Colorado School of Public Health Modeling Group Stakeholder Feedback Report: Website
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I. Introduction

The Colorado School of Public Health (ColoradoSPH) COVID-19 Modeling Group convened several meetings with stakeholders concerned with the course of the COVID-19 epidemic in Colorado on September 2, 2020. These stakeholder groups included Colorado Counties, Inc. (CCI), the Colorado Human Services Directors Association (CHSDA) and the Colorado Association of Local Public Health Officials (CALPHO). The purpose of these meetings was to gain insight and perspective on Version 1 of the website being developed by the ColoradoSPH Modeling Group. CCI, CHSDA, and CALPHO are professional membership associations representing a diverse group of local agencies that make vital decisions for Colorado residents. It was important for the Modeling Group to gather early stakeholder feedback from these groups to make the website as useful and sustainable as possible for various stakeholders. CCI, CHSDA, and CALPHO represent a variety of stakeholders across the state who have wide-ranging data and epidemic modeling needs and priorities related to the COVID-19 pandemic. The goal of the website is to provide data and regional epidemic models related to the COVID-19 pandemic, including the health of the population, a profile of its vulnerability, and the local economy, which in turn can facilitate data-informed decisions at the local level.

II. Why Stakeholder Meetings?

The Modeling Group held stakeholder meetings with these agencies to gain information on data sources that were already being used and how this website could help these agencies make informed decisions. This was achieved through open discussions and qualitative data collection to improve the Modeling Group's understanding of the vast scope of work of the three associations. The ability to listen to these stakeholders without an agenda was vital to obtaining useful information and candid feedback for the website.

These meetings lasted approximately 1 hour each. A slide show presentation demonstrated website information, data visualizations and examples of how the Modeling Group envisioned the data being utilized. It was an open forum where suggestions, questions and discussions from the stakeholders were welcome. The meetings were recorded to facilitate the preparation of this report and recommendations for the website.

These stakeholders were selected because they represent local agencies that may have different priorities related to mitigating the negative impacts of COVID-19. Each of these agencies works with data to implement public health orders, to stimulate the economy and to mitigate and suppress the COVID-19 pandemic.

III. Data Examples

Data and visualizations from other website dashboards similar to what is planned were presented during the meetings as examples of what will be included in the ColoradoSPH website. Figure 1 shows the data categories that will be included in the first version of the website. Throughout this report, example visualizations of some of these categories will be

shown to provide context to the concerns and comments shared by agency representatives.

Figure 1.

|			
Demographics	Age Race Ethnicity Language	**Socioeconomic Factors**	CDC Social Vulnerability Index Education Unemployment Uninsurance Poverty
Health Indicators	Chronic Conditions/Health Risks (e.g., asthma and diabetes) - Population 18+ - Population 65+ Hospitalization Mortality	**COVID-19 Surveillance**	Cases Hospitalizations Deaths Testing * Cumulative and Past 14-day rates
Economic Impact	Hours worked Wages Earned Business revenues (by industry)	**Mobility Patterns**	Relative Mobility Note: Relative mobility ranges from 0 (everyone is home all the time) to 100 (pre-COVID levels of staying at home) to theoretically infinitely high (in practice it rarely goes over 200)
Challenges to Physical Distancing	Crowded Housing Population Density Essential Job by Industry		

IV. Group Discussions

1- Colorado Counties, Inc.

a. Main Concerns

County commissioners have a wide range of concerns that expand beyond the health impacts of the pandemic to its economic and social impacts. During the meeting, commissioners voiced that coming into the winter season could severely impact businesses. Rural and mountain communities that rely heavily on the tourism industry are concerned about the change in activities, as well as the double or tripling in community size as tourist visits increase. One of their concerns is that this sudden increase in population can lead to more difficulty in controlling behavior such as social distancing and mask wearing when people are consistently inside. They also worry that visitors could be coming from states that are experiencing a high rate of COVID-19 infections. Figure 2 demonstrates the mobility data that can be utilized by these communities to track tourism movement and the status of the epidemic in their communities.

Figure 2

Out-of-state visits to: Denver County
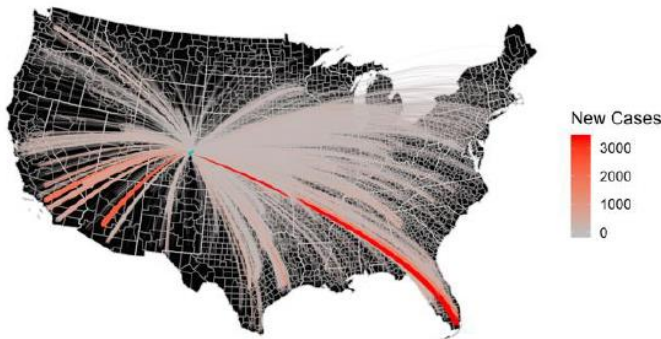
Source: SafeGraph visits (www.safegraph.com), NY Times (COVID-19 cases).
Visits on 2020-07-24. New cases in origin county on 2020-07-28.
Jude Bayham

There is also wide concern about the impact of the pandemic on local workforce and employment rates. Figure 3 demonstrates employment rates in Colorado in 2020 and contextualizes this concern.

The limited amount of employee housing can create a dense living situation during the winter months, in resort and ski communities in particular. When the pandemic started, many counties saw COVID-19 spread rapidly through restaurant workers who were living and socializing in close proximity. In addition, some counties, like Clear Creek County, experience workforce commuting across counties, raising concerns around COVID-19 case importation. County Commissioners have heard

Figure 3

directly from their constituents who express apprehension about high risk situations with tourists in the workplace. For example, rental technicians are concerned about getting close to guests while fitting recreational gear indoors. Data from the website can help these constituents understand their risks

In **Colorado**, as of July 29 2020, employment rates among workers in the bottom wage quartile decreased by **14.3%** compared to January 2020.

Jul 29, 2020

-14.3%
Low Wage
(<$27K)

while making vital operational decisions within their workplaces. There is increased concern from commissioners about COVID-19 fatigue amongst the general public and the desire to stop following public health orders due to the length of the pandemic. Commissioners hope that the website can help mitigate this fatigue by providing one place for their constituents to stay informed with easily explainable data.
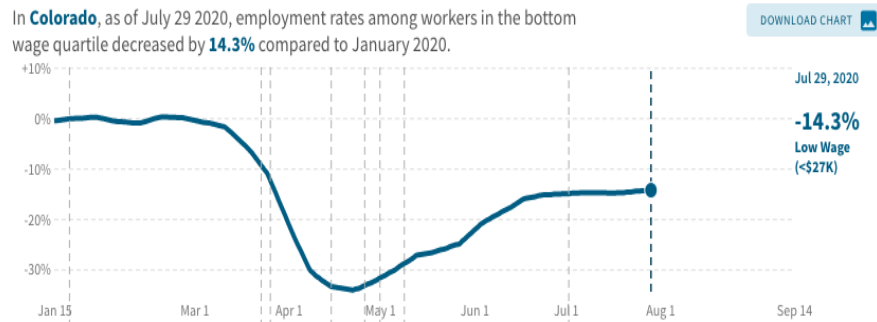
> "...I think it's very helpful...one of the inflection points we're dealing with right now...is just fatigue over dealing with this crisis after 5 or 6 months. And having these kinds of illustrations...these easily explainable data is going to help keep people vigilant. I think one of our biggest risk factors right now is...'people are just like...f it...we're over it, we're not going to distance anymore', but if they can see...if we can consistently show this type of information, we can re-energize to some extent the vigilance that is going to be needed to get thought the winter. So thank you, I think it's very helpful."

Another concern of county commissioners is the metrics being used to measure the COVID-19 pandemic. Some commissioners believe that using cases, hospitalization and death rates to measure the pandemic are ill-informed and can be manipulated with less testing. It is important

to note that this apprehension and lack of trust with the data can lead to how the website is or is not utilized. It will be important for the Modeling Group to integrate comprehensive data on the website spanning multiple data points and from several legitimate sources to ease these apprehensions. The quote below points to these models as a problem area and brings context to this concern.

> *"…thank you for the invitation unfortunately I will not be able to join. My input would be that I have absolutely no faith in the Colorado School of Public Health coronavirus modeling. Almost all of their estimates have been way off base and the big spike they are predicting in cases for August or early September is apparently not even going to happen. The state is totally basing its policies on these flawed models and not willing to adjust their policies based on what they're saying in the real world which I think is a huge mistake. That's my input. Thanks."*

b. Needs for the Website

The commissioners see the value of the website and were excited about using it to help with decision making and to easily access data. Below is a list of data points the commissioners would like to see included:
- Data to plan for winter season and seasonal social changes – projections for mobility and economic impact so businesses do not have to close down. For example, restaurants can be allowed to have heated outdoor seating to ensure business continues.
- Industry level data – For example, COVID-19 spreading through restaurant workers.
- Mental Health disparities and local drug/alcohol use.
- Data on waste water as a means to predict outbreaks.
- Broadband access – For example, this could be a social determinant of health if students and employees need to travel in order to work or submit assignments. This movement increases risk of exposure.
- Quality of Data – will there be reconciliation of multiple data sources?

There was a consensus that the regional models and additional data points will be helpful to county commissioners since the state-level tools do not reflect the local reality experienced by Colorado's diverse regions. Commissioners need to be able to show consistent data to their constituents to build trust.

> *"One of the things that would be extremely helpful to us, of course, is winter. There is such a behavioral change in winter and activity change in winter and, you know, we have a different kind of visitor here. I mean San Miguel County and a lot of our mountain towns are small in numbers but we double or triple in size and we have to accommodate for that."*

> *"Service industry employees have higher risk of exposure than visitors and folks who can work from home. Knowing the mobility of and housing habits specifically of these employees could be helpful in tourism regions."*
>
> *"I think it's very helpful from the standpoint of...as you speak with us [elected officials] and hear what we have to say, it sounds like it may help refine the output and that output will become more relevant to our needs...and...it's very helpful for us because those of us [elected officials]...we are swimming in the dark, but yet we're responsible for making and enforcing policy...and...all of this helps."*

2- Colorado Human Services Directors Association

a) Main Concerns

Human Services directors have a unique set of concerns surrounding the COVID-19 pandemic and its impact on a large array of social services including benefit utilization such as Temporary Assistance for Needy Families (TANF), Medicaid, and food assistance programs. Unemployment and housing issues were also discussed. These services are not directly handled by CHSDA but do impact their work in other social service areas. Many concerns voiced during the meeting were about the timing of the data used on the website (i.e., from previous years versus current year). Data fatigue was raised as an issue; for example, some said they are beginning to feel buried by the data instead of feeling like the data could get them ahead of the pandemic. Human Service Directors would like to be able to "gear up" for the impact of the pandemic, specifically, they expect an increased demand for services (Medicaid, housing, SNAP, etc.) as the pandemic continues and residents lose their jobs and health insurance coverage.

b) Needs for the Website

With these concerns in mind, there were several requests for website data:
- Data related to the impact of the pandemic on school closures and early childhood care programs.
- Housing Data
  - Eviction rates
  - Homelessness
  - Vacancy Rates
- Data on social service needs and vulnerable populations (immigrants, minorities, low socioeconomic status, etc.) (e.g., TANF). Figure 4 shows demographic data which can help anticipate some of these needs.
- Benefit utilization/enrollment and application numbers - this data can help human services directors with workforce planning to accommodate an increase in applications and claims processing as well as outreach.

- Impact of COVID-19 on New Birth Rate. This would be useful to project potential benefit needs in the future.

The human service directors voiced a need to share this data with all departments and agencies that they interact with to increase cross-agency collaboration.

Figure 4

Race/ethnicity Categories are not mutually exclusive, so population percentages may not sum to 100.	POP %
Asian, non-Hispanic	3.7%
Black, non-Hispanic	9.0%
Other race, non-Hispanic	0.2%
White, non-Hispanic	53.7%
Hispanic, any race	30.3%
American Indian or Alaska Native (one or more races, any ethnicity)	2.2%
Native Hawaiian or Other Pacific Islander (one or more races, any ethnicity)	0.3%
Two or more races, any ethnicity	3.6%

Gender	POP %
Female	49.9%
Male	50.1%

Age	POP %
Children (age 0-17)	20.2%
Adults (age 18-64)	68.5%
Older adults (age 65+)	11.4%

Lower SES	POP %
<100% of federal poverty level	13.8%

"This information, that you are providing from a local level, is very helpful for our metrics."

"The possibility of school districts closing again in the future will have a big impact on decisions that county human services makes, policy decisions they make, around, for instance, our early child care program."

"If we are talking about impacts related to economic self-sufficiency or housing or incidence of hospitalizations, whatever factor we want to compare it to. If we were to look at benefit utilization or benefit application numbers, things like that, that might help us to tell our story about the impact related to our workforce and the programs that sometimes are looked at as far as, you know, general funds [are] going down so we are going to cut this program and we can be like 'no look, our work load actually goes up when these other things are happening in our world.'"

3- Colorado Association of Local Public Health Officials

a) Main Concerns

Local public health agency (LPHA) officials expressed multiple concerns about data sources, regional models, and economic impact. LPHA officials want more information on the multitude of data sources that are currently available and who is managing these sources to ensure that

the correct data is disseminated. The challenge of sifting through multiple data sources instead of building trust and confidence in existing county level data dashboards is a concern. Without this trust, constituents would not know where to receive information and begin to distrust local agencies. LPHA officials would like to see a disclaimer on the website about contacting LPHAs when there is a discrepancy in the data.

CALPHO members expressed great interest in regional models to complement existing datasets. There is concern that local data would not be integrated into the website and efforts, already created by the LPHAs with immense resources, will be duplicated or lost. A potential solution is to provide a link to the county dashboards developed by the LPHAs on the website. There were concerns about the COVID-19 surveillance data used in the regional models and the need to ensure it is consistent with what is reported by the Colorado Department of Public Health and Environment (CDPHE). The expectation is that regional models will be available on the website to help with data informed decision making.

There is a wide range of needs across LPHAs. LPHAs that cover a smaller population, different workforces and industries, and have less health department staff would benefit from more resources and data than larger LPHAs with more resources. It will be important to incorporate all known data points and give all LPHAs the chance to make the same decisions with the same data.
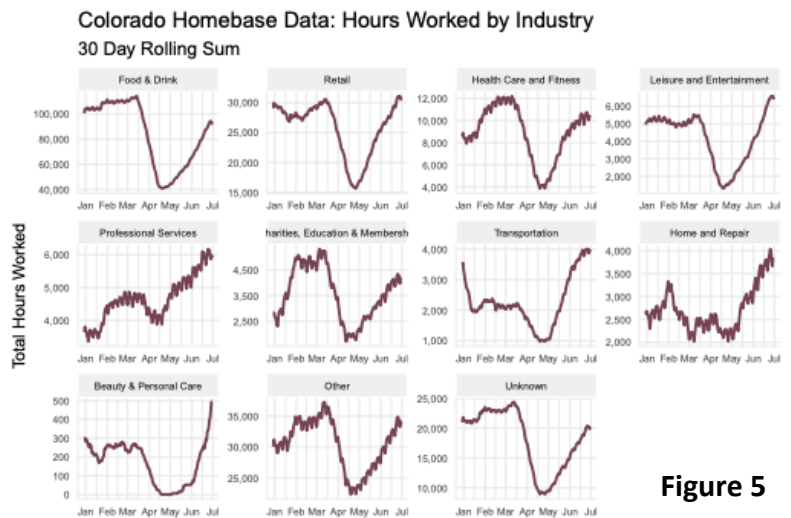

Figure 5

Economic impact was a large concern of CALPHO members. While they have a duty to develop and enforce public health orders to suppress COVID-19, they're also concerned for the health of their local economies. The data on the website should help inform the potential reality of this impact and how any economic changes could affect public health orders. Figure 5 demonstrates the economic impact based on industry. This data could help inform operational procedures per industry group to minimize the economic impact.

b) Needs for the Website

CALPHO members suggested additional data points or concepts they would find helpful for the website:
- Operational data – For example, can restaurants be opened based on public health orders (mask wearing and social distancing) and COVID-19 surveillance data.
- Data for "flipping a switch" - For example, if 100% of people wore masks, what would that impact be?

- School projections – For example, if cases increase within the school districts and schools have to teach virtually all of the time, what is the economic impact?
- Add agriculture to the industry view.
- Data points on vulnerable populations and minority groups.

Despite these needs and concerns, there was positive feedback about having access to regional models and having the website be a complement to data sources that are already being utilized.

> *"My main concern is that it is becoming increasingly time consuming and difficult to answer questions about all the data sets that are not local, rather than building confidence in our local dashboards."*
>
> *"Is there a way to put a caveat in these dashboards that, you know, if any of this data appears incorrect please check with your local public health agency or just a caveat that maybe this is not the most correct to date; local public health will always have primacy on these numbers."*
>
> *"I had voiced the need for regional modeling because our Broomfield county data is helpful but so much of what happens in Broomfield happens due to mobility with other surrounding counties. I would definitely support the idea of having modeling data at the regional level. I see it as a way of just complimenting the existing data sets that we have out there."*

V. Shared Themes

While CCI, CHSDA, and CALPHO each have different priorities and needs for what data and epidemic modeling should be included in the website, there were several common themes across the three groups. All groups were concerned about the economic impact of the pandemic in their communities. This included a desire for projections of the pandemic's impact on small businesses, employment and school closures. Housing and other benefit utilization was also a concern and need across the groups as these factors can impact the economy, as well as how local agencies are able to operate in the context of an increased demand for services.

All three agencies spoke about the need to understand the impact of the data. For example, seeing the numbers for social distancing and mask wearing measures was important to understand trajectories of the pandemic, but the agencies also wanted to be told what those trajectories would mean for businesses, schools, town events and needed social services. It is important to be able to use this data in an operational context and understand what the impact of the pandemic is beyond the number of cases, hospitalizations, and deaths. At this point in the pandemic, the wider reach of social and economic impacts is crucial to community survival. This operational thinking was a shared theme that could help all three agencies make informed decisions for their communities. Operational thinking can be explained through the example of social service offices. For example, this data can help social service offices stay open to help

constituents with benefit applications instead of closing down with no available approaches to reaching vulnerable populations.

Reconciling available data was another theme. Each agency voiced concern of where the data was coming from, consistency of data across a multitude of sources and how to share data between counties, regions and the Modeling Group. Apprehension stemmed from the widespread confusion about data accuracy and reliability as the pandemic continues to evolve quickly. Data needs to be aligned with state level and currently used county level data to build trust and reassurance to constituents as well as helping to make informed decisions. A benefit of the website is that it brings data from various sources into a single dashboard. Regional epidemic models were also a shared interest across the groups and each group is excited to see how these models may impact their work and constituents.

Table 1 demonstrates these shared themes. Themes highlighted in orange are ones that a singular agency specifically mentioned during the meetings. Themes highlighted in blue demonstrate those that at least two agencies discussed and those highlighted in yellow were discussed by all three. This list of themes is not exhaustive and will continue to grow as stakeholder input is sought throughout the development and refinement of the website.

Table 1. Shared Themes Across Stakeholders

Themes	Stakeholder by Professional Association		
	CCI	CHSDA	CALPHO
Winter Season Preparations	X		
Mental Health	x		
Concern for Minority Groups			X
Employment Data		X	
Benefit Utilization/Application		X	
Regional Models	X		X
Housing	X	X	
Mobility (Commuting, Broadband)	X		X
COVID-19 Public Health Orders (social network)	x		X
Data Sources/Reconciliation		X	X
School Open/Closed	X	X	X
Economy (Small Business, Industry)	X	X	X

VI. Key Takeaways

The key takeaways from these meetings will help shape the website as the Modeling Group works through each phase of development. All three professional associations have different priorities and scopes of work but are unified in many of the data points and concerns they share. This initial feedback will inform the development of Version 1 of the website which will seek to meet the different needs of various stakeholders.

The Modeling Group gained different perspectives from each agency on how the website data and models can be beneficial and engaging. It is important to look at the COVID-19 pandemic from a wide lens while utilizing many data points to help make informed community decisions.

VII. Next Steps

The Modeling Group has several next steps based on this first round of stakeholder feedback. These steps include:
- Reaching out to other stakeholder groups. The importance of gaining insights from multiple stakeholders and constituents is vital to the success of the website.
- Update Version 1 and future versions of the website to accommodate this initial feedback.
- Continue to gain feedback from these agencies and others via an open line of communication.
- Convene a Stakeholder Advisory Group with representation from various sectors across Colorado. This advisory group will be the formal mechanism through which the Modeling Group will adapt the website and epidemic models to meet the needs of various stakeholders.

VIII. Conclusion

These stakeholder meetings were informative to the development of the website and the work of the Modeling Group. This information will be utilized to improve the website to make it accessible and user-friendly for various local decision-makers and their constituents. The COVID-19 pandemic has brought, and continues to bring, much uncertainty to the well-being of communities across Colorado. The Modeling Group will continue to obtain feedback from stakeholders to ensure that the website and its tools can facilitate data-informed local decisions. The Modeling Group extends its gratitude to CCI, CHSDA, and CALPHO for their willingness to provide open and candid feedback and looks forward to future interactions with these and other stakeholders.