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Title: Interactive Mapping to Engage Community Members in Chronic Disease Prevention and Policy

Category: Open Government and Data, Information, and Knowledge Management

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State: Montana

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Executive Summary

Chronic diseases are common, costly, and often preventable. To inform the public more about chronic diseases-related services in their community the Chronic Disease Prevention and Health Promotion (CDPHP) Bureau of the Montana Department of Public Health and Human Services (DPHHS) created several mapping applications that the public could use to take action. These included a map of the ratio of school nurses to students to highlight the lack of school nursing services in the state, a map of community programs to help individuals learn more about their chronic disease and learn to manage it well, and finally a map about tobacco retail sales, especially among youth. These maps use an interactive, online format using ESRI's ArcGIS Online. They engage the viewer by encouraging them to interact with the map and ask questions of the data. These maps also provide local data, which is often limited in a large, but sparsely populated state like Montana. Using the platform provided by ESRI also allows non-technical staff to make updates and changes to the applications. This frees technical staff time to work on other projects. The mapping applications have led to a few successes already including influencing decision makers to introduce legislation and national promotion as an innovative and informational tool.

You can visit our maps here: <http://mtcdcpb.maps.arcgis.com/home/> and here <http://montana.maps.arcgis.com/apps/StorytellingTextLegend/index.html?appid=28b1df5b3330470ba3cfcfa60a81293c>

3) Business Problem and Solution Description

The Chronic Disease Prevention and Health Promotion (CDPHP) Bureau of the Montana Department of Public Health and Human Services (DPHHS) collects or has access to a variety of data on disease prevalence, health behaviors of the population, and locations of services. While program staff use the information internally, it is also important information to disseminate, allowing for people to take action. The Bureau has traditionally relied on printed tables and charts for dissemination of data and some data are never released at all, remaining in spreadsheets.

Bureau staff are often asked by partners and stakeholders if any local data are available on certain topics. Montana is a geographically large and sparsely populated state and health data are highly protected and confidential. Therefore, which data and at what level they could be released has to be carefully considered. The Bureau needed new and engaging methods that could be released at the community rather than state level to inform the public about chronic disease prevention topics.

The solution was to generate maps with county level data, when appropriate. Maps are often easily interpretable and can incorporate a large amount of information in one image. Readers are also familiar with maps and may be able to understand them better than a table or chart. To create maps, several Bureau programs used ESRI's ArcGIS Online interactive and desktop mapping tools to share information about chronic diseases and disease management. While some of these maps started as static, printed maps, all have been converted to interactive, online maps in the "story map" format that incorporates text, images, and geography with the available data to tell a explain an issue. They can easily be accessed online and are responsive to hand-held devices.

This project started with a couple of topics including school nurse to student ratios, locations of chronic disease management programs, and information about tobacco retailers, specifically describing the marketing of tobacco to children. While most of these maps were produced on staff time, the tobacco retail story map was produced by a contractor, who designed and implemented a transition plan for handing over the project to the state staff. This included several training opportunities and a product that was completed managed using state IT services. These tools and technological platform can easily be transferred to other topics to leverage public interest and explain issues.

The mapping applications are marketed in several ways. A mapping application to demonstrate the locations of all of the programs the Bureau supports for people with chronic diseases (i.e. home visiting, classes, one on one education) is being promoted

through a postcard being sent to healthcare providers around the state that encourages them to visit the website and refer their patients into the programs. A story map explaining the issue of youth access to tobacco was promoted by ESRI during National Public Health Week as an innovative story map to address the issue, by Tobacco Prevention Specialists around Montana, and youth that participate in the React Against Corporate Tobacco (ReACT) leadership groups promoted the map during the Montana State Legislature's Celebration on the Hill. Finally, a map showcasing the limited school nurses in Montana has been showcased by the Montana Association of School Nurses (MASN) locally and promoted nationally as an advocacy tool.

Significance

Chronic diseases are among the most common, costly, and preventable health problems. In 2011, over half of Montana adults (58%) reported having at least one and 33% reported having at least two chronic diseases or a related risk factor for chronic disease. One in five Montana adults (22%) and about one in seven (15%) youth reported that they currently smoke tobacco. Rates of tobacco use and chronic disease prevalence are even higher among other populations like American Indians, people with low-income, and adults with a disability. Specific programs have been shown to dramatically increase control of a chronic disease and teach a person how to manage it therefore reducing costs and improving quality of life. Certain policies have been shown to positively impact public health as well.

These projects create easy to understand, engaging explanations of a problem in communities. They incorporate engaging images, not just text, to tell a story. A key significance of these projects is that it provides local data. Because the state is large and diverse, stakeholder want information that is not the statewide estimate, but their local data. Data are more likely to get used and turned into action if they are felt to be true to their area.

The data are easy to update using the ESRI ArcGIS Online platform and the platform allows for flexibility. Because the platform is flexible and easy to use, non-technical staff are able to make necessary changes, freeing the time of the technical staff who would have had to perform analyses, publish documents, or use expensive and technical software.

Some successes from these projects include using the maps with key decision makers. MASN used the school nurse to student ratio map to advocate for more school nurses while visiting US Senator Testor's office in Washington DC. The map was so compelling that it resulted in legislation being drafted and introduced into Congress. Also, the tobacco retail map application was used during the Montana State Legislature

by youth participating in the ReACT groups to teach their local legislator(s) about their community and the risk of tobacco for youth.

As mentioned, there are several groups that benefit from these services. They include tobacco prevention specialists, school nurses, healthcare providers, decision makers, and citizens looking for more information about their local community and the services available to them, especially those available to help manage chronic diseases.

5. Benefit of the Project

These projects make information that has been collected about communities available to residents. They also call attention to the services that are available and issues impacting their community members. For example, the map of school nurse ratios is a reminder to decision makers about how few school nurses there are and creates a very tangible talking point. The tobacco retail map demonstrates how tobacco companies market to children, how close tobacco retailers are to school, and illustrates stores that have infractions for selling to minors. All of this information is in one location that allows someone to easily speak to the topic with the intent to decrease youth initiation of smoking. Finally, a map of services demonstrates to the viewer all of the services available to them in their county, making them aware of services they may not know about and providing contact information in one easy to find location. All of these applications promote taking action on a specific topic, whether it is on behalf of another's health or your own.

This project is also in a format that is easily transportable, accessible in most locations, and speaks to different populations. This format uses current technology to engage youth, is quick and allows for communicating with legislators who may have limited time, and is a quick reference for healthcare providers who also may have limited time with their patient. Not only does this link up with the state CIO priority of increasing use of and access to GIS and avoiding building custom-built systems but it also creates an effective government by reducing internal costs and offering value, another priority.

As the CDPHP Bureau enhances its performance management, these tools will be closely monitored. These mapping applications directly impact specific goals of the Bureau like increasing chronic disease management in children at school (through use of school nurse), decreasing youth initiation of tobacco use, and increasing self-management education to people with chronic diseases. As mentioned, they have already served to advance public policy related to school nurse to student ratios and access to tobacco for youth. Behavior change and reducing impacts due to chronic disease is a long-term goal that will take many years of monitoring before seeing the anticipated change.