

Who Stole Christmas? A Sentiment Analysis of Social Media Posts Related to a Tree-Cutting Ban in the Southwest

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Introduction/Need for Research

In September 2019, a federal judge in Arizona ordered the halt of tree-cutting in forests throughout New Mexico and parts of Arizona in response to a 2013 lawsuit filed by the WildEarth Guardians (Bryan, 2019). The lawsuit was filed in connection with the Endangered Species Act claiming that, “the U.S. Fish and Wildlife Service and U.S. Forest Service failed for 23 years to ensure spotted owl recovery” (WildEarth Guardians, n.d.; Bryan, 2019). The court order prompted the U.S. Forest Service to suspend the sale of fuel wood permits and other timber activities in five national forests in New Mexico, including the Carson National Forest where the U.S. Capitol Christmas tree was set to be harvested (Last, 2019). On October 23, the federal judge further narrowed the ban to allow for Christmas tree permits and prescribed burns, and the U.S. Capitol Christmas tree was harvested Nov. 6 (Bryan, 2019; Choose Outdoors, 2019).

Citizen group litigation, which is covered under Section 11 of the Endangered Species Act, can have a substantial impact on environment lawmaking but can cause agencies responsible for carrying out the laws to become swamped (Wilde, 2014; Brauer, 2011). In this study, we analyzed the sentiments of social media posts on Facebook and Twitter related to the tree-cutting ban issued in Arizona and New Mexico using the social listening tool Meltwater and tracked how those sentiments changed as important, relevant events took place. This relates to research priority 1 of the AAAE National Research Agenda (Roberts et al., 2016).

Conceptual Framework

The conceptual framework used for this study was sentiment analysis. Sentiment analysis, also known as opinion mining, is defined by Liu (2015) as the, “field of study that analyzes people’s opinions, sentiments, evaluations, appraisals, attitudes, and emotions towards entities such as products, services, organizations, individuals, issues, events, topics, and their attributes” (p. 1). Sentiment analysis typically tries to determine the sentiment of the user, whether positive, negative or otherwise, using text analysis (Yi et al., 2003). Opinions are important for the decision-making process and people are looking toward social media to seek out the opinions of others (Liu, 2015). People tend to be more honest about their opinions online, making data obtained from social media more reflective of people’s honest opinions than in-person interactions (Varma et al., 2017).

Methodology

This was a descriptive, quantitative analysis of Facebook and Twitter social media posts using the social media monitoring tool Meltwater. Data were collected from Sept. 1, 2019 to Nov. 5, 2019. The keywords entered into Meltwater to collect data, chosen using Boolean logic, were “New Mexico,” “firewood ban,” “U.S. Capitol,” “U.S. Forest Service,” “U.S. Fish and Wildlife Service,” “WildEarth Guardians,” and “Mexican spotted owl.” The posts retrieved were analyzed using the sentiment widget in Meltwater which looks at sentiment scores of a topic over time. Meltwater scores sentiments from -100 to 100 with 0 representing a neutral sentiment, a negative score representing a negative sentiment and a positive score representing a positive sentiment. Descriptive statistics were used to analyze the data.

Results/Findings

The Meltwater study yielded 530 publicly-available Facebook and Twitter posts with 23.0% being positive, 6.8% of posts being negative, and 70.2% being neutral. As shown in Figure 1, sentiment did vary during the time frame examined. The lowest sentiment score was captured during the week of October 7 while the highest sentiment score was captured during the last two days of the study. The largest difference in sentiment scores occurred between the week of October 7 and October 14 with a change of 120 points.

Figure 1.



Note. The sentiment score of Facebook and Twitter posts ranging from -100 to 100 shown over the period of weeks from Sept. 1, 2019 to Nov. 5, 2019.

Conclusions/Implications/Recommendations

The majority of Facebook and Twitter posts showed a neutral sentiment toward the events related to the tree-cutting ban in New Mexico. Sentiment analysis often assigns a generalized sentiment value to a text, which may result in the loss of details about complex sentiments expressed (Shivarkar et al., 2018).

Sentiment did vary in relation to the relevant events with sentiment scores becoming more negative during the time the ban on firewood cutting permits was enacted and most noticeably declining shortly before the ban on Christmas tree cutting was lifted. One local news outlet reported, “Wood is the primary heating source for many residents in rural areas who cannot afford propane and don’t have access to natural gas lines” (Associated Press, 2019). This finding may suggest this federal court ruling was personally relevant to a wide range of people and may have encouraged strong responses online. After the ban on Christmas tree permits and prescribed burns was lifted on Oct. 23, sentiment became increasingly positive.

Social media sentiment analysis is one way we can measure public attitudes, which can be a good indicator of their intention to perform a behavior (Liu, 2015; Ajzen, 1985). Further research is needed to determine exactly what factors may have caused a change in social media users’ sentiments. It would also be beneficial to study whether social media users’ changes in sentiments reflected actions taken such as writing to local newspapers, contacting legislative representatives, or creating petitions. Future conservation efforts should take into account the relevance of the issue to the public and how actions may have unintended or intended influences on their sentiments and subsequent behaviors.

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