Loomis, 2007), but their validity is limited by individuals' ability to accurately estimate the utility gained from those goods and services.

Production function and replacement cost approaches are traditionally applied when estimating the value of ecosystem goods and services that are traded in markets or possess close substitutes that are traded in markets (Brown, Bergstrom & Loomis, 2007). Production function methods value ecosystem goods and services by measuring their role as inputs for producers. For

example, researchers may derive the value of a forest by determining its total yield of harvestable timber. Replacement cost methods estimate the cost of restoring an ecosystem service if that service were lost (Brown, Bergstrom & Loomis, 2007). One could value an ecosystem service such as water purification by ascertaining the minimum cost of purifying, by other means, the relevant water supply.

Estimates of the Values of Urban Forests and Ecosystem Services

A number of studies have found that urban forests provide valuable services to residents and tourists (Bateman, et al., n.d.; Costanza et al., 2006; Dwyer et al., 1992; Jim & Chen, 2009; McPherson et al., 1997; Trust for Public Lands, 2008; Tyrväinen, 2001). Using contingent valuation to appraise two urban forests in Finland, Tyrväinen (2001) found that residents received value equal to approximately 15,525 FIM (or $2935 US) per acre/year in the town of Johensuu, and 7823 FIM (or $1479 US) per acre/year in Salo. Constanza et al. (2006) found similar estimates while valuing New Jersey's ecosystem services and natural capital. Based on studies of comparable ecosystems services, Constanza et al. (2006) found that urban greenspace delivered an annual value of $2,473 per acre in 2004 dollars. To give an idea of scale, this estimate, if it could be applied to Forest Park, would value the park at $12,612,300 each year in 2004 dollars (or $15,603,932 in 2015 dollars). Costanza et al. (2006) also observed that forests located close to a river's estuary zone contributed more to estuary water quality than forests further away.

Krieger (2001) emphasized the importance of forests for watersheds in terms of water quality and quantity in his review of the economic values of forest ecosystem services for the Wilderness Society. By his estimation, US forests as a whole contribute about $64.16/year/household in improved water quality. All of Portland sits on five watersheds, including the Columbia Slough, Fanno Creek, Tryon Creek, Johnson Creek and Willamette River. Forest Park is situated within the largest Willamette River watershed that encompasses both east and west sides of the city. Consequently, the value of water quality and quantity contributed by Forest Park is especially relevant.

In a survey by the Trust for Public Lands (2008), city park land in Philadelphia was estimated to reduce the cost of treating stormwater by almost $6 million per year. The survey also estimated that the parks' trees remove $1,534,188 in pollutants each year. These results are specific to Philadelphia, and not enough information is given by the study to infer similar values for

Portland or Forest Park, but these figures give a sense of the magnitude of these ecosystem service values.

Investing in Forest Park

Langemeyer et al. (2014) identified a trade-off between "place value," the sense of place and social cohesion produced by a green space, and management intensity. In this context, wilderness "place values" mean the sense of being in nature and of being away from modern human developments. While place values are reduced by a higher degree of management, tourism values increase when cultural facilities are embedded in a green space. Furthermore, Majumdar (2011) found that in Savannah, Georgia, urban forests and green spaces provide tourists $62-$117 million per year in consumer surplus (a critical economic measure of total value). He concludes that urban forest resources play an "increasingly important role in attracting tourists to urban areas by enhancing the beauty of cities and working as a complement of other urban attractions" (2011, p. 79). In the case of Forest Park, these results suggest that a visitor center that added cultural ecosystem services to the current ones would add value in terms of attracting more tourism. However, because a visitor center would entail more management intensity, such additional tourism might come at the expense of deep place values, which are more difficult to quantify.

These place values can also be thought of as passive use values, such as existence, option and bequest values. As will be discussed below, many park users gain meaning and utility just from knowing that Forest Park exists and is protected both as a wilderness habitat and urban park available to future generations. According to Loomis et al. (1999), such values may even exceed the value of actual wilderness experiences.

Previous research has suggested that place values differ among park users, and that a majority of wilderness users do not seek isolation but 'being alone together' with members of one's group. As Sharpe and Ewert (2000) stated, "it appears that people do desire social interaction in wilderness" (p. 219). Their notion of place attachment extended this assertion, describing visitors as 'place-oriented,' social or activity-oriented visitors. Sharpe & Ewert (2000) observed that park users with higher levels of place attachment are both more likely to make personal choices to protect their chosen environment and to respond negatively to alterations to park habitat and aesthetics or even the presence of other visitors. This has implications for how any change in management intensity would be perceived by residents with a wide range of viewpoints and

experiences in Forest Park. The research reviewed would suggest that a well-designed interpretive center within an urban area could become a prominent meeting place and focal point, which could facilitate more social and cultural ecosystem services than it would take away from other ecosystem services throughout the rest of the park.

III. Study Approach

Basis for Focus Group Approach

As part of the Forest Park Ecosystem Service Valuation Project, we conducted four focus groups in different neighborhoods within the Portland metropolitan area. A review of the literature indicates that focus groups are an accepted methodology for gaining insight into cultural norms and values, with clear best practices for achieving valid results. These best practices have helped to guide our own data collection, and are summarized in the following section.

Most best practices for creating and facilitating focus groups were established in the academic literature in the late twentieth century and have seen little change. The first step in a successful focus group is to determine whether it is the best approach for gathering the desired data. Focus groups possess notable limitations when compared to detailed interviews or data rich survey methods. Sample sizes are rarely large enough to draw inferences about larger populations, and thus the qualitative information generated could differ drastically in content from group to group in the same study. Despite these limitations, focus groups are generally an effective method for exploring a topic about which little is known and not many studies have taken place. They can be particularly useful during the early phases of a research process in order to develop hypotheses that can then be tested or help researchers understand local opinions, beliefs, and attitudes toward a particular issue. Focus groups can also be used by organizations as a way to develop connections with a local community.

The process of arranging a focus group is fairly straightforward and can be distilled into several steps (Simon, 1999). The first is to determine the stated purpose of the focus group, ensuring that discussion prompts address the topic at hand and that the information collected will adequately capture the subject of interest. Once these components have been determined, organizers should establish a timeline, then identify and invite participants. Identifying desirable attributes and key stakeholder groups in accordance with the stated purpose of the project will help

ensure that the right individuals are invited to participate. The next steps are then generating a list of questions, choosing a location or locations, creating a script for the focus group and selecting a facilitator or facilitators.

Appointing a facilitator from outside of the organization is preferable, as it ensures greater objectivity. It is also important to adequately train all staff assisting with the focus group. When choosing the location and the facilitator, best practices advocate finding settings that will make the participants feel most comfortable, though this will vary for every focus group. General consensus deems that focus groups should last between one and two hours, allocating no longer than 20 minutes for discussion of each topic. When conducting the focus group, facilitators should establish ground rules, stress confidentiality and continuously work to build trust. Facilitators should use non-directive prompts, aiming for a "low-control, high-process" style, while ensuring that discussion thoroughly covers relevant issues (McLafferty, 2004, p. 192). Facilitators should strive for good conversation on "warm, but not hot" (*i.e.* private) matters, focusing on research areas, considering alternatives, and avoiding bias (Grudens-Schuck, Allen & Larson, 2004, p. 4).

Group dynamics may encourage self-disclosure, spontaneous discussion and expression of local perspectives. On the other hand, social norms may preclude complete honesty, dissenting voices, or the gathering of individual content knowledge in group settings (Grudens-Schuck, Allen & Larson, 2004). Sensitive or controversial topics may not be addressed due to the power of social norms and etiquette. It is also useful to note that differences in status, income, power or personal characteristics may cause individuals to censor their ideas (Grudens-Schuck, Allen & Larson, 2004).

Focus group topics related to natural resource use and stewardship may include ownership, access, safety and risk perception, cost, wilderness ethics, management practices, political opinions (including pro and anti-preservation or science) and equity (including gender, race and class differences). Previous ecosystem value research has indicated that groups may generate 'groupthink' and more comments about general problems, cultural or aesthetic factors, consumptive services and potential solutions (Kaplowitz & Hoehn, 2001).

Group interactions, including cross-dialogue and non-verbal behavior are as important to gather as verbal transcripts, partly because this data may give researchers greater 'theoretical sensitivity' about what is important, and the potential generalizability of group results (Duggleby,

2005, p. 838). Ultimately, focus groups help to reflect social realities through direct access to participant language, gestures and experiential concepts (McLafferty, 2004).

In order to produce the best results, focus groups should aim to achieve two main goals: facilitating interaction among participants and maximizing the collection of high quality information (Acocella, 2011). In fact, the virtue of the focus group as a tool is its ability to generate data based on the synergy of the group interaction. Krueger (1994) believes rich data can only be generated if individuals in the group are prepared to engage fully in the discussion and, for this reason, advocates the use of a homogenous group (Rabiee, 2004).

To ensure accuracy of the information collected, all focus group interviews are recorded on audiotape or other recording devices. It is important to note that, after recording the interviews, each group investigates the reliability and validity of the data by conducting a team debriefing. During this process, the successes and failures of the interview are juxtaposed in order to identify any analysis issues.

Another benefit of focus groups is that they provide an opportunity for the sponsoring organization to show responsiveness and accountability. Valuable positive and negative feedback reported in the focus group process can potentially be incorporated into future best practices (McLafferty, 2004). For example, forest ecosystem services may be better experienced, supported and preserved as an irreplaceable 'community forest' which, as one British focus group participant stated, "should be forests for the *whole* community" (italics added) (Burgess, 1996, p. 134). With regard to the Forest Park project, we feel that the focus group process was enlightening and invaluable in generating a more in-depth understanding of the uses and value of Forest Park.

Methodology

Participants were invited to attend one of four focus groups held in different neighborhoods within the Portland Metro area. Some were offered an incentive (a $10-$25 gift card to local markets and restaurants). Participants were told the purpose of the research and made aware that complete anonymity could not be guaranteed due to the public nature of the focus groups, though no one's individual comments or survey responses would be used to identify individual perspectives, and the purpose of the focus group was to understand the perceptions of the entire group. They were then asked to provide oral consent to participate (and anyone who chose not to

participate received the incentive and was excused), followed by a series of open-ended questions while researchers collected field notes based on the group discussions. The questions that facilitators asked participants were semi-structured and iterative in that they were adjusted based on participants' responses to earlier questions and the discretion of the facilitator to encourage a robust and respectful discussion.

To supplement the qualitative data captured in focus group discussions, we also asked participants to complete a survey. The content of the survey was developed by faculty at Portland State University in conjunction with Forest Park Conservancy, and included a combination of multiple choice and write-in responses. The survey was designed to be anonymous; no questions that would provide identifying information were included. Additionally, respondents were allowed to opt out of answering all questions. A blank survey can be found in Appendix A. The survey was comprised of 30 questions, including questions related to:

- Frequency of visits to Forest Park
- Convenience of access to Forest Park
- Recreational activities done while in the Park
- General participation in outdoor recreational activities
- Use of possible new interpretive center
- Select demographic information about the respondent and their household

These surveys were administered following each of our four focus group sessions. Due to time constraints, surveys collected at the fourth focus group are not included in this analysis, but will be made available to Forest Park Conservancy for further study. Focus group staff gave paper copies of the questionnaire directly to participants, who filled them out before leaving the focus group session. Focus group facilitators provided background on the purpose of the project and contents of the survey to each participant prior to disseminating the survey. A Spanish translator was made available to one non-native English speaker during the focus group and survey.

Our intention in collecting this survey data was to capture a more quantifiable representation of participants' values and uses related to Forest Park. Survey responses were encoded into numerical data using the key provided in Appendix B. We then compiled and entered all of the data into Excel in order to run descriptive statistics that would allow us to see specific patterns in values and uses across participant groups.

In addition to identifying basic patterns in responses, we also sought to isolate what we considered to be interesting associations between responses to particular questions. In order to ascertain the direction and magnitude of these associations, we performed six regression analyses. These are statistical tests that examine a relationship between two or more variables. A regression plots individual points (in this case, an individual's responses to two questions) and attempts to characterize this relationship as a function that can then be used to predict one variable based on knowledge of another. Additional information is also generated describing the strength of the relationship between these variables. We were interested in five possible relationships:

1. Is there a relationship between the timing of respondents' last visit and their annual frequency of visits to Forest Park?
2. Is there a relationship between how often respondents participate in general outdoor recreation activities and how often they visit Forest Park?
3. Is there a relationship between number of visits made to all parks in the city and the number of visits made to Forest Park in the past year?
4. Is there a relationship between how long it takes respondents to get to Forest Park and how frequently they visited in the last year?
5. Is there a relationship between how difficult it is to get to Forest Park and the frequency they visited in the past year?
6. Is there a relationship between how long people spend in Forest Park and how long they spend in other parks?

While many best practices described above were incorporated into the Forest Park focus group process, there were several major differences in these groups as compared to typical studies. None of the groups were audio or video taped in an effort to ensure confidentiality. Additionally, though teams did not conduct post-group team debriefs due to time constraints, all contributors to the focus group analysis were convened before the focus group data were synthesized. All focus groups conducted were heterogeneous by design, as there was no effort to find participants with demographic similarities, other than area of residence.

IV. Survey Data Analysis

Characterization of Survey Respondents

Out of a total of 33 complete surveys, only 26 were analyzed. We should note that this constitutes an especially small sample size. Additionally, since survey participants were recruited from specific neighborhoods, the sample population is only a narrow representation of the Portland

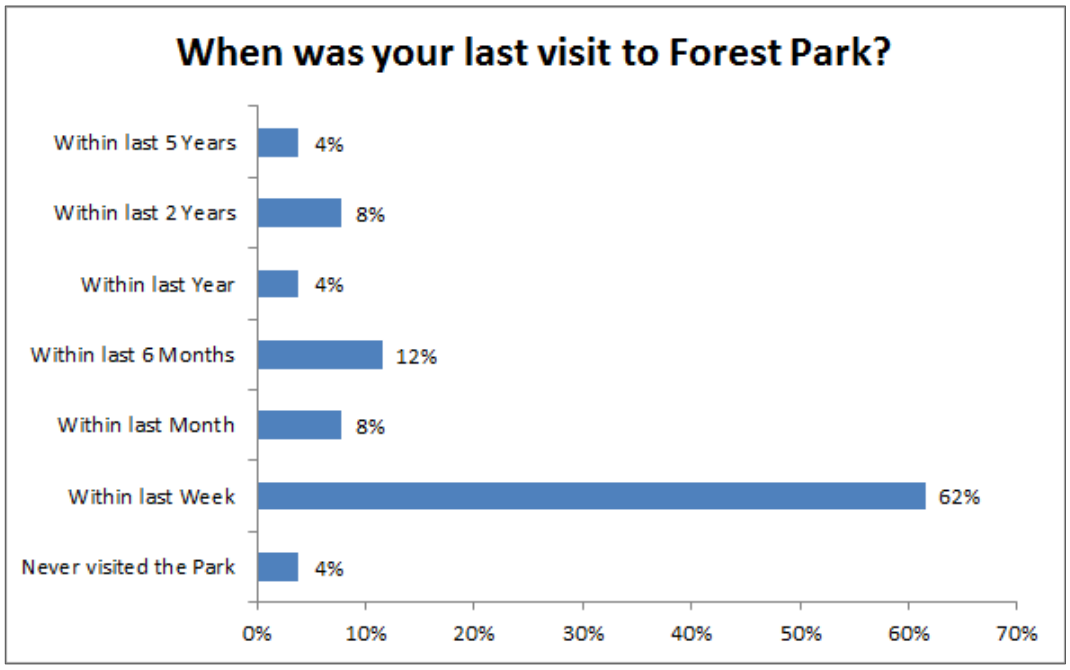
population as a whole. Results are therefore best viewed as indicative of what more in-depth analysis is likely to reveal.

The figure below depicts the extent of neighborhood representation, which varies visibly across focus groups; most notably, the Linnton neighborhood focus group hosted twice as many participants as did the South of Market (SoMa) focus group. This limitation should be noted when interpreting the survey results and subsequent regression analysis.

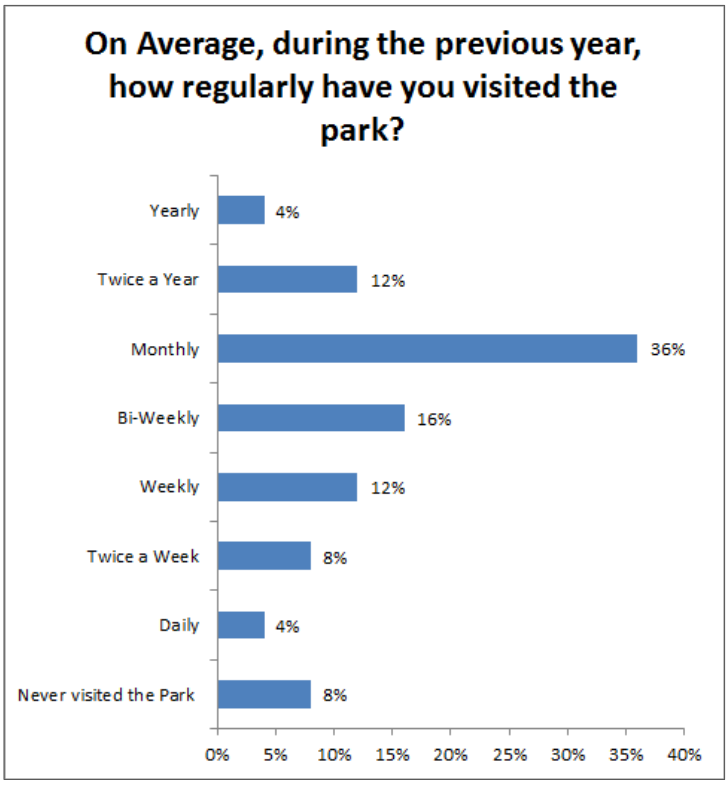
Focus Group	Location	Date and Time	Number of Respondents
Linnton	Linnton Community Center	Feb 5th, 6:15-7:30	12
South of Market (SoMa)	Portland State University	Feb 10th, 6:00-7:30	6
Lents	Bellrose Station Apartments Community Room	Feb 12th, 6:00-7:30	8
Inner NE	Matt Dishman Community Center	Feb 25th, 7:15 - 8:45	7

Last Visit to the Park

There were 26 survey respondents and 96% had visited Forest Park prior to the study. 62% of all respondents had visited within the last week. The second largest group of respondents (12%) had visited Forest Park within the last 6 months. These data confirm that the majority of respondents had some recent experience with Forest Park.



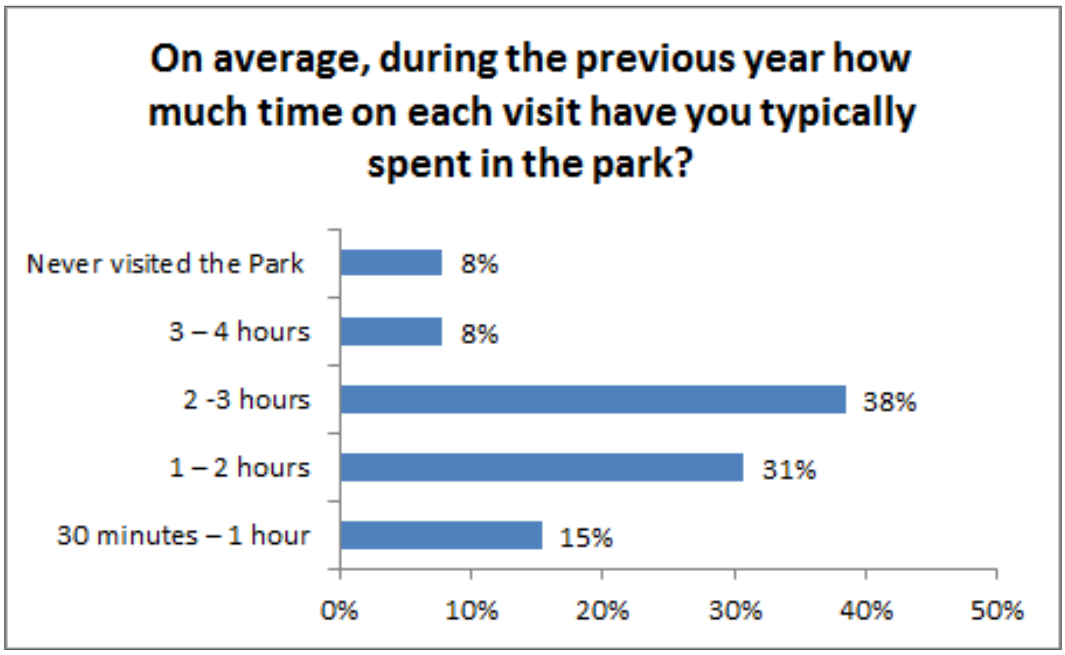
Frequency of Park Visits



Our survey results indicate that 76% of respondents visited the park 1 or more times a month during the previous year. Respondents who reported visiting monthly constituted 36% of total respondents. These results suggest that a majority of participants were not only capable of drawing on recent experience, but from fairly regular interactions with Forest Park.

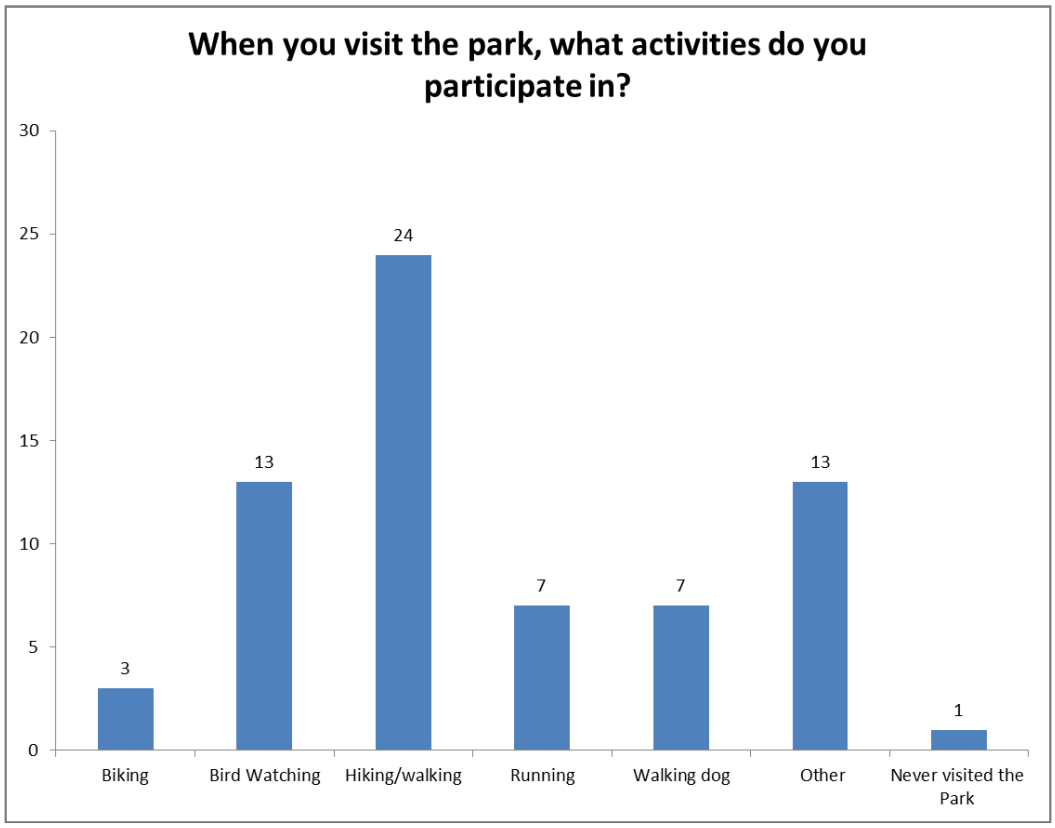
Time Spent in Forest Park

The most common duration reported for an average visit to Forest Park was '2-3 hours', chosen by 38% of respondents. A majority of respondents (69%) could be characterized as spending between 1 and 3 hours in the park. Given the size of Forest Park and its trails alone, the relative brevity of the average visit might suggest a preference for certain modes of transportation (*e.g.* biking or running as opposed to walking or hiking).



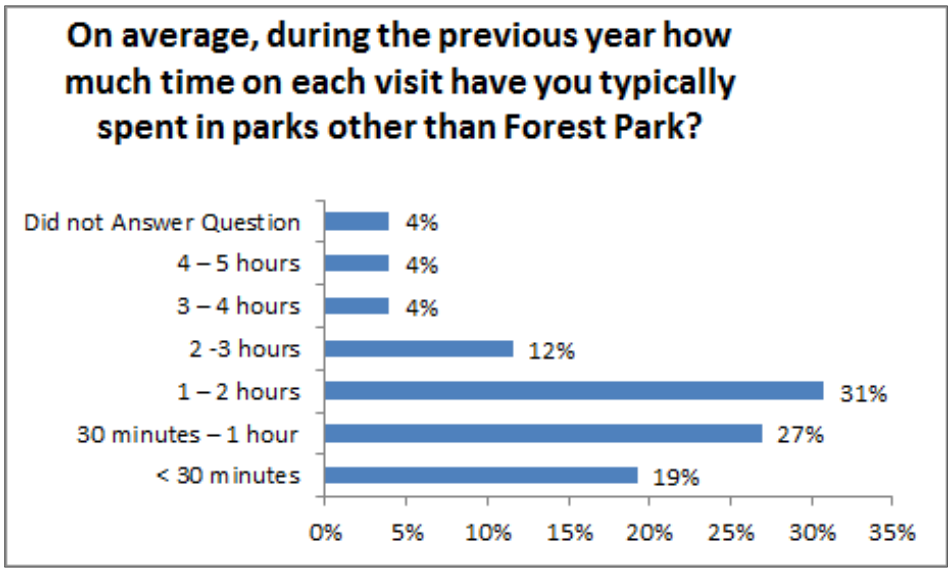
Typical Recreational Activity

Most respondents reported hiking or walking during their visits to Forest Park. Exactly half of all respondents (13 individuals) indicated that they went bird watching, and as many individuals also reported that they had engaged in an activity that was not specifically listed in the survey question. Over a quarter of respondents reported running in Forest Park, with as many individuals also noting that they bring dogs with them during their visits. When taken with the results to the previous survey question, these results might suggest that most participants in this study likely spend a majority of their time traversing relatively small areas of Forest Park during their average visit. However, our limited insight into these "other" reported activities prohibits us from confidently making such an assertion.



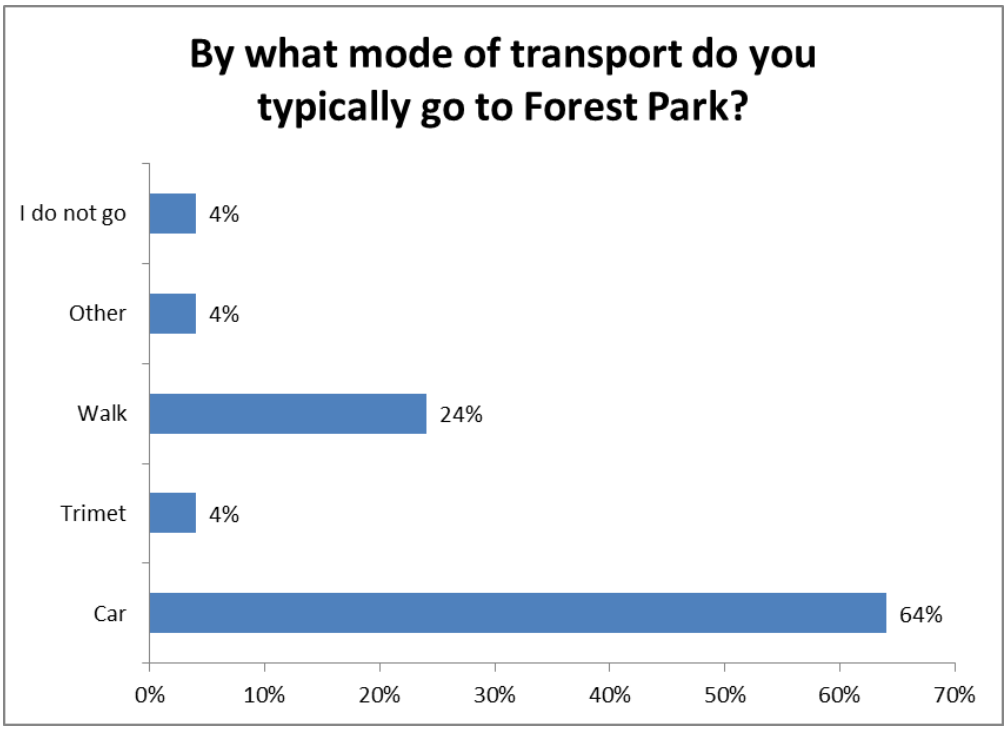
Use of Other Parks

When asked how much time respondents spent on average during visits to other parks, most reported between 1 and 2 hours. The main difference in time spent in other parks in comparison to Forest Park is a larger number of respondents spend under 30 minutes in other parks. 46% of respondents spend an hour or less on average in other parks. These findings suggest that activities in Forest Park are viewed as distinct from activities undertaken in other urban parks.



Transportation

The majority of respondents (64%) reported driving a car to Forest Park. The second most common mode of transportation reported was walking (24%). Only one participant in the entire study used TriMet to reach the park.

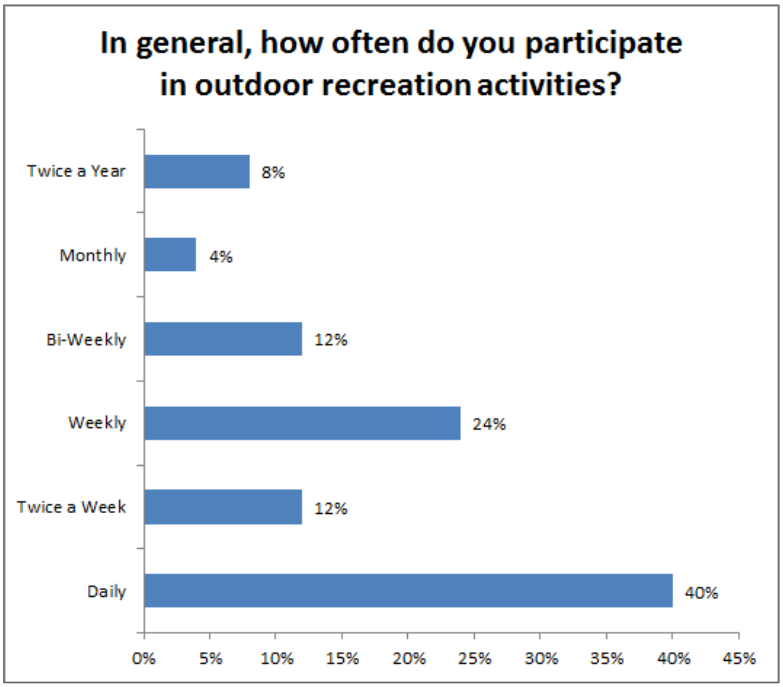


Participants were also asked if they owned a car and whether they believed public transit was a convenient mode of transportation for them. Again, a majority of respondents (69%) reported owning a car, though one individual did not typically rely on it to access Forest park. A reported 54% of participants further indicated that using TriMet to access the park would not be convenient for them.

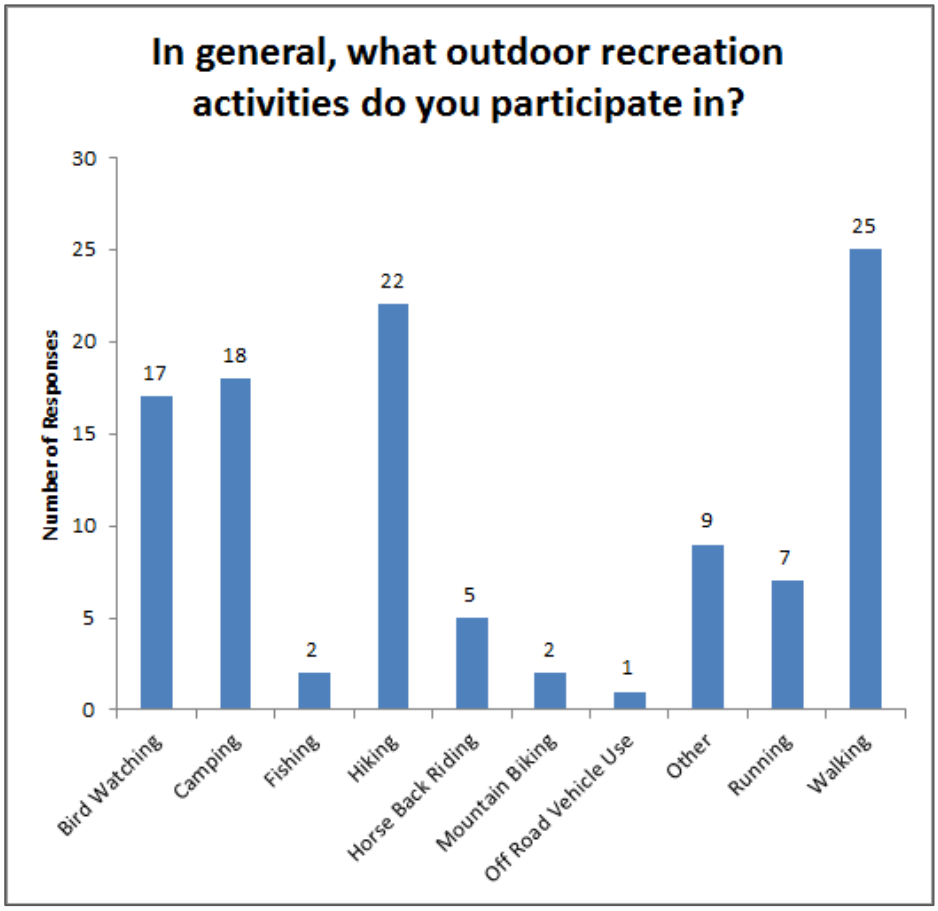
These results indicate that, with exception of those respondents who live within walking distance to Forest Park, the majority of participants in our study share a similar experience in accessing Forest Park. Unfortunately, these results also prevent us from gaining equal insight into the experience of users who must rely on public transportation to access the park. This could also indicate constraints that exist with respect to capturing the views of key demographic groups.

Respondent Outdoor activities

When asked how often participants engage in outdoor recreational activities, 40% indicated they are active outdoors on a daily basis, with 76% of respondents saying they participate in outdoor recreational activities at least once a week.

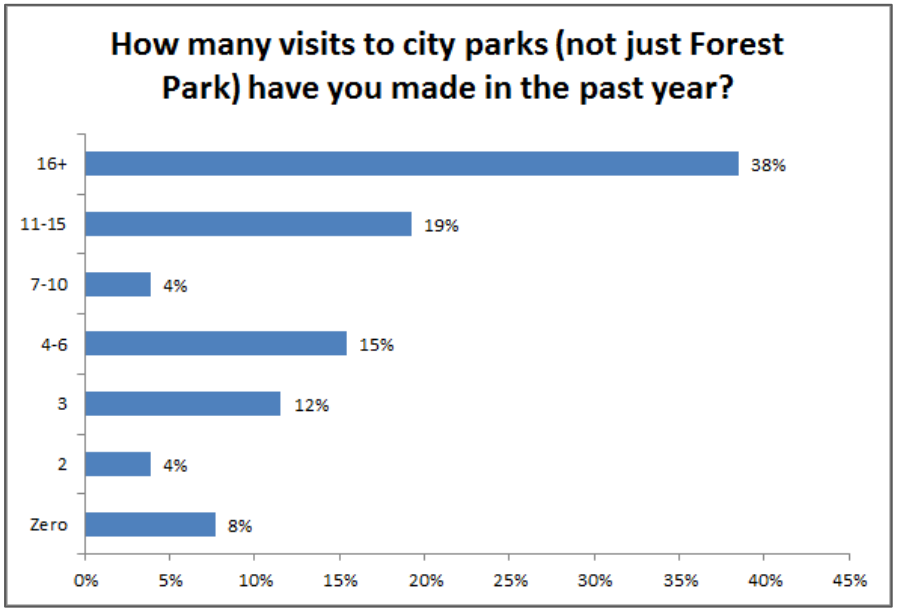


When asked a follow-up question regarding what activities they participate in, the most popular activities were walking (96%) and hiking (84%). Both these activities are the most common activities that occur within Forest Park.



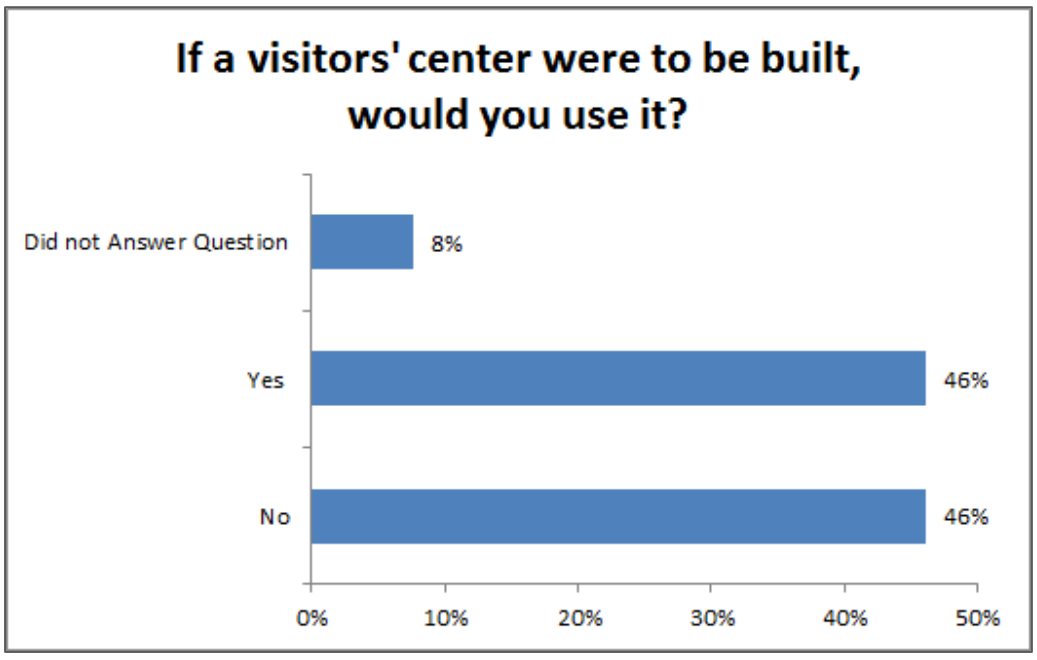
Overall City Park Use

When asked to report their total park use in the past year, an appreciable number of participants reported 16 visits or more. A simple majority (57%) visited city parks 10 times or more. Based on these findings, questions of a similar nature that are posed to future samples should group lower values together into a selection of '1-3' instead of separating these choices. In addition, more options for higher values might be considered.

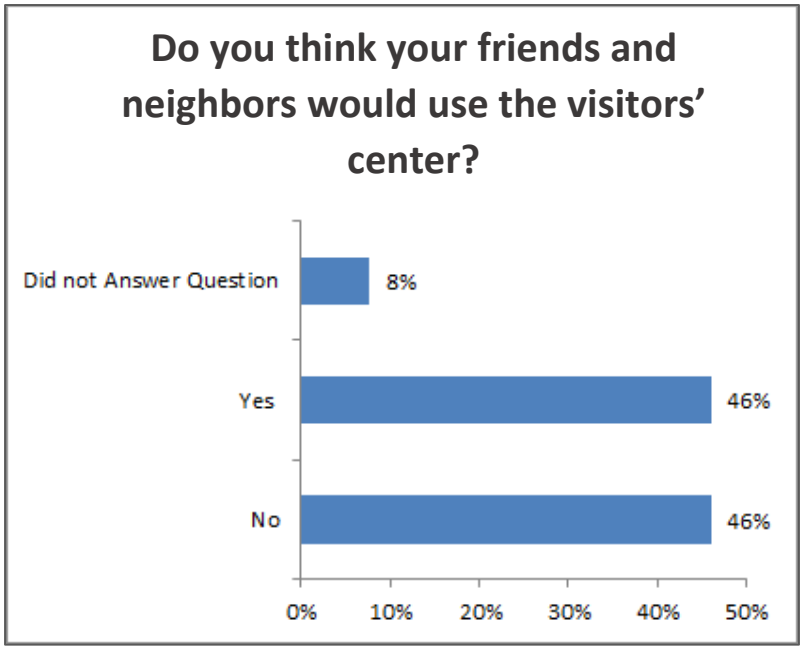


Questions Related to an Interpretive Center

When asked if respondents would use the proposed interpretive center, two individuals declined to respond. Of those participants who did respond, 50% replied 'yes' and the other 50% said 'no.'



When further asked whether participants thought their friends and neighbors would use such a center, the results perfectly mirrored responses to the previous question. This could be interpreted as individuals believing that those around them also hold their beliefs.

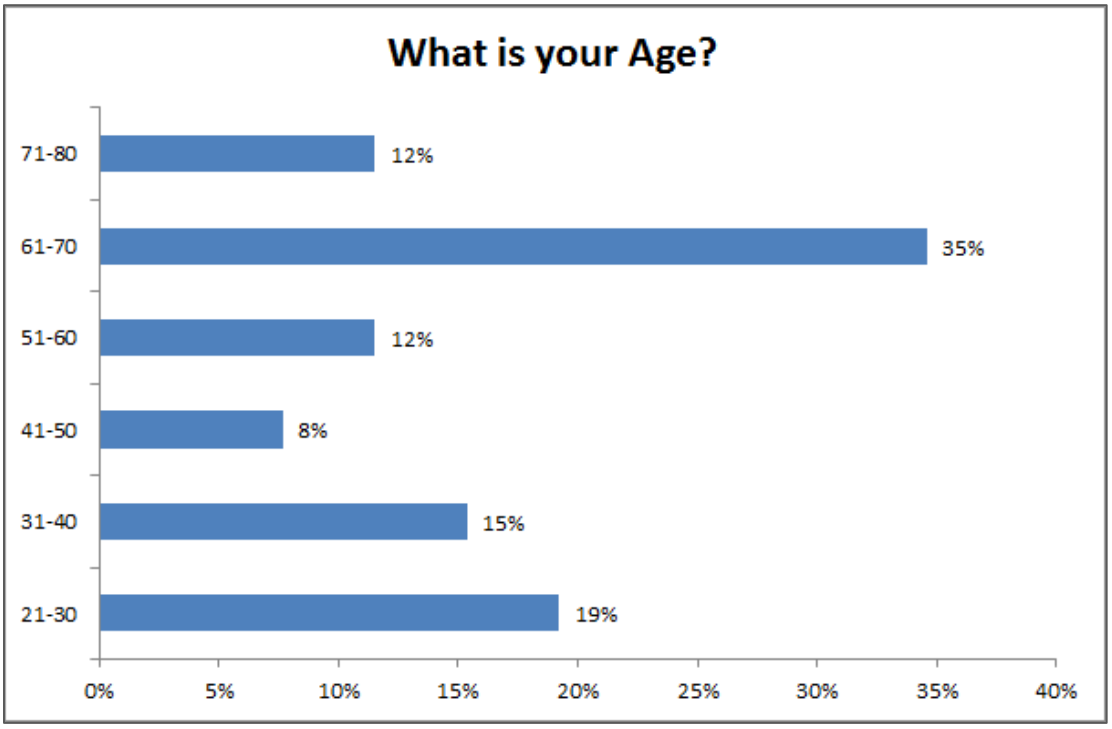


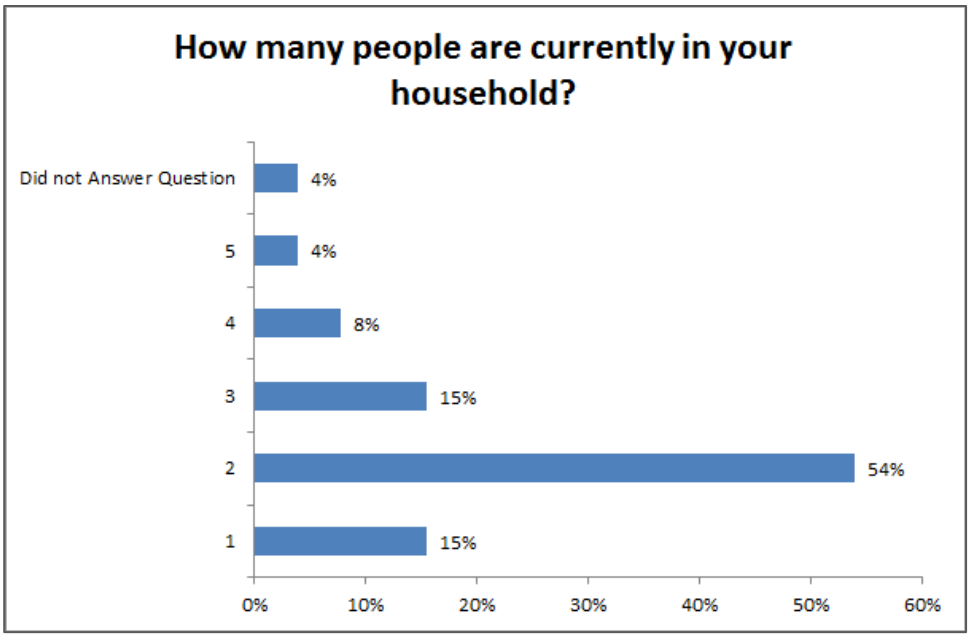
Of the respondents who reported that they would visit an interpretive center, 16% visited Forest Park at least once a week, 33% reported visiting the park monthly, 25% visited twice a year, and 17% had never visited before. Of the same respondents, 75% traveled to Forest Park by car, with the average travel time among them being 28 minutes.

Demographics

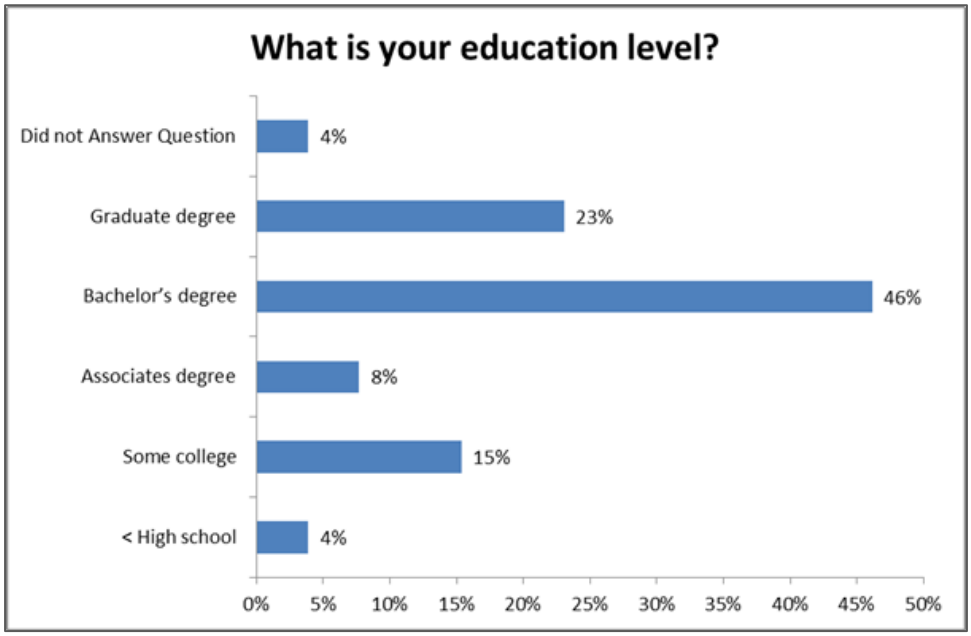
After being asked general questions about Forest Park, participants were asked a series of demographic identifier questions. The following figures illustrate those demographics that we found to be most significant to our results. Some demographic divisions, such as location of respondents' residence, are not as prominently highlighted in this section because they are a result of the study design itself. Other information, such as whether respondents owned a car, is already reflected in responses to other questions. Additional summary tables are available in Appendix C.

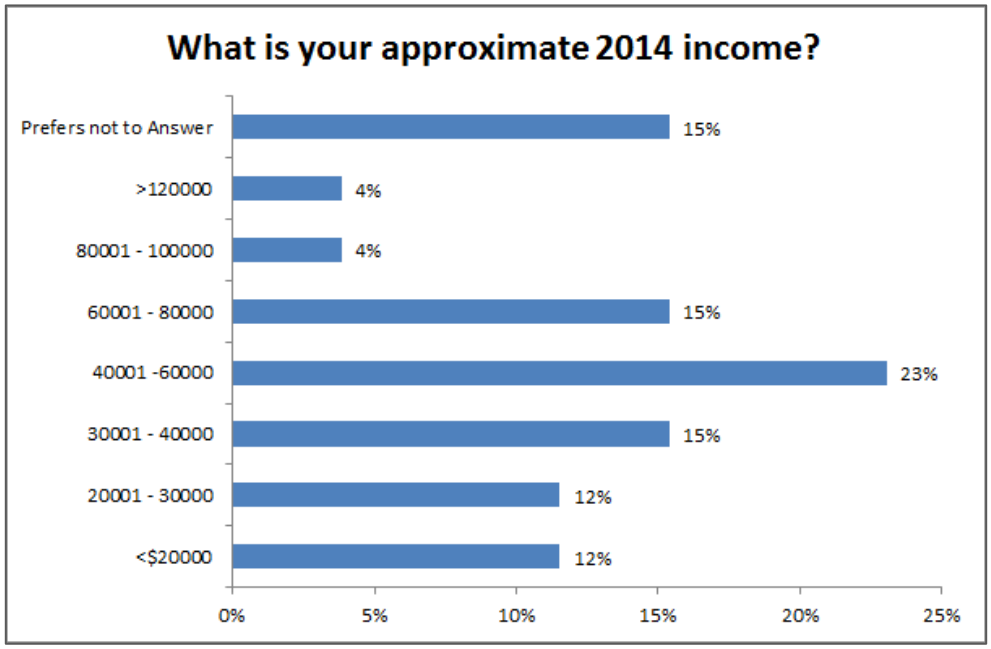
Important patterns to note in these responses relate to the relative absence of certain demographic groups. According to our survey results, participants were mostly female (62%), not-retired (65%) and/or employed (73%), and have resided in the Portland area for over 5 years. Nearly 60% of respondents were 50 years of age or older, while 19% were 30 years or younger.





Study participants overwhelmingly represented households of one or two individuals (69%), though it is unclear whether respondents were single, married or had children. A majority of respondents (73%) had earned at least a bachelor's degree; 23% of respondents had received some post-secondary education and only 4% had not received their high school diploma.





Approximate annual incomes seemed evenly distributed across ranges provided, though we did not distinguish between individual and household income. It is important to note the extent to which these demographics reflect those of Portland's population. Some statistics, such as household size and post-secondary education, could be viewed as consistent with recent census data; in 2010, the average household consisted of 2.31 individuals and over 90% of individuals possessed at least a high school diploma. Nonetheless, some underrepresented groups in this study, such as employed persons under the age of 50, could be thought of as an important demographic in capturing a representative sample population.

Regression Analysis

Question #1: Is there a relationship between the timing of respondents' last visit and their annual frequency of visits to Forest Park?

In this case, we did find significance, with a truncated p-value of .000. The R value, which indicates the strength of the relationship was .759, showing a strong positive relationship. The R square value, which gives the amount of shared variance and provides much of the predictive value is .576. The intercept value was 3.127, with a slope of .675. This suggests that the same individuals

who visited Forest Park recently were likely to have visited the park more regularly over the course of the past year.

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.759[a]	.576	.557	1.151

a. Predictors: (Constant), When was your last visit to Forest Park?

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	3.127	.355		8.798	.000
	When was your last visit to Forest Park?	.675	.121	.759	5.585	.000

a. Dependent Variable: How regularly did you visit the park in the last year?

Question #2: Is there a relationship between how often respondents participate in general outdoor recreation activities and how often they visit Forest Park?

In this case, the test found significance, with a p-value of .004. The R-value, which indicates the strength of the relationship was .549, showing a moderate positive relationship. The R square value, which gives the amount of shared variance and provides much of the predictive value is .301. The intercept value was 3.155, with a slope of .589. This confirms that individuals who participate in general outdoor recreation activities on a more regularly are likely to visit Forest Park more frequently.

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.549[a]	.301	.271	1.477

a. Predictors: (Constant), How often do you participate in outdoor recreation activities?

Coefficients[a]

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		

1	(Constant)	3.155	.556		5.670	.000
	How often do you participate in outdoor recreation activities?	.589	.187	.549	3.149	.004

a. Dependent Variable: How regularly did you visit the park in the last year?

Question #3: Is there a relationship between number of visits made to all parks in the city and the number of visits made to Forest Park in the past year?

A regression test did not find a significant association between these two variables.

Question #4: Is there a relationship between how long it takes respondents to get to Forest Park and how frequently people visited in the last year?

In this case, our regression test did find significance, with a p-value of .004. The R value was .564, showing a moderate positive relationship. The R-square value, which gives the amount of shared variance and provides much of the predictive value, is .318. The intercept value was 2.068, with a slope of .531. These results indicate that the longer it takes an individual to get to Forest Park, the less likely they are to visit regularly.

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.564[a]	.318	.287	1.363

a. Predictors: (Constant), How much time does it take you to travel to Forest Park?

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients		
		B	Std. Error	Beta	t	Sig.
1	(Constant)	2.068	.808		2.558	.018
	How much time does it take you to travel to Forest Park?	.531	.166	.564	3.206	.004

a. Dependent Variable: How regularly did you visit the park in the last year?

Question #5: Is there a relationship between how difficult it is to get to Forest Park and the frequency people visited in the past year?

This test also found a significant relationship, generating a p-value of .018. The R value, was .468, again showing a moderate positive relationship. The R-square value is .219. The

intercept value was 2.720, with a slope of 1.549. This expands on the results of the previous regression in associating greater difficulty in accessing Forest Park with fewer visits.

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.468[a]	.219	.185	1.561

a. Predictors: (Constant), How difficult is transportation for you to Forest Park?

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	2.720	.818		3.326	.003
	How difficult is transportation for you to Forest Park?	1.549	.609	.468	2.542	.018

a. Dependent Variable: How regularly did you visit the park in the last year?

Question #6: Is there a relationship between how long people spend in Forest Park and how long they spend in other parks?

A regression test did not find a significant association between these two variables.

V. Focus Group Analysis

The following section provides a summary of the discussions held during the course of all four focus groups. It is intended to highlight patterns observed and is not a complete registry of individual participant responses. We provide a sample of quotes in Appendix D for additional reference.

Uses & Perceptions

All of the participants in this study expressed positive perceptions regarding Forest Park. Most of the views that were expressed were directly related to recreational activities. Several individuals in the Lents group claimed that they were unaware of any non-recreational services provided by the park, though the group collectively identified several in their discussion. Similarly,

perceptions held within the SoMa group were communicated almost exclusively in the context of recreational experiences.

Focus Group Quote
"There are a lot of trail runners. [They] can be disruptive – especially in mud – to the people who are walking or hiking."
- Lents Group

The most commonly reported uses included walking, hiking, running, and mountain biking. All SoMa participants and most Lents participants identified as hikers or walkers. The Inner NE group was composed equally of hikers and mountain bikers. Both Inner NE and Linnton participants were able to cite much broader range of uses that included meditation, horse riding, bird watching, research, as well as educational and conservation-related activities. Participants in all groups also noted that they regularly brought out-of-town visitors to the park. Participants reported benefits of recreating in Forest Park ranging from physical fitness, to spiritual and mental relaxation, to cultural or environmental awareness. Participants also identified a number of favorable attributes specifically associated with Forest Park. Chief among these positive features was the close proximity and easy accessibility to wilderness, as well as the beauty and tranquility of the park itself. Lents participants praised Forest Park's proximity to other attractions, such as the Japanese Garden.

Most participants were also able to identify negative characteristics associated with their recreational experiences in Forest Park. The most commonly expressed hindrances were related to accessing and sharing trails. Inadequate signage both within and outside the park was a consistent issue throughout all focus group discussions. Several Lents participants believed that the park lacks sufficient advertising, claiming that not enough people know about it. Some SoMa participants stated that Forest Park either lacked adequate access, adequate signage, or both, especially when approaching from downtown. Many other participants defended the current accessibility to Forest Park, but conceded that some

Focus Group Quote
"I wonder also about the clarity or frequency of trail markers, I saw lots of people who were confused about where they were going. Clarity in particular is an issue."
-SoMa group

access points were not well marked. The general consensus across focus groups was that quality of trail signage is poor, citing the Wildwood trail as the only notable exception. Many Lents participants noted that the park's size could be overwhelming to new users and that a lack of signage might discourage visitors. Some female participants expressed feeling unsafe as a result of not being able to easily navigate within the park.

Participants from all but the SoMa group reported experiencing or witnessing some conflict between user groups. Lents participants identified trail runners and dog-owners as disruptive to non-runners, suggesting special-use trail designations and off-leash dog parks as possible solutions. Many individuals also reported a need for increased stroller access. Linnton participants expressed concern that the park is now less conducive to equestrian activities as a result of less available parking and fewer safe trails. They were apprehensive about the mounting requests for additional mountain biking and mixed-use trails. Inner NE participants believed that more trails should be designated as single-use, or that multiple-use trails should provide better signage to mitigate conflicts between bikers and hikers. Both the Lents and Inner NE groups cited off-leash dogs as a source of conflict as well.

For some individuals, a perceived paucity of park maintenance extended to provision of basic amenities and services. Inner NE participants emphasized a need to provide visitors with easily accessible water, toilets, and limited mobility access. Both Inner NE and Lents groups articulated a concern about English ivy and other invasive species, stating that it was compromising the health of the park. Similarly, SoMa participants felt that a stronger effort to reduce litter was necessary, specifically energy packets, plastic water bottles, and bagged dog waste.

Ecosystem Services & Existence Value

Participants in all four groups were able to acknowledge the value of Forest Park's existence as separate from the direct benefits they derived through recreation. Many participants in Lents and Inner NE agreed that the park held importance regardless of whether they visited it or not. The same participants identified the park as either a Portland landmark or a source of pride for the city. Some participants were able to identify indirect benefits or ecosystem services, most

Focus Group Quote
"Even if I never went to Forest Park again, I think it would absolutely still be valuable. It's part of what makes Portland Portland. I knew about it before I moved here."
- Inner NE group

notably wilderness habitat, carbon sequestration and water filtration. Inner NE and Linnton participants were able to offer a deeper ecological lens to their discussion than the SoMa and Lents groups. Linnton participants demonstrated an especially high ability to draw on a deeper and more intimate awareness of the park than any other group. This is likely the result of both their close proximity and connections to the park. Individuals cited a range of ecosystem assets, including biodiversity, storm water retention and air filtration, in addition to its existence value within the region.

Interpretive Center

We observed a moderate split in opinion over the value of an interpretive center. Infrequent users in the SoMa group agreed that an interpretive center would be especially useful to first-time and inexperienced visitors. Most the participants in the Lents group agreed with this perspective, further stating that they would also be highly motivated to visit Forest Park if such a center existed.

Focus Group Quote
"Why put all your eggs in one basket?"
- Linnton group

Similarly, individuals in the inner NE group felt that an interpretive center would positively impact their current use of the park while also drawing new users. Participants in the Linnton group collectively vocalized strong opposition to an interpretive center, while frequent users in the SoMa group reported being more disinterested than opposed to the proposal.

Supporters identified a number of relevant services that a center could provide. Maps and other informational resources regarding trails were the most commonly mentioned set of amenities, followed by toilets and water fountains. Supporters added that such amenities should be made available throughout the park. Participants in all focus groups agreed that a center would possess high educational value as well. Most individuals mentioned students as an important target audience, and suggested pairing the center with outdoor education programs for inner-city schools.

Focus Group Quote
"I definitely think a visitor center would improve my experience. It could help new people use the park, but education would need to be a big part of it. People need to know that it's there and what it can offer them."

- Inner NE group

Many supporters cited the need for informational materials that promoted ecological awareness and stewardship practices. One participant mentioned the possibility of guided tours and night walks, as well as 'unobtrusive' trail lights for safer walking in the evening, though another participant felt that any lighting would ruin the ambiance of the park. Individuals in the Inner NE group advocated for promoting responsible recreation ethics, such as Leave No Trace, and leveraging volunteer resources to monitor and remove invasive species. Participants in the Lents group suggested a focus on highlighting native flora and fauna. Inner NE and Linnton participants acknowledged the political and financial value in raising awareness around Forest Park's key ecosystem services and the need to conserve them.

Despite showing general support, the SoMa, Lents and Inner NE groups expressed mixed feelings about locating the interpretive center near the Northwest industrial area and Route 30, especially with regard to accessibility. SoMa Participants who did not own a car felt that the area was out of the way. On the other hand, Inner NE participants felt that the proposed location was ideal and would not exacerbate existing access challenges. Lents participants suggested and agreed that a shuttle bus operating between park access points would be useful, especially for day hikers who might normally travel in two cars.

The position of the Linnton group was that many of the aforementioned services, while worthwhile, did not require an interpretive center. They noted that the Audubon Society currently provides many of the same services an interpretive center would offer and that scarce funds would be better spent on expanding their capacity while improving amenities and basic maintenance throughout the park. They also suggested that a mobile phone platform might be a preferable medium for delivering informational services. This idea was also raised in the Lents and Inner NE groups as a potential alternative or supplement to an interpretive center.

It should be noted that the Linnton group did not express absolute opposition to the visitor center, but rather an overwhelming view that resources should not be spent on an interpretive center at present. Further, many individuals in this group mentioned that the Forest Park Natural Resources Management Plan (FPNRMP) supports the development of interpretive facilities much further in the future. They also noted that fundamental scientific studies have not been conducted that would help establish a baseline for forest health and set goals for mitigating impact from increased recreational use.

VII. Preliminary Conclusions

The concept of 'community forests' introduced in the focus group literature section furthers the idea that Forest Park is not only an urban natural wilderness area offering many ecosystem services, but is also a precious asset for a wider community. This is important when considering that community members have diverse needs, place attachments, outdoor savvy, and familiarity with the park. This socio-economic-cultural lens may help to inform future resource management, planning and partner messaging within Portland's various communities.

Certain focus group results may partially reflect prevailing social norms about Forest Park usage and understanding of ecosystem services. Our survey results indicate that many participants share very similar experiences with regard to how they use the park. Despite this, focus group results revealed a variety of levels of awareness of park ecosystem services (from none to high), and general intrinsic appreciation for the park. There is considerable difference of opinion on whether an interpretive center is a good use of limited resources, and whether locating the center in the Northwest industrial area is a good idea. However, there was more consensus around the park's biggest challenges, which include accessing and sharing trails, inadequate signage and maps, park advertising, safety, conflicts between users, and maintenance issues, especially litter and invasive species.

More research is needed to understand how outreach materials, current resource conditions, access and visual prompts affect public perceptions and expectations of park experiences. Understanding these variables may help Portland Parks and Recreation, as well as the Forest Park Conservancy, plan for future program and capital needs, including additional visitor services staff, habitat restoration, and/or a new interpretive center. Cultivating a more representative and

informed base of park users and supporters may not only increase the benevolent presence of recreational users, but also leverage political will and financial resources for much needed preservation activities.

Survey results generated from such a small sample size as ours cannot provide enough data to make definitive conclusions, but may build on other findings. Although Forest Park is a wilderness park, many users visit the park for just several hours. Survey data indicate that a majority visit for less than 3 hours. A more extensive survey of recreationists was published in 2012, the results of which should be compared against these preliminary findings. It is possible that this indicates people's limited recreation time and/or knowledge about less popular trails. It may also indicate there is untapped market demand for more guided wilderness hikes and group interpretive activities that would more fully engage stakeholders for longer periods of time, tap into users' desire for social interactions and attract new users.

Though issues of access to the park surfaced consistently throughout this study, we were unable to capture the views of a key demographic - TriMet users. Participants in the study indicate that they might use TriMet to access the park if a convenient route for them was established, but it cannot be assumed so or determined based on the data. Our feedback regarding parking and crowding issues indicate that diverting drivers toward public transit would be desirable, but would likely require more than one route. Issues of representation notwithstanding, the fact that most participants share a similar transportation experience might allow us to turn to other factors in explaining differences in visitation rates. Nonetheless, more research is needed about transportation access to the park and any prospective interpretive center location.

Recent research has advocated for cost-effective community engagement and access improvements for public green spaces because "given the health outcomes that nature can deliver, inequalities in access and use could exacerbate social disadvantage" (Shanahan et al. 2015). With more focused research, social marketing programs could be implemented to raise awareness and then eventually change behaviors concerning Forest Park's ecosystem, participation, recreational ethics, and place values. A detailed review of how different visitor resource management approaches affect their usage and place values might be a good place to begin. Exploring planning and funding opportunities to increase educational opportunities, with or without an interpretive center, is the next logical step.

It is clear from the results of this study that continuing to emphasize connections between ecosystem services, urban recreation and human health benefits will both resonate with current users of Forest Park and generate additional value. Popular ideas such as using mobile phone platforms as a 'virtual interpretive center' for wildlife recognition, educational or navigational purposes that may also improve equity and build cultural competency, should also be further explored. Increasing awareness is, however, just the first step. Deeper public engagement might include following safety and wilderness rules, joining an ivy removal volunteer event, learning how to identify birds, deciding to hike all of the trails, or donating to Forest Park Conservancy to support trails maintenance.

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Appendix A. Post-Discussion Individual Respondent Survey

[Note to students: conduct surveys in a private place where others cannot listen to responses]

Focus Group Number: _____ (sequentially in the order done e.g. first, second, etc.)

Respondent Number: _____ (start from one for each focus group)

Respondent Identification: _____ (Focus Group Number.Respondent ID)

Forest Park Visitation

1. Have you ever visited Forest Park?
   - ___ Yes
   - ___ No
   - ___ Prefers not to answer

2. When was your last visit?
   - ___ Within last Week
   - ___ Within last Month
   - ___ within last 6 Months
   - ___ Within last Year
   - ___ Within last 2 Years
   - ___ Within last 5 Years
   - ___ Within last 10 Years
   - ___ Never visited the Park
   - ___ Prefers not to answer

3. On average, during the previous year how regularly have you visited the park?
   - ___ Daily
   - ___ Twice a Week
   - ___ Weekly
   - ___ Bi-Weekly
   - ___ Monthly
   - ___ Twice a Year
   - ___ Yearly
   - ___ Never visited the Park
   - ___ Prefers not to answer

4. On average, during the previous year how much time on each visit have you typically spent in the park?
   - ___ < 30 minutes
   - ___ 30 minutes – 1 hour
   - ___ 1 – 2 hours
   - ___ 2 -3 hours

___ 3 – 4 hours
___ 4 – 5 hours
___ > 5 hours
___ Never visited the Park
___ Prefers not to answer

5. By what mode of transport do you typically go to Forest Park? (Choose only one)
___ Car
___ Trimet
___ Bicycle
___ Walk
___ Other
___ I do not go
___ Prefers not to answer

6. Using the transport mode you mentioned in the previous question, approximately how much time does it take you to travel to Forest Park? _____

7. If needed, is it convenient for you to go to Forest Park by Trimet bus, streetcar or Max?
___ Yes
___ No
___ Prefers not to answer

8. If no, please explain
_____

_____

9. How difficult for you is transportation to Forest Park?
___ Not at all difficult
___ Somewhat difficult
___ Difficult
___ Very difficult
___ Extremely difficult
___ I do not want to visit
___ Prefers not to answer

10. When you visit the park what activities do your participate in? Please list all that apply.
___ Never visited the Park
___ Hiking/walking
___ Walking dog
___Running
___ Biking
___ Bird Watching

___ Other
___ Prefers not to answer

11. For your outdoor recreational needs, what is the major park or outdoor area other than Forest Park that you primarily use? _____

Outdoor Activities

12. In general, what outdoor recreation activities do you participate in? Please list all that apply.
___ Hiking
___ Running
___ Fishing
___ Walking
___ Mountain Biking
___ Horseback Riding
___ Bird Watching
___ Off Road Vehicle Use
___ Camping
___ None
___ Other
___ Prefers not to answer

13. In general, how often do you participate in outdoor recreation activities?
___ Daily
___ Twice a Week
___ Weekly
___ Bi-Weekly
___ Monthly
___ Twice a Year
___ Yearly
___ Never
___ Prefers not to answer

14. How many visits to city parks (not just Forest Park) have you made during the past year?
___ Zero
___ 1
___ 2
___ 3
___ 4-6
___ 7-10
___ 11-15
___ 16+
___ Other
___ Prefers not to answer

15. On average, during the last year how much time on each visit have you typically spent in parks other than Forest Park?

___ < 30 minutes
___ 30 minutes – 1 hour
___ 1 – 2 hours
___ 2 -3 hours
___ 3 – 4 hours
___ 4 – 5 hours
___ > 5 hours
___ Never visited other parks
___ Prefers not to answer

Possible Forest Park Visitors' Center

16. If a visitors' center were to be built, would you use it?
___ Yes
___ No
___ Prefers not to answer

17. Do you think your friends and neighbors would use the visitors' center?
___ Yes
___ No
___ Prefers not to answer

18. What would be one amenity you would find useful in a visitors center?

___ Prefers not to answer

Residency

19. Where do you live?
_____NE or N Portland
_____SE Portland
_____SW Portland
_____NW Portland
_____Clackamas County
_____Washington County
_____Other
_____Prefers not to answer

20. What is your zip code? _____ ___ Prefers not to answer

21. How long have you lived in the Portland area?
___ I don't live in the Portland area
___ Moved here in the last year
___ 1-5 years
___ 5 years +
___ Prefers not to answer

Demographics

22. Gender of respondent
    ___ Male
    ___ Female
    ___ Prefers not to answer

23. What is your age?
    ___ 18-20
    ___ 21-30
    ___ 31-40
    ___ 41-50
    ___ 51-60
    ___ 61-70
    ___ 71-80
    ___ 81+
    ___ prefers not to answer

24. How many people are currently in your household?
    ___ 1
    ___ 2
    ___ 3
    ___ 4
    ___ 5
    ___ 6
    ___ >6
    ___ prefers not to answer

25. How many children are in your household?
    ___ 0
    ___ 1
    ___ 2
    ___ 3
    ___ 4
    ___ 5
    ___ >5
    ___ prefers not to answer

Socioeconomic Information

26. What is your approximate 2014 income?
    ___ <$20000
    ___ 20001 - 30000
    ___ 30001 – 40000
    ___ 40001 -60000

___ 60001 - 80000
___ 80001 – 100000
___ 100001 – 120000
___ >120000
___ prefers not to answer

27. Do you own a car?
___ Yes
___ No
___ Prefers not to answer

28. Are you retired?
___ Yes
___ No
___ Prefers not to answer

29. Are you unemployed?
___ Yes
___ No
___ Prefers not to answer

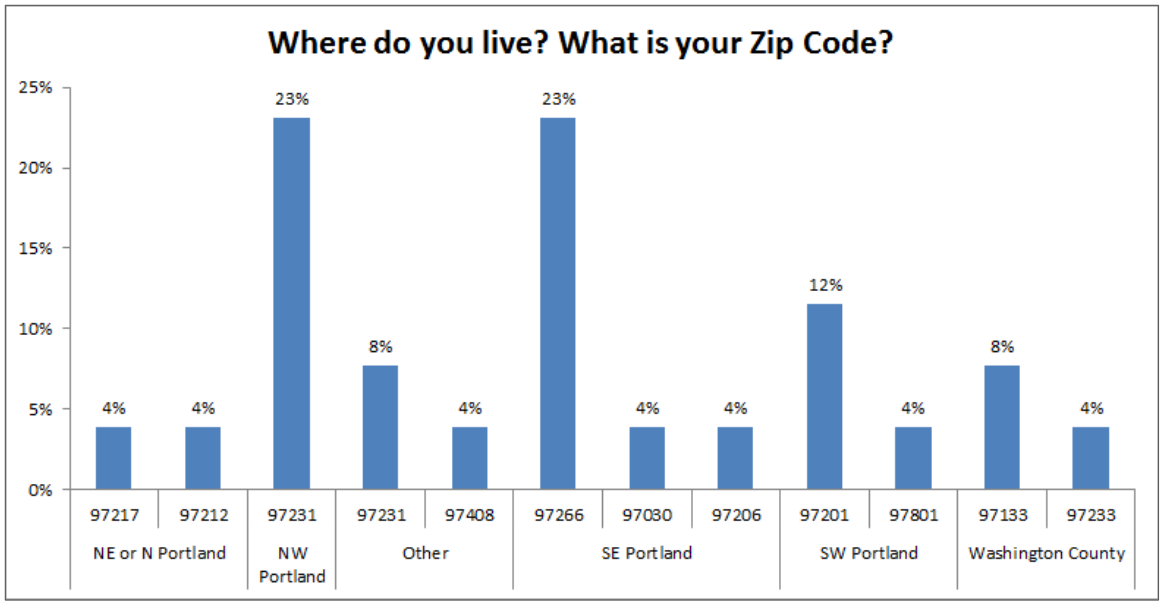
30. What is your education level?
___ < High school
___ High school degree
___ Some college
___ Associates degree
___ Bachelor's degree
___ Graduate degree
___ Prefers not to answer

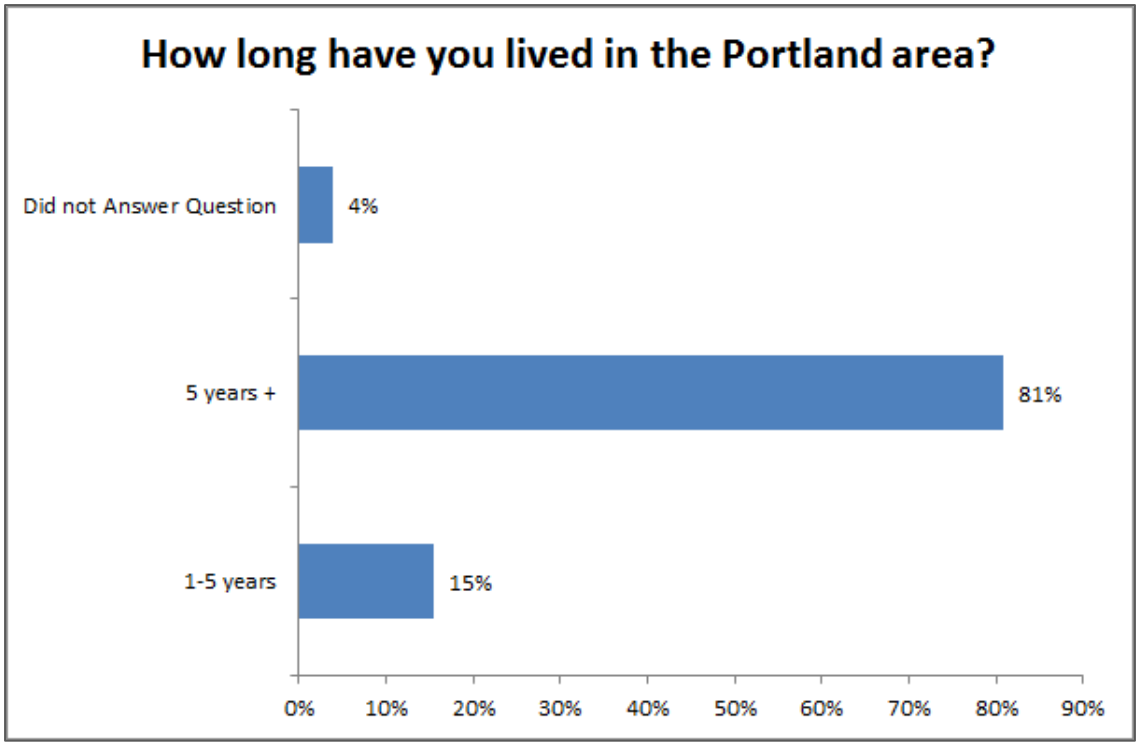
Appendix B. Survey Key

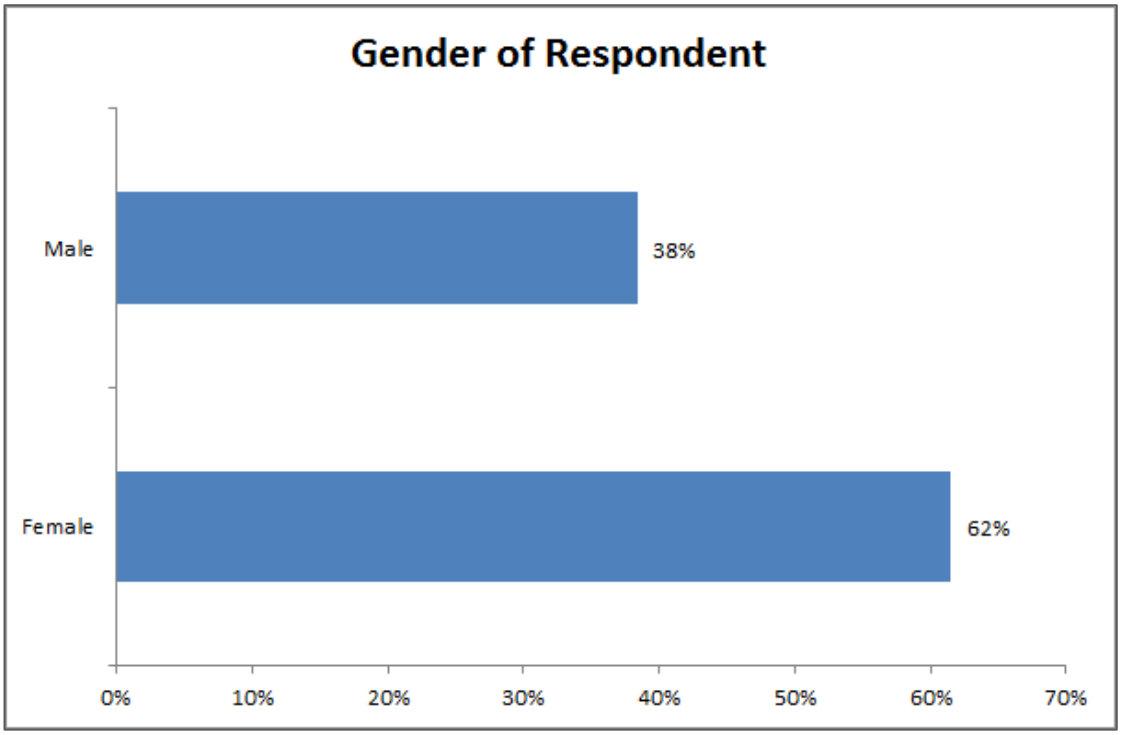
Q.#	Question answer code	1	2	3	4	5	6	7	8	9	10	11
1	Have you ever visited Forest Park?	Yes	No									
2	When was your last visit?	Within last Week	Within last Month	Within last 6 Months	Within last Year	Within last 2 Years	Within last 5 Years	Within last 10 Years	Never visited the Park			
3	On average, during the previous year how regularly have you visited the park?	Daily	Twice a Week	Weekly	Bi Weekly	Monthly	Twice a Year	Yearly	Never visited the Park	Prefers not to answer		
4	On average, during the previous year how much time on each visit have you typically spent in the park?	< 30 minutes	30 minutes – 1 hour	1 – 2 hours	2 -3 hours	3 – 4 hours	4 – 5 hours	> 5 hours	Never visited the Park			
5	By what mode of transport do you typically go to Forest Park? (Choose only one)	Car	Trimet	Bicycle	Walk	Other	I do not go					
6	Using the transport mode you mentioned in the previous question, approximately how much time does it take you to travel to Forest Park?	N/A										
7	If needed, is it convenient for you to go to Forest Park by Trimet bus, streetcar or Max?	Yes	No									
8	If no, please explain											
9	How difficult for you is transportation to Forest Park?	Not at all difficult	Somewhat difficult	Difficult	Very difficult	Extremely difficult	I do not want to visit	Prefers not to answer				
10	When you visit the park what activities do your participate in? Please list all that apply.	Never visited the Park	Hiking/walking	Walking dog	Running	Biking	Bird Watching	Other				
11	For your outdoor recreational needs, what is the major park or outdoor area other than Forest Park that you primarily use?	N/A										
12	In general, what outdoor recreation activities do you participate in? Please list all that apply.	Hiking	Running	Fishing	Walking	Mountain Biking	Horse Back Riding	Bird Watching	Off Road Vehicle Use	Camping	None	Other
13	In general, how often do you participate in outdoor recreation activities?	Daily	Twice a Week	Weekly	Bi-Weekly	Monthly	Twice a Year	Yearly	Never			

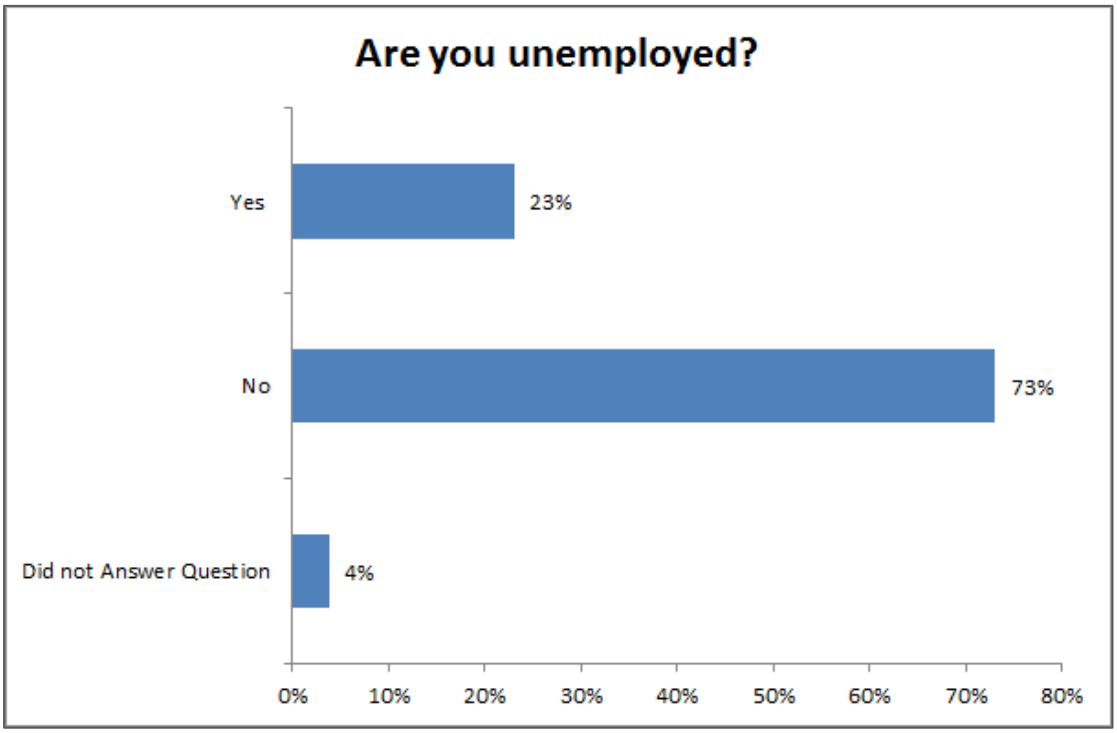
14	How many visits to city parks (not just Forest Park) have you made during the past year?	Zero	1	2	3	4-6	7-10	11-15	16–	Other		
15	On average, during the last year how much time on each visit have you typically spent in parks other than Forest Park?	< 30 minutes	30 minutes – 1 hour	1 2 hours	2 -3 hours	3 4 hours	4 5 hours	> 5 hours	Never visited other parks			
16	If a visitors' center were to be built, would you use it?	Yes	No									
17	Do you think your friends and neighbors would use the visitors' center?	Yes	No									
18	What would be one amenity you would find useful in a visitors center?	N/A										
19	Where do you live?	NE or N Portland	SE Portland	SW Portland	NW Portland	Clackamas County	Washington County	Other				
20	What is your zip code?	N/A										
21	How long have you lived in the Portland area?	I don't live in the Portland area	Moved here in the last year	1-5 years	5 years +							
22	Gender of respondent	Male	Female									
23	What is your age?	18-20	21-30	31-40	41-50	51-60	61-70	71-80	81+			
24	How many people are currently in your household?	1	2	3	4	5	6	>6				
25	How many children are in your household?	1	2	3	4	5	>5					
26	What is your approximate 2014 income?	<$20000	20001 - 30000	30001 - 40000	40001 -60000	60001 - 80000	80001 100000	100001 120000	>120000			
27	Do you own a car?	Yes	No									
28	Are you retired?	Yes	No									
29	Are you unemployed?	Yes	No									
30	What is your education level?	< High school	High school degree	Some college	Associates degree	Bachelor's degree	Graduate degree					
All questions had an additional answer of "Prefers not to answer" those are shown by a N/A on the results excel												

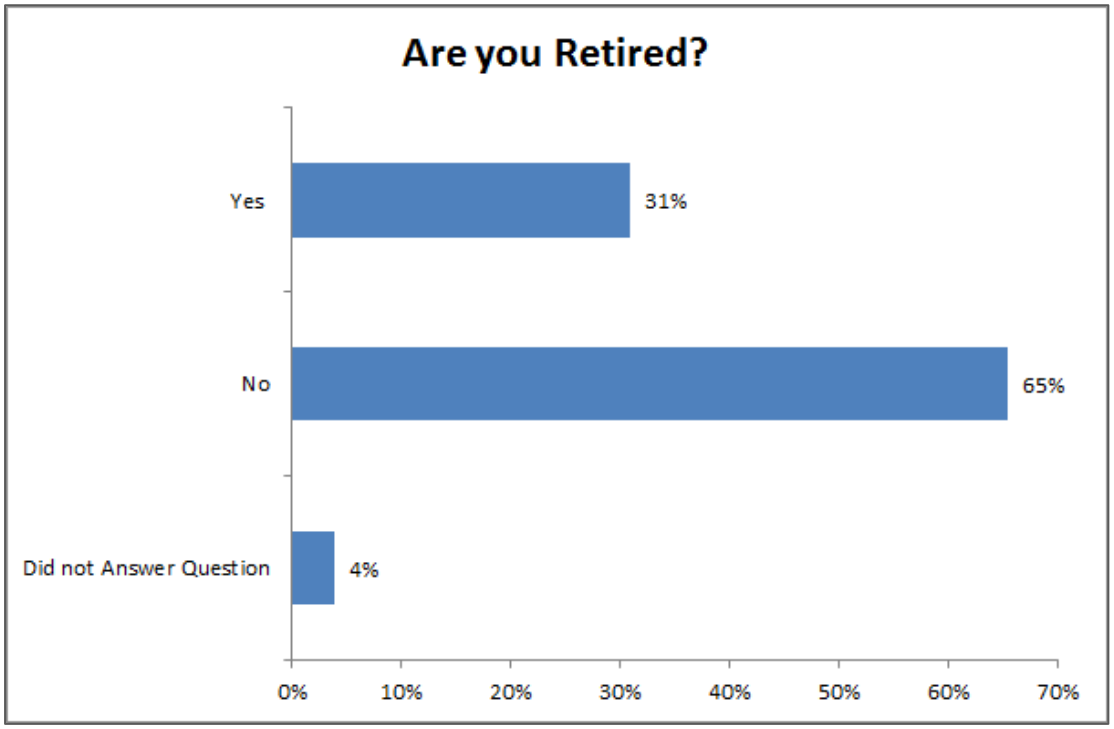
Appendix C. Additional Survey Response Summaries

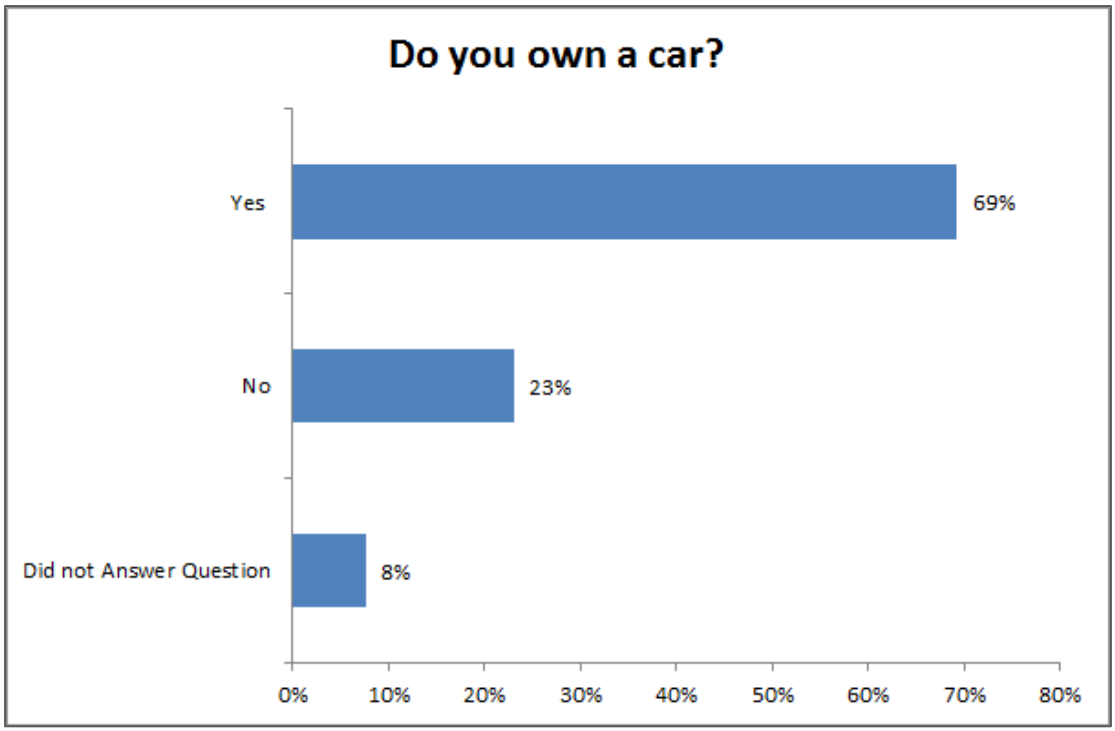


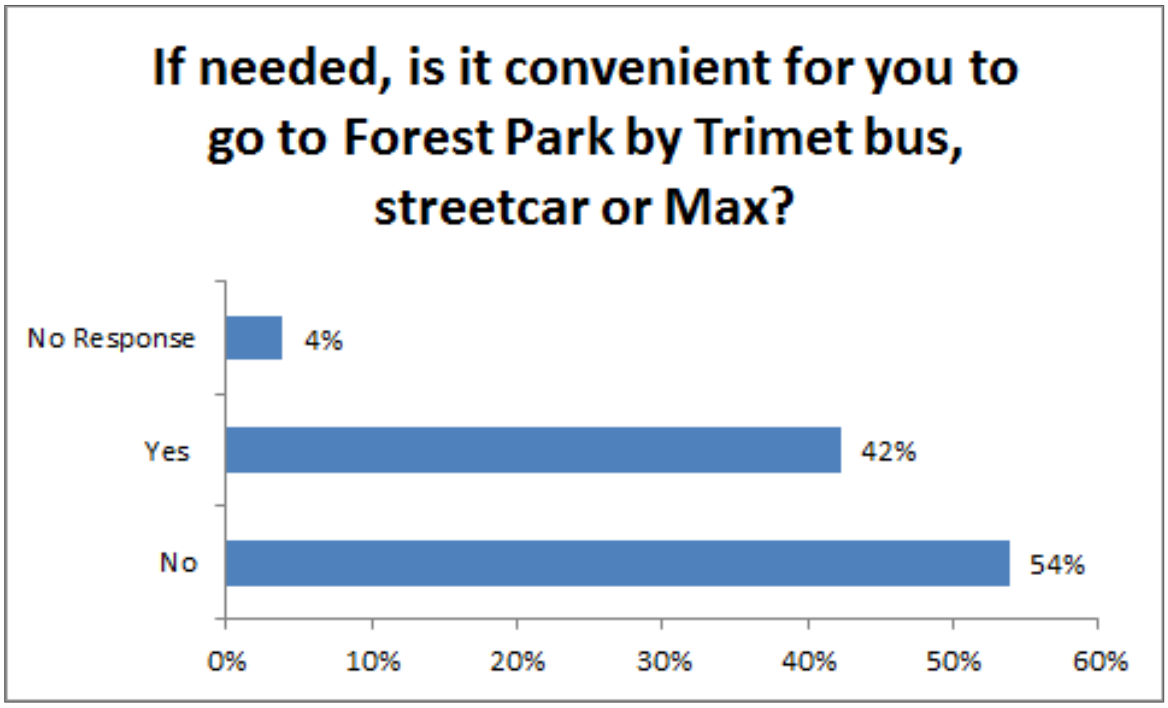



Gender of Respondent
Male
38%
Female
62%
0%
10%
20%
30%
40%
50%
60%
70%


Are you unemployed?
Yes
23%
No
73%
Did not Answer Question
4%
0%
10%
20%
30%
40%
50%
60%
70%
80%


Are you Retired?
Yes
31%
No
65%
Did not Answer Question
4%
0%
10%
20%
30%
40%
50%
60%
70%


Do you own a car?
Yes
69%
No
23%
Did not Answer Question
8%
0%
10%
20%
30%
40%
50%
60%
70%
80%


If needed, is it convenient for you to go to Forest Park by Trimet bus, streetcar or Max?
No Response
4%
Yes
42%
No
54%
0%
10%
20%
30%
40%
50%
60%

Appendix D. Selected Quotes from Focus Groups

Uses

"I was crushed that horses were kept out [of Forest Park]."

- Linnton group

"I have to say, safety is an issue for me as a female. I used to live really close and I used to go up by myself, and you have to be aware of your surroundings – I wouldn't go there at night for sure. It's dark. I think there are a lot of homeless and vagrants."

"I wonder also about the clarity or frequency of trail markers, I saw lots of people who were confused about where they were going. Clarity in particular is an issue."

-SoMa group

"If I had knowledge of additional access points, I would explore more of the park."
"There are a lot of trail runners. [They] can be disruptive – especially in mud – to the people who are walking or hiking."
"For hikers I think the signage is really good – better than a lot of places."

- Lents group

Perceptions

"[I] like to be able to be in the city but easily get out and be in nature, it's a good place to work out, there is the quietness, it's a good place to meditate."

"[Forest Park's] existence has high value for me in general, not even just recreationally. I just value it."

". . .there are also spots of old growth in the park, and they are not very accessible from Portland. And being around all those trees can do something, it can be very spiritual and primitively attractive, something that goes beyond just species diversity."

- SoMa group

"[Forest Park is an] opportunity for students and young people."

"I do use it mostly for hiking and being in nature. I am not really aware of services for me that it provides other than that."

- Lents group

"Even if I never went to Forest Park again, I think it would absolutely still be valuable. It's part of what makes Portland Portland. I knew about it before I moved here."

- Inner NE group

Interpretive Center

"Why put all your eggs in one basket?"

- Linnton group

"I think the location [of the proposed interpretive center] is a deterrent, I don't want to go way out there, and if you don't have a car, you can't easily get there"

- SoMa group

"[At] most parks I go to, you go to the visitor center first to figure out what trail to go to. Makes it easier to navigate."

- Lents group

"I definitely think a visitor center would improve my experience. It could help new people use the park, but education would need to be a big part of it. People need to know that it's there and what it can offer them."

"Forest Park is big. It can probably handle more visitors and still keep pristine areas in the north and allow more recreation in the south. More visitors can help with reporting invasive species and get involved in park cleanups, and that's more people to support park preservation and funding."

- Inner NE group