

COVID Compliance along select urban multiple use park trails

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Introduction

COVID-19, a highly infectious disease caused by the coronavirus, was first seen in the United States on January 21st 2020. Through the course of the COVID-19 pandemic, regions in the United States have been impacted to different degrees. Starting in spring 2020, there was a spike in COVID cases that were largely concentrated on the east coast. States like New York and New Jersey, which had the greatest number of deaths per day for the first 4 months of the pandemic, began to take cautionary measures such as implementing mask mandates and stay at home orders (PEW Research 2020). During this time, on April 3, 2020, the Center for Disease Control and Prevention recommended mask wearing nationally. Due to this and other measures, the East coast saw a decrease in the number of COVID cases.

However, while part of the US had lower numbers, beginning the summer of 2020, another region of the country - the South - saw a tremendous spike in cases. By July 2020, Texas saw the greatest average number of deaths per day (PEW Research 2020). Spikes in COVID-19 across the nation are related to mask usage and the enforcement of cautionary policies (CDC), a power of the state government. During the pandemic, regardless of location, people sought physical activity and escape from their daily lives on recreational trails. Given this, the purpose of this project was to describe and compare the percent of people wearing masks and the percent of people compliant with the physical distancing recommendations set by the CDC within selected parks in Illinois, Minnesota, Florida and Texas. These states were selected both due to their geographical proximity and differences in approaches to COVID. Illinois and Minnesota represent the midwestern region of the United States, while Texas and Florida represent the southern region.

Hypothesis

I hypothesize that parks in Minnesota and Illinois will yield/reveal a greater percentage of people compliant with the physical distancing and mask wearing recommendations than those in Texas and Florida.

Methods

Sites

Trail visitor observations occurred on a total of nine multiple-use trails, eight paved and one unpaved, from four different states, Florida, Illinois, Minnesota, and Texas. Within these, a total of 9084 encounters/events and 6399 groups were observed through predetermined zones between April 3, 2020 and June 30, 2020.

In Minnesota, three sites were selected: Wedgewood Park, Lake of the Isles Park Trail and Sather Trail. The Wedgewood Park trail is located in a residential area in the Mahtomedi community (population 7,676; US Census Quick Facts 2019), Wedgewood Park is 11.25 acres, and the 8-foot paved trail is less than a mile, looping around the fields and serving also a connector role to neighborhoods. Within the park there

was intermittent COVID signage. The Lake of the Isles Trail is a 8.5 foot wide, paved trail managed by the Minneapolis Park & Recreation Board. The City of Minneapolis' population was 429,606 as of 2019 (U.S. Census Quick Facts, 2019). This trail had COVID-related signage near the roads surrounding the trail. The Sather Trail is a 10-foot paved trail in White Bear Lake, Minnesota. The trail is 1.5 miles long. The City of White Bear Lake's population was estimated at 25,875 as of 2019 (U.S. Census Quick Facts, 2019). COVID signage appeared at this site on April 29, 2020. Minnesota's first confirmed COVID-19 case occurred on March 6, 2020. There were no mask wearing requirements during the study period.

In Illinois, one site was selected: Hessel Park Trail. The paved path is 8-feet wide and is one mile in length located around the perimeter of Hessel Park. The 22.2 acres park's amenities include a large playground, splash pad, picnic pavilions, tennis courts and volleyball courts. Hessel Park is part of the Champaign Park District, which serves a community of 88,909 (US Census Quick Facts 2019). COVID related signage was reported on the trail. The first case of COVID-19 in Illinois occurred in December 2019, and was the second known case in the US. As of May 1, 2020, the governor of Illinois mandated mask usage indoors in public places and recommended it outdoors in public.

In Florida, three sites were selected: Depot Park, the Gainesville-Hawthorne Trail and Loblolly Woods Nature Park. All trails are located in Gainesville, FL and are within several miles of each other. Depot Park is a 32-acre park in downtown Gainesville, which has a population of 133,997 (US Census Quick Facts 2019), with a little more than one mile of paved trails which are 10-feet wide. There were few signs recognizing COVID-19 which signaled closures of parts of the park. The Gainesville-Hawthorne State Trail is located southeast of Depot Park on the outskirts of Gainesville, and is also 10 feet wide. The section is managed by the City of Gainesville but continues to a 17-mile stretch of paved trail to the town of Hawthorne, Florida. The Loblolly trail is 2.7 miles long, 6-feet wide, unpaved trail and is located in a park which spans 159 acres.. Gainesville-Hawthorne and Loblolly did not have any signage present. The first case of COVID was reported March 1, 2020 in Florida. There was no statewide mask mandate, although several counties throughout the state attempted to enforce their own mandates.

In Texas, two sites were selected: the Waco River Trail and the Cotton Belt Trail. Both trails are located in Waco and managed by the City of Waco Parks and Recreation Department. The Waco River Trail and the Cotton Belt Trail are about 11 miles apart on opposite ends of Waco, which has a population of 139,236 (US Census Quick Facts 2019). The 12-foot-wide paved Waco River Trail is about five miles long, and the 15-foot-wide paved Cotton Belt Trail runs 2.5 miles long. Neither site had COVID-19 related signage present. The first case in Texas occurred on March 6, 2020. There were no mask wearing requirements during the study period. As of June 20, 2020, Waco required masks in indoor spaces where it was not feasible to keep a distance of 6 feet.

Data Collection

Data were collected between March 31, 2020 and June 30, 2020 by trained field observers in fixed observation zones on the selected trails. Observers recorded information regarding the interactions of visitor groups (referred to as observed groups) within the observation zones. One group was visually followed as they passed through the zone. After the group exited the zone, the next group entering the zone, from either side of the zone, was followed.

Observers recorded the group activity, group size, whether or not the members of the group moved to avoid another group, and if they went off the trail to do so. Every time the observed group encountered another group, the observers recorded the group activity, group size, whether or not the members of the group moved to avoid another group, if they went off the trail to avoid the other group, as well as an estimation of the distance between the two groups. If the members of either party were wearing a mask, a

note was made. Important to consider that the initiation of mask guidelines varied greatly both across and sometimes within each state.

Analysis

Data analysis focused on data when mask wearing was recommended nationally by the CDC (after April 3, 2020). Descriptive analysis was used to understand physical distancing compliance and mask wearing, while comparative analysis explored significant differences across sites in Florida, Illinois, Minnesota, and Texas. Both compliance categories were coded as 0 or 1. 0 indicates lack of compliance, while 1 indicates compliance. Descriptive analysis revealed the encounters compliant distribution was slightly skewed (skewness statistic .046), and the mask wearing distribution was significantly skewed (skewness statistic 4.281). For sites with 20 or more cases of mask wearing, comparative analysis tests were performed using chi-squared and Cramer's V association tests.

Results

Across the nine trails, a total of 6399 groups were observed with at least one interaction (event) with another group, and the number of events observed totalled 9084. Given the fluidity of time and anticipated leisure-time shifts due to COVID 19, as well as the general activity at each site, there was a range of observations seen. Zones in Sather Trail and the Lake of the Isles witnessed as many as 2000 groups while others, such as Wedgewood, as little as 66 (Table 1).

Table 1 Number of events and groups observed through predetermined zones at each park

Site	# of groups observed through zone with one or more event	# of events observed through zone
FL Depot Park	226	526
FL Gainesville-Hawthorne Trail	264	439
FL LOB	132	462
IL Hessel Park	190	371
MN BV	2044	2509
MN Wedgewood Park	66	347
MN Lake of the Isles	2829	2918
TX Cotton Belt	118	358
TX Waco River Trail	530	1154
Total	6399	9084

Across these sites, the percent of people who were compliant with physical distancing guidelines and the percent of people wearing a mask differed. The percent of people wearing a mask at each site ranged from 33% at Hessel Park Trail (HAS) in Illinois to less than 1% at Gainesville-Hawthorne State Trail (HRT) in Florida and Cotton Belt Trail (CB) in Texas. The percent of encounters that were compliant with the physical distancing recommendations varied from 12% at Depot Park (DP) in Florida to 70% in Hessel Park Trail in Illinois (Figure 1).

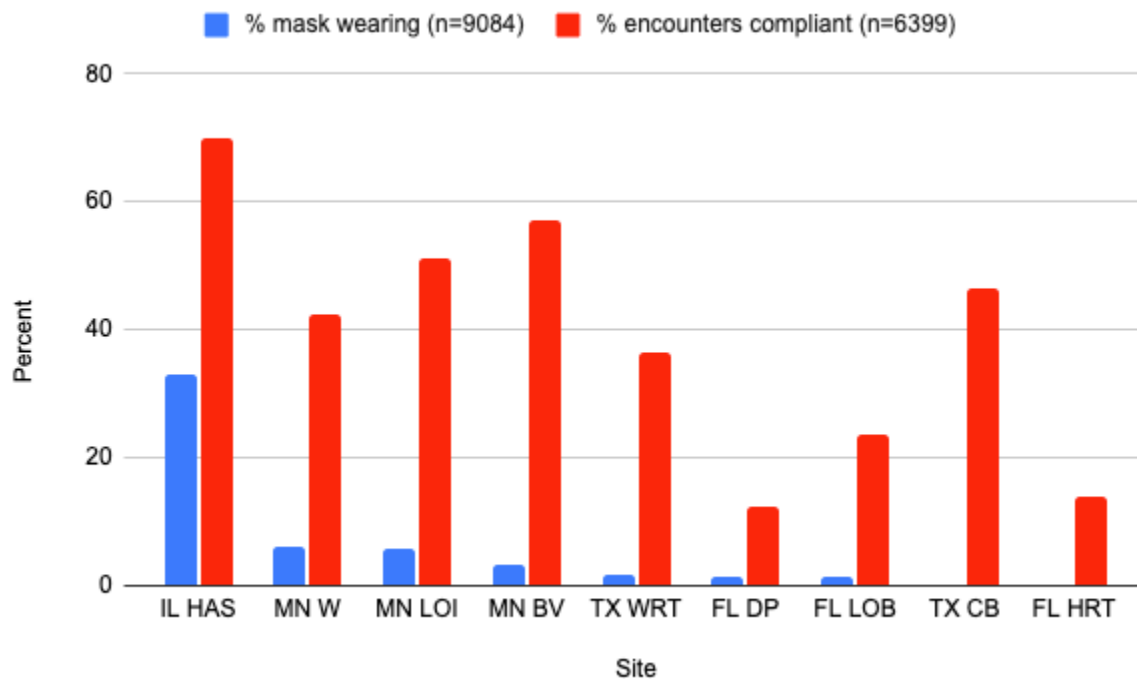


Figure 1 Mask-wearing compliance compared to physically compliant encounters at each site

Due to the low mask-wearing cases in Florida and Cotton Belt Trail in Texas, those sites were removed from the comparative analysis. Given that fewer than 1% were masked in Florida, they were significantly lower than other sites and states. Of the remaining sites, compliance rates were significantly different between two sites in MN, W and LOI, and other sites (Table 2) but the association was .281 which is significant, but low.

Table 2 Mask wearing compliance among observed groups at select sites

Site	IL HAS	MN BV	MN W	MN LOI	TX WRT	Chi Squared	Cramer V
% mask wearing (n=7299)	32.9 _b	3.30 _b	6.1 _a	5.7 _a	1.73 _b	575.85***	.281***

# of encounters per site	371	2509	347	2918	1154	--	--
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Each subscript letter denotes a subset of categories whose column proportions do not differ significantly from each other at the .001 level

Similar to mask wearing compliance, physical distancing compliance was recorded at each site. Of the five sites kept for analysis, physical distancing ranged from 70% in Illinois to 36.6% in Texas. Distancing compliance was significantly different between Wedgewood and Lake of Isles and the other sites (Table 3). The association between the sites was .133, which was significant but very low.

Table 3 Physical distancing compliance among trail sites observed, 2020

Site	IL HAS	MN BV	MN W	MN LOI	TX WRT	Chi Squared	Cramer V
% encounters compliant (n=5659)	70.0 _b	57.2 _b	42.4 _a	51.3 _a	36.6 _b	99.43***	.133***
# of events per site	190	2044	66	2829	530	--	--

Each subscript letter denotes a subset of categories whose column proportions do not differ significantly from each other at the .001 level

Discussion/Conclusion

By comparing levels of compliance across several select U.S. communities in Florida, Texas, Illinois and Minnesota, the dataset revealed physical distancing compliance and mask wearing compliance varied both across sites and states. Most notably, all Florida sites had significantly lower compliance rates than any other state. These Florida sites, along with one Texas site, were taken out of compliance calculations because of low mask wearing rates. Additionally, on average, Minnesota and Illinois had higher compliance rates than Texas. This means that parks in Minnesota and Illinois revealed a greater percentage of people compliant with the physical distancing and mask wearing recommendations than those in Texas and Florida.

Reflection

DFRACS offered me a great opportunity to apply the material I was learning in school to a real project and get involved with data analysis. I was able to get a pretty holistic view of what happens in a research project, from data collection to running analysis on the data to make conclusions, as well as attending team meetings. I learned valuable skills that I know I will be able to use in the future, such as navigating SPSS. This was a fantastic research experience.

References

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