Public Awareness of Health Issues After The Surgeon General Tweets

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Introduction

As of 2019, approximately 80% of Americans use social media, and 20% reported that social media was used as their primary news source. Not all health information disseminated on social media is reliable.

The U.S. Surgeon General, Dr. Gerome Adams, is tasked with providing information to the US public on improving health and preventing disease. For the Surgeon General's public health agenda to be successfully received by the U.S. public, social media must be effectively used.

One way to assess public awareness is through Google Trends. Here, we use Google Trends to evaluate whether the Surgeon General's twitter presence has influenced Google searches relating to public health concerns.

Methods

Using Google Trends and Twitter, we selected 13 tweets from the Surgeon General's account and found the most popular searches related to the topic of the tweets using MOZ (a search optimization program). We extracted data and compared it to an expected forecast found using an autoregressive integrated moving algorithm (ARIMA).

Results

Of the 13 tweets, 7 tweets contained at least 1 keyword with a positive greater than expected mean search interest for the week after the tweet was sent; however, only 2 were statistically significant. After removing an outlier the mean number of replies was 4.8 (95% CI, 1.2 - 8.5), the mean number of retweets was 15.6 (95 CI, 9.2 - 21.9), and the mean number of likes was 27.4 (95% CI, 17.9 - 37.0).

Conclusion

Findings from this study indicate that the Surgeon General's Twitter presence had a negligible influence on Google searches related to public health topics, having 2 tweets that produced a signficant rise in searches. Possibilities to increase the public's awareness regarding certain health topics exist. Specifically, allowing celebrities to market public health campaigns designed by the U.S. Surgeon General via social media may positively affect public health as multiple studies have shown that celebrities can cause an increase in public awareness about a health topic.

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Table 1: Search Interest in Tweets from @Surgeon_General

Search Term	Tweet	Stat	Term 1 — Daily % Greater Than Expected	Term 2 — Daily % Greater Than Expected
Term 1: Breast Feeding / Term 2: Breastfeeding	RT: Happy National Breastfeeding Month! Follow us to get great #BreastfeedingTips4Mom all month long: https://go.usa.gov/xUGtv #NBM19		-17.9	14.3
			22.1	13.4
			-3.9	17.4
			22.1	0.1
			37.1	3.1
		Replies: N/A	-6.9	2.1
		Retweets: 21	-21.9	2.1
		Likes: 29	Mean 4.39% (95% CI, -16.6 - 25.3)	Mean 7.50% (95% CI, 0.8 - 14.2)
Term 1: Eye Care for Kids / Term 2: Eye Problems	#DYK 1 in 5 preschool children have vision problems, which if left untreated can lead to a higher risk of learning difficulties? August is Children's Eye Health and Safety Month. Glad to hear that organizations like @IAPB1 are working to improve eye health for all ages!		-19.3	-1.1
			33.8	-20.4
			-19.3	8.6
			26	21.6
			-19.3	-22.4
		Replies: 2	26	-1.4
		Retweets: 8	-19.3	-17.4
		Likes: 16	Mean 1.23% (95% CI, -22.6 - 25.0)	Mean -4.64% (95% CI, -19.8 - 10.5)
Term 1: Hepatitis / Term 2: Hepatitis A	Today is #WorldHepatitisDay – a great reminder that we all have a role to play against viral hepatitis. Learn more & how you can get involved here:		-14.2	-4.4
			4.3	-3.8
			9.3	6.5
			23.3	19.5
			19.3	13.5
		Replies: 2	45.3	73.5
		Retweets: 24	24.3	41.9
		Likes: 15	Mean 15.9% (95% CI, -1.3 - 33.2)	Mean 20.96% (95% CI, -5.0 - 46.9)
Term 1: What is HIV? / Term 2: How do you get HIV?	RT: @Surgeon_General and I have been meeting with public health leaders & community stakeholders across the US about a historic opportunity to #EndHIVEpidemic. Read @IndyRecorder for more about how @HHSGov and @CDCgov plan to accomplish this ambitious goal:		-20.6	-10.6
			-33.3	28.4
			-16.6	-10.6
			30.4	-3.6
			-17.6	40.4
		Replies: 2	-29.6	27.4
		Retweets: 14	10.4	-10.6
		Likes: 31	Mean -10.99% (95% CI, -32.3 - 10.3)	Mean -8.69% (95% CI, -12.0 - 29.4)
Term 1: Kidney Disease Diet / Term 2: Kidney Disease Symptoms	An alarming 90% of adults w/ #kidney disease and nearly half in advanced stages of Chronic Kidney Disease are unaware they have the condition. See if you or a loved one should get tested at		36.1	-6.1
			-4.9	-8.1
			-10.9	17.9
			42.9	-21.1
			-9.9	24.9
		Replies: 7	6.1	-4.1
		Retweets: 12	6.1	56.9
		Likes: 15	Mean 9.36% (95% CI, -10.8 - 29.5)	Mean 8.61% (95% CI, -15.9 - 33.1)
Term 1: Lung Cancer / Term 2: Lung Cancer Symptoms	#DYK lung cancer kills more people in the U.S. every year than any other type of cancer? This #WorldLungCancerDay take time to learn more about lung cancer and its relationship with smoking: http://go.usa.gov/xmQp8 via @FDATobacco		20.3	35.5
			11.3	1.4
			-18.7	-25.6
			0.3	12.4
			-9.7	-17.6
		Replies: 9	8.3	-19.4
		Retweets: 12	0.3	9.4
		Likes: 19	Mean 1.73% (95% CI, -10.4 - 13.9)	Mean -0.56% (95% CI, -20.7 - 19.6)
Term 1: Maternal Mortality / Term 2: Maternal Mortality Rate	Strengthening #MaternalHealth is important to the health of our Nation. Earlier today, I met with leaders about maternal health advocacy. @HHS_ASH also announced #HRSA investment of ~$9M to improve access to maternal #obstetrics care in #rural communities.		4.1	0.6
			4.1	0.6
			25.2	30.6
			11.2	17.6
			0.2	-4.4
		Replies: 3	18.2	26.6
		Retweets: 15	50.2	76.6
		Likes: 51	Mean 16.17% (95% CI, 0.1 - 32.3)	Mean 21.17% (95% CI, -4.7 - 47.1)
Term 1: Organ Donor / Term 2: Organ Transplant	#DYK that minorities make up more than 50% of those on the transplant waiting list? Find out more about organ donation and how you can sign up to become a donor at http://organdonor.gov/register.html #NationalMinorityDonorAwarenessWeek #DonateLife #OrganDonor		14.2	-14.7
			-7.7	-5.1
			-14.5	3.9
			-33.3	-24.1
			-6.4	-24.1
		Replies: 0	11.9	-34.1
		Retweets: 12	-20.5	13.9
		Likes: 15	Mean -8.04% (95% CI, -23.7 - 7.7)	Mean -12.04% (95% CI, -27.9 - 3.8)
Term 1: Sickle Cell Trait / Term 2: Sickle Cell Symptoms	September is #SickleCellAwarenessMonth! #DYK sickle cell disease affects approximately 100,000 people in the U.S.? Get the facts and learn more about what is being done to advance #sicklecell education & research: http://minorityhealth.hhs.gov/sicklecell/		-12.1	-32.6
			29.6	-32.6
			8.6	45.4
			29.6	-32.6
			-25.4	-32.6
		Replies: 6	-26.4	-32.6
		Retweets: 43	10.4	-32.6
		Likes: 60	Mean -1.93% (95% CI, -24.6 - 20.7)	Mean -21.46% (95% CI, -48.7 - 5.8)
Term 1: Substance Abuse Disorder / Term 2: Substance Abuse Treatment	1/5 This week's #SundaySpotlight on #publichealth science highlights the important role of primary care settings in combating #opioidepidemic—read commentary in #PublicHealthReports *Continued as thread		11.8	17.9
			63.8	22.1
			12.8	-3.9
			-2.2	22.1
			-35.2	37.1
		Replies: 3	-2.2	-6.9
		Retweets: 9	41.8	-21.9
		Likes: 20	Mean -21.46% (95% CI, -48.7 - 5.8)	Mean 12.94% (95% CI, 16.8 - 42.7)
Term 1: Suicide Hotline / Term 2: Suicide Prevention	Today is National Physician Suicide Awareness Day, a day for us to break down the #stigma around mental health and increase awareness. If you or someone you know is struggling, you are not alone. Please call 1-800-273-TALK for help. #SuicidePrevention		13.6	-3.2
			6.6	-4.3
			3.6	-7.3
			-2.4	-5.3
			-17.4	-10.3
		Replies: 19	-8.4	-8.3
		Retweets: 390	-0.4	-6.3
		Likes: 570	Mean -0.69% (95% CI, -10.1 - 8.7)	Mean -6.43% (95% CI, -8.7 - -4.2)
Term 1: Tribal Health / Term 2: Warm Springs	1/3 Now Available: @CDCgov's Health and Wellness program focuses on key partnerships to prevent chronic disease and promote health for American Indians and Alaska Natives. Read all about it: https://cdc.gov/pcd/collections/Good_Health_And_Wellness_2019.htm		19.9	10.4
			-24.1	-1.6
			-46.1	-7.6
			-20.1	-11.6
			29.9	11.4
		Replies: 1	-2.1	-14
		Retweets: 9	31.9	-1.6
		Likes: 37	Mean -1.53% (95% CI, -29.3 - 26.2)	Mean -2.09% (95% CI, -11.3 - 7.2)
Term 1: HPV Cancer / Term 2: What is HPV	In 10 words or less, I work to end #EndHPVCancers to…Protect future generations from hearing the words: "You have cancer" #EndHPVCancers Quote Tweet - HPV Twitter Challenge: Your reason for improving #HPVvax rates and working to #EndHPVCancers in 10 words or less… #ivax2protect		44.3	-1.1
			-21.3	28.9
			1.8	-12
			-17.3	16.9
			-8.3	-21.1
		Replies: 2	0.8	19.9
		Retweets: 8	45.8	49
		Likes: 21	Mean 6.54% (95% CI, -19.0 - 32.1)	Mean 11.5% (95% CI, -11.1 - 34.1)