



JOURNAL BRIEF: Using Twitter to Measure Wellbeing in Parks and Urban Green Space

Sustainable Healthy Cities Journal Brief - 2019, No. 14 - Twitter Sentiment Analysis in Parks

This brief is adapted from the following peer-reviewed journal article: Plunz, R., Zhou, Y., Carrasco Vintimilla, M., McKeown, K., Yu, T., Uguccioni, L., & Sutto, M.P. (2019). Twitter sentiment in New York City parks as measure of well-being. *Landscape and Urban Planning*, 189(2019), 235-246.

Study Intent and Research Question

This study offers an exploration of how social media, and in particular twitter, can be used to evaluate social behavior in public spaces. It tries to understand if people express more positive sentiment when they are in parks as compared to when they are in other places. Specifically, among Twitter users in New York City, if people who visit parks express more positive sentiment on Twitter compared to the sentiment they express on Twitter in other places. This research uses social media to develop a methodology for understanding the varying levels of feelings in urban green space, focusing on New York City, studying nearly 3.3 million geo-located tweets between June 2016 and December 2017.

Key Background Information

Urban green space is an important element in research on indicators connecting the well-being of urban residents to factors related to the environment, health and livability (Van Kamp et al., 2003; Taylor & Hochuli, 2016).

Many studies focus on the benefits of green space for psychological well-being, noting positive green space impacts on stress levels, self-esteem, and sense of community, among other factors.

Aside from offering individual personal mental health benefits, urban parks as public space also provide opportunities for social interaction among members of a community, improving a sense of belonging for individuals and enhancing neighborhood ties (Thompson, 2002; Peters, Elands, and Buijs, 2010).

Psychological studies of local park users have produced conflicting results, and rarely compare the sentiment of users in parks to their sentiments in other non-green urban spaces. Doing so is helpful in understanding the immediate positive effects that parks have on visitors' moods.

Social media (with location sharing services) makes it possible to compare, on a large scale, the negative and positive sentiments expressed by park goers both inside and outside of parks.

Key Findings

In the case of New York City, sentiment expressed in tweets varies between areas inside and outside of parks.

In Manhattan, tweets sent from within parks express less positive sentiment as compared to tweets sent outside of parks.

Park visitors in the other boroughs of New York City generate more positive tweets while in parks as compared to outside of parks.

On average, for all of New York City, the sentiment expressed in parks is less positive than outside of parks. This reflects the strong negative sentiment expressed in Manhattan. For the other boroughs, in-park sentiment is higher than out of park sentiment.

One explanation for the difference in patterns of in-park/out-of-park sentiment across Manhattan and other boroughs is the substantial variation between a high day-time working-population in Manhattan relative to its lower night-time population of actual residents (a difference or more than 2 million). This large variation between night-time and daytime populations is not seen in the other boroughs.

Policy and Practice Implications

Further research is needed to understand the different relationships that commuters will have with urban green space vs, the experience that residents have with nearby green space. Any such differences may have policy implications around how urban green space can be targeted to

positively affect different resident and non-resident populations, both of which may be of interest.

Twitter users only represent a fraction of the actual park visitor population, and the use of social media data should not replace traditional survey methods for understanding wellbeing. Instead, it should be understood as a powerful supplemental tool.

More generally, when integrated with traditional planning tools, geotagged Twitter data can be used to identify dysfunction in spatial appropriation and organization of urban parkland to maximum public benefit.

The real-time nature of Twitter can prompt researchers to adopt spatial analysis tools for geo-located Twitter data vol-

untarily shared by users, since it reveals how people react to their immediate surroundings as well as their mobility patterns.

Twitter data is 24/7 and in continuum, providing a conscious stream and a collective picture of social responses to particular situations and contexts. It can provide a planning tool for assisting in overall design decisions, as opposed to traditional engagement tools focused on specific issues at specific times.

Twitter data is fundamentally cognitive in nature and therefore represents a significant advance in our comprehension of how we interact with our environment.



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Further Reading and References

- Peters, K., Elands, B., & Buijs, A. (2010). Social interactions in urban parks: Stimulating social cohesion? *Urban Forestry & Urban Greening*, 9(2), 93-100. [OPEN ACCESS] https://www.researchgate.net/publication/40851631_Social_interactions_in_urban_parks_Stimulating_social_cohesion
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About the Sustainable Healthy Cities Network

The Sustainable Healthy Cities Network is a U.S. National Science Foundation supported sustainability research network focused on the scientific advancement of integrated urban infrastructure solutions for environmentally sustainable, healthy, and livable cities. We are a network of scientists, industry leaders, and policy partners, committed to building better cities through innovations in infrastructure design, technology and policy. Our network connects across nine research universities, major metropolitan cities in the U.S. and India, as well as infrastructure firms and policy groups to bridge research and education with concrete action in cities.