

People, Parks, and Places: An Analysis of Green Spaces in Madison Through Sentiment

Mapping

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Abstract

This paper examines the role of parks and green spaces in creating social interaction and strengthening community ties. How park structure, both physical and institutional influence sentiments and the use of the spaces, the UW Arboretum and Orton Park, as a social space. The methods of research that took place included observation, interviews, surveys, and use of geotagged and associated social media data. Our results indicated that institutional structures are linked to social interaction in green spaces in Madison. The juxtaposition of the two spaces as represented in the sentiment maps offers a viewpoint on the role of size and sense of place in the creation of social spaces. The political ecology of the spaces depends on a wide variety of factors including ownership, funding, and founding principles. In Madison, the differences between seasons and occurrence of events both play a role in the amount of social interaction that takes place in the green spaces during different months of the year.

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Introduction

The town of Greendale Wisconsin came into being in the same way a microwave meal is unwrapped and finds itself on a TV dinner tray. It was premade, a planned community unpackaged on a large scale to meet the growing demand for a suburban home. The community did not grow organically around an initial street corner haunt, culture and tradition spreading with each additional resident. Instead, community arrived en masse, filing into the new town, ready to be made one's own. Within Greendale, there were already jobs, schools and a town center, places to work, earn, live, places to meet. And of course, there were parks. Parks with sprawling wooded pathworks and large open fields. These parks, just like the homes and city streets of Greendale, were there from the town's inception. Why bring up Greendale? A seemingly needless tangent to draw you to our discussion of parks and community. Think about the historical oddity that is Greendale. A town planned and populated through FDR's resettlement administration as part of the New Deal programs, its creators not only included parks and green spaces in their plans, but emphasized their importance to the new community. Greenbelt towns, of which Greendale was one, were created for community, not birthed out of it. Planners were tasked with creating a utopian plat to which community would take hold on the scaffolding they provided and one key tool the planners of Greendale relied upon was parks. A park plays host to any number and type of uses, its structure allowing for a community to gather and find itself within its open borders. In a town lacking history and community, parks were used

as a tool, a nexus that would welcome in the town's new residents, and hopefully what would emerge was a strengthened sense of community.

Green spaces play an important role in creating a sense of community and promoting the well-being of a neighborhood (Swanwick et. al., 2003, pg. 102, Kweon et. al., 1998, pg. 852, Thompson et. al., 2012). For this research project, we explored the role green spaces play in creating environments for social interaction and how green space structure influences sentiments attached to the use of green spaces as a social space (Burgess et. al., 1988 pg 460). Our research used a collection of primary and secondary sourced data to map and analyze individual's emotional connection to specific parks and how the parks serve its patrons, act in creating community, and the integration of the surrounding neighborhood. The data collected through observation, interviews, and data mining from social media content yielded information about the park's use and individual sentiments towards it as an asset to a healthy, safe neighborhood.

We focused our data collection on two parks in Madison, Wisconsin: Orton Park, the

small park in the Marquette neighborhood known for its annual festival held in late August, and The UW Arboretum, with its close-canopied woods, winding trails and restored prairie.

Though small, Orton Park, the City of Madison's first, holds a special place in many residents' hearts. Orton Park sits on a single block of the original Doty plat



Fig. 1
Doty Plat Map, 1836
Suydam, J. (1836). Plat of the town of Madison on the Four Lakes [Online Image].
Retrieved December 16, 2018 from

map of Madison on the southeast side of the Isthmus. Originally, the land that hosts Orton Park was the city cemetery. (Mollenhoff, 1975, pg 4). In the 1850s city planners decided the plot of land for the cemetery was inadequate for the growing Madison population and bought the land that is now Forest Hill Cemetery to serve as the new cemetery. The park was officially created in 1887 and remained the only public park in Madison until the turn of the 20th century when private interest in beautification in Madison began fundraising for new parks and greenways. (Mollenhoff, 1975, pg 6).

The University of Wisconsin-Madison Arboretum stretches from the Greenbush and Vilas neighborhoods in the city of Madison on its northern border, to Fitchburg on its southern edge. The neighborhoods of Burr Oaks and Bay Creek adjoin the Arboretum to the east, with Nakoma road and the Nakoma League neighborhood along with Monroe Street and the Dudgeon-Monroe neighborhood to the West. (City of Madison, 2015, n.p.). The Arboretum was first proposed by landscape architect John Nolen and then later promoted by Michael Olbrich and the Madison Parks and the Pleasure Drive Association (The University of Wisconsin Arboretum, 2018, n.p.). They were hoping that the Arboretum could serve as a “wildlife sanctuary, experimental forest preserve, protected area for sacred Native American sites, a place to experiment with re-establishing historical Wisconsin landscapes, and refuge from the city” (The University of Wisconsin Arboretum, 2018, n.p.). Today, the Arboretum consists of 1,200 acres of land in Madison. It still serves as a site for ecological restoration, but the Arboretum’s use has grown to serve people pursuing environmental volunteering, exercise, relaxation, exploration, and more. The Arboretum was not originally focused on recreational use, nor is that the goal of its existence today (University of Wisconsin Arboretum, 2018, n.p.). Yet the space

has been adapted by its recreational visitors in form, function, and concept to serve their needs. Adaptation occurred with the growth of the city and with it the greater need for it to serve in its “escape” capacity. The Arboretum is a natural landscape, yet still a built and purposed environment. That the “refuge from the city” finds itself as part of the city, sandwiched between Madison hospitals and Fitchburg suburbs, is a common narrative in the evolution of green spaces over time to become extensions of the communities they occupy. With users adapting roadsides to running paths and horticultural gardens to photoshoot backdrops.

Site Setting

The United States Environmental Protection Agency defines green space as “land that is partly or completely covered with grass, trees, shrubs, or other vegetation. Green spaces include parks, community gardens, and cemeteries” (EPA, 2018, n.p.). A simple definition for what on the surface could be a simple idea. By experience though, we know this tells us nothing as to the true nature of a place to simply define it “green space”. Where a unifying thread of dominance of vegetation may give a grounding for an idea, the differences between spaces are apparent from even the definition provided by the EPA. The differing experiences of place in a community garden compared to a cemetery are vast, differences the reader probably does not have to be reminded of. (Dow, Wyche n.d., pg. 1; Pitt, 2014, pg. 85). Taken a step further, say to compare a designated wilderness area to a roadside verge, the differences in the character and experience of these places are infinite and impactful. It has even been called into question whether a unifying definition for the term “green space” is present in the research literature (Taylor, 2016 pg. 26). That the continued pattern of use of the term greenspace, with multiple insufficient or even absent definitions, to describe the focus of research will lead to an increasingly fractured and

incoherent body of research on the topic (Taylor, 2016, pg. 32). This is to say that when studying greenspace, detail, context, elemental details of a place, they all matter.

This research covers two green spaces located in Madison: the UW-Arboretum and Orton Park. The Arboretum and Orton Park have significant structural differences and were created with different functions in mind. The Arboretum is an educational and academic landscape with a focus on ecological restoration. The founding principles of the Arboretum including conservation, restoration, the advancement of restoration ecology, and an adherence to Leopold's "land ethic", remain core components of the Arboretum's mission (UW Arboretum, 2018, n.p.). Orton Park is a mini-sized neighborhood park surrounded by homes in the Marquette neighborhood in the middle of the Isthmus. Differences in size, structure, accessibility, history, and perception of the green spaces are important in studying the influences on how users of green space understand and use the area (Burgess et. al., pg. 471). Providing a context for the two Madison green spaces is crucial for developing and following a rationale identifying the key differences and similarities that prompt diverse green space use.

The University of Wisconsin's Arboretum was first proposed by John Nolen, a landscape architect, in 1911. Nolen was jointly contracted by the University of Wisconsin, the city of Madison, and the state of Wisconsin to assist each in the development of their parks and green spaces. His plans for the state and city became central to the identity of both and leave lasting impacts, most notably the Wisconsin State Park System. (Wisconsin State Historical Society, 2018 n.p) His recommendations to the university were to develop an arboretum of at least 200 acres and a university forest of 1,000 to 2,000 acres, along with a botanical garden and a water garden (Nolen, 1910, pg. 70). In 1925, Michael Olbrich along with the Madison Parks and

Pleasure Drive Association started to raise money for a green space on the south shore of Lake Wingra. The plan for the Arboretum, first laid out in their annual report in 1928, relied on payments from both the city of Madison and the University Board of Regents to secure several hundred acres of land for the Arboretum. (Madison Park and Pleasure Drive Association, 1929, pg.21) In April of 1932, the original 246 acres of the Arboretum were acquired by the University via a deed transfer to the University from the Parks and Pleasure Drive Association (Miller, 2012, n.p.). The original name was “University of Wisconsin Forest Preserve Arboretum and Wildlife Refuge” (Court, 2014, pg. xi). The Arboretum expanded quickly. In two years, the Arboretum doubled in size to 500 acres. Local interest and donations allowed for the purchase of additional lands like Cherokee Marsh and by 1942 the Arboretum spanned some 1,100 acres (Jordan, 1981, pg. 9). The focus of The Arboretum at this time, under the research direction of Aldo Leopold, was to re-establish original Wisconsin landscape and plant communities. The experiment was pioneering and a massive undertaking. Leopold’s vision for the Arboretum was “a sample of what Dane County looked like when our ancestors came here”. (Jordan, 1981 pg. 11). The plan set out for the Arboretum and the work it entailed became known as ecological restoration. This work did not stop with a few years of plantings and the assembly of native Wisconsin species. Restoration work has continued and does so currently, with constant experiments testing the very restoration techniques themselves, as research into restoration and ecological management remains a major function of the Arboretum.

Developing this novel landscape, or landscapes, was quite the undertaking and could not have been possible without the work of the Civilian Conservation Corps (Jordan, 1981, pg. 10). Initial labor to transform the new landholdings that make up the Arboretum was provided by a

workforce of some 350 “transients” housed at the Arboretum, then called Camp Arboretum (Court, 2012, pg. 86). The transient workforce could not secure the proper equipment and was



Fig. 2
A Civilian Conservation Corps crew in 1935 turns the soil of an old farm field in preparation for a prairie restoration planting.

Civilian Conservation Corps [Online image]. (1935). Retrieved December 16, 2018 from <https://arboretum.wisc.edu/news/naturalists-notes/the-ccc-and-the-arboretum/>

found to be unmotivated in the hard labor. After six months it was clear to the Arboretum planners a change in labor was required. Replacing the transient workforce was the 2,670th CCC company who would be staying in the Arboretum at the renamed Camp Madison to complete the work. (Wood, 2014, n.p.). Camp Madison housed some 200 workers in wooden barracks still standing today. The work accomplished by the CCC enrollees over the six years of Camp Madison’s operation was fundamental in creating

the place visitors experience as the Arboretum today. Workers planted trees, finished the road through the Arboretum, cut and laid the stones for both entrance gates, dug ponds, and planted and maintained the Arboretum’s prairies and forests under the guide of Arboretum founders Aldo Leopold and William Longnecker (Court, 2012, pg 92). With the land acquired and a framework in place, the founders of the UW Arboretum created a groundbreaking research landscape that was just beginning to create its mark on the scientific world. As the Arboretum became a testing ground for new ideas and practices a patchwork of restored and maintained environments all within reach of Madison's growing population were created.

The Arboretum today houses 17 miles of sprawling, interconnected trails and multiple unique restored ecosystems spread over the 1,200-acre grounds (UW Arboretum, 2018 n.p.) Visitors to the Arboretum encounter several different restored landscapes creating a “microcosm of presettlement Wisconsin...an outdoor laboratory and classroom...a leafy green hole in the noise” (Jordan, 1981, pg.5). The major ecological areas create different sensations in the visitor experience within this outdoor laboratory, a description of these areas below gives context to some of the differing experiences and sentiments attached to locations in the Arboretum found in our research.

The restored prairies of the UW Arboretum serve as a centerpiece in the Arboretum and a crowning achievement in the field of restoration ecology. The Curtis Prairie, a parcel in the center of the Arboretum is the world's first restored prairie and the greatest success of the Arboretum's eighty-three-year history (Jordan, 1981,pg. 12; UW Arboretum 2018, n.p.). As is visible on the map of the Arboretum, many trails cut through the prairie and ring its outer edge. Trails through the prairie range from wide, mowed paths, suitable for walking with others as a group, to narrow and zig-zagging cuts through the tall prairie vegetation, barely wide enough for one person to slide through. Some paths in the prairies, including in the Greene and Curtis prairies, are user made and unmarked, a rebuke of a curated experience of the restored landscape. When these organic paths become frequented a sign is often erected to direct visitors back onto designated trails. This dynamic of controlling visitor experience plays out all across the Arboretum, a struggle to reconcile the classroom functions with its foundational research laboratory and restoration mission. The prairies offer a dynamic experience to a regular visitor. Over the course of a year, the prairies transform from charred and barren, a result of beneficial

controlled burns crucial to the health of the prairie ecosystem (UW Arboretum, 2018, n.p.). To towering native grasses with many flowering species erupting from spring until fall. Cyclical changes in the prairies create an evolving landscape for the visitor experience. Coming to a recently burned prairie versus immersing oneself into a prairie that towers overhead could create different sentiments and attachments to place and will be documented in our study.

Besides the prairies of the Arboretum, restored and remnant forest landscapes make up a large portion of areas open to visitor use. The forested areas of the Arboretum consist of unique vegetation and management practices, creating places characterized by more or less light and access. The Wingra Woods section of the Arboretum is a 52 acre stretch of woods, both remnant oak as well as plantings of maple, basswood, and beech. Wingra Woods contains multiple trails and little understory vegetation. Its position on a hill allows for observing a large area from a single vantage point and can be accessed by a small parking lot on the edge of the woods.

An important aspect of the Arboretum is the Visitor Center. The Visitor Center allows guests to not only learn more about the Arboretum but also allows them to take a small break from walking on the trails, browse the gift shop and library, and also refill their water bottles. Right near the Visitor Center includes some of the most popular destinations for guests at the Arboretum, Curtis Prairie and the Longenecker Horticultural Garden (Mark Wegener, personal communication, November 6, 2018). The Longenecker Horticultural Garden is a 35-acre area home to more than 2,500 types of plants and more than 100 species of Wisconsin's native woody plants (The Arboretum, 2018, n.p.). In addition to the Horticultural Garden near the Visitor Center, there is also the Wisconsin Native Plant Garden, which is located on 4 acres surrounding the Visitor Center (The Arboretum, 2018, n.p.).

Other landscapes of the Arboretum include the wetland areas such as Cherokee Marsh. The marsh represents a landscape valued not for its direct human benefit by occupation but valued for its vital role in the Arboretum and madison ecosystems (Jordan 1981 pg 23). No trails enter deep into the marsh, making it more a landscape to view from afar rather than enter. One last important landscape is the road through the Arboretum. While not traditionally thought of as a main attraction in a green space, the road is how many visitors experience the Arboretum, whether it be on foot or bike or using the road to enter or travel through.

The other green space in Madison this research paper discusses is Orton Park. Orton Park sits on a plot of land laid out on the 180 block in James Doty's plat map from 1836 (Durrie, 1874, pg. 169, Doty, 1836, n.p.) The village of Madison trustees purchased the 180 block in 1846 to serve as the village cemetery. Burials up until that time had occurred at various locations including parts of block 61 and the University Hill, or Bascom Hill as it came to be known. (Durrie, 1874, pg. 169). The cemetery caused the first of many controversies in Orton Park's history as its poor maintenance and lack of a fence allowed for wandering cattle to disrupt the graves of loved ones prompting anger with the trustees for lack of a solution. (Mollenhoff, 1975, pg 4). The cemetery lasted only a handful of years before its inadequate size became apparent. A 1853 article in the Wisconsin State Journal outlined the growing problem and suggested the shift from the 3.5 acre lot 180 to a different site, farther from the growing center of the village, with an acreage between 20-40 acres. (T., 1853, pg 2). While new burials at Lot 180 did not occur, it was not until 1877 that the efforts of John Ott saw that the remains buried at the old cemetery be transferred to the new cemetery, now known as Forest Hill. (Mollenhoff, 1975, pg 4). Ott continued his efforts to transform the plot into a park and between him and the city, money was

raised to beautify the lot. The City of Madison named the park after Harlow Orton, a Wisconsin supreme court justice in 1883 but the park did not officially open until 1887 (Wisconsin State Journal, 1887, pg 1). Orton Park was Madison's first and only park until the construction of Tenney park in 1900 (Wisconsin, State Journal, 1900, pg 1).

Compared to the Arboretum, Orton Park seems minuscule in size, being only three and one-half acres. Even with the small size, Orton Park holds a lot of significance to its visitors and also contains unique features and history that allow it to act as a central place for socialization and the formation of communities. Since the moment Orton Park was designated as an official city park, there have been many events that were able to make it the focal point for social life in Madison. “In the 1800s and the early 1890s, regular summer band concerts were held” (Mollenhoff, 1975 pg. 4). Though it doesn't exist now, there was a farmers market that also took place in the park (Mollenhoff, 1975 pg.4). In 1922, a commuting road was proposed to be constructed diagonally through the park “...for the convenience of suburban commuters” (Mollenhoff, 1975, pg. 4). The plan was struck down, maintaining the space as a community green space. In the early part of the 20th Century, the Ladies Aid of Pilgrim Congregational Church would frequently hold ice cream socials in Orton Park (Mollenhoff, 1975 pg.4). Also worth noting is the Gay Liberation statue installed in 1986. In 1992 the statues were moved to New York to commemorate the Stonewall Riots of 1969 (Journal Times, 1990). This information regarding construction, use, and representation of Orton Park in the past show the stake this green space has in the Wil-Mar Neighborhood. Over the years it was shaped to represent the community and integrate itself as a functioning green space.

For a more contemporary representation of the park, the Marquette Neighborhood Association organizes a music festival aptly named Orton Park Festival. The festival offers Madison residents a chance to listen to local music, buy from local vendors and create a community with one another by enjoying the park in a curated neighborhood event (Marquette Neighborhood Association, 2018, n.p.). In addition to the annual festival held at the park, Orton Park has opportunities every day to display its importance to the community. Being completely surrounded by houses and having a trail transect diagonally through the middle of the park, the space serves a purpose. The people living adjacent to Orton Park have the ability to walk right outside their back doors and be able to enjoy all the benefits of a green space while always having a place to go to relax. Commuters can ride their bikes along the path of the park and enjoy the natural beauty of oak trees. Even with such a difference between the Arboretum and Orton Park in both size and aesthetics, they are both spaces that are able to host social interaction and dialogue between individuals and are able to strengthen ties to the communities they serve.

Literature Review

Theoretical Frameworks

Vital to our study of green space is a groundwork of understanding that defines and situates key conceptual views and theories as they have been developed through prior research. The humanist geographical paradigm that research into parks and green space primarily occupies is not the home of rootless terminology and borderless concepts. While defining the field may not be a simple or concise task, the goals of this research and the base of knowledge it rests on

provide a sturdy framework. This allows for the inherent profusion of outcomes and observations to be understood and given meaning towards the result of analysis and conclusion. To set this framework, our research weaves together the concepts and methodologies of past studies while maintaining a critical lens.

Interactions in parks transform space into one with social and interpersonal significance. Delineating types of interaction from a weak smile at a passer-by to an in-depth and personal conversation is important in gauging the role of parks as social spaces (Peters et. al., 2010 pg.97). A review of previous work outlining levels and likelihoods of interaction add to our understanding of the role different interaction experiences play in shaping green space sentiments. (Gehl, 1987, pg 5). It is the cursory interaction that makes up much of the interactions between strangers in a park or green space (Peters et.al., 2010, pg. 97). Yet despite these interactions going little beyond small talk regarding the weather or pets and etc., they are still ranked as being valuable to park visitors (Peters et. al., 2010, pg. 99). Occupying a space comprised mostly of strangers, even without interactions can create a sense of social cohesion (Sennet, 1990, pg.10). Non-intimate interactions with strangers, like those at a park, can lead to an increased sense of belonging in the community despite their brevity, and represent an important and common piece of the social network that grows out from parks and green space (Kleinhans et. al., 2007; Peters 2010, pg. 99). Interactions like these occur in a “Public Realm” (Lofland, 1998, pg. 39). This is the space outside of our work and home, or the private and parochial realms. Within the public realm, an event of triangulation can bring two strangers together. The stimulus that provides this third aspect in that event is highly dependent on the individual as well as the space it occurs in. (Peters, 2010, pg. 94). The “serendipitous encounter”

was reported by park goers as one of the most valued parts of their experiences in open public green space (Dines et. al., 2006, pg. 15). These encounters are defined by their lack of planning and occur as a result of the common use of a shared space. For certain park goers such as families with young children the park provides a social space among a unique group of peers primed with a triangulating similarity in their role as guardians (Dines et. al., 2006, pg. 7; Kaźmierczak 2012, pg. 39; Krellenberg et al., 2014, pg.14-15). A study of public spaces in East London and the social dynamic that plays out within them produced a list of requisite characteristics of public space for it to foster social interaction. These include proximity, continuity of space, familiarity with surroundings, freedom to linger, the presence of facilities, and physical characteristics that support social activity (Dines, 2006, pg. 17). Each of these variables differ between both green spaces of focus. The UW Arboretum provides physical characteristics to harbor social activity such as trails, boardwalks and ecological amenities while the sheer size, lack of spatial continuity makes it hard to feel orientated and also decreases the chances of incidental interaction between strangers. Orton Park provides structural amenities such as a playground, gazebo, basketball courts, an open field and shaded areas within a relatively small area. Orton Park has very strong spatial continuity and it's smaller size combined with proximity to neighborhoods could allow park users to feel more comfortable, orientated and familiar with the space. For these same reasons, this green space could do more to harbor incidental interactions between strangers.

Within the context of our research the stimulus that sparks triangulation will be examined. Space design and intended purpose play a tremendous role in determining what these stimuli are and to what extent they are present. A space designed and occupied in a way that

encourages the interaction and coexistence in space will hardly resemble a space where structure influences users to expand and possibly avoid triangulation events (Dines, 2006, pg.17).

Determining the features of green space and parks that encourage triangulation and the social congregation of strangers, as well as locating spaces where these features are absent is integral to our research.

Another interpretation of the space in which informal social interaction occurs most readily is the “fourth place” understanding (Aelbrecht, 2016, pg. 132-134). This is compared to the third place popularized by Starbucks as an alternative to the workplace or home.

Characteristic to the fourth place is an “in-betweenness” of location, existing often not as a geographically and functionally distinct location such as a coffee shop, but on the margins of lands or places, leftover lots or bordering paths and lawns for example. Fourth places are distinctly in-between places, owing this trait to a indeterminacy of form and function and adaptability of use. Fourth places host a more diverse range of activities resulting in a more diverse social makeup than determinate social spaces (Aelbrecht, 2016, pg. 132-134). The existence of these fourth places on thresholds of space, like along paths or intersections allows for a flexibility in the use of space as its design, or lack thereof is not constricting. In comparing the social complexion of two Madison green spaces understanding the elements of a locale that exists as a fourth place will help shape our understanding of structures determinate role in creating social spaces.

Specifically applied to our two parks the concept of a fourth place offers one comprehensive theory for understanding how two places and their different structures can cause stark differences in facilitating novel social interactions in these spaces. Neither green space falls

into the category of fourth place, but an increase in overlapping characteristics between a green space in question and the characteristic in-betweenness of a fourth place could provide an understanding for observed social interaction. Orton Park sits within one large neighborhood block and has features of a fourth place location. The park is within the Marquette neighborhood while being situated slightly off a popular commercial strip. Its open space and minimal landscaping allow for wide ranges of use while maintaining a natural setting to draw visitors. The park's position on the border of commercial and residential areas bring together users from both realms in search of adaptable and open space. Compare this to the Arboretum which is more clear in its agenda and the ways it can be experienced. The Arboretum is rich with natural features but is designed in a way that limits spontaneous or flexible use. The Arboretum is not located in an area that allows it to become an in-between space as it is more isolated and sprawling. It also lacks an in-betweenness of form and function with maintained paths and restrictions from leaving these paths as well as a pronounced academic and research focus. Both spaces occupy the public realm but offer different opportunities for encounter and activities within them, as well as having very different structures which can change how visitors see the space as being one for social interaction.

Along with the importance of spaces that act as fourth places in spontaneous and informal social interaction is the presence of natural features in these spaces (Coley et al, 1997, pg. 469; Sullivan 2004, pg. 680). Natural features attract people to public spaces and result in more social interactions (Sullivan, 2004, pg. 680). Using the idea of triangulation and placing natural features as the link between visitors, provided that natural features like trees and grass create more attractive social spaces, suggests that parks and green spaces play an important role

in the informal social network and connections of community. By visiting parks and green spaces and experiencing them as a place of comfort and closeness with others, an enhanced sensation of community and an attachment to place can develop.

Interaction with non-strangers, that is friends and family, accounts for the majority of social activity within parks (Peters, 2010, pg. 96). This follows patterns seen outside of green spaces across the public realm (Lofland, 1998, pg.39). Surveys and interviews show that social interaction and social activity is ranked highly among visitors to these spaces whether it be among non-strangers or strangers. (Peters 2010 pg. 97; Kaźmierczak, 2012, pg. 36). An ease of connection, with flexible space and easy access to all creating the sensation of a place populated by strangers yet still being a comfortable space, is an attracting attribute to many visitors (Peters, 2010, pg. 98). Noting the social activities of green space visitors, whatever their nature, is important in understanding the sentiments surrounding a space. Using a space for social activity rather than just necessary or optional activities alone suggests a greater comfort and attachment to place and it is the social activity originating and centering around a place that prompts greater attachment and use (Dines et. al., 2006, pg. 14).

Place attachment exists not as a stand-alone attribute but as a process by which spaces gain meaning and importance to individuals. Attachment to place adds to sensations of community belonging because of an enhanced sense of comfort (Peters, 2010, pg. 94). Despite many studies diving into the topic of place attachment, the necessities for it to take hold, as well as the process by which it develops, there is still a contested academic debate on the topic (Moulay et. al., 2017, pg. 2). What is consistently shown in research studying the relationship of people to parks and their use as social spaces is the importance of place attachment in driving a

relationship of use of the park and seeing it as a social space. (Moulay et. al., 2017, pg. 1). A bond between person and place is comprised of place identity and place dependence in one understanding of place attachment (Kyle et al 2004, pg. 440). Place identity is the opportunity in a location to express and strengthen one's identity. Place dependence creates value in place to a person through its ability to serve in the pursuit of goals (Kyle et. al. 2004, pg. 451). Other theories like that of Scannell and Gifford (Scannell and Gifford, 2010) divide place attachment into categories of person, place, and process. Within these categories are further considerations, the personal aspect requires examining group vs. individual dynamics including religious or historical contexts as well as personally historical moments and milestones. Place focuses on social characteristics like social norms and the social arena and physical characteristics including contrasts between a built and natural environment. The process relates to the psychological steps involved in developing place attachment, within this are considerations of effective sensations of feelings tied to place, cognition and the formation of memory and meaning, as well as behavioral patterns. (Scannell and Gifford, 2010, pg. 3). This model fits the research and developments of other theories surrounding place attachment like the work of Altman and Low in 1992 (Altman and Low, 1992). The importance of place attachment as it relates to our research is that it is expressed behaviorally (Moulay et. al., 2017, pg. 4). Place attachment has a strong influence on personal values and understanding of the social meaning of public space as well as a reverse relationship of positive social interaction leading to place attachment.

The specific physical aspects of the two areas targeted in our research offer different landscapes for attachment to be developed. While many possible events, feelings, milestones, etc. can and do occur in both locations, the development and strengthening of social ties are one

of the most common and strongest drivers of place attachment. The social framework of a park is thus quite important in determining long-term use and sentiments surrounding it.

Underpinning our research into parks and green spaces' role in the social domain is the comparison between urban park and urban forest or urban natural area. While both the arboretum and Orton Park are public spaces full of natural features, the sentiments, and attachments associated with these spaces can take different forms resulting in different patterns of use, interaction, and the likelihood of an encounter. Public spaces can serve as places of retreat for the individual or a group (Dines et. al., 2006, pg. 28). Establishing a place of retreat that can provide an opportunity for reflection and escape is a powerful connection in forming place attachment as these locations are often cherished. Within a space of reflection or escape the structure and natural features of a space are often important factors. Proximity to water, a sense of seclusion while remaining accessible are two factors that could appear in our research of parks and zones of intentional non-interaction. Yet within these enclaves, an interaction that does occur between individuals of a group is much more personal and of greater substance than serendipitous encounters with strangers (Seeland, 2008, pg.11). In this way public green spaces can be home to two opposite ends of social interaction, stretching from first greetings to romantic encounters and secretive activity. The physical geography of the two spaces being studied are influential in creating these areas of non-interaction, likewise, the structure influences all other activities occurring in a space, social or otherwise.

Activities that visitors to green spaces engage in are studied to understand the importance of green space as a social setting. Given all the previous discussion into the nature of interaction in the public realm, it is important to know the frequency that which interactions occur compared

to other green space activities and how interactions are viewed in the context of a positive green space experience by visitors. In a 1987 book titled *Life Between Buildings*, Jan Gehl develops a method of categorizing activities in public space into three categories that have persisted in some shape or form in many following publications. Necessary activities like passing through space while exercising or commuting, optional activities like relaxing or thinking, and social activities contain the bulk of park and green space activity (Kazmierczak, 2012, pg. 33; Gehl, 1987, pg. 12). Social activities, while a minority of overall activity are persuasive in shaping attachments and sentiments to place. As seen in Lofland's research as well as the work of Worpole and Knox the existence of a space dominated by strangers has benefits beyond direct interaction that lead to increased sentiments of inclusion and the opportunity to observe and be around others in a non-threatening environment. (Lofland, 1998, pg. 39; Worpole and Knox, 2005, pg. 2). There are also negative sentiments for green spaces for some individuals. There may be feelings of resentment towards people who fall into certain groups. People who fall into specific socioeconomic status or members of a particular race may not feel positive sentiments towards green spaces or other public areas. Researchers looked at some aspects of green space in terms of health but also looked at who is harmed by green space and who is displaced by green space (Sushinsky et. al., 2017, pg. 21). People with a lower than average socioeconomic status and racial minorities tend to live in areas that often have a lower quality and quantity of green space (Sushinsky et. al., 2017, pg. 21; Jennings and Gaither, 2015, pg. 1954). It is unlikely that people who live in these economically disadvantaged areas have the same access to green spaces as well due to the lack of public transportation in some areas (Jennings and Gaither, 2015, pg 1954; Jennings et. al., 2017, pg 3; Ngom et. al, 2016, pg. 43). This disparity could be solved through

land use planning and funding for areas of a city that lack resources for high-quality green spaces, like many larger cities have (Joassart-Marcelli, 2010, pg. 1,184). Underserved populations in Madison do not always have the best access to public transportation (Becker, 2017, n.p.). There is a possibility that these populations may not have access to high-quality green spaces so they do not get the benefits that green spaces usually give.

Additional theoretical framework important to the context of this research is spatial science. Past research has shown a positive relationship between the locations of green spaces and benefits to people's psychological health (Lee et. al., 2012, pg. 205). Benefits include reduced frustration, more patience, greater enthusiasm, and increased attention capacity (Lee et. al., 2012, pg. 205). Research into the architectural implementation of including green spaces near-by or within buildings created increased benefits to psychological health (Coley et. al., 1997 pg. 487). Even though our research does not focus on buildings particularly, looking at how an individual's distance from green space effects mood is important when it comes to sentiment mapping and the radius a park draws from. Though our research is not tied directly into the epidemiological effects of green spaces, it is helpful to look at this kind of research as it points to the importance and positive role of green spaces, as well as the impact green space experience and sentiment has on health. Research conducted by the Netherlands Institute for Health Services Research found that individuals living near green spaces or individuals that visit green spaces often tended to have a higher feeling of perceived health compared to individuals that have little to no interaction with green spaces (Maas et. al, 2006, pg. 588). In fact, living in areas near green spaces lead to clear spikes in satisfaction (Maas et. al., 2006, pg. 588). Individuals tend to be happier when living in urban areas that have more green spaces (White et. al., 2013, pg. 926).

With increased perceptions of health, there may be more positive sentiments about green spaces for individuals involved.

Case Studies/Prevailing Explanations

Case studies surrounding the topic of urban parks and recreational areas share a common conclusion that public green spaces serve a much wider purpose than simply making a community more attractive (Swanswick et. al., 2003, pg. 1). Parks also play a huge part in catalyzing community and economic growth in the surrounding area (Swanswick et. al., 2003, pg. 1). Focusing on the development and extension of green spaces can increase value and investments in that space. This can create a feedback loop that positively affects personal benefits and sentiments, as well a sense of community within the immediate and surrounding area (Swanswick et. al., 2003, pg. 1). Green space renewal efforts driven by communities themselves in order to see these community and economic benefits in the long term are specifically argued for in supporting literature. If money is invested in a public park, the renewal will attract more individuals from the community and yield an array of positive social and personal effects (Swanswick et. al., 2003, pg. 1). Even on a simpler level, a public park should be well-maintained and provide sufficient amenities to support social interactions and support social ties (Każmierczak, 2012, pg. 34). Both the UW Arboretum and Orton Park are well-maintained and provide different amenities which promote different levels and kinds of interaction and community. Orton Park's small size encourages popular activities like dog walking, biking, and strolling. Compared to the larger Arboretum, where activities are more

guided such as hiking or attending a class. Due to some funding from the University of Wisconsin and big donors, the Arboretum is able to offer some education programming to guests throughout the year. At the Arboretum, there is a larger framework that exists for creating social spaces internally through the use of weekly programmed events, tours, and an indoor visitor center space. The main investment in Orton Park comes from the annual Orton Park Festival which helps fund the local Wil-Mar Neighborhood Center, which helps support the Wil-Mar neighborhood with workshops, classes, and more.

Community investment into parks is not to be confused with gentrification, or efforts to “renew” an entire neighborhood. On the contrary, gentrification has been found to abruptly and unnaturally sever a sense of community in neighborhoods (Każmierczak, 2013, pg. 41). Studies of public parks in Manchester, UK found that neighborhoods with ongoing gentrification efforts yielded the highest percentage of people without any social ties in the area (Każmierczak, 2013, pg. 41) Orton Park lies in the Marquette neighborhood which according to our interviewee Gloria Van Dixhorn, has been changing in recent years due to more rental properties and less family owned houses within the neighborhood (Van Dixhorn, 2018). This raises the possibility of Orton Park functioning less as a community investment, because of the higher influx and outflux of residence in the area.

Urban green spaces specifically present opportunities to bring together strangers of different ethnic and cultural backgrounds (Neal et al, 2015, pg. 464). There exists a lot of diversity in urban green spaces and that is where many people go to experience that diversity (Aptektar, 2017, pg. 104). In relation to Swanswick et. al.’s support towards urban renewal of green spaces, Neal et. al. stresses the fact that parks are an elective or choice based service,

compared to sidewalks or roads which are necessary (Swanswick et. al., 2003, pg.104; Neal et. al., 2015, pg. 464). Parks attract people based on their ability to give leisure-pleasure associations and a park's ability to stimulate all senses (Neal et al, 2015, pg. 473). So work to improve parks on this basis should bring more people and more diversity to the space. This specific case study examined a few different parks in the UK, and an interview that took place inquired about the ethnic diversity of a specific park event. The interviewee (white, middle-aged English woman) described a social situation which was unfamiliar to her yet attractive at the same time. Many different cultures and demographics all converged at this event organized in this park. She felt positive about this event bringing all kinds of people together. Neal et. al. describe this space shared by diverse cultural backgrounds as a "temporary community" (Neal. et. al., 2015, pg. 473). Creating multicultural mingling or even opportunities to do so on a small and temporary scale can vastly improve a sense of togetherness and unity that reflects out into the surrounding area (Neal et. al., 2015, pg 473). Events like weekly work parties and educational tours at the Arboretum and the Orton Park Festival create a sense of a "temporary community".

An important point worth noting is that some research has found green space users do not go to public parks to meet new people as a primary goal (Peters et. al., 2009, pg. 97). A case study comparing social interaction in select parks in the Netherlands between a Dutch majority and ethnic minorities found that most inter-cultural mingling was rare and brief. Certain demographics were more open to interactions beyond small talk than others and most had to be catalyzed in some way (dogs, sports games, music, etc). The most influential initiator in this case study seemed to be park size. Smaller parks led to more interactions simply by chance and this

result influences our hypothesis when comparing Orton Park to the Arboretum. The overarching idea seems to be how individuals will use a public park the way they wish and that usually doesn't involve meeting new people. Most interactions that occur between strangers are owed to chance. From the literature, government incentives or investment in park amenities and materialities does seem to have an effect on intercultural mingling or new interactions in general. Also, park structure such as size and other nuances can promote or hinder the chance of social interactions as well. The Arboretum, being over 1,200 acres in size may make it difficult for social interaction to occur if there are not many people using the green space but events being set up by the Arboretum may increase social interaction due to everyone at the space being there for that particular reason. Orton Park, being small in size, makes it easy for incidental social interaction to occur. Even from one location in the park, a visitor is able to see most other places in the park, with the exception of a few areas obstructed by some of the amenities in the park, like the gazebo, playground, and more.

There were many case studies that emphasized green space as a factor in an individual's social, mental and physical well-being. Changing patterns of communication and work patterns and an increase in mobilization have negative effects on an individual's social ties (Kaźmierczak, 2007, pg 358). A study performed in Sweden placed high stress working individuals either in an indoor man-made handicraft environment complete with arts & crafts activities and comfortable furniture or into a local urban forest for simple leisure activities during a few hours of the work week to test for psychological improvements and a reduced stress level (Dolling et. al., 2017). Results showed that time spent in an urban forest simply as leisure greatly reduced stress symptoms and greatly improved all dimensions of the participant's health (Dolling et. al., 2017).

The problems seem to be how participants were forced to use this urban forest as therapy for the study and were not naturally using the space before the study was done. It has been found that green spaces without obvious design intentions or activity purposes were frequented much less than parks with clear design intentions (Lee et. al., 2012, pg. 215). Natural areas and urban forests are usually removed from the routes of daily activities which can affect an individual's perception of that space (Lee et. al. 2012, pg. 216). The UW Arboretum is classified as an urban forest and is larger than a traditional park. It has designated areas for activities like restoration volunteering but much of the space consists of meandering trails and vegetated areas. According to Lee's findings, the UW Arboretum would be frequented less than Orton Park simply because of perceptions of safety and distance from the daily circuit of activities. Connecting back to Dolling et. al.'s work, there is great therapeutic potential in larger parks and urban forests but social stigmas and perception stunts its use.

Methodology

Research conducted in a public space to study the interactions of patrons with their environment and to others requires a developed and sound methodology for interpreting the activities that take place. Adapting the strategies of previous research where it proves dependable and applicable is key to producing our own methods. As well as remaining critical and changing practices to fit the goals of our research and to accommodate time constraints and considerations regarding subjects' wellbeing.

Selection of space for study often resembles a balancing act between proximity, diversity of activities, and users and similarity of structure or function among other variables. In order to

narrow focus on the question at hand one or more of these variables may be a key differentiating factor between spaces such as the structure of space as a landscaped or more natural space or the demographic makeup of likely visitors. (Kaźmierczak, 2012, pg. 35). Situating place within the historical context of that location (Buijs, 2009, pg. 429) as well as the social context of the surrounding land (Kaźmierczak, 2012, pg. 35).

The use of questionnaires or surveys allows for a broader reach in research and more responses but lacks the detail and ability to provide the context of other data collection methods. Surveys, like those done in the research of Kaźmierczak, Peters, Seeland, Whiting et. al., and numerous others are often designed to allow for statistical analysis and garner data on respondent's demographics, activities partaken in, and their relation to the park or green space. Surveys were used primarily to create a picture of who uses parks, how often, and for what purpose. This method also suffers from a low response rate. Answering questions regarding socializing required more in-depth methods such as focus groups or interviews and observation. Where surveys provide the numerical data for the quantitative study of space, observation and interviews help explain the meaning of behaviors in public spaces and individuals sentiments surrounding the social sphere of public space. (Peters, 2010, pg. 99). Observation allows for the direct collection of data that includes interactions to different people as well as the interplay between people and surroundings. Observations do not require the participation of subjects so only their outwardly visible behavior can be noted and not sentiments, emotions, or thoughts. Observational data can only offer a snapshot of activities at the moment of collection. Choosing an opportune time of year to observe maximum use or the occurrence of an event might be beneficial to research. (Coley et. al., 1997, pg. 473). By developing a pattern of observation a

map of common behavior situated in time and location can be created (Low et al, 2005, pg. 23). By studying via observation social activities can be seen playing out in real time rather than recounted (Peters, 2010, pg. 95). Because of this, observation will be primarily used to gather data on the presence and location of social groups and other interactions. Even with the combination of surveys and observation, data collection on green space social activity requires more in-depth probing to collect data on people's knowledge, understanding, and experiences (Dines et. al., 2006, pg. ix).

Interviews are often used as a research tactic to gather information that cannot be seen via observation and requires more time to draw out than a survey allows. The information pulled from interviews is often focused on individual's understanding and experience of a space. By conducting multiple interviews studies also receive responses defined outside of the experience of the researchers themselves. This means interviews open up the researcher to realities and definitions, uses, and understandings they might have been unaware of (Dines et. al., 2006, pg. 11). Low et. al. applied this thinking to their research with the adoption of transect walks through the spaces they were studying. Transect walks were recorded interviews centered around the features the respondent described or commented on as both the interviewer and interviewee passed through space (Low et. al., 2005, pg. 175). Allowing the interview experience to be active and participant-led, produced more in-depth and diverse responses.

The presence of memory-jogging visuals or the actual movement through a space that is the topic of questioning produces more valuable interview responses (Low et. al., 2005, pg. 175). Use of visuals and maps in our interviews and surveys will hopefully allow the respondent to situate their responses in the space they are describing.

Methods

For our methods, there were four main types of data collection: surveys, interviews, observation, and social media research. For initial information collection, we started with our literature review in order to come up with our own methods by comparing and contrasting other researchers' methods in order to decide which methods would be feasible for us to use in our research in order to get the proper data. The first step of our initial information collection started with database research. Through this, we were able to lay a foundation of knowledge on how the two green spaces became what they are today and how the past has dictated their uses and function within the community.

To continue learning about the contemporary roles of these green spaces we spent time observing both sites on weekends. Observational data included generalized demographic information, activities, whether or not they took place alone or with others, and other interesting notes regarding how the space was being used. As our main data collection method we distributed two online surveys. One regarding an individual's use and sentiments of Orton Park and one for the UW Arboretum. We asked questions such as "Do you use Orton Park/ The Arboretum alone or with friends?" "How often do you visit Orton Park/ The Arboretum?" and "What neighborhood are you from?" to gauge how far individuals travel to visit these green spaces. The most important questions on these surveys included a clickable map of each green space. Individuals were asked to click on an area where they might go to socialize or be alone. This data would then be organized and represented as the sentiment maps in our results.

We also conducted two interviews to gain specific or professional insight into each green space. One interview was with Mark Wegener, the Assistant Director of the Arboretum. We

asked specifically about visitor information and ways the Arboretum as an institution works to facilitate the sense of community addressed in our research question. Gloria Van Dixhorn, our other interviewee represented Orton Park as a long time Wil-Mar resident and Orton Park visitor. We asked her about her opinion on Orton Park's role in her community and how she's seen that role and function of the park change over the years. The interviews were important in understanding specifics about each space that we were not able to find online. It also led us to additional resources to explore more about the current use of the spaces for social interaction.

Finally, we conducted a statistical analysis using a t-test to find the difference in proportions. This test allowed us to see if there was any significance in the difference between the proportion of "yes" versus "no" answers for if visitors use the spaces for socialization. This test allowed us to see if our observed activities match up with whether people actually use the spaces to socialize or not. With such a small sample size, it was difficult to get a good confidence interval but there were more social or group activities observed at the Arboretum versus Orton Park which will be discussed more in the results section.

Results and Analysis

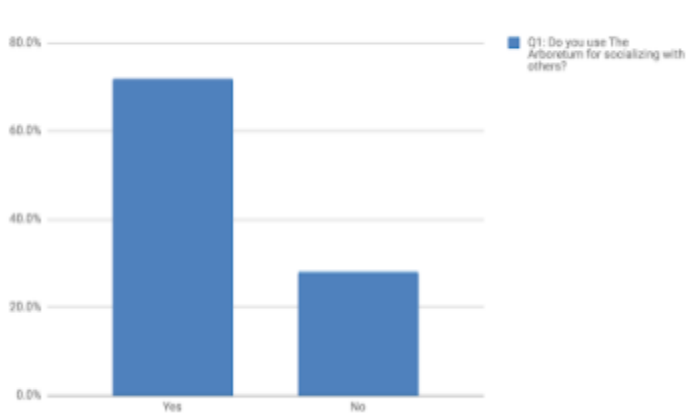


Fig 3:
Bar graph of survey responses asking if visitors use The Arboretum for socialization with others

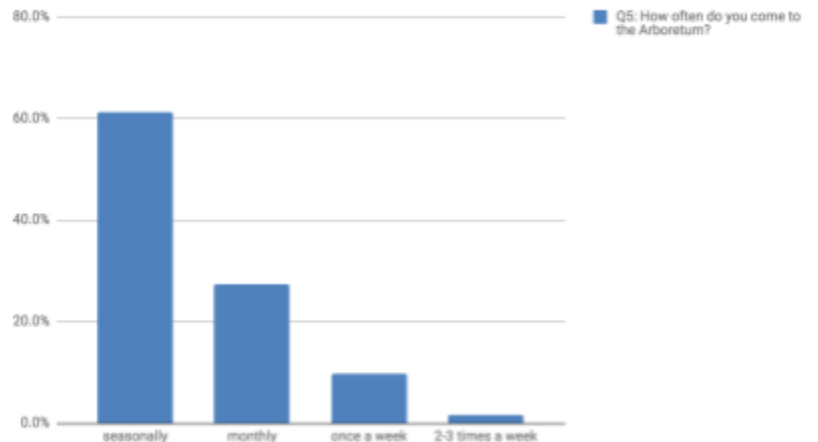


Fig 4:
Bar graph of survey data asking how often visitors come to the Arboretum

Survey Data

The first set of graphs shows data from the Arboretum surveys (above). A majority of people surveyed use the Arboretum for socializing with others. This result goes against our hypothesis. The Arboretum's large size, decentralization, and purposed and regulated areas were thought to be less suited for socialization. The second graph shows how often visitors visit the Arboretum. The majority of visitors visit seasonally. Seasonal changes like the changing colors in autumn or when the flowers in the trees are blooming in spring are major attractions of the Arboretum. (Mark Wegener, personal communication, November 6, 2018). This result points to a more destination centered sentiment of the Arboretum, being a place attended seasonally instead of on a more regular basis.

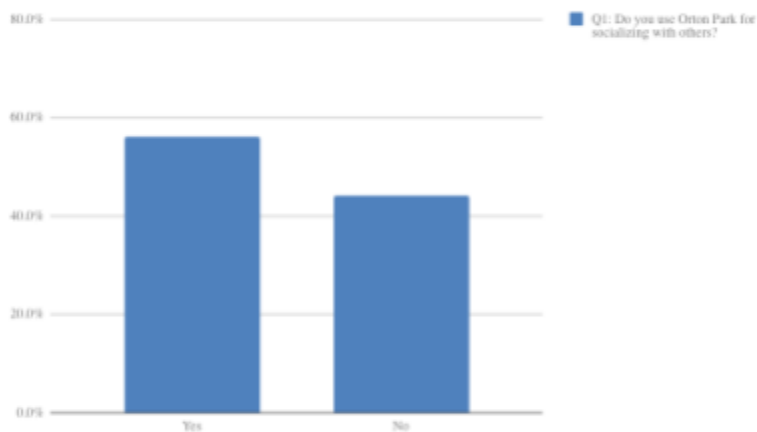


Fig 5:
Bar graph from survey data asking if visitors use Orton Park for socialization with others

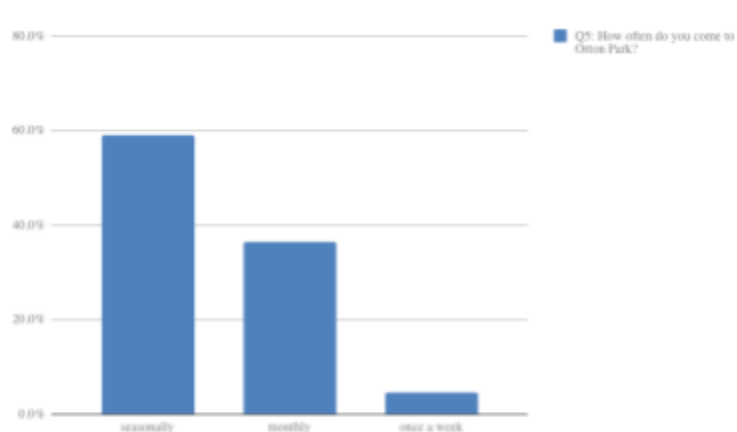


Fig 6:
Bar graph of survey data asking how often visitors come to Orton Park

The second set of graphs shows the survey data for Orton Park. The difference between the people who go there to socialize and the people who go there alone is not as large as the Arboretum. In the analysis section, we were able to see if this difference in proportions of people who said yes versus no held significance. This result did not align with our original hypothesis because Orton Park seems more accessible and convenient due to it being located in the middle of a neighborhood.

The second graph for Orton Park also shows most people visiting seasonally. There were also a decent amount of respondents who said they go monthly. This may be due to the proximity of the park to surrounding neighborhoods.

Survey question using word associations probed sentiments surrounding Orton Park and the Arboretum. There were many unique words due to the survey question being open-ended, allowing respondents to put whatever words they wanted. For the Arboretum, the words that were repeated the most included: nature/natural (19 responses), peace/peaceful (10 responses),

and calm/calming (10 responses). The most commonly repeated words for Orton Park included: festival (6 responses), community (5 responses), and trees (4 responses). From these responses, it seems that sentiments of the Arboretum surround ideas of immersion in nature and the Arboretum as a natural escape from more hectic surroundings in the city. The Orton Park survey features many responses referencing the festival and community showing an association respondents might see in Orton Park as a place anchored by its connection to the Marquette neighborhood and surrounding community. When asking questions about where visitors are coming from in terms of neighborhood, the Arboretum had a much greater draw than Orton Park. The Arboretum is very central in Madison, is very large in size, and has many accessible routes, making it a spot many people pass by on their daily commutes. Orton Park, on the other hand, is a small and neighborhood-oriented park. Many of the respondents for the Orton Park survey lived in the Atwood or Wil-Mar neighborhoods. The close proximity of the park to those neighborhoods make it an easy destination for many folks, especially on their commutes if they bike because of the diagonal trail that goes through Orton Park. The small size of Orton Park also makes it “hidden”, as one of our survey responses said, possibly explaining the low number of responses for the Orton Park survey.

Observational Data

In addition to survey data, our research included observational data collection gathered through eight observational sessions between the two green spaces. Observation at Orton Park could be conducted without having to travel through the green space as most of the property is viewable from certain vantage points. Observation at the Arboretum could not capture all users at a certain time due to the size and structure of the Arboretum and the transient nature of many

activities done at the Arboretum. Because of this, observation at the Arboretum was split between observing at certain locations and observing while traveling the many trails and corners of the Arboretum.

Orton Park was observed on four occasions for an average of two hours per observation session. Observational data showed intermittent and short-lived activity by most users. Activity centered around the diagonal sidewalk that spans the length of the park and was used by bikers, walkers, and runners. Those using the park path rarely lingered or strayed from the path as they passed through the park. Two individuals were observed walking through the park on a sunny, warm, fall afternoon carrying food in the direction away from a popular commercial strip close to Orton Park. Usage of Orton park as a scenic shortcut or as a different fork of the sidewalk represented the majority of observed use, but other, more deliberate and lasting usage did occur. During two observation sessions, long-term use was observed that relied on the park's structure or amenity offerings. A group of two children and a mother were observed picnicking at the park's picnic tables and then using the playground equipment. Another group was observed on a different day LARPing, or Live Action Role Playing, which made use of the park's open areas as well as the picnic tables. Despite only observing two occurrences, the observation of the LARPing and picnicking provide interesting data points showing social use, and in the case of the LARPing, the green space acting as a meeting space and catalyst for social activity. Observation of Orton Park yielded few data points, amongst those collected use centered around the sidewalk bisecting the park.

Observation in the Arboretum occurred on four separate occasions averaging two and a half hours per session. Observation took place on multiple times and days of the week as well as in concordance with events on the Arboretum calendar. Arboretum user activity that was observed can be separated into three broad regions: road, trails away from Visitor Center, and Visitor Center and surrounding areas. The regions of use provide different opportunities for social interaction and occur along or in different venues that either play host to more permanent or transitory use.

Arboretum use along the road was dominated by runners and bikers as well as drivers to and from the Visitor Center. The road provides a scenic location for exercise along a measured and level path. The road has two access points that lead toward the Visitor Center but do not connect because of a separating fence only opened Sunday afternoons. An uptick in road traffic was observed during a five-minute period on a Sunday afternoon compared to a non-Sunday period, possibly showing users taking advantage of this opening for a scenic drive or just increased use on that Sunday. Road usage resembles necessary activity and creates a space of transit as defined in Jan Gehl's book describing social interaction in city public spaces (Gehl 1987) Necessary activities take place in a specific space, in this case, the Arboretum road, but could occur elsewhere. The observed road usage is not truly necessary activity as a motivator behind them could very well be their completion within the Arboretum. But the acts could occur elsewhere and were not observed to be prompts to use the Arboretum beyond the road as a transit corridor. Observation of the users of the roads showed a large portion used the road for

individual exercise or activity that was temporary and mobile. Group and pair exercise use for both biking and running and walking was observed. Road use was not observed creating opportunities for unplanned interaction and was more likely to be used individually and not socially than the other regions of the Arboretum.

The trails in the Arboretum offer a flexible and widely used space. Users of the trails were observed walking, often in pairs or groups. The trails have many rest spots like downed logs and benches which were observed to be popular with individuals and users in pairs as both immersive areas to observe, or as rest spots where conversation and interaction continued. Use of trails in pairs trended towards mix gendered pairs with multiple pairs observed holding hands or taking pictures together, suggesting a romantic nature sentiment held by users most prominent on the wooded trail regions of the Arboretum than the road or deforested sections. Natural immersion seemed to prompt many Arboretum visitors to explore the trails. Use of the trails was greatest during peak fall colors. Trail usage was dominated by group and pair walking as compared to the exercise uses of the road, or the indeterminate uses of more central areas.

The visitor center area and surrounding trails serve as a hub of activity for the Arboretum. Both ends of Arboretum Drive lead towards the Visitor Center, funneling many users who arrive by car to the area. The visitor center area contains the Longenecker Horticultural Garden, where the most concentrated use in the Arboretum was observed. The Horticultural Garden was dominated by pairs and groups with activities such as photography, playing with children, and educational tours accompanying walking as the primary activities observed. The concentrated activity around and in the visitor center created greater opportunity for incidental social contact

and occurrences of triangulation. The Arboretum's educational mission is anchored at the visitor center with guided tours, a library, places to ask questions and informational posters and signs. Observed guided activities and tours such as an edible plants tour of the Horticultural Garden or a crafting event for young children bring together many visitors sharing a common interest and created dozens of interactions between strangers throughout the course of the activities. The central visitor center area of the Arboretum is an identifiable and easily accessible meeting place for visitors from which they can fan outwards into the Arboretum. Because of this, the greatest concentration of social and group uses and interaction was observed in this area.

Interviews

For our research, we conducted two main interviews, one for each of the green spaces discussed. Similar questions were asked in each of the interviews. Concerning the University of Wisconsin Arboretum, we interviewed assistant director and database administrator, Mark Wegener. For Orton Park, we interviewed with long-time Madison resident and avid Orton Park visitor, Gloria Van Dixhorn.

The Arboretum was not originally created as a social and community space in the way other urban green spaces like Orton Park were. The Arboretum is not a park, in fact, it is funded in part by the University of Wisconsin's research wing. "While we are not a park, we are 1,200 acres of green space in the middle of the city so we do function in a lot of ways like park" (Mark Wegener, personal communication, November 8, 2018). The resources for the Arboretum come from the University of Wisconsin and donors for the Arboretum. The limited funds available have to be prioritized to fit the mission and projects that support the Arboretum's home in the

university. (Mark Wegener, personal communication, November 8, 2018). “Things that support research? Great! Obviously things that support land care, but as far as spending a ton of resources on understanding our visitors, not that we shouldn’t-- but with limited resources, we just don’t have that great of data on our visitors,” (Mark Wegener, personal communication, November 8, 2018) Even though there is not great data on Arboretum use by visitors, there have some visitor snapshots. The last complete visitor survey was done in 1994. That was specifically focused on visitors that were physically at the Arboretum. A survey was recently completed in October of 2018, which engaged Arboretum constituents via social media, an electronic newsletter, their website, and university outlets to send people to a Qualtrics.com link. The community survey completed by the Arboretum received 1,600 responses. Compared to 1994, there has been a 500% increase in visitors, specifically to the visitor’s center. Even though estimate is only for this visitor’s center, it can be extrapolated that there are more visitors using the Arboretum for various activities (Mark Wegener, personal communication, November 8, 2018).

The biggest reason people choose to come to the Arboretum is to take a break from the city, enjoy nature, or walk the trails. That makes it so only certain times of the year are popular for visitors.

Mark Wegener: “The two biggest times for us are fall and spring ... It’s early spring actually. The reason for that is because of the 50-acre tree garden called Longenecker Gardens. There is a really impressive collection of flowering trees and shrubs and there is this two to three week period where it is all blooming at the same time. So that, by far, is our busiest time of the year... So then in summer, it [amount of visitors] actually goes down quite a bit. We have mosquitos, we get heavy rains so sometimes the trails get a little flooded. And again, in

mid-September to October, for the fall color, we get this second huge spike each year. Again, this shows up in our visitor's center numbers."

The aesthetic beauty of nature attracts visitors to natural spaces. It would make sense that these spikes in visitor numbers correlate with either flowering trees or with the changing of the leaves in fall. But do these events create a sense of community within the Arboretum? Perhaps. Many of the people who do come to the Arboretum during these times end up posting about their adventures on social media, whether it be a post on Instagram, or a Facebook post with some pictures attached. Most likely, these pictures are geotagged with the Arboretum. This creates a small sense of community, a digital one. It is not a physical community that we think of but with the rise of technology, it creates a new type of online community.

In terms of a physical community, there are several ways the Arboretum helps facilitate community and social interaction. The Arboretum has a large volunteer corps which consists of hundreds of volunteers. Every Saturday morning, there are drop-in work parties and a lot of the people who come have been coming for years. These volunteers have started doing stuff together outside of volunteering. Another group of volunteers are a focused cohort of volunteer stewards who are trained all together to engage visitors and deal with rule violations, but they also have a sense of community within themselves (Mark Wegener, personal communication, November 8, 2018).

Mark Wegener: "We have this cohort of volunteers, about 30 to 40 of them, who all get trained together in multiple sessions. They have regular meetings and are kind of deputized as a part of the staff because they sort of are in a way... And then tours! The visitor's guide has a whole list of tours, classes, lectures, events. Each one of those things creates its own community in a sense, of the people attending or participating."

The activities that are formally created by the Arboretum create a large sense of community and opportunities for social interaction between guests. An example of this from Wegener is a birding group that meets every Tuesday morning. The person who leads these birding expeditions started out as a volunteer at the Arboretum with the volunteer corps and now he leads the birding trips to various parts of the Arboretum. Other groups have started using the Arboretum as a meet-up spot as well. For example, cycling groups use the entrances of the Arboretum as a meet-up spot and then ride through the Arboretum to the rest of their route. The main road going through the Arboretum is only three-miles long, end-to-end, so it is not nearly long enough for serious cycling groups but it is used as a starting point. Many different photography groups also use the Arboretum at least once annually as their photography spot for the day, most likely during early spring or fall (Mark Wegener, personal communication, November 8, 2018).

With the Arboretum's size, it is difficult to see exactly where people spend the most time but there are patterns to visitor use. The area around the Visitor Center is where most guests seem to feel most comfortable. This is for several reasons: the Visitor Center has the main parking area, bathrooms and helps center the visitor experience. When asked about popular areas in the Arboretum, Mark replied:

Mark Wegener: "The area right around around the Visitor Center here, because people drive in and this is the end of the road and it's the main parking area. There's no bathrooms anywhere on the landscape except for inside the building, or else we have a port-a-potty outside [by the parking lot]. The area right near the Visitors Center include the native plant garden and it would also include the Longenecker Horticultural Gardens. I would say that most people come here to visit those areas. Other areas that are really popular include the Curtis Prairie. I

think people really like to walk around [there] because it is really easy to get lost here... When you walk out to the Curtis Prairie, you can see the Visitors Center so it is hard to get lost there."

People who use the Arboretum tend to stick to areas where they feel the most safe, but there are other areas that are popular with visitors as well. Wingra Woods is another popular area. There is a small parking lot nearby and there's a natural spring that flows year-round called Big Spring. Another area that tends to be more popular is right next to Monroe Street. Many people do not actually know that it is part of the Arboretum, but the convenience of being next to a highly-residential area makes it very popular. There is also a bike trail that goes through that area which makes it a part of many people's daily commute.

Even with the use of the Arboretum increasing, there still exists many barriers to entry. For college students in particular, getting there can be hard. While school is in session, there are only a few months of the year where it is comfortable enough to bike to the Arboretum. There are also no bus lines that go directly to the Arboretum. When using the Metro system, a visitor would still have to walk a few miles to get to the Visitors Center from the outskirts of the Arboretum. Another big barrier for visitors is the amount of rules that the Arboretum has.

Mark Wegener: "We have a ton of rules here. You probably noticed this when you were coming in, we have signs everywhere. This goes back to our mission and our home in the university. If we don't tell people we are not a park, which we are not, people are going to treat us like any other park. We heard in the survey that many people want to bring their dogs, or people wish they could mountain bike, slackline or put their hammock up. We have a ton of rules but there's good reason for them but they create a barrier. It is not a geographical barrier but it is a institutional barrier... Some people don't feel welcome here and that is something as an organization that we have to react to and deal with... No big donor is going to give us [The Arboretum] a lot of money unless they have had a good experience [here]. I do think we need to consider the visitor experience as a priority even though it is not directly in our mission."

Safety is a big issue at the Arboretum. First off, the trail markers are archaic and difficult to understand. The road is also an issue, even though the road is not a thru-road due to a gate but there is still a large amount of vehicle traffic. Combine that vehicle traffic with bikers, runners, families with strollers, and everything else, it becomes an issue for safety. It might not be the biggest issue but it is something that people do think about (Mark Wegener, personal communication, November 8, 2018). Another issue is safety on the trails. There are no call boxes on the property. On the trails, visitors are pretty much on their own. At Orton Park, when you call 911, there is going to be response pretty quick. Around the Arboretum, there is not a police station and the trails are not marked very well so response will take a while. The large size of the Arboretum also contributes to visitor's sentiments of safety as well. The Arboretum has a lot to offer but it is also very distributed and is a strange shape. "It [The Arboretum] was basically pieced together over 15 years from buying little parcels of land," (Mark Wegener, personal communication, November 8, 2018). There are also many different entrances scattered throughout. The scattered nature of the entrances and trails can make it difficult to make a centralized meeting spot for visitors even though it allows a lot of access. This may cause some guests to feel less-than-welcome, in addition to the large amount of rules. "If you're gonna build a community or have social interaction, you don't want to feel like you're not welcome," (Mark Wegener, personal communication, November 8, 2018).

For juxtaposition, we also are looking at the community Orton Park creates by getting a perspective from a long-time Madison resident. Gloria Van Dixhorn is a resident of the Wil-Mar neighborhood and is very familiar with Orton Park and how it has changed in the past couple decades. Over the years, she has observed the park change in the amount of people who use it. It

seems that there are more people using it now than before but less families using it overall due to the properties in the area being rented instead of owned by families (Gloria Van Dixhorn, 2018, personal communication). In terms of physical changes, storms in the past few years have taken down some of the larger trees. When it comes to sentiments, many people do think of trees as an important feature of Orton Park. During the summer, in addition to the Orton Park Festival in August, many people hold weddings and various other celebrations in the gazebo area and the play area is used by daycare summer camps. (Gloria Van Dixhorn, personal communication, 2018). From the perspective of a Madison resident, it seems there is a strong sense of community being built in Orton Park.

Shannon Kim: "In your opinion, can you see a sense of community being built by the people who use Orton Park? Why or why not?"

Gloria Van Dixhorn: "Strong [sense of community being built by the people who use Orton Park] because neighbors get to know each other through kids playing together or just through relaxing in the park...The [Orton Park] festival helps bring a shared experience to the community. It helps fund local community centers like the Wil-Mar."

Even though the park is loved by many in the community, Van Dixhorn says the size is too small for the people who live in the neighborhood but she does not think that the size plays a big role in creating barriers to social interaction between people who use the park (Gloria Van Dixhorn, personal communication, 2018). Orton Park remains an important green space, especially for residents of the surrounding neighborhood who benefit directly from the Orton Park Festival and from the benefit the park gives as a green space in general.

Statistical Analysis

Q1 - Do you use Orton Park for socializing with others?

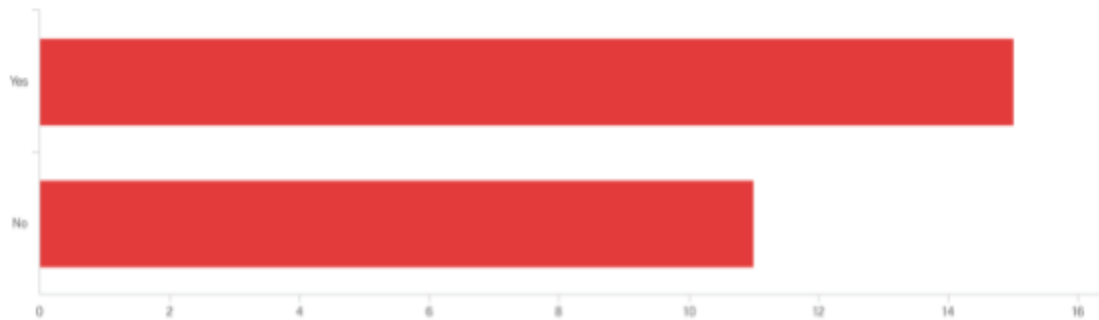


Fig 9:

Data from Qualtrics survey on whether visitors use Orton Park for socialization or not

Q1 - Do you use The Arboretum for socializing with others?

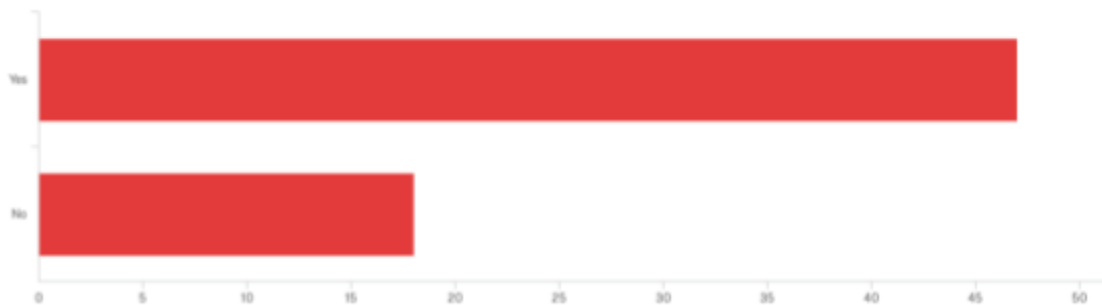


Fig 8:

Data from Qualtrics survey on whether visitors use The Arboretum for socialization or not

To analyze statistical differences between our survey data between the Arboretum and Orton Park, we were able to use a t-test to calculate the differences in proportions. The reason for this is because the only options for responses to the questions asking if visitors go to these spaces alone or with people were yes or no. For the t-test for comparisons of proportions, we used the

proportion of the answer “yes” as the percentage we were going by. In our case, Proportion 1 will be The Arboretum and Proportion 2 will be for Orton Park. The proportion of the amount of “yes” responses versus the amount of “no” responses for the Arboretum is 0.719 (48 yes, 16 no, 64 total) whereas the proportion of the amount of “yes” responses versus the amount of “no” responses for Orton Park is 0.577 (15 yes, 11 no, 26 total) . The null hypothesis we are testing for $H_0: P_1=P_2$. The significance level calculated at the end was $P= 0.1938$, which for our significance level of 0.05, means we should not reject the null hypothesis. With the small sample size, we cannot be 100% sure that there is not significance between the proportions of yes versus no in both spaces. What we know for certain is that there is a higher proportion of yes versus no in the Arboretum which may indicate it is used for social interaction more than Orton Park. More research would need to be conducted with higher sample sizes in order to get a more statistically significant data.

A statistical analysis of Orton park observation was conducted using a Fisher Exact test between social and non-social activities and if the social nature of park activity relates to transient versus enduring use. At a significance level of .05 the result was found to be significant.

Results			
	transient	enduring	<i>Marginal Row Totals</i>
social	2	6	8
nonsocial	34	2	36
<i>Marginal Column Totals</i>	36	8	44 (Grand Total)

The Fisher exact test statistic value is 0.0001. The result is significant at $p < .05$.

Discussion

Significance and Unexpected Results

It seems that even with the Arboretum being vast and decentralized, there seemed to be a stronger sense of community by visitors due to there being formal activities already being planned by the Arboretum, like volunteer work and educational lectures. Most of the time, the only time people really feel a sense of community in Orton Park was during the Orton Park Festival, which only takes place once a year. Even though Orton Park is small and centralized, it seemed that most people only pass through along the diagonal path as a shortcut. These results were unexpected because we expected there to be more sense of community in a small, centralized space, but many students do not know where Orton Park is whereas they are very well aware of the Arboretum and even enjoy going there with friends for informal photoshoots and to enjoy nature. Orton Park is very important to the community but it does not convey the sense of community amongst survey respondents that the Arboretum did.

Sentiment Maps/Word Clouds

The results of our sentiment maps not only show where individuals tend to go within the green spaces but also why they choose those spaces in particular. The first Arboretum map (*Appendix A Fig. 1*) asks for a favorite place to socialize in the Arboretum. The Visitors Center and garden area was the most popular area which corresponds well with the interview with Mark where he says people tend to feel more comfortable and orientated near areas where they are able to see the Visitors Center. The Visitors Center is the central hub within the space, providing the

only sense of structure and orientation to a very large and unstructured green space. Within the literature we found that park size dictates how much that spaces if frequented. The UW Arboretum is very large and the Visitors Center and garden area can function as a common meeting point or area of socialization. We then asked for a favorite place to go when that individual wanted to be alone (*Appendix A Fig. 2*). Lost City forest took precedent here which was not surprising considering the expanse of trails and dense forest that characterize this space. This area of the Arboretum could be used by individuals looking for peace of mind and an escape from everyday stresses. This concept of nature as therapy within urban forests was discussed in the literature review as well and Lost City Forest could be used with this intention because such settings aren't available at Orton Park or many other Madison green spaces. We also asked for favorite features within the Arboretum. Survey takers had the option to click on a map or type in an answer if it couldn't be spatially represented. In both *Appendix A Fig. 3* and *Fig. 4* there is a similar pattern of ecological amenities taking place. Areas such as Curtis Prairie, Gardner Marsh, and Lost City Forest had the most clicks with the inclusion of the main road for biking, running or walking. These sentiments also pair well with the second word cloud (*Appendix A Fig. 5*) which shows three words individuals associated with the Arboretum. Most visitors relate this green space with sentiments of relaxation, nature, peace and unique flora/fauna. Lastly, we asked for the survey taker's neighborhood of residence (*Appendix A Fig. 6*). Here we can see how wide of a reach the Arboretum has throughout Madison. We received responses from many neighborhoods including those outside the mapped area. This map, alongside social media and observational analysis, tells us that the Arboretum can function

as a social space, but it does more to create a sense of community within the space itself and serve as a unifying landmark to the city of Madison as a whole.

In comparison to the responses from the same question on the Orton Park survey (*Appendix A Fig. 12*) we can see how Orton Park operates on a local level. It serves the immediate community around it which ended up being the Atwood, Tenny-Lapham and Marquette neighborhoods. This is reflected in our interview with Gloria Van Dixhorn when she describes Orton Park to be “an extension to her own front yard” (Van Dixhorn, 2018). Sentiment data collected on the social spaces of Orton Park showed a favoring of the gazebo (*Appendix A Fig. 9*). This result aligns with literature such as (Cohen et. al., 2016) which point to an amenity based explanation for park attendance. This result also aligns with the sentiments collected in the Arboretum, where amenities and classes were a popular feature with creation of community as a result. Data mapped on spaces of isolation showed few responses, with the most common being the basketball courts, possibly a result of Orton Parks small size and lack of hidden places available within its physical structure. Orton Park may not function in the capacity of creating spaces of noninteraction as the Arboretum can. Comparing this result to social media data from Orton Park provides some insight into the response of the basketball courts as an area to attend alone as a majority of the posts tagged to Orton Park featuring the basketball courts did not feature others in the photo (*Appendix A. Fig. 8*). The mapping of favorite features of the Arboretum again featured the gazebo, the most prominent feature of the park, as well as the diagonal walking path through the park. The response of the walking path lines up with observational data from Orton Park, where a majority of use was centered on this path. Both word clouds featuring sentiments surrounding favorite features and associations toward the park

are overwhelmed by the “Orton Park Festival” response. This response highlights the importance of the festival in defining the character and sentiments of Orton Park, as well as the impact it has on the place attachment to the park. Our review of social media data also points to the importance of the festival in Orton Park’s commonly held identity, as roughly 500 posts on Instagram are tagged to Orton Park, while 430 are tagged specifically to the festival. These values are almost equal despite the festival only occurring one weekend out of the year.

Bias

Our data did have some significant bias, skewing our results. For example, most of the survey respondents were students or people who were affiliated with the University of Wisconsin– Geography department. This would make sense why the Orton Park survey got about a third of the responses than the Arboretum survey. Students who have never been to, or even heard of Orton Park would not feel comfortable taking a survey asking about the use of the park if they had never been there in the first place.

There is also bias amongst our geotagged social media data. Usually, people who use social media tend to be younger, probably teens to their thirties. They are most likely millennials or part of generation Z. In fact, in 2018, 88% of adults between the ages of 18 and 29 used at least one social media site and 78% of adults between the ages of 30 and 49 used at least one social media site. Only 64% of adults between the ages of 50 and 64 used social media and only 37% of adults 65 or older (Pew Research Center, 2018, n.p.). This would skew our data so it is mostly representative of their perspectives of the green spaces.

Another source of bias and inaccuracy in our data was the timeframe data collection took place. This project took place between September and November of 2018. Due to this the observational data may not reflect patterns of use consistent throughout the year. Many people will probably not be lounging around a park when it is only 40 degrees outside but are possibly more likely to be with a group of people and playing sports when it is 70 degrees and sunny. The time of year made it difficult to get accurate and sufficient observational data, especially for Orton Park, where we only saw a few people over the course of hours of observation. This may also stem from lesser use of Orton park more generally, but cannot be said with confidence either way without observing for a longer timeframe. The Arboretum remains popular during autumn and winter due to the trees changing colors and winter activities like snowshoeing, skiing, and continued events and tours. A larger rush of visitors slows down later into the fall season when there are no longer trees to look at and when the weather starts to get colder. Even with fewer visitors coming later into the season, there is still a sense of community being built through the volunteer activities that happen every weekend and through the events that the Arboretum holds. Orton Park does not have any formal events planned throughout the colder months which is also a factor in why there were not as many people.

Social Media

By reviewing posts to social media platforms like Instagram and Twitter as well as Strava our research can expand beyond the narrow timeframe that traditional observation and surveys occurred in. Posts to social media were reviewed on the nature of activities captured in images and the accompanying caption or description of a post. Strava data from the service's Global Heat Map highlights the most popular recorded routes by activity (walking/running, biking,

skiing) in both spaces. A bias in social media data exists toward recording and sharing events that may not reflect a typical pattern of use (Deutsch, 2018, n.p.). Posts reviewed at both spaces, but most noticeably at Orton park are skewed towards pictures and posts about special events and sightings that prompted a posting to a media platform rather than everyday use.

Social media information was gathered by searching #OrtonPark on Instagram and Twitter. Posts centered around the annual Orton park festival balanced with other traditional posts reflecting regular use, activities, seasonal changes, and amenities. The Orton Park Festival has occurred over a late summer weekend for the past 50+ years and has grown into the parks marquee attraction and event. Despite our research and observation not overlapping with this event, social media posts give a snapshot of the event and how the park transforms every year to host it. As an interesting point speaking towards how much influence the festival has on community building, when looking up on Instagram #ortonpark, about 500 results show up. If you search #ortonparkfestival, approximately 430 results show up. It is interesting to see how one weekend in the entire year generates almost as many results as the park in general. The festival features numerous food vendors, live music, aerial acrobatic performances, and activities for kids. The festival draws visitors from all over but succeeds in creating an event that helps strengthen community within the neighborhood. This is reflected in posts describing positive, community-based sentiments, opportunities to catch up with friends, and pictures of family and friends gathered for the shows. The festival is quite unique in the yearly activity of the park, it is the only major event held there annually and provides free entertainment



Fig 10:
Image from Twitter.com, user @astrodex

and unique activities. Despite it only occurring once a year, the Orton Park festival seems to be the event and activity most associated with the space of Orton Park on social media. The festival is free, easily accessible and a memorable event, because of this it holds immense place attachment weight and creates strong bonds between the festival's attendants, enjoyable social experiences with neighbors and community members and the place it occurs. Association between Orton Park and social spaces are not limited to the festival in the view provided by social media. The park's non-festival identity through social media is more individual and mundane, interrupted by a swelling of social activity and interaction around the festival weekend. This is not to say the social media footprint of Orton Park outside of the festival is absent or unimportant, but it takes on a much different nature, focusing on individual or family experiences, nature, or documenting ritualistic activities that take on special meaning in the park. One unique post via Twitter in August of 2013 describes a user using the app *Foursquare* which shows the user in the park with thousands of others. Given the date of this Tweet, it most likely is taking place during the festival as it occurs from August 21st to the 25th annually. This clearly exemplifies the social potential of the space. Even though this individual was exaggerating the number, there is a clear sense of the park being used as a social space as orchestrated by the Marquette Neighborhood Association.

When digging through social media content showing use of the Arboretum, we searched #UWArboretum on both Instagram and Twitter. There were far more activity based posts concerning this green space compared to posts about Orton Park (omitting the festival). Activities such as family portraits, engagement photos, wildlife photography, exercise, and Arboretum hosted trail hikes. One post that speaks toward the Arboretum serving the entire city

and building its own community within the space is Figure 11 which shows the Camera Company hosting a group photography outing. This included members of the community coming together under a unified interest, using the trails and ecological amenities to educate and enjoy photography.

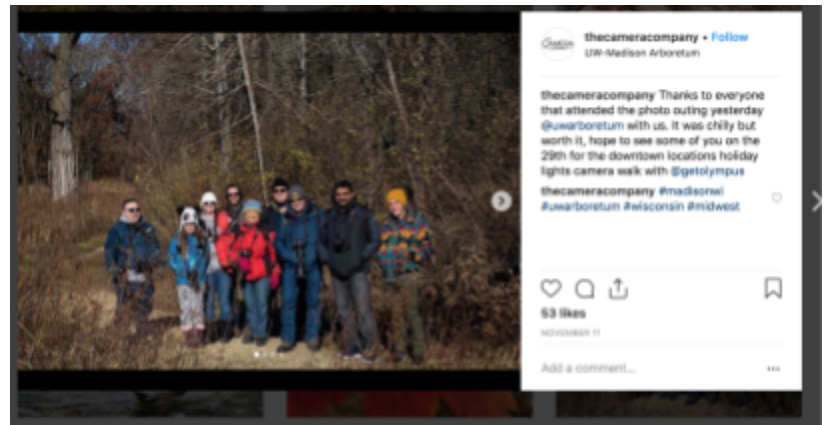


Fig 11:
Image from @TheCameraCompany on Instagram.com

Future Research

Due to this project being restricted to a semester, there were many things about this project that are incomplete due to the season and time constraints. If conducted over a greater amount of time we would collect observational data during all seasons in order to accurately juxtapose social activity all year, rather than just for autumn. There would also be more time to administer surveys to get a larger, more accurate sample size. There would be more time to administer in-person surveys as well and to get more interviews from community members about their sentiments towards green spaces as a social space. Visiting the park in person and collecting data from its everyday happenings would provide a clearer representation of the space as it is used by those who frequent it. In-person surveys would reduce bias as well by reaching an audience that isn't closely connected with the researchers. This could include older demographics, those not able to access technology or individuals whose lives are completely outside our influence.

Conclusion

Our findings from this research project has uncovered important information regarding how Orton Park and the UW Arboretum are used as social spaces and how the reality of their usage matched or differed from their institutional and structural intentions. We found that green space isn't always used in ways once thought or intended and there are a multitude of outside influences that dictate how effective the park is in harboring social activity and supporting a strong sense of community. This project also unveiled the personal sentiments of park users and provided useful information towards how certain spaces in the park are used and emotionally considered. Furthermore, on-site observations paired with interviews gave us primary data towards an analysis of the park as a positive function in the Madison community. This project was created with strong intentions and a solid structure but could be idealized with more time and a broader survey of individuals within the city.

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Appendix A: Original Graphics

Where would you go if you wanted to socialize?

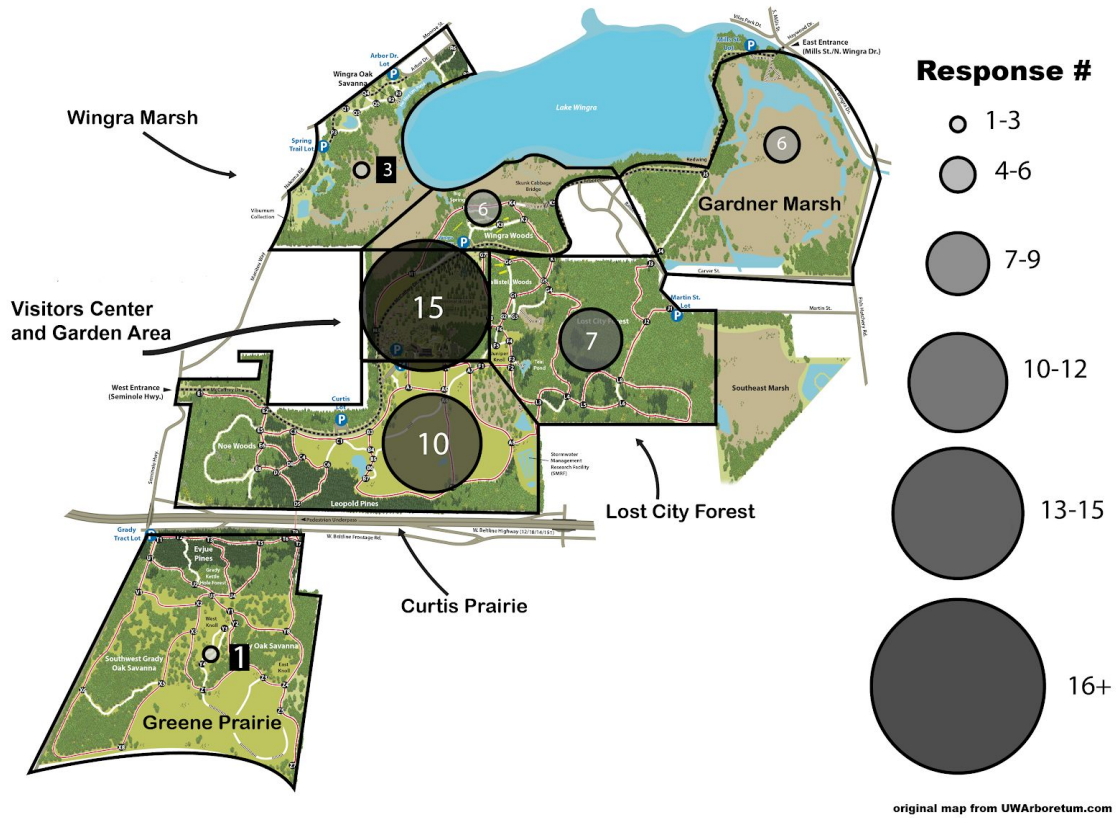


Fig. 1

Where would you go if you wanted to be alone?

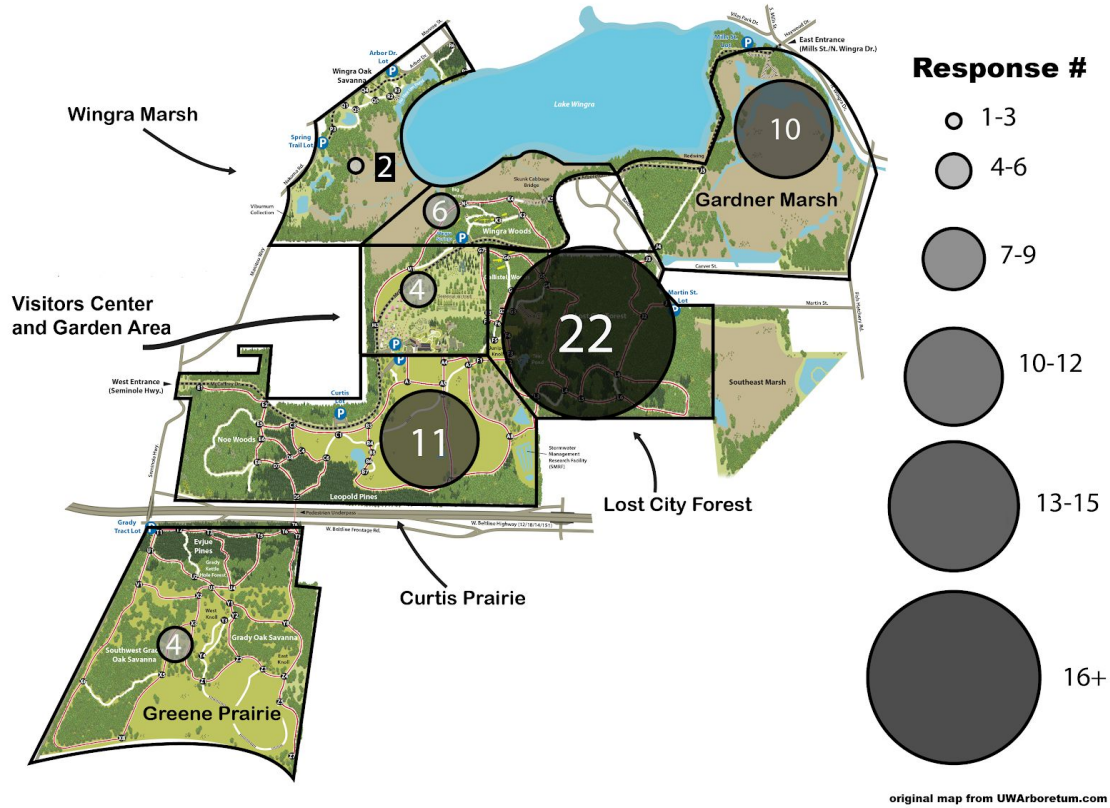


Fig. 2

What features of the Arboretum do you enjoy the most?



Fig. 3

What specific features of the Arboretum do you enjoy the most?



Fig. 4

What are three words you associate with The Arboretum?



Fig. 5

What neighborhood do you live in?

Response Count

10+

7-9

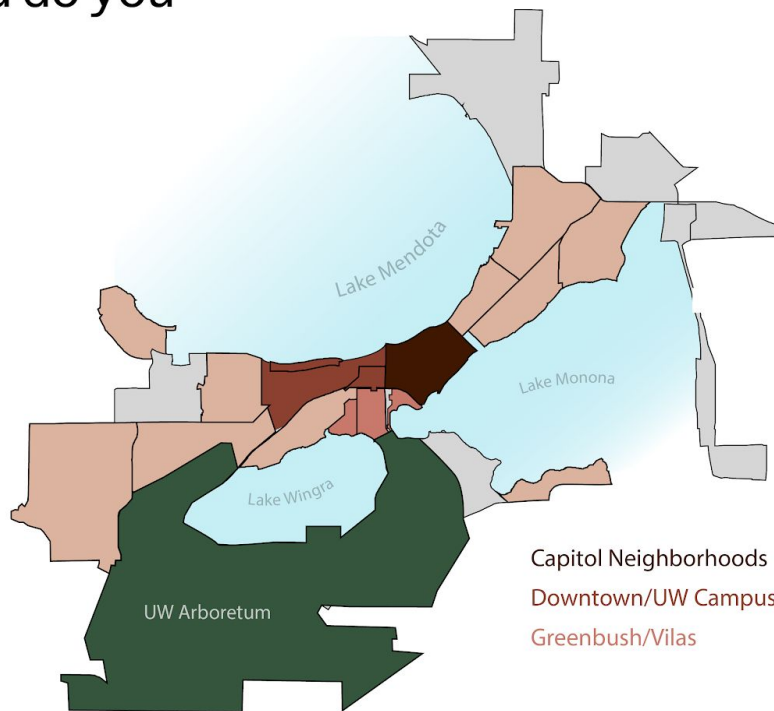
4-6

1-3

No Responses

Outside Neighborhoods

- Middleton (3)
- Eken Park (1)
- Burr Oaks (1)
- Fitchburg (1)
- Heritage Heights (1)
- Hilldale (1)
- Radio Park (1)
- Richmond Hill (1)
- Walnut Grove (1)



- Capitol Neighborhoods
- Downtown/UW Campus
- Greenbush/Vilas

Fig. 6

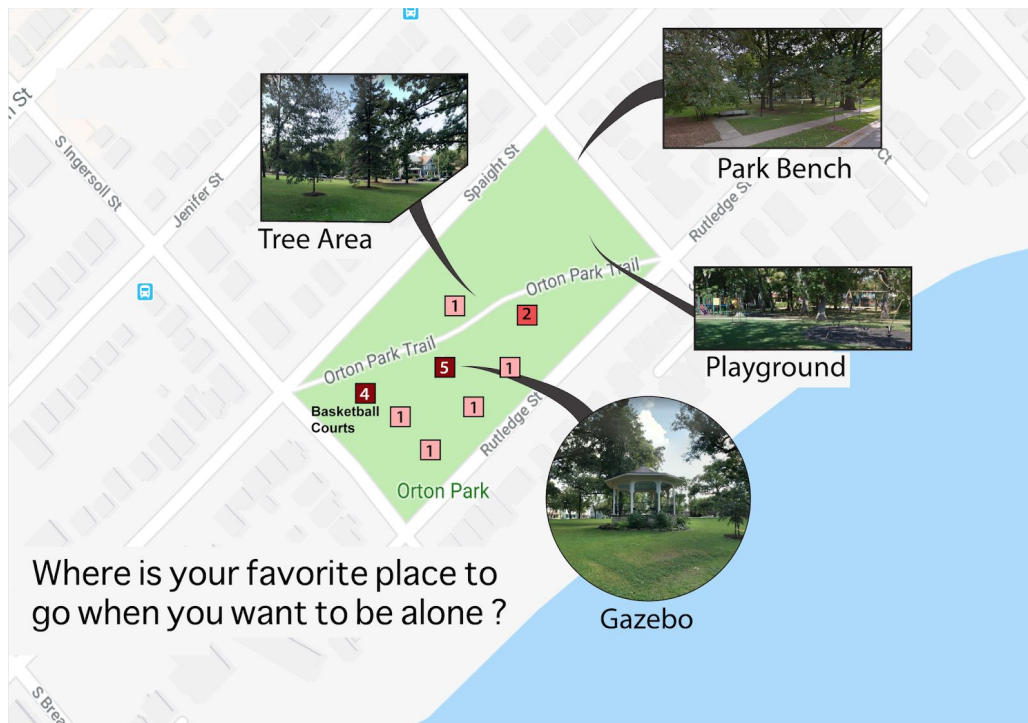


Fig. 7

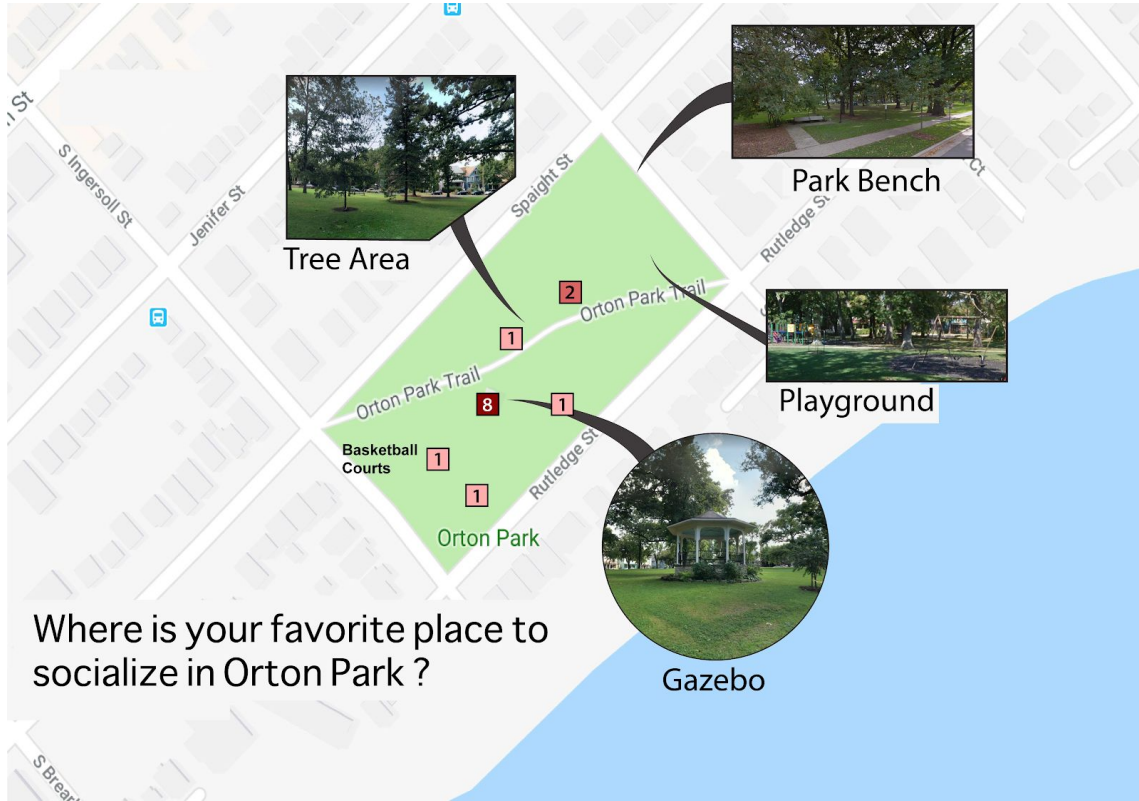


Fig. 8

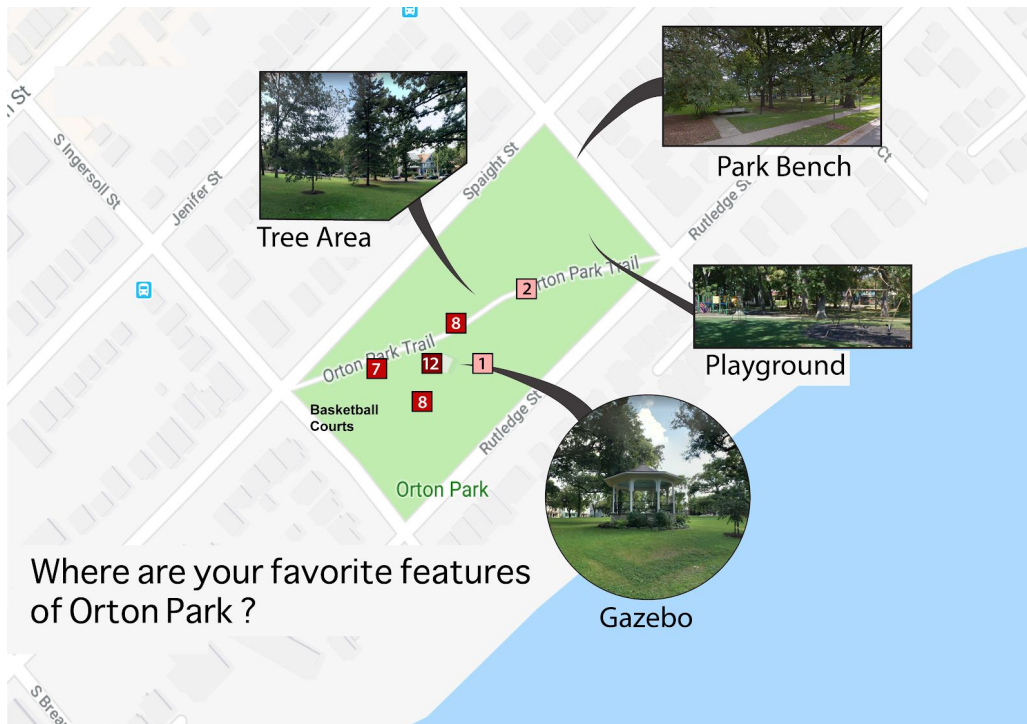


Fig. 9



Fig. 10



Fig. 11

What neighborhood do you live in?

Atwood
Tenney-Lapham
Marquette
Capitol Neighborhoods

No Responses



Fig. 12

Appendix B: Interview Transcript with Mark Wegener

November 6, 2018

Shannon Kim:

So the first main question we have is how has the public use of the Arboretum changed over the years?

Mark Wegener:

So like the short answer to that is we don't really know how public use has changed over the years, but we have some indicators, right? You know, one of the things that's really important to know about the Arboretum is that it is part of the university but its home is in the Vice Chancellor for research and education so that's basically the wing of the university that is most concerned with actual research, like hard research that's kind of where we live and so, in terms of what we sort of are, and where we get part of our funding, it's the university but specifically the research wing of the University. So, right away there, it's important to know that we are not really a park. And this has been kind of a topic of controversy for a long time. While we are not really a park, we are 1,200 acres of green space in the city, so we function in a lot of ways as a park. But, um, our resources, where we get them, are from the University and from donors and we only have so many resources and so we sort of prioritize how we spend them based on what our mission is and what our home is in the university. So things that support research: great. Obviously, things that support land care, but as far as spending a ton of resources on understanding our visitors, not that we shouldn't, but with such limited resources, we just don't have that great of data on our visitors.

That said, we do have a couple of snapshots of visitor use. Our last big, full-blown visitor survey was done in 1994 and so we did ask a question like: 'how do you use the Arboretum'

We also just concluded a community survey, in the last month. We engaged our constituents via social media, our electronic newsletter, our website, and university outlets to send people to a Qualtrics survey link. We got about 1,600 responses and it gives a more contemporary snapshot of how people use the Arboretum. One thing we know for sure is that there are a lot more visitors. We don't know the exact numbers unfortunately, we can say, just the visitor's center, we do track how many people come into the visitor's center. In 2002, about 9,000 people come into the visitor's center that year and in 2016, we have 46,000 people, so that's an increase of like 500% since the visitor's center opened. Do we have 5x the visitors on the property? Not necessarily, but we clearly have a lot more visitors. It doesn't seem like the uses have changed a ton since 1994 and this recent survey.

My suspicion is that there is just a lot more than everything. I don't think recreational use has necessarily gone up, well, maybe with runners, because running is just a bigger thing than it was 20 or 30 years ago.

The biggest things people come here for are to enjoy nature, take a break from the city, walk the trails... and then recreational uses come after that.

Shannon Kim:

I guess sort of going off of that, are there certain times of the year that the Arboretum is most popular? I know probably warmer months, most definitely but are there activities that change throughout the years that are more popular?

Mark Wegener:

Definitely. So, the biggest two times for us by far are spring and fall. That is actually different than what I thought. It's early spring actually. The reason for that is because of the 50-acre tree garden called Longenecker Gardens, but there is a really impressive collection of flowering trees and shrubs: lilacs,

crabapples, and magnolias. And there is a 2-3 week period in the spring where it is all blooming at the same time and it really is incredible. There are hundreds of these blooming trees. So that, by far, is our busiest time of the year. It's also the time of the year when everyone's like "oh thank god, it's spring. Time to get out of the house". So that's a peak. So in the summer, it actually goes down quite a bit. Definitely, we get more use than in the winter but it flattens out around July, August, September. We have mosquitos, we get heavy rains so sometimes the trails get a little flooded, and everyone just has a lot of stuff going on. And again, in about mid-September to October, for the fall color, we get this second huge spike every year. Again, it shows up in our visitor's center number. Winter is pretty low use, we have cross-country skiing here but we don't groom the trails for skiing so it's really just a recreational style of skiing, so just getting outside. We have snowshoeing as well, but you have to stay on the trails and a lot of people like to go off trails for snowshoeing but you can't do that here. So the use gets pretty low in the winter.

Shannon Kim:

Do you think in the spring more students would use this space for academic reasons?

Mark Wegener:

Yeah. So clearly more students during the school year, spring and fall. And because the acceptable conditions for field seasons are late spring, like right around graduation, we get a lot of student projects out here and in the early Fall. as far as student and class participation, those are two big spikes. And as noted, we have a number of research projects. These are things that can be anywhere from like, 3-month projects but we also have projects that have been going on for decades. Really long-term projects looking at soils. Those are year-round. We don't really have a seasonality with those. I think we currently have around 53 permanent research projects going on on the property.

Shannon Kim:

Can you see a sense of community being built in the Arboretum by the people who use it?

Mark Wegener:

Yeah definitely. So a few that came to mind: a big one is -- well some of these are more formal like we plan these to be a community and some of them kind of have happened. We have a huge volunteer corps. We wouldn't be able to take of the property we have without those volunteers. We have hundreds of volunteers. Some of those groups are, like, the receptionist, but they work more alone. But some of them are groups. So we have a weekly thing called work parties, like a volunteer work party and the idea is that -- it's a drop in thing, anyone can come. They rotate around the landscape. But it's a Saturday morning thing for several hours and you come to work on a restoration project for the Arboretum. And a lot of those people have been doing it for years. So they have their own community and they sort of do things outside the Arboretum sometimes as a group. And that's kind of pre-meditated as part of that activity. We kind of hope that it creates a cohort. Another group is-- these are also volunteers but they are called volunteer stewards. So we have 17 miles of trails here. We only have a few people, and two of them are students, who actually patrol the trails here. So they can't be out everywhere at once. So we have this focused cohort of volunteer stewards, 30-40 of them, and they get a ton of training all together in multiple sessions and then they are sort of turned loose to kind of patrol and keep track of things like "oh hey, there's a tree down on this trail" or "hey, i saw two people who had dogs in the Arboretum" They are trained to kind of engage with visitors and deal with rule violations, but they too, have this community. They have regular meetings and they are kind of deputized as a part of the staff because they sort of are staff in a way. And then tours, we have these sort of tours. The visitor's guide has a list of all our tours, classes, events. We have lectures here. Each one of those things creates it's own community in a sense of the people attending or participating. It comes out 4 times a year. It talks about all the ways people can get involved here.

The other category would be things that just happen here. An example of that is that we have this birding group. There's this guy named Chuck Henderson, he lives in the neighborhood, he also happens to be a volunteer. He's a really good birder. He birds like 300 days a year and he does most of it here [The

Arboretum]. He puts all of his bird data on e-Bird but he also started, just through people, he started leading these Tuesday morning, I think they meet at 7AM maybe it's 6... and he goes out on a birding trip. He leads it and he takes people to different areas and he helps them find birds and that has become a major scene where there are lots of people who come every week to Chuck's birding group.

Shannon Kim:

–And the Arboretum did not start this?

Mark Wegener:

No, it's just a thing that organically happened and it's kind of neat in that way. Cycling groups use the entrances of the Arboretum when it's nice out, they'll use the entrance as the meet-up spot. Our road is only three miles long, which is not nearly long enough for these cyclists but they come, ride-through and meet up here so that's another kind of community that has organically formed here.

Shannon Kim:

Yeah, so they use it to pass through?

Mark Wegener:

Yeah.

Sam Molinaro:

We've seen that's the typical use of the Arboretum. People pass through it alot and that's fine, but its just used for leisure or exercise then.

Mark Wegener:

Yeah.

Sam Molinaro:

And even cars too. It's a shortcut in some sense but it is nice to look [at the scenery]

Mark Wegener:

and for people who can't run or bike though, it's 3 miles end-to-end so it's nice to ride through and see alot of it. Photography groups too. This is not something we organize. There's numerous photography groups that at least once a year, they have this be their location for their group.

Shannon Kim:

What specific areas are popular with guests?

Mark Wegener:

Yeah, so I have two things to say about that. 1) it's anecdotal information but we know the area right around the visitor's center here -- because people drive in and are "where's the Arboretum" and they get to the end of the road, it's the main parking area, the bathroom is here. There's no bathrooms anywhere on the landscape except for inside the building or else we have a port-a-potty outside. The areas right around the visitor's center include the native plant garden, it would also include Longenecker Horticultural Gardens. I would have to say most people that come here visit those areas.

Other areas that are really popular to just walk include Curtis Prairie, that is kind of pride and joy from a restoration standpoint. It is the oldest restored prairie in the world. It is where the idea of restoring a prairie came from. I think people really like to walk around it because it's really easy to get lost here. When you look in here [the 2018 survey], in terms of feedback and suggestions for us, that was one of the biggest things. We kind of consciously don't have a lot of maps on the trails partially because it's not our mission exactly to have recreational use here but also partially because we don't want to impact that experience of being in the outdoors. That said, we don't want people being lost out there either and people feel comfort in the area near the visitor's center. When you walk out to Curtis Prairie, you can see the visitor's center. It's very hard to get lost. So that area is really popular. Wingra woods, there's a small parking lot up there. There's a hillside, maple woods, there's a spring. It's a natural spring that flows year round. Tons of birds. It's a really peaceful spot. That area gets a ton of use. Another area I would say is really popular is this area by Monroe st, so a lot of people don't even know that is the arboretum but we kind of wrap around Lake

Wingra and it is near Wingra Park, with the boat rentals. It is this very small area that is disconnected from the rest of the arboretum but it gets a lot of use. There's a small bike trail here that is actually part of people's commute. There's another really cool spring in here that a lot of people. Just by virtue of it being so close to the Monroe Street neighborhood, where a lot of people live, it's so accessible, it gets a lot of use.

If you go Google UW Arboretum, you can see how busy it is. Not just the visitor's center. Everyone has a phone so it tracks you. It's like you're on a phone with traffic data but we never knew what days were more popular. With every one of those, there's location data but we can't get that.

Shannon Kim:

Do you know where people who are using the Arboretum are coming from?

Mark Wegener:

Not exactly, but kind of. (map of neighborhoods with 1600 people who answered their survey) By zip code, it shows how many people answered our survey

Shannon Kim:

What are the main barriers to use of the Arboretum?

Mark Wegener:

The first one is getting here. I went to college here and it was a thing to come out here. When you're in school, there's only a few months of the year where it's comfortable enough to bike out here. The roads get kind of sketchy, we don't use a lot of salt. I guess that would be the first thing: getting here. Another big barrier is rules. We have a ton of rules here. You probably noticed when you were coming in, we have signs everywhere. That goes back to our home in the university and our mission. If we don't tell people that we're not a park, which we are not, people are going to treat us like any other park. We heard in the survey, many people want to bring their dogs. Or people wish they could mountain bike or slackline, or put their hammock up or picnic. We have a ton of rules. There's good reasons for those rules but they create a barrier. It's not a geographic barrier but its an institutional barrier to more people coming here. And then going along with that, people get the idea like "jeez, if there are that many things I can't do there, do they even want me there? Is this even for me? Is this just for the university?" People don't feel welcome here so that's something that as an organization we have to react to and deal with. I think as more people are exposed to this place and more people want to come or can come, we have to rethink that. The other part of that is probably beyond what you're asking here but is our donors. We rely a lot on our donors. We don't get all our money from the university. The university gives us a quarter of it. The rest of it comes from donors. I don't mean like \$20 donors, i mean like big donors who have built up these endowments that we take the interest off of. No big donor gives us a lot of money unless they have had a good experience here doing birding or volunteering. I think we do need to consider the visitor experience as a priority even though it's not directly in our mission.

So the last thing I would say is, we have 17 miles of trails but they are not very user-friendly. We use this very archaic system of trailhead markers that even we don't understand.

Safety is an issue here. Largely I'm talking about the road. Although it's not a thru road, there's a gate. Depending on which way you came in, you can't go through the other and that's kind of by design because we want to cut down on the traffic from people that were using this as a shortcut for their commute. We still get a ton of vehicle traffic. When you combine that vehicle traffic with all the bikes and runners and families with strollers and everything else, that's becoming a pretty big issue for us. We're lucky, quite frankly, that nothing bad has happened. I don't know if it's the biggest barrier for people to come here but it is something that people think about. Out on the property, we don't have call boxes. You're kind of on your own out there. Compared to Orton Park, there are neighbors everywhere. When you call 911 at Orton Park,

you know there is going to be response pretty quick. If you call 911 here and you're maybe on some trail that isn't marked very well, there's not a police station around here, it's going to be a while. That is an issue too, that -- as we move into the 21st century-- we need to start thinking about that a little bit more.

Shannon Kim:

The last question we have, just prepared, how does the structure and size of the Arboretum contribute to or create barriers to social interaction?

Sam Molinaro:

And contribute to feelings of safety as well? I mean, if it's big, it'll be more intimidating.

Mark Wegener:

I think is the most interesting question. We have a lot to offer here. We have 17 miles of trails. We have beautiful spots. I hadn't even realized before I started working here that there was this whole area south of the beltline and now that's my favorite area. There's never anyone there. So we have a lot to offer but it's also really distributed. It's big, it's a weird shape. It was basically pieced together over 15 years from buying little parcels of land. We don't have a main entrance. We have 20-some distributed entrances all over. There's two main places to come in via the road but there's also all these places to come in via a trail. We've tried to create more of a central area outside here with architectural structure but the distributed nature of the place and maybe it allows access to a lot of people but for social interaction or centralized meeting spot, it's doesn't really provide that. The institutional part, between the rules, like I said. If you want to meet up with people in the evening but you have your dog, you literally can't come here. It is hard to find your way around once you're away from the main road, even for the people who work here and that's a pretty scary thing for a lot of people, getting lost in a forest. I think, the things that I talked about that have self-organized and things that have created a community here, they all have a central spot that they meet but they're all different. It's not like every day, you can come to the same spot and see what's going on. That's not really a thing here. You could get here and be like "where's the volunteer work party today?" and because the gate is close, you would have to get back on the beltline and go all the way around to get to it. It could be 20 minutes away even though you're here. Part of the reason why you see the rules everywhere is because you could be coming from anywhere so we're not sure if you have seen it yet but it ends up becoming a less-than-welcoming environment. If you're gonna build a community or have social interaction, you don't want to feel like you're less than welcome.

Appendix C: Observation Log (Arboretum)

Activity	Tally	Notes
Run alone w/ headphones	9	
Running alone on road	12	
Running pair on road	3	
Running group on road	0	
Walking alone on road	15	
Walking pair on road	6	
Walking group on road	3	
Biking alone	10	influenced by weather, some biking for leisure or for exercise
Biking pair	8	
Biking group	7	
Walking alone trail	14	-went 40 mins on trails in Wingra Woods without seeing anyone -both observations of trail usage are from area by Monroe/nakoma Rds. And spring trails and path. Multiple people have camera gear.
Walking pair trail	20	-camera gear -talking, -holding hands, -taking photos -fall colors as an attraction, -many couples -reading arb. Lit.,
Walking group trail	27	-family group,

		<ul style="list-style-type: none"> -young adults with young children common -social outing -talking -laughing -family with young kids taking photos on trails, walking
Running alone trail	4	
Running pair trail	0	
Running group trail	0	
Off trail alone	0	
Off trail group/ pair	3	
Non walking or running alone, trail	2	<ul style="list-style-type: none"> -sitting on benches looking at spring -doing worm research
Non walking or running trail pair/group	2	pair sitting on trail bench
Hort. Garden area alone	2	<ul style="list-style-type: none"> -walking, -following turkeys
Hort Garden area pair	46	<ul style="list-style-type: none"> -mom and child, - mom reading tree tags to kid, -pair of volunteer employees, -observe plants, taking photos, -strolling, -mother and child playing in fall leaves, -parent with kid in stroller, -have arb. Lit. -many couples
Hort. Garden area group	70	<ul style="list-style-type: none"> -strolling, -family of 4 taking fall family photos, -grandparents with grandkid -group of dozen or so on guided tour of Hort. Garden. Tour provides space for

		<p>socializing across age groups and races between people with a common interest, wide range of ages although majority are middle aged or older, talking amongst tour goers, many groups of parents and a young kid/kids</p>
Visitor Center alone	1	
Visitor Center pair	20	<p>-watch film, -ask workers questions, -look at map, -looking out big windows, -V.C seems to serve as hub of activity on chilly days, -Arb worker overheard talking to a girlscout, commending her for coming,</p>
Visitor Center group	42	<p>-parents and children in VC for craft event with natural materials, interaction between parents, kids and facilitators. -visitors looking at maps -lots of activity around V.C/H.G. entrance, -people asking arb. workers questions, -browsing arb library/store, -looking at phenology board</p>

