Bringing People Back into Public Health Data: Community Feedback on a Set of Visualization Tools - Summary Report

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Publication Statement

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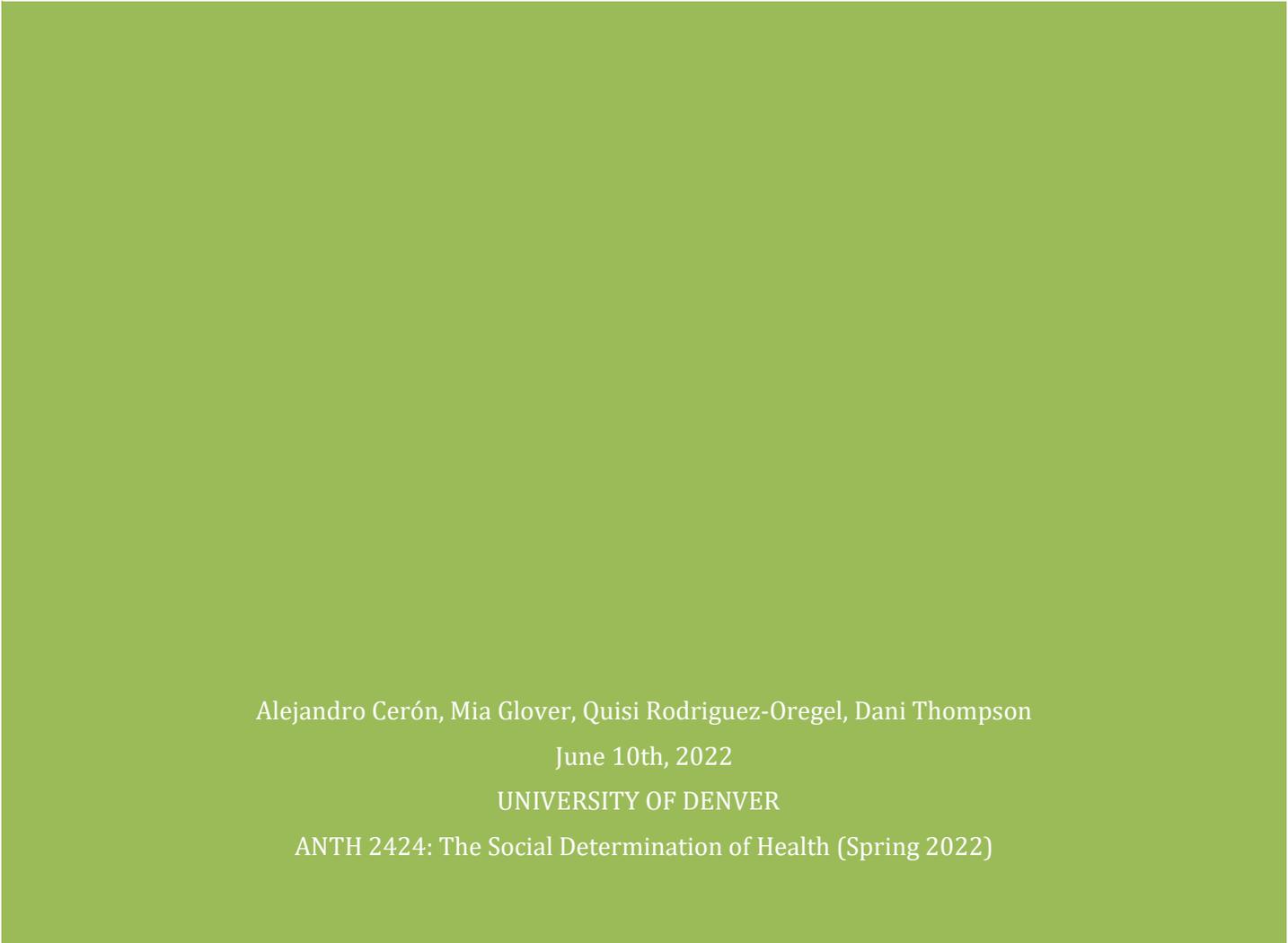
BRINGING PEOPLE BACK INTO PUBLIC HEALTH DATA: COMMUNITY FEEDBACK ON A SET OF VISUALIZATION TOOLS SUMMARY REPORT

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ANTH 2424: The Social Determination of Health (Spring 2022)

Acknowledgments

Special thanks to the participants in this study for their generous and thoughtful participation. A big thank you to our community partner for trusting us with the product of their work.

This study was designed and coordinated by Spring 2022 The Social Determination of Health's Graduate Teaching Assistants Mia Glover, Quisi Rodriguez-Oregel, and Dani Thompson, under the direction of Alejandro Cerón, course instructor. Data collection, analysis and report writing was carried out by the undergraduate students who took the class, as part of the course requirements. The study was conceived by Alejandro Cerón and two community partners who will be kept anonymous in this report.

Mia Glover, Quisi Rodriguez-Oregel, Dani Thompson, and Alejandro Cerón prepared this summary report.

The summary report is based on the following three reports that include findings that are more detailed:

1. Weight Status: Edited by Mia Glover. Authors: Tom Adams, Naomi Asakura, Kaela Belknap, Anna Block, Nicole Boehler, Hannah Boeve, Sarah Bomers, Sasha Borovok, Grace Bryan, Kate Buffington, Majesty Cain, Beth Carideo, Haley Chesno, Grace Connell, Jake Corbett, Camille Cruz, Chloe Dawkins, Anna Denniston, Lydia Dickens, Sophie Duplock, and Mia Glover (Graduate Teaching Assistant)

2. Cardiovascular Health: Edited by Quisi Rodriguez-Oregel. Authors: Samuel Dwinell, Avery Ess, Sam Ferman, Ellis Geis, Ethan Graupmann, Xander Hedrick, Angel Hernandez-Miramontes, Grant Huyghe, Sara Ibrahiem, Anna Jamieson, Ian Kang, Allie Kris, Erin Lawrence, Maddie Leake, Ryan Leary, Taylor Loh, Charlotte Monroe, and Quisi Rodriguez-Oregel (Graduate Teaching Assistant)

3. Cancer Screening: Edited by Dani Thompson. Authors: Alexander Nguyen-Lopez, Henry O'Daffer, Cat Parish, Jaylee Recountre, Grace Rizzo, Noah Roseth, Grace Rothstein, Katie Sage, Marie Saltzmann, Stephen Shlain, Riley Shores, Mackenna Simson, Mark Teneza, Jack Weinmeister, Justin Weinzweig, Alison Wenman, Patch Whelan, Lea Zimmerman, and Dani Thompson (Graduate Teaching Assistant)

Executive Summary

Background: Public health problems disproportionally affect minoritized groups, and socioeconomic inequalities shape their distribution. While this has been widely documented since the 1990s, and painfully confirmed through the current pandemic, public health research and information systems have not fully developed the tools for addressing health inequities. As a result, some of the most affected social groups are invisible in public health data, and the socioeconomic conditions that make them disproportionally affected are not well understood and addressed. Some have suggested that adopting approaches such as intersectionality and social determination in public health research and practice can improve how health inequities are addressed. Simultaneously, public health researchers and practitioners all over the world are looking for better ways to present public health data, while community and social activists are calling for public health data justice and democratization. Our community partners in this study, who work for an undisclosed organization, have led an effort of almost two years that is aimed at improving the representation and visualization of public health data in the state of Colorado. They have created three sets of pilot visualizations for weight status, cardiovascular health, and cancer screening, respectively, and asked us to collect feedback from the community on those visualization tools.

Methods: *Study goal*: To learn from people about how well a set of public health visualization tools tell the data stories about people in Colorado. *Study design*: Exploratory, cross-sectional, qualitative study. *Population and sample*: We were interested in adults who live in the State of Colorado. We used purposive sampling aiming at diversity in gender, race/ethnicity, age, occupation, and place of residence. *Data collection*: Semistructured interviews, audio recorded and transcribed within one week. Audios were destroyed after transcription. No personal information was recorded and audios and transcripts did not include any information with the potential of breaching anonymity. *Data analysis*: We used thematic analysis to analyze the interviews. *Research team*: 56 undergraduate students taking The Social Determination of Health (ANTH 2424) in spring 2022, three graduate teaching assistants, and one course instructor. The course instructor coordinated with two community partners in setting the goals and study design.

Findings: Although there are findings that are specific to each of the three webpage prototypes, some findings are common to the three. In general, participants had positive reactions to the general idea of the webpages, but several expressed negative reactions to different webpage elements, or to how the different elements conveyed an overall message. Some of the concerns expressed by participants include that some contents may not be accessible or easy to understand, that they did not see a representation of Colorado's residents' diversity in the different webpage elements, that the resources offered are not specific or sufficient, that the aesthetics and navigability of the website could be improved, and that the overall message the webpage aims to convey may not be easy to understand by users.

ANTH 2424. The Social Determination of Health (Spring 2022)

Conclusions and recommendations: Overall, some revisions to the webpage prototypes were suggested. First, improving the coherence between the wrapper, the webpage elements, and the webpage intended overall message. Second, improving the communication of a message by looking at webpage elements' accessibility, readability, and language. Third, expanding how the webpage represents and speaks to the diversity of Colorado's residents. Finally, include resources that are easier to get to by being more specific to users' potential needs.

Table of Contents

Contents

Introduction

This course-based study is a product of the University of Denver's Spring 2022 The Social Determination of Health (ANTH 2424) class. The study aimed to understand how well a set of public health visualization tools tells the data stories about people in Colorado, and about important public health problems. For this, a team of almost sixty undergraduate students taking the class, coordinated by three graduate teaching assistants, and directed by the course instructor interviewed a total of fifty-six people from Colorado, qualitatively analyzed those interviews, and wrote reports that draw conclusions and recommendations.

This study is part of an ongoing collaboration between some anthropology professors at the University of Denver, and our community partners, a small group of public health professionals working at an undisclosed organization in Colorado. The collaboration began in June 2020, through monthly virtual meetings to discuss the problem of misrepresentation of social groups in public health data. This led to an initial set of course-based projects in Spring 2021, where students taking Dr. Esteban Gomez' Visual Anthropology course, and students in Dr. Kelly Fayard's Museum Exhibit Design class, used tools from these courses to look at official websites displaying public health data about weight status in Colorado. Students made suggestions on how to bring back people and their stories to the data, as well as input about website accessibility and design. Our community partners took those suggestions and designed three prototype webpages – on weight status, cardiovascular health, and cancer screening – that utilize visualization tools and other strategies aimed at addressing the problems of misrepresentation of social groups, and at bringing back people and their stories. Over the winter of 2022, our community partners and Alejandro Cerón designed the general approach that we used in the study presented here, aimed at showing the three prototype webpages to community members who live in Colorado, and get their feedback about them. The idea is to use the collected feedback to improve those prototypes and publish the new webpages in the next few months.

In this summary report, we present the main insights gained from this study. We described the findings in more detail in three separate reports, one for each of the three prototype websites that touch on weight status, cardiovascular health, and cancer screening. Those reports also include the interview guides and informed consent forms we used.

Background

Public health problems disproportionally affect minoritized groups, and their distribution is shaped by socioeconomic inequalities. While this has been widely documented since the 1990s (Krieger 2011), and painfully confirmed through the current pandemic (Kolata 2020), public health research and information systems

have not fully developed the tools for addressing health inequities (Breilh 2021). As a result, some of the most affected social groups are invisible in public health data, and the socioeconomic conditions that make them disproportionally affected are not well understood and addressed (Gkioulekaa et al 2018). Some have suggested that adopting an intersectional approach in public health research and practice can improve how health inequities are addressed (Mullings and Schulz 2006, Green et al 2017, Bauer & Scheima 2019).

Intersectionality is a theory, method and praxis that invites a critical understanding of the overlapping and conflicting dynamics of race, gender, class, sexuality, nation, and other inequalities, and not simply the framing of categorically, spatially, or temporally rooted concerns with diversity (Cho, Crenshaw & McCall 2013). Tracing its origins to Black feminist activists (Collins 1990) and academics (Crenshaw 1991), the field of intersectionality studies can be thought of today as a dynamic set of conversations moving in divergent directions as they engage with different ontologies, epistemologies, theories, methodologies, institutions, and practices (May 2015, Carastathis 2016, Collins & Bilge 2016).

Implementing intersectionality as a method for addressing public health inequities implies putting it in conversation with relevant theories and methods (Cho, Crenshaw & McCall 2013), like those rooted in political ecology (Krieger 2011) and political economy (Breilh 2021), as well as opening up the repertoire of research techniques through interdisciplinary collaborations (Weber 2006). Adopting intersectionality as a research method implies embracing complexity (McCall 2005), avoiding the simplifications of focusing only on the identities of individuals (Jordan-Zachery 2007) or of only statistical analyses (Hancock 2007). It also implies engaging with societal structures and processes that perpetuate social inequities, and envision political interventions that will disrupt those structures and processes (MacKinnon 2013). Empirical studies using intersectionality have shown differences depending on whether researchers start by putting social groups' perspectives at the center, or by focusing on understanding the dynamics of social processes, or by looking at the entire social system that shapes inequities (Choo & Ferree 2010). Similarly, intersectional complexity can be empirically addressed by using an anticategorical (i.e., questioning given categories), intracategorical (i.e., looking at diversity within one category), or intercategorical strategy (i.e., looking at combinations of categories) (McCall 2005).

All of this opens up two challenges for public health practitioners. On the one hand, there is a need to develop techniques, methodologies and theories that move us beyond traditional public health categories and risk factor approaches. On the other hand, it is urgent to start creating accessible information that does not misrepresent people or public health problems. Can one be advanced without the other?

ANTH 2424. The Social Determination of Health (Spring 2022)

Methods

Study goal: To learn from people about how well a set of public health visualization tools tell the data stories about people in Colorado.

Study design: Exploratory, cross-sectional, qualitative study.

Population and sample: We were interested in adults who live in the State of Colorado. We used purposive sampling aiming at diversity in gender, race/ethnicity, age, occupation, and place of residence.

Data collection: Semistructured interviews, audio recorded and transcribed within one week. Audios were destroyed after transcription. No personal information was recorded and audios and transcripts did not include any information with the potential of breaching anonymity. Informed consent was obtained from participants. This study followed University of Denver's guidelines for course-based research.

Data analysis: We used thematic analysis to analyze the interviews.

Research team: 56 undergraduate students taking The Social Determination of Health (ANTH 2424) in spring 2022, three graduate teaching assistants, and one course instructor. The course instructor coordinated with two community partners in setting the goals and study design.

Findings

General characteristics of participants

The team interviewed 20 participants for the weight status prototype, of whom 12 were White/Caucasian, 14 were females, and 16 had at least college education. Of the 18 participants in the cardiovascular health interview, 10 were White/Caucasian, 14 were females, 10 were males, and 15 had at least college education. Of the 18 participants in the cancer-screening interview, 12 were White/Caucasian, 10 were female, and all of them had at least college education.

Participants in all groups worked in a variety of occupations and sectors, and the majority lived in Colorado's Front Range. Each of the specific reports contains detailed information about study participants.

Webpage prototype 1. Weight status

From the 20 interviews for this webpage prototype, students identified a list of 20 different themes. These themes reflect the most prominent feedback that the

respondents mentioned throughout their interviews. Of those 20 themes, four major themes stood out the most.

The first theme that was one of the most talked about was the accessibility of the webpage. While most of the respondents agreed that the wrapper statement was easily accessible, most of the respondents noted that the infographics were hard to understand and read. A few of the respondents also mentioned that they believed that the webpage had a political edge to it, leaning to appeal toward a certain voting demographic.

Another theme that stood out was readability. About 65 percent of the respondents believed that the graph used on the webpage was not readable for the public. Others noted confusing terms that may not be decipherable to some. Overall, it seemed that the respondents believed that the readability of the page needed to be edited in order to make it more accessible to the public.

The third major theme that was detected was language. Most of the respondents agreed that the language used on the website was clear, although some mentioned that using the term weight status made the intention and understanding of what the website was trying to represent a little misleading.

The fourth major theme that was identified by the students was mention of the wrapper statement. The respondents had mixed feelings about the wrapper statement. Some of them felt that the resources were missing on the website compared to what the wrapper talked about, while others liked that the wrapper included resources to help people obtain a healthy weight. Most respondents added that the wrapper needed some updating to be more inclusive and understandable.

After analysis of the interviews, we were able to come up with feedback to present to our community partner. The four main themes, and the others included in this report offer outside insight into how the website is being represented in its current form to a public audience. In reading and interpreting the interviews, we appreciate that the feedback offered by the respondents offers a guide in how to proceed with suggestions and edits before the final website is launched.

Webpage prototype 2. Cardiovascular health

Out of the 13 themes identified from the 18 interviews, four major themes stood out. The first theme identified is clarification. This theme focuses on some of the confusion that interviewees had on some of the visualization tools that were presented to them. The second theme is resources. This theme encompasses feedback from interviewees on the types of resources that there were and would like to see. The third theme is representation. This theme centers on the responses that interviewees made on sexual orientation, mental health, gender, and race/ethnicity. The last main theme is focused on aesthetics. This theme spotlights the comments interviewees made about the webpage's layout, visibility/accessibility of the content, images, and graph.

The first main theme of clarification will discuss some of the confusion that interviewees encountered when looking at the images and chart. A comment made by a Caucasian heterosexual female who has a graduate degree and is a psychologist said, "I don't really get what the point of it is. It's a nice picture but I don't get it" and later suggests that "if there was a title, that might help" or some text explaining what the image means. There were some interviewees that did appreciate the images, for example, an interviewee who is an Asian, male, with a master's degree employed at Core Logic really enjoyed the picture with the Black family sitting at a dinner table eating. This interviewee states, "What I really like about this image is obviously the family sitting together" and then says, "I definitely like the food that they're eating on their plates." The cholesterol screening chart also brought up some confusion, and as a White, male that is an Auto parts delivery driver says, "I guess I'm just not…sure what you were going to look at for cholesterol. You know is this good? Or is it bad?" Most of the feedback interviewees gave included adding descriptions and explanations of the images and chart. For the visualization tool of the video teaching people how to check their blood pressure, almost all interviewees had positive comments and no need for clarification of the video.

The second main theme of resource consists of feedback from interviewees on the resources that were shown and suggestions they provided. Most of the feedback provided from interviewees consisted of adding more resources. Some suggestions include this one from a White female with a bachelor's degree who works as a Private Market Investment Analyst who states, "maybe some additional ones with like, some information and then some specific ones that are like, things that you can do action items that you can do." Along with adding solution-based / action-oriented resources, another interviewee who is a White male currently unemployed says that you could add "good medical websites and resources …to learn more about cardiovascular health." Therefore, adding resources that let people know about factors and lifestyle behaviors that contribute to cardiovascular health would be beneficial and informative. This also includes adding resources from the area (Colorado) and other opinions. As a White male with a master's degree who works as a Commercial Air Pilot says, "maybe there's some specific resources in your town that you're living in? Like, these are some parks that you could walk in or these trails…" In conjunction with this, a Black male college graduate who is a business owner mentioned that you could "add someone leading like the Jewish Hospital." Adding resources from the area like parks and ways people can engage in lifestyle behaviors that benefit their cardiovascular health along with medical centers would be useful to include in the community partner's webpage.

The third theme of representation centers on sexual orientation, mental health, gender, and race/ethnicity. This theme was divided with some interviewees feeling represented and others feeling left out. Some of the reasons that interviewees mentioned they felt excluded from this webpage is because as a Puerto Rican Jewish bisexual woman indicates, "they aren't depicting anything for like LGBT community" and also calls attention to the fact that the website does not "even talk about like mental health issues." Similarly, a Caucasian female with a bachelor's degree that

works as a Managing Director tells us that "I think if you add gender, you've got to figure out how to address that." As mentioned, this theme is nuanced and as this Sephardic Male Jew who is a Jewish professional points out "there is a representation of people who are not White and I think it is important definitely in Colorado" but then also states that "but you know, there's not a huge diversity because they're aren't people with lighter skins or other ethnicities I guess." Some interviewees did note that they felt like people were represented but those who specified why they did not feel included indicated that there was a lack of diversity in certain categories. Taking a more balanced approach and including other ethnicities and skin colors would help people from all different backgrounds to feel included.

The last theme considers the aesthetics of the webpage including the layout, visibility/ accessibility of the content, images, and graph. The webpage layout and visibility/accessibility are closely related. As a White male interviewee who works as an Auto parts delivery driver specifies that they layout is "too small" and can be a bit hard to read and maybe by making the colors a bit more contrasting it may help with visibility. As another interviewee who is a Black college graduate male and is a business owner raises the point that "it's kind of hard to read" and probably putting information in "bullet point form" could "make it stand out more." Additionally, a White female with a bachelor's degree who is a private market investment analyst suggests "... mixing up whether you're seeing text or graphs or videos or pictures, if you can create like a little bit of variety, add some different textures and things like that. And different sizes and fonts or color." Most interviewees had good remarks to say about the webpage's aesthetics but those that gave suggestions mainly emphasized how it could be more accessible/visible for them.

Overall, the following themes of clarification, resources, representation, and aesthetics explore the ways in which our community partner can make their webpage content digestible for the public. With suggestions of the interviewees, we were able to come up with helpful feedback. Ways that our partner can clarify some of the confusion interviewees had encompass incorporating text and explanations on the images and chart. Some suggestions for resources included adding more resources that give more information on ways that people can change their behaviors or seek professional help. Representation can be improved by including different skin colors, adding topics of gender, sexual orientation, and mental health in data and resources. Lastly, aesthetics can be improved by incorporating some visibility aspects like using bullet points, adding a variety of what is shown and including different fonts and colors.

Webpage prototype 3. Cancer screening

Together, students were able to identify 17 themes through thematic analysis. From these 17, five major themes came into focus. The first of these themes being demographics. The demographics of both the participants and those represented by the information discussed played a major role in what participants responded to in these interviews. Most often, demographics of the participant shaped how they

ANTH 2424. The Social Determination of Health (Spring 2022)

viewed the information as a good or bad representation of how cancer screenings affect all groups. The second major theme was cancer-screening attitudes. Attitudes towards cancer and cancer screening played a major role in the information collected in that the emotions that coincide with access to and the process of obtaining and using information about cancer screening are usually large factors in one's health. The third major theme was webpage elements. Because the information provided was presented within the confines of a webpage and its reception was dependent on one's ability to navigate and understand what was presented, much of the suggestions as well as positives of this information was discussed during the interviews. The fourth major theme identified was accessibility. Accessibility was a major concern for those interviewed in terms of data presentation and the audience's ability to use the information given in order to mitigate cancer risks through screening. The final major theme identified was major takeaways from the information given. Major takeaways from the web page as a whole were important considering what each of the participants took from the experience as a way to gauge what other residents of Colorado might take from the same information and its presentation.

Demographics were discussed both in terms of who was interviewed as well as how participants' answers during interviews might have been affected by how they fit into the categories listed in Annex 1. The largest demographic groups interviewed in this study were white women, and all participants had some college education. These characteristics most certainly had an effect on how the information presented was engaged with as a result of who was represented both by the webpage as well as in the study. In short, those interviewed most often had privileged demographic characteristics and most of the information that was given was either most representative of these same privileged demographics as well as geared toward those with experience reading statistical information presented through graphs. Regardless of this overwhelming majority who responded to the question, "do you think people who would fall under your demographic are included in the data presented?" with a yes, there were some instances where this was not the case. Most obviously, this occurred in regards to gender representation as was discussed by a white male in answer to this same question:

"But gender identity is not necessarily represented by a dress or non-dress anymore. Therefore, I do not have an answer to that, but I can see a particular group of non-binary gender identities, maybe not feeling included by this. Either or, type of male or female presentation."

The second major thematic group was attitudes towards cancer screenings. The attitudes of the participants towards cancer screenings played a large role in how the information that was given during the interviewing process was understood and internalized. Most often, these attitudes (especially in the case of fear) can either pose a barrier to learning more as well as an incentive to educate oneself. Barriers were discussed as a part of what often gets in the way of the average person having access to cancer screenings as well. These barriers most often were discussed in reference to how often they become a problem in the context of cancer screenings. If not in this context then barriers were also discussed as a source of confusion regarding its

presence within the "Wrapper Statement" and what it meant. Cancer screenings were also most often discussed in terms of affecting the people who the participant knew rather than the participant themself. Many participants were quoted as saying that they knew someone or had a family member who had been affected by cancer but had never really thought of cancer screenings in relation to themself. This also could be indicative of the types of resources and information given in the webpage discussed since most of these resources were targeted towards older people. This was referred to both in initial statements as well as when looking at graphs when a white female investment firm assistant commented,

"Basically, that you need to start paying attention when you turn 40 for women, but actually much earlier. Which, you know, it is a simple diagram. It is just easy to read and is it is not complicated. It is just something that you should just look at and you can keep it in your head. Okay. 40 you got to do this."

The third major thematic group was elements of the web page as a whole. These elements were specifically discussed in reference to how easily the navigation of the information was for the participants that were interviewed. Although the participants were not able to physically navigate the web page themselves, they were walked through a prototype version of what the page could look like in the future once it is published. How respondents reacted to the information given was important to note as this took up a large portion of the interviews. The participants were interviewed specifically on three elements, these being graphs, two videos, and a wrapper statement. As stated before, the reactions to these elements were mixed and were either found to be clear and helpful or confusing and at times further fear inducing. The most clear example of this negative response elicited from both confusion about what the information is trying to convey as well as general health concerns being a white male from Boulder's reaction to the "You've Got Guts'' video:

"I don't get the guts remark....the main idea is not clear, and I don't like the reference to guts. It is kind of discouraging and doesn't make me want to get screened."

The fourth major thematic group that emerged in these interviews was accessibility. Accessibility to cancer screenings themselves as well as how the data was presented in the information given and whom the information given was left out were major points discussed during interviews. As stated previously, access to cancer screenings was shown to be a major concern for those interviewed in terms of who most often has access to these types of resources as well as who most often gets the proper treatment and healthcare as a result. As was highlighted by the graphs and visuals given, participants were able to identify the discrepancies between SES and education, which put certain groups of people (those with a lower SES and less education) at a disadvantage for being screened enough and on time according to the guidelines given. This point was illustrated by a Mexican American female from Denver:

"It looks like for the level of education, those who graduated college tend to meet the guidelines, and then for socioeconomic status, it looks like those who don't have low SES also tend to meet the guidelines....And I think for education level, like graduating

ANTH 2424. The Social Determination of Health (Spring 2022)

college, that kind of makes sense just because maybe they're more exposed to different kinds of resources. I think for not having a low socioeconomic status, people are able to access more resources."

The final major thematic group identified from these interviews was major takeaways from the webpage. This theme encompasses what participants took away from the information presented during the interview. This information was important to the study given that the goal of these resources and the information given is to be able to encourage and inform Colorado residents to be informed regarding cancer screenings in order to have better access to these resources and be screened on time. One of the most important of the takeaways from this information in reference to this being guidelines for cancer screening. The final important take away from these interviews included in this theme were general recommendations for improvement for data presentation. Most often, these issues were in terms of information retention having to do with confusion that led to not being able to engage with information discussed. Often participants expressed a desire for the information presented to be either simplified or clarified for relevance as well as what it meant in relation to cancer screenings.

Overall, the data collected in these 18 interviews showed that the information and its presentations were received in a variety of ways. Most often, the information was either presented in a way that was encouraging and positive or confusing and negative. How data and resources are received is important in this context because it can very quickly lead to the complete avoidance of being screened or introduce a lifesaving action to a person for the first time. Participants who responded positively to the information presented believed that this subject matter was handled in a way which highlighted the importance of being informed while also maintaining an encouraging and positive tone that inspired them to pursue more information for themselves. Those who were able to engage with the information most often asked few clarifying questions and reacted favorably to what was being presented. Those who had trouble engaging with and understanding the graphs, resources, videos, and other visuals presented were usually unengaged with the information, reacted negatively to its presentation, and had less to take away from the webpage and its elements.

Conclusions and recommendations

For the Weight Status website prototype, we concluded that revisions should be made before our community partner launches their website. Some respondents recommended that the website prototype be revisited to ensure that all of the resources mentioned in the wrapper statement are accessible on the website. It is also suggested that the wrapper be edited to ensure that it is inclusive and de-politicized. It was also recommended that the website be revised to ensure that it remains

readable to all education levels, and that images are altered for them to be less busy and more understandable to every age level and all demographics.

For the Cardiovascular Health website prototype, the themes depicted feedback from interviewees on different aspects of the data visualization tools. These themes include concepts like resources, images, video, link, clarification, the wrapper, education, personal history, attitudes, representation/inclusion, accessibility, and aesthetics. Four major themes that contain helpful suggestions for the webpage include the concepts of including clarification, adding resources that are more diverse, representation, and aesthetics. There were various suggestions made by interviewees and students. Some of the feedback specifically for the main themes consists of adding more resources that give more information, by including different skin colors, adding topics of gender, sexual orientation, and mental health in data and resources, and incorporating some visibility aspects like using bullet points, adding a variety of what is shown and including different fonts and colors. Based on interviewees' feedback, revisions should be made before our community partner launches the website so that people can utilize and benefit from their website.

For the Cancer Screening website prototype, we can conclude that the information and its presentations were received in multiple ways that were both positive and negative. Overall, the information was presented in a way that was encouraging and positive. This is important within the context of cancer screenings. Those with positive things to say about the information presented believed that this subject matter was handled in a way which highlighted the importance of being informed while also maintaining an encouraging and positive tone that inspired them to pursue more information for themselves. The information itself had mixed reactions since it was perceived as both clear and easy to understand as well as confusing and unengaging. Those who were able to engage with the information most often asked few clarifying questions and reacted favorably to what was being presented. However, those who had trouble with understanding certain aspects, such as graphs, the term socioeconomic status, etc., were more often less engaged with the material and reacted negatively to the information. Keeping this in mind, it is recommended that the information be presented in simpler ways, which would allow for those who are not used to or are unable to engage with data in certain graph forms or certain terminology to still be able to engage with what is being presented. It is also recommended that the information being presented be done not only using easily accessible language, but also language, which acknowledges the spectrum of the Colorado residents, which it targets. Most clearly we can see this in the language used when referring to cervical and breast cancer which most often discusses these screenings as targeted towards women, when there are other trans and non-binary individuals who would also need this information but might feel alienated or discouraged from pursuing screenings if they have been left out.

References

Bauer, G.R., Scheima, A.I. (2019) "Methods for analytic intercategorical intersectionality in quantitative research: Discrimination as a mediator of health inequalities." Social Science and Medicine, 226: 236-245.

Breilh, J., (2021). *Critical Epidemiology and the People's Health: Theory and Context*. Oxford University Press.

Carastathis, A. (2016). Intersectionality: Origins, Contestations, Horizons. University of Nebraska Press.

Cho, S., Crenshaw, K.W., McCall, L. (2013). "Toward a Field of Intersectionality Studies: Theory, Applications, and Praxis." Signs: Journal of Women in Culture and Society, 38(4):785-810.

Choo, H.Y., Ferree, M.M. (2010). "Practicing Intersectionality in Sociological Research: A Critical Analysis of Inclusions, Interactions, and Institutions in the Study of Inequalities." Sociological Theory 28(2): 129-149.

Collins, P.H. (1990). Black Feminist Thought: Knowledge, Consciousness, and the Politics of Empowerment. Unwin Hyman.

Collins, P.H., Bilge, S. (2016). Intersectionality (Key Concepts). Polity.

Crenshaw, K. (1991). "Mapping the Margins: Intersectionality, Identity Politics, and Violence Against Women of Color." Stanford Law Review 43:1241–99.

Gkioulekaa, A., Huijtsa, T., Beckfieldb, J., Bambrac, C. (2018). "Understanding the micro and macro politics of health: Inequalities, intersectionality & institutions - A research agenda." *Social Science and Medicine*, 200: 92-98.

Green, M.A., Evans, C.R., Subramanian, S.V. (2017). "Can intersectionality theory enrich population health research?" *Social Science and Medicine*, 178: 214-216.

Hancock, A.M. (2007). "When Multiplication doesn't Equal Quick Addition: Examining Intersectionality as a Research Paradigm." Perspectives on Politics, 5(1): 63-79.

Jordan-Zachery, J.S. (2007). "Am I a Black Woman or a Woman who is Black? A Few Thoughts on the Meaning of Intersectionality." Politics & Gender, 3(2): 254-263.

Kolata, G. (2020). "Social Inequities Explain Racial Gaps in Pandemic, Studies Find." *The New York Times*, December 9th, 2020. Website: https://www.nytimes.com/2020/12/09/health/coronavirus-black-hispanic.html?smid=em-share. Retrieved 12/10/2020.

Krieger, N., (2011). *Epidemiology and the People's Health: Theory and Context*. Oxford University Press.

MacKinnon, C.A. (2013). "Intersectionality as Method: A Note." Signs: Journal of Women in Culture and Society, 38(4): 1019-1030.

May, V. (2015). Pursuing Intersectionality, Unsettling Dominant Imaginaries. Routledge.

McCall, L. (2005). "The Complexity of Intersectionality." Signs: Journal of Women in Culture and Society, 30(3): 1771-1800.

Weber, L. (2006). "Reconstructing the Landscape of Health Disparities Research: Promoting Dialogue and Collaboration between Feminist Intersectional and Biomedical Paradigms." In Gender, Race, Class, and Health: Intersectional Approaches, A.J. Schulz and L. Mullings, eds. Jossey-Bass, pp. 21-59.

Mullings, L., Schulz, A.J. (2006). "Intersectionality and Health: An Introduction." In Gender, Race, Class, and Health: Intersectional Approaches, A.J. Schulz and L. Mullings, eds. Jossey-Bass, pp. 3-20.