

8-2022

## Beyond the Plant: Facing Systemic Barriers as a Meatpacking Community During the COVID-19 Pandemic

Shannon Barrientos  
*University of Nebraska Medical Center*

Tell us how you used this information in this [short survey](#).

Follow this and additional works at: [https://digitalcommons.unmc.edu/coph\\_slce](https://digitalcommons.unmc.edu/coph_slce)

 Part of the [Public Health Commons](#)

---

### Recommended Citation

Barrientos, Shannon, "Beyond the Plant: Facing Systemic Barriers as a Meatpacking Community During the COVID-19 Pandemic" (2022). *Capstone Experience*. 214.  
[https://digitalcommons.unmc.edu/coph\\_slce/214](https://digitalcommons.unmc.edu/coph_slce/214)

This Capstone Experience is brought to you for free and open access by the Master of Public Health at DigitalCommons@UNMC. It has been accepted for inclusion in Capstone Experience by an authorized administrator of DigitalCommons@UNMC. For more information, please contact [digitalcommons@unmc.edu](mailto:digitalcommons@unmc.edu).

**Beyond the plant: Facing systemic barriers as a meatpacking community during the  
COVID-19 pandemic**

Shannon Barrientos, Department of Epidemiology

Capstone Chair: Kendra Ratnapradipa, PhD

Committee Member: Elizabeth Lyden, MS

Committee Member: Virginia Chaidez, PhD, RD

## **Abstract**

The COVID-19 pandemic has revealed and magnified health disparities and social inequities that disproportionately burden racial and ethnic minorities. These disparities are readily seen within meatpacking communities, considering a lack of protections offered by the meatpacking industry have heightened COVID-19 susceptibility. These conditions have aggravated health inequities within rural communities throughout the span of the pandemic. Despite significant advances in research investigating the effect of COVID-19 on essential workers within the meatpacking plants, this research remains isolated within the meat processing industry. Moreover, research has focused predominantly on the pandemic's impact on rural communities and the institutional barriers that hinder positive health outcomes among rural community members. However, additional research is needed to investigate the systemic barriers specifically within rural meatpacking-dependent communities. The current study aimed to utilize concepts from the socio-ecological model and knowledge gap theory to inform ways in which multiple levels of influence have contributed to accelerated health disparities within meatpacking communities. Using these two frameworks, this study provides insight on the effects of knowledge gaps among individuals of low socioeconomic status and the political directives that created challenges when controlling the COVID-19 outbreaks. This qualitative study analyzes data collected from interviews conducted with rural meatpacking community members such as healthcare personnel, community leaders, cultural group liaisons, and adult community members. This study concludes that multidimensional barriers have contributed to a gap in knowledge across socioeconomic strata, worsened work environments among the essential workforce, and created a need for leadership from local and national stakeholders.

## **Literature Review**

### *Background of the Meatpacking Industry*

Since the beginning of the COVID-19 pandemic, the United States has experienced a shock in its social and economic systems. Although COVID-19 guidelines initiated social distancing practices, encouraged the use of face masks in public spaces, and recommended general improvements to hygiene and sanitation to minimize infection, a social crisis could not as easily be avoided (Centers for Disease, 2021; Haase, 2020). Among vulnerable populations that have been disproportionately affected by COVID-19 are those who make up the essential workforce within the meatpacking industry. According to the U.S. Department of Homeland Security (2020), an essential worker is one who contributes to the operation of agencies or corporations that are fundamental for maintaining a social and economic infrastructure. Due to this criterion, the meatpacking industry continued production with minimal protections at the onset of the pandemic. Consequently, meatpacking companies were the sources of thousands of COVID-19 cases and hundreds of avoidable COVID-related deaths. A recent investigation found that 86,000 employees tested positive for COVID-19, and 423 died across the five largest meatpacking corporations in the United States (Chadde, 2021; Select Subcommittee, 2021).

In an industry that primarily attracts immigrant workers, those with less education, and non-native English-speaking individuals, fear of retaliation often prevents workers from expressing concerns about the subpar safety regulations within the industry (Martin 2012; Ramos et al., 2021). Inadequate working conditions were a staple for most meatpacking plants before the start of the pandemic. Due to the nature of the work being done, injury and illness are frequently occurring issues (Ramos et al., 2021); however, several agencies such as the Governmental Accountability Office, Occupational Safety and Health Administration (OSHA),

and Centers for Disease Control and Prevention (CDC) have found that illness and injuries have gone underreported by meatpacking companies across the nation (Human Rights, 2019).

Moreover, research has captured and presented the experiences of meatpacking workers, which has indicated that meatpacking plants favor corporate profit over the safety and wellbeing of workers that are regarded as essential (Ramos, 2020; Ramos et al., 2021; Human Rights, 2005).

### *Meatpacking Communities*

Although the literature surrounding the impact of COVID-19 on frontline meatpacking workers is unequivocal, COVID-19 infections do not occur in isolation; hence, the issue is not contained within the plants' parameters but extends into rural communities where these facilities are located (Herstein et al., 2021). A rise in COVID cases places a strain on the infrastructure and systems within rural communities as they are often underequipped with the resources necessary to control an outbreak (Sharma et al., 2022). Emerging data show that rural communities continue to experience higher case and mortality rates compared to their urban counterparts (Ullrich & Mueller, 2022). A study conducted by Saitone and colleagues (2021) concluded that meatpacking-dependent communities experienced a 110% higher infection rate per capita compared to non-meatpacking communities. In addition to these results, they found that communities with a pork processing facility have a 160% higher infection rate than non-meatpacking communities, and communities with a poultry facility have a 20% higher infection rate (Saitone et al., 2021).

### *Social Determinants of Health*

An essential component to addressing the rise in COVID-19 cases and the risk of poor health outcomes among rural meatpacking communities is to address the social and economic conditions that exacerbate health inequities and heighten vulnerability. A vast majority of the

essential workforce is comprised of racial and ethnic minorities, which places these individuals at a greater risk of contracting and transmitting COVID-19 (Rogers et al., 2020; Do & Frank, 2021; Raine et al., 2020). A study conducted by Ramos et al. (2020) found that 72.4% of meatpacking employees surveyed believed they were at high risk of contracting COVID-19; however, less than half (41.6%) had tested for the virus. Additionally, 93.2% of surveyed participants reported feeling worried or extremely worried about infecting their family members. These concerns are common among racial and ethnic minorities as they are more likely to live in multigenerational households compared to non-Hispanic Whites (Raine et al., 2020).

Overwhelming evidence has shown how the coronavirus pandemic has revealed systemic obstacles that aggravate health inequities, such as the disproportionate allocation of resources, wealth, power, and opportunities (Paremoer et al., 2021; Ndumbe-Eyoh et al., 2021). As previously discussed, the pandemic has magnified the exploitative tendencies of established corporations and the subpar protections offered to employees. Opportunities for social and economic mobility are seldom provided to essential employees, hence leaving an entire class of individuals financially vulnerable. Due to financial necessity many essential workers may refrain from taking time off even when symptomatic.

While experiencing financial insecurity contributes to the risk of poor physical health outcomes, a less direct but equally impactful path to disparate health outcomes is through insufficient access and ability to process health information. A study conducted by Goodman and colleagues (2012) found that residential segregation was a predictor of low health literacy. More specifically, respondents who lived in a predominantly White neighborhood were more likely to have higher health literacy than those in communities where racial and ethnic minorities are the dominant group. The authors offered several reasons low health literacy is common within

minority communities. For example, those who live within these communities are often of low socioeconomic status and have less access to healthcare. As a result, these individuals are excluded from participating in patient-physician interactions where health-related information is provided. Additionally, the limited availability of social networks with adequate information on prevention strategies or treatment is a pervasive issue that influences health behavior and outcomes, particularly in the age of COVID-19.

### *Research Aim*

Given that multilayered influences affect health outcomes, this qualitative study aims to identify specific systemic components that contribute to the overall risk of COVID-19 contraction and identify barriers that exacerbate health disparities within meatpacking communities.

## **Methods and Materials**

This capstone project is part of a larger project being conducted by researchers at the University of Nebraska-Lincoln (UNL), utilizing data that was previously collected.

### *Target Population*

The current study obtained data from interviews with residents of rural meatpacking communities in Nebraska. All interviews were conducted by trained personnel on the research team. Data were collected from April 2021 to October 2021.

### *Eligibility Criteria*

Individuals interested in participating were required to fall within one of two categories: 1) health related worker (i.e., healthcare provider, public health personnel, community health worker) or 2) community member (i.e., faith-based leaders, cultural group leaders, and adult

community members). Participants were required to be 19 years of age or older to participate in the study. To capture residents' experiences where meatpacking comprises a large portion of the workforce, individuals who live or work in Crete or Lexington, Nebraska, were invited to participate.

### *Procedure*

The opportunity to participate in the project was presented through printed and virtual flyers made available at community centers, libraries, community events/meetings, local clinics, churches, and social programs in Lexington and Crete. Additional modes of recruitment included recommendations provided by community partners and local community organizations. Community stakeholders contacted potential participants that met the eligibility criteria and provided the research team's contact information. Interested individuals were given additional information about the study and compensation details. Prior to all interviews, participants were asked to provide demographic information for eligibility screening. The Qualtrics survey also included informed consent. This platform, offered by the UNL, allowed the research team to download all data directly into an external hard drive. All material such as the consent form and the demographic survey was offered in Spanish and Somali for individuals who requested documentation in either language.

The interviews were conducted via Zoom and were scheduled to take 60 to 90 minutes. Each interview session was recorded using Zoom software, and an audio recorder was used as a form of backup. Interviewers informed the participants when the recording began and ended. Upon completing each interview, the recorded session was uploaded to Box, a password-protected cloud storage software. Once video and audio recorded files had been uploaded to Box, all remaining recordings stored in the Zoom software and audio recorder were deleted.



Participants were also given the option to complete the interview via phone. To ensure confidentiality was preserved, the interviews conducted by research team personnel were completed in private spaces. Moreover, participants were encouraged to conduct the interview in a private setting.

The purpose of the interview was to record the experiences of individuals who live or work in a meatpacking community during the COVID-19 pandemic; hence, the interviews were guided by questions tailored to COVID-19 and its impact on the participant, their family, and the greater community. Supplemental questions that stimulated conversation surrounding role changes, communication barriers, and COVID-19 vaccine accessibility were also incorporated; these questions were designed to be open-ended. All interviewers followed a script that directed the interview, and supporting prompts were included to encourage elaboration for specific questions.

A total of 15 interviews were recorded and transcribed using one of three methods: 1) manually transcribing the interviews verbatim onto a Word document by a research team member or using automated services such as Temi ([www.temi.com](http://www.temi.com)), 2) transcription software provided by Zoom, or 3) Samsung speech-to-text. All automated platforms use secure servers and data encryption. Identifiable information such as names or phone numbers were redacted from the transcripts and replaced with ID numbers. Electronic versions of the transcripts were encrypted and password-protected, and all printed copies were securely stored in locked cabinets. For Spanish-speaking participants, the interview was conducted by one of two bilingual team investigators; a total of two Spanish-speaking participants were interviewed for this study. Although Somali-speaking individuals did not participate, the research team had partnered with Lexington Regional Health Center and the Department of Modern Languages and Literatures at

UNL to connect with Somali translators. To ensure all transcriptions captured participants' recorded responses, all interviews that were transcribed manually and by an automated system were reviewed two times by a member of the research team. Interviews that were conducted in Spanish were first transcribed in the original language and later translated and reviewed for accuracy.

The risk of participation was minimal; however, the team had a response plan (referral to UNL mental health resources to assess suicidality and risk of self-harm) if a participant were to disclose thoughts or intentions of self-harm during the interview. Regarding compensation, all participants were compensated with a \$40 Walmart gift card upon completing the interview. The current study was approved by the UNL Institutional Review Board.

### *Theoretical Framework*

The pandemic not only introduced a viral pathogen to the public but further disrupted decaying social and economic systems. By understanding the multidimensionality of health behavior and COVID-19 transmission, the Socio-Ecological Model (SEM) informed the interplay between multiple levels of influence such as individual, relational, organizational, and societal factors as they contribute to health inequities (Kilanowski, 2017; Salis et al., n.d.). This framework allows for the identification of barriers across multiple levels of society. In addition to SEM, the Knowledge Gap Theory (KGT), which describes the disparate distribution of information and knowledge between individuals of high and low socioeconomic status (SES), informs degrees of knowledge on COVID-19 safety guidelines and the COVID-19 vaccine (Donohue & Tichenor, 1975; Paul et al., 2020). For the purpose of this research, SEM, as defined by Chaidez and Palmer-Wackerly (2016) and Bronfenbrenner (1977) was used to code and analyze the data. The proposal definition outlines 5 levels within SEM: individual, microsystem,

exosystem, macrosystem, and mesosystem. It should be noted that the definitions for each tier in SEM are presented by Chaidez and Palmer-Wackerly (2016) were primarily used as baseline definitions and minor adaptations to these definitions were made to appropriately capture the experiences and thoughts presented by the participants.

### *Data Analysis*

Given that qualitative thematic analysis is an iterative process, a three-phase approach developed by Forman and Damschroder (2007) was applied to create a categorization scheme that was used for the analysis phase. The first phase includes immersing oneself in the data and becoming familiar with the content being presented. All audio-recorded interviews, which ranged from 60 to 90 minutes, were listened to for this initial phase. Active “memoing” was performed during these sessions to capture salient ideas, connections, and concepts. For phase two, each transcript was reviewed two times to identify emerging themes and collapse codes into smaller units of information (Creswell, 2015). Upon completing the initial round of coding, five codes were developed to organize KGT data; this included: information sources, helpful/nonhelpful information, accessing information, information frequency, and COVID-19 knowledge. The five SEM categories were used as priori themes to characterize the data. All transcripts were highlighted, and color coded for analysis. A requisite for phase three (i.e., interpreting the data and identifying overarching concepts) is to develop a comprehensive codebook. Each code includes a summary and examples that clarify how to define and code a particular excerpt. Upon finalizing the codebook, the data and codes were organized systematically using matrices to identify patterns across participants’ experiences during the pandemic. The data were analyzed in aggregate and not based on participant type (i.e., healthcare

provider, community leader, faith-based leader, etc.). Lastly, themes that emerged across interviews were recorded and supported by quotes extracted from interviews.

## **Results**

A total of 15 participants were interviewed; however only 13 completed the survey in its entirety, therefore the demographics data reflects information reported by those who responded to all questions. Based on the self-assessment, most respondents were female and were primarily aged 19 to 35. Most community members, 11 out of 13, completed post-secondary education with 6 of those individuals having received a graduate or professional degree. Approximately 53% of respondents identified as Hispanic and over half of individuals indicated that they had no difficulty paying bills within the past 3 months whereas only two participants reported significant financial challenges. The values are displayed in detail in Table 1. The assessment also captures English proficiency, which was measured by an individual's ability to speak, understand, read, and write in English; this data is displayed in Table 2. Most participants are proficient in English, with only one participant reporting that they do not speak the language very well and two participants indicated a limited ability to read and write in English.

<b>Variable</b>	<b>n</b>	<b>(%)</b>
Sex		
Female	8	61.5
Male	5	38.5
Age		
19-35 years old	6	46.2
36-55 years old	4	30.8
>55 years old	3	23.0
Education		
Less than High School	2	15.4
Technical School/Associates Degree	1	7.7
Bachelor's Degree	4	30.8
Graduate or Professional Degree	6	46.2
Race/Ethnicity		
Hispanic/Latinx	7	53.8
non-Hispanic White	5	38.5
Two or More Races	1	7.7
Difficulty Paying Bills		
No Difficulty	7	53.8
Some Difficulty	4	30.8
A Lot of Difficulty	2	15.4

Table 1. Demographics and Characteristics of Sample (n=13)

<b>English Proficiency Level</b>				
	<b>Speak</b>	<b>Comprehend</b>	<b>Read</b>	<b>Write</b>
<b>Well</b>	12	13	11	11
<b>Not Very Well</b>	1	0	1	1
<b>Not at All</b>	0	0	1	1

Table 2. English proficiency level across four forms of communication.

### *KGT Themes*

Based on the 15 interview transcripts, five codes were created in the first round of KGT coding. These codes were collapsed into two overarching themes: 1) rural communities had a disparate distribution of reliable COVID-related information and 2) community members struggled to identify sources that offered accurate and reliable COVID-19 information. Details describing both themes are provided below, along with quotes that support theme one (Table 3) and theme two (Table 4).

#### *Theme 1: Disparate Distribution of Information*

Those interviewed, who were predominantly community leaders, were well informed and reported having access to multiple mediums of information. This was more thoroughly described when the interviewer inquired about their knowledge surrounding COVID-19, such as modes of transmission, groups more susceptible to contracting COVID-19, locations in the community that offer the COVID-19 vaccine, and awareness of COVID-19 recommendations such as masking and social distancing. The majority of participant responses reflected their ability to access trustworthy information. Various participants expressed confidence in their ability to differentiate reliable information from unreliable information; moreover, those who were knowledgeable on COVID guideline updates and recommendations also reported following most or all of the recommended practices such as social distancing in public settings, masking, and receiving the vaccine.

In addition to sharing their personal experiences with accessing information during the pandemic, participants commented on obstacles other community members encountered when seeking information. While many of the experiences they shared were not their own, given that many participants hold leadership roles in the community, they were able to recount barriers

experienced by underserved groups. Among these disadvantages included an inability to access COVID-related information or resources made available during the pandemic. For example, language barriers kept many uninformed about vaccine options or the benefits of vaccination. Additionally, some participants reported that a large proportion of community members they serve were unaware of what was occurring during the early stages of the pandemic.

Considering many groups within meatpacking communities did not have access to reliable sources of information, less reliable sources were utilized. For instance, many used their immediate social network as their primary source of information along with unregulated instant messaging platforms; consequently, misinformation became widespread and contributed to skepticism and hesitancy towards the COVID-19 vaccine. For example, some participants spoke about others' fears about the vaccine that were likely rooted in misinformation. The digital divide also contributed to unfavorable consequences such as minimizing opportunities to access COVID-related information. Quotes relating to information access are displayed in Table 3.

<b>Disparate Distribution of Information</b>	
<b>Category</b>	<b>Quote</b>
Seeking COVID-19 Information	<p>I was mainly looking for updates on cases because we knew that the cases were rising on a daily basis and, and I was just looking on the area, how many cases we had not just in the country, but in the state, and also in in our town. I was also looking for what type of plans or protocols that were implemented to align to those protocols and also looking for the vaccine to see if it was something already available if they were still working on it. So, anything was very, very useful and helpful information to learn about. But for me, I was always looking at vaccination updates and the cases yeah. If the cases were dropping or if they were increasing or how many more cases, we have in our town. (107)</p> <p>We started having a weekly clinician call, um so that we could be updating clinicians about what was going on. There was also for some time, a weekly and then bi-weekly call among community leaders in Lexington to try to talk about what was going on. Um CDC, other</p>

	<p>places, I mean it was a real fog of war, especially initially you know, and I was very involved, I mean I was reading, [...] you know my sources of information, a little bit different than my patients I'm reading like the New England journal, and up to date and lots of clinical support text. (108)</p>
Following Recommendations Based on COVID-19 Knowledge	<p>Personally, I wore the mask all the time, because I knew it was for protection and that it was important...like let's do what the CDC and the people that are experts on the topic are telling us to do we need to cooperate, we need to follow those protocols and kind of like be cooperative so that we can all work together to get through this. (107)</p> <p>Yeah, so definitely the ones I follow, are you know the hygiene ones which I've always followed anyway washing your hands before and after you eat you know washing your hands after you cough just normal stuff. But then, even though it was just annoying, what [...] if I know that I'm going somewhere high risk, mask. Because it makes others [...] mostly because it makes others comfortable and mostly because it's a it's like I'd rather have it, and be wrong then not have it and be wrong, you know so it's a it's so just things like that... mask, vaccinations. Vaccinations are always good so you know a lot of the things I've said I'm already doing, those are the practices, I tend to follow. (114)</p> <p>I was chomping at the bit to get vaccinated from the get-go before they even knew very much of anything, because the downside was just too down. And, to be honest, I was kind of hoping for Moderna or Pfizer just because the efficacy was much higher than the Johnson and Johnson. (106)</p>
Language Barrier	<p>I know I noticed that something that we didn't have a lot of, and perhaps this contributed to misinformation, was just the lack of information in multiple languages. (103)</p> <p>The challenges were to get the information to the appropriate people, and I still think that's a challenge as you work with different populations you don't necessarily have all one ethnicity, which is easy to go through which I've worked in populations before where everyone's the same you know, everybody has Facebook everybody has this and that. When you work at a population that is from all over the world there's different uh ways of trying to communicate with them different languages, even with some languages have subtypes in then um we have trouble sometimes even getting interpreters for them, we have interpreters here all the time, but how do you contact them, you know what do you say to that person who might be from uh Saudi Arabia and the next one is from Somalia and the next one is from dududu you look at all those countries and how do you contact them I uh that's difficult ...even through their work uh</p>



	<p>that's just their work that doesn't take care of their family, their families are the ones at risk, as these people come home from work and...or if they're just being integrated into the United States and they've had some testing done they don't even know where a clinic is at or if they can get in a clinic they've been in um in a refugee camp for three years, or whatever. How do they communicate, who did they talk to? Well certainly it isn't anybody in the United States. (109)</p> <p>People from other cultures that don't speak English because there were so many resources available that I learned of. Some of them were like state resources, but if they don't speak the language and if they don't get the information or they don't know what's out there um they're not going to be able to even apply or know that those resources were available to them, so I think is [...] vulnerable because of the language. (107)</p> <p>Right here in Lexington we had some food pantries available once a month in some churches and different organizations were doing things to provide food on a weekly basis, but I mean um sometimes those posters and those flyers were only English and not in other languages because, in addition to the Hispanic population, we have other cultures, people from Africa and Asia, and I understand that is like almost impossible to translate into many different languages, but yeah that's a situation that makes other people far behind from getting those um available benefits. (107)</p>
Digital Divide	<p>Many parents did not [...] don't have internet at home and those type of things, so I think internet was [...] a very lack of communication in some households. So, that makes it even more difficult for them to access information or to learn about [...]. (107)</p>
Increasing Awareness of COVID Guidelines	<p>I think the most vulnerable and high risk people in our community are those that we serve. I mean we serve low-income families who need the extra help resources that we can give them. Some of them, probably didn't even fully understand what was happening so trying to explain it to them, show them different ways that they could try and go about their normal um way of living, I guess, but also helping them to adapt to the changes that happened, you know, the wearing the masks, you know, social distancing, the not going out that sort of thing. (104)</p>
Misinformation	<p>I mean I would think right away, I would think Fox news, and you know some more of the like conspiracy sources. I would actually see a lot of folks begin to share those and I know I got some [...] I would get like WhatsApp messages with like, um some of those like conspiracy theories and stuff. They were just kind of like chain messages, and I would get those once in a while and just think [...] yeah, it would just make me think of like misinformation and how do we combat that. (103)</p>

	<p>Oh man Facebook, is a huge perpetrator of this uh that is just the worst you know the, the major uh social media specifically uh Twitter, Facebook. All those just I, don't put any stock in it, but I do look at it just to see what people are saying so I can be like okay, so that when people come up and are freaked out about stuff I can kind of calm it down a little bit. But otherwise other than that uh a lot of, a lot of just [...] there's always someone who's an expert that just puts up some sort of a blog or some sort of a um some sort of an opinion that is then just blown way out of proportion, so private blogs, Facebook, Twitter, those are the sources I tend to not trust, but if it's something like if it's an actual doctor who's putting stuff up I tend to put a bit more credence in and that sort of thing. (114)</p>
<p>Misinformation and Skepticism of COVID-19 Vaccine</p>	<p>And so, I have a lot of patients [...] initially it was, “Oh gee I don't trust that vaccine.” People having actively hostile beliefs about the vaccine. (108)</p> <p>Pues um ayer precisamente vino aquí un conocido de mi esposo y él tenía su máscara y le dije, “¿Todavía no se vacuna?” Y me dijo, “No, tengo miedo que dicen que uno se puede volver loco que no se que.” Le digo, “Pues se va volver loco si no se la pone” le dije, “Porque nosotros la tenemos desde febrero, nosotros nos la pusimos desde febrero y míranos aquí estamos gracias a Dios.” (110)</p> <p><i>Well, um yesterday an acquaintance of my husband came over and he had his mask and I told him, “You haven’t gotten vaccinated yet?” and he told me “No, I’m scared. People are saying you’ll go crazy, something or other.” I told him, “Well, you’re going to go crazy if you don’t get it.” I told him, “Because we’ve had it since February, and we got it in February and look at us, we’re here thank God.”</i></p> <p>Um I also hear my patients talking about infertility, which is brought up with lots of different vaccines this question about, “Oh, if you get that vaccine it will cause infertility.” Also, “They're getting it for free, so you need to be suspicious of it. Anything the government's giving you for free they're putting a chip in you it's something kind of dangerous.” (108)</p>

Table 3. Displays quotes to support theme one using KGT framework.

## *Theme 2: Challenges in Finding Reliable Information*

The participants' responses indicated they are knowledgeable about the virus, the state of the virus in their community, methods to protect themselves and others from illness, and how and where to access resources during the pandemic. Bidirectional information sharing was done within the participants' immediate social circle, which can heighten awareness of COVID-related updates. Community leaders frequently commented on receiving and circulating COVID-related information shared by members of their immediate social network, such as colleagues, friends, and family. Information shared by trusted individuals was regarded as valuable and reliable for one participant, who sought information about the severity of the virus during the early stages of the pandemic, and another who relied on weekly updates from a coworker who works in healthcare. One participant commented that they were unaware of updated masking recommendations until their colleague informed them of the changes. Likewise, some participants reported informing friends and family about recommended practices, encouraging coworkers to adhere to masking recommendations, or provided suggestions about testing when someone they know experienced symptoms consistent with COVID-19.

Although the information circulated within participants' social circles was generally reliable based on the information disclosed in the interviews, other participants recounted that friends and family were often sources of misinformation. Given that three of the participants interviewed are healthcare personnel, they described their experiences with educating patients as a way to mitigate misinformation in their community. The topics covered in the clinic included the benefits of vaccination, information about COVID prevalence within their community, and discussions on the benefits of masking. Refer to Table 4 for quotes to support the second KGT theme.

<b>Challenges in Finding Reliable Information</b>	
<b>Category</b>	<b>Quote</b>
Lack of Leadership	As you know, COVID-19 was very difficult because one county would be different than the next county which would be different than the next state, which was different than the nation. There was no cohesiveness at all, and it was random...so the leadership nationally was not utilized at all. (109)
Lack of Transparency	I feel like information or sharing information right away. I know, you know, CDC, government, whatever it was that might be worried about you know what kind of crisis would happen if you give out information too you early on, you know, I feel like information is something that everyone should have access to even if it's something that they're afraid that, oh it's going to cause like havoc and people freaking out and doing this or doing that. Um, but I feel like if we would have had direct information right away um it could have helped us in the long run. (104)
Lack of Trust	I would say I don't really trust them official government sites as much as I use to just because there's been so many inconsistency, so those use to be my absolute trusted sources and I'm not saying that anything that they're saying is incorrect it's just that they've sort of had to talk so much that they have publicly shown their imperfections and that they are also learning as we go and so sometimes certain things will happen and I don't necessarily trust the decisions that they make, because I know that the evidence is not always as strong and things like that...I think I trust, a lot less people, and especially authority figures after this pandemic because um it is interesting how different people make decisions, who don't always have all the first-hand information, or you know haven't seen it first in their face type of stuff. (115)
Centralized Information Source	<p>I wish I would have better access to resources from official sites. Places where they were to tell us, “Okay, this is the official site, this is your first contact information or, this is the first place where you can go and have accurate results.” You know, instead of just trying to look in different areas. Just have an actual place on the web, to look for that information on a state or national basis so that we were all in the same channel. (107)</p> <p>Yeah, I wish we had had a national like um a national source that we could just depend on, but every organization, whether it be the National Association of Rural Health Clinics the National Rural Health Association who I'm working with, all had their own websites. Um the CDC had its own website, the Department of Health had its own website, everybody had a website, but no one was really the “here’s where everyone should go to get their information.” (109)</p>

Table 4. Displays quotes supporting the second KGT theme.

## *SEM*

Five themes that capture multiple levels of influence were created based on the five SEM tiers. These included 1) community members prioritize others' safety; 2) information sharing is common within trusted social networks; 3) COVID-19 protections varied across employers; 4) political barriers created challenges for meatpacking communities; and 5) essential workers needed to financially support their families.

### *Theme 1: Community Members Prioritize Others' Safety*

Several participants reported remaining cautious in public settings such as grocery stores and restaurants. Specifically, participants reported masking, sanitizing regularly, and remaining socially distant when possible. Many community members expressed that they adapted their behavior and daily routine to protect themselves and others. These behavior changes included following one-way aisle arrows when shopping, quarantining or self-isolating for the recommended period as outlined by CDC, masking in public spaces, grocery shopping less frequently, or declining to attend social gatherings. After commenting on their experiences with adopting recommended practices, nearly all participants reiterated the importance of following COVID-19 guidelines to keep individuals in their immediate social network and the larger community safe. Table 5 provides quotes to support the first SEM-related theme.

<b>Community Members Prioritize Others' Safety</b>	
<b>Category</b>	<b>Quote</b>
Changing Behavior	I haven't really seen a whole lot of people or been out, I know when I was living with my parents, I was trying to be very cautious, and I know I was always kind of more concerned about them than [...] than I was for me. So, for their sake, I would try to not go anywhere. (103)
	I really appreciate, especially some stores who, you know, they have lines waiting outside because they really want to follow those recommendations of X amount of people can only be in their store at one

	<p>time based on the square feet in the store. So, I definitely follow that and following the arrows to the point where it's really frustrating when other people don't follow the arrows because it's kind of like what is the point of having these precautions if not everyone is going to follow them. (101)</p>
Protecting Others	<p>So, I had to quarantine for those 14 days, but I did my whole quarantine I didn't want to expose my students at school and go back to work. (107)</p> <p>Casi todo el tiempo estuve aquí a dentro de mi casa cuidándome y cuidando a las demás personas incluso yo puse un sign afuera de mi puerta que no pudieran [...] no podíamos recibir amistades que nos sentíamos pero nos estábamos cuidando y nos estábamos cuidando a ellos también. (110)</p> <p><i>Almost all of the time I was here inside my home taking care of myself and looking after others. I even put a sign outside of my door that they can't, or we can't have guests, we are sorry, but we are taking care of ourselves and we are taking care of them too. (110)</i></p> <p>In my case I don't want to get sick or get sick again. I don't want that type of illness again. But I want to protect my community, I want to protect my family, I think you have a lot of people that are a little bit like that. You know I don't want to [...] if someone is around me who has not had it, I don't want to give it to them. Maybe I won't feel as bad, I don't want to make anyone else sick (102)</p> <p>I mean, yes I would love to get back to you know going and seeing friends or going and doing stuff um without having to wear a mask but my biggest reason for getting it [COVID-19 vaccine] was because I wanted to protect my family from getting it. I have family members that have preexisting conditions that makes them more likely to suffer really big complications from having COVID so I want to protect myself and protect them from getting it. (104)</p> <p>My biggest responsibility is to keep my staff and my patrons safe that's my number one responsibility, and that has been my guiding principle in the decisions that we've made...I would have to say that it's not just about protecting yourself it's about protecting others so um [...] and I think sometimes people look at it, as a personal [...] it only affects you but it actually affects a lot of other people. (106)</p> <p>If I get it, I miss work if I miss work, a lot of people in need, go like go hungry, you know so [...] its social distancing [...] I do social distancing more to protect others, than I do to protect myself. Because if I get sick others suffer. Like I'm miserable for a few days, but people that actually need me they're the ones who suffer. (114)</p>

Table 5. Displays quotes supporting the first SEM theme.

## *Theme 2: Sharing Information within Social Network*

The participants' responses indicated they are knowledgeable about the virus, the state of the virus in their community, methods to protect themselves and others from illness, and how and where to access resources during the pandemic. Bidirectional information sharing was done within the participants' immediate social circle, which can heighten awareness of COVID-related updates. Community leaders frequently commented on receiving and circulating COVID-related information shared by members of their immediate social network, such as colleagues, friends, and family. Information shared by trusted individuals was regarded as valuable and reliable for one participant, who sought information about the severity of the virus during the early stages of the pandemic, and another who relied on weekly updates from a coworker who works in healthcare. One participant commented that they were unaware of updated masking recommendations until their colleague informed them of the changes. Likewise, some participants reported informing friends and family about recommended practices, encouraging coworkers to adhere to masking recommendations, or provided suggestions about testing when someone they know experienced symptoms consistent with COVID-19.

Although the information circulated within participants' social circles was generally reliable based on the information disclosed in the interviews, other participants recounted that friends and family were often sources of misinformation. Given that three of the participants interviewed are healthcare personnel, they described their experiences with educating patients as a way to mitigate misinformation in their community. The topics covered in the clinic included the benefits of vaccination, information about COVID prevalence within their community, and discussions on the benefits of masking. The quotes that support the second theme in SEM are listed in Table 6.

Sharing Information within Social Network	
Category	Quote
Informed by Network	<p>I have a friend, like a group chat, and we would send links to just articles. I remember one especially early on, I remember uh sending like the dictionary definition of like what that meant [definition of pandemic] [...] and then I have another friend who is a nurse in Oklahoma, and we would text back and forth, and I would ask her like what do you think about this whole COVID thing this pandemic and this was pretty early on. (103)</p> <p>[A] coach [who works in healthcare] ...would kind of give us um, the team, updates like every week about Covid and kind of what she knew. (101)</p> <p>For example, um when the CDC gave us the um freedom of optional masking, I didn't know about that, until I heard it from other teachers. (107)</p>
COVID-19 Recommendations	<p>I was, you know, trying to encourage people whenever they were starting to have some symptoms, you know, especially if they had more than one that, yeah you know, try to go down and get tested. (105)</p> <p>Mm bien, en el trabajo, cuando pues este, las reglas que se pusieron decían oh tienes que usar la máscara uh correctamente en tu boca, no debajo de tu nariz o de lado... hay veces hay personas que no seguía esas reglas de no ponerse bien las máscaras y allí estaba el peligro y cuando estaban platicando uh tenían las máscaras de lado...[Y en estas situaciones, hizo algo ] Decirles “hey póngala sus máscaras correctamente.” (113)</p> <p><i>Mm well, at work well when the rules were made, they said oh you have to wear a mask correctly on your mouth, not below your nose oh on the side uh it [...] they were explained how to correctly wear a mask but for many reasons I know that [...] a lot of people did not feel comfortable with the masks well logically it was , it was new for all of us, so then sometime there were some people who did not follow the rules of not properly wearing a mask and that's where the dangers was and when they were talking uh they had their mask to the side and they would pull it down... [What would you do in these situations?] Tell them, “Hey put your masks on correctly.” (113)</i></p>
Counteracting Misinformation	<p>[Participant shares conversation with patient]</p> <p>I tell my patients like, “Have you gotten vaccinated?” “Eh, I don't know.” Like, “Well there's COVID around.” “In Lexington?” And I'm like, “Yeah yeah I diagnosed a case in here yesterday.” “What?” “Yeah. You need to get a vaccine.” And so, I don't know, I think that people are hopefully coming around to it a little bit, but there's a lot of</p>



	<p>misinformation there's a lot of stuff that they hear from their friends and family (108)</p> <p>I spent 20 minutes just talking about the vaccine with one patient because of all the misconceptions, “oh, there's going to be a tracking device, it's going to turn you into something else.” (109)</p>
--	---

Table 6. Displays quotes supporting the second SEM theme.

### *Theme 3: COVID-19 Protections Varied Across Employers*

Several individuals reported having safe and supportive work environments where employers provided protections against infection by implementing multi-layered controls as outlined by OSHA. For instance, participants mentioned that their employer would require staff, clients, customers, students, and patrons to wear masks upon entering the building (i.e., library, school, firm, etc.). Employers offered other methods to maximize COVID-19 prevention, such as providing cleaning supplies to disinfect high-touch surfaces, allowing employees to work remotely, offering scheduling flexibility when employees experienced COVID-like symptoms, providing paid sick leave without penalization to those who tested positive for the virus, and provided the vaccine on site.

While some employers provided sufficient space for social distancing, one participant reported working in close proximity with their coworkers in the meatpacking plant, which placed them at risk of contracting COVID-19. Other participants spoke about the work conditions experienced by meatpacking workers and the need for greater precautions and guideline adherence in the meatpacking plants. As mentioned by a community advocate, protests led by community organizers and meatpacking workers were one method used to champion safe working conditions in meatpacking facilities. Vocalizing the needs of meatpacking workers was essential, considering risks were often related to being linked to the plant through direct or

indirect contact. One participant shared that a patient's parents expired from COVID-19 after being infected by a household contact that was employed by a meatpacking facility. In another interview, a community member explained that she felt fortunate not to have been affiliated with the meatpacking plant. Supporting quotes for this theme are located in Table 7.

<b>COVID-19 Protections Varied Across Employers</b>	
<b>Category</b>	<b>Quote</b>
Employer Following Guidelines	<p>Well, as a teacher I was responsible for making sure that I had to be at the front door of my classroom providing the alcohol to every student to sanitize their hands by the entrance of the classroom um and every teacher was responsible for doing the same. Um we also had to make sure that they were wearing the mask [...] not just their mouth, but also their noses. We were also responsible for doing activities that didn't involve going to other classrooms or gathering in places like the gym with larger groups other than our own classes and also um at the end of each class at the end of the period we were responsible for cleaning the desks, with a solution that they provide to us. (107)</p> <p>Like we had one [rule] at school that was just basically you know. Social distance, if possible, mask on always, handwashing, you know, as frequently as possible, and if you're sick stay home. It was just you know four simple things for everyone to remember. (105)</p> <p>I was working from home for a while, so I know there were a lot of adjustments there and I had to make. Once we were able to come back to the office [...] then, you know, still just taking those extra precautions making sure clients are coming in with their masks and just sort of trying to enforce some of those things.</p>
Safe Work Environment	<p>The bank was um supportive I think like financially, because we did get uh pay and a half when we were physically at the branch, and then when we were working from home, we just got our normal pay, so we would never had to go without a pay check or we never had to file for unemployment. And then even when we did get covid um, if someone did get covid, they stayed and just worked from home if they were able to and, if not, if they were too sick, they would get paid regardless (101)</p> <p>You know, the things that I mentioned, you know, like it made sense that you had to quarantine, and you had to get the time off, I mean it really made sense that they paid us with our time off [...]. and with those cleaning supplies and everything. It was nice that they provide everything to us even the masks, because we really needed those supplies to run and</p>

	<p>to have things smooth. I think, for the most part I'm satisfied with their work and what they did to support us. (107)</p> <p>Really anywhere, I mean we [...] the Crete Public Schools was vaccinating like they had a clinic for everyone that worked at Crete Public Schools, and they had nurses come from Bryan to give us all the vaccine up at the Crete Middle School. (101)</p>
Meatpacking Working Conditions	<p>Y en el trabajo fue de [...] pues en el trabajo fue más complicado porque hay más personas alrededor de uno, hay muchas personas que se que se pegaban más de frente a frente y uh hubo muchos contagios aunque uno hubiese querido estar uh en una [...] unos cuantos pasos de distancia pero a veces no era no era [...] uh posible porque pues los puestos de trabajo están en seguida de uno tras otro y pues tienen que estarse cercas. (113)</p> <p><i>And at work [...] well, it was more complicated at work, because there are more people around you and there are a lot of people that would stand more than face to face and there were a lot of infections even when you wanted to be uh in a [...] a few steps away but sometimes it wasn't, it wasn't [...] possible because well the positions are close to each other, one after another, and so you have they have to be close to each other. (113)</i></p> <p>My dad works at the packing plant, the beef company. And he was the one who had symptoms, so when he started having symptoms, because the plant just kept working and they never closed, they never had any uh time off for the employees, because they were considered essential workers. (107)</p> <p>We had a lot of people out of work, we had a lot of people that were sick. I would say a huge majority of Saline County in general, but especially in Crete had contracted COVID. Most of our community work, since most of our community is Hispanic, most of them work at the factory, so we have Smithfield nearby we've got Crete Mills we've got Nestle Purina. Um and especially Smithfield that was a huge epicenter for the COVID outbreak here in in the county but especially just in Crete itself. (114)</p>
Advocating for Safe Work Environment	<p>So, you know something I had never seen in Crete before were workers, like Smithfield workers, would walk out, and, you know [...] yeah stage a walk out because they were [...] they were upset they were [...], they felt that they were being ignored, and so I had never seen that before in my community. Not much really changed. That weekend I remember a lot of workers attended a protest or a rally in town to build on that movement that they had begun. (103)</p>

	<p>Every Saturday, the people who worked at Smithfield and their families, would come and protest on Main street and protest for like a safe work environment, because it seemed like based off of what people are saying at the protest is that no precautions were being made and they were still, you know, especially in the assembly line, they were still so like super close together and yeah you're wearing masks but you're like touching all of this meat that could be contaminated and, you know, standing right next to each other so that was like a huge struggle. (101)</p> <p>My work is primarily around um workers, meatpacking workers, so I began to advocate on that end for their protections um primarily because I began to see, and some of my colleagues began to see, that they were they have sort of been left out of the conversation and of any kind of protections, so we started to speak out on their behalf. Um and as we were going kind of into a summer months, at first, I kind of [...] I watched as people were very fearful um for themselves and for their families and really there was you know a lot of uncertainty around what COVID would do um to people's families. (103)</p>
Meatpacking Patient	<p>A patient of mine who was pregnant came and she was sort of early in her pregnancy and said, "I work at the plant, I'm very scared that I'll get COVID. Can you write me a note to be off work until the pandemic ends?" And this is a very unusual kind of note for me to write I said, "Well, let me put you on quarantine let's keep you off of work for at least two weeks and kind of see how things go." And then she didn't come back to the clinic for several months after that, and when she did come back, um I remember she had some paperwork for me to fill out. So, I walk in and sure enough she did have COVID during that time, and one of her family members had gotten it and also died of it. And so, I asked her, "How do you think it came into the house?" And she said, "You know you wrote me that note, and so I was at home, but my husband was working at the feedlot that supplies the meatpacking plant. We think he brought it into the family, everybody got sick, including me, including my parents." And she had also said, "I'm living with my elderly parents, and I'm very concerned about infecting them." And it turned out exactly as she had feared. (108)</p>
Fortunate to not Work in Meatpacking	<p>I am really lucky, I feel like compared to a lot of other people, because you know I did hear about people whose parents work at Smithfield or their grandparents who a few of them did pass away from COVID and I'm thankful that none of my family works at any of those factories and none of my family members got COVID or no one I knew passed away so I feel like really, really lucky, but I know that that's not the same for everyone. (101)</p>

Table 7. Displays quotes supporting the third theme in SEM.

#### *Theme 4: Political Barriers Creating Challenges for Communities*

Local government in Lexington and Crete did not implement a mask mandate; instead, local leaders in Crete encouraged employers to enforce masking in their respective businesses. This resulted in inconsistencies in masking across community institutions considering staff was tasked to police masking along with fulfilling other work responsibilities. Alternatively, attempts to enact a mask mandate in Lexington were stopped due to resistance from state leaders. Other forms of opposition were experienced by local leaders who notified state stakeholders about their concerns regarding the degree of COVID-19 infection in their community. Although the information provided to the state health department prompted community-wide National Guard testing, it resulted in significant repercussions for those who reported the outbreak to state authorities.

Attempts to temporarily discontinue plant operations were unsuccessful due to national and state directives that protected meatpacking plants from closing. As mentioned by a community leader, national agendas requiring meatpacking industries to stay open was a strategy to stabilize and preserve the meat market rather than safeguard the health of meatpacking workers. Other communities attempted to push for plant operation closure; however, the local government did not have political influence outside city limits where the plants were located and therefore could not enforce the closure of the local meatpacking plant. A mandate to close meatpacking plants was within the jurisdiction of the county board of supervisors, but a participant reported that one board member expressed skepticism towards the severity of COVID-19, which created challenges when suggesting a closure mandate to the board.

A participant indicated that meatpacking plants were not required to disclose case counts, nor were epidemiological field investigations performed despite the rising number of patients

who work at the meatpacking plant displaying COVID-19 symptoms. Many of these COVID-19 cases were either employed by the local meatpacking plant or were secondary cases that had contact with a household member that worked at the plant. Despite the outbreak's severity, one participant commented on their fear of openly expressing concerns, seeing as other community members had experienced severe consequences for speaking out against the plant. All quotes relating to this theme can be found in Table 8.

<b>Political Barriers Creating Challenges for Communities</b>	
<b>Category</b>	<b>Quote</b>
No Mask Mandate	<p>As a city council member, you know we contemplated a mask mandate we didn't feel like it ultimately was necessary, but the mayor did go and ask all of the businesses to try to enforce mask wearing within their individual businesses to try to keep it there.</p> <p>I mean in grocery stores, where it says on the front of the store, it is required to wear a mask you have people that aren't wearing a mask, that aren't socially distancing. You know and that's probably the biggest thing I see is those that don't follow what they're asking them to do.</p> <p>I wish that people who are not vaccinated all wore masks um but one good thing that has come about with not requiring masks in city buildings is that I don't have to be the mask police anymore...I mean just last week, I had somebody scream at me that, you know, I'm treating him like a criminal because, heaven forbid, he had to wear a mask. It was very loud and very rude and I'm tired of it, you know I'm tired of being the mask police.</p>
Barriers to Mask Mandate	<p>I mean some of these recommendations were very difficult for people to abide by and um, you know, so that was tricky we had lots of conversations about masking. ...we've kind of decided early on that masks and vaccines that's really where our political influence ought to lie to really [...] how can we try to push those things. And the governor sued health departments ... for doing a mask mandate....</p>
Whistleblowing Consequences	<p>When COVID started, I was very concerned early on and had been kind of watching and watching others outbreak and the week before [...] actually it was almost the day that our outbreak really became super overwhelming was the day that the south Sioux City plant became the largest outbreak in the country, and that was, um, I think, in North or South Dakota but for a while they were a plant that was considered the</p>

	<p>largest outbreak at that time, and I think we were as big as they were. And so it became very difficult because at that point the CDC was still not really recommending testing, nor did we really have testing available so although we had a sense that there was a big problem going on, it was not something that we could per se confirm... We were 50% positive in the first round of National Guard testing um and [...] my institute did not appreciate what they consider to be whistleblowing actions...and it has led to changes in my professional role.</p>
National Directives for Meatpacking Industry	<p>Again, definitely no interest in masking and that was from the city council. Um and then yeah, just in terms of the demographics of who the employers are in town, I mean it was not long after our major outbreak started that um President came out with the statement about plants will not close and essentially that statement, the first one was kind of the PR part of it, the you know the press release said something like, "These plants are going to stay open come hell or high water." And that's not a direct quote obviously but then, when you actually read the language, of the directive, it was not so strong but the way that it really was kind of portrayed in the media is these places are essential for life, then they are not closing.... there was a political decision made early on that these plants would not close</p> <p>And even when the Sioux City plant shut down for a few days, there was all of these like spikes in meat prices and instability in the meat market, so, you know, a lot of reluctance to shut down the plants.</p> <p>So, you know, I just think there was a real lack of political will to, you know, support the health of people who were working at these plants because the imperative was seen as this is the food supply, we must protect the food supply.</p>
Barriers with County Government	<p>Some communities tried to say let's try from our community, to try to shut down a plant. For one thing, that plant is located outside of city limits. So, there was some limited ability, even if we would get the city council on board to do anything that they would have to abide by and so that, you know, [...] I remember talking to the mayor early on, and he was like, "I don't have anything to do with that. They're not part of Lexington; they're outside city limit." And so, then it would be the county and, like the county board of supervisors, but you know they had another doctor on the city board that was also kind of a COVID denier and just, you know, they really, [...] made it difficult to move forward and so things happened the way they happened.</p>
Limited Data Sharing from	<p>Yeah, big corporate set up somewhat difficult to kind of influence their action or even know what was going on, you know they get on these community calls and be like, "Yep everything's great." Okay, can you tell</p>

Meatpacking Plants	us anything else? “What do you want to know?” Oh, no, so [...] it was, yeah working with that corporate actor and having the big outbreak there and you know the state never really went into the plant [to conduct outbreak investigation].
High COVID Prevalence	I mean it just became evident that not only did we have major transmission that seemed to be centered at the plant because of the demographic patterns of our Hispanic and also Somali communities, which represent the two kind of largest groups that are working at the plant, um lots of dense housing lots of cohousing. Lexington has a high rate of what's called homelessness among school aged children, and that's really classified as, families who are kind of doubling up, so it doesn't necessarily mean, these are like kids on the street, but homeless in the sense that they don't have their own room and their own bed kind of thing...And so, um we have a lot of families living together in community. And so, what seemed to be the pattern is that somebody from the household would get exposed at the plant, come back, and then lots of secondary cases within households.
Fear of Meatpacking Industry	And the plants are very powerful, I mean, I have also seen many examples of you know people who would speak out, you know if [...] I know I have indicated to you that I'm a bit skittish even talking about some of these topics, because I have examples of other people in this community who have had blowback for crossing the plant.

Table 8. Displays quotes supporting the fourth theme in SEM.

### *Theme 5: The Need to Financially Support Families*

Various interviews touched on the financial implications of the pandemic. Loss of employment was common, as noted by one participant who stated seeking employment during a time when many were losing their job. Given that poverty was reported as a significant barrier in both communities across multiple interviews, essential workers remain in unsafe work environments because they feel they have limited options to secure other employment opportunities. Participants reported that the financial responsibilities of feeding and supporting their families keep meatpacking workers from missing work despite experiencing COVID-related symptoms or working in poor environments. As commented by a Lexington resident, many individuals refuse to seek healthcare for fear of experiencing the financial instability a two-



week quarantine period can create for a family. All quotes that were used to support the final SEM theme are found in Table 9.

<b>The Need to Financially Support Families</b>	
<b>Category</b>	<b>Quote</b>
Job Loss	<p>It really had affected me in a positive way, I think [...] so I started, I was working at the bank and um I was like already looking for a new job [...] kind of and then so I was like okay, then the pandemic came and there's no way you know, people are losing their jobs, how am I going to different one. (102)</p> <p>Like I'm fortunate to have the role I have. I'm thankful I'm very thankful that I have had employment, I feel like that's one of the conversations I had with my dad. You know so many people lost their jobs during this time, so many people were laid off and couldn't find a job, so I feel like that's been one of the things he's always he's always said, like be thankful that you have a job that that you can, that we all I guess, have a job. (103)</p>
Poverty	<p>Then it's just it's the poverty here as well, you know with, especially with immigrant populations, of course, we all know that that oftentimes means that they can't um take advantage of the employment opportunities that are often higher paying and provide benefits for themselves or their family and so you know we have a good portion of our [...] over almost 25% of our population in Crete live in poverty. (105)</p>
Financial Need to go to Work	<p>With the factories it's like I don't really know a lot about. If you know what it all entails to shut down something like that, but it seems like um the higher ups didn't really even try to think about doing that, they just expected all workers to come and they didn't really have a choice because they still needed to get paid and feed their family basically, so I think it's because they didn't have a choice. (101)</p> <p>There are employment opportunities, but there's not a lot of options either in Crete, so you know people hold on to what they have [...] so [...] yeah I mean I think that's, that's one of the reasons that people don't speak out because they can't, you know, quickly find another job that's either going to be close by or the that's going to have the same benefits (103)</p> <p>I don't know, and it was just tricky because then, from the perspective of my patients, they would say, "I have to go work. Don't put me on quarantine like when you're telling me I can't work for two weeks." Like, especially if they were quarantined multiple times. Maybe the first time</p>

	<p>they get some pay for it, but the second time or third time that they're getting quarantined for two weeks, like they're just like, "Don't do this to me." and so people would stop coming for medical care, because they understood that it would likely result in quarantine. And so, you know, this is why we're not seeing any testing now like don't nobody want to be told that they've got COVID because we all at this point sort of understand what the implications of that are. (108)</p> <p>El mayor necesidad fue de seguir teniendo los recursos alimentos, uh dinero para seguir pagando los biles. Trabajo, porque si no había trabajo pues no hay como. (113)</p> <p><i>The greatest need was to continue having resources for food, um money to keep paying bills. Work, because if there's no work, well then there's no way.</i></p>
--	---

Table 9. Displays quotes that support the fifth SEM theme.

## Discussion

This study aimed to identify individual and societally based influences contributing to the burden of COVID-19 in rural meatpacking communities using the socioecological model the knowledge gap theory. This study demonstrates ways in which personal perception of the severity of COVID-19 and systemic barriers and facilitators can contribute to disease prevalence within rural communities.

### *Knowledge Gap*

The literature substantiates the significance of the disparate gap in COVID-19 knowledge, primarily during the initial stages of the pandemic. Studies have indicated that knowledge surrounding COVID-19 is substantially different across education and socioeconomic strata (McCormack et al., 2021; Wolf et al., 2020; Geldsetzer, 2020). The current study's findings align with the literature in that participants indicated having an adequate understanding of modes of transmission, methods to minimize the risk of illness, and locations offering the vaccine in their community; however, participants spoke on the differences in COVID-19

knowledge for other members of their community. Participants suggested that language barriers were one of two major issues that contributed to a COVID-19 knowledge gap. Rozenfeld et al. (2020) reiterates that those with limited English proficiency have been at a disadvantage during the pandemic due to the inaccessibility of rapidly changing information. The digital divide was a second barrier that posed challenges to accessing COVID-19 information, as commented by two participants. One individual reported that many community members do not have internet access. This finding is consistent with data presented by Vogels (2021), which demonstrates that rural adults are less likely to own a digital device (i.e., smartphone, computer, tablet) nor have home broadband. The digital divide limits the ability to access COVID-related information, such as information on protective behaviors to minimize the risk of illness, testing sites, vaccine sites, etc.

### *Identifying Reliable Sources*

Although challenges arose when seeking or accessing public health information for some community members, those interviewed struggled to identify dependable sources of information. Many expressed a need for a central source of information where community members could access COVID-related content without needing to visit supplementary or competing sites. Some participants questioned the credibility of government sources, as it was believed that there was minimal transparency on behalf of national agencies as our understanding of the virus evolved throughout the pandemic. A cross-national study conducted by Bollyky et al. (2022) suggests that high levels of trust in government are associated with reduced infection rates and higher vaccine coverage. This finding applies to the current study as it proposes rationale behind the high number of cases and vaccine hesitancy within rural meatpacking communities.

Several participants with leadership or healthcare roles mitigated misinformation by sharing information about the vaccine's benefits or information on COVID-19 prevalence to emphasize the relevance of the COVID-19 crisis in their community. Data and recommendations were often shared with participants' friends and family, which generated opportunities to educate individuals about community resources (i.e., nutrition assistance) and increase COVID-19 awareness, which can facilitate disease prevention (Lu et al., 2021; Choi & Men, 2021). By comparison, participants reported that social circles and unregulated instant messaging platforms propagated misinformation, thus triggering a reduction in vaccination intent. This result echoes findings from prior investigations aimed at evaluating the effects of misinformation on physical health. Studies have indicated that misinformation has prompted skepticism about the vaccine and minimized the importance of adhering to health practices such as masking, social distancing, and self-isolating when ill (Barua et al., 2020; Tasnim et al., 2020). Malhotra (2020) discussed the influence of mobile instant messaging services (MIMS) spreading political propaganda that contradicts evidence-based recommendations for COVID-19 risk management. Since users of MIMS typically communicate with trusted friends and relatives, misinformation distributed by trusted sources through these mediums may be readily accepted.

#### *Prioritizing Others' Safety*

The level of COVID-19 guideline adherence remained consistently high across individuals interviewed. For many, adopting recommended practices such as social distancing, masking, minimizing the frequency of social gatherings, and receiving the vaccine was perceived as a method to protect themselves and others. Participants reported feeling a sense of social responsibility to adhere to COVID-19 guidelines and prioritize others' safety; however, in discussions surrounding their perception of those who do not follow recommended practices,

respecting personal autonomy was a notable response across various interviews. More specifically, participants stated that the decision to adhere to recommendations was an individual one. Shared values and a sense of solidarity may act as a protective factor against infection such that individuals who feel a sense of collectivism are likely to comply with COVID-19 guidelines, which can substantially minimize the rate of transmission (Kim & Han, 2022; Coroiu et al., 2020; Los Angeles County, 2022).

#### *COVID-19 Protections Varied Across Employers*

The majority of respondents indicated that their employer established a safe work environment by implementing multi-level protections such as requiring masking, encouraging social distancing, maintaining adequate cleaning supplies, allowing employees to work remotely, and providing paid sick leave. Although most participants reported having a supportive employer that prioritizes staff safety, participants commented on the inadequate working conditions of the essential workforce in their community. Two Crete residents recalled seeing or participating in protests to advocate for a safe work environment for community meatpacking employees. The evidence clearly depicts the unsafe working conditions within the meatpacking industry (Ramos et al., 2021; Gaitens et al., 2021; Brudney, 2020). Participants' perceptions were that those who are employed by a meatpacking plant are at greater risk of falling ill with COVID-19. This finding is consistent with a study conducted by Saitone et al. (2021) that yielded results suggesting that meatpacking workers are at a higher risk of suffering from COVID-19 and the presence of a meatpacking facility within a community increases the rate of infection for members of the host community. As noted by several participants and the literature, the elevated infection rate for meatpacking communities can largely be attributed to multigenerational households that accelerate the rate of transmission (Keifer, 2022; Bohon & Ponder, 2020).

### *Political Barriers*

The literature supports masking as a protective guideline that reduces the incidence of COVID-19 (Adjodah et al., 2021; Huang et al., 2022). Although the evidence to support mask mandates is robust, many state and local governments discontinued mask mandates prematurely, while others did not implement a mandate. The latter instance is consistent with respondents' accounts of their communities' masking protocol. One Crete resident spoke on the city council's decision to encourage business owners to enforce masking. Overreliance on business owners and staff to police masking has been shown to negatively affect the health and well-being of staff, given that employees are tasked to confront customers who do not voluntarily comply with masking recommendations. This study's findings are consistent with research conducted by Mayer and colleagues (2022), which highlight issues such as a lack of masking adherence and inconsistent masking enforcement.

Although local political decisions created barriers to reducing the COVID-19 burden within meatpacking communities, some statewide and national strategies did not sufficiently support the health of the essential workforce. Significant political barriers were disclosed by one community leader that experienced opposition and ramifications when notifying state authorities of the COVID-19 outbreak in their community. Moreover, this participant expressed fear of speaking out against meatpacking plants in their community. These examples demonstrate an unmistakable power differential that reinforces silence among community members (D'LoMonte, 2021; Martinez, 2021).

Executive directives that guard the meat market and prioritize sustaining meatpacking conglomerates by prohibiting state public health agencies from authorizing the closure of meatpacking plants have resulted in inflated rates of COVID-19 within the communities they

operate in (Public Citizen, 2020). As mentioned by a rural resident, national strategies to protect meatpacking operations allowed workers' health and safety to fall by the wayside.

### *Financial Insecurity*

Comments regarding financial insecurity were made across nearly all interviews. Based on the interviewees' responses, poverty remains a major problem for the essential workforce in meatpacking communities. Mueller et al. (2021) suggest that the pandemic has had significant consequences on economic outlook and unemployment in rural regions of the United States. Evidence from the United States Census indicates that individuals who occupy the essential workforce have a median annual salary of \$20,000 a year (Monte & Laughlin, 2022). Furthermore, data from the USDA (2021) demonstrates that high poverty rates have long burdened rural meatpacking counties, with meatpacking communities experiencing a 34.7% poverty rate compared to 26.2% for non-meatpacking dependent rural communities. The experiences shared by community members in the current study speak to the foundational obstacles of marginalized and disadvantaged individuals. The reality of those who face economic insecurity during the pandemic is that they are led to work despite illness, the risk of infection, the risk of infecting loved ones, and the risk of death in order to keep their family afloat.

### **Limitations**

This research has several limitations. First, a large majority of respondents have completed post-secondary education and are proficient English speakers; thus, accessing and understanding health or public health information may not be as difficult for these individuals compared to other community members whose native language is not English or have a lower level of education. Although they were able to share examples from their communities, it is

unclear how representative their own experiences are. Based on the information disclosed in the interviews, many participants reported having some degree of influence in the community. Most respondents identified as a community leader and while they offered their understanding of the lived experiences of working-class community members, these accounts do not substitute for the first-hand experiences of underprivileged groups. Future research should aim to recruit more community members with diverse roles and education levels across socioeconomic strata.

## **Conclusion**

This study illustrates the wide range of social dilemmas that amplify COVID-19 incidence within communities that rely heavily on the meatpacking industry for employment. It is evident that macrolevel interference, such as poor legislative judgment from national, state, and local leaders, has adversely affected the trajectory of health in communities. Corporate profit and political influence were prioritized over the health of vulnerable communities. This research calls for multidisciplinary collaboration that includes researchers, community members, faith-based leaders, and community stakeholders to address the expanding health disparities and inequities that persist within underserved communities. There is a need for deliberate and targeted solutions such as establishing sustainable interventions to address gaps in knowledge, creating opportunities for individuals to voice their concerns without fear of reprisal, and supporting platforms that encourage and facilitate information sharing among social networks. The pandemic has heightened challenges across systems, and it is by responding to the needs of communities by partnering with community members and leaders that research can champion health equity and enable change.



## Work Cited

- Adjodah, D., Dinakar, K., Chinazzi, M., Fraiberger, S. P., Pentland, A., Bates, S., Staller, K., Vespignani, A., & Bhatt, D. L. (2021). Association between COVID-19 outcomes and mask mandates, adherence, and attitudes. *PloS one*, 16(6), e0252315. <https://doi.org/10.1371/journal.pone.0252315>
- Barua, Z., Barua, S., Aktar, S., Kabir, N., & Li, M. (2020). Effects of misinformation on COVID-19 individual responses and recommendations for resilience of disastrous consequences of misinformation. *Progress in Disaster Science*, 8, 100119.
- Betsch, C., Korn, L., Sprengholz, P., Felgendreiff, L., Eitze, S., Schmid, P., & Böhm, R. (2020). Social and behavioral consequences of mask policies during the COVID-19 pandemic. *Proceedings of the National Academy of Sciences*, 117(36), 21851-21853.
- Bohon, S. A., & Ponder, R. (2020). Residential Crowding among Meat Processing Workers. In *Social Problems in the Age of COVID-19* (pp. 59-68). Policy Press.
- Bollyky, T. J., Hulland, E. N., Barber, R. M., Collins, J. K., Kiernan, S., Moses, M., ... & Dieleman, J. L. (2022). Pandemic preparedness and COVID-19: an exploratory analysis of infection and fatality rates, and contextual factors associated with preparedness in 177 countries, from Jan 1, 2020, to Sept 30, 2021. *The Lancet*, 399(10334), 1489-1512.
- Brudney, J. J. (2020). Forsaken Heroes: COVID-19 and Frontline Essential Workers. *Fordham Urb. LJ*, 48, 1.
- Centers for Disease Control and Prevention. (2021, March 23). *COVID-19: Your Health*. <https://www.cdc.gov/coronavirus/2019-ncov/your-health/index.html>
- Choi, S. L., & Men, F. (2021). Food insecurity associated with higher COVID-19 infection in households with older adults. *Public health*, 200, 7–14. <https://doi.org/10.1016/j.puhe.2021.09.002>
- Cohen-Cline, H., Li, H. F., Gill, M., Rodriguez, F., Hernandez-Boussard, T., Wolberg, H., ... & Vartanian, K. (2021). Major disparities in COVID-19 test positivity for patients with non-English preferred language even after accounting for race and social factors in the United States in 2020. *BMC Public Health*, 21(1), 1-9.
- Coroiu, A., Moran, C., Campbell, T., & Geller, A. C. (2020). Barriers and facilitators of adherence to social distancing recommendations during COVID-19 among a large international sample of adults. *PloS one*, 15(10), e0239795. <https://doi.org/10.1371/journal.pone.0239795>
- Creswell, J.W. (2015). *30 Essential Skills for the Qualitative Researcher* (2nd ed.). SAGE Publications, Inc.
- D LoMonte, F. (2021). When a Leak Becomes a Lifeline: Reinvigorating Federal Labor Law to Protect Media Whistleblowing About Workplace Safety. *Seattle Journal for Social Justice*, 19(3), 22.
- Do, D. P., & Frank, R. (2021). Unequal burdens: assessing the determinants of elevated COVID-19 case and death rates in New York City's racial/ethnic minority neighbourhoods. *J Epidemiol Community Health*, 75(4), 321-326.
- Donohue, G. A., Tichenor, P. J., & Olien, C. N. (1975). Mass media and the knowledge gap: A hypothesis reconsidered. *Communication research*, 2(1), 3-23.
- Forman, J., & Damschroder, L. (2007). Qualitative content analysis. In *Empirical methods for bioethics: A primer*. Emerald Group Publishing Limited.

- Gaitens, J., Condon, M., Fernandes, E., & McDiarmid, M. (2021). COVID-19 and essential workers: a narrative review of health outcomes and moral injury. *International Journal of Environmental Research and Public Health*, 18(4), 1446.
- Geldsetzer, P. (2020). Knowledge and perceptions of COVID-19 among the general public in the United States and the United Kingdom: a cross-sectional online survey. *Annals of internal medicine*, 173(2), 157-160.
- Goodman, M. S., Gaskin, D. J., Si, X., Stafford, J. D., Lachance, C., & Kaphingst, K. A. (2012). Self-reported segregation experience throughout the life course and its association with adequate health literacy. *Health & place*, 18(5), 1115–1121.  
<https://doi.org/10.1016/j.healthplace.2012.04.010>
- Haase, A. (2020). Covid-19 as a social crisis and justice challenge for cities. *Frontiers in Sociology*, 93.
- Herstein, J. J., Degarege, A., Stover, D., Austin, C., Schwedhelm, M. M., Lawler, J. V., Lowe, J. J., Ramos, A. K., & Donahue, M. (2021). Characteristics of SARS-CoV-2 Transmission among Meat Processing Workers in Nebraska, USA, and Effectiveness of Risk Mitigation Measures. *Emerging infectious diseases*, 27(4), 1032–1038.  
<https://doi.org/10.3201/eid2704.204800>
- Huang, J., Fisher, B. T., Tam, V., Wang, Z., Song, L., Shi, J., ... & Rubin, D. M. (2022). The Effectiveness Of Government Masking Mandates On COVID-19 County-Level Case Incidence Across The United States, 2020: Study examines the effectiveness of US government masking mandates during a portion of the COVID-19 pandemic. *Health Affairs*, 41(3), 445-453.
- Human Rights Watch. (2005, January 24). *Blood, Sweat, and Fear: Workers' Rights in U.S. Meat and Poultry Plants*. <https://www.hrw.org/report/2005/01/24/blood-sweat-and-fear/workers-rights-us-meat-and-poultry-plants>
- Human Rights Watch. (2019, September 4). “When We’re Dead and Buried, Our Bones Will Keep Hurting”. [https://www.hrw.org/report/2019/09/04/when-were-dead-and-buried-our-bones-will-keep-hurting/workers-rights-under-threat#\\_ftn108](https://www.hrw.org/report/2019/09/04/when-were-dead-and-buried-our-bones-will-keep-hurting/workers-rights-under-threat#_ftn108)
- Keifer, M. (2022). Two Perspectives: Agricultural Employers and Their Essential Workers. *Journal of Agromedicine*, 27(1), 1-3.
- Kilanowski, J. F. (2017). Breadth of the socio-ecological model. *Journal of Agromedicine*, 22(4), 295-297.
- Kim, M. Y., & Han, K. (2022). Social Motivation to Comply with COVID-19 Guidelines in Daily Life in South Korea and the United States. *Behavioral Sciences*, 12(7), 213.
- Los Angeles County Department of Public Health. (2022, July 08). COVID-19: Reducing Risk Keeping Safe & Preventing Spread.  
<http://publichealth.lacounty.gov/acd/docs/reducingrisk.pdf>
- Lu, L., Liu, J., Yuan, Y. C., Burns, K. S., Lu, E., & Li, D. (2021). Source Trust and COVID-19 Information Sharing: The Mediating Roles of Emotions and Beliefs About Sharing. *Health education & behavior : the official publication of the Society for Public Health Education*, 48(2), 132–139. <https://doi.org/10.1177/1090198120984760>
- Malhotra, P. (2020). Covid19: A Relationship-Centered and Culturally Informed Approach to Studying Misinformation on COVID-19. *Social Media+ Society*, 6(3), 2056305120948224.
- Martin, P. (2012). Migration and competitiveness in US construction and meatpacking. *Unpublished paper, University of California, Davis, CA*.

- Martinez, J. E. (2021). COVID-19 Has Exposed Underlying Injustices and Continues to Threaten the Health and Safety of Workers in Our Communities. *American Journal of Preventive Medicine*, 61(3), 461-463.
- Mayer, B., Helm, S., Barnett, M., & Arora, M. (2022). The impact of workplace safety and customer misbehavior on supermarket workers' stress and psychological distress during the COVID-19 pandemic. *International journal of workplace health management*.
- McCaffery, K. J., Dodd, R. H., Cvejic, E., Ayre, J., Batcup, C., Isautier, J. M., ... & Wolf, M. S. (2020). Disparities in COVID-19 related knowledge, attitudes, beliefs and behaviours by health literacy. *medRxiv*.
- McCormack, L. A., Squiers, L., Frasier, A. M., Bevc, C., Lynch, M., Bann, C. M., & MacDonald, P. D. (2021). Gaps in knowledge about COVID-19 among US residents early in the outbreak. *Public Health Reports*, 136(1), 107-116.
- Miller, C.T., Rose, M. (2020, April 04). It's hardly shocking the Navy fired a commander for warning of coronavirus threat. It's part of a pattern. ProPublica. <https://www.propublica.org/article/its-hardly-shocking-the-navy-fired-a-commander-for-warning-of-coronavirus-threat-its-part-of-a-pattern>
- Monte, L. M., & Laughlin, L. (2022, April 9). *Essential, Frontline, & High Risk: How COVID-19 prioritized low-wage workers while heightening their disadvantage*. United States Census. <https://www.census.gov/content/dam/Census/library/working-papers/2022/demo/sehsd-wp2022-08.pdf>
- Mueller, J. T., McConnell, K., Burow, P. B., Pofahl, K., Merdjanoff, A. A., & Farrell, J. (2021). Impacts of the COVID-19 pandemic on rural America. *Proceedings of the National Academy of Sciences*, 118(1), 2019378118.
- Ndumbe-Eyoh, S., Muzumdar, P., Betker, C., & Oickle, D. (2021). 'Back to better': amplifying health equity, and determinants of health perspectives during the COVID-19 pandemic. *Global Health Promotion*, 17579759211000975.
- Paremoer, L., Nandi, S., Serag, H., & Baum, F. (2021). Covid-19 pandemic and the social determinants of health. *bmj*, 372.
- Paul, G., Sharma, S., Singh, G., Singh, G., Sharma, S., Paul, B. S., & Gautam, P. L. (2020). Assessment of knowledge gaps and perceptions about COVID-19 among health care workers and general public-national cross-sectional study. *Journal of Anaesthesiology, Clinical Pharmacology*, 36(3), 337.
- Public Citizen. (2020, September 15). USDA, Meatpacking Industry Collaborated to Undermine COVID-19 Response, FOIA Docs Show. <https://www.citizen.org/news/usda-meatpacking-industry-collaborated-to-undermine-covid-19-response-foia-docs-show/>
- Raine, S., Liu, A., Mintz, J., Wahood, W., Huntley, K., & Haffizulla, F. (2020). Racial and ethnic disparities in COVID-19 outcomes: social determination of health. *International journal of environmental research and public health*, 17(21), 8115.
- Ramos, A.K. (2020). *Concerns and perceptions of COVID-19 among meatpacking plant workers*. University of Nebraska Medical Center College of Public Health. [https://tools.niehs.nih.gov/wetp/public/hasl\\_get\\_blob.cfm?ID=12211](https://tools.niehs.nih.gov/wetp/public/hasl_get_blob.cfm?ID=12211)
- Ramos, A. K., Carvajal-Suarez, M., Trinidad, N., Quintero, S., Molina, D., & Rowland, S. A. (2021). "No somos máquinas"(We are not machines): Worker perspectives of safety culture in meatpacking plants in the Midwest. *American journal of industrial medicine*, 64(2), 84-96.

- Rogers, T. N., Rogers, C. R., VanSant-Webb, E., Gu, L. Y., Yan, B., & Qeadan, F. (2020). Racial disparities in COVID-19 mortality among essential workers in the United States. *World medical & health policy*, 12(3), 311-327.
- Rozenfeld, Y., Beam, J., Maier, H., Haggerson, W., Boudreau, K., Carlson, J., & Medows, R. (2020). A model of disparities: risk factors associated with COVID-19 infection. *International journal for equity in health*, 19(1), 1-10.
- Saitone, T. L., Schaefer, K. A., & Scheitrum, D. P. (2021). COVID-19 morbidity and mortality in US meatpacking counties. *Food Policy*, 101, 102072.
- Sallis, J.F., Owen, N., Fisher, E.B. (n.d.). *Ecological Models of Health Behavior*. Health Behavior and Health Education: Theory Research and Practice. <https://www.med.upenn.edu/hbhe4/part5-ch20.shtml>
- Sharma, S., Badami, V., Rojas, E., Mittal, A., Stansbury, R., Rana, B., ... & Wen, S. (2021). ICU mortality in patients with coronavirus disease 2019 infection: Highlighting healthcare disparities in rural Appalachia. *Critical Care Explorations*, 3(10).
- Select Subcommittee on the Coronavirus Crisis. (2021, October 27). *Hybrid Hearing on "How The Meatpacking Industry Failed The Workers Who Feed America"*. <https://coronavirus.house.gov/subcommittee-activity/hearings/hybrid-hearing-how-meatpacking-industry-failed-workers-who-feed>
- Tasnim, S., Hossain, M. M., & Mazumder, H. (2020). Impact of Rumors and Misinformation on COVID-19 in Social Media. *Journal of preventive medicine and public health = Yebang Uihakhoe chi*, 53(3), 171-174. <https://doi.org/10.3961/jpmph.20.094>.
- U.S. Department of Agriculture. (2021, May 13). The meatpacking industry in rural America during the COVID-19 pandemic. <https://www.ers.usda.gov/covid-19/rural-america/meatpacking-industry>
- Ullrich, F., & Mueller, K. (2022, April). *COVID-19 Cases and Deaths, Metropolitan and Nonmetropolitan Counties Over Time*. RUPRI Center for Rural Health Policy Analysis. <https://rupri.public-health.uiowa.edu/publications/policybriefs/2020/COVID%20Longitudinal%20Data.pdf>
- United States Department of Homeland Security. (2020, August 13). *Guidance on the Essential Critical Infrastructure Workforce*. <https://www.cisa.gov/identifying-critical-infrastructure-during-covid-19>
- University of Illinois Chicago. (2021, February 2). Black, Hispanic Americans
- Wolf, M. S., Serper, M., Opsasnick, L., O'Connor, R. M., Curtis, L., Benavente, J. Y., ... & Bailey, S. C. (2020). Awareness, attitudes, and actions related to COVID-19 among adults with chronic conditions at the onset of the US outbreak: a cross-sectional survey. *Annals of internal medicine*, 173(2), 100-109.
- Vogels, E. A. (2021). Some digital divides persist between rural, urban and suburban America. <https://www.pewresearch.org/fact-tank/2021/08/19/some-digital-divides-persist-between-rural-urban-and-suburban-america/>

## APPENDIX A: INTERVIEW & CODING GUIDE

### **Phase 1: Reviewing the Interviews**

The initial analysis phase was guided by recommendations outlined by Forman and Damschroder (2007) on organizing qualitative data. Phase one involved becoming familiar with the data by watching and listening to video and audio recordings of each interview while documenting notable responses, thoughts, questions, and phrases from the participant.

#### *Preparing for Review*

Prior to reviewing the interviews, the Zoom recording for each interview was accessed through OneDrive; if the interview was conducted on another platform other than Zoom the audio recording was selected. The split-screen features on a MacBook Pro laptop was utilized to display the audio or Zoom recording on the left-hand side of the screen and a Microsoft Word document, used for notetaking, was placed on the right-hand side. All notes for this initial review were documented on Microsoft Word for Mac version 16.59. Each document included the participant's ID number and the date the review was completed. All interviews were listened to in a private setting to preserve confidentiality.

#### *Formatting Notes Document*

All interviews were directed by a script containing 18 standard questions with two to seven prompts or sub-questions under each standard question to encourage further discussion or elaboration for points made under one of the standard questions. Probing questions that prompt further conversation were used at the interviewer's discretion; moreover, sub-questions that were posed varied across interviews. Sub-questions were posed by the interviewer based on the participants understanding of the question (i.e., participant required clarification of initial question), or in response to the participant's response (i.e., probing). In the initial round of

review, the 18 standard interview questions were typed onto the Word document prior to listening to the interview. If additional questions were posed during the interview, the recording was paused, and the question was transcribed onto the Word document. After including all questions that the interviewer asked, the final document consisted of approximately 35 to 47 questions total; the total number of questions in each interview varied. If the interviewer did not ask one of the standard 18 questions, the question that was excluded from the interview was deleted from the notes document. The aim of reviewing each interview is to become familiar with the data and document salient concepts, ideas, concerns, and experiences shared by the participant throughout the interview. Notable information shared by the participant was documented under the question that prompted a particular response. All questions were numbered, and any notes that were recorded were documented in a bulleted format underneath the question.

### *Notetaking*

If a participant provided a short response with no additional information or detail (i.e., yes/no response), parentheses were used to bracket a note-to-self reminder for the coder stating that the participant did not elaborate on their response. If the participant restated a point that had been documented previously or if their response was not perceived as noteworthy by the coder, the question was retained; however, notes were not documented under the question that prompted that particular response. Time stamps were included in the notes document underneath specific comments or questions at random to reference a specific section of the interview if needed. Additionally, participants were quoted in the notes document when compelling or thought-provoking statements were shared in the interview; a time stamp followed all quotes for future reference. Occasionally, a participant would provide valuable information not relating to the

question asked; all notes surrounding that comment were documented under the "Tangent" subcategory. This category was positioned under the question that prompted the tangent. As a part of this process, the Zoom or audio recording being reviewed was frequently paused to document notes or general thoughts on the responses provided by the participant.

### *Coder Notes*

A section where general thoughts or ideas of the coder was created and titled "General Thoughts" which was positioned at the end of the notes documents. In this category, ideas, connections, and questions were documented from the coder's perspective. Here, comments surrounding connections made between the participant's experiences and concepts within sociological and health communication frameworks were documented. Other notes documented in this section were comments surrounding the coder's experiences relating to the participant's responses and notes highlighting the parallels between responses provided by the interview under evaluation and other interviews. The review and notetaking process took approximately two to four hours, depending on the length of the interview.

### *Spanish Interviews*

For interviews conducted in Spanish, the same procedure was used to format the notes document and guide notetaking with the exception that all questions were documented in Spanish and English. Prior to reviewing the Spanish recordings, the 18 standard questions were written in English, followed by the Spanish translation. All sub-questions were transcribed in Spanish while listening to the recording; the recording was then paused to allow for prompts to be translated to English. All notes were documented in English regardless of the language spoken in the interview.

## **Phase 2: Coding**

### ***SEM***

#### ***Round 1 Coding***

Using the transcribed interviews, which remained in a virtual format, were reviewed to identify statements relating to SEM. For the initial round of coding, a green highlight was applied to all excerpts relating to SEM. During the first phase of coding, the five levels of SEM were not defined within the transcriptions but would be reserved for the subsequent coding cycle. Responses that referred to experiences relating to a group that the participant did not identify with, were framed using a blue highlight for the first and last word of the statement. This bracketing strategy was used to identify salient experiences as recounted by the participant while specifying that the experiences or circumstances were not of their own.

#### ***Round 2 Coding***

All statements that were highlighted in green for the initial coding cycle, were reevaluated using the definitions outlined in Table 1 to assign each response to one of five SEM tiers. Each level was assigned a separate color and labeled with a numeric value in ascending order. Responses that could function across several SEM levels, were highlighted in black and a comment was attached to the statement to specify which SEM levels were at work within the response based on the coder's interpretation of the statement. Refer to table 10 to review the definitions for each SEM level.

### **KGT**

#### ***Round 1 Coding***

Similar to categorizing data under SEM, a line-by-line review of the interview transcription was completed to identify all statement aligning with or relating to KGT as defined



by Donohue & Tichenor (1975). Data that was previously classified under SEM was re-highlighted to burgundy as a way of noting co-occurring codes were present within the response. A comment was attached to the statement where the coder noted which codes were used to define the quote.

### *Round 2 Coding*

Upon completing the initial round of coding, five codes were developed to organize the highlighted KGT data; this included: information sources, helpful/nonhelpful information, accessing information, information frequency, and COVID-19 knowledge. Each code was assigned a numerical value in ascending order; these values will be used for data organization and for the purpose of data analysis. The definitions that directed quote organization can be found in Table 11. Considering there were limited color options to highlight and group all KGT-related data within one of the five KGT codes, all KGT data that were highlighted in the initial round of coding was extracted and pasted onto a separate Word document and organized within matrices. This organization method is explained in detail in *Organizing the Data*.

## **Phase 3: Organizing the Data**

### *KGT*

As a method of organizing the highlighted data, five separate tables (one for each KGT code) were created on a separate Word document. After concluding the second round of coding, all SEM-related quotes were extracted and positioned into their respective table. These tables contain three columns: quotes, notes, and SEM level. The notes section includes memos created by the coder and the interview question that prompted the response. The SEM level column included the numeric value attached to one of the five SEM categories; this was done to highlight

the intersection between SEM and KGT. This process was performed for each participant. Refer to Table 12 to view a visual representation of this arrangement.

### *SEM*

The method used to organize KGT data was also used to arrange SEM-related quotes. Again, five separate tables (one for each SEM layer) were created on a separate Word document. All SEM-related quotes were pasted into one of the five tables created. Similar to the KGT tables, the SEM tables also included three columns: quotes, notes, and KGT level. Refer to Table 13 to view a visual representation of this arrangement.

SEM Level	Definition
<i>Individual (1)</i>	Individual attitudes, beliefs, and personality traits as reported by the participants.
<i>Microsystem (2)</i>	An individual's immediate social environment, such as family, friends, school, church, coworkers.
<i>Exosystem (3)</i>	An individual's larger social network, such as neighborhood, large institutions, and organizations (e.g., mass media, government, and social services), workplace, school administration, state, and federal policies.  *The exosystem is often comprised of social determinants of health
<i>Macrosystem (4)</i>	An individual's shared societal and cultural norms/customs, values, and ideologies, social classes, religious affiliation, poverty, and socioeconomic status.
<i>Mesosystem (5)</i>	The interconnectedness between levels of SEM.

Table 10. SEM level definitions used to guide secondary coding cycle.

KGT Level	Definition
<i>Information Sources (1)</i>	<p>A person or place from which information comes, arises, or is obtained.</p> <p>i.e., government agencies, employer, friends, family, coworkers, media platforms, news sites, health agencies (i.e., clinics, hospitals, COVID-19 testing sites), schools, research could all be sources of information.</p>
<i>Helpful/Nonhelpful Information (2)</i>	<p>Information the participant has verbally indicated to be helpful; often helpful information comes from sources the participant trusts.</p> <p>Unhelpful information is information that comes from a source that the participant does not trust. Moreover, skepticism surrounding a particular type of information or information source as noted by the participant would be included in this category.</p>
<i>Accessing Information (3)</i>	<p>Is the ability to identify, obtain, and utilize sources of information in order to become better informed about the topic of interest.</p> <p>i.e., obtaining COVID-related information whether that be COVID recommendations, evolving guidelines, or general vaccine information.</p>
<i>Information Frequency (4)</i>	<p>How often the participant seeks or distributes COVID-related information; information can be given to family, friends, coworkers, employers, elected officials, etc., or can be received from any of the sources listed.</p>
<i>COVID-19 Knowledge (5)</i>	<p>Statements that indicate the participant's awareness or understanding of COVID-related information.</p> <p>This category is used to gauge the participant's level of understanding and knowledge surrounding COVID-19.</p>

Table 11. Displays the definition for each KGT code.

Accessing information		
SEM	Quote	Notes
3, 4	“I think the strength of the health is just getting that information out, especially in the school. The superintendent would um have a weekly video that he would explain all of the Covid like updates everything that changed or stayed the same from the last week. He would always talk about where our dial was and that was posted on their website, this was on all their social media.	<p>Having information readily accessible</p> <p><i>What are the strengths in each of these areas, would you say for the health?</i></p> <p>3 – school admin as source of info</p> <p>4 – social norm for community members to go to games and follow Crete Public Schools → potentially a good way to share COVID-19 information</p>

Table 12. An example of a section of the table used to arrange KGT data.

Individual		
KGT	Quote	Notes
2	“...putting our trust in professionals who know what they're doing you know, into people who do the research to get the right vaccine I think it's, it's worth it to put our trust in those people and so um in order for the pandemic and for us to be able to go back to normal the majority of people should probably get it.”	<p>Trusting research</p> <p><i>And what are your thoughts on the vaccine?</i></p>

Table 13. An example of a section of the table used to organize SEM data.

## APPENDIX B: APPLICATION OF PUBLIC HEALTH COMPETENCIES

### **MPH Foundation Competency**

The primary foundational competency that will be met through the current study is MPH6: "Discuss the means by which structural bias, social inequities and racism undermine health and create challenges to achieving health equity at organizational, community and societal levels." This research aims to highlight the multi-level systemic barriers that rob underprivileged and historically marginalized communities from obtaining and sustaining health and well-being during the COVID-19 pandemic. Through this study, I hope not only to illuminate the experiences of members of rural meatpacking communities but also to foster dialogue among researchers, community members, and stakeholders to address ongoing health inequities that plague society.

### **MPH Concentration Competencies: Epidemiology**

EPIMPH2, which states, "Apply appropriate study designs and data collection methods to answer specific epidemiologic questions and address public health issues," is the first Epidemiology competency that will be met with this project. This qualitative study aims to determine how systemic influences have contributed to the rise of COVID-19 cases by evaluating rural community members' experiences, values, behaviors, and opinions. EPIMPH2 will be addressed by noting emerging themes and distinct patterns during the analysis phase.

The second Epidemiology competency that will be integrated into the Capstone project is EPIMPH5: "Apply principles of ethical conduct, cultural sensitivity, and social justice to public health research and practice." The research team exercised cultural intelligence when developing survey and interview questions and carefully considered multiple recruitment methods.

Moreover, this study's central objective of promoting social justice and health equity would satisfy this final competency.

## APPENDIX C: INSTITUTIONAL REVIEW BOARD

### **Human Subjects**

This project was approved on December 20, 2020, by the University of Nebraska Lincoln Institutional Review Board. Please refer to the IRB approval letter attached for additional information.



## Official Approval Letter for IRB project #20472 - New Project Form

December 21, 2020

Angela Palmer-Wackerly  
Department of Communication Studies  
LPH 351 UNL NE 685880329

Virginia Chaidez  
Department of Nutrition and Health Sciences  
LEV 104A UNL NE 685830806

IRB Number: 20201220472EP  
Project ID: 20472  
Project Title: Systems-based Community Intervention Development: A Multilevel CBPR Approach to Enhancing Health Care Services and Communication in Meatpacking Communities

Dear Angela:

This letter is to officially notify you of the approval of your project by the Institutional Review Board (IRB) for the Protection of Human Subjects. It is the Board's opinion that you have provided adequate safeguards for the rights and welfare of the participants in this study based on the information provided. Your proposal is in compliance with this institution's Federal Wide Assurance 00002258 and the DHHS Regulations for the Protection of Human Subjects under the 2018 Requirements at 45 CFR 46.

- o Review conducted using expedited review categories 6 & 7 at 45 CFR 46.110
- o Date of Approval: 12/21/2020
- o Date of Expedited review: 12/16/2020
- o Date of Acceptance of Revisions: 12/21/2020
- o Funding (Grant congruency, OSP Project/Form ID and Funding Sponsor Award Number, if applicable): Internal; Nebraska Tobacco Settlement Funds
- o Consent waiver: Consent documentation at 45 CFR 46.117(c)(1)(ii)
- o Review of specific regulatory criteria (contingent on funding source): 45 CFR 46
- o Subpart B, C or D review: NA

You are authorized to implement this study as of the Date of Final Approval: 12/21/2020.

NOTE: Please note that change request form(s) must be submitted with the final Spanish and Somali language consent documents when available. No participants may be enrolled at this time unless they fluently speak and understand English until we receive the translated materials.

We wish to remind you that the principal investigator is responsible for reporting to this Board any of the following events within 48 hours of the event:

- \* Any serious event (including on-site and off-site adverse events, injuries, side effects, deaths, or other problems) which in the opinion of the local investigator was unanticipated, involved risk to subjects or others, and was possibly related to the research procedures;
- \* Any serious accidental or unintentional change to the IRB-approved protocol that involves risk or has the potential to recur;
- \* Any protocol violation or protocol deviation
- \* An incarceration of a research participant in a protocol that was not approved to include prisoners
- \* Any knowledge of adverse audits or enforcement actions required by Sponsors
- \* Any publication in the literature, safety monitoring report, interim result or other finding that indicates an unexpected change to the risk/benefit ratio of the research;
- \* Any breach in confidentiality or compromise in data privacy related to the subject or others; or
- \* Any complaint of a subject that indicates an unanticipated risk or that cannot be resolved by the research staff.

Any changes to the project, including reduction of procedures, must be submitted and approved prior to implementation. A change request form must be submitted to initiate the review of a modification.

For projects which continue beyond one year from the starting date, an annual update of the project will be required by informing the IRB of the status of the study. The investigator must also advise the Board when this study is finished or discontinued by completing the Final Report form via NUgrant.

If you have any questions, please contact the IRB office at 402-472-6965.

Sincerely,

Rachel Wenzl, CIP  
for the IRB





## Official Approval Letter for IRB project #20472 - Change Request Form

June 16, 2022

Angela Palmer-Wackerly  
Department of Communication Studies  
LPH 351 UNL NE 685880329

Virginia Chaidez  
Department of Nutrition and Health Sciences  
LEV 104A UNL NE 685830806

IRB Number: 20201220472EP

Project ID: 20472

Project Title: Systems-based Community Intervention Development: A Multilevel CBPR Approach to Enhancing Health Care Services and Communication in Meatpacking Communities

Dear Angela:

The Institutional Review Board for the Protection of Human Subjects has completed its review of the Request for Change in Protocol submitted to the IRB.

This change request specific to the graduate student sub-project has been collaboratively approved identifying the University of Nebraska-Lincoln as Reviewing IRB and has been approved to include the following changes and procedures as described in the form:

Additional dissemination of findings through UNMC student-led thesis project.

Please be aware that all approvals/reviews specific to this change request must be sought through the Reviewing IRB and appropriate updates should be submitted to the Relying IRB per their policies and procedures.

In addition, as the UNL site-investigator, you are required to maintain an active list of participating personnel on the NUgrant project via the project personnel list ensuring documentation and monitoring of human subjects training and conflict of interest.

We wish to remind you that the principal investigator is responsible for reporting to this Board any of the following events within 48 hours of the event:

- \* Any serious event (including on-site and off-site adverse events, injuries, side effects, deaths, or other problems) which in the opinion of the local investigator was unanticipated, involved risk to subjects or others, and was possibly related to the research procedures;
- \* Any serious accidental or unintentional change to the IRB-approved protocol that involves risk or has the potential to recur;
- \* Any protocol violation or protocol deviation
- \* An incarceration of a research participant in a protocol that was not approved to include prisoners
- \* Any knowledge of adverse audits or enforcement actions required by Sponsors
- \* Any publication in the literature, safety monitoring report, interim result or other finding that indicates an unexpected change to the risk/benefit ratio of the research;
- \* Any breach in confidentiality or compromise in data privacy related to the subject or others; or
- \* Any complaint of a subject that indicates an unanticipated risk or that cannot be resolved by the research staff.

This letter constitutes official notification of the approval of the protocol change. You are therefore authorized to implement this change accordingly.

If you have any questions, please contact the IRB office at 402-472-6965.

Sincerely,

Rachel Wenzl, CIP  
for the IRB





## APPENDIX D: SUPERVISION & FACILITIES

### **Supervision and Facilities**

All data were collected through the University of Nebraska-Lincoln by direction of Dr. Angela Palmer-Wackerly and Dr. Virginia Chaidez for the study titled, “Systems-based Community Intervention Development: A Multilevel CBPR Approach to Enhancing Health Care Services and Communication in Meatpacking Communities.” Data analysis and interpretation of results for the current study will be performed under the University of Nebraska Medical Center with mentorship and supervision offered by Dr. Chaidez.

April 27, 2022

To whom it may concern,

It is with pleasure that I agree to serve as a third committee member for supervising the capstone project of Shannon Barrientos. In this capacity, I will oversee her analysis of qualitative data which involves assigning select papers to read on qualitative analysis methodology, attending weekly meetings to discuss her process and coding progress, review her work and provide feedback, answer questions and determine weekly action items. Feel free to contact me for any concerns, questions or related matters.

Sincerely,



Virginia Chaidez  
Associate professor  
Nutrition and Health Science Department  
[vchaidez2@unl.edu](mailto:vchaidez2@unl.edu)

## APPENDIX E: BIOGRAPHY & CURRICULUM VITAE

### Biography

Shannon is a student in the College of Public Health concentrating in Epidemiology. She received her bachelor's degree at the University of Nebraska-Lincoln in 2020 and hopes to continue conducting research as she prepares for medical school.

### Education

---

University of Nebraska Medical Center, Omaha, NE

**Master of Public Health**

**August 2022**

Concentration: Epidemiology

University of Nebraska – Lincoln, Lincoln, NE

**Bachelor of Arts**

**August 2020**

Major: Sociology; Minor: Global Studies, Humanities in Medicine, Communication Studies

Languages: Spanish (native)

### Research Experience

---

#### Graduate Research Assistant

**June 2021 – present**

*Minority Health Disparities Initiative, University of Nebraska – Lincoln*

- Actively recruited participants in rural Nebraska during community gatherings and free clinics in Lincoln, Nebraska
- Assisted in data collection by conducting interviews with participants to gather information surrounding their experiences during the COVID-19 pandemic
- Transcribe and translate hourlong interviews conducted with both English and Spanish speaking participants

#### Research Assistant

**July 2019 – August 2020**

*Department of Sociology, University of Nebraska – Lincoln*

- Served as research assistant to Dr. Kimberly Tyler on a project titled: “Outcomes of Sexual Assault among Sexual Minority and Heterosexual College Men and Women”
- Interviewed and collected sensitive participant information to be later evaluated
- Carefully entered data into Excel and transferred to SPSS to be analyzed
- Assisted in developing a literature review by gathering relevant research articles

#### Undergraduate Research Experience Intern

**June 2017 – December 2017**

*Department of Education and Human Sciences, University of Nebraska – Lincoln*

- Served as research intern to Dr. Lisa Knoche on a nationally funded project working to enhance young children's behavior in a home setting
- Translated recorded interviews from Spanish to English to be further coded for data analysis
- Thoroughly de-identified personal information of participants to preserve confidentiality

## Professional Experience

---

### Medical Research Supervisor

June 2021 – present

*Celerion, Lincoln, NE*

- Conduct time-sensitive ECGs on study participants under varying study groups
- Accurately gather participant's vital signs while identifying out of range values
- Assist phlebotomists on blood draws by verbalizing blood draw procedures
- Ensure study drugs are being correctly administered to participants to minimize study deviations
- Perform detailed evaluations of all data gathered for vitals, ECGs, and blood draws to ensure values and readings have been accurately documented
- Meticulously process blood samples using centrifuge machinery and pipette study-specific plasma values to appropriate aliquots
- Train onboarding associates to follow standard operating procedures for gathering data such as in blood processing, administration of study drug, and blood draws

### Graduate Intern

August 2021 – December 2021

*Office of Health Disparities and Health Equity, NEDHHS*

- Organize leading cause of death per county based on race/ethnicity and gender on Excel using Nebraska Vitals Statistics
- Designed infographics to improve awareness surrounding health disparities in Nebraska among lay community members
- Presented at the Nebraska Health Department Quarterly Conference where I spoke on health disparities among racial/ethnic minorities and evidence-based solutions to minimize health inequities

### Bilingual COVID-19 Contact Tracer / Survey Administrator

August 2020 – June 2021

*Professional Research Consultants, Omaha, NE*

- Conducted interviews with individuals who have tested positive for COVID-19 while keeping cultural and emotional awareness
- Informed contacts of relevant and accurate safety and social distancing guidelines after being exposed to positive cases
- Conducted community health needs assessments to identify health needs through data collection
- Conducted hospital consumer assessment of health care providers and systems survey to individuals across the country for the purpose of gathering patients' perspectives of hospital care

### Clinical Intern

June 2018 – August 2018

*Hospital Roosevelt, Guatemala City, Guatemala*

- Served as an intern to Dr. Iris Cazali in the Department of Internal Medicine and Infectious Diseases
- Aided in documenting patient care and performed various duties assigned by health care providers
- Participated in discussions surrounding infectious diseases such as hepatitis A, typhoid fever, and malaria

## Involvement

---

### Relief Society Vice President

May 2021 – present

*Church of Jesus Christ of Latter-Day Saints, Lincoln, Nebraska*

- Conduct quarterly interviews with women in local chapter of the Relief Society to assess their needs
- Direct committees in planning appropriate activities for members of the congregation

- Coordinate with pastor to plan outreach projects to increase church attendance for less active members

### **Spanish Interpreter Volunteer**

**May 2019 – present**

*Clinic with a Heart, Lincoln, Nebraska*

- Assist Spanish-speaking patients during admissions and other health care provider-patient interactions
- Accompany patients through their appointment to ensure their concerns are being communicated to healthcare providers
- Translate documentation provided by the patient
- Provide cultural information to medical professionals to achieve an accurate patient narrative
- Ensure the clinic remains an inclusive and welcoming environment by exemplifying compassion towards patients and fellow volunteers

### **Sunday School Instructor**

**September 2019 – May 2021**

*Church of Jesus Christ of Latter-Day Saints, Lincoln, Nebraska*

- Teach religious material to 35-person class aged 18 to 60
- Study and tailor creative lesson plans to meet the needs of all class participants
- Initiate discussions regarding religious subjects within a class setting
- Serve on a teaching committee that develops methods to improve teaching and enhance classroom interaction