

# **ENVIRONMENTAL SCAN REPORT**

Utilizing Technology to Deliver Public Health Messaging to Enhance Coordinated Chronic Disease Prevention and Health Promotion: *An Environmental Scan of Community, School, Tribal, Worksite, and Healthcare Sectors in South Dakota* 

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Chronic disease prevention and health promotion are integral in the battle against chronic disease and the risk factors associated with them. The leading causes of death among adults in South Dakota are cancer and heart disease and the leading cause of death in children 1-19 years of age in South Dakota is accidents (unintentional injuries).<sup>1</sup> Evidence-based research highlights the value of media and health communication to address chronic diseases in priority populations and settings. With the everchanging landscape of technology availability and use among a cross section of the United States, challenges still reduce the use of technology to deliver health messaging, including access, cost, and reach to populations. The South Dakota Department of Health and their partners assessed how technology is used to deliver public health messaging across priority sectors, including community, healthcare, tribal, school, and worksite.

## ABOUT

The environmental scan was conducted in collaboration with professionals who work in the community, healthcare, tribal, school and worksite sectors. Contributors include:

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## BACKGROUND

Chronic diseases have significant impact on people in terms of death, illness, and disability. In South Dakota (SD), heart disease and cancer continue to be the leading causes of death, with over 40% of deaths in SD attributable to those diseases. The projected annual costs attributable to chronic diseases in SD by 2023 will include \$2.7 billion in treatment expenditures and \$8.4 billion in lost productivity.<sup>2</sup>

Media and health communication strategies utilized to address chronic diseases and risk factors for developing chronic disease are varied based on the evidence. What works for one population and/or focus area, may not work for the other. According to the Community Guide, "a collection of evidence-based findings of the Community Preventive Services Task Force to help



select interventions to improve health and prevent disease", based on strong evidence, health communication campaigns that use multiple channels, one of which must be mass media, combined with the distribution of free or reduced-price health-related products is effective for producing intended behavior changes.<sup>3</sup>

#### **RURAL LANDSCAPE OF SOUTH DAKOTA**

South Dakota is a largely rural and underserved state with the majority of its 66 counties considered rural, which disproportionately limits residents access to goods and services to support healthy living, including public health information. Barriers to rural wellness and prevention are affected by access to health education, recreational facilities, and health services and professionals. These barriers highlight disparities which can affect the availability of education, preventive, and treatment programs.<sup>4</sup>

To combat the lack of access to health services in rural communities, telehealth is a technology that is being more readily relied upon to deliver non-clinical services, including provider training and medical education. However, one challenge that does plague the effective use of telehealth is access to affordable broadband. Many rural communities do not currently have access to internet connection speeds which support the effective and efficient transmission of data to provide telehealth services.<sup>4</sup>

Recent findings from the Pew Research Center report that there is a "digital gap that persists between rural and urban America."<sup>5</sup> Rural adoption of technology use has increased, however rural residents are less likely to have multiple devices, e.g. smartphone, desktop/laptop computer, home broadband, and/or tablet. Contributing to the gaps in broadband among rural residents is income levels of residents, while higher income residents often have broadband services at home, infrastructure is still lacking across rural America for access to high quality and high speed broadband.

South Dakota is currently the 33<sup>rd</sup> most connected state in the United States, with 84% of the state having broadband coverage and 29% of the population underserved. According to BroadBandNow, "there are 193,000 people in SD that have access to only one wired provider, leaving them no options to switch. In addition, another 47,000 people in SD do not have any wired internet providers available where they live."<sup>6</sup>

## **CHANGING TECHNOLOGY**

With the ever-changing landscape of technology; tribal, worksite, community, school, and healthcare sectors rely upon various types of media to access health information. Traditional forms of media used by public health professionals have included print, radio and/or television. However, over time media outlets and technology have advanced and become a critical component to deliver public health information and impact chronic disease prevention and control. Social media, patient portal, webinars, e-mail, phone applications, and websites are all platforms utilized more and more to provide health information to populations, focused on affecting health knowledge, attitudes, and practices. Strategies to effectively reach populations to encourage behavior change are changing to meet the evolving technology boom and social media presence.

Due to various factors, such as rural geography, organization policies, competing interests/activities, and competency in technology use, it is necessary to deliver public health information in various formats to reach diverse populations and support coordinated chronic disease prevention and health promotion. Some residents in SD do not even utilize technology, so simply delivering health education face-to-face may be the method utilized to effectively reach priority populations.

According to the Pew Research Center, since 2013 smartphone ownership among seniors, aged 65 and up, has more than doubled, with four-in-ten as users. However, adoption rates of smartphone ownership among seniors does lag behind the overall population. In addition, "internet and broadband adoption among older adults varies substantially

across a number of demographic factors – notably age, household income and educational attainment."<sup>7</sup> The Pew Research Center indicates that social media use is also becoming more important, but only "34% of Americans 65 and up never use social networking sites."<sup>7</sup> Barriers to adopting the use of technology among seniors include confidence with using electronic devices, physical challenges, and access to broadband.

#### TRIBAL

ural

While access and use of technology is a challenge for rural communities, tribal communities are affected by the same

challenges. According to the Federal Communications Commission, approximately "63 percent of Tribal land residents lack access to fixed broadband speeds, as compared to only 17 percent of the U.S. population. This disparity is even higher for residents of Tribal lands in rural areas, with approximately 85 percent lacking access."<sup>8</sup> Reasons noted for this disparity, include geography, cost, lack of people trained on how to access and manage broadband, as well as coordinated federal efforts to provide access. As mentioned before, income is a factor in accessing technology, and SD is home to the poorest Indian reservations in the United States. Therefore, utilizing technology to deliver public health messaging may be challenging and alternative means of education are necessary, such as face-to-face during home visits by community health representatives and/or at local healthcare clinics by healthcare providers.

## INTRODUCTION

An environmental scan is an assessment tool structured to understand context; collect information and identify resources, links, and gaps on public health practices. This process can be used to identify quality improvement opportunities and research priorities, guide interventions, educate decision makers, and improve health outcomes.<sup>9</sup> "Environmental scanning integrates multiple strategies for information collection, including focus groups, in-depth interviews, and surveys with target populations; literature reviews; personal communications; and policy analyses.<sup>79</sup>

The South Dakota Department of Health and statewide health partners and stakeholders from community, tribal, school, healthcare and school sectors, engaged in efforts to address chronic disease prevention and control across SD, and developed the South Dakota Coordinated Chronic Disease State Plan (the State Plan) (2012-2017).<sup>10</sup> The State Plan is intended to help guide all stakeholders in SD as they collaborate on cross-cutting efforts to prevent and lessen the burden of chronic disease. Coordinated chronic disease prevention efforts in SD can reduce the prevalence of chronic disease across the state population. The National Prevention Strategy's (NPS) four Strategic Directions were selected as the framework for the State Plan, which was also guided in partnership with community, healthcare, tribal, worksite, and school sectors focused on chronic disease prevention and control.

Guided under the strategic direction of the NPS, "Healthy and Safe Environments", the State Plan identified Objective 1.2: By 2017, conduct an environmental scan and then develop and implement five sector-specific plans for the areas of communities, schools, worksites, tribes and healthcare in which to deliver public health messaging. This objective supports achieving Goal 1 of the State Plan: Utilize technology to enhance coordinated chronic disease prevention and health promotion.<sup>10</sup>

## **PROJECT OBJECTIVES & ACTIVITIES**

In January 2017, an environmental scan process was implemented to gain a better understanding of how public health messaging is delivered using technology in tribal, community, worksites, school, and healthcare sectors to enhance coordinated chronic disease prevention and health promotion across SD. The scan assessed who is receiving messaging, barriers to delivery, and successes to addressing coordinated chronic disease prevention and health promotion. This process occurred through development, implementation and evaluation of an environmental scan guided by a workgroup of multi-sector professionals in SD.

#### LITERATURE REVIEW

A literature review was conducted to identify evidence-based research findings that addressed conducting an environmental scan in a public health practice. Research findings published in 2005 identified that no one established methodology to conduct an environmental scan existed and a decade later, findings published indicated that "despite its adoption as an assessment tool in various healthcare context, an environmental scan does not have a consistent definition or process in public health."(Utility of Environmental Scan) (Kentucky) Based on the literature findings and the lack of a consistent structure to the environmental scan process, the environmental scan was guided by a seven step process utilized by Kentucky's Human Papillomavirus Vaccination Project (Figure 1).

#### FFB 2017 FEB 2017 MAR 2017 IIII-SEP 2017 OCT 2017 **JAN 2017** APR 2017 MAY 2017 Establish focus Identify what Disseminate Analyze and how Results and Results and area and Establish Identify and Conclusions to purpose of information Develop Timeline and Implement Convene a will be engage stakeholders environmental Summary Key Determine scan Stakeholders workgroup scan collected Report Goals

## Step 1: Convene workgroup of sector representatives to support implementation of environmental scan

An external project consultant recruited a workgroup of representatives from tribal, community, school, worksite, and healthcare sectors in SD whose work is engaged in coordinated chronic disease prevention and health promotion. Workgroup members represented city and state health departments, state education departments, non-profit organizations, tribal organizations, state university extension, health systems and secondary nursing higher education programs. A technology and communications professional was also recruited from the SD Department of Health to serve on the workgroup and provide insight regarding how technology is currently being used to provide public health messaging. Representatives from the workgroup collaborate in different facets, but came together recognizing the value of multi-sector collaboration for the process to be successfully implemented. Workgroup members were convened in January 2017 for an introductory meeting to discuss the environmental scan process, as well as throughout the process to solicit and integrate their input into the scan and ensure the design of the scan was appropriate to elicit information from each sector.

#### Step 2: Establish focal area and purpose of environmental scan

Figure 1: Timeline of Environmental Scan

Workgroup members discussed the purpose of the environmental scan as it related to enhanced chronic disease prevention and health promotion. Members determined the focus area and purpose should address the established goal in the State Plan, Goal 1: Utilize technology to enhance coordinated chronic disease prevention and health promotion. Emphasis was determined to center on technology to guide information collected.

### Step 3: Establish timeline and determine goals

The timeline established for implementation of the environmental scan was January 2017-May 2017. The information collected took longer than expected, and the timeline was extended to August 2017. The following goal and priorities were established by the workgroup to guide the process:

- <u>Goal</u>: Utilize technology to enhance coordinated chronic disease prevention and health promotion.
- <u>Priority</u>: To provide recommendations regarding how technology is utilized and available to enhance coordinated chronic disease prevention and health promotion in communities, schools, tribes, worksite, and healthcare sectors in South Dakota. Two sub priorities were established to ensure:
  - 1. How technology is used for public health messaging in communities, schools, tribes, worksites, and healthcare sectors to enhance coordinated chronic disease prevention and health promotion.
  - 2. How technology is impacting the mission to prevent and control chronic disease in South Dakota.

#### Step 4: Identify information to be collected

An environmental scan can be utilized as an assessment tool, engaging multiple methods to gather information. The workgroup determined due to the broad nature of the State Plan objective as it was written, a survey was an appropriate method to gather information from sector representatives and professionals. The survey was developed over months with input from workgroup members and based on their knowledge of their respective sectors. Survey questions were modeled after valid questions utilized in an environmental scan project conducted by the McMaster Institute of Environment & Health<sup>11</sup> to conduct a systematic review of the media and social media in public health messages, as well as input from workgroup members. The McMaster project findings suggest that data that available should be used to "produce evidence to guide future social media use and public health initiatives", as well as foster discussion between sectors to reduce duplication of efforts to guide social media initiatives. The report findings also suggest that guidelines should be established for social media application (e.g. examples, resources, recommendations for policies), as well as present current evidence.<sup>11</sup>

The SD survey was developed in Survey Monkey and was tested by workgroup members to ensure the questions being asked were appropriate to elicit desired responses. Survey questions were organized into three categories, demographics (e.g. sector representation), patterns of technology used to deliver public health messaging, the feasibility of using technology to deliver public health messaging, and any additional information that can help inform utilizing technology to deliver public health messaging. Questions asked were consistent across sectors, with some questions targeted at gathering sector specific information. The questions included multiple-choice, yes/no, and open-ended types.

The objective established in the State Plan to support implementation of the process included, By 2017, conduct an environmental scan and then develop and implement five sector-specific plans for the areas of communities, schools, tribes, worksites, and healthcare in which to deliver public messaging. Short-term objectives identified to support meeting the objective included:

- By February 2017, identify stakeholders/partners from communities, schools, worksites, tribes and healthcare sectors to disseminate survey to and solicit feedback regarding the workgroup priority.
- By March 2017, develop and disseminate a Survey Monkey focused on collecting information from communities, schools, worksites, tribes and healthcare sectors regarding the types of technology utilized and how the technology is utilized to address the workgroup priority.

• By May 2017, collect, analyze and disseminate survey findings to communities, schools, worksites, tribes and healthcare sectors to support use of technology to deliver public health messaging to enhance coordinated chronic disease prevention and health promotion.

#### Step 5: Identify and engage stakeholders

Workgroup members identified stakeholders from their respective sectors who could be invited to participate in the process and complete the survey. A convenience sample of survey respondents and stakeholders were engaged based on the ability to reach sector stakeholders and respondents via e-mail communication channels. Stakeholders were informed what was needed from them by participating in the process and offered access to the results of the environmental scan. Due to the broad reach of some tribal organizations, the appropriate target populations in the tribal sector were identified in effort to elicit appropriate feedback.

#### Step 6: Implement scan

The survey was disseminated to workgroup members to share with their sector stakeholders via e-mail, as well as through the Chronic Disease Partners e-mail listserve which includes multi-sector partners and stakeholders in SD who may have not been reached by the workgroup members.

#### Step 7: Analyze results and develop summary report

Survey results were analyzed using deductive reasoning and two reviewers. The open-ended questions were analyzed for key themes across all sectors and within each sector.

#### Step 8: Disseminate results and conclusions to key stakeholders

Survey findings will be shared with the workgroup members and key stakeholders of community, worksite, healthcare, tribal, and school sectors to inform them and support future strategies to utilize technology to deliver public health messaging.

#### RESULTS

Survey findings elicited responses to support a better understanding of how and *if* technology is utilized to deliver public health messaging within and across sectors to enhance coordinated chronic disease prevention and health promotion.

#### DEMOGRAPHICS

Survey respondents were comprised of a convenience sample due to the feasibility to reach a broad sector of stakeholders to complete the survey, thus is not representative of each sector. There was a total of 158 respondents from community, healthcare, tribal, school and worksite sectors (Figure 2). The response rate was highest from community and healthcare sectors. Respondents were asked to share their contact information, including organization they represented, their job role, and general contact information to support future efforts to enhance the use of technology to deliver public health messaging. Approximately 90% of respondents identified their job role, which

included a broad section of South Dakota professionals, including Executive Director, CEO, Nutrition Director, Healthcare Professional, Public Health Practitioner or Program Coordinator.



Figure 2: Respondents by Sector (N=158)

Within each sector, specific questions were asked to elicit additional demographic information:

Community: There were 51 respondents who represented the community sector and within those respondents 83% serve more than one community across SD (Figure 3). Respondents (n=49) indicated the size of the communities served by their organization as defined by US Census Bureau categories: Urban – 50,000 or more people, Urban Cluster – At least 2,500 and less than 50,000, Rural – Less than 2,500 people, and Rural/Frontier – Population density of size or few people per square mile.<sup>12</sup> Fifty seven percent (27) of respondents indicated they serve urban cluster communities, followed by 53.19% (25) rural communities, 48.94% (23) urban communities, and/or 25.53% (12) serve frontier communities. The findings indicate that a majority of respondents serve multiple communities across the state.

Tribal: There were 14 respondents who represented the tribal sector and within those respondents, approximately 41% (5) serve more than one tribe of South Dakota's nine tribes as indicated in Figure 3. Within the tribal sector the following sectors are represented; 25% (3) tribal sector, 25% (3) public health sector, 8.33% (1) non-profit sector, and 41.67% (12) other sectors, including recreation and culture and a combined representation of government, healthcare, worksite, public health, and non-profit.



#### Figure 3: Communities and Reservations Served by Respondents

Healthcare: There were 49 respondents who represented the healthcare sector and within those respondents, 40 indicated the type of facility represented by their healthcare sector organizations and noted in Figure 4. The type of

healthcare facility (managed/owned/leased) respondent's organization belonged to, included 38.1% (16) state/government, 33.33% (14) Not-for-Profit, 28.57% (12) healthcare system, 11.9% (5) independent and 4.76% For

system, 11.9% (5) independent, and 4.76% For Profit (14).

School: There were 28 respondents who represented the school sector and within those respondents 60% (4) represented k-12, 16% (4) higher education, 12% (3)





high school, 8% (2) elementary school and 4% (1) combined elementary and middle school. Within those respondents, their student population includes the following in Table 1.

#### **Table 1 - Student Population**

Student Population	Less than 250	250-499	500-749	1250-1499	2000 or more
% (Number)	28.00% (7)	24.00% (6)	12.00% (3)	4.00% (1)	32.00% (8)

Worksite: There were 16 respondents who represented the worksite sector, which was the lowest response rate by sector for the survey. Respondents indicated the number of employees at their worksite included the following in Table 2. The industry respondents (n=14) represented Construction, 14.29% (2), Education, 7.14% (1), Government, 14.29%, (2), Manufacturing, 42.86% (6), and Non-profit Organization, 14.29% (2).

#### Table 2 - Employee Population

Employee Population	0-25	26-100	101-250	251-500	Over 500
% (Number)	6.25% (1)	25% (4)	31.25% (5)	25% (4)	12.5% (2)

## PATTERNS OF TECHNOLOGY USE

Respondents were asked a series of questions that pertained to their patterns of technology use to deliver public health messaging to enhance coordinated chronic disease prevention and health promotion, including the type(s) of technology used, the health topic(s) addressed, the audience(s) targeted to receive messaging, and who and how staff is involved in delivering messaging.

#### Type of Technology Used by Sector

Respondents (N=188) indicated the type of technology used in their organization for public health messaging, Figure 5. Across all sectors, e-mail (96.61%) was the most relied upon technology, followed by website (80.51%), and social media (79.66%). Patient portal, webinars, smartphone applications, and discussions boards were indicated at a

smaller percentage than the higher-ranking technologies; with podcast as the least used technology. The type of technology used within each sector respondent is noted in Figure 6.







Figure 6: Type of Technology Use by Sector (N=118)



Fourteen percent of respondents (n =17) indicated "Other" types of technology are used by their organization with four key types of technology indicated, including print, television/radio, face-to-face, and other technology. Print included bulletin boards, newspaper articles, fliers, literature; television/radio included internal radio psa's, television station, waiting room digital display; face-to-face included on-site health screenings, health workshops, in-home visits, and presentations by health professionals; as well as other technology which included texting as noted by a

healthcare sector respondent ["texting with pregnant mom app"], DVD's in schools with smart boards, and student and faculty portals. Other health topic themes by sector are indicated below in Table 3.

Community	Healthcare	Tribal	School	Worksite
<ul> <li>In person educational events, seminars</li> </ul>	<ul> <li>Newsletter</li> <li>Waiting room PowerPoint digital display</li> <li>Print/TV media</li> <li>Newspaper articles</li> </ul>	• Webinars	<ul> <li>Student and faculty portal</li> <li>Internal TV station</li> </ul>	<ul> <li>Bulletin board</li> <li>Health professional presentations</li> <li>On-site health screenings</li> <li>Internal email system</li> </ul>

#### Table 3: Other Types of Technology Used by Sector

## Health Topics Addressed Using Technology to Deliver Public Health Messaging

Respondents (n=106) across all sectors indicated that physical activity and nutrition was addressed the most (80.19%), followed by approximately half across tobacco (59.43%), diabetes (56.6%), obesity (54.72%), and heart disease and stroke (49.06%). Oral health and substance abuse were the least addressed topics (39.62%). The highest percentage of respondents (80.19%) within each sector reported that physical activity and nutrition was the health topic their organization utilizes technology to deliver public health messaging. The healthcare, tribal, school and worksite sectors identified tobacco as their second most addressed topic, however, the community sector identified diabetes, followed by obesity as its second topic.

Approximately 41% of community sector respondents indicated tobacco was addressed, as compared to 78.38% who reported physical activity and nutrition as the focus. The lowest percentage of respondents by sector reported they address the following health topics; community: substance abuse (29.73%), healthcare: injury prevention (37.5%), tribal: oral health (45.45%), school: cancer (10%), and worksite: cancer (30.77%). (Figure 7)

Twenty four respondents (22.64%) indicated "Other" topics they address using technology, which included a



large focus on immunization and school health, as well as maternal and child health (e.g. pregnancy, breast feeding, prenatal education). Additional topics addressed include STDs, mental health, and arthritis. Overall wellness was also indicated from a worksite respondent ["We promote wellness programming throughout the year, using all types of platforms as we recognize different staff are reached most effectively in different a manner...we try to touch on all types of topics throughout the year"]. As noted throughout the survey findings, some respondents do not utilize technology to deliver public health messaging, rather they rely on face-to-face interactions, as indicated by a school sector respondent, ["Many of these topics are discussed in health and counseling classes. We don't specifically use technology for information delivery"]. Other health topic themes by sector are indicated below in Table 4.



#### Figure 7: Health Topics Addressed Using Technology to Deliver Public Health Messaging by Sector (N=106)

#### Table 4: Other Health Topic Themes by Sector

	Community		Healthcare		Tribal		School		Worksite
•	Mental health	•	Arthritis	٠	Mental Health	•	Immunizations	•	General
•	Maternal and	•	Maternal and	٠	Maternal and	•	Drugs and Alcohol		Wellness
	Child Health		Child Health		Child Health	•	STDs		
		•	General Wellness						

#### Audiences Targeted to Receive Public Health Messaging

Respondents (N=116) across all sectors indicated which audience(s) are targeted for delivery of public health messaging using technology. Families (62.93%) and the general public (62.07%) were the most targeted audience across all sectors, with priority populations (25.86%) as the lowest targeted audience.

Within each sector, respondents indicated the audiences targeted to deliver public health messaging using technology include the general public for the community (82.05%), healthcare (81.25%), and tribal (90.91%) sectors; students for the school sector (85.71%); and worksite staff for the worksite sector (84.62%). Priority populations were the least targeted population for the healthcare (27.59%), tribal (9.48%) and worksite (11.21%) sectors. Refer to Figure 8 for the percentage of audience targeted by sector.



#### Figure 8: Audiences Targeted for Public Health Messaging Using Technology by Sector (N=116)

Approximately eleven respondents (9%) also indicated "Other" audiences are targeted, including low income, tribal communities, senior population, pregnant mothers and other professionals, which can also be considered priority populations. Face-to-face visits were also indicated for delivering health education to families and individual clients through home visits as noted by a tribal sector respondent ["We don't use technology to deliver health education, but rather we use face-to-face discussion during home visits...not all of our clients use social media or even have telephones in their homes."]. Refer to the Appendix for a complete list of responses by sector.

#### Focus of Public Health Messaging

Respondents (N=110) across all sectors indicated the focus of their public health messaging included health education (any combination of learning experiences designed to help individuals and community improve their health by increasing their knowledge or influencing their attitudes), health promotion and prevention (process of enabling people to increase control over, and to improve, their health. It moves beyond a focus on individual behavior towards a wide range of social and environmental interventions), and/or healthcare reminders (communicating with those who may benefit from participating in appropriate health promotion and preventive care activities or who may require appropriate and timely review of their treatment and/or their medical devices). Respondents indicated that health promotion and prevention are the largest focus of public health messaging (85.45%), followed closely by health education (80%). Only half of respondents indicated that healthcare reminders are a focus (51.82%).



### Figure 9: Measurement of Effectiveness of Technology Use to Deliver Public Health Messaging

Within each sector, health promotion and prevention and health education were reported as the focus of messaging over healthcare reminders (Figure 10.)





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Four (3.64%) respondents also indicated "Other" areas of focus, including home visits and caregiver support (Table 5).

#### Table 5: Other Areas of Focus by Sector

Community	Tribal	School
Caregiver support	<ul> <li>Trained, credentialed staff to</li> </ul>	Online review of slides and
Home visits	deliver health messages during	answering questions for blood
	home visits	borne pathogens

## Effectiveness of Technology Used to Deliver Public Health Messaging

Respondents (N=91) across all sectors indicated how effectiveness of the technology used to deliver public health messaging is measured. Social media engagement (e.g. likes, shares, followers, etc.) was the most used measurement by respondents (56.85%), followed by page views (42.86%) and response rate and achieving desired health outcomes (38.46%). Referral/enrollments to evidence-based programs (30.77%) and reach (26.37%) were the least used types of measure.

Within the community (40.54%), healthcare (64.29%), tribal (54.55%), and school (36.84%) sectors, social media engagement (likes, shares, followers, etc.) was indicated as the primary measure of effectiveness of technology used to deliver public health messaging. Respondents from the worksite sector indicated they use achieving desired health outcomes as the primary measure of effectiveness.



#### Figure 9: Measurement of Effectiveness of Technology Use to Deliver Public Health Messaging by Sector

Approximately nineteen percent of respondents (n=18) also indicated "Other" types of effectiveness measures, with a high number of respondents across all sectors who indicated effectiveness is not measured as noted by a community sector respondent ["This is not a primary focus for our organization"] and a tribal sector respondent ["We are not systematically measuring effectiveness"]. Other responses included surveys, attendance rate, and number of materials (e.g. brochures, educational information) mailed to target populations as measures of effectiveness. Refer to the Appendix for a complete list of responses by sector.

#### FEASIBILITY OF TECHNOLOGY USE

Respondents were asked to assess the feasibility of using technology to deliver public health messaging, including the staff assigned, staff role, how content is determined, tools used to manage delivery of public health messaging via social media, and barriers to using technology to deliver public health messaging.

#### Level of Staff Assigned to Deliver Public Health Messaging

Respondents (N =103) across all sectors indicated what level of staff is assigned to deliver public health messaging (e.g. health communication). Respondents indicated that an individual staff person (41.75%) is the level of staff most assigned, followed by a communications team (34.95%). Approximately 16% have no one assigned and only 6.8% use volunteers.



#### Figure 10: Level of Staff Assigned to Deliver Public Health Messaging by Sector (N=103)

The highest percentage of respondents from the community (41.67%), tribal (45.45%), school (54.55%), and worksite (30.77%) sectors indicated that an individual staff person is assigned to deliver public health messaging, while healthcare sector respondents (48.28%) indicated that a communications team is assigned to deliver public health messaging. A small percentage of respondents indicated that no one is assigned to deliver public health messaging. Respondents from the worksite (15.38%), community (8.33%), healthcare (3.45%) and tribal (9.09%) sectors also indicated they rely on volunteers to deliver public health messaging.

Approximately nineteen percent of respondents (n=20) also indicated "Other" staff are assigned to deliver the messaging, including a high number of respondents who indicated administration/HR/marketing staff as noted by a healthcare sector respondent, ["As the marketing director, I spread the word. This survey has made me aware that maybe we should be addressing our clients via email. Something we don't do right now"]. Other staff include a wellness team, individual program/clinic staff, as well as some school staff, and a media contractor. One tribal sector respondent noted Community Health Representative staff are responsible during a home visit, ["All CHR staff perform health education to individuals and families during a home visit...each staff member is responsible for their own community."]. One worksite sector respondent noted, ["I was asked to start a wellness committee about five years ago. The current duties include weekly reminders on topics I think are pertinent. There is no direction given by our administration"]. Other staff types indicated by sector are indicated below in Table 6.

#### Table 6: Other Staff Types Assigned to Deliver Public Health Messaging by Sector

	Community		Healthcare		Tribal		School		Worksite
•	Wellness team	•	Program staff	٠	Individual	•	Wellness team	٠	Wellness team
•	Administration/	•	Administration/		program/clinic	•	School staff	•	Administration/
	HR/Marketing		HR/Marketing		staff	•	Face-to-Face		HR/Marketing
	staff	•	Unknown						
•	Media contractor								

## Staff Role in Delivering Public Health Messaging

Respondents (N = 67) across all sectors identified what role staff plays in delivering public health messaging. Almost three fourths of respondents indicated posting of messaging (72.38%) as the largest role staff has in delivering public

health messaging, followed by developing content (63.81%), and scheduling (46.67%).

Within each sector, the highest percentage of respondents indicated that the role staff play in delivering public health messaging is posting, followed by developing content and scheduling (Figure 13).







Approximately 12% of respondents indicated "Other" roles staff play including dissemination of content (e.g. promoting website, send to the newspaper), content development (e.g. content, reviewing and approving content), and face-to-face (e.g. health class, forums, talking circles) and not sure. A tribal sector respondent indicated they provide home visits, ["Provide home visits and community health workshops i.e. Talking Circles"]. Other staff roles indicated by sector are indicated below in Table 7. Refer to the Appendix for a complete list of responses by sector.

#### Table 7: Other Staff Roles by Sector

	Community		Healthcare		Tribal		School		Worksite
•	Dissemination of content Posting Forums	•	Content development Posting	•	Face to face Dissemination of content	•	Dissemination of content	•	Evaluation

#### How Content is Determined for Public Health Messaging

Respondents (N=103) across all sectors identified how content was determined to deliver public health messaging. Respondents indicated both in advance (64.08%) and content share from other sources (64.08%) were the most used formats. Contributions by other organizations' staff or team was reported by almost half of the respondents (49.51%), and approximately 30% used on the spot (e.g. immediate, real-time emphasis) updates.



Respondents also indicated "Other" methods were used, including by need as noted by a tribal sector respondent, ["By the needs of the community members"] and a healthcare sector respondent, ["developed for response to emerging threat or pertinent update"], staff (e.g. RN, management oversight) and one just did not know.

## Tools Used to Manage Delivery of Public Health Media via Social Media

Respondents (N=57) across all sectors shared open-ended responses regarding what tools their organization uses to manage delivery of public health messaging via social media such as Hootsuite, Everypost, or Buffer. A high number of respondents indicated that they did not know what was used, ["I am unware of the tools they use as I am an end user - I don't participate in management"] and ["I admit that I am not sure"]. Facebook was also reported by many respondents, followed by websites, ["For social media, we primarily focus our efforts on our website, Facebook page and blast email"]. A few respondents reported the use of Hootsuite, Tweetdeck, Twitter, and Connect 5 Messaging.

Within each sector, respondents indicated the following tools are used to manage delivery of public health messaging:

- Community: Facebook is the most used tool, while many were unsure of tools used. You Tube, Hootsuite, and Twitter were also utilized. One respondent indicated they do not use social media, but would like to learn, ["Do not use social media to deliver health information. Would like to learn more about doing so"].
- Healthcare: Facebook, Tweetdeck, and Google Drive are tools used to manage delivery of public health messaging. However, more than half of the respondents indicated they did not know, unsure, or it was not applicable to their healthcare facility and/or program to utilize.

- **Tribal:** Facebook, LinkedIn, are Constant Contact the most used tools, but some are currently looking for alternatives. Some respondents did not use any and some were unsure. Face-to-face meetings are also relied upon instead of technology, ["Common everyday face-to-face meetings with individuals, families, and the community."]
- School: Facebook and a district website are the most used tools. Respondents also indicated that they do not use any, are unsure of the tools used, and/or do not use social media. One respondents indicated that Connect 5 Messaging System is used.
- Worksite: A small number of respondents answered this question and indicated Facebook is used to manage delivery of public health messaging. One respondent indicated one person is in charge of social media and website, while no tools are used or it is not applicable, ["We don't currently use social media for wellness"].

## Barriers to Using Technology to Deliver Public Health Messaging

Respondents (N=92) across all sectors indicated what barriers affect their ability to use technology to deliver public health messaging, with over half of the respondents (51.09%) who indicated budget as the primary barrier, followed

by a lack of staff training on technology (36.96%), lack of staff (34.78%), and internet access (31.52%). A smaller percentage (26.89%) indicated a lack of tools (e.g. technology) and population base (17.39%) were barriers. However, based on other responses, population base or access to the population base, is reported by a higher percentage of respondents as a barrier.

Within the community (63.64%) and healthcare (54.17%) sectors, respondents indicated that budget is the primary barrier to using technology to deliver public health messaging (Figure 15). Barriers indicated by other sectors include lack of staff as reported by tribal sector respondents (63.64%),



internet access as indicated by worksite sector respondents (77.78%), and lack of staff training on technology (33.33%) and other barriers (33.33%) indicated by school sector respondents. Tribal sector respondents also indicated that internet access (54.55%) and lack of tools (e.g. technology) (54.55%) as additional barriers to using technology to deliver public health messaging. Language was indicated by the lowest percentage of tribal and worksite sectors as a barrier to using technology to deliver public health messaging. The population base (community - 9.09%, healthcare – 20.83%), lack of staff (school – 13.33%, worksite – 0%) and lack of tools (e.g. technology) (healthcare – 20.83%) were also reported by the lowest percentage of respondents as a barrier to using technology to deliver public health messaging.



#### Figure 13: Barriers to Using Technology to Deliver Public Health Messaging by Sector (N=92)

Respondents also reported "Other" barriers to using technology to deliver public health messaging, with access to the population base (e.g. lack of cell phone or computer, people do not use social media, access to high speed internet), as noted by a healthcare sector respondent, ["There is a challenge with the patient population being able to access public health messaging due to factors like language, internet access and have the tools to access the information (e.g. computer, smartphone, etc.)"] and organizational policy for technology use (e.g. lack of own social media accounts by program staff), as noted by community sector respondent, ["Large organization that centralizes social media and other technology. This slows the process, which creates a disconnect in social media platforms that thrive on immediacy and engagement with the audience. Program staff have no access to or ability to interact through the social media with the audience."] as major barriers. Information overload was also reported as a barrier as noted by a healthcare sector respondent, ["public receives so many messages from many sources"]. Some respondents also reported a lack of knowledge on what information to share as a barrier, as well as no barriers existed. Other barriers indicated by sector are indicated in Table 8. Refer to the Appendix for a complete list of responses by sector.

	Community	Healthcare	Tribal	School	Worksite
٠	Access to	Staff time	Access to	Access to	<ul> <li>Budget</li> </ul>
	population base	<ul> <li>Organizational</li> </ul>	population base	population base	
٠	Organizational	policy for	<ul> <li>Organizational</li> </ul>	<ul> <li>Knowledge of</li> </ul>	
	policy for	technology use	Policy for	education needs	
	technology use	<ul> <li>Access to</li> </ul>	technology use	<ul> <li>Barriers Not</li> </ul>	
•	Budget	population base		measured	
•	Staff time	<ul> <li>Budget</li> </ul>			
•	Internet access	<ul> <li>Information</li> </ul>			
		overload			

#### Table 8: Other Barriers to Technology Use by Sector

## ADDITIONAL INFORMATION TO INFORM TECHNOLOGY USE FOR PUBLIC HEALTH MESSAGING

Respondents were asked to share any additional information that can help inform effective use of technology to deliver public health messaging to enhance coordinated chronic disease prevention and health promotion, including areas of chronic disease challenge to address, any successes experienced using technology to deliver public health messaging, and any additional information to better support understanding of how an organization uses technology to deliver public health messaging.

### Chronic Diseases Challenging to Address using Technology to Deliver Public Health Messaging

Respondents (N=93) across all sectors reported yes/no if there are areas of chronic disease that are challenging to address using technology to deliver public health messaging. Over half (56.99%) of respondents reported there were "no" challenges, and 43% reported "yes", there were challenges. Of those respondents who reported yes, they provided open-ended explanations as to why and what are challenges. Chronic diseases and risk factors for chronic disease were reported by a high number of respondents, including obesity, diabetes (e.g. diabetes education), and heart disease. One school sector respondent reported, ["Specific topics such as diabetes, heart disease, etc. do not ally to the masses of young children. Often parents are not interested in information that they perceive doesn't apply to them"]. Reach and impact were reported by many respondents as challenging to address, ["It is always challenging to develop a message that will have the greatest impact on our audience as each individual has different priorities, resources, needs, etc."]. Disparities and rural population, motivation and behavior change as noted by a tribal sector respondent ["It is difficult to create messages that grab the attention of the public and motivate behavior and lifestyle changes"] as well as access to aging population and/or those who do not have access to technology were reported as noted by a healthcare sector respondent, ["Reaching certain populations that aren't using technology...perhaps certain age demographics and certain socio-economic groups."]. Cancer prevention, tobacco use and policy in American Indian populations, substance abuse, and sexual health were also reported as challenging to address. A few respondents reported that message delivery as noted by a community sector respondent ["crafting the message and aiming the message to the target audience"] and difficulty recommending information or treatment sources. Other chronic diseases challenging to address by sector are indicated below in Table 9. Refer to the Appendix for a complete list of responses by sector.

	Community	Healthcare	Tribal	School	Worksite
•	Diabetes Employee access	<ul><li> Reach and impact</li><li> Cancer</li></ul>	<ul><li>Sexual health</li><li>Face-to-face</li></ul>	<ul><li>Message delivery</li><li>Resources</li></ul>	<ul><li>General wellness</li><li>Employee access</li></ul>
•	Reaching aging populations Reach and impact Obesity	<ul> <li>prevention</li> <li>Access to populations</li> <li>Sexual health</li> </ul>	<ul> <li>Access to populations who lack technology</li> <li>Motivation/ hobseign Changes</li> </ul>	<ul><li>available</li><li>Population and disease</li></ul>	<ul> <li>Message delivery</li> <li>Reach and impact</li> </ul>
•	Tobacco use and policy Message delivery	<ul> <li>Message delivery due to language barriers</li> </ul>	benavior Change		

#### Table 9: Other Chronic Disease Challenging to Address by Sector

## Successes Experienced using Technology to Deliver Public Health Messaging

Respondents (N=55) from the sectors, including community (29.09%), healthcare (25.45%), tribal (15.55%), school (16.36%) and worksite (15.55%), shared open-ended responses to describe successes that could be associated with outcomes and type of media used. Respondents shared many examples of successful outcomes (e.g. increased awareness, education, and communication in populations, increased screening rates) that have been observed as noted by a worksite sector respondent, ["Quit Tobacco Program – through use of social media has been fun and successful. Pay our employees \$500 at the end of the year if they have been tobacco free for 1 full year."] and pertinent to parents, schools, and tribes, ["keeps parents updated on what their kids are learning at the Tokata Youth Center"]. One school sector respondent noted a successful outcome for parents, ["We have parents who like and encourage use to continue to put out health messages as they are either unaware of the current health trends or have very little knowledge."]

The type of media used was also reported by respondents as a reason for success, including social media (e.g. You Tube videos, Twitter, Facebook), as noted by a community sector respondent, ["We have been creating YouTube videos this year...It's gotten people talking about topics so much more than they used to..."] and ["We have participated in Twitter chats organized by larger organizations which has led to greater exposure regionally and nationally"], Text as noted by a healthcare sector respondent, ["Text for Baby – SD has been recognized several times as one of the top users"], and television. Refer to the Appendix for a description of successes identified by respondents within each sector.

#### Additional Information to Support Understanding

Respondents (N=28) across all sectors shared open-ended responses to better support understanding how their organization uses technology to deliver public health messaging. Respondents feedback included a broad spectrum of responses with emphasis on the value of social media platforms (e.g. Facebook, podcasts, etc.) and other electronic communication (e.g. e-mail, webinars, websites, newsletters, etc.) to reach populations. Respondents also reported that face-to-face communication is necessary over the use of technology to deliver public health messages and education due to challenges with access to technology, including internet and phone service as noted by a worksite sector respondent, ["Technology is a struggle but we use it how and whenever we possibly can"] and a community sector respondent, ["In our office we would like to use more technology. Our internet in our area is not always reliable, and cell phone service is spotty."]. Rural populations were reported as hard to convene, so technology is replied upon for communication, as noted by a community sector respondent, ["It is hard to get people together since we live in a rural

area...that live a distance away, so it is hard to have meetings but we can keep them informed by using a monthly newsletter and keeping things posted to our Facebook Page."]. Refer to the Appendix for a description of additional information identified by respondents within each sector.

## LIMITATIONS

The survey data presents some valuable and interesting findings that can be utilized to address gaps and strengths across tribal, healthcare, school, community, and worksite sectors regarding using technology to deliver public health messaging. However, some limitations to the findings include the following:

- Chronic Disease State Plan Objective: The State Plan objective, By 2017, conduct an environmental scan and then develop and implement five sector-specific plans for the areas of communities, schools, worksites, tribes and healthcare in which to deliver public health messaging, that guided the environmental scan efforts was written in 2012 in collaboration with partner organizations and stakeholders, however it is not understood who wrote the objective and their intended goal of it. The objective is written broadly and presented challenges with interpretation and implementation to address all five sectors due to the breadth of organizations, schools, healthcare systems, etc. within each sector across SD.
- **Survey Design:** The survey sample used in this survey was a "convenience sample", which still provides useful information and data, however the number of organizations, schools, healthcare systems, etc. within each sector known and unknown reduced the option to identify a representative sample for statistical significance for each sector. Future efforts to collect data would benefit by breaking down the data collection by sector and designing the survey to collect data from a representative sample.
- Question Design: Some questions were identified upon analyzing results that they may have been worded in a manner that confused respondents and/or did not elicit the type of responses desired for the question. Some of the open-ended answers to the questions reflected the multiple-choice answer options for the question, thus the response rate for some questions may have likely been higher. For example, the question: "Identify the barriers to using technology to deliver public health messaging" was likely challenging to understand due to the multiple-choice options that respondents had to choose from: 1) language, 2) staff training on technology, 3) budget, 4) population base, 5) lack of staff, 6) internet access, 7) lack of tools (e.g. technology), and 8) other. Population base referred to a specific population that may be hard to reach due to various factors, including aging or underserved populations.
- Survey Dissemination and Response Rate: The survey was only disseminated via email. The survey was disseminated to sector representatives within the workgroup, who disseminated the survey to their sector contacts to ensure that the appropriate person was completing the survey. The survey was also disseminated via e-mail listserves to statewide partners, worksite wellness partners, and physical activity and nutrition stakeholders. Disseminating the survey in only one platform, e-mail, may have limited the number of people and the appropriate people who received the survey. In addition, workgroup representatives disseminated the survey to their contacts, which may have eliminated additional responses in each sector. The survey was also disseminated in the summer of 2017, and many school sector representatives were not working and thus a lower response rate from this sector. Further action to address this limitation would be to ensure the survey is disseminated via multiple platforms and at a time of year when a higher response rate could be achieved.

## **CONCLUSIONS & RECOMMENDATIONS**

## CONCLUSIONS

The environmental scan highlighted strengths and gaps across the community, healthcare, tribal, worksite, and school sectors regarding how technology is utilized to deliver public health messaging. Overall respondents used some type of technology to deliver public health messaging, with some methods used more than others. While technology is an important factor in enhancing coordinated chronic disease prevention and health promotion, it is important to remember the value and need of face-to-face health communication, as well as the challenges a frontier and rural state such as SD has with access to technology. In addition, a general lack of knowledge and/or understanding on how to utilize technology, e.g. social media, websites, etc., should be further explored, as many of the respondents indicated they just did not know about technologies and/or how to use them if they are available.

There have been many successes in utilizing technology to deliver public health messaging to enhance coordinated chronic disease prevention and health promotion that have relied upon different types of technology, including YouTube, text, and traditional forms of media, e.g. print, television, and radio. With those successes come ongoing challenges to utilize technology to address chronic disease prevention and control, such as workforce capacity or rural geography. In addition, the technology most utilized by respondents is what may be considered as commonly used methods, including e-mail, social media, and website. Alternative technologies, such as discussion boards, podcast, and/or webinars, may not be used as much due to lack of training, lack in workforce capacity or access to technology.

The top three barriers to utilizing technology to deliver public health messaging, including lack of staff training on technology, budget, and lack of staff, which present challenges to delivering health communication. Community sector respondent's barriers reported are in line with what is often understood about community organizations, including lack of funding and staff available to support public health efforts. In addition, tribal sector respondents indicated barriers in line with challenges that are often faced living and working on SD's Indian reservations, such as access to care, technology, poor housing, and financial constraints. While budget and workforce capacity may not be as easy to address, providing staff training on technology use, may address some of those barriers by building the capacity of existing staff to identify cost-effective, quality methods to use technology to deliver public health messaging and enhance coordinated chronic disease prevention and health promotion.

A broad range of chronic disease topics are addressed with a high focus on obesity and factors associated with it, including physical activity and nutrition. Within SD there are variety of programs and services available from organizations such as the SD Department of Health or the American Heart Association, which focus on these factors. Substance Use and Injury Prevention are not predominantly addressed by sectors as indicated by respondents, perhaps due in part to the availability of programs to focus on these issues. However, new programs have been added to the SD Department of Health focused on opioid use and injury prevention, so perhaps more focus will be on these topics for public health messaging. Opioid use has been on the rise across the nation which highlights the need to place emphasis on this issue.

In addition, while there are a broad range of chronic disease topics being addressed, many respondents reported the challenges with knowing if the messaging is really making an impact and motivating behavior change among populations to address chronic disease. Providing training on evaluation methods may address these challenges,

however alternative methods to deliver interventions may need to be addressed to determine if reach and impact are being achieved.

Technology use and broadband access is on the rise; however, access is still a challenge to utilizing technology to deliver public health messaging. Some challenges with access may be due in part to populations, e.g. elderly, not feeling confident in how to use the technology available. However, access is also a challenge due to the rural nature of many SD communities and lack of geography, funding, workforce capacity, etc. to effectively support access to technology in these areas. An increase in broadband access could support technology use. In addition, providing some level of training and/or education to populations uncomfortable with technology use, may be warranted to enhance delivery of public health messaging focused on chronic disease prevention and health promotion.

Effectiveness of technology used to deliver public health measuring should be measured as it is not commonly measured among respondents. Understanding if the technology utilized is working as intended to deliver public health messaging to populations to enhance coordinated chronic disease prevention and health promotion is an important evaluation method to guide current and future work. Including training on effectiveness measurements, e.g. Google Analytics, Facebook Analytics, CDCynergy Lite, etc. would narrow the focus of technology utilized to deliver public health messaging and reduce duplication of efforts. In addition, some respondents indicated their measure of effectiveness is if desired health outcomes are achieved, which is ideal, however hard to measure cause and effect. Thus, other measures should be utilized to assess the effectiveness of the technology used.

The target audiences for public health messaging are largely to the general public as noted by the community, healthcare, and tribal sectors. The aging population in SD was indicated as a target for public health messaging, which is important considering their challenge with accessing technology. While targeting general public health addresses a broad reach, it is also important to target messaging to priority populations, e.g. women, low-income, etc., when feasible to ensure those often hard to reach populations are being reached.

Workforce capacity or the level of staff assigned to deliver public health messaging is in line with what is often known about the infrastructure of organizations within sectors. For example, the community, tribal, school and worksite sectors often rely on an individual staff person to deliver public health messaging while the healthcare sector relies on a communications team to deliver public health messaging. While the workforce capacity available in an organization to devote to health communication varies due to various factors, such as budget or need, it is important to recognize that an available workforce to deliver health communication can be an effective resource to support coordinated chronic disease prevention and health promotion.

There are variety of areas that respondents indicated as challenges to address utilizing technology, within some contributing factors including; language barriers, rural access, and broadband access. Based on some of the respondent's feedback, it is apparent that additional education is needed and/or emphasized for all ages regarding the risk factors for chronic disease. The lack of knowledge of parent's role in supporting healthy children as noted by a school sector respondent, [Specific topics such as diabetes, heart disease etc. do not apply to the masses of young children. Often parents are not interested in information that they perceive doesn't apply to them] were surprising and warrants additional education.

Gaps in organizational/HR/Administrative staff and program staff working directly with public health programs presents challenges with developing and disseminating public health messaging appropriately and effectively. Where feasible, organizational policy for technology use may need to be further addressed to ensure that appropriate methods and messaging are being utilized to enhance chronic disease prevention and health promotion.

Technology was noted as an unnecessary or inefficient method to deliver public health messaging. It is important to remember that even with the evolving field of technology, that may not be an option for some of the populations, such as rural or aging, that community, healthcare, tribal, school, and worksite sectors work with. It is important to have public health messaging and education available in different methods and to provide face-to-face when possible.

### RECOMMENDATIONS

Findings from the environmental scan underscore the need for additional approaches to strengthen the capacity of public health and healthcare professionals working in community, tribal, healthcare, worksite, and school sectors to utilize technology to deliver public health messaging to enhance coordinated chronic disease prevention and health promotion. The following are recommendations for strategies to support public health in SD:

- **Provide Training:** Based on the feedback provided by survey respondents, including financial and workforce capacity barriers to using technology to deliver public health messaging, as well as a general lack of understanding on how to utilize technology to deliver public health messaging; there is a need for training. The training should focus on how to use social media for public health messaging, measures professionals can use to evaluate the effectiveness of use of technology to deliver public health messaging, as well as how to develop content and identify the appropriate methods for dissemination.
- Conduct Additional Evaluation of How Technology is Utilized to Deliver Public Health Messaging: The environmental scan provided a valuable look into how professionals working within SD community, healthcare, tribal, school, and worksite sectors utilize technology to deliver public health messaging. However, the survey was a convenience sample which did not include a high response rate from the school and worksite sectors, thus perhaps leaving more questions unanswered. Additional evaluation methods, including sector specific focus groups, key informant interviews and/or surveys, might expand the learning about each sector to truly understand the gaps and strengths utilizing technology to deliver public health messaging.
- Address Organizational Policy for Social Media Use and Marketing: To increase the capacity of program staff, healthcare staff, etc. to utilize technology for social media and marketing to enhance coordinated chronic disease prevention and health promotion, it is recommended administrative/HR departments review their organizational policy regarding media use. Specifically, regarding who can develop, disseminate, and manage content, as well as identification of social media platforms to enhance message delivery.
- Identify Strategies to Target Aging Population Using Technology: Based on feedback provided by respondents regarding challenges with reach to priority populations, such as older South Dakotans, as well as research that highlights challenges with technology use among older Americans, it recommended for public health professionals within and across sectors to identify strategies that build the capacity of older South Dakotans to access and utilize technology to enhance coordinated chronic disease prevention and control. Strategies may include providing training to older adults, educational campaigns and/or interventions that enhance learning. Collaboration with organizations who serve older South Dakotans, e.g. AARP of South Dakota, South Dakota Department of Adult Services and Aging, etc., may provide opportunities to increase the adoption of technology use to support chronic disease prevention and health promotion.
- Enhance Strategies to Educate Sector Professionals: The findings suggest that additional strategies should be adopted to enhance learning among professionals working in school and worksite sectors regarding chronic

disease and the risks associated with it, including at-risk populations across the age span. Specifically focusing education on obesity prevention and associated risk factors to parents, worksite staff, and school staff is necessary to achieve the desired long-term outcomes of chronic disease prevention.

## RESOURCES

Evidence-based recommendations to inform social media practice are available to build the capacity of staff within all sectors to support utilization of technology to deliver public health messaging.

- <u>CDC Social Media Tools, Guidelines & Best Practices</u>: To assist in the planning, development and implementation of social media activities, the following guidelines have been developed to provide critical information on lessons learned, best practices, clearance information and security requirements.
- <u>Gateway to Health Communication & Social Marketing Practice</u>: CDC's Gateway to Communication and Social Marketing Practice provides resources to help build your health communication or social marketing campaigns and programs.
- <u>Health Literacy Online</u>: This research-based guide will help you develop intuitive health websites and digital tools that can be easily accessed and understood by all users including the millions of Americans who struggle to find, process, and use online health information.
- **Digital Communications:** This Digital Communications sub-site (HHS.gov/web) is a resource for HHS employees and contractors who are responsible for building and maintaining the Department's digital presence.

## APPENDIX

Respondents provided diverse, open-ended feedback to questions included in the survey, included the Appendix. In addition, individual sector reports included in the Appendix indicated below, highlight findings unique to each sector that support or deter utilization of technology to deliver public health messaging

- A. Open-ended Responses by Sector
- B. Community Sector Report
- C. Healthcare Sector Report
- D. Worksite Sector Report
- E. School Sector Report
- F. Tribal Sector Report

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## **APPENDIX**

Question 13: Indicate the type of technology your organization uses to deliver public health messaging.

Sector	Responses
Community	Collaboration with other entities who are involved with serving the Native American
	community IHS, GPTCHB
	<ul> <li>In Home visits in respective communities, Health workshops in communities</li> </ul>
	In person educational events, seminars, wellness fairs.
Healthcare	Advertising, print/tv media
	• Waiting room PPT digital display. We print fliers of most every announcement that
	comes to our office as handouts that we give to clients or they can pick up in the
	waiting rooms. The information is forwarded to our staff utilizing emails for them to
	share with our clients. Only FB and our website (occasionally) used for clients.
	Newspaper articles
	Booth at events
	Newsletter (via email)
	• Texting with pregnant moms app; DVD's in schools with smart boards for health,
	nutrition and dental
	None in our office but the state office uses social media and website
Tribal	Will be starting webinars soon.
School	Student & Faculty Portals for secure use
	Online grade book
	Student Portals
	Promethean Boards
	Long distance learning
	• We have our own tv station KLRN. We partner with Sanford Health and present on
	a variety of health topics on KLRN.
Worksite	Bulletin board in break room and flyers throughout agency spaces; health
	professional presentations (dietitians in person)
	On-site health screenings; PA; Nurse case Manager; Wellness Education; Fitness
	Center; literature
	I use our internal email system to share health information.

# Question 14: Indicate the health topic(s) of which your organization uses technology for the delivery of public health messaging.

Sector	Responses
Community	Relationship education; Mental health
	• Suicide
	• Pregnancy, breast feeding, labor and delivery, puberty, and disease prevention
Healthcare	<ul> <li>Arthritis - over 100 types as well as juvenile arthritis</li> </ul>
	<ul> <li>General knowledge of our services and health conditions that we assist in supporting</li> </ul>
	<ul> <li>We share what ever comes into our office. Some info is sent to different divisions of our organization to share with clients.</li> </ul>
	Prenatal education
	Pregnant moms
	Women's health, birth control options and STI prevention

	None in our office but the state office provides information in all of the above
Tribal	We utilize KILI radio along with PSA's
	Behavioral health, maternal and child health
School	Immunization information
	Flu immunizations
	State required health protocols for schools
	Disease prevention/immunizations
	Drugs and Alcohol
	Vaccinations, STDs
	Needed immunizations to start school
	Many of these topics are discussed in health and counseling classes. We don't
	specifically use technology for the information delivery.
	Immunizations
	Immunizations, illness
Worksite	<ul> <li>We promote wellness programming throughout the year, using all types of platforms as we recognize different staff are reaching most effectively in different manners; we deliver messages about financial, physical, mental, and emotional topics; I checked all above because we try to touch on all types of topics throughout the year, both within and outside specific wellness challenges - it's safe to say our emailed newsletter alone hits these topics at some time during the year.</li> <li>Student screenings, HS physicals, health assessments, vision &amp; hearing, oral health, and flu shots</li> </ul>

# Question 15: Indicate the audience(s) targeted to deliver public health messaging using technology.

Sector	Responses
Community	<ul> <li>Specific Facebook audiences determined by nature of the campaign</li> </ul>
	<ul> <li>Individuals, families in community through home visits</li> </ul>
	Other local nonprofits/professionals
	Senior population 60 and over
	Members
Healthcare	Tribal Business Entities
	Pregnant moms
	Low income are a priority
Tribal	• We don't use technology to deliver health education, but rather we use face-to-
	face discussions during home visitsnot all of our clients use social media or even
	have telephones in their homes
	Tribal communities
School	Faculty, Staff & Administration
Worksite	None

# Question 17: Indicate how the effectiveness of the technology used to deliver public health messaging is measured.

Sector	Responses
Community	<ul> <li>This is not a primary focus for our organization.</li> <li>We don't measure our messaging.</li> <li>Mailing list size</li> </ul>

	Attendance at various wellness events.
Healthcare	We do not measure it
	Of note, I answer all these questions with some hesitation as we are not a
	healthcare provider but rather an advocacy organization for physicians. However,
	in our role we do a lot to both educate and work with physicians to ensure and
	improve the delivery of healthcare.
	Not really measured
	Very hard to measure when teaching children in schools
	• I'm not sure how the [healthcare provider name removed]measures this information.
Tribal	• Not effectiveas mentioned prior, not all of our clients utilize social media or even
	have telephones.
	We are not systematically measuring effectiveness.
	Inquiries
School	Sign off of form that they completed the necessary training
	I don't believe it's measured.
	Unsure. Anecdotally we hear from people who are watching KLRN.
Worksite	Participation in wellness activities; surveys following completion of specific wellness
	activities and general wellness overview survey(s); we don't currently have the
	capability to measure page views of our intranet webpage
	Measured by attendance at events
	• I can see how many people looked at my emails, but there is no measurement as to
	how the information is used.

## Question 19: What role does staff play in delivering public health messaging?

Sector	Responses
Community	• Email
	Reviewing master post lists
	Collaboration and Forums
Healthcare	• Suggesting content, reviewing and approving content (work with media agency)
	Promoting website
Tribal	Provide home visits and community health workshops ie. Talking Circles
	Disseminating, sending to the newspaper
School	• Sending out the link to the training and keeping record of forms signed/training
	completed
	Freshmen take a semester long health class.
	Coaches encourage good health choices.
	Nursing faculty will provide links and information to other faculty, staff and
	students. We use webinars to gain information.
	Not sure
	We have a wellness committee that works with staff.
Worksite	Evaluating

## Question 22: Identify barriers to using technology to deliver public health messaging.

Sector	Responses
Community	Because of the barriers listed in this question we contract out for these services
	<ul> <li>Most of our elders/high risk clients do not use social media</li> </ul>
	• Large organization that centralizes the use of social media and other technologies.
	This slows the process, which creates a disconnect in social media platforms that

	<ul> <li>thrive on immediacy and engagement with the audience. Program staff have no access to or ability to interact through the social media with the audience.</li> <li>Funding and access for high speed internet across the state is becoming concerning as grant dollars are maximized, therefore these dollar no longer cover the expense associated with providing all levels of web based technology.</li> <li>Parent Internet Access - some may not have access to internet on a daily basis. They visit the Community Resource Center to get on the internet.</li> </ul>
Healthcare	<ul> <li>Enough staff time to develop the content to go onto social media</li> <li>We have not been collecting email addresses from clients. But will discuss for the future.</li> <li>Two of our biggest barriers to delivering public health messaging is lack of a true budget for media/communications and staff time. And so because this is a priority for us, we do what we can with the resources that we have available.</li> <li>I think another and often overlooked barrier is the all the competition we have for the provider's limited time. Healthcare providers are simply bombarded with information, requests, regulations, messaging, etc. "</li> <li>NA</li> </ul>
	Public receives so many messages from many sources
Tribal	<ul> <li>None</li> <li>Not everyone has a home telephone, cell phone, or computer</li> <li>Use of social media is restricted by the [Tribal Sector Name Removed] for a number of reasons. There are policies restricting and prohibiting use of social media.</li> <li>People not using social media</li> </ul>
School	<ul> <li>None</li> <li>Have not identified</li> <li>Lack of access within our intended audience</li> <li>Lack of information on what needs to be shared.</li> <li>We really don't barriers to deliver public messages using technology</li> </ul>
Worksite	• We are just too small to afford the wellness websites that are available in the market. It would be great if someone could build and maintain a website that small employers could participate it. We respect that these sites require a minimum amount of support no matter the staff size - this is a barrier to small employers and we do our best to be creative with other outreach formats.

# Question 23: Are there areas of chronic disease (e.g. heart disease, diabetes, obesity, etc.) that are challenging to address using technology to deliver public health messaging?

Sector	Responses
Community	Diabetes education
	<ul> <li>Hard to reach employees who need the information</li> </ul>
	All listed because the message is public for a personal condition
	Obesity
	<ul> <li>We work with aging populations and many with chronic disease do not use technology</li> </ul>
	It's difficult to balance broad public health messaging with disease-specific
	messaging in the context of a city health department.
	All when looking at disparities and rural populations
	• How it pertains to our clients but we are working on the right message with the
	Dept of health
	<ul> <li>It's one thing to educate and another following advice</li> </ul>
	N/A to our work

	Encouraging cessation and smoke-free policy through technology to Indian Country
	is challenging. Many want in-person contact.
	• It can be done, but online engagement often varies depending on the message.
	• The information we distribute is program information which is educational.
	Crafting the message and aiming the message to the target audience.
Healthcare	All chronic diseases are so heterogeneous that it is difficult to have effective
	messaging. Preventive services easier to construct messages than chronic diseases.
	Obesity for us is a difficult public health message
	• Not everyone uses social media and hard to reach all areas of the community
	• I only work with heart disease and stroke. However, it is always a challenge to
	develop a message that will have the greatest impact on our audience as each
	individual has different priorities, resources, needs, etc.
	• People are not interested until they need something so preventative is a challenge
	• Not aware as we have not been doing it directly with our clients.
	• The topics aren't challenging as much as factors such as language barriers. More
	public health messaging happens in the clinic setting through patient education.
	Prevention messages not always considered applicable by clients to their own
	health and wellbeing
	Cancer Prevention
	Reaching certain populations that aren't using technologyperhaps certain age
	demographics and certain social-economic groups.
	Sexually Transmitted Infections, and Obesity
Tribal	• I don't know the answer to this question, I do not work in this area.
	Sensitive topics like STD's or substance use
	Some areas are easier to explain face to face with people.
	Many, many families do not have access e.g., computer, smartphone, etc.
	• It is difficult to create messages that grab the attention of the public and motivate
	behavior and lifestyle changes.
School	• We find it difficult to include some pictures of chronic diseases due to the graphic
	nature of the photos. We also find it difficult to recommend specific places for
	more information or treatment for the disease as we are not affiliated with any
	medical group.
Worksite	• With our wellness advocates team designing and implementing programs, we have
	to be very careful with privacy - we keep our topics generic. It would be great to
	have chronic disease prevention for specific staff but again, costwe also have a
	24/7 environment which makes programming tricky.
	Many employees without access to computer or smart phones
	Finding the right media and content to deliver
	It is hard to reach everyone, and leave a positive impact.

# Question 24: Describe any successes your organization has experienced using technology to deliver public health messaging.

Sector	Responses
Community	None
	<ul> <li>We have been creating You Tube videos this year using our staff to promote and educate health and wellness. It's gotten people talking about topics so much than they used to because of the videos we are creating!</li> <li>using partner newsletters for message delivery</li> </ul>

	• We have participated in Twitter chats organized by larger organizations which has
	led to greater exposure in the region as well as nationally.
	• Our social media efforts have also resulted in steady growth for our platforms,
	particularly Facebook and Twitter.
	Increasing screening rates
	Social media with park prescriptions
	• We will share information on our Facebook page and we will have more like on a
	topic than we have people in our local area so we know we are reaching beyond
	our community.
	Get Your Tail on the Trail Facebook Page
	Circle of Life cancer education module developed for American Indians has a
	mobile app that can be downloaded on mobile device.
	Through local radio station on air to discuss health prevention topics
	Ads on breast cancer survivor, mammograms, go red day
	No huge success yet.
	Recruitment for research projects through use of technology
	• It is informational to those who receive it.
	I have had feedback on immunization information
	• We use text messaging for appointment reminders and communication with clients
Healthcare	• Text for Baby - SD has been recognized several times as one of the top users.
	Social media - face book to deliver messages, survey monkey for patient surveys
	• When new programs have been developed, we have been able to post on social
	media to increase awareness. This has assisted with helping more patients and
	families with promoting social skills.
	• The clinic recently has expanded use of UpToDate (UpToDate.com) for patient
	education in the clinic setting. We are always looking for new ways to access and
	share public health messaging.
	• S.D. is consistently 4th in the nation for enrollments in the text4baby service - text
	messages to pregnant women and parents of infants through age 1
	• Importance of vaccines through articles in the paper or in person at health fairs or
	other events - People are more aware of vaccines that are needed.
	Breast Health Campaigns
	• We have successfully done a number of webinars on chronic disease and other
	physician/healthcare related topics.
	Facebook messages for screenings, sun safety, farm safety, drug & alcohol
	awareness, etc. has been very successful.
	Unable to assess
	Facebook has increased our client numbers and make more people aware of our
	clinic and what we provide for services
	• NA
	• For several years, SD was ranked first in the nation on individuals using
	"Text4Baby" program.
	WIC program messaging is well received.
Tribal	• Each department within the organization has their own web page to post health
	information that the department is working on. We let our tribes know that they can
	access this information if they cannot, then we can send them the desired
	intormation that they may need for their community.
	• The Recreation department has expanded their reach through social media since
	we tocused on it 2 years ago. Our reach has been expanded to 200+ people.
	PSA's on KILI radio
	• The Community Health Education publishes articles, ads, and photos in the Tribal
	newspaper weekly and has a FaceBook page. We have a website for our First
	I,000 Days Initiative, although we are going to have problems in sustaining it. We

	<ul> <li>e-mail flyers and announcements to various distribution groups. We also work with the Tribal radio station. Tom Wilson, the radio station manager is very high tech savvy.</li> <li>Attendance at health fair</li> <li>Not sure</li> <li>Facebook updates concerning a Walk Challenge that was held. Participants were able to receive updates, reminders, tips, etc.,</li> <li>Increased followers and likes on social media. Expanded network of resources through sharing content.</li> </ul>
School	<ul> <li>None</li> <li>Gains people's attention and opens up questions in a non-threatening way</li> <li>Using the "all call" system we have to relay messages to all staff/students/families</li> <li>we do not deliver public health messaging</li> <li>We have used several sources including social media to get the word out. Actually on the reservation Facebook is the most effective</li> <li>School reach calls/emails are usually effective with our entire family population</li> <li>Using technology, we have had a good rate of students entering school with up to date immunizations. In addition, we attempt to educate when a student should stay home due to the flu symptoms.</li> <li>We have parents who like and encourage us to continue to put out health messages as they are either unaware of the current health trends or have very little knowledge.</li> </ul>
	• The KLRN channel and partnership with Sanford has been a great success.
Worksite	<ul> <li>We have learned to keep emails very short and use links for additional reading - staff turn off/delete if the email is longer than a single screen; those that want more can read the links; visuals are good too. But newsletters have be skillfully created - they are piggy with email space and if they cause staff to exceed email maximums they get frustrated and just delete them. So it's equally important to be respectful of size/storage space.</li> <li>Able to distribute event information and reminders easily</li> </ul>
	<ul> <li>We get people to sign up for and participate in our wellness screenings</li> <li>Quit Tobacco Program - through use of social media has been fun and successful. Pay our employees \$500 at the end of the year if they have been tobacco free for 1 full year.</li> </ul>
	Using Power Point slides in the break room.
	<ul> <li>I was recently told by a staff member that she has lost 40 pounds reading my Weekly Wellness Tips, share on our internal email system. She also participates in local fitness events which I promote.</li> </ul>
	• Keeps parents updated on what their kids are learning at the Tokata Youth Center.
	• As of this year we added in using Facebook which has enhanced our communication.

# Question 25: Please share additional information to better support our understanding of how your organization uses technology to deliver public health messaging.

Sector	Responses	
Community	None	
	<ul> <li>We work with Better Choices, Better Health and CAREgivers program in promoting upcoming workshops and including materials during outreach, more of a messenger in the process.</li> </ul>	

	<ul> <li>We primarily employ Facebook and Twitter to reach our audience, and focus on public health messaging at the [community sector location removed] level. The majority of our followers are middle-age females.</li> <li>It is hard to get people together since we live in a rural area and have students/staff/community members, etc. that live a distance away so it is hard to have meetings but we can keep them informed of events, reports, etc. by using a monthly newsletter that is emailed out and by keeping things posted to our Facebook Page.</li> <li>Individuals and through home visits in communities</li> <li>Again, some of our programs include healthy lifestyles and we send out information about what the Club is doing in programming for the week or month.</li> <li>Most of mine is done face to face and with handouts. I do share emails that I find people would benefit from</li> <li>In our office we would like to use more technology. Our internet in our area is not advanted and have and the prime is an empirical and and the prime is an empirical and the prime is an empirical and the prime of the sector.</li> </ul>
Healthcare	<ul> <li>diways reliable, and cell phone service is sporty.</li> <li>We share the info via emails to staff, but normally give clients printed materials.</li> <li>We are in a unique position since our [healthcare program named removed] and our [healthcare program named removed] both fall under the umbrella of the [healthcare program named removed]. Therefore, we have fairly stringent requirements in areas like use of social media. So, we try to utilize the tools we have to the best of our ability and then take advantage of community partnerships whenever possible as another avenue to help share public health messages.</li> <li>WIC clients have option to do short online learning activities for a wide variety of topics related to health and nutrition</li> <li>We are a very small town. Most of my communication with the public is in person or through the paper or speaking at an event. I do have brochures available.</li> <li>We do not use face book or social media with our clients, but use one on one social interaction with client in our office</li> <li>Automated phone reminders for clinic, Facebook page for family planning and Facebook page for the WIC clients/DOH</li> <li>NA</li> <li>Unified DOH messages</li> </ul>
Tribal	<ul> <li>Our organization currently does not have anyone in the health/clinic sector that delivers public health messaging. I am not sure the reason, but from our experiences as a department it is a missed opportunity for the young audience.</li> <li>All I can think of for now.</li> <li>We use Facebook to promote health education and for promoting health fairs or other health related activities. Looking into other social media, but have been told not many people use twitter in our area. and young people mostly use Instagram or snapchat. (which we are still learning and don't have access to at work)</li> <li>Website design and maintenance creates our existence in the cyber world.</li> </ul>
School	<ul> <li>We put out information on Concussion/ Heart Screenings</li> <li>This is not applicable to our school</li> <li>Most schools in South Dakota have School Messenger that can call parents of certain grade levels, buildings, etc. to notify of many situations</li> <li>We are very basic in our approach. We use emails, text messages, our school's website, our online grade book, and social media to reach parents, students, and community members. We find that if we try to do too much, we do not have the staff or the time to keep multiple forms of communication up to date. We try to keep things simple but also to give the very best information available.</li> </ul>

	[School sector names removed] with our community re be an excellent resource on this topic. I work closely their expertise in the area of using technology to rea	elations department may also with them and rely greatly on uch large numbers of people.
Worksite	Technology is a struggle but we use it how and when generally starts with email and our intranet web pag articles, webinars, etc.	ever we possibly can - it's ge, with links to podcasts,

Utlizing Technology to Deliver Public Health Messaging: An Environmental Scan of Community, School, Tribal, Worksite, and Healthcare Sectors in South Dakota

## COMMUNITY



Demographics: Fifty-one respondents represented the community sector, with 83% of those who serve more than one community across SD varied in size from urban clusters to rural and frontier communities.

Patterns of Technology Use: The general public and families are the primary audiences targeted through the top three technologies utilized, e-mail, social media, and website, with the primary focus of messaging as health promotion and prevention and health education. In-person educational events and seminars are other methods used for delivering public health messaging. In addition, the leading health topics these technologies are used to address are physical activity and nutrition, diabetes, and

obesity, including other areas identified, mental health and maternal and child health. Oral health is the least addressed.

Feasibility of Technology Use: The effectiveness of the technology used is measured through social media engagement (e.g. like, shared, etc.), page views, and response rates, with reach the least used measurement and some that do not measure at all. Individual staff persons and a communications teams are assigned to deliver messaging, with a few where no one is assigned. Content is largely determined in advance and shared from other sources. In addition, administration, a wellness team, or an external media contractor is also utilized by a few community sectors to deliver messages. Staff roles in

delivering public health messages largely include developing content and posting messaging. Many community sector representatives do not use or do not know if tools are used to manage delivery of the messaging, however Facebook, websites, and Hootsuite were indicated by ones that do. Barriers to using technology to deliver messaging is largely budget, followed by lack of staff and lack of staff training on technology, however access to the population base is also a barrier due to poor internet access, lack of social media use, organizational policies for technology use, and staff time.

#### **Barrier to Technology Use**

"Large organization that centralizes the use of social media and other technologies. This slows the process, which creates a disconnect in social media platforms that thrive on immediacy and engagement with the audience. Program staff have no access to or ability to interact through social media with the audience."

-Community Organization Staff

Additional Information to Inform Technology Use for Public Health Messaging: Almost half of respondents indicated that the primary areas of chronic disease challenging to address using technology, include obesity, diabetes education, tobacco use and policy, aging populations, disparate populations, as well as having the ability to reach and impact populations effectively. However, many communities have had success using technology to deliver messaging, such as Twitter chats, YouTube videos to promote wellness, or public campaigns promoted through Facebook. Moreover, internet access is often a challenge to utilizing technology to deliver messaging, especially in rural areas, however Facebook has been a useful platform to deliver information.

Utilizing Technology to Deliver Public Health Messaging: *An Environmental Scan of Community, School, Tribal, Worksite, and Healthcare Sectors in South Dakota* 

## HEALTHCARE



Demographics: Forty-nine respondents represented the healthcare sector by facility type indicated in Figure 4. The type of healthcare facility (managed/ owned/leased) respondent's organization belonged to, included 38.1% (16) state/government, 33.33% (14) notfor-profit, 28.57% (12) healthcare system, 11.9% (5) independent, and 4.76% for profit (14).

Patterns of Technology Use: The general public, patients, and families are the top three audiences targeted to receive public health messaging using technology. The top three technologies used for messaging include website, social media, and e-mail, with health education, health promotion and prevention and healthcare reminders all the focus of messaging. Other types of technology used

include digital displays in waiting rooms, TV media, newsletters, and newspaper articles. Social media and webinars are used the most by local health departments, while patient portal is used the most in Medical/Physician Office/Ambulatory Care/Clinic. In addition, the leading health topic these technologies are used to address include physical activity and nutrition, tobacco, and cancer, with injury prevention, substance use, and oral health as the least addressed topics. Physical activity and nutrition are the leading

health topics addressed the local health department and Medical/Physician Office/Ambulatory Care/Clinic. Oral health is not addressed by Assisted Living or Health Plan/Health Insurers, as well as injury prevention Health Plan/Health Insurers. Additional topics addressed include arthritis, maternal and child health, and general wellness.

Feasibility of Technology Use: The effectiveness of the technology used is measured through social media engagement, page views, followed by achievement of desired health outcomes, and referrals/enrollments to evidence-



based programs. However, a few indicated they do not measure or are not sure how it is measured. A communications team was primarily indicated as the person(s) assigned to deliver messaging, which is highest among Medical/Physician Office/Ambulatory Care/Clinic facilities, with about half who indicated an individual staff person and that no one is assigned. Other staff assigned include program staff or administration/HR/marketing staff. Staff roles in delivering

messaging includes developing content and posting it, followed by scheduling, with some that suggest content and approve content. Content for the messaging primarily determined in advance and content shared from other sources, with some content contributed by other organization staff and few that provide updates on the spt. In addition, Facebook, Google Drive, or Tweetdeck were indicated as tools used to manage delivery of messaging via social media, however many respondents did not know what is used.

#### **Technology Used to Deliver PH Messaging**

"As the marketing director, I spread the word. This survey made me aware, that maybe we should be addressing our clients via e-mail. Something we don't do right now."

-Healthcare Marketing Director

Barriers to using technology to deliver messaging is largely budget, followed by lack of staff training on technology and a lack of staff, with a lack of tools as the least barrier. However, health plan/health insurers do not see lack of staff training on technology or a lack of tools as barriers. In addition, internet access is not a perceived barrier to hospital, assisted living, and health plan/health insurers, while it is a barrier to the other facility types. Moreover, staff time,

organizational policy for technology use, access to priority populations due to language barriers and access to internet and/or computer, budget, as well as information overload were also indicated barriers.

Additional Information to Inform Technology Use for Public Health Messaging: A little less than half of respondents indicated reach and impact on populations, cancer prevention, access to priority populations, and message delivery due to language barriers as areas challenge to address. However, many healthcare entities have had success using technology to deliver messaging, such as use of Facebook messages for screenings in hospital and assisted living facilities, Text for Baby or WIC program messaging in a local health department, Breast Health Campaigns in Medical/Physician Office/Ambulatory Care/Clinic facilities, and use of UpToDate for patient education in FQHC's. Moreover, while technology is used to deliver messaging, in-person education is often utilized in rural communities, as well as a unified message has helped with messaging. Organizational policy for technology use continues the challenge message delivery through social media between healthcare professionals and administrative policy.

Utilizing Technology to Deliver Public Health Messaging: *An Environmental Scan of Community, School, Tribal, Worksite, and Healthcare Sectors in South Dakota* 

## WORKSITE



Patterns of Technology Use: Worksite staff are largely the audiences targeted by the top three technologies utilized to deliver public health messaging, e-mail, website, and social Demographics: Sixteen respondents represented the worksite sector, which was the lowest response rate by sector for the survey. Respondents indicated the number of employees at their worksite included the following in Table 2. The industry respondents (n=14) represented 14.29% (2) Construction, 7.14% (1) Education, 14.29%, (2) Government, 42.86% (6) Manufacturing, and 14.29% (2) Non-profit Organization.

#### Table 1 - Employee Population

Employee Population	% (Number)
0-25	6.25% (1)
26-100	25% (4)
101-250	31.25% (5)
251-500	25% (4)
Over 500	12.5% (2)

media, with smartphone applications as one of the least utilized technologies. The focus of messaging of health education, health promotion and prevention, as well as healthcare reminders. The health topics addressed through messaging is largely physical activity and nutrition, injury prevention, and tobacco, with cancer and oral health the least addressed health topics. Other topics addressed indicated all topics related to wellness are addressed throughout the year.

Feasibility of Technology Use: The effectiveness of technology used to deliver messaging varies, with achieving desired health outcomes and social media engagement as the top two used, however worksites also use page view, response rate and referrals/enrollments in evidence-based programs as other effectiveness measures. However, some worksites do not have the ability to measure page views or do not use a measurement. Individual staff persons and a communications team deliver messaging, with human resources identified as other staff persons assigned to deliver messaging. Staff are tasked with posting, developing content, and scheduling delivery of messaging, with one site who evaluates messaging. Content is primarily shared from other sources, followed by determined in advance and contributed from other organization staff.

#### **Effectiveness Measurement**

"I can see how many people looked at my e-mails, but there is no measurement as to how the information is used."

-Worksite Staff

Worksites indicated they do not use tools to manage delivery of messaging via social media, however Facebook, and School Messenger was indicated by one worksite. Internet access was identified as the primary barrier to using technology to deliver messaging, followed by budget, and lack of tools (e.g. technology). Additional Information to Inform Technology Use for Public Health Messaging: Half of respondents indicated no challenges with using technology to deliver messaging to address areas of chronic disease, while some indicate challenges with focusing on a specific disease, finding the right media and content to deliver, or having the ability to reach everyone and leave a positive impact. However, worksites have experienced successes using technology to deliver messaging, including distribution of event information, registration and participation for wellness screenings, Quit Tobacco Program, or staff weight loss using wellness tips received from internal e-mail system and participation on local fitness events. Technology is challenge for some worksites to use, however it is utilized when feasible.

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## SCHOOL

Demographics: Twenty-eight respondents represented the school sector, including 60% (4) k-12, 16% (4) higher education, 12% (3) high school, 8% (2) elementary school and 4% (1) combined elementary and middle school. Within those respondents, their student population includes the following in Table 1.

#### Table 1 - Student Population

Student Population	% (Number)
Less than 250	28.00% (7)
250-249	24.00% (6)
500-749	12.00% (3)
1250-1499	4.00% (1)
2000 or more	32.00% (8)



Patterns of Technology Use: Students and families are the primary audiences targeted by the top three technologies utilized to

deliver messaging, e-mail, website, and social media, with smartphone application, podcasts, and discussion boards as the least used. Middle school and k-12 schools do not use smartphone applications. Specifically, families are heavily targeted for k-12 schools, but not at all for universities. Faculty and staff are additional audiences targeted, as well as student portals and an internal TV station are additional types of technology used. The focus of the messaging is primarily health education and health promotion and prevention. In addition, physical activity and nutrition, tobacco, and oral health are the top three health topic address through messaging, as well as immunizations in k-12 and drugs and alcohol and STD's in university facilities as other health topics addressed. Cancer and heart disease and stroke are the least addressed topics.

Feasibility of Technology Use: The effectiveness of technology used is measured through response rate, social media engagement, and achieving desired health outcomes, with reach not measured at all and some unsure if it is being measured and or not at all. Individual staff person(s) are responsible for delivering messaging, followed by a communications team and no one that is assigned. Wellness team and health and physical education teachers, as well as school counselor are other staff persons assigned to delivering messaging. Staff are primarily tasked with posting and developing content in delivering messaging, with scheduling the least assigned task, as well as other roles assigned include sending out training information and links to information. Content for messaging is developed in advance, followed by content shared from other sources and contributions by other organizations. Various methods are used to manage delivery of messaging via social media, including Facebook, text messages, websites and Connect 5 Messaging System, with half of respondent who indicate none are used. Barriers to using technology to deliver messaging are broad, with a lack of staff training on technology, budget, and internet access as the leading barriers, however lack of access to the intended audience and lack of information on what needs to be shared as other barrier identified.

Additional Information to Inform Technology Use for Public Health Messaging: There are largely

no areas of chronic disease that are challenging to address using technology to deliver messaging, however a few areas indicated that sharing photos of chronic disease are too graphic, and it is different to recommended place for information or treatment for specific diseases as there is no affiliation with a medical group. In addition, one respondent indicated that

#### **Chronic Disease Areas Not Addressed**

"Specific topics such as diabetes, heart disease etc. do not apply to the masses of young children. Often parents are not interested in information that they perceive doesn't apply to them"

-School Staff

diseases such as heart disease and diabetes do not apply to young children and parents are not interested in the information. Schools have had success with gaining people's attention regarding chronic disease, and getting the word out through social media, specifically Facebook on the reservation. Parents have also encouraged schools to continue to share health messages as they are unaware of current health trends. Additional insight to better understand school sectors' use of technology to deliver messaging include the use of a basic approach to deliver messaging through e-mail, text messages, and social media.

Utilizing Technology to Deliver Public Health Messaging: *An Environmental Scan of Community, School, Tribal, Worksite, and Healthcare Sectors in South Dakota* 

## TRIBAL



Demographics: Fourteen respondents represented the tribal sector and within those respondents, approximately 41% (5) serve more than one tribe of South Dakota's nine tribes. The following sectors are represented within the respondents; 25% (3) tribal sector, 25% (3) public health sector, 8.33% (1) non-profit sector, and 41.67% (12) other sectors, including recreation and culture and a combined representation of government, healthcare, worksite, public health, and non-profit.

Patterns of Technology Use: The general public, followed by families and students are the primary audiences targeted through the top three technology utilized, e-mail, social media, and

website, however face-to-face discussions are also often used in place technology due to poor internet and telephone access in tribal communities. The nonprofit sector also uses webinars to deliver messaging. Smartphone applications are not used at all across the tribal sectors. The primary focus of the messaging is health promotion and prevention, followed by health education, with healthcare reminders the least focus. A variety of chronic disease areas are addressed across all tribal sectors using technology, with tobacco, cancer, physical activity and nutrition, and chronic disease management as leading health topics addressed. Oral health and injury prevention are the least addressed topics across all tribal sectors, with the non-profit sector not addressing these topics at all.

Feasibility of Technology Use: The effectiveness of the technology used is measured through social media engagement, page views, and reach, however some are not measuring effectiveness at all or it is not applicable due to face-to-face discussions. Individual staff persons, followed by communications team, and volunteer(s) deliver messaging, and a few where no one is assigned. Non-profit sectors only use an individual person to deliver messaging. In addition, staff roles in delivering messaging include developing content and posting it, while one disseminates content to the newspaper and Talking Circles are facilitated during in-person community workshops. Moreover,

#### **Technology Used to Deliver PH Messaging**

"We don't use technology to deliver health education, but rather face-to-face discussion during home visits...not all of our clients use social media or even have telephones in their homes"

-Tribal Staff

content utilized to deliver messaging is primarily shared from other sources, followed by contributions from other organization staff and determined in advance. Tribal healthcare sectors do not use content contributed from other organization staff and the non-profit sector does not use content shared from other sources. Community needs also determined the content delivered. Facebook is primarily used to manage delivery of messaging via social media, however Youtube, Constant Contact, and LinkedIn are also used, as well as a few do not know what is used. Barriers to using technology to deliver messaging is primarily a lack of staff, however, internet access, lack of technology tools, as well as lack of staff training on technology was also indicated. Budget is barrier for healthcare and non-profit sectors, but not for the public health sector. Language barriers were least recognized barrier. Organizational technology use policies regarding social media use and access to telephone or computer, as well as lack of social media use are also barriers.

Additional Information to Inform Technology Use for Public Health Messaging: Some topic areas are challenging to address using technology, including STD's or substance use, as well as message that grab people's attention and motivate behavior change. However, many tribal organizations have had success using technology to deliver messaging, including using Facebook to promote a walk challenge and keep participants engaged, expanded network of resources and reach to people through social media. Moreover, Facebook has been successfully used to promote health education in the public health sector, while one organization does not have staff who delivers public health messaging, identified as a missed opportunity.