How Instagram can help city planners understand park usage and attractions:

A case study of Klyde Warren Park


by


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# Abstract

Parks and open spaces are important for communities and the overall well-being of people. In dense urban areas, parks and green spaces provide a place where people can meet, exercise, and experience nature and open space that otherwise can be lost in downtown areas. Depending on the park and the specific amenities and qualities it has will influence the park's usage. By analyzing social media posts that tag specific parks, planners are able to see parks through a new view. Unlike traditional research methods, such as interviews and surveys, social media is raw, unfiltered data. It is not filtered to try to tell the researcher what they want to hear. Analyzing Instagram posts brings us both raw data of words from the caption along with personal photographs. Researchers can understand what people are saying about these spaces, how they feel in a space, the events they are at, who they are with and why they are there. The photographs tell the researcher what people enjoy about the space, which amenities they like or the event that they want to remember. By using geolocation, we can narrow down a case study of Klyde Warren Park as a specific park location that people have tagged in downtown Dallas, Texas. This research demonstrates what social media, and more specifically Instagram analysis, can show to help inform planners in ways that people use and perceive parks. These findings help planners to understand how social media can help justify parks and understand park usage in dense urban environments and specifically Klyde Warren Park in downtown Dallas, Texas.

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# Chapter 1 - Introduction

Social media platforms are used to create and share content to the public or a list of followers. It allows people to express themselves through a profile on topics throughout their daily lives. This report shares how social media platforms can be used as a methodology to collect data and understand park usage and attractions. This research method can bring raw, unfiltered information about how people perceive and utilize parks and green spaces. This methodology has been put forth on a case study in Dallas, Texas, Klyde Warren Park.

## Downtown Urban Centers

World population is increasing and moving from rural and suburban areas to urban centers (Boyd, 2018). As people move into downtown areas, it is creating larger cities with greater population density than ever before. In America specifically, there are people continuing to move into downtown areas and urban sprawl around dominant business districts or industry-specific hubs (Boyd, 2018). Cities have started preparing for this growth as well as creating more urban downtown spaces. These urban spaces have attracted much of this growth back into the downtown areas.

The United Nations in 2009 and the International Organization for Migration in 2015 both estimated that around 3 million people were moving to cities every week (United Nations, 2018). Table 1 shows the urban vs. rural population in the United States. Approximately 54% of people worldwide now live in cities, up from 30% in 1950 (Boyd, 2018). This estimates the growth of 2/3 of the world's population in the next 15-30 years. The trend of moving into urban areas is much more popular in the United States showing 80.7% of Americans live in urban areas

(Census, 2018). Opportunities are greater in larger cities as well as network effects, productivity, and efficiency.

**Table 1: Urban Population Versus the Rural Population**
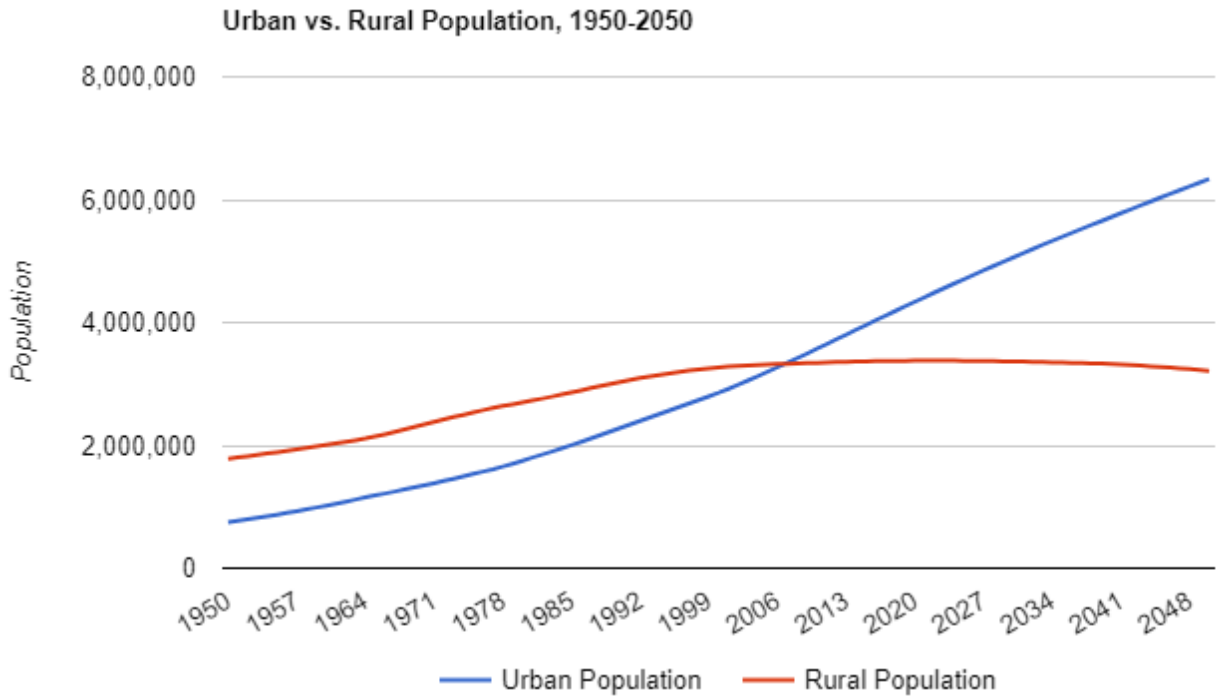


Derived from: United Nations Department of Economic and Social Affairs, World Urbanization: The 2018 Revision-Population

When people transition from suburban areas into cities, they may lose access to green open spaces that they have been accustom to. Providing urban residents access to green spaces, such as parks, is important to their overall well-being (Barnett., et al 2005). Urban green spaces, especially parks, provide many benefits to residents who live in dense urban cities. Urban parks help create overall improved physical and psychological health, as well as social benefits to its users.

**Dallas, Texas**

The Dallas metropolitan area is located in rural northern Texas and is one of the largest cities in the United States with over 6 million people (Census, 2020). Due to the size of Dallas and the amount of population increase, Dallas faces problems with density and overcrowding. Downtown Dallas is home to a population of 10,858 residents, while the city of Dallas is home to 1,343,573 (Census Bureau, 2018). The projected growth density map of Dallas is found in figure 1. The average yearly household income is nearly $113,000 for residents living in downtown Dallas (Census Bureau, 2018). The last decade has shown the largest growth of United States metro areas in the Dallas-Fort Worth Metropolitan area. It has gained 1,349,378 residents from 2010 through 2019 (Census, 2020). With this large jump in residents, 42% of people living in downtown Dallas are 25-34 years old (Data USA, 2018). The population and household income impacts the types of amenities that cities plan for in the downtown Dallas area. Understanding what people want and need based on their age and lifestyle will help make recommendations for planning in Dallas and the use of space and amenities to help sustain or improve resident's overall well-being.

**Figure 1: A map of Dallas, Texas, and its projected growth density. Outlined is downtown Dallas that shows a high projection of growth.**
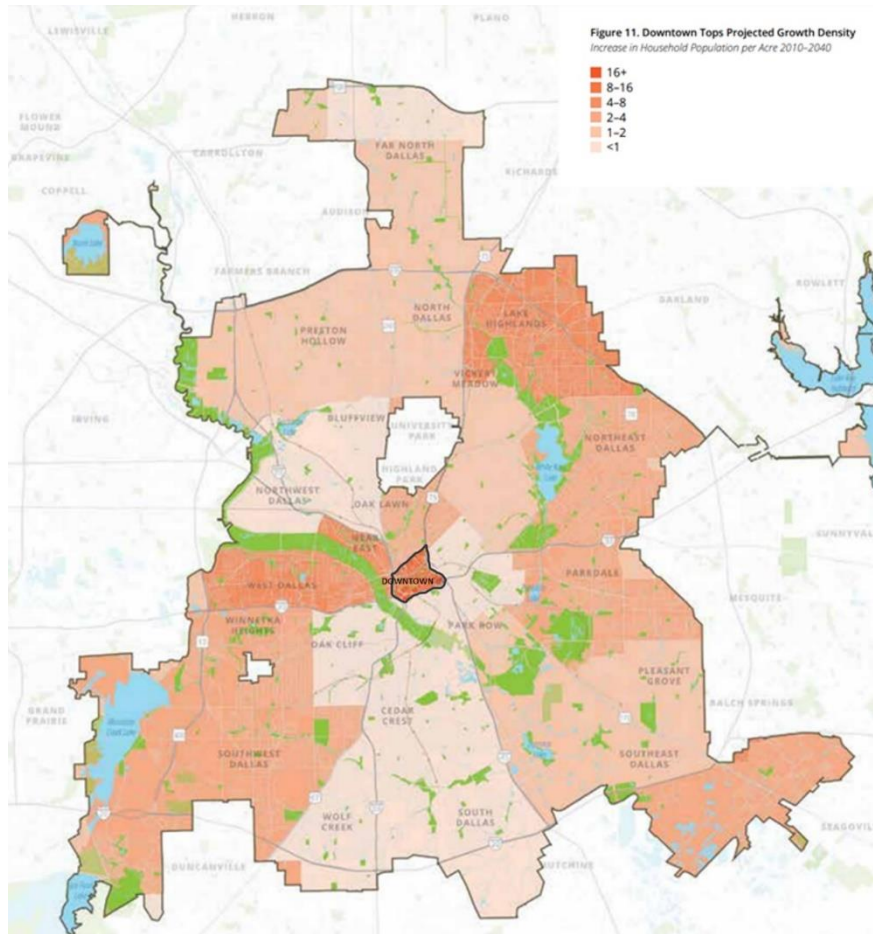


Derived from: Dallas, Texas Planning & Urban Design: 2021 Comprehensive Plan.

     As the world continues to move into urban areas a problematic question arises: Where will the people live and how can we keep up with the increased population? Urbanization results in more, larger cities and larger cities growing. Cities and planners begin to strategize ways to keep up with the population increase by building. Larger cities build infrastructure to support larger populations as well as take away green space to build buildings. This report focuses on how social media may be explored to help analyze parks and justify the space needed to keep parks in dense urban areas.

A case study is used in research to investigate and give insights into a real-life situation. Case studies advance knowledge base as well as have been proven useful for studying innovations, evaluating programs, and informing policy (Reis, 2009). This study analyzes the park usage and attractions of the unique Klyde Warren Park in downtown Dallas, Texas. The park represents a newer, urban green space in a dense downtown area.

**Klyde Warren Park**

The case study used in this report is Klyde Warren Park, located in downtown Dallas, Texas. Figure 2 shows a map of the Dallas-Fort Worth Metro area, downtown Dallas, and Klyde Warren Park. Klyde Warren Park was chosen because it is in a dense downtown area with a large population. In a location such as northern Texas, there is a humid subtropical climate which typically brings a mild winter along with a hot summer. Therefore, parks can be used year round and usage tends to go up after the winter months.

**Figure 2: A map of the Dallas-Fort Worth metropolitan area, Downtown Dallas, Klyde Warren Park.**
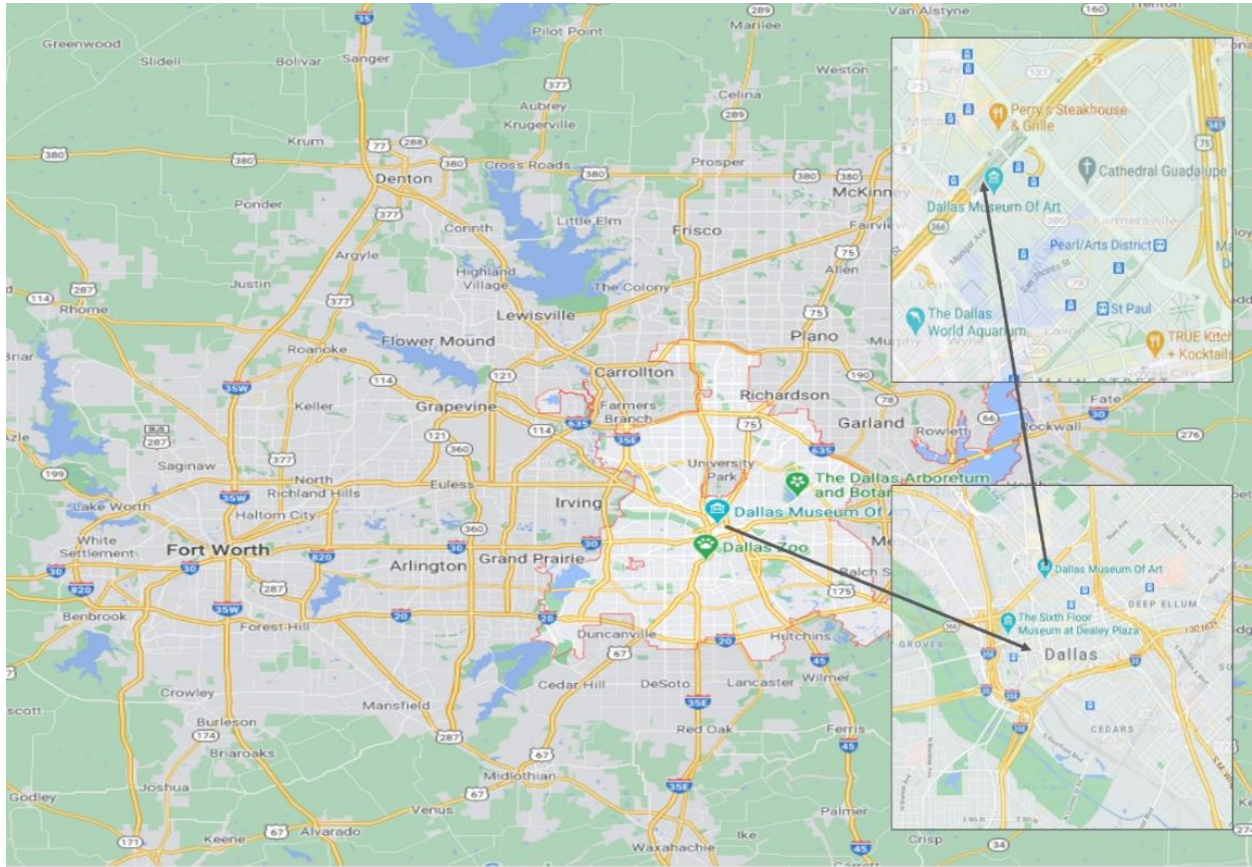


Derived from: Google Maps. (2020). Google Maps. Retrieved from https://maps.google.com/

Klyde Warren Park opened in 2012. The park is a 5-acre deck park over the recessed eight-lane Woodall Rodgers Freeway in downtown Dallas. The concept originated in the 1960s when Dallas Mayor Erik Jonsson decided to recess the freeway. Years later the idea came about again, and the community began to rally support for the project in 2004 (Klyde Warren Park, 2020). People began donating money, including the Real Estate Council, and construction of the deck began in 2009 (Klyde Warren Park, 2020). Many times downtown areas do not have a lot of green space and it has been proven through research that green spaces such as parks provide a great deal of mental and physical relief, especially in areas where green space is scarce.

The idea of the park was a green space "out of thin air" connecting the Dallas Uptown neighborhood with its Art District and downtown business center. It welcomes more than one million visitors each year (Klyde Warren Park, 2020). Figure 3 shows Klyde Warren Park in relation to downtown Dallas. The park also brings an increased quality of life and increased foot traffic into the area (Klyde Warren Park, 2020).

**Figure 3: Klyde Warren Park in relation to downtown Dallas.**



Derived from: Perez, C. (2015, September). How Klyde Warren Park Has Changed Dallas Real Estate. Dallas Magazine.

Parks not only benefit people mentally and physically, but they can benefit a city economically. Klyde Warren Park has changed the real estate in downtown Dallas. In 2012 when the park opened, high-rise commercial and residential properties went from overlooking what used to be a concrete hole of Woodall Rodgers Freeway, to the best view in downtown Dallas. "Since late 2012, triple-net lease rates at Trammell Crow Center in the Arts District have climbed from $19 per square foot to $25 per square foot—a 32 percent jump. Rents at 2100 Ross were increased from $13 to $19 per square foot—a 46 percent increase. On the north side of the park, lease rates at 2000 McKinney have climbed 56 percent, from $25 to $37 per square foot. And rents at 2100 McKinney have appreciated an incredible 64 percent, from $22 to $36 per square foot (Perez, 2015)." Klyde Warren Park brings a unique characteristic to the area and is now a landmark for all residents to enjoy.

**Park Attractions and Amenities**

Klyde Warren Park has many amenities that attract its daily users. The amenities include a Butterfly Garden, Chase Promenade, Children's Park, East Lawn, Ginsburg Family Great Lawn, Hart Boulevard, Janes Lane, Moody Plaza, Muse Family Performance Pavilion, My Best Friends Dog Park, Nancy Collins Fisher Pavilion, Reading and Game Room, Botanical Garden, The Grove, and The Porch. Figure 4 is a map of Klyde Warren Park and its amenities. Other amenities include an 11-food truck lane located on the west end of the park. There are parking and pedestrian entries, handicapped entry, along with bike racks and the M-Line Trolley.

**Figure 4: Map of Klyde Warren Park and Park Amenities**





## Butterfly Garden

Keep an eye out for butterflies and enjoy the seasonal bloomage.



## Chase Promenade

This walkway spans the entire Park, offering visitors a scenic route from St. Paul Street to Pearl Street.

## Children's Park

An imaginative place with interactive fountains, playgrounds, a storytelling tree and a kid-size amphitheater, the Children's Park has fun, educational programming from all over the city.



## East Lawn

The East Lawn is home to the putting green and serves as a secondary location for Park events and recreational activities.



## Ginsburg Family Great Lawn

The central hub of programming and a passive space to relax and enjoy the surroundings, you can bring a picnic or a book to enjoy the space on a nice day. Or you can attend a yoga class, a movie screening or a performance in the pavilion.

### Hart Boulevard

A pair of pedestrian plazas mark the Arts District to the south and Uptown to the north. This walkway is lined with water features, as well as ample seating and lighting for day and night.



### Jane's Lane

A 25-foot wide allée of Red Oaks, this granite pathway open for jogging or strolling is lined with soft lighting and wood benches.



### Moody Plaza

The main entry into the park and gateway to the adjacent Arts District, this area connects visitors to the main amenities. There is splashing water and space for performers.

## Muse Family Performance Pavilion

This venue hosts a variety of performance groups throughout the year. Concerts, theater and dance take place on the stage with audiences spread out across the Great Lawn. When there isn't a performance, it offers the Park a shady spot under which visitors can pull up a chair.



## My Best Friend's Park

A fenced environment where off-leash dogs can safely play and socialize, with fountains in which to cool down on a warm day.



## Nancy Collins Fisher Pavilion

This pavilion is home to a food kiosk where you can grab a snack to enjoy in the park.

## Reading and Game Room

Grab a spot in the shade and a book or magazine from our lending library (thanks to Lucky Dog Books for keeping our shelves stocked) and take a break from the hustle and bustle of the city. Have a seat at a chess or checkers board or check out another free game from the game cart – game carts are open daily. The Reading & Games Room also hosts have musicians, speakers, workshops as well.



## Botanical Garden

One of the quieter areas in the Park, decomposed granite walkways allow Park users to peruse the native plant species. The flowers change seasonally.



## The Grove

A 25-foot wide path filled with activities including petanque (French bocci ball), ping pong and foosball.

Derived from: Klyde Warren Park. (2020). Retrieved March 15, 2021, from

https://klydewarrenpark.org/

# Chapter 2 - Literature Review

This project is aimed to better understand parks in a dense, urban environment. The importance of parks in an urban setting is the benefits that parks bring. The overall well-being of residents who live in dense inner cities can be positively influenced by green space; open green space is known to minimize stress, promote physical activity, provide opportunities for social interaction, and promoting social capital.

## Benefits of Park Usage

### Stress

Residents who live in areas that lack green spaces may be more vulnerable to the negative impacts of stressful life events due to the lack of opportunities for nature-based coping strategies than individuals living in areas with abundant green spaces (D'Alessandro et al., Year). This then ties to people's everyday well-being and lessened mental fatigue. Parks are a good place for both private sanctuaries, as well as frenetic activity, peace and quiet, as well as noisy fun (Greenhalgh et al., 1996).

### Physical Activity

The link between green spaces and physical activity is very prominent. Green spaces have proven to better mental health by creating a space for more people to have physical exercise. This is creating better access for people to become physically fit. Without having this physical element in people's everyday lives, we also see an increase in obesity across the world. This then can lead to more serious health issues, such as diabetes, stroke, cardiovascular disease,

and many others (D'Alessandro et al., 2015). Having green space may attract people outside to walk or participate in other physical activities.

The feelings of distress can be helped by physical activity and enhance the well-being of a person. Physical activity can also work against the symptoms of anxiety or the development of these disorders along with depressive disorders. Studies show that "over half of all mental disorders begin by the mid-teen years, and this increases to nearly 75% by the time adults reach their mid-20s" (Dunn & Jewell, 2010). Having access to urban green spaces and parks gives a place for people to be active.


## Social

Green spaces can help build a stronger social community. Research has proven that residents of neighborhoods with greenery in common spaces are more likely to have stronger connections and social ties than those who live in spaces surrounded by barren concrete. A study conducted by the University of Chicago and the University of Illinois found that in urban public housing the level of vegetation in common spaces brought more social ties (Kuo et al., 1998). They mentioned that in inner-city neighborhoods the study shows that the presence of trees and grass supports common space use and informal social contact among neighbors. It brought the residents a sense of safety and adjustment that usually is not found in barren areas.

When planning for healthier cities a good place to start is land use planning. Planners can come up with ways to better understand how physical activity and the social environment can affect human health (Corburn, 2004). Each city is unique and brings its own history, culture, strengths, weaknesses, resources, and skills. When cities are aware of this it can become a benefit in promoting good health for that community (Ashton et al.,, 1986). Human health and

planning quality communities will offer the best opportunity for people now and in the future to enjoy a good quality of life.

## Drivers of Park Visitation

Since green spaces and parks in an urban setting bring both ecosystem and public health benefits, it is important to understand what brings people into parks. The services provided by green spaces such as parks depend on the specific context in which they occur and how nature is experienced. Looking at how nature is experienced and the preferences of individuals who value the services will tell exactly what a person is looking for out of nature (Donahue et al., 2018). Because of the growing population and density in cities, there is a greater demand for green spaces because of the land cover that comes with density. Access and park amenities appear to be important across all contexts. It seems that factors that influence nature-based recreation in urban areas vary by location, type of green space, or user groups (Donahue et al., 2018).  Public green spaces in urban environments bring a connection to residents and visitors to nature that is not always possible elsewhere in cities.

### Park Usage

Previous research shows an array of park characteristics that attract users to visit parks (Andersson et al., 2015). The characteristics include park size, recreational activities, organized recreational activities, and accessibility have been shown to have a positive impact on park use (Cohen et al., 2014). Park attractions are a leading factor to park usage. Specific variables such as landscape, built infrastructure and recreational facilities, accessibility, and neighborhood characteristics help researchers understand what is bringing people into parks. Specific variables

including water features, the number of amenities within a park, length of trails, and population density of nearby neighborhoods had positive and significant effects on visitation rate (Donahue et al., 2018).

## Weather and Climate

Several recent studies have shown that there is a considerable relationship between weather, climate, and park visitation (Buckley & Foushee, 2011). Understanding how weather and climate can influence park visitation and park seasons can provide park planners with a clearer picture of the opportunities and decision-making for development for infrastructure planning and conservation efforts (Hewer,. et al 2016). A study completed in Ontario shows that park visitation is affected by weather and summer months have a higher park visitation rate than in the winter months (Hewer,. et al 2016). The study also was able to show that park visitation was controlled by the day-to-day variability. From Monday to Thursday park visitation was low while Friday to Sunday as well as longer, holiday weekends it was notably higher (Hewer., et al 2016).

Due to more people living in cities than in rural areas, more individuals likely find themselves in urban parks and green spaces than in remote wilderness areas. The use of social media has become a research method when looking at park usage and transportation patterns to see the park usage along with values of landscape and urban planning (Dunkel, 2015). Study areas have been looking at visitation patterns, amenities, neighborhood characteristics, and weather to help understand park visitation.

# Social Media

Although social media is not brand new, it is a newer tool for conducting research. Social media, such as Instagram and Twitter, are used for real-time posting of individual text and pictures. While Twitter is used to pass on contact and links provided by others, Instagram is mainly used to share self-generated pictures with one another (Minin et., al 2015). Both Instagram and Twitter are used for individuals to communicate their interests to their followers or the general public. Because most citizens in the United States have smartphones, they also have access to the internet with sensors that mark locations. This makes posting easy and makes this newer generation of data unmatched (Batty, 2013).

In a conservation science study, they investigated getting a broader understanding of the use and popularity of different social media platforms for nature experiences. A survey was taken where the respondents were asked which social media platforms were most relevant to them. The survey also asked which social media platforms were used for posting content such as texts, pictures, and videos that were related to nature-based experiments, along with who they shared content with and the geotagged location of the post. It was found that Facebook was most popular for nature-related posts, followed by Instagram, Twitter, and YouTube (Minin,. et al 2015). Forty percent of the surveyed said they geotagged their posts (Minin,. et al 2015).

Most studies about urban parks today rely on traditional survey measures such as visitor count at parks and or questionnaires from surveyors (Cohen et al., 2010; Dallimer et al., 2014). In traditional research methods such as surveys, there is potential for people to be biased due to the survey techniques or the reference group. Due to the need for new research, urban park managers and researchers began developing new methods. Methods that use geographic location

information (found in Instagram and Twitter) and sensors help to expand the research for measuring and mapping park visitation (Shoval & Ahas, 2016).

**Instagram**

Instagram was launched in 2010 and has become one of the most widely used social media platforms in the world (Duggan, 2020). In early 2015, it was reported that over 200 million users around the world use the service to share 70 million pictures per day (McCracken, 2015). People use Instagram to show where they are in the city. When people associate themselves with things by following, liking, tagging, or commenting on the same places, users can form communities online. By looking at where people associate themselves, we can investigate how communities emerge through social media and cities (Boy & Uitermark, 2016).

Instagram should be investigated only if the researcher is interested in what they can find there. The researcher can make connections from pictures and captions for selected parks and selected groups of users. Table 2 shows the ages of Instagram users in 2021. Instagram data can bring a new light on issues that are studied in the city by analyzing where people are spending their time and how they choose to do so.

**Table 2: Age of Instagram users in 2021.**
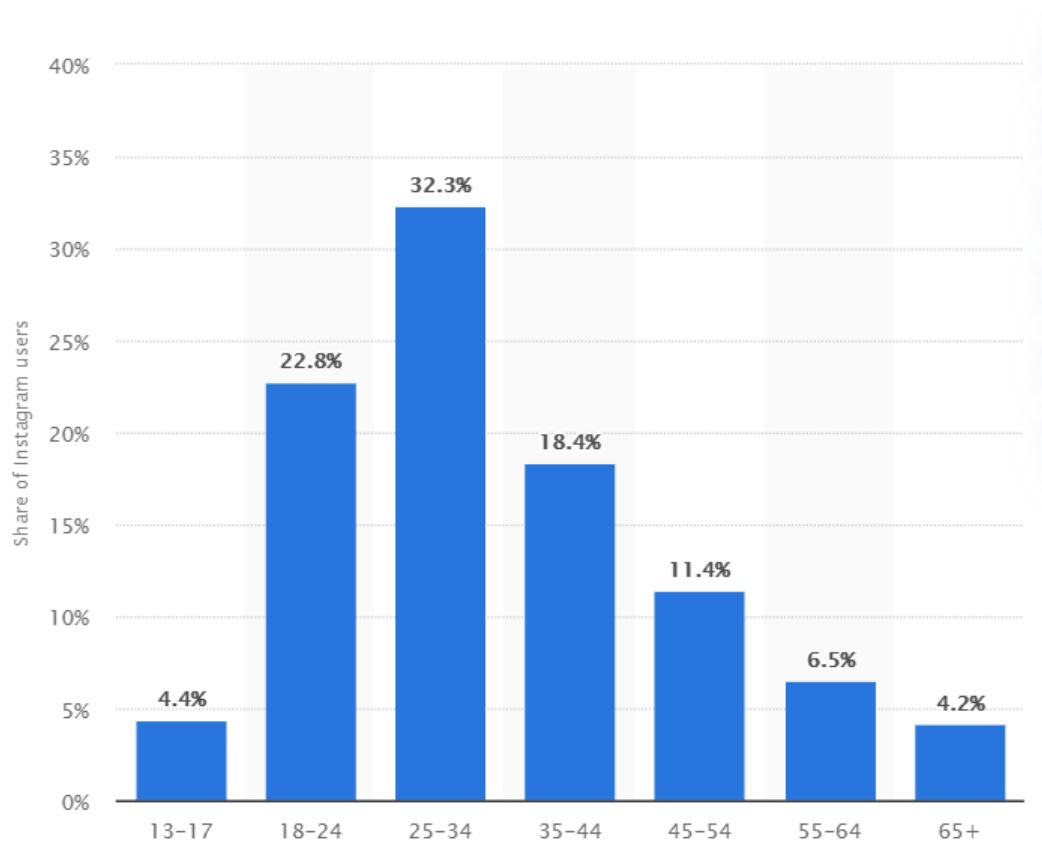


Derived from: Sehl, K. (2021, January 27). Instagram demographics IN 2021. Retrieved March

    5, 2021, from https://blog.hootsuite.com/instagram-demographics/


     Overall, social media content can be used to answer multiple questions like where and

when a post is being made, as well as a content analysis that explains why the user is posting. By

analyzing raw social media content, such as elements found in photographs or keywords in a

tweet, the planner can evaluate the social benefits an urban green space provides to understand

the preferences of park users (Richard & Friess, 2015).

**Geographic Location**

A geotagged location is when a user tags a specific location and gives the coordinate of latitude and longitude or the name of a place. This shows the exact location of where the picture or post was taken from or talked about; this is a feature commonly found in social media such as Instagram, Twitter, and Facebook. With geotagged information, social media content has the potential to represent the mobile population at a higher spatial location than most other methods of research (Longley et al., 2015). When looking up a geolocation or geotag on social media you are able to see all public posts that were tagged in that specific coordinate or site name. Using social media and geographic location as a research tool helps planners and researchers understand what the user finds meaningful about the post, such as how they feel in certain locations, and why they are visiting specific locations.

## Twin Cities Metropolitan Precedent Study

In a study conducted in the Twin Cities Metropolitan Area in Minnesota, two online social media platforms were used to estimate park visitation. Flickr (image and video hosting service (Flickr 2020)) and Twitter (microblogging and social network service who interact with tweets, likes, and tweets (Twitter, 2020)) helped to estimate recreational demand in 1581 urban public parks (Donahue et al., 2018). Their research followed from recent studies that prove social media can prove a rich source of geographic information (Goodchild, 2017). There has been an interest to incorporate geotagged social media data and many newer examples using data from social media in conservation science and urban planning (Dunkel, 2015).

The Twin Cities study looked at small parks, municipal pocket parks to large, multi-jurisdictional regional parks which brought a diverse sample across one single metropolitan area

(Donahue et al., 2018). Information was found about annual park visitation counts. Flickr and Twitter were then used to track past posts that had public geotagged posts or "tweets" that included text, link, photo, or video content. Both Flickr and Twitter data were unique tools and provided coverage for estimating the use of Twin Cities Metropolitan parks. Research indicated that from the years 2012-2014, on average, a greater number of social media users posted from parks on Twitter during the period of analysis (Donahue., et al 2018). Later, researchers investigated the amenities that each park had in correlation to the social media posts and park usage to better understand why people were visiting certain parks.

Using social media and on-site surveys there are many different landscapes, built infrastructure, accessibility, and neighborhood attributes to understand what influences the use of urban parks. All in all, geotagged social media data was able to help bring urban park agencies and planners' information and trends on recreational patterns in park systems that would not be found with only traditional surveys. The Twin Cities study shows that the annual estimates from both social media websites are reasonable similarities for park visitation that can be found from traditional survey methods (Donahue et al., 2018).

# Chapter 3 - Methods

This project is an effort to help planners understand park usage and attractions through Instagram data. By looking at specific geographically located Instagram posts will help to bring a greater understanding of specific parks. This method was brought to light during the COVID-19 Pandemic that began in early 2020. The pandemic brought challenges to the use of other research methods such as surveys and observation due to travel and social distancing restrictions.

## Social Media

The social media application used in this methodology is Instagram. As mentioned previously in this paper, Instagram is a platform where people can share their personal experiences and emotions through photography and captions. Instagram has allowed its users to be able to share photographs from anywhere in the world including parks and open spaces. The data that is posted online, publicly, gives information about the public's perception and usage of parks and open spaces that are then available to be further analyzed.

In this methodology, Instagram data from Klyde Warren Park in downtown Dallas, Texas was analyzed through the perspective of Instagram users that geo-tagged the specific coordinates of the park. Analyzing this data will help better understand Klyde Warren Park users and see how social media can be analyzed by planners to better understand other parks.

## Site Selection

The case study of Klyde Warren Park was chosen because of its proximity to the downtown, Dallas area. A park in a dense, urban environment was chosen because of the lack of

green and open spaces that are found in those areas. Klyde Warren is a successful urban park and analyzing a highly used park allows the researcher to analyze how people are using a successful space. A key aspect of this methodology is that it can be done remotely, which saves time and money. During a worldwide pandemic it was frowned upon to travel and recommended to social distance it seemed reasonable to look at data with such easy access.

## Analytic Strategy

The method chosen for the research makes analysis critical in understanding the data collected. The research process that is described in this chapter has helped understand how planners can utilize this method by understanding Klyde Warren Park. The data is analyzed through a word and photo analysis and then related back to planning.

### Research Process

By using a case study, it helps to focus on one specific area. By examining one park for a certain amount of time, research shows how a park is used over time and the characteristics that attract residents and visitors. The data used in this analysis is from Instagram posts that are geographically tagged.

The first step in using social media is searching the geotagged location to narrow the search to photographs that have tagged specific coordinates or names of places. By geolocation, we can explore why people visit and or what people say about Klyde Warren Park will be found by tapping into public Instagram posts. Geolocation of Klyde Warren Park shows every post that the person has tagged that location in order by date. The geotag of Klyde Warren Park on Instagram shows public users who have tagged the park's coordinates on their photo along with

the caption. The official Instagram page Klyde Warren Park also geotags the location to show events, openings and closures, maintenance, and any important news regarding the park. Data was pulled from September 9, 2020, to October 13, 2020, a 20-day period in a warmer fall season, along with Instagram posts from January 4, 2021, to January 24, 2021, a 20-day period, to investigate the cooler, spring season for a total of 40 days. During those 40 days, there was a total of 511 posts that geo-tagged Klyde Warren Park to be analyzed.

Looking into the photographs that were posted on Instagram research showed where in the park the photo was taken. There were specific landmarks that photographs are taken repeatedly with which will help understand what people are looking for in parks or why they visited that specific park. Another reason to look at the photographs was to see how often events in the parks were posted about. Figure 5 is an example of an Instagram post used in the study. Instagram photos are typically photographing of something that people are proud of or happy about. Rarely, does one take a negative picture about something to post on Instagram.

**Figure 5: Sample Instagram Post**



The captions that are posted along with the photographs can tell what the user is thinking, feeling, or a description of the photo. A photo analysis will be noted to find any reoccurring landmarks or events that have drawn people into the park. Because Instagram content is often personal and describes everyday concerns the caption will be examined by a language analysis (Schwartz et al., 2013). Language analysis is a method to analyze and narrow down text. This includes word spotting, text categorization, thematic analysis, and lexical.

**Data Organization**

Once the Instagram photos were downloaded, the photograph along with the caption was put in an excel sheet. The sheet included the date the post was made and the weather from that day. Included for each post were the caption, hashtag, photo, and any notes describing the photograph. Figure 6 is an example of the excel sheet used during the research of this project. While organizing the data, there was a constant word and photo analysis to highlight any significant posts.

**Figure 6: Example of Excel Sheet**



**Word Spotting**

Word spotting or keyword spotting focuses on simplicity and figuring out what the phrase is about. This can be easily put into an excel sheet. When word spotting, we can also categorize the word as positive, negative, or neutral (Medelyan, 2020). When you see a keyword when word spotting, you can assume that it is what the piece of text is about by that particular word.

**Text Categorization**

        Text categorization is used when providing examples, no manual creation of patterns or rules needed unlike word spotting (Medelyan, 2020). Emerging themes will not be noticed and there is a lack of transparency within this approach. Sometimes it is hard to pick out emerging themes and it takes time to continuously monitor data to find themes.

**Word Analysis**

        The keywords that were found to be used the most in the word analysis were put into a word cloud generator. A word cloud generator uses the frequency of the word and the physical size of that word varies depending on the use (Wordart, 2021). The creation of the diagrams is made from wordart.com. The top keywords were pulled from the Instagram captions and put into wordart.com to see what people are talking about when geo-tagging Klyde Warren Park. This helps the planner to understand what people are saying about those spaces, which events they are attending, and their overall thoughts and feelings from that day in the park by seeing which words are frequently posted about.

**Photo Analysis**

        A photo analysis was conducted from the Instagram posts that tagged Klyde Warren Park. During the photo analysis, it was clear that there were many reoccurring backgrounds. This helps to understand which landmarks people believe to be aesthetically pleasing to pose in front of and post to Instagram. This can further help planners see what attracts people into parks, which parts of the parks people are spending time in and which elements of the parks that people do not congregate to. After making note of the landmarks, the spaces were also put into

worldart.com to see which landmarks were most photographed with along with the less photographed landmarks throughout the park.

Looking at Instagram posts gives a different perspective and a look into someone's perception of a space as well as the emotion that words or pictures can bring. Understanding why people are attracted to a space helps to understand what a person enjoys as well as how they feel. People spend time in green spaces to get a breath of fresh air, socialize, exercise, people watch, events, etc. During the research process, text categorization happened when reoccurring events, landmarks, or words were used and posts were lumped together from similar posts.

# Chapter 4 - Findings

The idea to use social media as a research method to better understand parks was thought of in the middle of the Covid-19 pandemic. During this pandemic and creation of this master's report, it was frowned upon to travel long distances and walk up to strangers and talk, which is what a lot of traditional methods require. Testing the use of social media as a method seemed to be reasonable due to the abundance of available data as well as the overall conveniency it brought. The three, word clouds describing the analysis of Instagram posts are presented in figures 7-9.

**Figure 7: Klyde Warren Park Word Analysis, Word Cloud**



Key Findings:

- Instagram users talk about how they feel while at the park.

- Instagram users describe the weather while at the park.

- Instagram users feel and and/or post positive emotions while at the park.

- Klyde Warren Park is frequently posted about through Instagram.

Klyde Warren Park's word cloud of the word analysis makes it very clear that residents and visitors of Dallas enjoy the park. The size of keywords such as "love", "fun", and "happy" are positive words that Instagram users resonate with the park when they post online. The frequency of those positive emotions indicates that people who use and post about the park enjoy their time there. Many users also talk about the weather as a beautiful day, sunshine, fresh air, and nice day, indicating that visiting during those times of day or year are key to when they visit the park. A noticeable trend was found by looking at the correlation between the number of posts each day and the weather. More users posted pictures on warmer, nicer days than cooler, rainy days which can infer that people are attracted to parks during warmer, sunny weather.

**Figure 8: Klyde Warren Park Photo Analysis of Landmarks, Word Cloud**
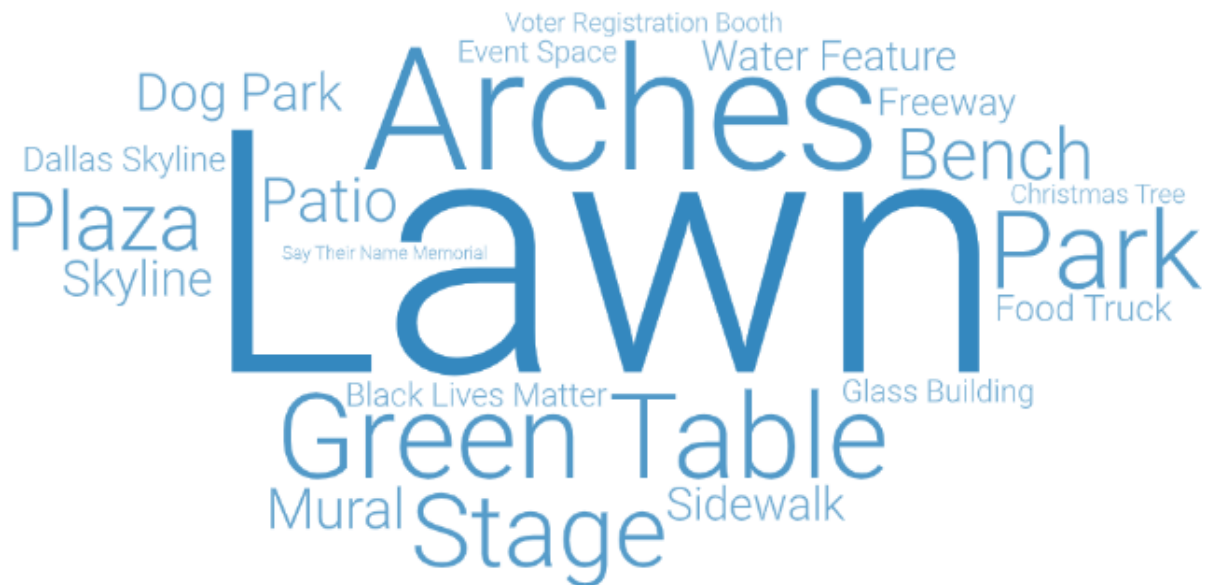
Key Findings:

- Instagram users enjoy posting pictures of themselves using the two large lawn areas.

- Instagram users find the arches aesthetically pleasing during the daytime and lit up at nighttime for a photo opportunity.

- Instagram users utilize the tables, benches, and other seating areas throughout the park.

- Klyde Warren Park has an array of amenities that Instagram users positively post about.

Klyde Warren Park's photo analysis of landmarks indicates that a lot of time is spent on the large lawn areas. Many photograph opportunities were taken with the arches that line a pathway. The words "green tables", "bench", "dog park" and "stage" also stand out in the word cloud as frequently used landmarks. Other less frequently photographed spaces were the food truck lane, freeway, and the Dallas skyline.

**Figure 9: Klyde Warren Park Events, Word Cloud**

Movie on the lawn
Meditation Food Truck
MLK Day
Dance Say Their Name Memorial
Lunch in the park · Live Music
Vote Registration
Meeting Picnic Market Date Night Trolley
Yoga Birthday's
Boho Market Dog Park
Photography Barre
Mi Cocina Restaurant

Key Findings:

- Klyde Warren Park is visited to attend a variety of events.

- Instagram users attend organized events such as yoga classes as well as personal picnics.

- Voter registration, memorials, markets, and food bring people into Klyde Warren Park.


Klyde Warren Park's word cloud analysis showed many events that brought residents and visitors into the area. Popular events based on the frequently posted words and photographs include voter registration booth, yoga, Say Their Name memorial, and the markets. Other, less frequently posted about events that brought people into the park was the dog park, dates, food trucks, movie on the lawn, and live music.

# Chapter 5 - Discussion

This project uses a novel method for understanding parks by analyzing social media content. Research in planning is difficult due to the number of factors that should be included when planning a region, a city, or a community. Social media brings a research method focusing on a younger demographic that can be hard to study. There is a correlation with the average age of social media users and the average age of people living in downtown areas. The majority of Instagram users fall in between the ages of 18-34 while a large percentage of people living in downtown areas are between the ages of 25-34 years old, this makes social media and Instagram a useful tool to help planners understand that demographic in downtown urban centers.

## Limitations

Using social media data as a method to study parks is an insufficient way to research when used solely on its own in this report. The biggest limitation when using Instagram as a research method was the number of park users that this study limits. Since Klyde Warren Park opened in 2012, it has welcomed more than one million visitors each year (Klyde Warren Park, 2020). Understanding that there is a certain generation that uses social media platforms to post, limits the research selection. Since 33% of Instagram users are between the ages 25 and 34 years old followed by 30% of users between ages 18 and 24 years old there is a large number of people that this study does not include. Even though there are many Instagram users who post daily, this study does not account for the people who do visit the park but do not post about it or park users that do not use social media.

The second limitation is that social media, and more importantly Instagram, is a platform that is aimed towards posting and sharing aesthetically pleasing photographs and positive captions. Compared to Twitter which is aimed to give opinions and have conversations on topics. The word and photo analysis are not always clear when attempting to understand the intent of the social media post. Although many times it was clear why the user was at the park and how they felt, it was hard to determine their likes and dislikes of the area.

Another limitation of this methodology is that it does not prove that people were at the park to use the park. People travel distances to take a picture to post because other people are doing it. Many times, the Instagram photo was a photograph of people posing in front of a landmark. The Instagram posts are not always easy to determine whether the park is being used, how it is being used or how the photograph is significant to this report. Table 3 explains the strengths, weaknesses, opportunities, and threats that Instagram as a method brings.

**Table 3: Strengths, Weakness, Opportunity, and Threats Table**

### Strengths

- Easy access to data
- Low cost
- Ability to go back in time and look at older data
- Data is raw and unfiltered and rich in detailed opinion
- People post about things that they enjoy

### Weakness

- Limited demographic due to Instagram user's age
- Not all Instagram users post everywhere they go or very frequently
- Instagram is mostly posting of positive content and not widely discussed compared to Twitter.

### Opportunity

- Can access research easily
- Better understand the younger generation living in the area as they are the targeted audience
- Can plan more for what people say they like

### Threats

- Planners are unable to access similar data for all parks
- Dependent on researcher's interpretation during analysis
- Lack of feedback of things that people dislike about parks.
- Unable to plan for all people

Reflecting on the data analysis and understanding the content found on Instagram helped better recognize how this method can be used in the planning and designing of future parks. Planners can use this method to see how and wherein the park people are spending time based on the photographs or events posted about. Planners can also begin to understand the environmental affordances or how the park allows people to meet their needs based on how people are utilizing the spaces in their photograph or caption. Another way that planners can use Instagram is gathering information about the number of posts in a given day depending on the day of the week, time of day, events in the park, or weather. This can help planners better understand when people are going to the park and how to better plan for amenities.

**Recommendations to Planning**

This research aimed to understand if and how social media data could be used as a method to research and plan for better parks. As this method is applied to other research in an analysis process, there is likely an even greater insight into how people spend time in park spaces. As planners, it is important to consider all people regardless of age, sex, race, and religion. Due to this method limiting a large group of people due to the majority age group of Instagram users, it would be recommended to include other social media platforms as well as mixed methods.

By cross-referencing different social media platforms such as Twitter, research can show different information that could be important to plan for parks. Different social media platforms are aimed at different content than Instagram which is aimed towards aesthetically pleasing photographs and captions. Twitter brings a discussion of topics with responses to Tweets that Instagram does not. Twitter would help understand the negative opinions of parks as well as a dialogue that is not found when researching content found on Instagram.

Another recommendation to planners using social media as a method would be to use social media as a tool within their research process while pairing it with other traditional methods. Social media can bring insight to popular opinions or trending data, yet it lacks proof of how the park is truly being used. By performing a full site analysis and/or studying other social media platforms along with an Instagram analysis, it can better help planners get an understanding of park users by more data from a wider population.

**Recommendations for Future Research**

Recommendations for future research using social media as a method would be to use multiple social media platforms. While many people use social media, they do not always use one single platform. After analyzing Instagram posts alone, it shows that Instagram is a place of photographs and captions rather than conversation and commenting. Lastly, there are more aspects that make a park function other than the amenities that a park brings. Social media shows what amenities park users use but not how they use them or how many different areas of the park they use. Using a mixed method approach a researcher could better understand a user's whole visit rather than one specific amenity (photograph) they liked and what they choose to say about that one area.

**Conclusion**

In conclusion to this project, there are aspects to social media that can help planners understand parks yet there are more limitations than there are benefits to the method. Social media can help planners understand how a certain demographic of park users and Instagram users, use and post about Klyde Warren Park. This is limited to visitors of a certain age that use social media regularly to post about their experiences. While there is a limited demographic found in social media, mixed with other research methods can further help planners understand park use. This research also helps to better plan and justify parks and open green spaces in dense urban environments that would otherwise be developed for more profitable projects. Social media as a method can help planners understand what attracts the limited demographic into the park by which events, landmarks, and what they say about the area but should not be a method used solely by itself due to its limitations.

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