Reducing Covid-19 Infections and Holiday Travel through Social Media Campaigns in the United States

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Sector(s): Health

Location: Arizona, Arkansas, Florida, Illinois, Indiana, Maine, Maryland, Minnesota, North Carolina, Oklahoma, Oregon, Rhode Island, and Virginia, United States

Sample: 6,998 zip codes in 820 counties

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During the Covid-19 pandemic, many health professionals have used social media to promote preventive health behaviors. While previous research shows that messaging by health care professionals can affect health-preserving behaviors in small samples, this evaluation is the first to test the effectiveness of such messaging at scale using social media. By running a Facebook public health campaign, researchers found that social media messaging from doctors and nurses reduced holiday travel and subsequent Covid-19 infection rates. This suggests that social media campaigns may be an impactful and cost-effective way to slow the spread of Covid-19 and enact behavior change.

Policy issue

Throughout the Covid-19 pandemic, there has been a critical need to rapidly and effectively disseminate information at large-scale to promote preventive health behaviors and curb further spread of the virus. While health professionals have been spreading public health messages on social media, there has not yet been concrete evidence to demonstrate that this communications strategy can influence behavior at a large scale. To control the ongoing Covid-19 crisis, as well as future pandemics, it is critical to understand the effectiveness of physician- and nurse-led social media messaging at scale. Can widespread public health messaging on social media reduce Covid-19 infections and affect travel behaviors?

Context of the evaluation

In November 2020, when Covid-19 cases were rapidly increasing in the United States, the Centers for Disease Control and Prevention (CDC) issued public guidance encouraging people to limit their travel for the upcoming holidays (Thanksgiving and Christmas.) Since the virus can be more easily transmitted by travelers or families celebrating indoors, it is especially critical to take precautionary health measures and limit travel during the holidays.

Facebook reaches almost 70 percent of American adults, with 36 percent getting their news predominantly from the platform, so it is a suitable site for a large-scale public health campaign. To disseminate CDC guidance broadly and identify public health strategies to effectively reach a large audience and impact human behavior, researchers used Facebook to launch a Covid-19 prevention campaign.

Since Facebook collects publicly available data on user locations from users who opt into location history sharing, researchers were able to obtain data on users' travel from November to December 2020. As thirteen US states publish weekly Covid-19 statistics, researchers also obtained Covid-19 caseload data from 6,998 zip codes, out of over 40,000 in the country, spanning 820 counties.

On average, 46 percent of zip codes were classified as urban, with 36 percent of counties leaning Democrat and 62 percent leaning Republican, which mirrored the general composition of the United States at the time.

Details of the intervention

Researchers conducted an evaluation of a large-scale Facebook advertising campaign to test whether short video messages recorded by nurses and doctors could affect preventive health behaviors and reduce Covid-19 infections. Overall, more than 35 million Facebook users received over 111 million total ads in their feeds containing 20-second video messages. The messages encouraged people to stay at home rather than travel over Thanksgiving and Christmas. In the time before Thanksgiving, researchers randomly assigned 820 counties from thirteen states to one of two campaign intensity levels. Within each county, zip codes were randomly assigned to treatment or control. Prior to Christmas, researchers excluded a group of fully rural counties from the study that ranked in the top tercile of votes for Donald Trump in the 2020 election, to account for growing polarization between the election and the inauguration. The remaining counties were re-randomized to one of two campaign intensity levels for the Christmas campaign:

1. *High-intensity group:* At Thanksgiving, 410 randomly assigned counties were assigned to the high intensity group. Among those 410 counties, 2,608 zip codes (nearly 75 percent) were randomly assigned to receive the ad campaign between November 14-29, and the other 871 zip codes were assigned to a comparison group. For the Christmas campaign, researchers randomly assigned 386 counties to the high-intensity group, within which 2,485 zip codes received the messages from December 17-31 and the other 829 to a comparison group.
2. *Low-intensity group:* At Thanksgiving, in 410 randomly assigned counties, 819 zip codes (or 25 percent) were randomly assigned to receive the low-intensity "stay at home" messages between November 14-29. The other 2,475 zip-codes were assigned to a comparison group that received no messaging. For the Christmas campaign, after the exclusion of fully rural counties, researchers randomly assigned 381 counties to the low-intensity group. Within those counties, 871 zip codes were randomly assigned to receive the messages in the lead-up to Christmas, and the other 2,558 to a comparison group.

In total, more than 11 and 23 million Facebook users were reached by the Thanksgiving and Christmas campaigns, respectively. On average, users in the study received two to three videos in November and three to four videos in December. Following the campaigns, publicly-available county-level location data of Facebook users and zip-code-level Covid-19 statistics from state databases were used to track distance traveled over the holidays and Covid-19 infections in the two-week period starting five days after the holiday (the average incubation time for Covid-19 infections).



Results and policy lessons

Researchers found that the social media campaigns led to a substantial decrease in holiday travel and subsequent Covid-19 infections. High intensity counties saw a reduction in average distance traveled from home compared to low intensity counties in the three days leading up to the holidays. In zip-codes that received the intervention, cases of Covid-19 decreased compared to zip codes that did not receive the Facebook messages. Throughout the campaigns, over 12 percent of targeted users watched at least three seconds of a video, which represented high engagement compared to Facebook industry averages (of 1 to 2 percent for ads; 6 percent for video posts).

Holiday travel: The social media campaign led to a reduction in distance traveled over the holidays, especially in counties that received higher coverage of Facebook ads. In these high-intensity counties, distance traveled in the three days before the holidays decreased by 4.4 percentage points compared to February 2020, which was 1 percentage point larger than the travel reduction in low-intensity counties. While the campaign did not see any effects on the holidays (Thanksgiving or Christmas) the decrease of average distance traveled in the three days prior suggests that the messages had effects on holiday-related travel.

Covid-19 cases: The social media campaign led to a 3.5 percent reduction in Covid-19 cases following the holidays in intervention zip-codes compared to the comparison zip-codes after the average incubation period for Covid-19. There was a slightly larger reduction in Covid-19 cases in high-intensity counties compared to low-intensity counties.

Political affiliation and geography: Researchers did not observe differences in impacts between Republican and Democratic counties, or urban versus rural counties, suggesting that individuals were responsive to physician-delivered messages regardless of geography or political affiliation. With the broad reach and instant dissemination of platforms such as Facebook, these results suggest that large-scale social media campaigns may be an effective tool to distribute accurate public health messages to a vast audience.

Breza, Emily, Fatima Cody Stanford, Marcella Alsan, Burak Alsan, Abhijit Banerjee, Arun G. Chandrasekhar, Sarah Eichmeyer, Traci Glushko, Paul Goldsmith-Pinkham, Kelly Holland , Emily Hoppe, Mohit Karnani, Sarah Liegl, Tristan Loisel, Lucy Ogbu-Nwobodo, Benjamin A. Olken, Carlos Torres, Pierre-Luc Vautrey, Erica T. Warner , Susan Wootton, and Esther Duflo. "Effects of a Large-Scale

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