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## Social Media Adoption in Health Departments Nationwide: The State of the States

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# Social Media Adoption in Health Departments Nationwide: The State of the States

## Abstract

Web-based social media sites are increasingly being used by the public to find and share health information. Public health organizations, including state health departments (SHDs), have begun adopting social media to disseminate health information to consumers. The purpose of this study was to examine adoption patterns and characteristics associated with social media adoption in SHDs across the U.S. In early 2012, we used web searches to identify which SHDs had adopted Facebook or Twitter and the adoption date. Adoption of social media has grown steadily since 2008, with 28 SHDs using Facebook and 41 using Twitter as of February 2012. We used 2010 profile data from the Association of State and Territorial Health Officials to compare characteristics of adopters and non-adopters. While there were few significant differences, trends showed that adopting SHDs tended to be in more populated states with more urban residents and higher levels of internet access than non-adopters. Adopting health departments tended to have higher per capita health department expenditures, more educated health department leadership, more staff, and younger staff than non-adopters. SHDs adopting Facebook/ Twitter early may be good partners in developing and disseminating social media public health strategies. More evidence is needed regarding current and effective uses of social media for public health practice.

## Keywords

social media, Facebook, Twitter, state health departments, diffusion of innovations

**Abstract**

Web-based social media sites are increasingly being used by the public to find and share health information. Public health organizations, including state health departments (SHDs), have begun adopting social media to disseminate health information to consumers. The purpose of this study was to examine adoption patterns and characteristics associated with social media adoption in SHDs across the U.S. In early 2012, we used web searches to identify which SHDs had adopted Facebook or Twitter and the adoption date. Adoption of social media has grown steadily since 2008, with 28 SHDs using Facebook and 41 using Twitter as of February 2012. We used 2010 profile data from the Association of State and Territorial Health Officials to compare characteristics of adopters and non-adopters. While there were few significant differences, trends showed that adopting SHDs tended to be in more populated states with more urban residents and higher levels of internet access than non-adopters. Adopting health departments tended to have higher per capita health department expenditures, more educated health department leadership, more staff, and younger staff than non-adopters. SHDs adopting Facebook/Twitter early may be good partners in developing and disseminating social media public health strategies. More evidence is needed regarding current and effective uses of social media for public health practice.

## Background

Web-based social media sites (social media), such as *Facebook* and *Twitter*, allow the instantaneous creation and exchange of user-generated content online. Compared to traditional media, social media are lower cost, reach a more targeted audience, and facilitate dialogue between senders and recipients of information.<sup>1</sup> Unlike other forms of direct communication, such as the phone call, social media allow for one-to-many or many-to-many communication.<sup>2</sup> Facebook and Twitter, launched in 2004 and 2006 (respectively), have the potential to engage large audiences; there are more than 845 million Facebook users and 140 million Twitter users worldwide.<sup>3</sup> Every minute, 695,000 Facebook statuses are updated and 98,000 tweets are sent.<sup>4</sup> A recent review of social media usage estimated that it would take, “38 years for radio to disseminate a message to 50 million people, 13 years for television, 4 years for the internet, 3 years for the iPod, and less than 3 months for Facebook.”<sup>5</sup>

Health-related social media activities have grown in recent years. Social media sites are used to share information and support in online communities,<sup>6</sup> with over 1,200 Facebook groups advocating for cures for disease by 2007.<sup>5,7</sup> As of 2011, 65% of adult internet users in the U.S. reported using social networking sites<sup>12</sup> and a large proportion of people reported seeking health information online.<sup>13,14</sup> Among those with internet access, social media use in the U.S. is significantly higher in younger groups, however, it is independent of educational attainment, race/ethnicity, socioeconomic position, and health care access, indicating that social media may be useful for reaching some disadvantaged groups.<sup>1,15,16</sup>

Social media are currently used by healthcare providers and public health organizations to provide health information such as tips on healthy eating to consumers.<sup>2,5</sup> In addition, social media sites are beginning to be used in surveillance efforts to track outbreaks of disease.<sup>8</sup> However, as of 2009, only 17% of public relations practitioners in local public health departments reported using social media to disseminate health information.<sup>17</sup>

Despite being a low-cost tool for reaching the public and conducting surveillance, both activities that fall under 10 essential services provided by health departments, there is little information on health department social media adoption and use. This pilot study examines patterns of social media adoption and the characteristics of states and state health departments associated with adoption of Facebook and Twitter in state health departments (SHDs) in the United States.

## Methods

To examine adoption of social media by SHDs, we used three archival data sources and collected primary data on social media. Characteristics of SHDs were from the 2010 administration of the Association of State and Territorial Health Officials (ASTHO) profile survey. Census data from 2010 was used to examine the proportion of state residents living in rural areas, and 2010 Pew Internet & American Life survey results were used to determine the proportion of state residents with internet access. In February 2012, Web searches were used to identify Facebook and Twitter accounts for health departments in all states and Washington D.C. (n=51). We collected the date each account was opened, how many likes (Facebook) or followers

(Twitter) the account had, and the number of tweets sent for Twitter accounts. Number of posts is not available for Facebook.

Rogers' Diffusion of Innovation (DOI) theory may be useful in understanding adoption patterns. DOI describes adopters of new technology as innovators (first 2.5%), early adopters (next 13.5%), early majority (next 34%), late majority (next 34%), and laggards (last 16%),<sup>10</sup> with each group having specific characteristics. For example, early adopters are often opinion leaders who are followed by others and so may make good partners for dissemination. Given the small sample size, we collapsed the DOI categories into three groups. The first group consisted of innovators and early adopters, the second category consisted of early majority and late majority SHDs, and the third group consisted of non-adopters. The collapsed categories were selected to differentiate those SHDs that may assume opinion leader roles (early adopters) from those unlikely to be opinion leaders (early majority/late majority). We examined patterns of adoption over time and compared state characteristics and health department characteristics across adoption categories. Finally, we examined likes, followers, and tweets as indicators of the reach and use of each account.

Geographic Information Systems (ArcMap, version 10) was used to visually examine adoption patterns. SPSS 19.0 was used for statistical analysis. Social media data collection took place between February-April, 2012 and data was analyzed in June 2012.

## Results

Just over half of SHDs (n=28; 55%) had a Facebook page. More state health departments (n=41; 80%) had a Twitter account. All states with Facebook also had Twitter; 13 states had Twitter only. On average, state health department Twitter pages had 1340.3 (s.d.=1436.7) followers and had tweeted 678.2 (s.d.=663.8) times. Facebook pages had 964.4 (s.d.=663.8) likes.

### *Patterns of social media adoption over time*

Facebook was adopted by the first state health department in January of 2009; five months passed before another state health department adopted Facebook. Facebook showed a clear group of innovators/early adopters between July and December, 2009, followed by a steady stream of early/late majority through 2011. From August 2011 until data collection in February 2012, not a single additional state health department joined Facebook.

Twitter adoption started with two state health departments in fall 2008; it was not until January 2009 that another state health department joined. Twitter was then adopted consistently on a nearly weekly basis by 23 state health departments throughout the first half of 2009. A few states stood out for being early in both technologies (AK, AZ, CA); others (FL, GA) were later to adopt both technologies, and 10 states did not adopt either. Figure 1 shows the geographic distribution of innovator/early adopters, early/late majority, and non-adopters.

-Figure 1-

*State characteristics and social media adoption*

The map of adoption (Figure 1) suggested that SHDs in states with larger populations and more urban areas may be more likely to adopt social media. However, we found few significant differences during comparisons of population size, percent of residents living in rural areas, and percent of residents with internet access across adoption categories. There was a significantly higher percentage of rural residents in non-adopting states than in early/late majority states for Twitter. For Facebook, innovator/early adopting states had significantly larger populations than non-adopters. Although non-significant, health departments not adopting Twitter were in states with smaller populations with less internet access than health departments adopting Twitter (Table 1).

-Table 1-

*SHD characteristics and social media adoption*

In addition to geographic and demographic considerations, health department resources and characteristics may play a role in adoption. We examined adoption in light of health department expenditures, staffing, and the age and education level of leadership. Again, there were few significant associations. Public information specialists are the staff members who would be most likely to manage social media accounts for SHDs. There was a significant difference in the number of public information specialists across Twitter adoption categories, with early/late majority having the most (Table 1). Several non-significant trends emerged. For the most part, non-adopting SHDs had fewer human and financial resources overall and per capita, although this did not hold for per capita staffing for Twitter adoption. Employees were older at non-adopting SHDs compared to adopters. Leader education levels were generally lower among non-adopting SHDs than adopters.

*Social media reach and use*

Finally, we examined whether SHDs adopting earlier with more staff dedicated to social media and a larger population to serve would have more likes and followers. There was no significant relationship between population size or number of public information specialists and the number of followers or likes for SHD accounts. However, innovators/early adopters had significantly more Twitter followers ( $t(39)=2.5$ ;  $p<.05$ ) and Facebook likes ( $t(11)=3.7$ ;  $p<.05$ ) than early/late majority adopters. Controlling for adoption date, there was a positive and significant relationship between state population and number of Twitter followers ( $r=.45$ ;  $p<.05$ ), indicating that state population was associated with more followers, regardless of how long the SHD had a Twitter account. However, there was still no significant association between the number of Facebook likes and population. In addition, the number of Facebook likes and Twitter followers were not associated with number of public information specialists, controlling for adoption date. Likewise, there was no significant difference in the number of tweets sent by adoption category, population size, or number of public information specialists.

**Conclusion**

Although public health organizations affiliated with government are often risk-averse and slow to adopt new technologies like social media,<sup>5</sup> most state health departments have adopted at least one form of social media.<sup>3</sup> Some state health departments adopted early, indicated by darker shading in Figure 1, which may be an indicator they are opinion leaders who would make good partners for researchers and practitioners working on social media public health strategies.<sup>3, 10</sup> There were few significant differences between innovator/early adopter, early/late majority, and non-adopter state health departments, although trends demonstrated that innovator/early adopters were generally SHDs with more financial and human resources in states with larger and more urban populations.

Health departments slow to adopt, or not adopting Facebook or Twitter, may be facing organizational barriers common to government organizations including lengthy potential approval and development processes for new projects, layers of process and policy that hinder use of social media once it is adopted, the lack of a reliable and fast internet connection, and firewalls that screen out social media for employees.<sup>11</sup> Given the lack of evidence regarding effective uses of social media for public health practice, non-adopters may also be waiting for more information. Some health departments may also be focusing on more program specific social media accounts (e.g., a Twitter feed related to sun protection), rather than a general health department account; only general social media accounts were examined in this study.

In addition to informing the public, social media have the potential to improve other aspects of public health practice such as facilitating dissemination of information among health departments and other organizations. The potential of social media to change public health seems great; however, additional evidence is needed on barriers to adoption and effective uses of social media by health departments, both in communicating to the public and for other purposes.

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Table 1. State resident and state health department characteristics by social media adoption category.

Twitter	Innovators/early Adopters		Early/late majority Adopters		Non-Adopters		p
	<i>m<sup>a</sup></i>	<i>s.e.</i>	<i>m<sup>b</sup></i>	<i>s.e.</i>	<i>m<sup>c</sup></i>	<i>s.e.</i>	
<b>State resident characteristics</b>							
Total population (millions)	6.6	3.9	6.7	1.0	3.5	1.3	n.s.
% residents with internet access	71.0	1.9	69.5	1.0	67.9	1.8	n.s.
% rural residents	27.6	6.7	21.9 <sup>c</sup>	2.0	37.0 <sup>b</sup>	4.9	<.05
<b>Health department finances</b>							
Total FY expenditures (millions)	390.0	167.6	535.0	103.5	302.0	115.6	n.s.
FY expenditures per capita	83.0	25.0	101.8	13.3	64.8	23.7	n.s.
<b>Health department staff</b>							
Total full time employees (FTEs)	1335.9	427.0	2724.4	625.4	986.7	239.2	n.s.
FTEs per ten thousand residents	4.3	1.9	5.1	1.0	5.2	1.8	n.s.
Public information specialists FTEs	3.0	0.9	7.4	1.5	2.3	0.7	<.05
Avg age of current employees	45.6	2.0	47.3	0.3	48.6	0.5	n.s.
Leader education (%)							n.s.
RN or bachelors degree	0.0		6.9		20		
Master's degree	11.1		17.2		10.0		
Doctorate	88.9		75.9		70.0		
Facebook	<i>m<sup>a</sup></i>	<i>s.e.</i>	<i>m<sup>b</sup></i>	<i>s.e.</i>	<i>m<sup>c</sup></i>	<i>s.e.</i>	p
<b>State resident characteristics</b>							
Total population (millions)	11.7 <sup>c</sup>	4.0	5.7	1.3	4.1 <sup>a</sup>	.7	<.05
% residents with internet access	68.3	1.9	70.4	1.3	69.2	1.2	n.s.
% rural residents	23.6	3.9	23.2	3.5	29.0	3.2	n.s.
<b>Health department finances</b>							
Total FY expenditures (millions)	856.0 <sup>c</sup>	292.2	446.0	114.6	323.0 <sup>a</sup>	53.0	<.05
FY expenditures per capita	86.9	25.0	110.2	17.2	77.3	15.6	n.s.
<b>Health department staff</b>							
Total full time employees	3036.4	1240.9	2597.0	893.7	1422.0	262.1	n.s.
FTEs per ten thousand residents	4.3	1.8	5.6	1.3	4.7	1.2	n.s.
Public information specialists FTEs	5.8	1.9	6.7	1.8	3.8	1.1	n.s.
Avg age of current employees	45.8	1.7	47.1	.3	48.1	.4	n.s.
Leader education (%)							n.s.
RN or bachelors degree	0.0		5.3		14.3		
Master's degree	25.0		10.5		14.3		
Doctorate	75.0		84.2		71.4		

