8-31-2017

The Value of Urban Parklands: A User Study of the Baldwin Hills

Michele Romolini
Loyola Marymount University

Eric Strauss
Loyola Marymount University

Sarah Bruce-Eisen
Loyola Marymount University

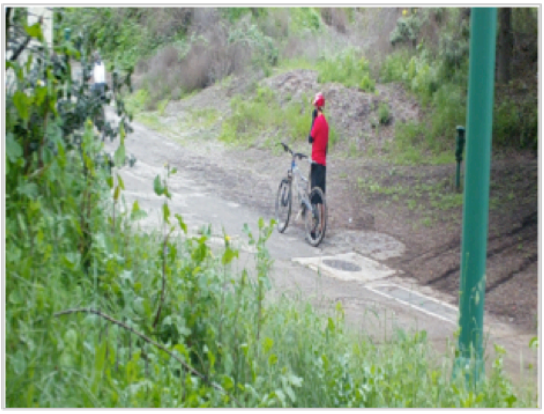
Emily Simso
Loyola Marymount University

Recommended Citation

Romolini, M., Strauss, E.G., Bruce-Eisen, S., & Simso, E.R. (2017). The Value of Urban Parklands: A User Study of the Baldwin Hills (Research Report). Los Angeles, CA: Loyola Marymount University Center for Urban Resilience.

LMU|LA
Center for Urban Resilience

The Value of Urban Parklands: A User Study of the Baldwin Hills



Michele Romolini, PhD, Director of Research
Eric Strauss, PhD, Executive Director
Sarah Bruce-Eisen, Research Assistant
Emily Simso, Research Fellow

Loyola Marymount University Center for Urban Resilience
August 31, 2017

EXECUTIVE SUMMARY

This report provides the results of a two-year research study by the Loyola Marymount University Center for Urban Resilience (CURes) to examine park visitation and user behavior and attitudes in the Baldwin Hills Parklands. Supported by the Baldwin Hill Conservancy through California Proposition 84 funding, the goal of this study was to better understand how individuals are using and interacting with the Baldwin Hills Parklands. It is the first large-scale, multi-year, field-based attendance survey and multifaceted analysis of visitors' experiences in the Parklands, consisting of a pilot and four comprehensive field seasons.

Building on a pilot phase in 2014, 38 CURes research assistants spent 1,934 hours in the parks over four field seasons from 2015-2017. Researchers conducted 1,747 park user surveys, completed counts of 12,709 parks visitors, analyzed 4,998 images from park entrances, and produced reports and outreach materials. The results show that the Baldwin Hills Parklands:

- receive high levels of visitation, especially on weekends, with the Kenneth Hahn State Recreation Area serving the largest user population at any one time, and the Baldwin Hills Scenic Overlook State Park having the highest visitation on average;
- have a devoted population of frequent users that tend to visit only one park within the Baldwin Hills Parklands;
- are visited by people who are highly civically engaged, have a moderate understanding of the local environment, and are very interested in learning more about the environment of the region;
- are visited by users mostly arriving by car who tend to enter through main park entrances, with no trouble finding parking;
- receive a substantial number of visitors who would prefer to arrive by foot or bicycle, and even more who would be interested in taking the park shuttle but were not aware of it;
- support both active recreation and passive enjoyment of nature, with walking and enjoying nature as the top two activities indicated by users;
- are visited by users who do not often go to the coast, though nearly all indicate a willingness to walk or bike on a recreational trail to visit the beach;
- serve a diverse population of users from Los Angeles County that are, on average, relatively young, highly educated, and of low to moderate income, which is not entirely consistent with the surrounding population; and
- receive visitors with highly positive sentiments and attachments to the parks.

These findings suggest that the Baldwin Hills Parklands are an integral natural resource in the Los Angeles region. They also provide a foundation to guide continued work to better understand, improve, and promote the use of the parklands. This report details the findings of the two-year study, provides interpretations of the results and recommendations for the Baldwin Hills Conservancy.

ACKNOWLEDGMENTS

We are grateful to the staff and board of the Baldwin Hills Conservancy, for supporting this work and providing ongoing input throughout the three-year study. We also acknowledge our funding source, California Proposition 84 funds. This studied benefitted from the expertise and hard work of Drs. John Dorsey, Jim Landry, and Sheron Mark, all of whom made substantial contributions to the research proposal, budget, and pilot phase of the project. Former LMU CURes staff members Viktoria Kuehn and Erich Eberts managed the teams of research assistants. Dr. Pete Auger lent his game camera knowledge to help with development and implementation of that portion of the study. Dr. Robert Ryan contributed his expertise on place attachment to develop that section of the survey and analyzed the Season 1 data. StudyLA produced the maps that help visualize the findings and how our results compared to local demographics. Researchers with Savatree Consulting Group, the University of Vermont, and Clark University produced the urban tree canopy assessment, with funding from this grant, the Annenberg Foundation, Loyola Marymount University, and the Ballona Conservancy. Finally, this report would not be possible without the efforts of 38 LMU undergraduates who spent over 2000 hours collecting surveys from August 2014-May 2017.

TABLE OF CONTENTS

LIST OF TABLES

LIST OF FIGURES

1. INTRODUCTION

Urban parks provide a multitude of benefits for residents. Parks increase an individual's ability to partake in physical activities (Cohen et al., 2007), which can improve mental (De Vries, 2003) and public health (Young, 1995) in the community. Green spaces also empower individuals and communities through passive and active engagement programs (Westphal, 2003). The increased social behavior promoted in these areas (Sullivan et al., 2004) leads to elevated community involvement and decreased social tension among groups (Peters et al., 2010). Through this, social coherence is bolstered in communities with access to green spaces (Young, 1995). Research has shown that people form emotional bonds or "place attachment" (Shumaker & Taylor, 1983) to the environments around them. Conservationists since Aldo Leopold (1949) put forth that human experiences are diminished by the loss of any animal or plant species, and biologist E.O. Wilson (1984) coined the term *biophilia* to describe the innate human "urge to affiliate with other forms of life." Moreover, many environmental educators believe that gaining knowledge about natural environments will lead to a more earth-sensitive public (Chawla & Hart,1988; Louv, 1991). There is an implicit assumption that learning about local flora and fauna will lead children to form an attachment to their local biological landscapes (Nabhan & Trimble, 1994) and that this attachment is necessary for environmental stewardship. This human need for environmental experience makes urban parks critical resources amid the vast built environment of cities.

The Los Angeles region is expected to experience increased extremes in the variability of temperature and precipitation as climate change progresses (Berg & Hall, 2015; Bartos & Chester, 2014). Urban greening is one strategy that can help to mitigate the impacts of climate change (Bowler et al., 2010). Increasing green spaces, such as trees and parks, can contribute to offsetting greenhouse-gas (GHG) emissions, removing air and water pollutants, cooling the local climate, and improving public health in urban areas (Pataki et al, 2011). However, communities do not have equitable access to urban green spaces. Low-income areas and

neighborhoods that are predominantly Latinos, African Americans, or Asian-Pacific Islanders have less access to parks than White dominated areas (Wolch et al., 2005). This may be due to increased suburbanization and decentralization primarily by whites (Pulido, 2000), which aided in resources being unevenly distributed across demographic groups. This is particularly relevant in Los Angeles, where higher density housing and industry are primarily on the city's eastern and southern edges, areas that are also chiefly lower-income and minority communities (Weiss, 2002). As a consequence of the industrialization, public parks are less commonly found in those neighborhoods. Additionally, toxic areas are more likely to be in minority communities (Boone & Modarres, 1999; Morello-Frosch et al., 2001). The disparity between demographic groups is not due to minority move-in; environmental risks began after these neighborhoods were established (Pastor et al., 2001). Neighborhood inequity is a cycle, as residential tree canopy is closely linked with resident income (Heynen et al., 2006) and trees are shown to increase property values (Morales, 1980; Luttik, 2000), leading to funding patterns that increase existing inequalities (Wolch et al., 2005). This unevenness can be visualized using "equity mapping" to see where green spaces should be implemented to create a just distribution of resources (Talen, 1998).

The Baldwin Hills Parklands are in a population dense area of west LA. The parks are in the Culver City, Baldwin Hills, and Ladera Heights neighborhoods, the census information for which can be found in Table 1. The Baldwin Hills Parklands also intersect with park poor areas; Baldwin Hills is considered to have a high park need and Culver City is moderate need, while Ladera Heights is low need (Los Angeles Park Needs Assessment, 2016). According to the CalEnviroScreen (version 3.0, 2016) the census tracts encompassing the parks range from 36-40% to 66-70% for their total score, with a higher score indicating a higher environmental burden on the population. There is also a concentration of areas near the Parklands that are considered disadvantaged or severely disadvantaged communities, as defined by the State of California (CA DWR, 2015). The Baldwin Hills Parklands are situated to provide access to green

spaces for millions of Angelenos from the surrounding neighborhoods, as well as adjacent neighborhoods and cities in Los Angeles County (L.A. Forum, 2015).

Table 1. Census information for Los Angeles County and areas adjacent to the Baldwin Hills Parklands.

	Culver City, California	Ladera Heights CDP, California	Baldwin Hills and neighborhoods in ZCTA 90008	Los Angeles County, California
Total Pop	39,469	7,509	31,837	10,170,292
Male	48.4%	45.8%	44.6%	49.3%
Female	51.6%	54.2%	55.4%	50.7%
Median Age	40.5 years	50.3 years	43.9 years	36.1 years
Latino (any race)	23.1%	3.9%	23.3%	48.4%
White NH	48.1%	14.6%	2.6%	52.0%
Black NH	8.5%	71.3%	67.0%	8.2%
Asian NH	14.8%	5.0%	3.7%	14.5%

Source: American Community Survey (2015).

With this grounding, the goal of this research was to better understand visitors' use, activities, and sentiments regarding the Baldwin Hills Parklands. It is the first large scale, longitudinal, multi-method analysis of the park visitors' experiences in the Baldwin Hills Parklands. Methods used during the three-year project consisted of a field-based park user survey, park visitation counts, and game camera monitoring of park entrances. These data were supplemented with additional US Census and tree canopy data.

The work was overseen by the Loyola Marymount University (LMU) Center for Urban Resilience (CURes). This study will inform ongoing initiatives, specifically the Baldwin Hills Master Plan and Park to Playa (Mountains Recreation and Conservation Authority et al., 2012), along with additional recommendations for infrastructure improvements, education and outreach, further research, and funding. Because this study coincides with implementation of the Park to Playa trail, which is intended to connect areas in the Baldwin Hills Parklands, the data can reveal trends in park use, behavior, and attitudes during a period of major physical

change to the park system. This study was supported by Proposition 84 funds through the Baldwin Hills Conservancy, and is well aligned with the Conservancy's commitment to the acquisition of open space, protection of natural habitat, and provision of recreational and educational resources for users in the Baldwin Hills Parklands.

The following sections will describe the study design and methods, report the results, discuss implications for the Parklands, and provide recommendations based on the findings.

2. METHODS

This study of the Baldwin Hills Parklands was intended to provide a comprehensive view of the visitor population, and how they use and feel about the parks. To do this, we employed a mixed methods approach to data collection that utilized a park user survey, systematic counts of visitors and game camera monitoring. We combined the resulting data with additional US Census and LA Urban Tree Canopy information to situate the Baldwin Hills Parklands in the context of the surrounding landscape.

2.1 PARK USER SURVEY

2.1.1 RESEARCH QUESTIONS

When developing the survey, researchers were guided by several overarching questions that would help provide an overall understanding of the user population of the Baldwin Hills Parklands.

- What is the rate and frequency of use of the parks?
- How do users travel to the parks, and are there barriers to access?
- What types of activities do park visitors engage in?
- What is the level of environmental awareness of park visitors?
- What is the demographic composition of the park user population?
- Do visitors demonstrate attachment to the Baldwin Hills Parklands?

2.1.2 SCOPE

The scope of the study included a pilot phase, in August-December 2014, during which the survey was tested; preliminary results from 236 visitors were collected, reported (Mark et al., 2014), and presented to the Baldwin Hills Conservancy Board; and the study was revised in response to researchers' recommendations and Board feedback. The next two years of the study, from January 2015 through July 2017, represent the "comprehensive phase" of the study. This report covers the comprehensive phase consisting of four field survey collection

periods over two years: Summer 2015, Winter/Spring 2016, Summer 2016, and Winter/Spring 2017.

Trained undergraduate research assistants (RAs) were stationed in Kenneth Hahn Scenic Recreation Area (KHSRA), Norman O. Houston Park, Baldwin Hills Scenic Overlook State Park (BHSO), Culver City Park, Reuben Ingold Park, Yvonne B. Burke Sports Complex, and the Ballona Bike Path at 14 designated locations within the parks (Figure 1).

2.1.3 VISITOR COUNTS

Research assistants conducted strategic visitor counts each time they were in the field to provide an estimate of visitor usage on the weekdays and weekends. Counts were performed by the RA standing in a central location in the park and noting the number of unique visitors that passed their location for a period of 15 minutes. Visitor counts were recorded in a central database at the end of each shift.

2.1.4 SURVEY IMPLEMENTATION

Participants were intercepted at the designated park locations (Figure 1) and invited to take the user survey (See Appendix 1 for survey instrument) in either English or Spanish. RAs utilized a set script that included information about the study, and participants were asked to provide verbal consent that they wished to proceed with the survey. The survey protocol received human subjects approval from the LMU Institutional Review Board. Surveys were recorded using Qualtrics survey software on iPads to facilitate the process and minimize data entry errors. Participating in the survey was voluntary and individuals also had the option of completing the survey online by supplying their email address.

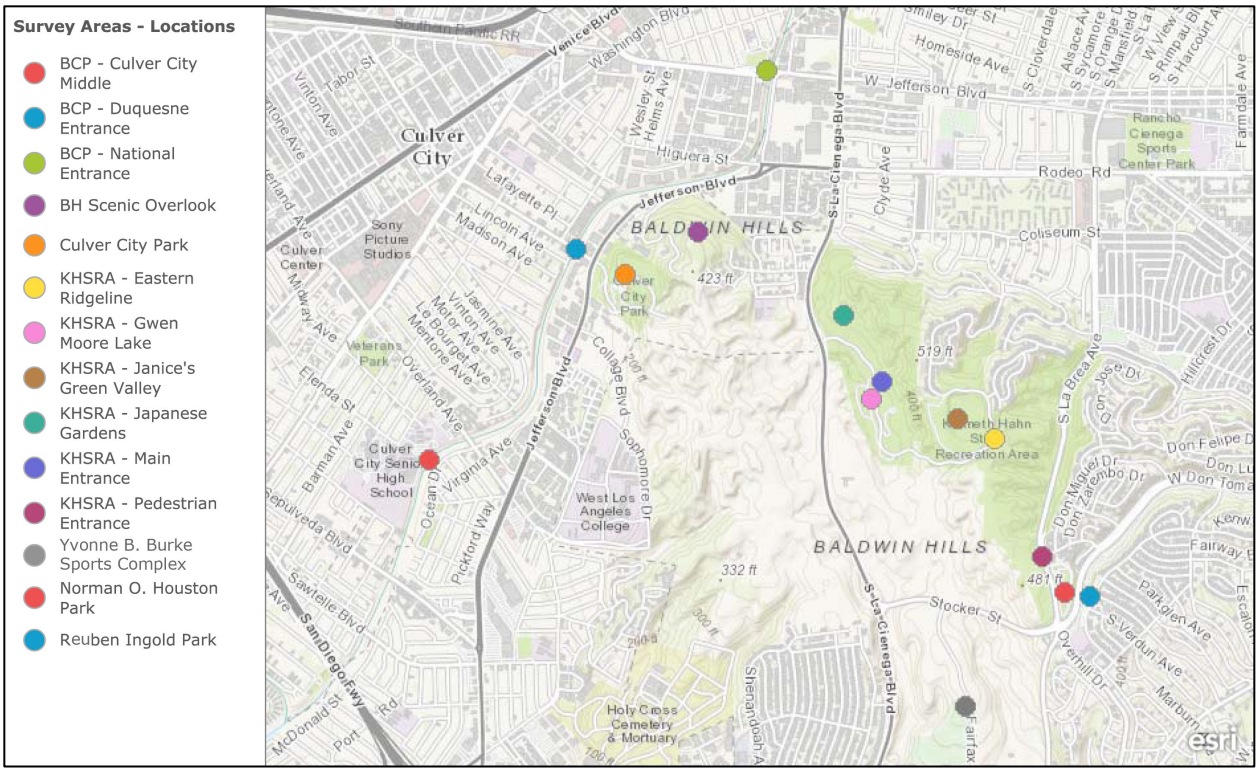
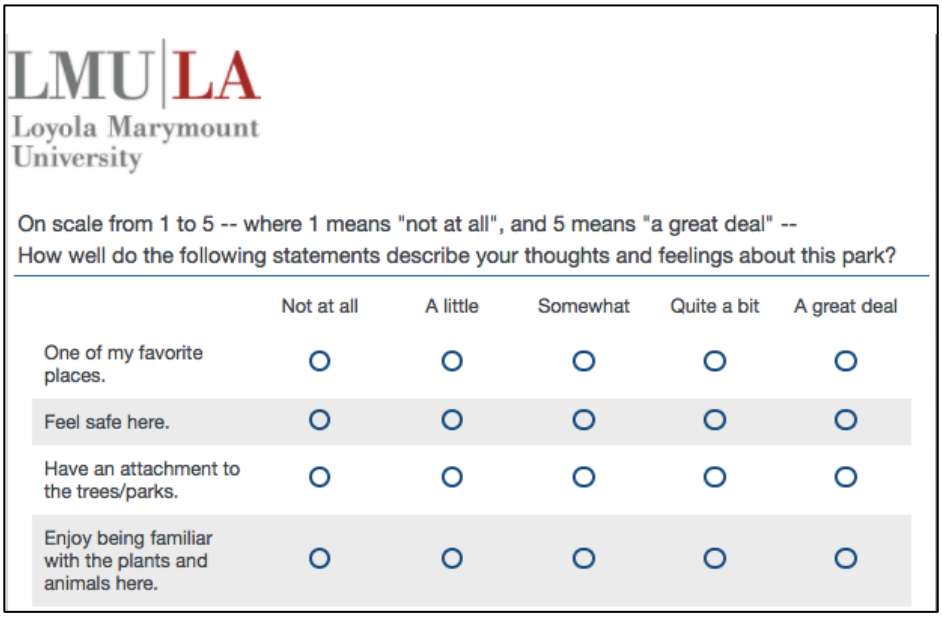


Figure 1. Map of park survey distribution locations within the parks surveyed. Note that BCP refers to the Ballona Creek Bike Path (StudyLA, 2017).

The procedure was modified slightly throughout the comprehensive phase to increase effectiveness. In Season 1, we included a set of questions designed to examine the extent of place attachment of visitors to the Baldwin Hills Parklands. A special section of the survey entitled, "Sentiments about the park," asked visitors to respond to a series of statements about the park (Figure 2). This place attachment section was removed in subsequent field seasons to increase response rate.


LMU|LA
Loyola Marymount University

On scale from 1 to 5 -- where 1 means "not at all", and 5 means "a great deal" --
How well do the following statements describe your thoughts and feelings about this park?

	Not at all	A little	Somewhat	Quite a bit	A great deal
One of my favorite places.	O	O	O	O	O
Feel safe here.	O	O	O	O	O
Have an attachment to the trees/parks.	O	O	O	O	O
Enjoy being familiar with the plants and animals here.	O	O	O	O	O

Figure 2. Screenshot from the place attachment section that was distributed to park visitors as park of the Baldwin Hills Park User Survey in Season 1 (June-September 2015).

From Season 2 onward, RAs were not sent to one location for a shift but given two to survey, so that they could move to a busier location if needed to maximize survey collection for each shift. Additionally, the sites for surveys were reduced to 10 sites instead of the original 14. The decision to remove four locations was a result of RAs encountering very few people at those places. Specifically, the Stocker and Don Lorenzo pedestrian entrances of Kenneth Hahn State Recreation Area and the Duquesne and National entrances of the Ballona Creek Bike Path were removed. Some of the questions were also eliminated or altered to reduce survey fatigue and maximize response rate. In Season 3, to combat the potential effects of hot weather, RAs were stationed in shady areas at a table with water bottles where visitors could cool off while taking the survey. In Season 4, part of the cohort of RAs was drawn from a LMU Environmental Studies engaged learning course.

2.1.5 DATA ANALYSIS

Surveys that were successfully completed were uploaded to Qualtrics and compiled for data processing. The surveys were formatted and downloaded into Excel spreadsheets. Each season's specific spreadsheet was combined into a master spreadsheet to calculate results for all four field collection seasons.

Statistical analyses of results for each survey question were executed using Microsoft Excel data tools. The raw data from each survey question was processed in separate Excel sheets to keep consistency while analyzing the results. Histograms and bar graphs were created to visualize the data and percentages were calculated for numerical representations of the data. To examine the relationships between Season 1 park sentiment data and several other variables of interest, principal factor analysis, t-tests, and statistical analyses of variance (ANOVA) were conducted using the SPSS statistical software package.

As part of this grant contract, LMU's Center for the Study of Los Angeles (StudyLA) provided consulting services to produce maps that visualize the study location and relevant Census data using ArcGIS. The Census maps allowed us to situate the demographic study data within the context of the surrounding areas.

2.2 GAME CAMERA MONITORING

2.2.1 RESEARCH QUESTION

To our knowledge, this is the first study to use game cameras to collect information on park users. Thus, our guiding research question was: *How effective is game camera monitoring as a method to study human activities in parks?*

We believed that the use of remote-sensing camera equipment would provide an additional source of data collection by capturing activity by visitors, particularly during off-peak hours, such as pre-dawn and post-dusk, when researchers would not be in the field.

2.2.2 STUDY DESIGN & IMPLEMENTATION

The game camera visitation study was launched in Summer 2015, and was comprised of four distinct phases. Phase 1 of the project was spent identifying locations and developing an initial research design; during Phase 2 the cameras were field tested for appropriate positioning; in Phase 3 we focused on analysis of data from one site to inform development of a data classification system; and in Phase 4, we collected and analyzed from three additional sites.

Five Browning "Dark Ops" High Definition Trail Cameras were stationed in the Baldwin Hills Parklands. The sites were: Baldwin Hills Scenic Overlook State Park (BHSO) Back Gate, La Brea Veronica, La Brea Stocker, BHSO Path, La Brea Don Lorenzo (Figure 3). The cameras were set to either field scan or motion activated settings, based upon recommendations by a game camera expert.

2.2.3 DATA ANALYSIS

The images captured from the cameras were uploaded to the picture sorting program Picasa 3. With field images or videos, we conduct a process known as "tagging." Each image receives one or many "tags" that identify which categories they fall into. For example, an image could be given the tags: In, 3, Active. This would mean the image showed: entry into the park (In), by three people (3), and that the people in the image were in fitness gear that indicated an active use of the park (Active). We spent the majority of Phase 3 reviewing the data in depth and developing tags to help reveal patterns in park user behavior (see Romolini & Strauss, 2016). Part of this process is to tag "false positives," or images that captured movement other than that intended by the study. In this case, a false positive may be when an animal activated the motion sensor, or a tree branch or even a moving shadow. Though game cameras are generally used for animal behavior study, for this project the equipment has been positioned to capture human behavior and thus animals are considered outside of the scope of the results. However, we did create a separate tag for animals, as the data may be of interest to the Baldwin Hills Conservancy.

For this final phase of the project, we focused on analyzing images from three sites: Site 2, Site 3, and Site 5 (Figure 3). We analyzed images from Site 4 for the last report, and we include those data in this final report to provide the ability to compare across sites. We did not analyze Site 1 (Don Lorenzo entrance) images, as the location of this camera proved less than ideal for capturing user behavior, despite much time and effort in the field attempting to achieve effective positioning. Vehicles triggered the camera to take thousands of images that did not contain people. Since the overwhelming majority of the images were of cars and not park visitors, it was not deemed an efficient investment of project time and budget to analyze the 11,000+ images from this site.

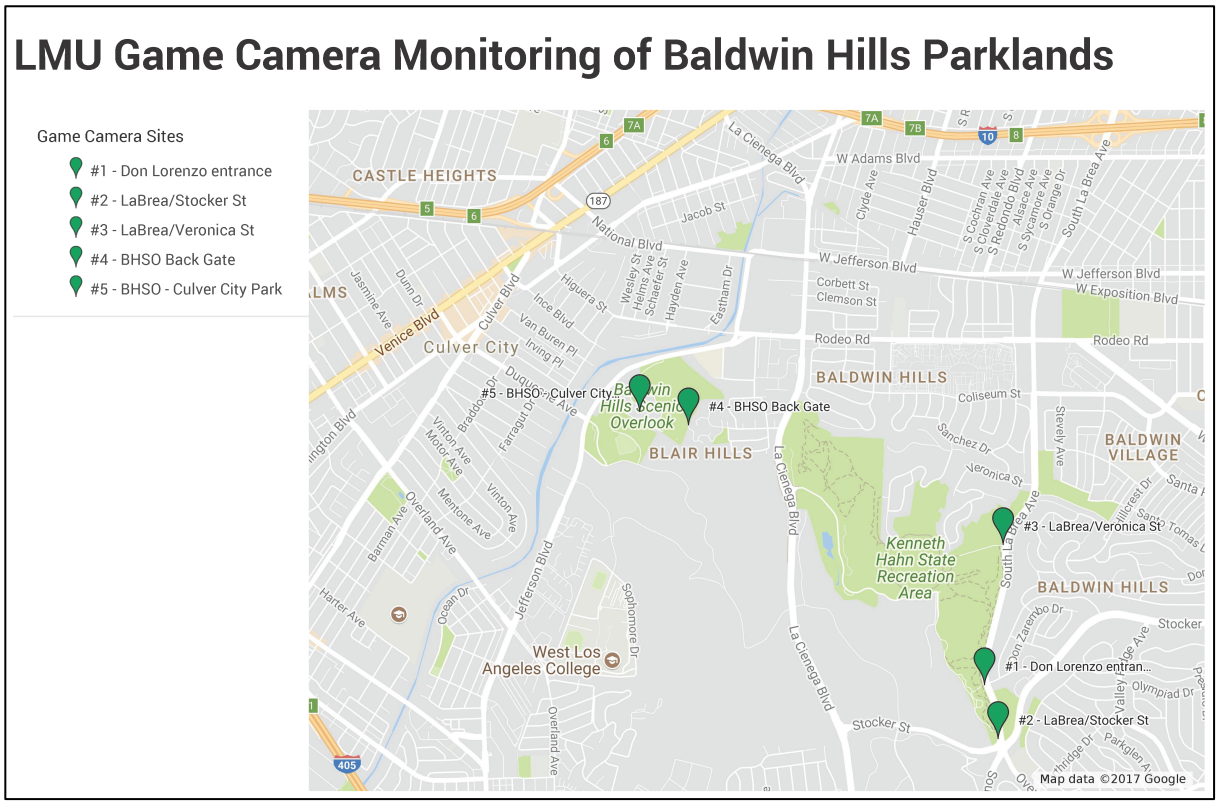


Figure 3. Game camera location sites (image from Google Maps).

2.3 URBAN TREE CANOPY

Concurrent to this study, LMU CURes conducted a high resolution, high accuracy urban tree

canopy and land cover assessment of coastal Los Angeles (O'Neill-Dunne et al., 2015). The overarching goals of the Baldwin Hills parklands study include contributing to protection of waterways and natural resources, and informing equitable distribution and public access to those natural resources. To this end, some funds from this grant were committed to the tree canopy study. This provides the Baldwin Hills Conservancy with coastal tree canopy cover information, which can aid in their efforts to protect the Ballona Creek Watershed and promote access to natural resources for its residents. We will report some of the findings in Section 4 (for full report see O'Neil-Dunne et al., 2015), and the full dataset is available for use by the Baldwin Hills Conservancy via a password protected link on the CURes website.

The tree canopy assessment was completed through the consulting services of Savatree Consulting Group and the University of Vermont Spatial Analysis Laboratory. These assessments use a combination of high resolution (<1 meter) spatial imagery and LiDAR (Light Detecting and Ranging) data. Imagery from 2014 consisted of 4-band (visible plus NIR) at a resolution of 1 meter and was acquired through LMU's membership in the Los Angeles Regional Imagery Acquisition Consortium (LARIAC). LiDAR data from 2009 was acquired through the National Oceanic and Atmospheric Administration (NOAA) as part of the California Coastal Conservancy Coastal LiDAR Project with an average spacing of ~1.5 points per square meter. The geography of the tree canopy assessment was dictated by the availability of LiDAR data for the region, thus tree canopy was analyzed within the NOAA Coastal Project boundaries (Figure 4). The separation of five years between the LiDAR data and the spatial imagery provided the opportunity to measure tree canopy change between 2009-2014 as well as provide an assessment of current (as of 2014) tree canopy.

Figure 4. Geographic boundaries for the Tree Canopy Assessment of coastal Los Angeles County.

Spatial analysis was conducted to first, produce a seven-category land cover analysis of coastal Los Angeles, and second, to produce a parcel-scale assessment of existing and possible tree canopy locations.

3. RESULTS

3.1 USER COUNTS

A total of 12,709 visitors were counted during 355 counts at all parks across four data collection seasons (Figure 5).

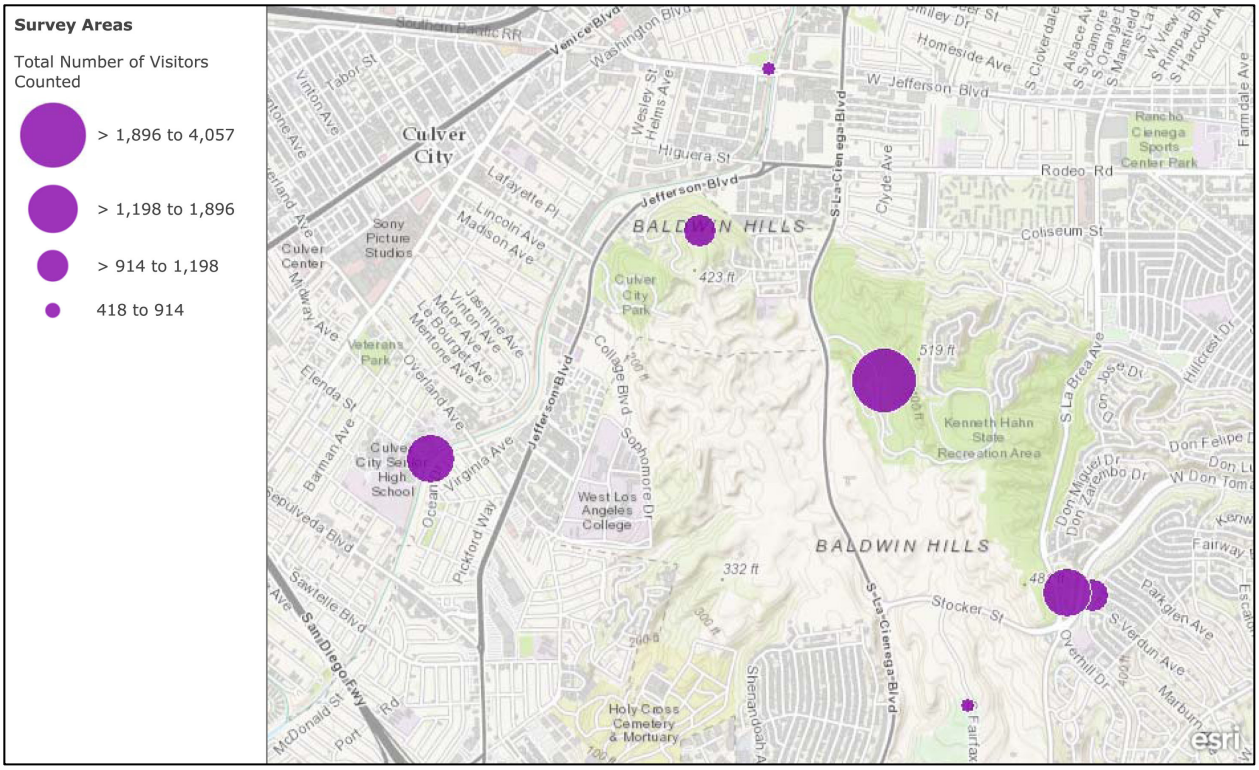


Figure 5. Map of total number of visitors counted for the Baldwin Hills Park User Study (StudyLA, 2017).

Seventy-three percent of counts were conducted during weekdays while 27% were conducted on weekends. Researchers at Kenneth Hahn State Recreation Area observed 615 visitors in one 15-minute period, which is the most compared to the other parks (Table 2).

Table 2. Total and peak user counts for all parks from 2015-2017.

Baldwin Hills Park Location	Total number of visitors counted for the study	Peak visitors counted during one 15-min period
Kenneth Hahn SRA	4,057	615
Norman O. Houston	1,896	75
Culver City Park	1,814	330
Reuben Ingold Park	1,198	60
Baldwin Hills Scenic Overlook	1,054	135
Ballona Creek Bike Path	914	240
Yvonne B. Burke Sports Complex	418	90

The Baldwin Hills Scenic Overlook State Park had the most consistently high visitation, with 96 visitors present during an average 15-minute period on the weekends, and 47 on the weekdays. Weekday versus weekend visitation is shown in Figure 6.

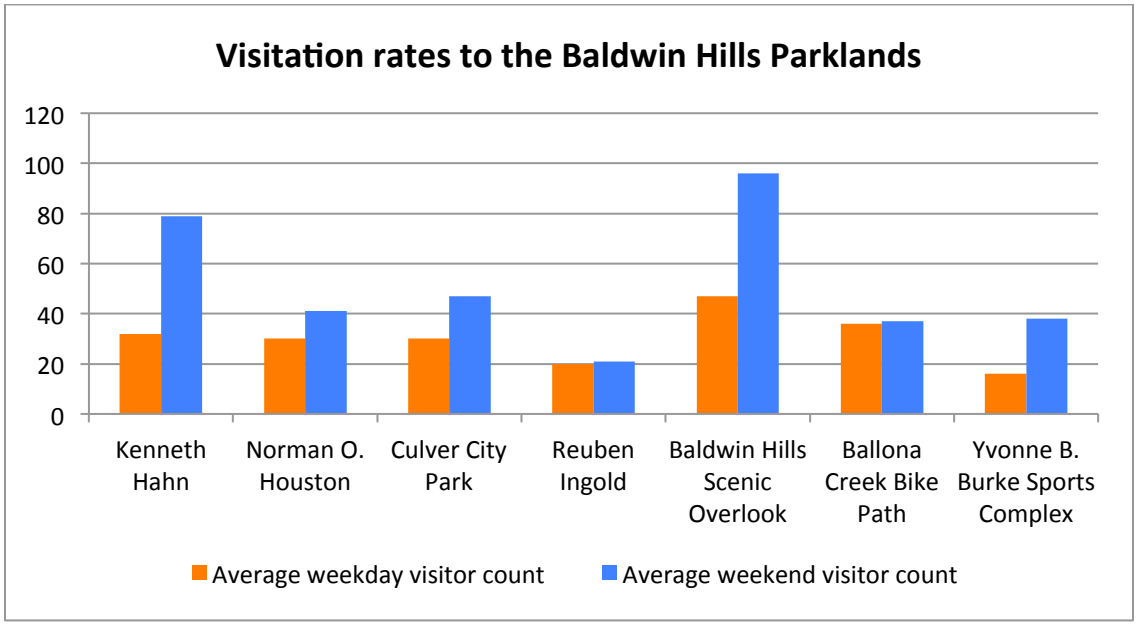


Figure 6. Weekday and weekend visitation rates to the Baldwin Hills Parklands.

User counts were also assessed by field collection season. Figures 7 and 8 show those findings. Collection seasons 1 and 3 represent mostly summer months (June-September) and collection

seasons 2 and 4 represent winter/spring (January-April 2016 and February-May 2017). There were some differences between summer visitation and winter/spring visitation, as shown.

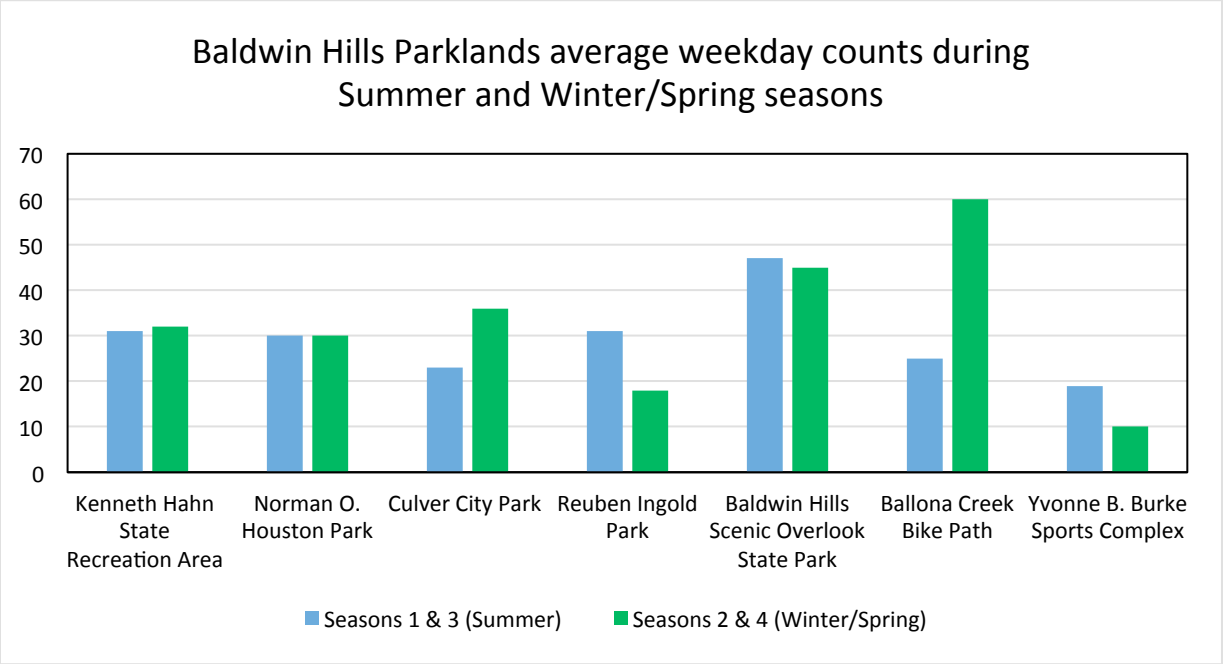


Figure 7. Summer versus winter/spring weekday visitation rates in the Baldwin Hills Parklands.

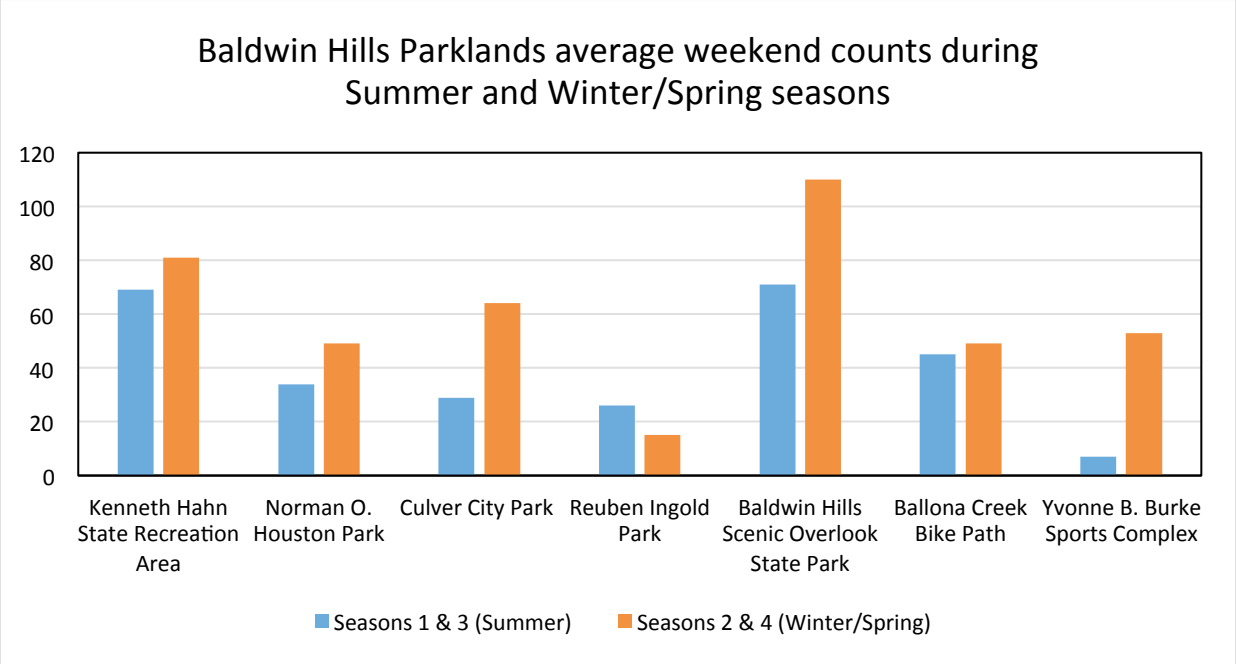


Figure 8. Summer versus winter/spring weekend visitation rates in the Baldwin Hills Parklands.

3.2 USER SURVEY

3.2.1 DATA COLLECTED

In total, 1,747 surveys were collected from 14 sites over the four comprehensive field seasons. Adding in the pilot season (Mark et al., 2014), this study gathered information from 2,016 park visitors to the Baldwin Hills Parklands. However, since the survey instrument and study methods were modified extensively following the pilot, this final report does not include results from the pilot. Table 3 and Figure 9 show the breakdown of the number of surveys collected by location for the two-year study.

Table 3. Surveys collected and hours spent in the field for the Baldwin Hills Park User Study.

Field Season	1 (Jun-Sep '15)	2 (Jan-Apr '16)	3 (Jun-Sep '16)	4 (Feb-May '17)	Total
Surveys Collected	363	594	416	374	1,747
Hours in the field	532	453	501	448	1,934

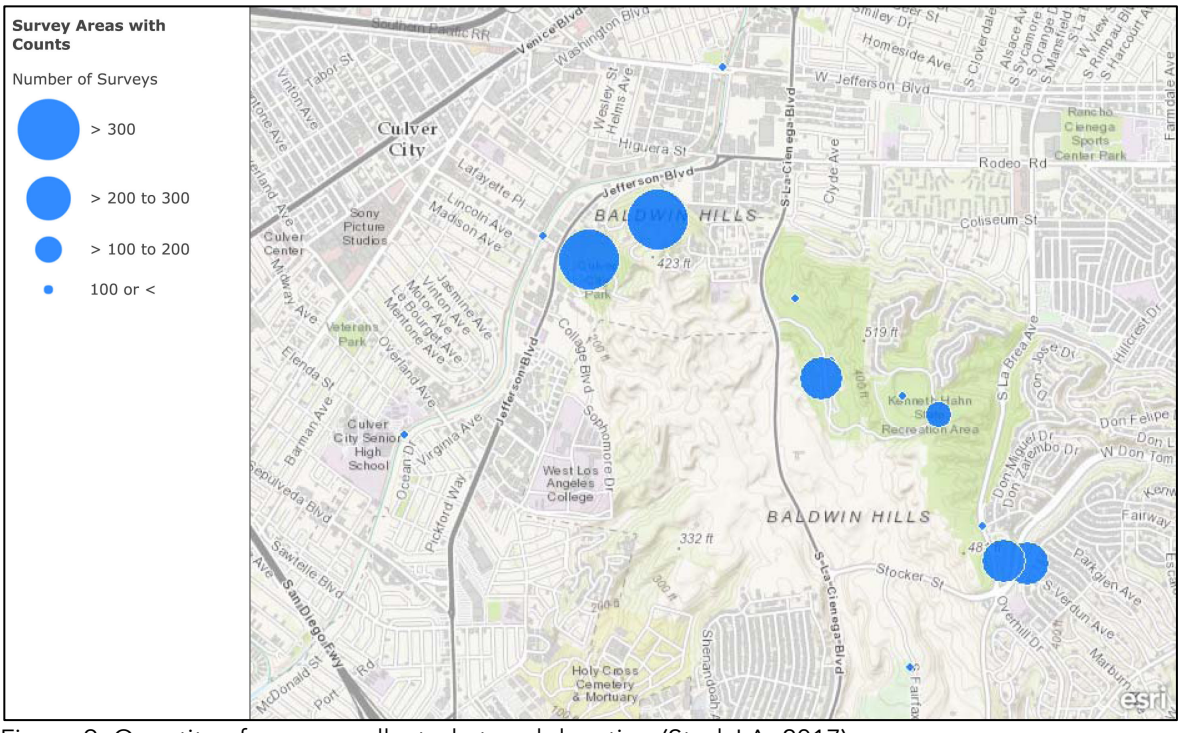


Figure 9. Quantity of surveys collected at each location (StudyLA, 2017).

Over the course of the study, 38 LMU undergraduates were involved in aspects of survey implementation, game camera study management, data analysis, and reporting. In the four comprehensive field collection seasons, these students spent approximately 1,934 hours in the field, with many additional hours in the lab (Table 3).

3.2.2 SURVEY RESPONSES

The following provides a summary of the results, by question, of all the survey responses provided by park visitors. They are grouped by research question theme: frequency of use, accessibility, activities, environmental awareness, demographics, and place attachment.

3.2.2.1 FREQUENCY OF USE

Question 1: How often do you visit this particular park?

The results showed 22% of surveyed park users said they visited the certain park 2-3 times a week, 19% reported 2-3 times a month and 16% of park users reported once a week. Season specific responses can be seen in Table 4.

Table 4. Frequency of respondent visits to Baldwin Hills Parklands, by season

Frequency of Visits	Summer 2015 Season	Winter/Spring 2016 Season	Summer 2016 Season	Winter/Spring 2017 Season
Daily	13%	12%	10%	9%
2-3 times a week	22%	19%	24%	25%
Once a week	21%	13%	14%	17%
2-3 times a month	20%	18%	19%	19%
Less than once a month	14%	17%	16%	15%
Never	2%	5%	6%	4%

Question 2: What time of day do you like to visit the park?

The results showed 27% of respondents said they liked to visit the park in the early morning, 26% reported they like to visit in the afternoon, and 20% reported they like to visit during mid-day. Seventeen percent reported that they like to visit in the late morning, and 10% reported they like to visit in the evening,

Question 3: Which other Baldwin Hills parks do you visit? (choose all that apply)

The findings showed Kenneth Hahn State Recreation Area, Baldwin Hills Scenic Overlook State Park, and Culver City Park (skate park, dog park and ball fields) were chosen the most as other parks visited by respondents (Figure 10).

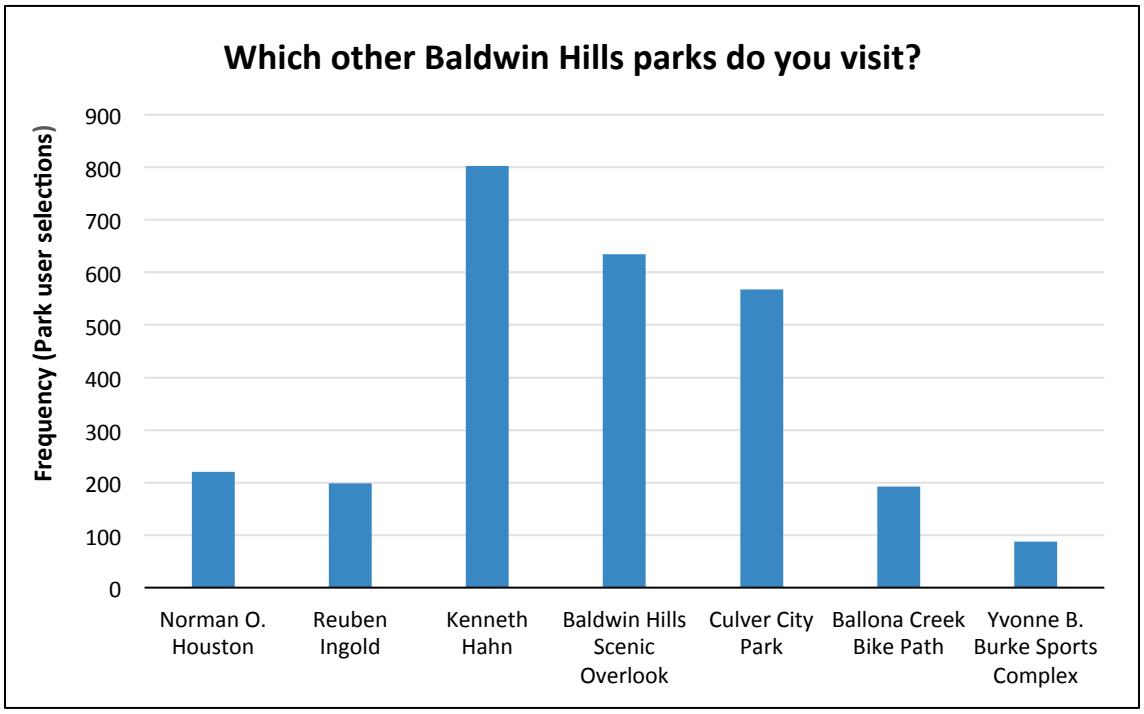


Figure 10. Parks visited besides the location at which respondents received the survey.

Question 4: How often do you visit other Baldwin hills parks?

The results showed 25% of park users reported that the never visit Baldwin Hills Parkland areas other than the one they recorded in the previous question. Twenty-one percent reported they visit less than once a month, and 18% reported they visit 2-3 times a month. 16% reported that they visit once a month, 9% reported that they visit once a week, 9% reported that they visit 2-3 times a week and 2% reported that they visit daily.

3.2.2.2 ACCESSIBILITY

Question 5: How did you get to the park today?

The results showed 84% of park users reported that they used a car, SUV or truck to get to the park, 10% reported that they walk, and 3% reported that they used a bike to get to the park. The full breakdown of results is shown in Figure 11.

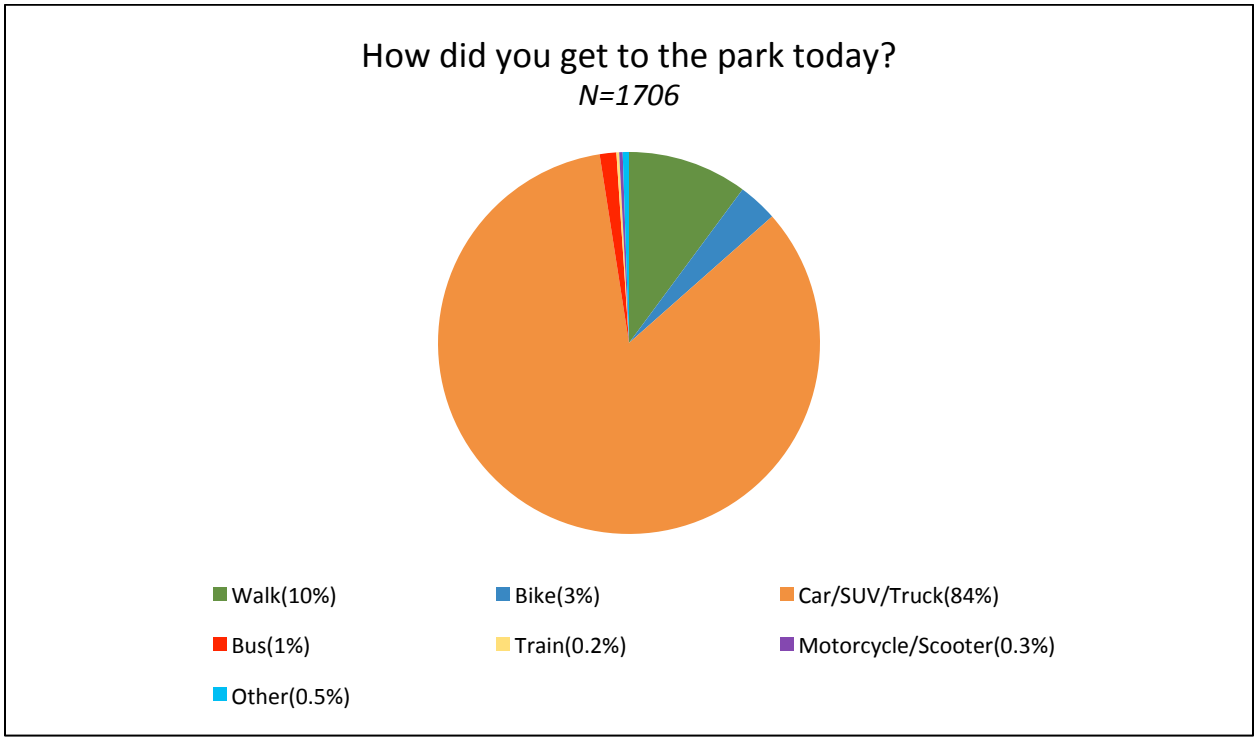


Figure 11. Chart of survey responses describing mode of travel to get to the parklands.

Question 6: How far did you walk?

The results showed 173 (10%) of the park users said that they walked to the park that day. Most said that they walked less than one mile or less than half a mile. Only three park users reported that they walked five miles or more. Figure 12 shows the one-mile area surrounding the survey locations. While a quarter-mile is the generally agreed upon standard distance that people are willing to walk to a park (Boone et al., 2009), we used a more liberal radius to include any reasonable walking distance.

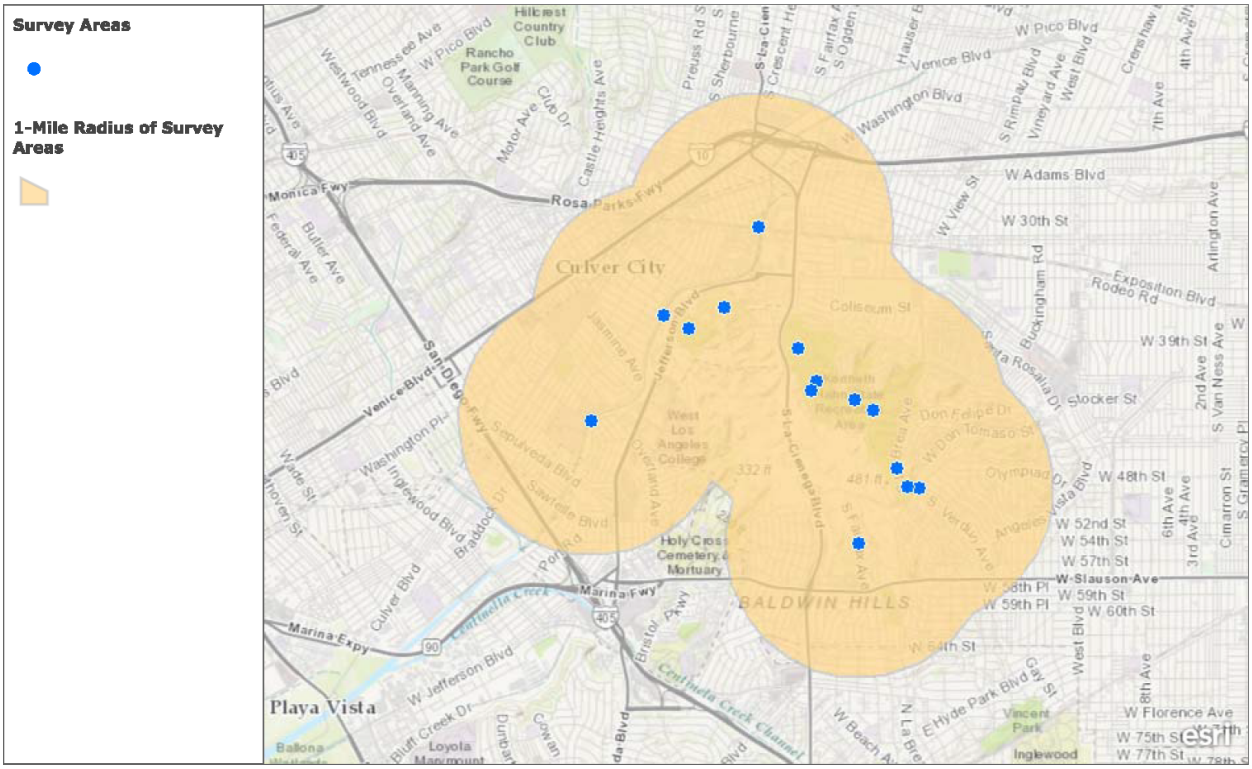


Figure 12. Map showing the area contained in a one-mile radius around the survey locations (StudyLA, 2017).

Question 7: How convenient was it to find parking?

The results showed that the 72% of park users who drove to the park reported that finding parking was very convenient, and an additional 12% found it convenient. There were 233 users (16%) who reported they found parking to be very inconvenient, slightly inconvenient, or average. The highest responses of less convenient parking were from visitors to the Baldwin

Hills Scenic Overlook State Park, followed by Culver City Park, Gwen Moore Lake and the Eastern Ridgeline at Kenneth Hahn SRA, and Norman O. Houston.

Question 8: Where did you park?

The results showed 65% of park users reported that they parked in the parking lot for the park, 33% of park users reported that they parked on the street in the surrounding neighborhood. One person reported that they parked in an Electrical Vehicle charging station parking spot by selecting Other.

Question 9: What other ways do you get to the park?

The results showed 57% of park users reported that their primary other way to get to the park is driving a car, SUV, or truck. Twenty-two percent reported that walking was their main other way. 13% reported that they bike, 4% reported that they use the bus, 3% reported they use an other way not listed in the survey, 1% reported they take the train, and 0% (2 park users) reported they use a motorcycle.

Question 10: If given the choice of all transportation options, what would your preferred way to get to the park?

The results showed 48% of park users reported that if given all of the transportation options they would choose to drive a car, SUV, or truck. Twenty-two percent of park users reported that they would walk if given the choice of all transportation options, and 19% said they would prefer to bike. Figure 13 shows the breakdown of actual versus preferred mode of travel for the entire study.

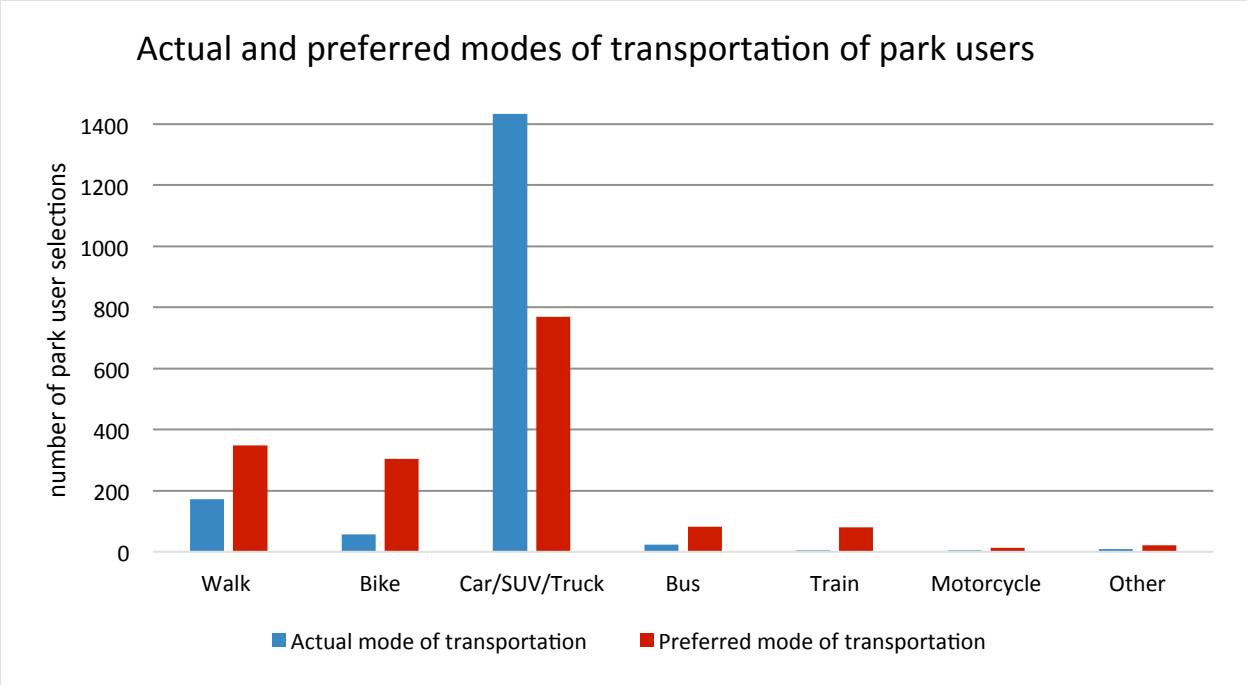


Figure 13. Results of survey respondents' actual and preferred modes of transportation.

We noted some differences in preferred mode of travel by data collection season and time of year. The first data collection season (Summer 2015) had a seemingly anomalous high level of respondents who arrived to the park by bicycle (10%) and bus (4%), which was 11% higher than the subsequent three field collection seasons when an average of less than 3% of users reported bus and bicycle as their mode of travel to the parklands. Also notable, the preference for driving was lower in data collection Seasons 2 and 4 (average of 44.5%), which occurred in the Winter/Spring versus 54% in Seasons 1 and 3, which took place in the summer.

Question 11: How did you enter the park?

The results showed 88% of park users reported that they use the main park entrance. Ten percent of park users reported that they use a smaller back or side entrance to enter the park. While this is not a large number, it is notable. Five of these types of entrances were monitored through the game camera portion of the study, for which results are provided in Section 4.3.

Question 12: Are you aware that the county operates a free shuttle to the park?

Nearly 90% of park users reported that they did not know about the free park shuttle.

Question 13: Would you take the shuttle?

The results showed 52% of park users reported that they would take the shuttle.

Question 14: How strongly do you agree or disagree with the following statement: "There are particular areas in the park that I avoid."

As shown in Table 5, most users did not avoid particular areas in the park, but 11% of users reported they agreed or strongly agreed that they avoid certain areas in the park.

Table 5. Survey responses indicating whether users avoid particular areas in the park.

Response	Percentage of Respondents
Strongly disagree	41%
Disagree	31%
Neither agree nor disagree	17%
Agree	8%
Strongly agree	3%

Question 15: Why do you avoid particular areas?

For the users that reported that they agree or strongly agree with the statement in the last question, the majority of park users reported that they avoided particular areas because they are "unsafe." The second-highest amount reported "too crowded" to be the reason. The rest reported that they avoided particular areas due to being "hard to get to/ inaccessible," "lack of equipment," "lack of facilities," and/or "odors". A small portion (2%) of users chose "other" and reported in writing that they avoided particular areas for a variety of reasons: "snakes," "Lady with crazy dog won't leave and is not held accountable for breaking park rules," "Allergies," "Lonely," "Respect for the wildlife," "Different environment of people," "Geese,"

"Dogs not on leash," "No grass," "Lack of dog friendliness," "Ticks and fleas," "No dogs allowed," "Not dog friendly," "Dogs not allowed," "Uncontrollable Aggressive dog," "Do not go on trails," "Wild dogs," "Unpaved pathways inaccessible," "Crazy dog owners," and "Loose dogs." Figure 14 shows a visualization of these responses.

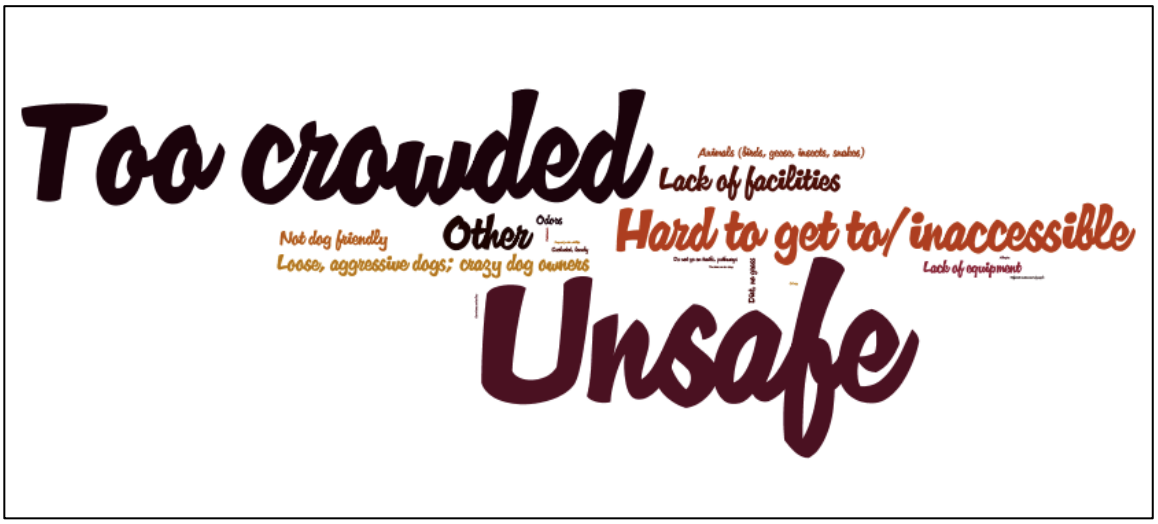


Figure 14. Word cloud visualization depicting why visitors avoid certain areas (created using wordle.net).

3.2.2.3 ACTIVITIES

Question 16: What kinds of activities do you do in the park? (Select all that apply)

Visitors were asked to identify all of the types of activities they like to do in the parklands. Out of 15 choices, the majority of park users reported that they "use walking trails, roads, stairs or ramps" (77% of respondents), followed by "enjoy nature" (48% of respondents). "Jog within the park" received the third-highest number of selections (44%). "Camp within the park" received the least number of selections (2%). Table 6 shows all of the results for this question.

Table 6. Activities reported by visitors to the Baldwin Hills Parklands.

Activities	Number of selections by park users (N=1729)
Use walking trails, roads, stairs or ramps	1333 (77%)
Enjoy nature	832 (48%)
Jog within the park	762 (44%)
Use dog park	522 (30%)
Have picnics/social gatherings	474 (27%)
Bring kids to play	448 (25%)
Use fitness equipment	370 (21%)
Use playing fields for active sports	243 (14%)
Meditate or do yoga	217 (13%)
Birdwatch	203 (12%)
Help take care of the environment in the park	165 (10%)
Use community recreation center facilities	124 (7%)
Mountain bike within the park	107 (6%)
Use skate park	55 (3%)
Camp within the park	34 (2%)

Figure 15 helps to visualize this information.

Figure 15. Word cloud visualization of responses for use of the Baldwin Hills Parklands (created with wordle.net).

Question 17: Would you be interested in volunteering for park related activities?

The results showed 63% of park users reported no, they would not be interested in volunteering for park related activities. Thirty-seven percent reported yes, they would be interested in volunteering for park related activities.

Question 18: Would you like more information regarding the parklands and the Park to Playa trail?

The results showed 53% of park users reported no, they would not like more information regarding the Park to Playa trail. Forty-seven percent reported yes, they would like more information regarding the Park to Playa trail.

Question 19: How many miles would you walk or bike on a recreational trail between Baldwin Hills to the beach?

The results showed that 91% of park users reported that they would walk or bike between one and ten miles from Baldwin Hills Parklands to the beach.

Question 20: Do you know where the Ballona creek or the wetlands are?

The results showed that 53% of park users reported that they know where the Ballona creek or the wetlands are. Forty-seven percent reported that they do not know where the Ballona creek or the wetlands are.

Question 21: How often do you visit the coast?

The results showed that 25% of park users reported that they visit the coast less than once a month, 25% reported once a month, and 23% reported 2-3 times a month. The extremes of Never (6%) and Daily (4%) were the lowest reported. The results for this question are graphed in Figure 16.

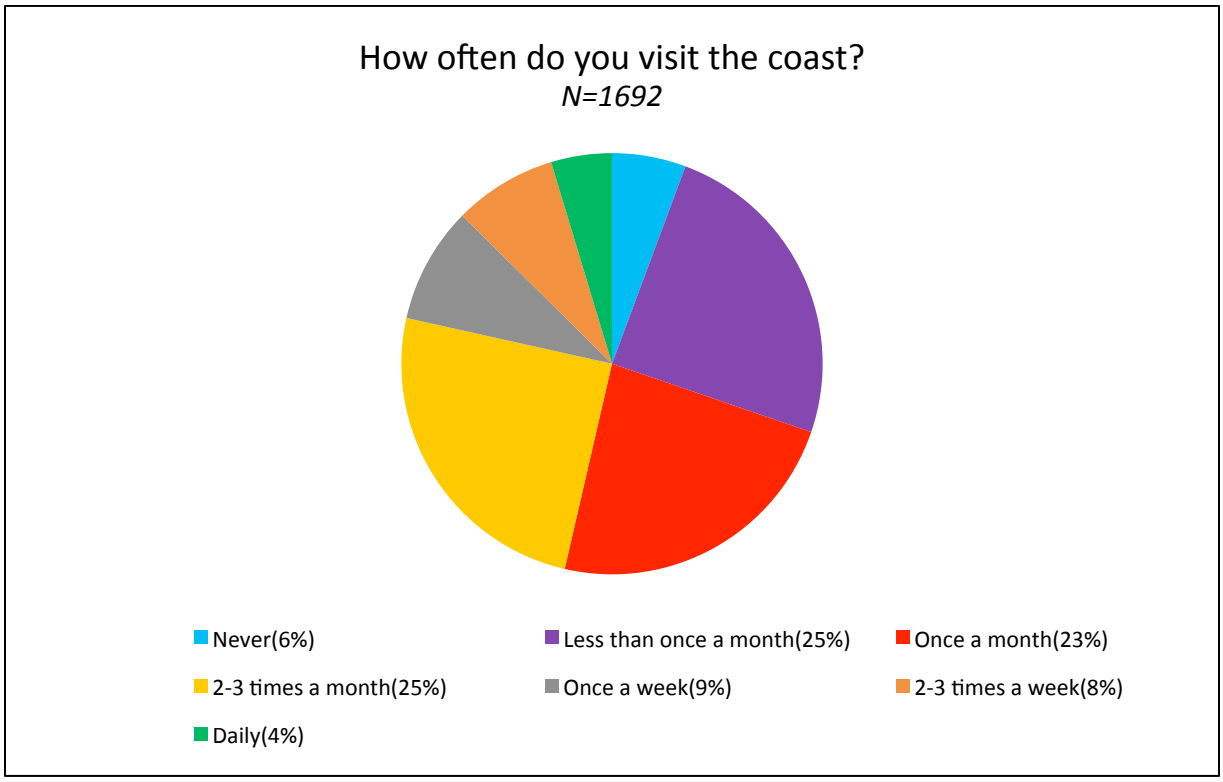


Figure 16. Responses from visitors to the Baldwin Hills Parklands of how often they visit the coast.

3.2.2.4 ENVIRONMENTAL AWARENESS

In the first part of this section of the survey, respondents were asked to indicate whether they agreed with four statements related to environmental awareness. The results for this are displayed in Table 7.

Table 7. Results showing how strongly respondents agreed to a series of statements related to environmental awareness.

	Response				
Question	Strongly Disagree	Disagree	Neither Agree nor Disagree	Agree	Strongly Agree
I am aware of the factors involved in maintaining a healthy and balanced urban environment	1%	9%	14%	45%	31%
I am aware of the types of plants that are native to this region	7%	30%	20%	31%	12%
I know where there are open bodies of water and streams for recreation and enjoyment within the Baldwin Hills area	5%	24%	16%	35%	20%
The Baldwin Hills parklands can be a place for me to learn about science and the environment	1%	5%	15%	44%	35%

Question 22: Would you like to better understand the region's environment from the parks to the ocean?

The results showed 70% of park users reported yes, they would like to better understand the region's environment from the parks to the ocean.

Question 23: Which topics are you interested in understanding better?

The results showed 29% of park users reported that they are interested in better understanding human health and the environment, 24% reported that they are interested in better

understanding wildlife, and 15% reported they are interested in better understanding water quality. Respondents had the least interest (7%) in learning more about water quantity. These results are graphed in Figure 17.

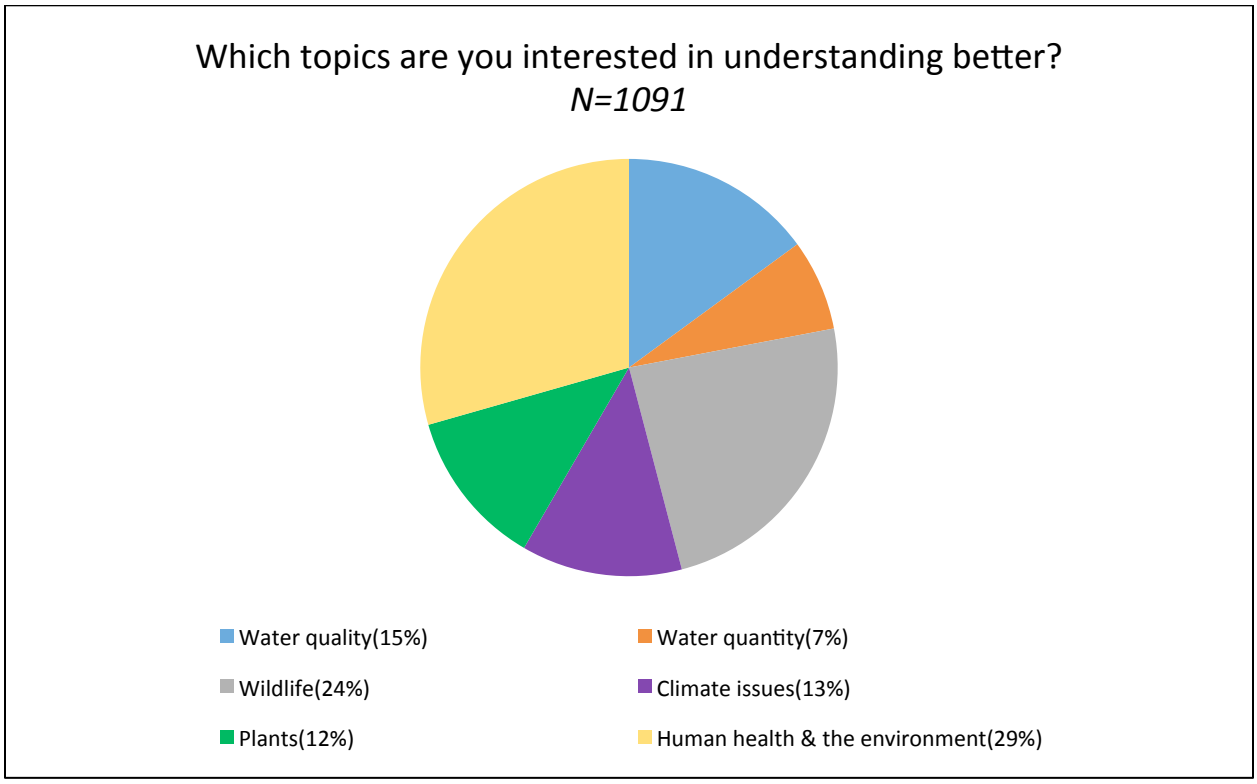


Figure 17. Topics that park visitors indicated interest in learning more about.

Question 24: Which educational opportunities would you use if available?

The results showed that 48% of park users reported they would use educational signs throughout the park, 26% reported they would use formal programs as educational opportunities, and 22% reported they would use informal activities, such as group meet-ups.

3.2.2.5 DEMOGRAPHICS

Question 25: In which neighborhood do you live?

Park users were asked to choose from a list of neighborhoods adjacent to the Baldwin Hills Parklands. The results showed that 47% of park users reported that they live in "other,"

indicating that nearly half of the park users that took the survey were not from any of the neighborhoods listed. The second and third highest reported neighborhoods were Culver City (24%) and Baldwin Hills (13%), respectively. Respondents choosing "other" were asked to provide their zip codes. Figure 18 allows for a visualization of this data.

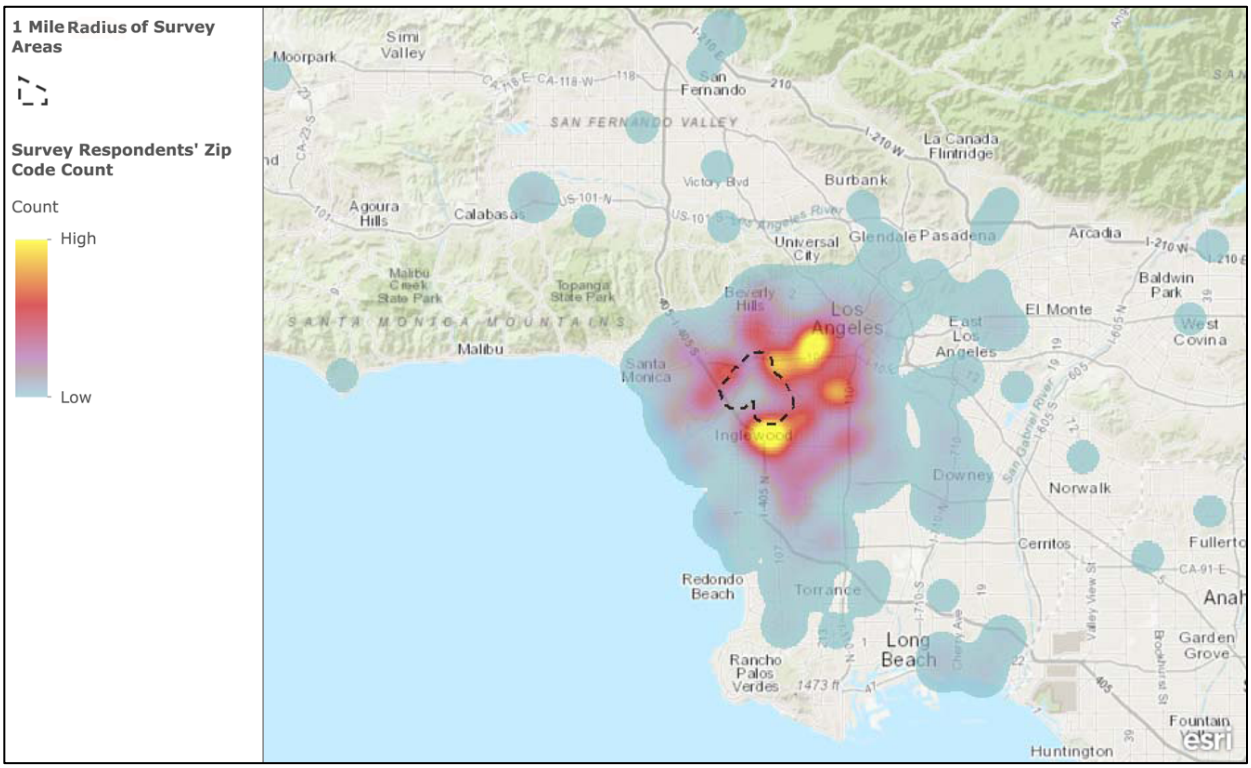


Figure 18. Heat map of zip codes of survey respondents based on frequency of response (StudyLA, 2017).

As shown, the concentration of visitors is still from nearby neighborhoods, though many are coming from greater Los Angeles County. Less than 1% of respondents reported that they live outside of LA County, split nearly evenly between other counties in the state and other parts of the country.

Question 26: Do you rent or own?

The results showed 57% of park users reported that they rent, 43% reported that they own.

Question 27: How old are you?

A portion of the visitors reported their age. Ages of the 204 respondents to this question ranged from 18 to 95, with a median age of 35 years old. Figure 19 allows for a comparison of this experimental data with reported census information.

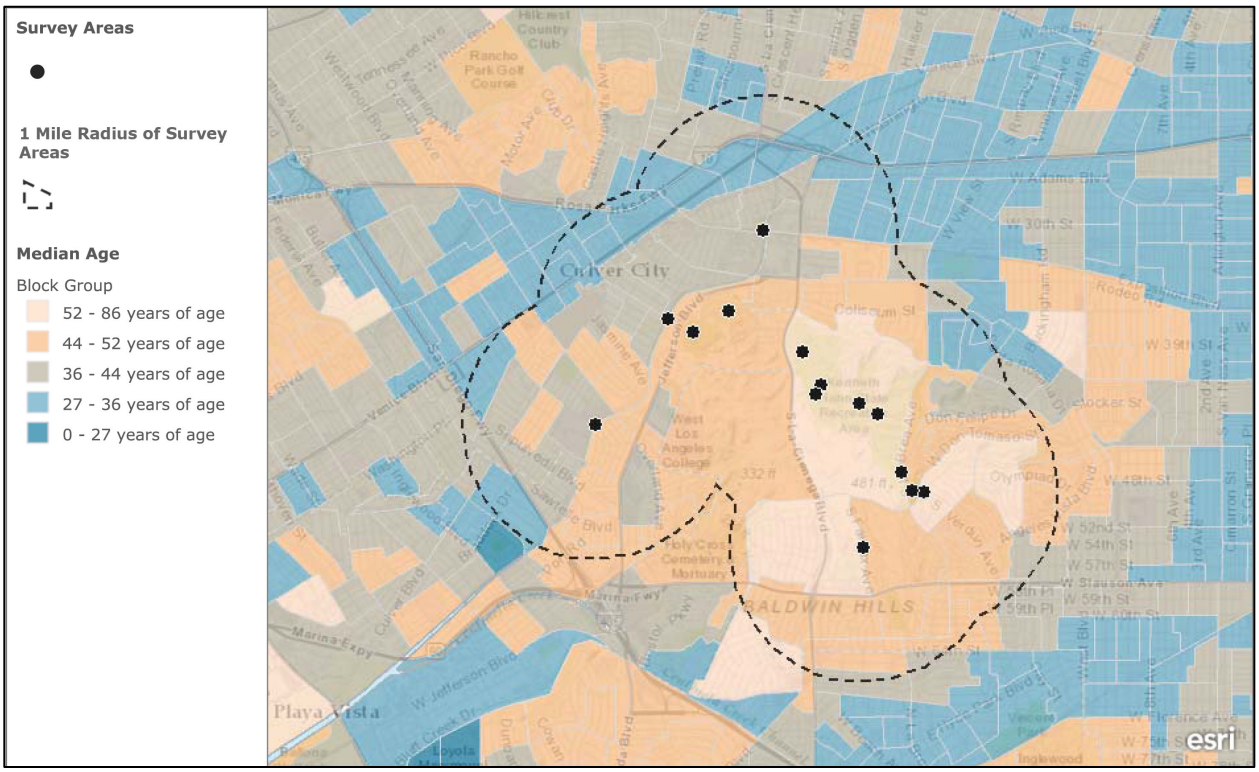


Figure 19. Map of individuals' reported ages based on census information (StudyLA, 2017).

The average individual going to the Baldwin Hills Parklands is younger than many of the census tracts within the one-mile radius but is more consistent with the census tracts surrounding the parks.

Question 28: What language/s do you speak? Select all that apply.

English was spoken by 97% of the 1631 users who chose to respond to this question. Spanish was spoken by 30% of the respondents, and "other" was chosen by 7% of users.

Question 29: Please indicate your gender.

The results showed 56% of park users reported "female," 43% reported "male," 0.2% reported "transgender," and 0.8% reported "prefer not to answer." Figure 20 provides a comparison of this reported data with given census data.

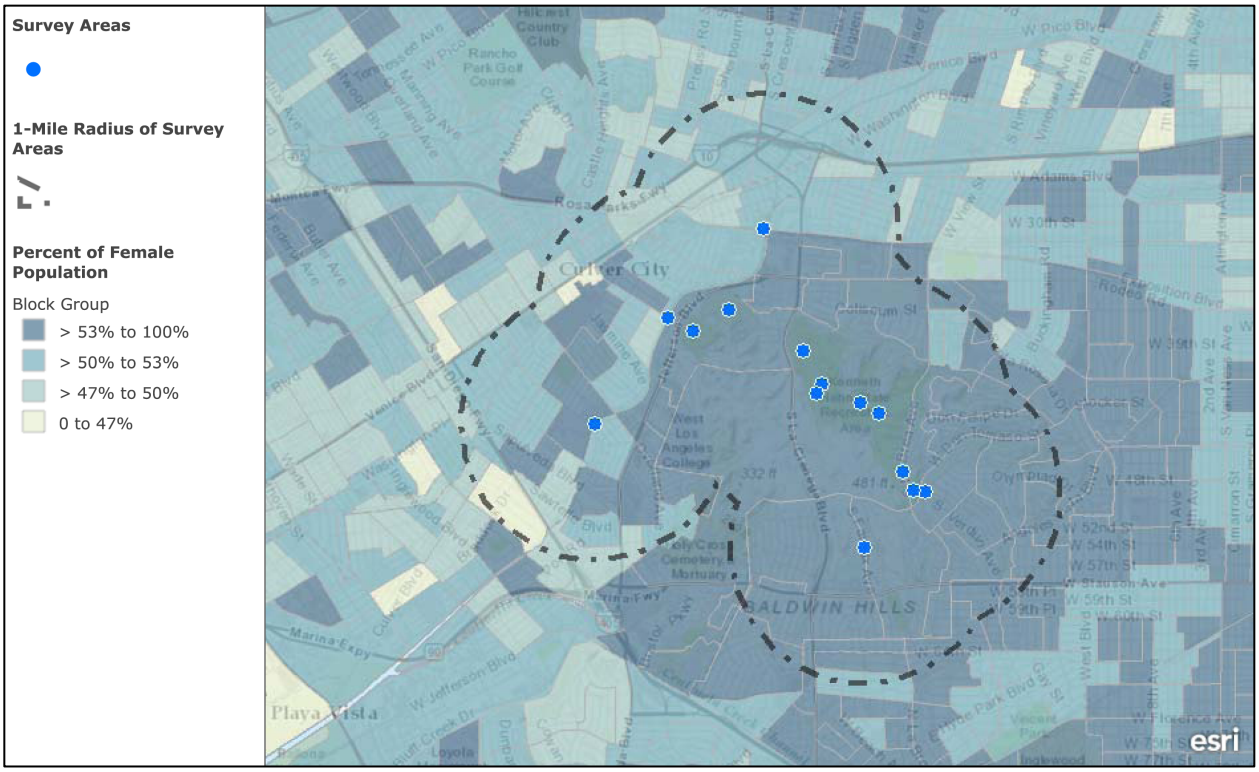


Figure 20. Map of residents reporting as female based upon census information (StudyLA, 2017).

The reported genders of the survey respondents are consistent with the census information, as there are more females present in both reports.

Question 30: What is your individual income level?

For this question, 30% of park users preferred not to answer, 18% reported $20,001 - 50,000, and 18% reported $50,001 - 80,000. The full set of income responses are shown in Figure 21.

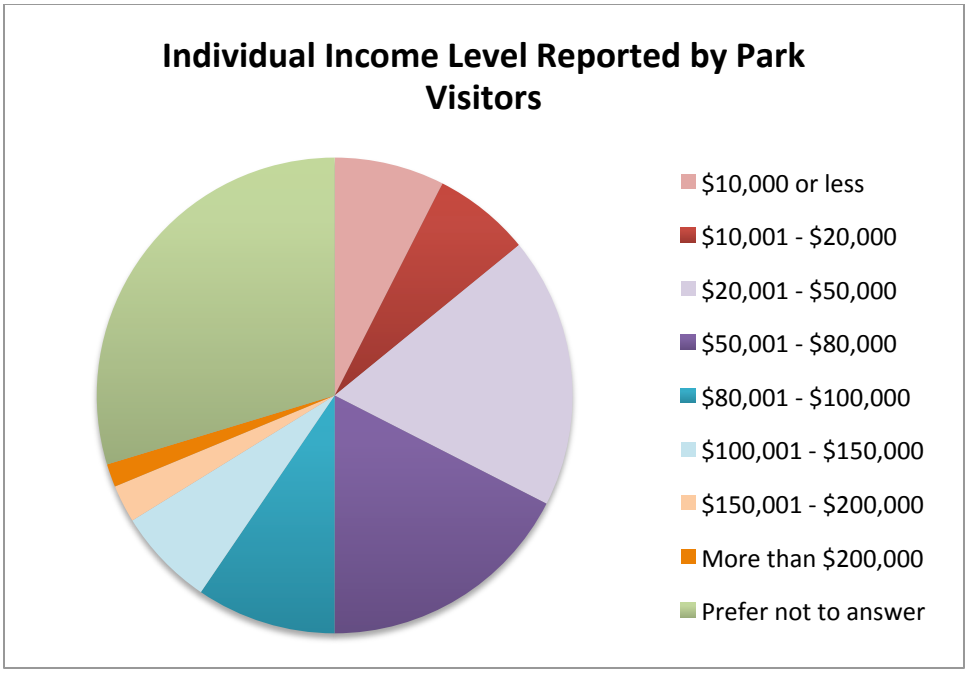


Figure 21. Incomes reported by park visitors.

Figure 22 allows for a comparison of this data with census information.

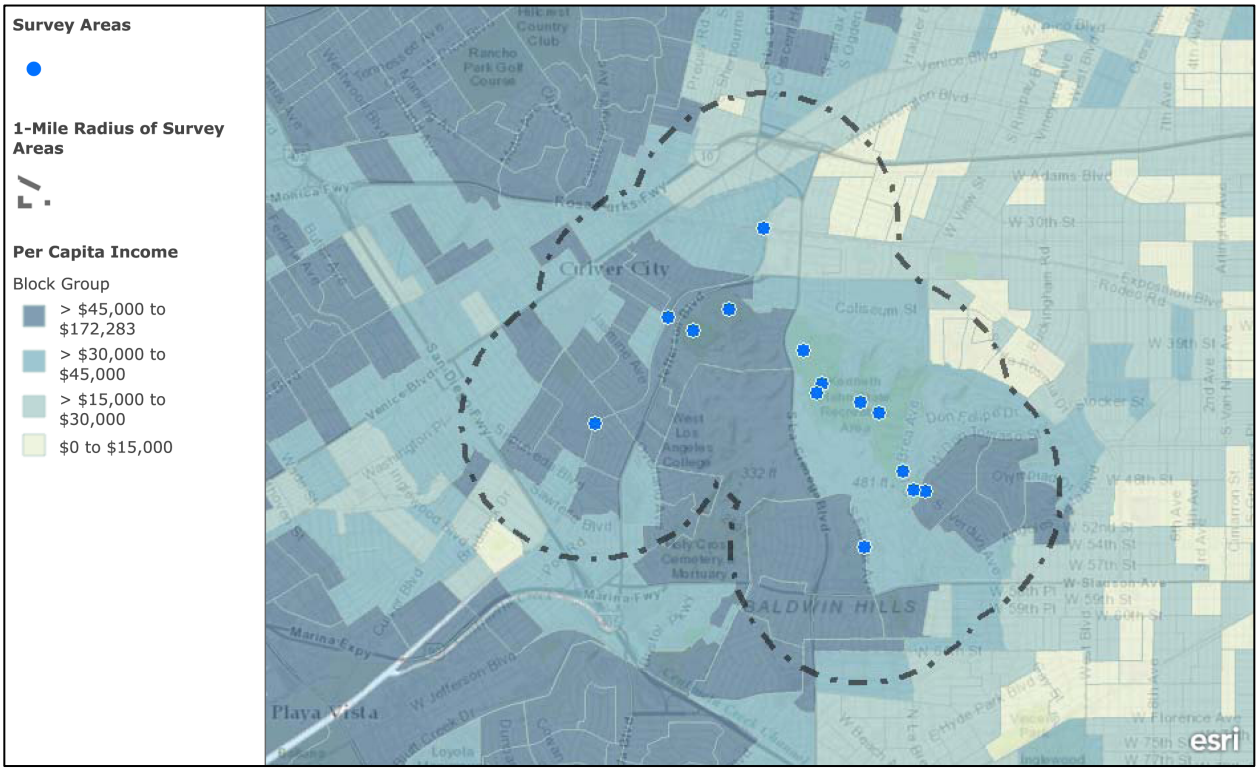


Figure 22. Map of reported individual incomes of residents based on census information (StudyLA, 2017).

The incomes of the survey respondents are fairly consistent with the reported incomes from the census, though slightly lower in some areas. The survey results are lower than the incomes for many census tracts surrounding the parks, specifically the northwest and southwest neighborhoods.

Question 31: What is your highest level of education completed?

The results showed 27% of park users reported that they completed at least some graduate or professional school, 38% of park users reported that they completed college, and 19% reported that they had some college. Ten percent reported completing high school or GED, and 2% reported some high school. Five percent chose "prefer not to answer." Figure 23 shows these results.

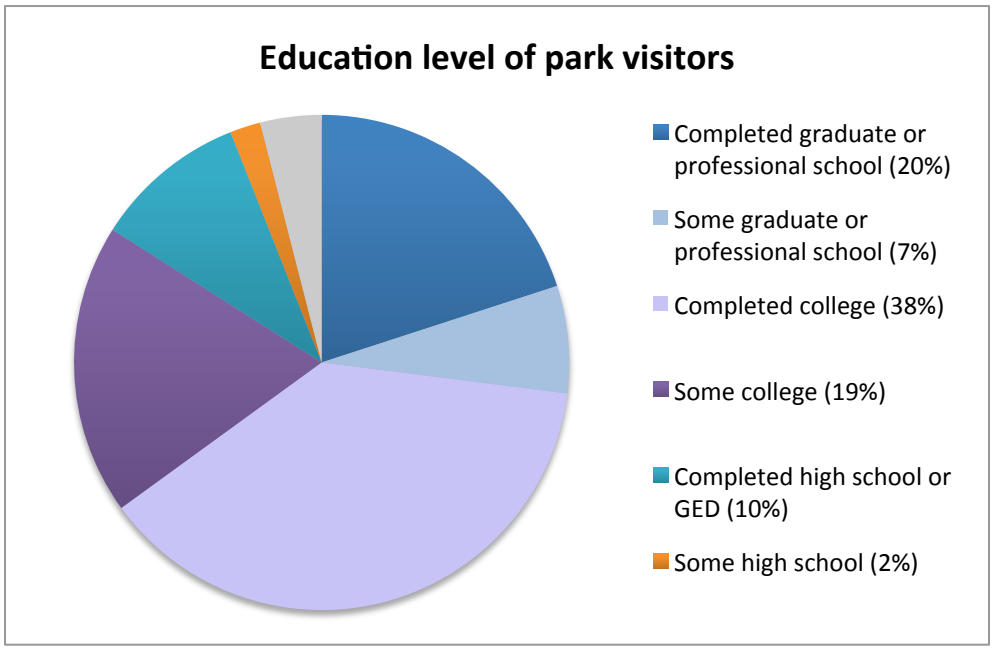


Figure 23. Reported education level of park visitors.

Figure 24 provides census information on education for comparison.

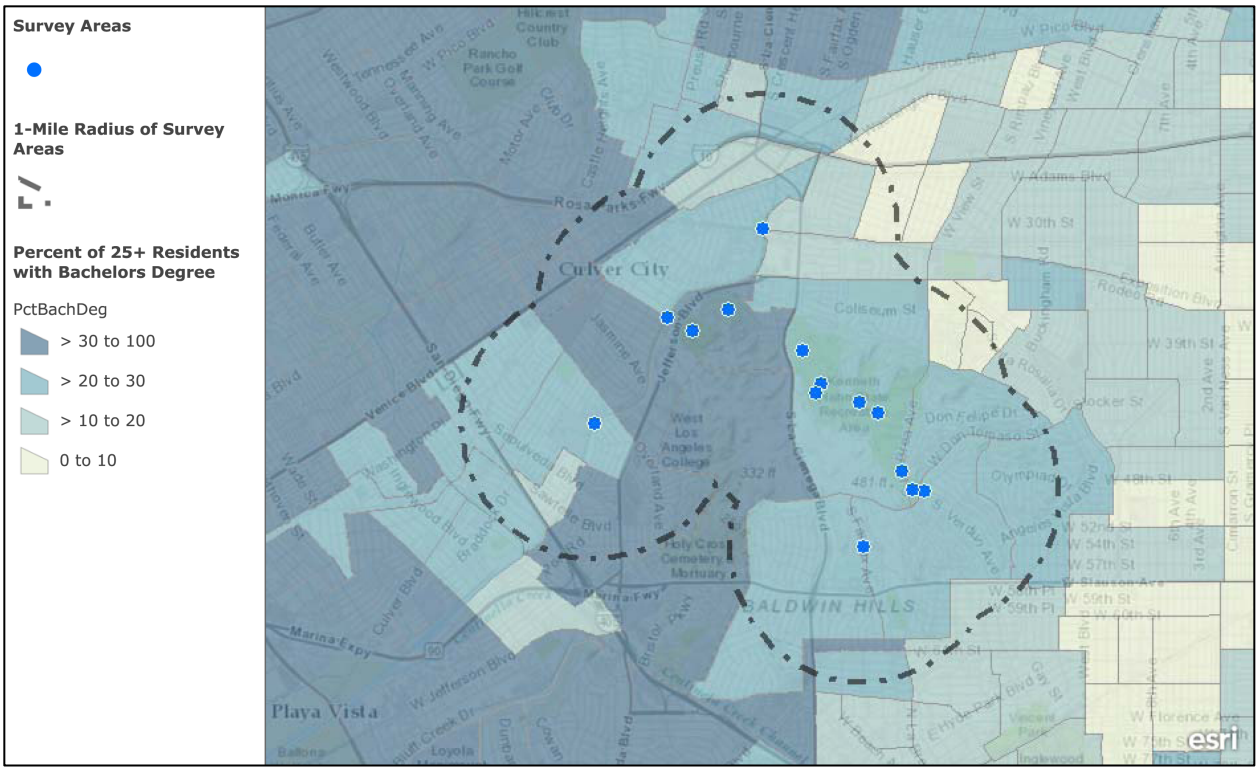


Figure 24. Map of residents with a Bachelors degree based upon census information (StudyLA, 2017).

The survey results indicate a more educated population using the Baldwin Hills Parklands than those that live within the one-mile radius. While the data for the surrounding areas to the west show a population for which at least 30% has a Bachelor's degree, the population east and south of the parks have a lower rate of Bachelors degrees than the surveyed visitor population.

Question 32: Are you a veteran?

The results showed 5% of park users reported that they are veterans.

Question 33: Are you retired?

The results showed 12% of park users reported that they are retired.

Question 34: How many children do you have?

The results showed, 54% of park users reported that they do not have children living with them. Nineteen percent reported that they have 2 children and 15% reported that they have 1 child. Seven percent reported 3 children, and 5% reported 4 or more children.

Question 35: Do you have any disabilities?

The results showed, 6% of park users reported that they have disabilities. Less than 1% of respondents indicated that they require ADA compliant facilities.

Question 36: Do you vote?

The results showed 80% of park users reported that they vote.

Question 37: Please indicate your racial identity.

When asked to indicate their race, 35% of park users reported white/Caucasian, 31% reported black/African American, 8% reported Asian, 6% preferred not to answer, and 16% reported other. Other included: Hispanic, Ethiopian, Egyptian, American, Mexican/a, multi/mixed race, Ecuadorian, Swana, Jewish, Iranian, Filipino, Latino, Dominican, Southeast Asian, Japanese American, Israeli, Sicilian, Peruvian, Indian, Armenian, Italian, Belizean. The following figures allow for a comparison of some of these reported demographics with census information.

Figure 25 shows the proportion of respondents who identified as Asian, which was 8% of the surveyed population. This reflects the demographics of the surrounding community (Figure 26), as the area within a one-mile radius has a population that is between 0-25% Asian.

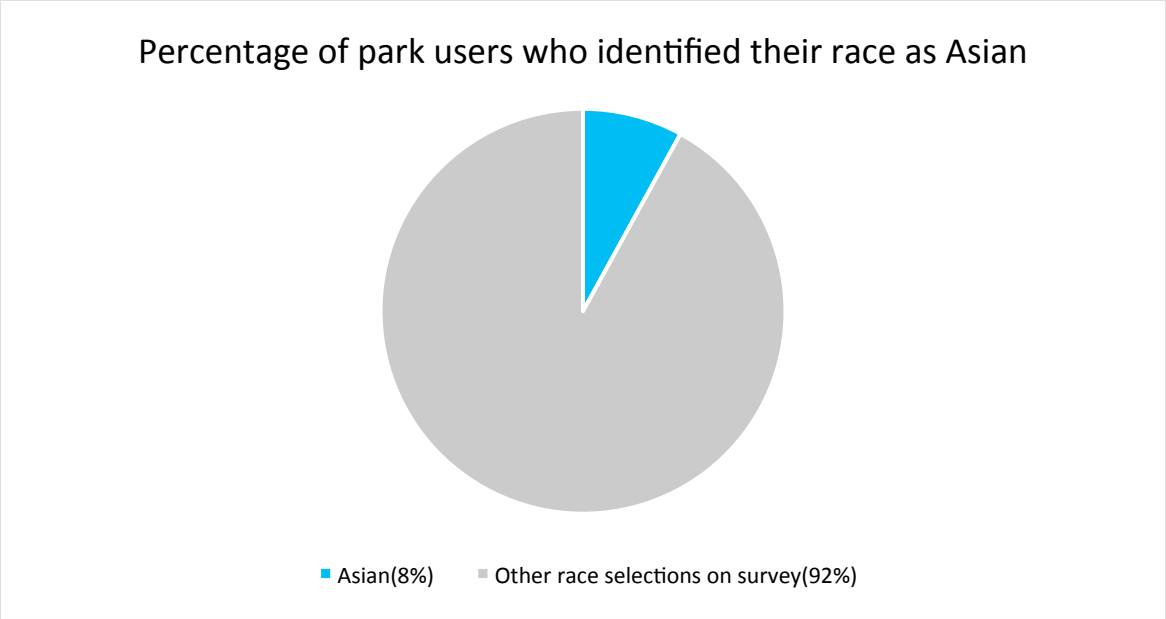


Figure 25. Percentage of park users identifying as Asian.

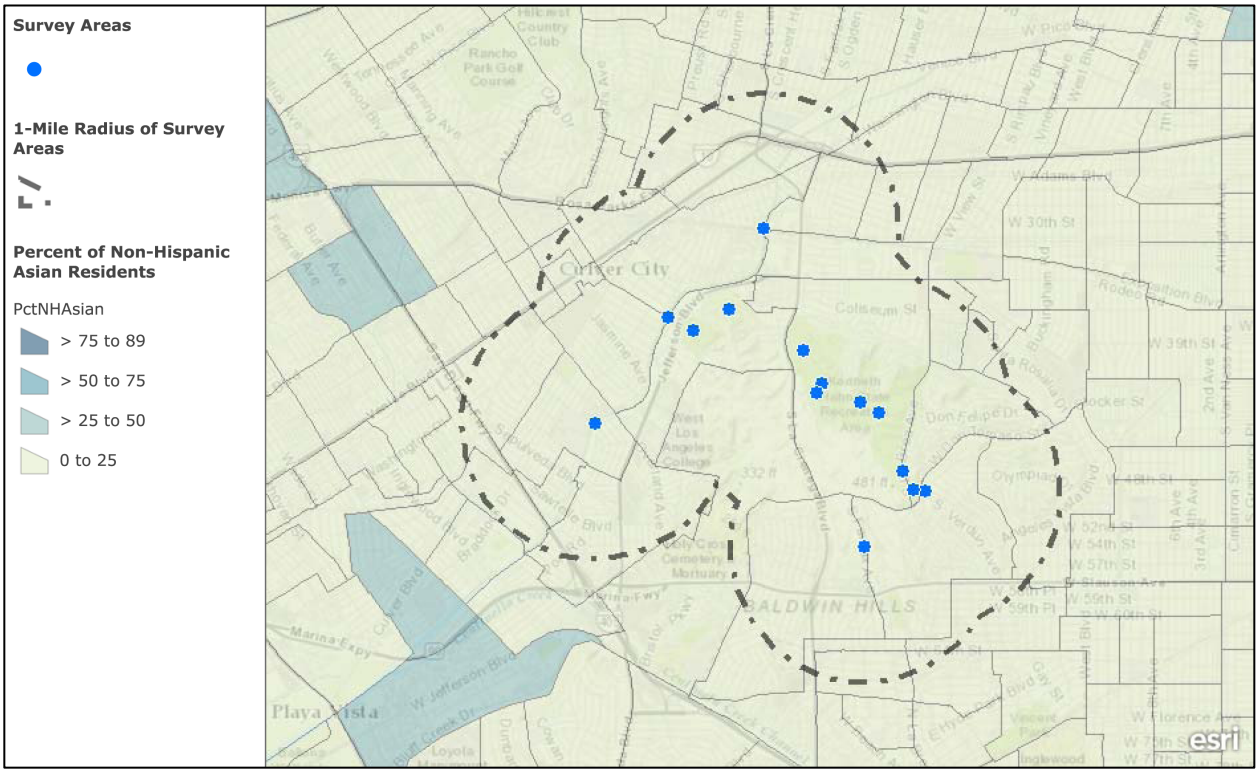


Figure 26. Map of individuals reporting their race as Asian based on census information (StudyLA, 2017).

The percentage of respondents who identified as Black or African-American (Figure 27) somewhat corresponds to the neighborhoods surrounding the parks (Figure 28), as 31% of individuals marked their race as Black and some of the census tracks represent that proportion. However, the number may have been expected to be higher based upon the greater population representation along the eastern side of the Baldwin Hills Parklands.

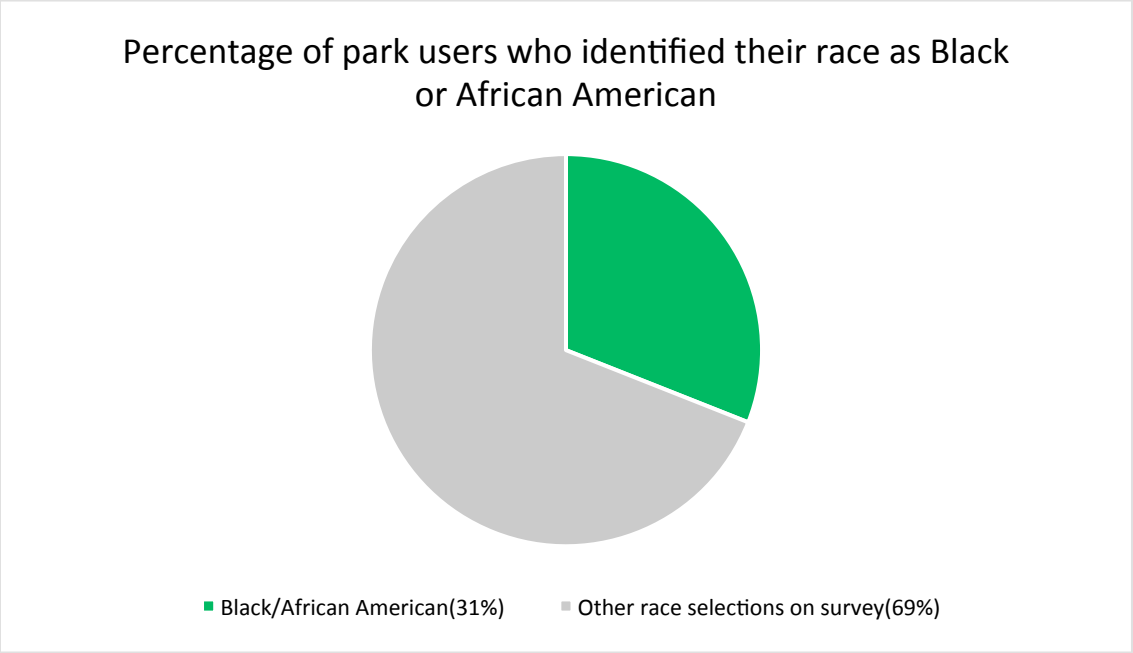


Figure 27. Percentage of park users identifying as Black or African-American.

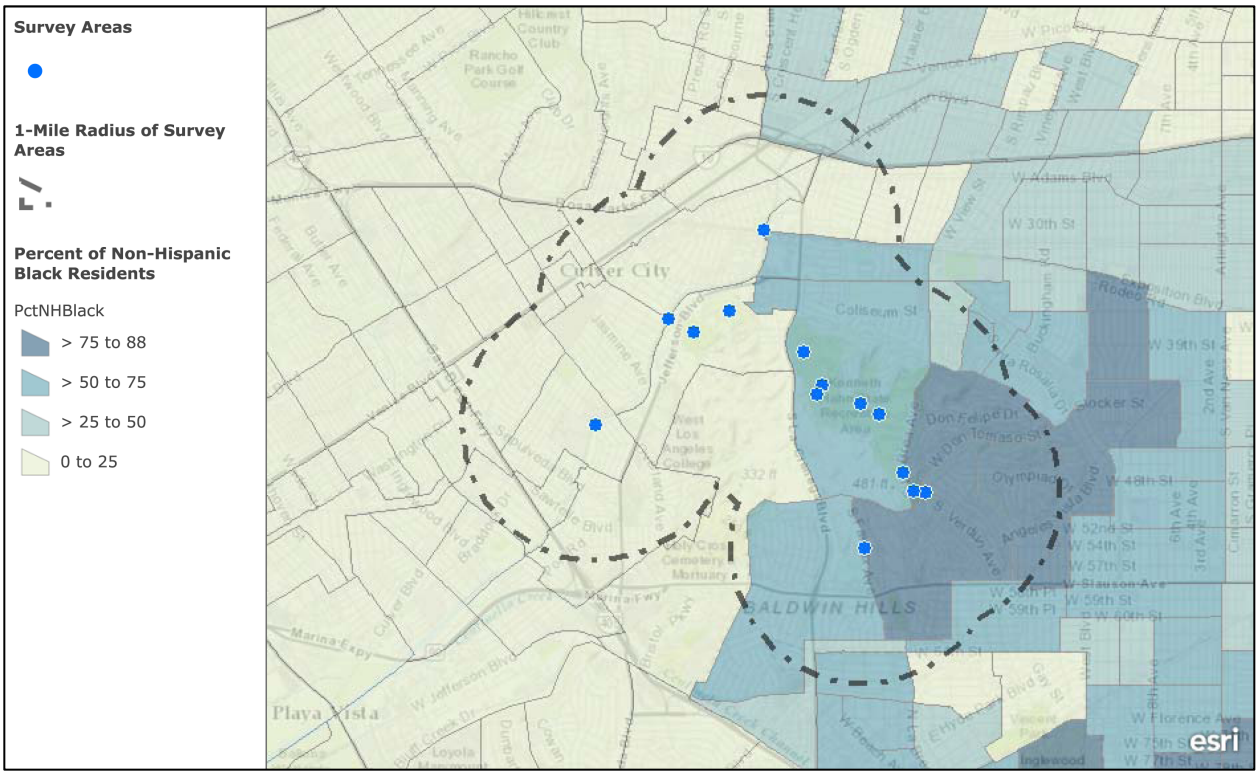


Figure 28. Map of individuals reporting their race as Black based on census information (StudyLA, 2017).

The percentage of respondents who identified as White or Caucasian (Figure 29) corresponds rather well to the population surrounding the Baldwin Hills (Figure 30), as 35% of individuals reported their race as White and some of the census tracts reflect that proportion. However, given the higher representation in the northwestern and western portions of the map, that number may have been expected to be higher.

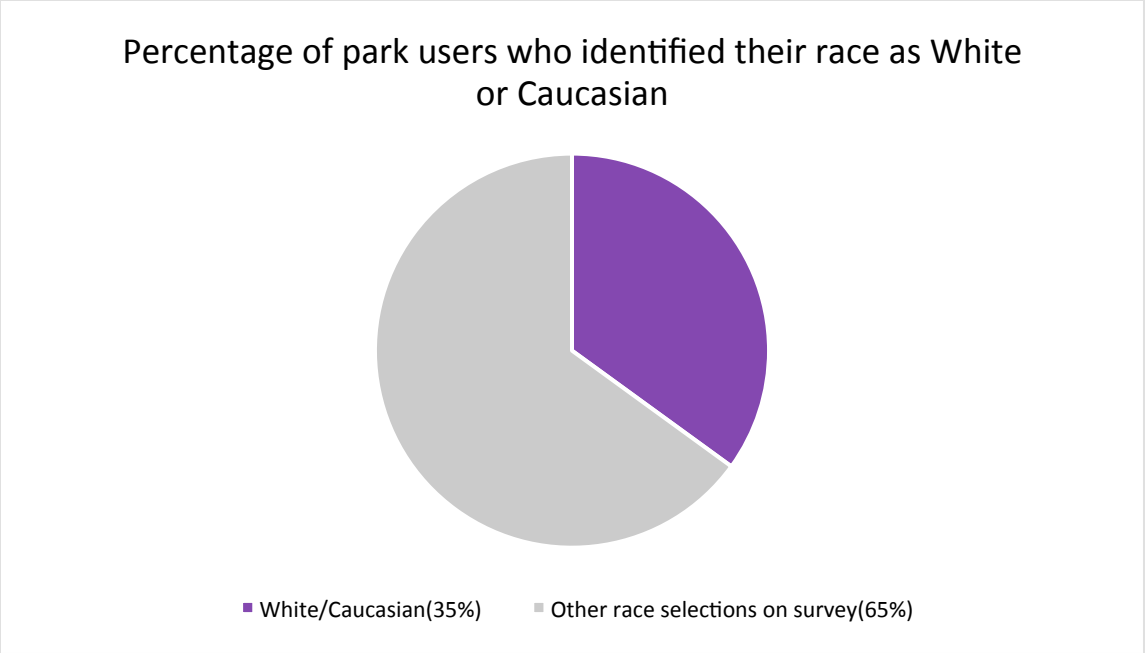


Figure 29. Percentage of park users identifying as White or Caucasian.

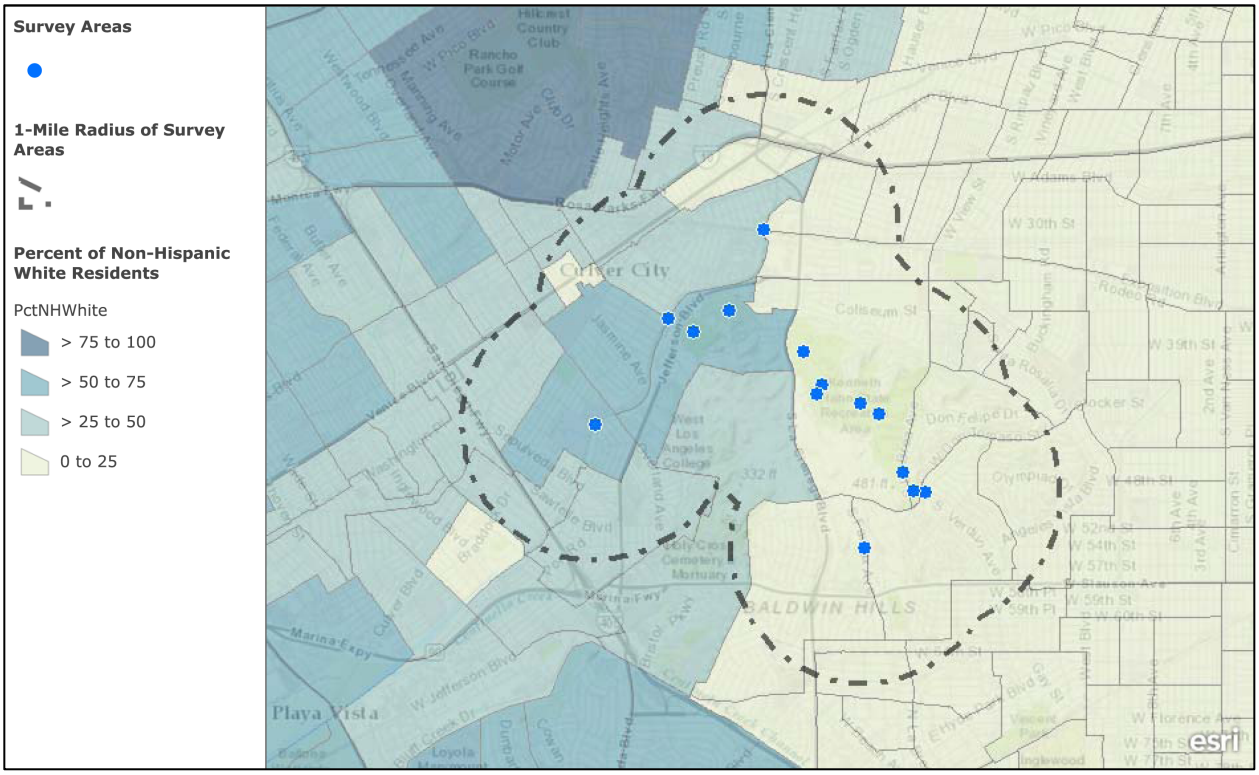


Figure 30. Map of individuals reporting their race as White based on census information (StudyLA, 2017).

Question 38: Do you identify as Hispanic or Latino?

When asked if they identify as Hispanic or Latino, 27% of park users responded "yes" and 68% reported "no" Five percent preferred not to answer (Figure 31).

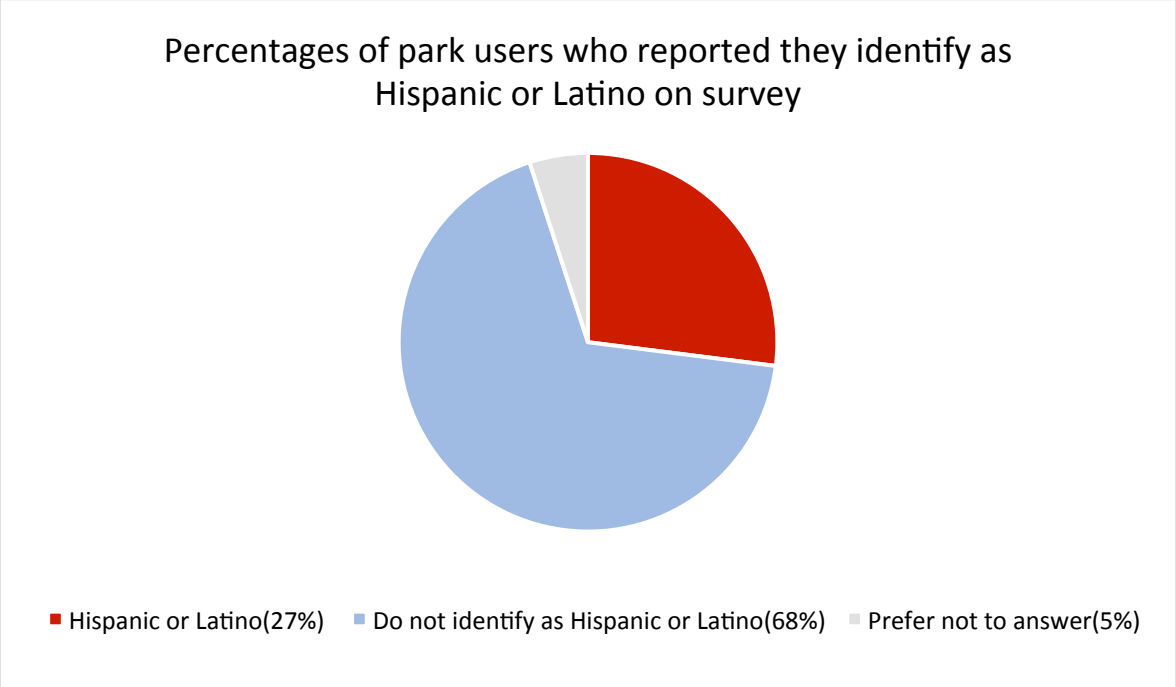


Figure 31. Percentage of park visitors who identify as Hispanic or Latino.

Figure 32 allows for a comparison of this data with reported census information.

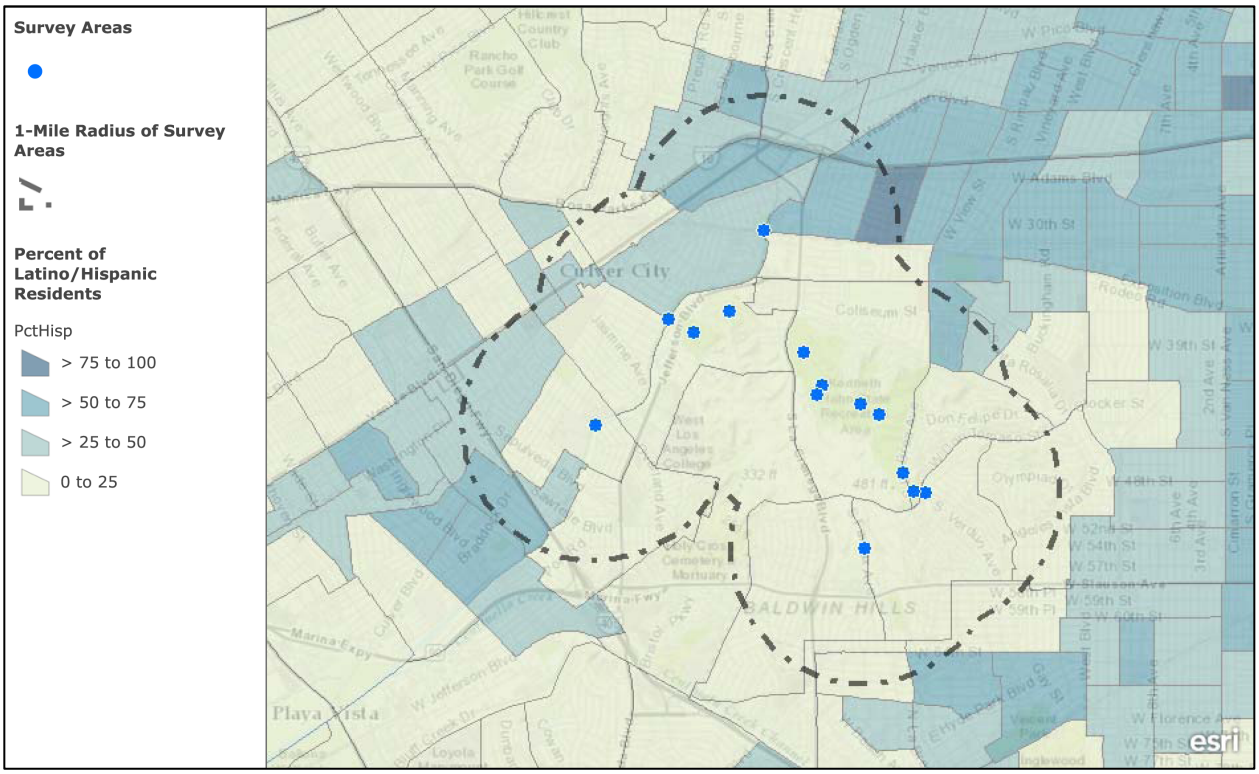


Figure 32. Map of reported Latino/a residents according to census information (StudyLA, 2017).

The survey respondents reporting as Latino/a is lower than some of the areas within the one-mile radius of the Baldwin Hills Parklands and many of the census tracts around the parks.

Supplement: Tapestry Segmentation Data

Another way of looking at neighborhoods in an area is through Tapestry Segmentation, which identifies census tracts as one of 14 distinctive groups based upon socioeconomic and demographic factors (Tapestry Segmentation, 2017). Figure 33 displays how the neighborhoods around the Baldwin Hills Parklands parks qualify, as determined by the reported census information.

Figure 33. Tapestry Segmentation map for census tracts around the Baldwin Hills (StudyLA, 2017).

Most of the residents within the one-mile radius are in one of the first three groups. The Affluent Estates (L1) group has established wealth and is well educated, with 90% being homeowners and a tendency toward being married families. The Upscale Avenues (L2) group is also predominantly married couples, with 70% being homeowners. This group is more diverse, often with older children. Finally, the Uptown Individuals (L3) group is younger, but well educated and hard working. They tend to be less inclined towards marriage or owning a home. Therefore, L1 and L2 do not represent the average individual being surveyed at the Baldwin Hills Parklands, as the responses from the survey showed a lower individual income and that 57% rent their home. The L3 group is more similar to the average survey respondent, as they are younger and less established in terms of wealth. The L3 group also tends to be more green and environmental, which may explain the interest the respondents had in learning more about the parks and the surrounding ecosystems.

The census tracts surrounding the Baldwin Hills Parklands, besides those already mentioned, are mainly Hometown (L12) in the southeast corner and Next Wave (L13) in the northeast. The L12 group is made up of suburban single households (either owners or renters) with lower incomes. Some have children, but it is mixed. The L13 group is younger, very diverse, and has more foreign languages spoken. The homes are generally rented, children are common, and individuals are hard working. These groups most likely account for the diversity seen in the languages spoken at the parks and the ethnicity reported. The L12 and L13 census tracts may also be a factor in the lower age and income of the average respondent.

3.2.2.6 PLACE ATTACHMENT

As described in the methods, the Summer 2015 field season included a section with 12 statements about park sentiments. A total of 288 visitors participated in this part of the study. On a scale from 1 to 5, where 1 meant "not at all" and 5 meant "a great deal," visitors were asked to rate how well each statement described their feelings about the park. As shown in Figure 34 below, respondents provided ratings that indicated above average positive sentiments for all of the statements. The highest agreed upon statement was "feel safe here" followed by "feel more peaceful after visiting." The least agreed upon statement was "confident that I can find my way around the park" followed by "this park is like an old friend," although these were still higher than average.

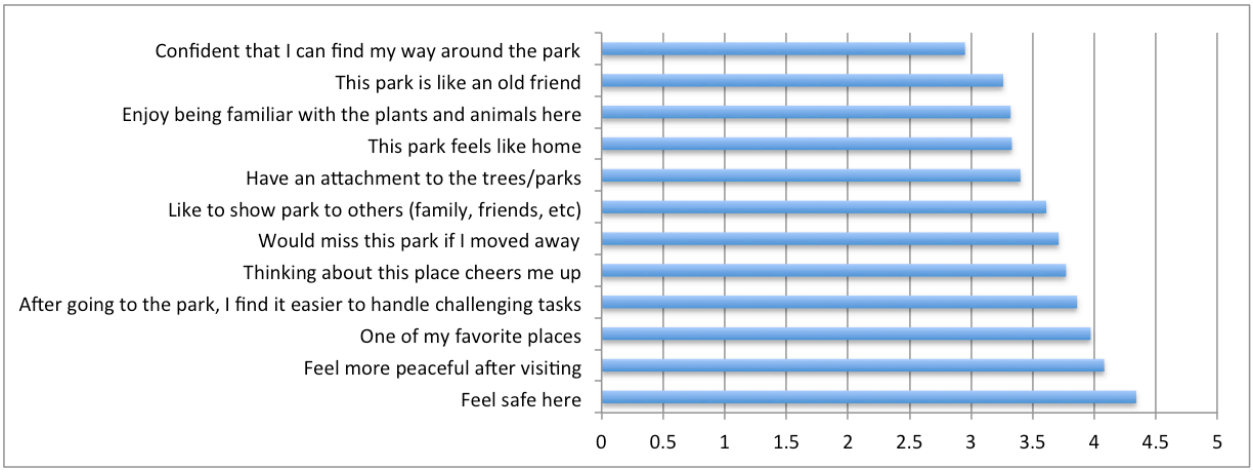


Figure 34. Level of agreement with the place attachment statements on the Baldwin Hills User Survey (N=287).

The place attachment survey section used several statements that were intentionally similar so that analysis could be done on reliability of response. Factor analysis was conducted to look for commonalities between individual items in the place attachment section. The results of the factor analysis were used to construct scales to reduce the data into larger categories, or factors. Factor 1 statements were related to connections people have to the natural aspects of the park (trees, plants, animals) and the personal connection to the park (e.g., feels like home; is an old friend); and Factor 2 statements were related to the positive feelings that people have when visiting the park (e.g. one of my favorite places; feel safe here). To statistically support the grouping of these statements, a Cronbach reliability test was used. The resulting Cronbach's Alpha scores were all close to 1.0, which indicates a high degree of reliability in grouping the statements into the two factors (Table 8).

Table 8. Factor analysis of the place attachment questions revealed two main groups: 1) nature/personal attachment and 2) positive feelings related to the park. The high Cronbach's Alpha scores statistically support these groupings.

FACTOR SOLUTION- Attachment- Thoughts and Feelings About Park	Mean	S.D.	Cronbach's Alpha
Factor 1- Nature Attachment/ Home	3.44	1.14	0.93
Have an attachment to the trees/parks	3.40	1.29	
Enjoy being familiar with the plants and animals here	3.32	1.32	
Would miss this park if I moved away	3.71	1.34	
Like to show park to others (family, friends, etc.)	3.61	1.26	
This park is like an old friend	3.26	1.36	
This park feels like home	3.33	1.35	
Factor 2- Positive Feelings	4.07	0.75	0.87
One of my favorite places	3.97	1.05	
Feel safe here	4.34	0.80	
Feel more peaceful after visiting	4.08	0.95	
Thinking about this place cheers me up	3.77	1.04	
Confident that I can find my way around the park	4.34	0.84	
After going to the park, I find it easier to handle challenging tasks	3.86	1.07	

N=287. Principal axis factor analysis, varimax rotation, pairwise deletion of missing values. Eigenvalues greater than 1.0, factor loadings greater than 0.50. Pairwise deletion of dual loadings greater than 0.55.

Once confirming the overall reliability of the results, we wanted to delve deeper into user's sentiments. Thus, for this part of the study, we asked five detailed research questions:

1. Does place attachment vary depending on the park visited?
2. Is there a relationship between place attachment and frequency of park use?
3. Is there a relationship between place attachment and mode of travel to the park?
4. Is there a relationship between place attachment and willingness to volunteer in the park?
5. Do park sentiments vary based on demographics?

In the following, we report the results by question.

Does place attachment vary depending on the park visited?

We used the statistical analysis of variance (ANOVA) model to examine the relationship between park location and place attachment. Park locations were grouped into zones, as follows:

- Zone A: Reuben Ingold & Norman O. Houston Parks, Don Lorenzo & La Brea Pedestrian Entrances
- Zone B: 5 locations within the Kenneth Hahn State Recreation Area
- Zone C: Baldwin Hills Scenic Overlook State Park and Culver City Park
- Zone D: 3 locations along the Ballona Creek Bike Path
- Zone E: Yvonne B. Burke Sports Complex

The results of this are shown below, in Table 9. Generally, there were few significant differences in place attachment based upon survey location. This was particularly true for the positive feelings that park users expressed about visiting these places. In other words, survey respondents did not vary in their level of place attachment to the different park locations with a couple of noteworthy exceptions. There were significant differences between the Yvonne B. Burke Sports Complex (Zone E), which was rated significantly lower for the places attachment factor related to nature and showing this place to others, than the Kenneth Hahn State Recreation Area (Zone B) and the Baldwin Hills Scenic Overlook State Park/Culver City Park (Zone C). The bike trail sections (D) were also rated lower than the other park locations, but not significantly.

Table 9. Place attachment by park location.

		Zone	N	Mean	Std. Deviation	Std. Error
Attachment Factor: Nature/ Home	1.00	A	69	3.26	1.21	0.15
	2.00	B	83	3.53[a]	1.12	0.12
	3.00	C	97	3.67[b]	1.06	0.11
	4.00	D	28	3.18	1.22	0.23
	5.00	E	10	2.40[ab]	0.65	0.21
	Total		287	3.44	1.14	0.07
Attachment Factor: Positive Feelings	1.00	A	69	4.01	0.81	0.10
	2.00	B	83	4.12	0.76	0.08
	3.00	C	98	4.10	0.75	0.08
	4.00	D	28	4.04	0.69	0.13
	5.00	E	10	3.90	0.53	0.17
	Total		288	4.07	0.75	0.04

*[abc]Significantly different at the p<.05 level, Bonferroni Post-hoc test
Attachment Nature, ANOVA, F=4.097, d.f.=4,282, p<.005
Attachment Positive Feelings, ANOVA, F=0.368, d.f.=4, 283, N.S., p<.0.83

Is there a relationship between place attachment and frequency of use?

When asked, "how often do you visit this particular park?" users were able to choose a range of seven responses, from "Never" to "Daily." These were collapsed into three categories: Rarely (Never, Less than Once a Month, Once a Month); Somewhat Often (2-3 Times a Month, Once a Week); and Often (2-3 Times a Week, Daily). We then conducted an ANOVA to determine the relationship with place attachment. As shown in Table 10, frequency of park use was significantly related to level of place attachment. Those who indicated higher frequency of use (2-3 times per week to daily) indicated significantly higher levels of place attachment than less frequent users.

Table 10. Frequency of Use by Place Attachment Factors.

		N	Mean	Std. Deviation	Std. Error
Attachment Factor: Nature/ Home	1.00	64	3.39[a]	1.10	0.14
	2.00	118	3.08[b]	1.21	0.11
	3.00	105	3.87[ab]	0.94	0.09
	Total	287	3.44	1.14	0.07
Attachment Factor: Positive Feelings	1.00	64	3.81[a]	0.86	0.11
	2.00	119	4.00[b]	0.73	0.07
	3.00	105	4.31[ab]	0.64	0.06
	Total	288	4.07	0.75	0.04

*[abc]Significantly different at the p<.05 level, Bonferroni Post-hoc test
Attachment Nature, ANOVA, F=14.54, d.f.=2,284, p<.000
Attachment Positive Feelings, ANOVA, F=10.272, d.f.=2, 285, p<.000

Is there a relationship between place attachment and mode of travel to the park?

As shown in Table 11, mode of travel was significantly related to place attachment with those who drove indicating stronger levels of place attachment (nature/home) than those who walked and biked. They were not significantly different in the positive feelings that were associated with place attachment.

Table 11. Mode of Travel by Place Attachment Factors.

		N	Mean	Std. Deviation	Std. Error
Attachment Factor: Nature/ Home	Car	216	3.54[a]	1.09	0.07
	Walk/ Bike	64	2.97[a]	1.19	0.15
Attachment Factor: Positive Feelings	Car	217	4.08	0.77	0.05
	Walk/Bike	64	3.94	0.67	0.08

*[a]Significantly different at the p<.05 level, t-test, t=3.72, d.f., 278, p<.000

Is there a relationship between place attachment and willingness to volunteer in the park?

Visitors were asked, "would you be interested in volunteering in park-related activities?" We compared these responses to the place attachment questions and found that there was a relationship between place attachment and interest in volunteering (Table 12). Those who indicated that they were interested in volunteering opportunities in the parks rated both place attachment factors significantly more than those who were not interested.

Table 12. Interest in Volunteering by Place Attachment Factors (t-test).

		N	Mean	Std. Deviation	Std. Error
Attachment Factor: Nature/ Home	Yes-volunteer	96	3.79[a]	1.09	0.11
	No-volunteer	188	3.24[a]	1.13	0.08
Attachment Factor: Positive Feelings	Yes-volunteer	96	4.21[b]	0.81	0.08
	No-volunteer	189	3.99[b]	0.71	0.05

*[a]Significantly different at the p<.05 level, t-test, t=3.92, d.f., 282, p<.000
*[b]Significantly different at the p<.05 level, t-test, t=2.29, d.f., 283, p<.000

Do park sentiments vary based on demographics?

We conducted statistical analyses (t-tests) on several demographic responses compared to place attachment.

- Home ownership/rental by Place Attachment Factors

  Homeowners were significantly more likely to indicate a higher level of place attachment to the natural elements of the parks and feel that they were more like home

than were renters. However, both groups indicated similar high levels of positive feelings from visiting the parks.

- Income by Place Attachment Factors

  We divided the responses into two groups: Upper-income, defined as over $80,000; and Lower-middle income, defined as under $80,000. Upper and middle-upper income residents rated place attachment to nature and feels like home significantly higher than middle-lower income respondents. These relationships were similar to homeownership and rental results since these variables are usually highly correlated.

- Other Notable Results

  We conducted analyses on some other demographic responses, and found that neither gender nor education level were significantly related to place attachment. Hispanic/Latinos did rate higher than non-Hispanics on place attachment, but not at a statistically significant level ($p<.08$). However, this borders on statistically significant, so it is a result worthy of highlighting for follow-up research.

3.3 GAME CAMERA MONITORING

As described in the methods, images were analyzed by quantifying the observed behaviors. We created a classification system of "tags" that were assigned to each image, as shown in Table 13.

Table 13. Tag descriptions and total tag counts for all park sites.

Tags	Description
P	People
Type/Time of Entry	
In	People entering the park
Out	People exiting the park
Same	Same People: Already accounted for
N	Night
Number in Group	
1	1 person observed
2	2 people observed
3	3 people observed
4	4 people observed
5	5 people observed
Behaviors of People	
Active	People are wearing active gear/physical activity
B	Bicycle
S	People smoking
Types of People	
W	Workers (individuals wearing uniform)
Pregnant	Pregnant individuals
Ch	Children
DW	Dog-walking
False Positives	
FP	False Positive
A	Animals
Dog	Dog
Cat	Cat
Liz	Lizard
Coyote	Coyote
Bird	Bird

We analyzed images for four sites in the Baldwin Hills Parklands: Site 1 – La Brea & Stocker entrance to Kenneth Hahn SRA; Site 3 – La Brea & Veronica entrance to Kenneth Hahn SRA; Site 4 – the Baldwin Hills Scenic Overlook SP Back Gate; and Site 5 - the path connecting Baldwin Hills Scenic Overlook SP and Culver City Park. The data collected and the number of images tagged for each park can be seen in Table 14.

Table 14. Data collected from the game camera monitoring at five sites throughout the Baldwin Hills Parklands.

Site #	Site Name	Time period for data collection	Number of Images	Images Tagged
1	Stocker	May 2017-June 2017	1,327	1,327
2	Don Lorenzo	May 2017-June 2017	11,363	0
3	Veronica	May 2017-June 2017	1,409	1,409
4	BHSO Back Gate	October 2015-April 2016	6,957	1,001
5	BHSO Path	May 2017-June 2017	1,261	1,261

The total tag counts across all four park sites can be seen in Table 15.

Table 15. Image analysis from monitoring of four locations in the Baldwin Hills Parklands.

Tags	Site 1: Stocker	Site 3: Veronica	Site 4: BHSO Back Gate	Site 5: BHSO Path	Total for all four sites
P	19	488	855	122	**1,484**
Type/Time of Entry					
In	8	178	412	71	**669**
Out	10	234	463	43	**750**
Same	1	314	261	8	**584**
N	1	1	80	0	**82**
Number in Group					
1	15	337	522	56	**930**
2	4	101	269	53	**427**
3	0	21	64	10	**95**
4	0	14	24	2	**40**
5	0	6	3	1	**10**
Behaviors of People					
Active	18	400	391	109	**918**
B	0	10	21	0	**31**
DW	1	5	9	1	**7**
Types of People					
W	0	48	101	4	**153**
Pregnant	0	0	3	0	**3**
Ch	0	0	29	0	**29**
False Positives					
FP	1303	485	71	506	**2365**
A	0	57	30	3	**90**
Dog	1	5	9	1	**11**
Cat	0	0	2	0	**2**
Liz	0	0	14	0	**14**
Coyote	0	0	1	0	**1**
Bird	0	1	0	30	**31**

Across all four sites, 62% of the 1,484 images containing people were tagged as "active," meaning the person was wearing active clothing and/or clearly exercising (Figure 35). This was most pronounced at Site 1 (Stocker), with 95% of the small number of people observed classified as active, followed by 90% of people classified as active at Site 5 (BHSO-

Culver City Park connection), 82% of people classified as active at Site 3 (Veronica), and 46% active people at Site 4 (BHSO Back Gate. At Site 4, nearly 20% of the images containing people were taken at night, highlighting the ability of game camera monitoring to capture activities that may not be observed when researchers would typically be in the field.

Figure 35. Image of an active user to the Baldwin Hills Parklands, captured through the game camera monitoring of Site 4.

At the La Brea Veronica location, thirty-five percent of the total images contained at least one person. Many people seemed to be accessing the entrance to use the hill for exercise purposes. Also notable was that 64% of the images containing people were tagged "Same," meaning many of the individuals were identified using the location more than once in the dataset, and several were walking dogs.

Most of the sites were predominantly used by a single visitor, with the exception of the Baldwin Hills Scenic Overlook State Park – Culver City connection (Site 5). At this entrance, the majority (54%) of the images containing people showed groups of two or more (Figure 36). The game camera at Site 5 also picked up many images of birds mid-flight.

Figure 36. Two people captured through game camera monitoring of Site 5, which had more people traveling in groups than any other site.

At the Stocker location, the 19 individuals observed were often witnessed by themselves, walking and generally in active wear versus street clothes. A large number of false positives were recorded at this site, mostly from vehicles triggering the camera.

3.4 URBAN TREE CANOPY & LAND COVER

The tree canopy assessment combined 2009 LiDAR data and 2014 spatial imagery to produce a map of coastal Los Angeles providing high accuracy information on land cover (Figure 37).

Figure 37. Land cover analysis combined 2009 LiDAR data and 2014 spatial imagery to produce a seven-category land cover classification map.

The land cover categories are then used to complete the tree canopy analysis, as shown in Figure 38. According to this assessment, coastal Los Angeles had 13% (12,389 acres) existing tree canopy cover. Possible tree canopy is broken down into two categories: vegetation (grass/shrub and bare soil land cover categories) and impervious (non-road, non-building paved surfaces). Coastal Los Angeles had 55% overall possible area for tree canopy, with 20% possible vegetation (20,495 acres) and 35% possible impervious (34,074 acres). Thirty-two percent of the area assessed was unsuitable for tree planting because it contained rights of way, buildings, or open water.

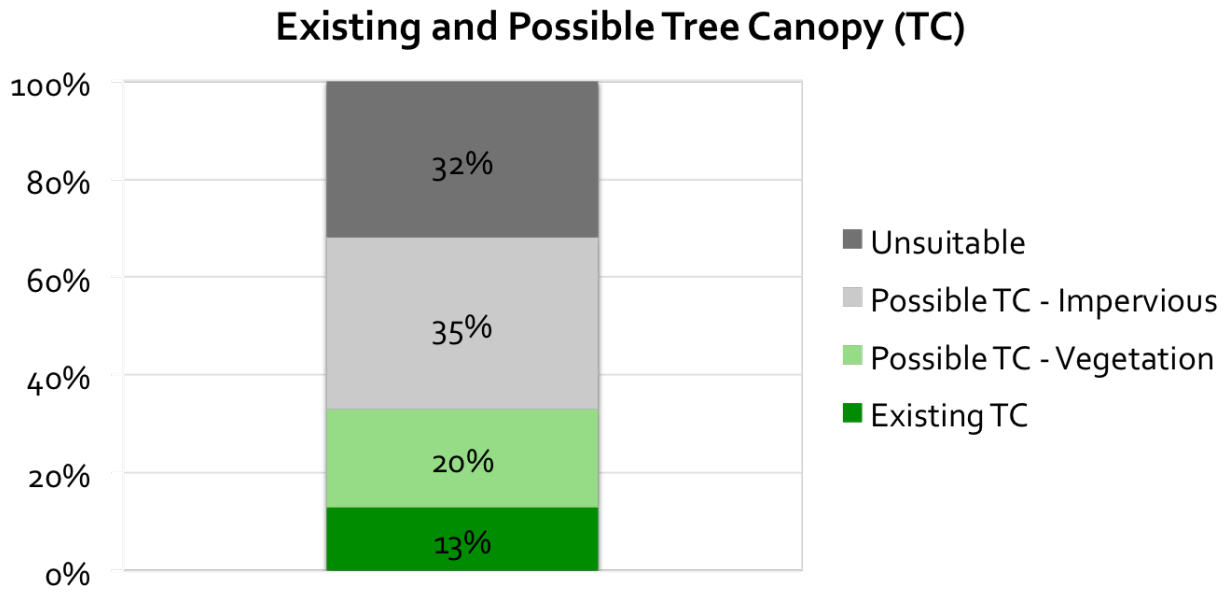


Figure 38. Tree canopy metrics for coastal Los Angeles (O'Neil-Dunne et al, 2015).

These results can be visualized at different scales. Maps of existing and possible tree canopy by Census Block Group in the areas near the Baldwin Hills Parklands are shown in Figures 39 and 40.

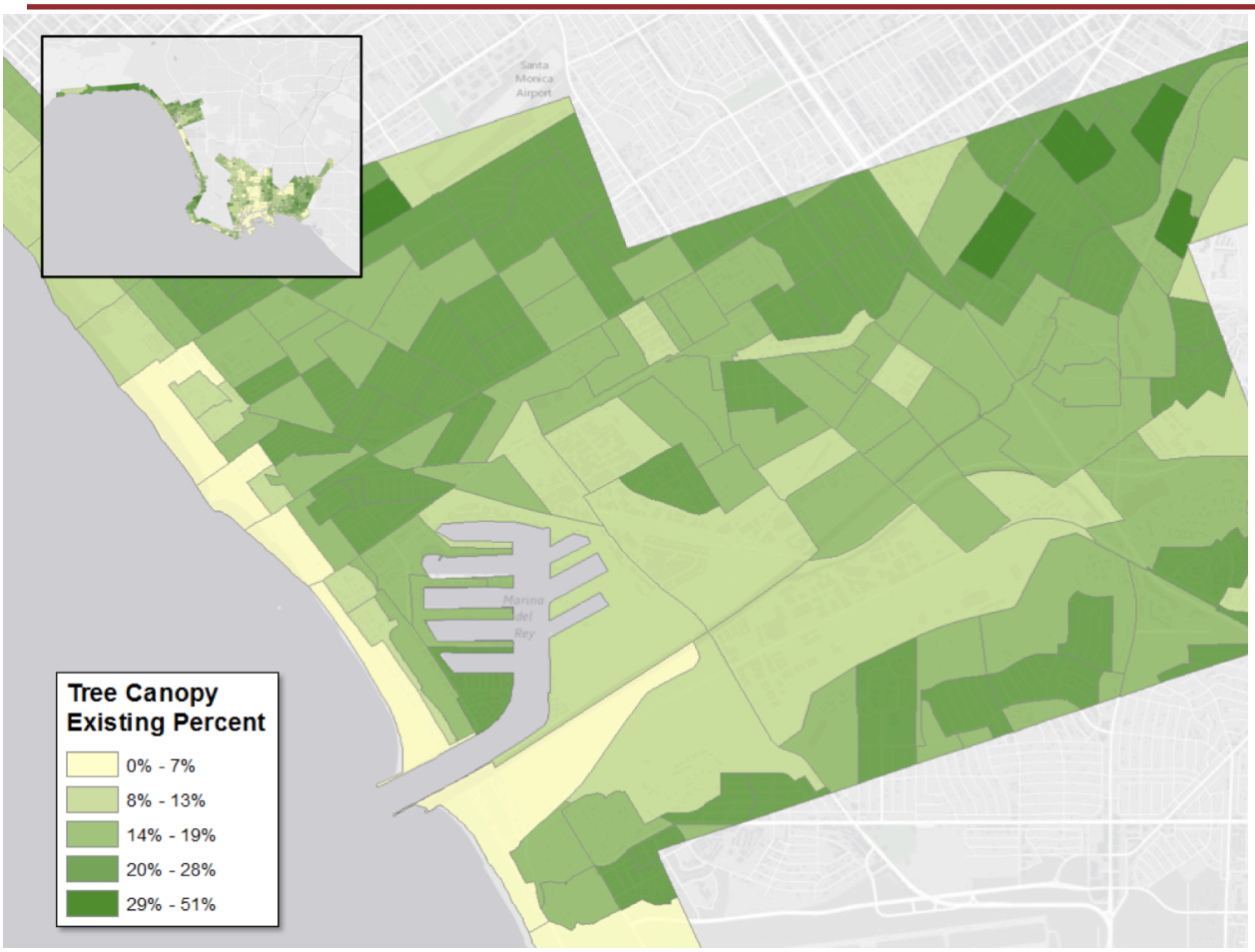


Figure 39. Map of existing tree canopy by Census Block Group for the area near the Baldwin Hills Parklands and for all of coastal Los Angeles (inset).

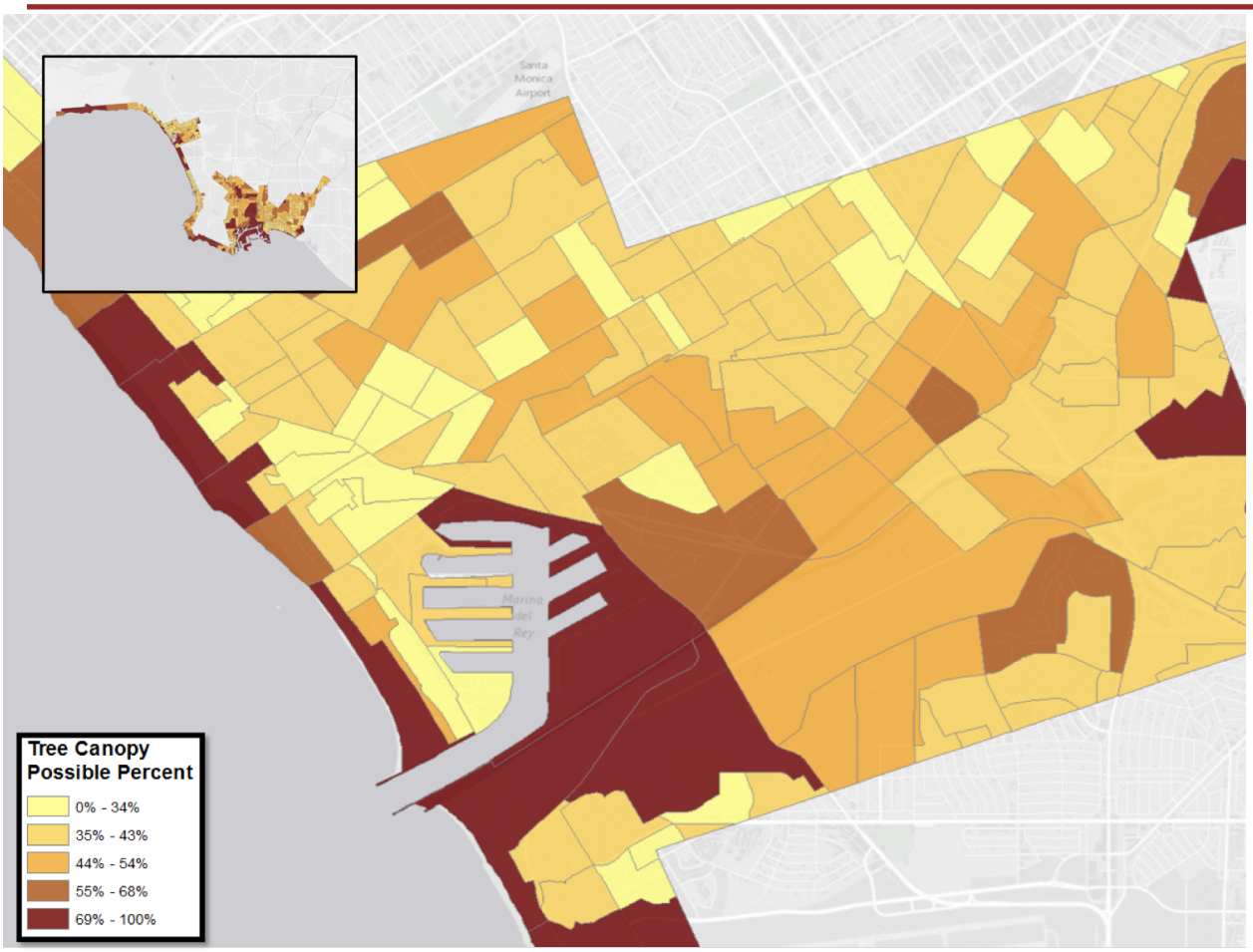


Figure 40. Map of possible tree canopy by Census Block Group for the area near the Baldwin Hills Parklands and for all of coastal Los Angeles (inset).

The data can also be viewed at the parcel scale. Figure 41 shows parcel level maps of existing and possible tree canopy for a section of coastal Los Angeles.

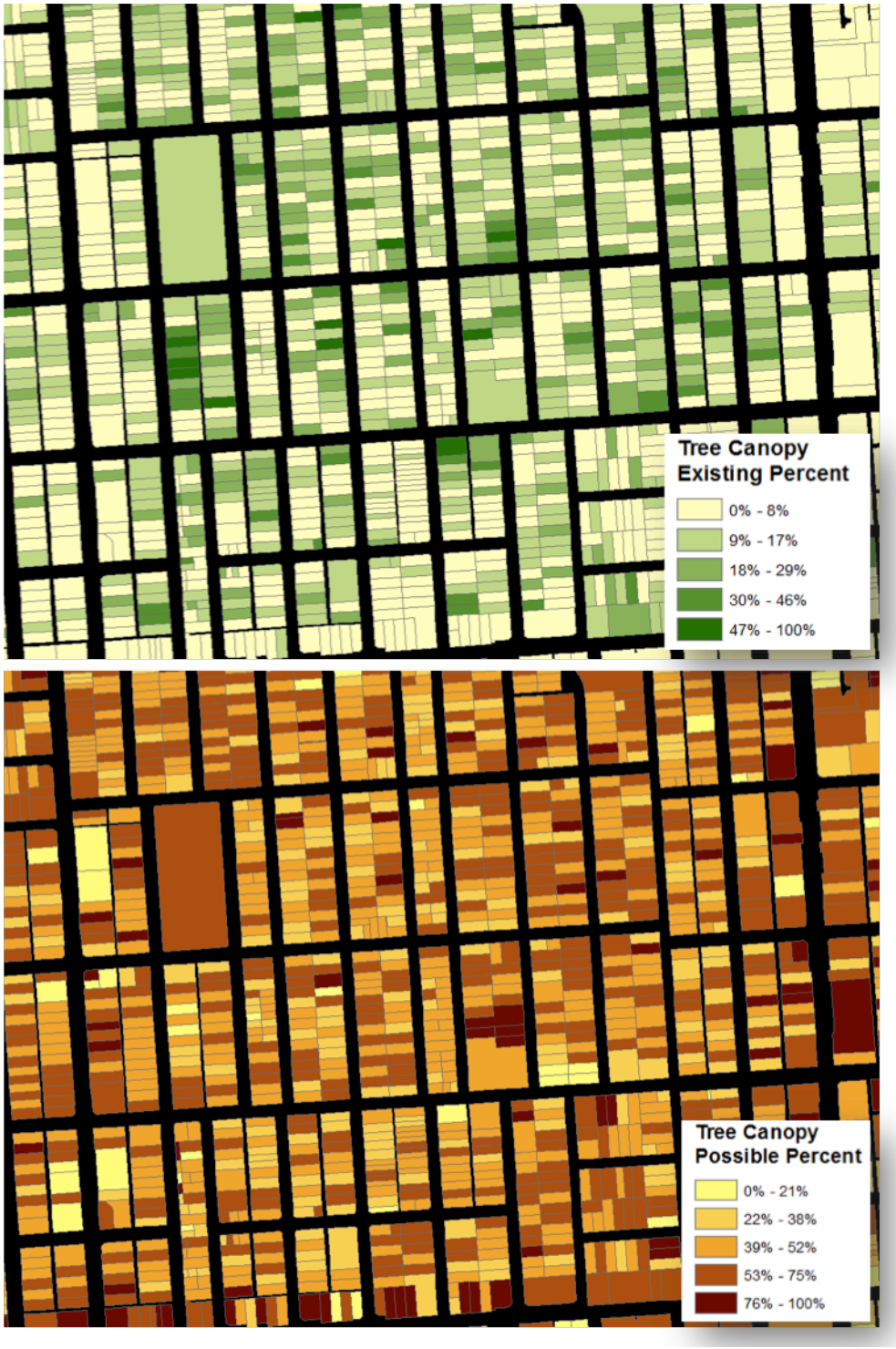


Figure 41. Parcel level maps of existing (top) and possible (bottom) tree canopy in coastal Los Angeles.

In addition, the tree canopy assessment examined existing and possible canopy to land use type, to determine which land uses had the most opportunity for increased canopy. As shown in Figure 42, residential is the dominant land use, followed by right of way, transportation and utility, commercial, and industrial.

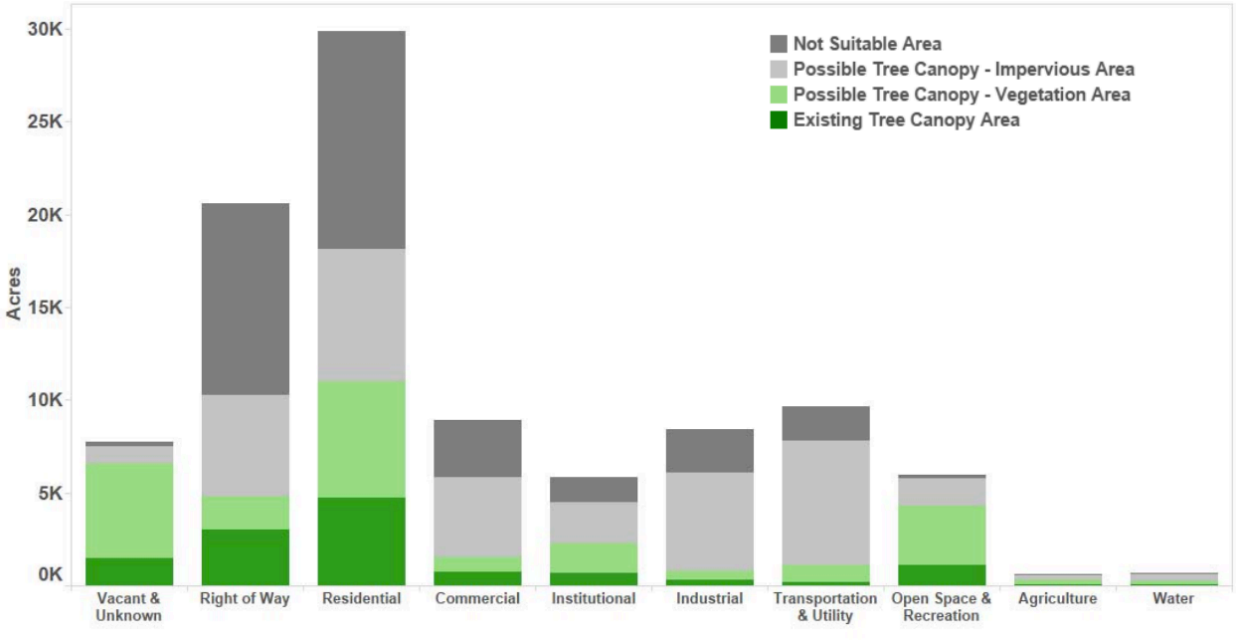


Figure 42. Existing and possible tree canopy in coastal Los Angeles, summarized by land use.

4. SUMMARY & DISCUSSION

The data reported in this report represent the behaviors and attitudes of 1,747 visitors to the Baldwin Hills Parklands, and the visitation rates of 12,709 park users. This provides a robust foundation to draw conclusions and generalizations about the user population. In this section we will summarize and discuss the results by research question topics.

4.1 RATE & FREQUENCY OF USE

This study found that visitors to the Baldwin Hills Parklands tended to be frequent users, with 38% visiting more than once per week, who only visit one park within the system. Indeed, 46% of users said they visit other Baldwin Hills Parklands "Never" or "Once a Month." This shows that the majority of visitors are repeat, relatively frequent users of the parks. Programming could be tailored to serve these repeat users. The low visitation rate to other locations in the Baldwin Hills Parklands may be because users go to the park closest to where they live or work, and indeed, as was found in the place attachment results, frequent users expressed higher attachment to the park. It may also be that visitors have not gone to another park recently and so selected the "Never" option on the survey. Increasing the connectivity of the parks may increase how often people go to different parks in the system.

The levels of visitation revealed that weekend visitation is generally higher than weekdays, with the Kenneth Hahn State Recreation Area serving the largest user population at any one time (615 visitors observed in one 15-minute period), and the Baldwin Hills Scenic Overlook State Park having the most consistently high visitation on both weekday (average of 47 visitors observed in a 15-minute period) and weekends (average of 96 visitors observed in a 15-minute period). When asked what time of day they like to visit the park, user preferences spanned relatively evenly across daytime hours, with the morning (27%) and afternoon (26%) as the most popular. This indicates that park programs may be scheduled during those time periods to attract the most participants. In addition, any future research on park users should continue to schedule researchers to be in the field at varying times of day.

4.2 ACCESSIBILITY

Survey results revealed that an overwhelming majority (84%) of users drove to get to the park, entering though the main entrance (88%) and finding it very convenient (72%) to park. For users who did not find the parking to be convenient, peak times for those parks could be analyzed to determine if parking needs to be expanded. The parks where convenient parking was reported could be used as a model for those that had less positive results. Although most visitors arrive by car, 41% would prefer to walk or bicycle to the park. These results indicate that many park users would like to be able to get to the parklands in a more active way. Therefore, creating a more accessible biking and walking system may be beneficial to users. The Park to Playa trail may be an effective way of doing so. Related to this, the majority of park users reported that they visit the coast once a month or less. However, as 91% of visitors reported that they would be willing to walk one to ten miles to get to the beach, the number of individuals going to the coast may rise upon the completion of the Park to Playa trail.

Only 10% of the park users said that they walked to the park that day. Most said that they walked less than one mile or less than half a mile. This low rate of walking may be attributed to at least two factors. One reason could be that walkers face obstacles to accessibility, since the parks are surrounding by heavily trafficked roads and some of the less formal pedestrian entrances are not necessarily well known or marked. A second reason may be that users are coming from further distances. As shown in the demographics results, 47% of park users reported that they live in neighborhoods other than those immediately adjacent to the parks, and the park user demographic "profile" does not align closely with the immediately surrounding communities. Outreach to residents within a 1-mile radius reminding them of the park(s) within walking distance may help promote traveling to the park on foot. Additionally, the park shuttle could help reduce the walking distance and thus encourage visitors to walk. Most users (90%) were unaware that the Baldwin Hills Conservancy runs a park shuttle, though 52% indicated they would take the park shuttle. Considering this, there may need to be more

public outreach or advertising for the shuttle to let park users know that it is available, given the low awareness rate and high interest rate.

4.3 ACTIVITIES

The survey results indicate that park visitors take part in a range of activities. The findings suggest a physically active user population, with walking (77%) and jogging (44%) rated among the top three activities. However, visitors also go to the parklands for more passive uses, including enjoying nature (48%) and having picnics and social gatherings (27%). One quarter of visitors reported that they bring their kids to play in the parklands.

Respondents utilize many of the existing amenities in the park, with notable representation of visitors who use the dog park (30%), the fitness equipment (21%), and the playing fields (14%). Yet only 7% of visitors report using the community recreational center. Given the high quality centers in both the Baldwin Hills Scenic Overlook State Park and Kenneth Hahn State Recreation Area, greater promotion of their use may be warranted.

Only 10% of visitors indicated that they help take care of the environment in the park, yet 37% percent responded yes when asked if they would be interested in volunteering for park related activities. When seeking volunteers, direct recruitment in the parks may be a successful strategy.

It is notable that 30% of the visitors utilized the dog park. When asked if they avoid certain areas in the park, 2% of the population agreed and provided write-in responses describing the reasons. It seemed that most of the issues people had with certain areas involved dogs. Either the area was avoided because dogs were not on leashes or the area was avoided because it was not dog friendly. This is a small but vocal population. A potential solution could be to ensure entrances clearly marked as to their level of dog accessibility so that users are aware of where these areas are located before entering the park.

4.4 ENVIRONMENTAL AWARENESS

Survey respondents generally had to a low to moderate understanding of the local environment, with 47% expressing that they did not know where the Ballona Creek or wetlands

were. This was a surprisingly high "no" response, given that the Ballona Creek bike path is part of the Baldwin Hills Parklands, and that several of the parks are within view of the creek. Twenty-nine percent indicated that they were not aware of open bodies of water or streams within the parklands. In addition, 37% reported lack of knowledge of native plants in the area. Yet 70% would like to learn more about the local environment. The results showed 29% of park users reported that they are interested in better understanding human health and the environment, 24% reported that they are interested in better understanding wildlife, and 15% reported they are interested in better understanding water quality. Only 7% indicated they would be interested in learning more about water quantity. This is notable, as California just experienced a 5-year drought, with Southern California still facing dry conditions.

When asked what types of educational approaches they would utilize, 48% of park users reported they would use educational signs throughout the park, 26% reported they would use formal programs as educational opportunities, and 22% reported they would use informal activities, such as group meet-ups. These methods, particularly signs and plaques, could be used to inform residents on topics they seem less aware of such as the Ballona wetlands and native plant species, as well as initiatives the park is implementing. It appears that the visitor population is open to learning more about the parks' environments and would respond well to more programming.

4.5 DEMOGRAPHICS

The results of four data collection seasons provided an overall snapshot of the average visitor to the Baldwin Hills Parklands. In general, a visitor is most likely to be female (56%), be relatively young (average age of 35) and child-free (54%), earn less than $80,000 (51% of those who chose to respond) and rent her home (57%), have a college education or a graduate degree (58%), be either Caucasian (35%) or African-American (31%), speak English (97%), and live either outside of the adjacent neighborhoods to Baldwin Hills (47%) or in Culver City (24%).

Visitor ages ranged from 18 (the youngest age that could be surveyed) to 95, with a relatively young median age of 35 years old. Because the average visitor is younger, offering

programming aimed towards that age range (such as yoga or music in the parks) may be an effective way to encourage visitation from that demographic. On the flip side, outreach may be conducted to promote visitation from older members of the population. There were 12% of visitors who indicated they were retired. Educational programs or other opportunities could be offered to reach out to that demographic as well.

Thirty-eight percent of park users reported that they completed college, 20% reported that they completed graduate or professional school, and 19% reported that they had some college. It is interesting to note that despite most of the population having completed at least some college, the average park visitor does not have a high income. Remarkably, 80% of park users reported that they vote. This indicates a highly educated, civically engaged population that may be called upon to support environmental or park-related measures.

English was spoken by 97% of the respondents, Spanish was spoken by 30%, and "other" was chosen by 7% of users. Therefore, having information in both English and Spanish would serve a majority of the population visiting the parklands. The results showed 27% of park users reported identifying as Hispanic or Latino. This is lower than would be expected given the ethnic composition of the areas within the one-mile radius of the Baldwin Hills Parklands and many of the census tracts around the parks. Expanding Spanish programming or accessibility may encourage more of these populations to visit the Baldwin Hills Parklands, as research shows that Latino park visitors often feel discriminated against by White visitors (Byrne, 2012).

It is also notable that only about one-third of park visitors identified as Black or African-American. The Baldwin Hills Parklands are situated in a historically African-American area of Los Angeles, and indeed, the demographics of Ladera Heights and the Baldwin Hills neighborhoods reflect a two-thirds or higher black population (Table 1 and Figure 28). This builds on the reporting above in Section 5.1 that the park visitation is not representative of the adjacent neighborhoods and suggests a need to promote use by residents.

Finally, it is important to highlight that while work can be done to ensure the parks are serving the local populations, the parklands are a destination for visitors outside of the immediate area and truly provide a regional urban green space for Los Angeles County. The moderate to low income of most park visitors suggests that the Baldwin Hills Parklands are providing source of recreation and access to nature that may not be available to users otherwise.

4.6 PLACE ATTACHMENT

For this section of the survey and with the expertise of Dr. Robert Ryan, we examined several place attachment questions. First, we examined whether there was variation in place attachment factors among the different park locations. We expected that there may be differences in strength of attachment between parks with different features. Next, we looked at the relationship between place attachment factors, frequency of use and mode of travel to the park. Previous research has shown that recreation users express greater place attachment sentiments with places that they visit more frequently and that are closer to where they live (Williams et al., 1992; Moore & Graefe, 1994). We also assessed the relationship between interest in volunteering and place attachment, using volunteering in parks as a proxy for environmental stewardship, to test the hypotheses that stewardship may be a result of place attachment. Finally, we analyzed relationships between place attachment factors and several demographic variables, to determine if park sentiments vary among groups of people.

In summary, we found that park visitors overall expressed a high level of place attachment, both to the natural aspects and a sense of personal connection to the parks. This was consistent across parks, with the exception of the Yvonne B. Burke Sports Complex rating significantly lower than the others and the Ballona Creek Bike Path rating lower (but not significantly) than the others. This may be because the sports complex is not necessarily a place where people are actively choosing to visit, but rather a result of games being scheduled there, etc., and the bike path is not a destination as much as a thoroughfare. Visitors who drove to the parks indicated stronger levels of place attachment (nature/home) than those who walked

and biked. This was surprising as we expected walkers and bikers would have a stronger connection. It is important to note that the drivers were a large majority of the sample, which could influence this result. Consistent with our expectations, users who visited more frequently expressed stronger place attachment, suggesting that in addition to recruiting new visitors, park management should focus on serving their core visitor base. Those who indicated that they were interested in volunteering opportunities in the parks rated both place attachment factors significantly more than those who were not interested. These results suggest that place attachment may be a motivator for increased interest in stewardship activities; and these would be the most likely individuals for the park district to contact for future efforts. We also found that renters and lower-middle income visitors expressed lower levels of place attachment than upper income visitors. Additional outreach to these communities may be useful.

4.7 GAME CAMERA

The game camera visitation study was an exploratory research project, intended to determine if this methodology would be effective to monitor park entrances. Camera monitoring is a useful approach to capture rare behaviors, which is why they are used to study wildlife, especially nocturnal animals. In this study, we employed cameras to help us capture behaviors at several less frequently used entrances to the Baldwin Hills Parklands, in lieu of stationing research assistants in places where they may not see a person for their entire shift.

We were successful in establishing effective locations for cameras at four of the five sites, with the high volume of automobile traffic at Site 1, making it extremely difficult to monitor. The data collected were useful to begin to develop a systematic approach for analyzing activities at these locations.

A large number of false positives were recorded at Site 1, mostly from vehicles triggering the camera. This, in addition to the camera at Site 2 producing over 11,000 images that seemed to mostly be vehicle induced false positives, suggests that using cameras to monitor locations near roads may not be the most effective method. However, the game camera monitoring revealed trends in park use at several less frequently used entrances. We

found that the majority of people use the four monitored entrances to the park for physical activities, and they tend to be used by single individuals, with the exception of Site 5. We observed many birds mid-flight at Site 5, which can likely be attributed to the Audubon activities occurring adjacent to the camera location. Site 3, La Brea Veronica, was the one site monitored that is not an actual entrance to the parklands. Given the ongoing use of this entrance to the park by what seem to be local residents, the Baldwin Hills Conservancy may consider creating a more intentional entrance, including signage and a safer entry point.

Overall, the methods tested through this study suggest that game cameras can be used as an inexpensive tool, relative to intensive surveys, to conduct ongoing monitoring of parks. This approach may be especially useful in less frequented locations and times of day (or night). Future employment of monitoring projects would not have to be limited to access and use. Observational methodologies such as the System for Observing Play and Recreation in Communities (McKenzie et al., 2006) might be applied without the need to send researchers out into the field for several hours each day. In addition to human behavior, research on wildlife could be conducted through these mechanisms. Permanently installed game cameras at key locations, such as Site 5, could provide the ability to conduct long-term monitoring of both human and animal populations.

4.8 URBAN TREE CANOPY & LAND COVER

An analysis of the Los Angeles Coast based on land cover data derived from high-resolution aerial imagery and LiDAR found that 12,389 acres of the study area were covered by tree canopy. This represents 13% of all land in the study area. An additional 55% (54,574 acres) of the county's land area could theoretically be modified to accommodate tree canopy. Within the Possible category, 20% (20,495 acres) of total land area was classified as Vegetated Possible and another 35% as Impervious Possible (34,074 acres). Establishing tree canopy on areas classified as Impervious Possible will have a greater impact on water quality and summer

temperatures while Vegetated Possible, or grass/shrub, is more conducive to establishing new tree canopy (where such lands are not established grassland or chaparral habitat).

Tree canopy in Los Angeles is a vital asset that reduces stormwater runoff, improves air quality, reduces the region's carbon footprint, enhances quality of life, contributes to savings on energy bills, and serves as a habitat for wildlife. Targeted increases in tree canopy can enhance the services that trees provide. Canopy goals can be better implemented and more effective when they are targeted towards specific audiences (e.g. residents) or goals like reducing stormwater runoff. Indeed, residents are paramount to preserving existing tree canopy and increasing canopy cover in the future, as residential land is the single largest land use type in coastal Los Angeles. While there is currently more tree canopy on residential land than any other land use type, there is also more room to plant trees on residential property than on any other land use type. Given that 43% of the visitors to the Baldwin Hills Parklands own their homes and that the majority express an interest in learning more about the region's environment, the parklands can be a place to conduct outreach to promote tree planting and tree care.

Despite the dominance of residential land use within the study area, all land use types have vegetated or impervious surfaces that could host additional tree canopy. For example, institutional and industrial sites both contain large proportions of Possible Tree Canopy-Impervious. These changes would have meaningful impacts on water and heat island issues. In addition, new developments in the study area showed a conspicuous lack of tree canopy. New urban development projects should include in their plans new tree plantings in yards, common areas, and transportation rights-of-way. These new trees will produce a net gain in canopy while mitigating the effects of increased impervious surfaces. The Baldwin Hills Conservancy and its partners are well placed to advocate for such changes, as well as to increase canopy within the parklands themselves wherever possible and suitable.

5. RECOMMENDATIONS

The findings of this study portray the Baldwin Hills Parklands as a valuable urban resource with regional significance. One intended outcome of the project was to utilize these results to guide recommendations so that the parklands continue to serve as an integral green space in Southern California.

5.1 INFRASTRUCTURE IMPROVEMENTS

1. **Consider improving parking options.**

   Since 84% of visitors arrive by car, parking is an important amenity in the Baldwin Hills Parklands. While 72% of users found parking to be convenient, improvements can be made in parks that did not receive high ratings. The locations that visitors found parking at least somewhat inconvenient were Baldwin Hills Scenic Overlook State Park, Culver City Park, Gwen Moore Lake and the Eastern Ridgeline at Kenneth Hahn State Recreation Area, and Norman O. Houston. Electric vehicle parking can also be expanded in parks where this is not available to increase accessibility.

2. **Reduce barriers for bikes and pedestrians.**

   Despite the majority representation by drivers, 41% of park visitors reported that they would prefer to access the park by bicycling or walking. Increased bicycle infrastructure, including well-marked lanes and connection points, and installation of more bicycle racks at entrances may help encourage bicycling. Increasing connectivity between the parks through the Park to Playa project will also allow more visitors to use bikes or walk to the Baldwin Hills Parklands. Creating safer pedestrian access in certain locations, such as the Stocker Corridor and the main entrance to Kenneth Hahn SRA would help promote walking. Increasing the publicity for the free shuttle and alternative transportation options will also decrease the amount of individuals driving to the parks (see below).

3. **Increase tree canopy in the parklands.**

   Tree canopy is a vital asset that reduces stormwater runoff, improves air quality, reduces the region's carbon footprint, enhances quality of life, contributes to savings on energy

bills, and serves as a habitat for wildlife. Where possible and suitable, tree canopy should be increased within the parklands.

5.2 EDUCATIONAL EFFORTS

1. **Install additional signage.**

   Nearly half of the park users reported they would use educational signs throughout the park. Signs and plaques could be used to inform residents on topics they seem less aware of (the Ballona wetlands and native plant species), as well as initiatives the park is implementing. Improved signage for general informational and way finding purposes may also be considered; including advertising the park shuttle service, providing signs at informal but well-used entrances such as the Veronica/La Brea entrance, and indicating whether or not dogs are allowed.

2. **Distribute promotional materials.**

   As part of this report, we produced promotional materials including a brochure, a one-page document, and a poster to highlight this study and its findings. These, in addition to information about Park to Playa and the Baldwin Hills Conservancy's existing transportation access map, should be distributed widely. The Baldwin Hills Conservancy may consider sending these to residents in the 1-mile radius around the parks, sharing with state funders and others, posting on web and social media platforms, etc.

3. **Expand use of Spanish-language materials.**

   Nearly a third of the respondents indicated that they speak Spanish. In addition, a lower than expected percentage of users reported that they are Latino or Hispanic. Providing Spanish signs, promotional materials, and other information would serve the Spanish speakers already visiting the park, but also may help increase the visitation from other members of the Latino and Hispanic communities.

4. **Implement formal education programs.**

   More than one quarter of park visitors said they would use formal education opportunities. The community centers in the parklands can be places for activities such as lectures,

workshops, and trainings for park visitors and community members. These types of programs can provide information about topics of interest, such as the connection between the environment and human health, an area in which 29% of survey respondents expressed an interest in learning more. Another possible use of these programs could be to encourage residents to plant and care for trees, to contribute to increasing and maintaining the urban tree canopy of the region. Formal education programs could help promote increased and more effective environmental stewardship and public health.

5.3 TARGETED OUTREACH

1. **Balance between serving frequent users and recruiting new users.**

   As discussed in the demographics section, the responses to the survey indicate that most visitors are coming from outside of the 1-mile radius zone considered a walkable range. Thus, there is a real opportunity to conduct local outreach to those residents to encourage them to visit (and ideally walk) to the Baldwin Hills Parklands. However, there is a population of frequent users that should also be served. Many respondents reported that they would participate in informal activities, such as group meet-ups. Because the average visitor is younger, offering programming aimed towards that age range (such as yoga or music in the parks) may be an effective way to boost visitation rates.

2. **Support increased visitation by African-American and Latino populations.**

   Groups such as Outdoor Afro and Latino Outdoors exist because African-American and Latino communities are often underrepresented in outdoor recreation. This study found that while the Baldwin Hills Parklands do receive high visitation from these communities, their representation is low when compared to the demographics of the neighborhoods surrounding the parklands. The Baldwin Hills Conservancy should consider supporting meet-up groups or other informal programming aimed directly at increasing park use by African-Americans and Latinos.

3. **Engage park users in civic stewardship.**

More than one-third of respondents said they would volunteer and over three-quarters said that they vote. We also found high levels of place attachment among visitors, and that this attachment may be a motivator for increased interest in stewardship activities. Thus, the user base of the Baldwin Hills Parklands can be recruited to volunteer in park-related activities, and the Baldwin Hills Conservancy should consider outreach activities to garner support for park-related ballot initiatives or candidates.

5.4 FUTURE RESEARCH

1. **Repeat the survey at regular intervals.**

   This would facilitate a better understanding of how attitudes and use are changing over time, especially following the implementation of Park to Playa. One potential way to do this may be to continue the approach from Season 4, which included incorporating the research into an undergraduate course. This could serve research and outreach purposes: to establish a consistent, tested survey approach on a regularly scheduled basis that becomes part of the LMU and Baldwin Hills Conservancy communities and produces both data and student ambassadors for the Baldwin Hills Parklands.

2. **Follow-up on specific findings.**

   Smaller scale studies could be done through follow-up surveys, interviews, focus groups, or other methods to explore particular areas of inquiry. Possible areas for further research may include examining the demographics findings in more details (why are most visitors coming from outside a 1-mile radius, what are the barriers to park use, etc.); investigating the transportation choices of visitors (and the unusual finding of higher attachment to the parks by car users); or conducting a more detailed assessment of the types of activities and preferences of users.

3. **Utilize game cameras for further research.**

   Consider utilizing the field-tested and established game camera methodology as a relatively inexpensive tool to conduct ongoing monitoring of parks. This monitoring would

not have to be limited to access and use. In addition to human behavior, research on wildlife could be conducted through these mechanisms. Permanently installed game cameras at key locations, such as Site 5, could provide the ability to conduct long-term monitoring of both human and animal populations.

4. **Produce information on environment and human health benefits.**

   The survey and the game camera monitoring revealed that the vast majority of the visitor population uses the parklands for physical activity. Visitors are also interested in learning more about their health. Research on the impacts of regular park use on urban residents could provide a mechanism to quantify the benefits of outdoor recreation and promote further use of the parklands.

5.5 FUNDING OPPORTUNITIES

1. **Utilize study data to support need for continued Bond funding.**

   The findings of this study, supported by Proposition 84 funds, highlight the need for continued funding of urban parks based on the demonstrated public interest and usage. The Baldwin Hills Parklands are a valuable regional resource serving a densely populated surrounding area and the greater Los Angeles region. Most of the areas served by the Parklands are considered disadvantaged or severely disadvantaged communities as defined by the State of California (for a map of disadvantaged communities, see https://gis.water.ca.gov/app/dacs/). This underscores the need for an increase in the investment of bond and initiative spending within the urban core compared to rural areas. Constituents of the Parklands should be proportional beneficiaries of the funds being spent in California.

2. **Seek additional funding for Parklands through California Cap and Trade (AB-398).**

   Revenue from the recently extended cap and trade legislation would be appropriately invested in the Baldwin Hills Parklands, as the target areas for funding include urban greening and zero carbon transportation alternatives. The Baldwin Hills Conservancy should

seek funding from AB-398 for continued infrastructure improvements, implementation of the Park to Playa trail, and education programming outreach to support climate adaptation and community resilience.

6. CONCLUSION

This two-year study of the Baldwin Hills Parklands aimed to provide the Baldwin Hills Conservancy and its stakeholders with a comprehensive understanding of the visitor population. We found that the Parklands are serving both the local neighborhoods and greater Los Angeles County, making them an integral urban natural resource that offers great recreational, aesthetic, and environmental benefits for the most populous county in the United States.

Visitors report largely positive experiences in the park, including conducting a range of activities, feeling like the park is a place they can go to learn about the environment, and expressing positive sentiments and feelings of attachment to the parks. Most visitors reported that they did not avoid any areas in the park, suggesting that the parklands are welcoming places for the majority of the population. Yet there were barriers to park use, both implied and reported. These are in the areas of accessibility, lack of knowledge about the park amenities and local environment, and underrepresentation from certain demographic groups. Additionally, given its relatively small footprint, the Baldwin Hills Parklands may not be funded proportional to the population they are serving.

With these data as a foundation, we offered a series of recommendations for infrastructure improvements, educational efforts, targeted outreach, future research, and funding opportunities. It is our aim that this report can support the Baldwin Hills Conservancy's efforts to preserve and grow these valuable parklands to serve the communities of need in Los Angeles County.

7. REFERENCES

"Baldwin Hills Crenshaw." *Mapping L.A.* Los Angeles Times. Web. 14 July 2017. http://maps.latimes.com/neighborhoods/neighborhood/baldwin-hillscrenshaw.

Bartos, M., and M. Chester. (2014). Assessing future extreme heat events at intra-urban scales: A comparative study of Phoenix and Los Angeles.

Berg, N., and A. Hall. (2015). Increased interannual precipitation extremes over California under climate change. *Journal of Climate*, *28*(16), 6324-6334.

Boone, Christopher G., Buckley, Geoffrey L., Grove, J. Morgan, and Sister, Chona (2009) Parks and People: An Environmental Justice Inquiry in Baltimore, Maryland, Annals of the Association of American Geographers, 99:4, 767-787, DOI: 10.1080/00045600903102949

Boone, Christopher G., and Ali Modarres. "Creating a toxic neighborhood in Los Angeles County: A historical examination of environmental inequity." *Urban Affairs Review* 35.2 (1999): 163-187.

Bowler, Diana E., et al. "Urban greening to cool towns and cities: A systematic review of the empirical evidence." *Landscape and urban planning* 97.3 (2010): 147-155.

Byrne, Jason. "When green is White: The cultural politics of race, nature and social exclusion in a Los Angeles urban national park." *Geoforum* 43.3 (2012): 595-611.

"CalEnviroScreen 3.0." *OEHHA Science for a Healthy California*. California Environmental Protection Agency, 30 Jan. 2017. Web. 14 July 2017. https://oehha.ca.gov/calenviroscreen/report/calenviroscreen-30.

California Department of Water Resources (CA DWR). "Resources - Disadvantaged Communities (DAC) Mapping Tool." (2015) Web. 22 August 2017. http://www.water.ca.gov/irwm/grants/resources_dac.cfm

Chawla, L., and R.A. Hart. (1988). The roots of environmental concern. In D. Lawrence, R. Habe, A. Hacker, and D. Sherrod (Eds.), Proceedings of the nineteenth annual conference of the Environmental Design Research Association (pp. 15-18). Pomona, CA: Environmental Design Research Association.

Cohen, Deborah A., et al. "Contribution of public parks to physical activity." *American journal of public health* 97.3 (2007): 509-514.

"Culver City." *Mapping L.A.* Los Angeles Times. Web. 14 July 2017. http://maps.latimes.com/neighborhoods/neighborhood/culver-city.

De Vries, Sjerp, et al. "Natural environments—healthy environments? An exploratory analysis of the relationship between greenspace and health." *Environment and planning A* 35.10 (2003): 1717-1731.

Heynen, Nik, Harold A. Perkins, and Parama Roy. "The political ecology of uneven urban green space the impact of political economy on race and ethnicity in producing environmental inequality in Milwaukee." *Urban Affairs Review* 42.1 (2006): 3-25.

Kelly, Therese. "Baldwin Hill Park, Crenshaw." *L.A. Forum*. 2015. Web. 17 July 2017. http://laforum.org/article/baldwin-hill-park-crenshaw.

"Ladera Heights." *Mapping L.A.* Los Angeles Times. Web. 14 July 2017. http://maps.latimes.com/neighborhoods/neighborhood/ladera-heights.

Leopold, A. (1949). A sand county almanac with other essays on conservation from Round River. New York: Oxford University Press.

Luttik, Joke. "The value of trees, water and open space as reflected by house prices in the Netherlands." *Landscape and urban planning* 48.3 (2000): 161-167.

Mark, Sheron, et al. *The Value of Urban Parklands: A Park User Survey Study of the Baldwin Hills - Report of Pilot Study.* Loyola Marymount University, 2014.

McKenzie, Thomas L., Deborah A. Cohen, Amber Sehgal, Stephanie Williamson, and Daniela Golinelli. "System for Observing Play and Recreation in Communities (SOPARC): reliability and feasibility measures." *Journal of Physical Activity and Health* 3, no. s1 (2006): S208-S222.

Moore, R. L., and A. R. Graefe. (1994). "Attachments to recreation settings: The case of rail-trail users." *Leisure Sciences*, 16, 17-31.

Morales, Dominic J. "The contribution of trees to residential property value." *Journal of Arboriculture* 6.11 (1980): 305-308.

Morello-Frosch, Rachel, Manuel Pastor, and James Sadd. "Environmental justice and Southern California's "riskscape" the distribution of air toxics exposures and health risks among diverse communities." *Urban Affairs Review* 36.4 (2001): 551-578.

Nabhan, G. P., and S. Trimble. (1994). A geography of childhood: Why children need wild

places. Boston: Beacon.

O'Neil-Dunne, J.P.M., D.H. Locke, and M.F. Galvin. (2015). Tree Canopy Assessment: Los Angeles Coastal Zone. SavATree Consulting Group: Bedford Hills, NY. Web. 31 August 2017. http://cures.lmu.edu/wp-content/uploads/2015/12/Tree-Canopy-Report-Los-Angeles.pdf.

Pastor, Manuel, Jim Sadd, and John Hipp. "Which came first? Toxic facilities, minority move-in, and environmental justice." *Journal of urban affairs* 23.1 (2001): 1-21.

Pataki, Diane E., et al. "Coupling biogeochemical cycles in urban environments: ecosystem services, green solutions, and misconceptions." *Frontiers in Ecology and the Environment* 9.1 (2011): 27-36.

Peters, Karin, Birgit Elands, and Arjen Buijs. "Social interactions in urban parks: Stimulating social cohesion?." *Urban forestry & urban greening* 9.2 (2010): 93-100.

Pulido, Laura. "Rethinking environmental racism: White privilege and urban development in Southern California." *Annals of the Association of American Geographers* 90.1 (2000): 12-40.

Romolini, Michele, and Eric Strauss. *The Value of Urban Parklands: A Park User Study of the Baldwin Hills - Semiannual Report, Season 3.* Loyola Marymount University, 2016.

"Santa Monica Mountains: Park Statistics." *National Park Service*. U.S. Department of the Interior, 1 Mar. 2015. Web. 17 July 2017. https://www.nps.gov/samo/learn/management/statistics.htm.

Shumaker, S. A., and R. B. Taylor. (1983). Toward a clarification of people-place relationships: A model of attachment to place. In N. R. Feimar & E. S. Geller (Eds.), Environmental psychology: Directions and perspectives (pp. 219-251). New York: Praeger.

StudyLA. Maps for Baldwin Hills Park User Study (2017). Data sources: US Census Bureau, Infogroup | County of Los Angeles, Bureau of Land Management, Esri, HERE, Garmin, INCREMENT P, Intermap, USGS, METI/NASA, NGA, EPA, USDA.

Sullivan, William C., Frances E. Kuo, and Stephen F. Depooter. "The fruit of urban nature vital neighborhood spaces." *Environment and behavior* 36.5 (2004): 678-700.

Talen, Emily. "Visualizing fairness: Equity maps for planners." *Journal of the American Planning Association* 64.1 (1998): 22-38.

"Tapestry Segmentation." *Esri Demographics*. ArcGIS. Web. 28 July 2017. http://doc.arcgis.com/en/esri-demographics/data/tapestry-segmentation.htm#ESRI_SECTION2_D34B7970D92941D5A32339D6E31C29CE.

"We All Need Parks!" *Parks Needs Assessment*. Los Angeles County Department of Parks and Recreation. Web. 14 July 2017. <http://lacountyparkneeds.org/>.

Weiss, Marc A. *The rise of the community builders: The American real estate industry and urban land planning*. Beard Books, 2002.

Westphal, Lynne M. "Urban greening and social benefits: a study of empowerment outcomes." *Journal of Arboriculture* 29.3 (2003): 137-147.

Williams, D. R., M. E. Patterson, J. W. Roggenbuck, and A. E. Watson. (1992). Beyond the commodity metaphor: Examining emotional and symbolic attachment to place. Journal of Leisure Sciences, 14, 29-46.

Wilson, Edward O. (1984). Biophilia. Cambridge, MA: Harvard University Press

Wolch, Jennifer, John P. Wilson, and Jed Fehrenbach. "Parks and park funding in Los Angeles: An equity-mapping analysis." *Urban geography* 26.1 (2005): 4-35.

Young, Terence. "Modern urban parks." *Geographical Review* (1995): 535-551.

"3810 Santa Monica Mountains Conservancy." *Governor's Budget*. California Department of Finance. Web. 17 July 2017. http://www.ebudget.ca.gov/2016-17/StateAgencyBudgets/3000/3810/department.html.

"3835 Baldwin Hills Conservancy." *Governor's Budget*. California Department of Finance. Web. 17 July 2017. http://www.ebudget.ca.gov/2016-17/pdf/GovernorsBudget/3000/3835.pdf.

APPENDIX 1.

BALDWIN HILLS COMPREHENSIVE USER SURVEY

STUDENT INTRODUCTION (SPOKEN)

Good Day. My name is _____ and I am a student at Loyola Marymount University conducting a survey on behalf of the Baldwin Hills Conservancy. We are hoping to learn about the experiences of park visitors by inviting you to participate in a brief survey with me today. It should take about 10-15 minutes to complete.

The survey will ask about your activities in the park, your thoughts about park facilities and features, and other similar topics, including some personal background information such as where you live and the language you speak. This survey is completely anonymous and voluntary, and you may end it at any time. You will never be identified by name or picture.

- Any questions about the study can be sent to the lead researcher, Dr. Michele Romolini. Would you like her business card?
  Yes/No

- Before we begin, can you provide me with verbal confirmation that you understand the purpose of this study and that you wish to participate?
  Yes/No

- Would you be willing to provide an email address or phone number in order to be contacted in the future to answer similar follow-up questions? We will not use your information for any purpose other than this park study nor will we provide your contact information to anyone beyond this study.
  First Name:
  Email Address:
  Phone Number:

SECTION 1: FREQUENCY OF USE

- How often do you visit this particular park? (Choose one)
  first time | once every few months | once every few weeks | once a week | several times a week

- What time of day do you like to visit this park? (Choose one)
  ☐*early AM* ☐*late AM* ☐*mid-day* ☐*afternoon* ☐*evening*

- Which other Baldwin Hills parks do you visit (show the map)? (Check all that apply)
  ☐*Culver City Park/Bill Botts Playing Field/Dog Park* ☐*Norman O. Houston Park* ☐*Ladera Ball Fields* ☐*Kenneth Hahn State Rec. Facility* ☐*BH Scenic Overlook* ☐*Ballona Creek Bike Path* ☐*Ruben Ingold Park*

- How often do you visit other Baldwin Hills parks (show the map)? (Choose one)
  first time | once every few months | once every few weeks | once a week | several times a week

SECTION 2: ACCESSIBILITY

- How did you get to the park today? (Choose one)
  Walk | Bike | Car/SUV/Truck | Bus | Train | Motorcycle/Scooter | Other

- (If walked) How far did you walk? (Choose one)
  less than one half of a mile | less than 1 mile | less than 2 miles | less than 5 miles | 5 miles or more

- (If drove) How convenient was it to find parking?.
  Very convenient/Slightly convenient/Average/Slightly inconvenient/ Very inconvenient

- (If drove) Where did you park? (Choose one)
  In the park parking lot| On the street in the surrounding neighborhood |
  In the parking lot of a local business, e.g. a grocery store or shopping mall | Other:_____

- How did you enter the park? (Choose one)
  Main park entrance | Smaller back or side entrances | Unofficial entrances | Climbed over fences or walls | Other:_____

- What other ways do you use to get to this park? (Check all that apply)
  ☐*Walk* ☐*Bike* ☐*Car/SUV/Truck* ☐*Bus* ☐*Train* ☐*Motorcycle/Scooter* ☐*Other:_____*

- If given the choice of all transportation options, what would be your preferred way to get to the park? (Choose one)
  Walk | Bike | Car/SUV/Truck | Bus | Train | Motorcycle/Scooter | Other:_____

- Are you aware that the County operates a free shuttle to the park?
  Yes | No

- Would you take the shuttle?
  Yes | No

- There are particular areas of the park that I avoid.
  Strongly Agree | Agree | Not Sure | Disagree | Strongly Disagree

- (If Agree) Why? (Check all that apply)
  ☐ too crowded ☐unsafe ☐hard to get to/inaccessible ☐lack of equipment ☐lack of facilities
  ☐odors ☐other:_____

- How easy is it to find your way around this park [or using the park trails]?
  Very easy/ Slightly easy/ Average/ Slightly difficult/ Very difficult

SECTION 3: ACTIVITIES

- What kinds of activities do you do in the park? (Check all that apply)
  ☐*Use walking trails, roads, stairs or ramps* ☐*Jog within the park* ☐*Have picnics/social gatherings*
  ☐*Use playing fields for active sports, e.g. football, basketball* ☐*Meditate or do yoga* ☐*Bring kids to play*☐*Use fitness equipment* ☐*Use community recreation center facilities*
  ☐*Use dog park* ☐*Use skate park* ☐*Mountain bike within the park* ☐*Camp within the park*
  ☐ *Birdwatch* ☐ *Enjoy nature* ☐*Help take care of the environment in the park*
  ☐*Other:* _____

- Would you be interested in volunteering in park-related activities?
  Yes | No

- Would you like more information regarding the parklands and the Park to Playa Trail?
  Yes | No

- How many miles would you walk or bike on a recreational trail between Baldwin Hills to the Beach?
  *Number of miles:*_____

- Do you know where the Ballona Creek or the wetlands are?
  Yes | No

- How often do you visit the coast (i.e. Venice, Playa Del Rey, Marina, Santa Monica)? (Choose one)
  never | once every few months | once every few weeks | once a week | several times a week

SECTION 4: ENVIRONMENTAL HEALTH AND CONDITIONS

- I am aware of the factors involved in maintaining a healthy and balanced urban environment.
  Strongly Agree | Agree | Not Sure | Disagree | Strongly Disagree

- I am aware of the types of plants that are native to this region.
  Strongly Agree | Agree | Not Sure | Disagree | Strongly Disagree

- I am aware of the factors that impact the water quality in the local area.
  Strongly Agree | Agree | Not Sure | Disagree | Strongly Disagree

- I know where there are open bodies of water and streams for recreation and enjoyment within the Baldwin Hills area.
  Strongly Agree | Agree | Not Sure | Disagree | Strongly Disagree

- Would you like to better understand the region's environment from the parks to the ocean?
  Yes | No

- (If yes) Which topics are you interested in understanding better? (Check all that apply)
  ☐*water quality* ☐*water quantity* ☐*wildlife* ☐*climate issues* ☐*plants*
  ☐*human health and the environment* ☐*other:*_____

- Which educational opportunities would you use if available? (Check all that apply)
  ☐*informal activities* ☐*formal programs* ☐*signage* ☐*other:*_____

SECTION 6: USER DEMOGRAPHICS

- In which neighborhood do you live? (List of BH-adjacent neighborhoods plus "other")
  ☐*Baldwin Hills* ☐*Baldwin Village* ☐*Baldwin Vista* ☐*Blair Hills* ☐*Culver City* ☐*Ladera Heights* ☐*The Village Green* ☐*View Park* ☐*Windsor Hills* ☐*Other*

- (If Other) In which zip code do you live?
  Zip code:_____

- (If BH-adjacent) How long have you lived in the Baldwin Hills surrounding area?
  Years:_____ Months:_____

- Do you rent or own?
  Rent | Own

- How old are you?
  Age:____

- What language/s do you speak? (Check all that apply)
  ☐*English* ☐*Spanish* ☐*Tagalog* ☐*Cantonese* ☐*Korean* ☐*Armenian* ☐*Vietnamese* ☐*Persian*

☐*Japanese* ☐*Other:*_____

- Please indicate your racial identity. (Check all that apply)
  ☐*White* ☐*Black or African American* ☐*American Indian and Alaska Native* ☐*Asian* ☐*Native Hawaiian and Other Pacific Islander* ☐*Other*

- Please indicate your ethnic identity.
  ☐*Hispanic or Latino* ☐*Non-Hispanic or Latino*

- Please indicate your gender.
  ☐*Male* ☐*Female* ☐*Transgender* ☐*Other*

- What is your income level?
  < $10K | $10K - <$20K | $20K - <$50K | $50K - < $80K | $80K - < $100K | $100K - <$150K | $150K - <$200K | >$200K

- What is the highest level of education completed?
  Some high school | High school diploma or GED | Some College | College | Some Graduate or Professional School | Graduate or Professional School

- Are you a veteran?
  Yes | No

- Are you retired?
  Yes | No

- How many children do you have?
  0 / 1 / 2 / 3 / 4 / 5 / more than 5

  (If answered "1" or more) How many of your children live at home with you?

- Do you have any disabilities?
  Yes / No

- (If yes) Do you require ADA-compliant facilities?
  Yes | No

- Do you vote?
  Yes | No