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https://smalltowns.soc.iastate.edu/covid19

Impact of COVID-19 in Iowa's Small Towns

The coronavirus disease 2019 (COVID-19) global pandemic continues to be a major public health crisis in the U.S., severely impacting the health, economic, and emotional welfare of many Americans.[1,2] Large metropolitan areas have garnered the most attention in academic and policy discussions about COVID-19 due to the sheer numbers of cases and deaths. Missing from the discussion is the pandemic's impact on smaller communities in rural America. This is a critical omission because COVID cases and deaths have proliferated in rural places over the past year.[3,4]

There is an immediate need to understand how COVID-19 has impacted the well-being of residents in understudied rural communities, especially meat packing towns that have had large outbreaks among their diverse workforce.[5] This report summarizes key statewide impacts and perceptions of COVID-19 from a survey of 13,679 households across 73 small towns in Iowa, including two micropolitans. There were 5,229 Iowans who responded to our survey between December 2020 through February 2021, for a response rate of 38.2 percent. Refer to the appendix for more details on the methods. Town-level summaries are available on the Iowa Small Towns Project website (https://smalltowns.soc.iastate.edu/covid19).

COVID-19 Trends in Iowa

Rural Iowa had far more COVID-19 deaths than other rural places in the U.S. Confirmed and/or positive cases are not ideal measures because they provide no information on the severity of the disease, such as who is asymptomatic or who is severely ill. Instead, we use COVID-19 mortality rates per 100,000 to measure the severity of the pandemic. Rural counties in Iowa with a town of 2,500 or more suffered 270 deaths per 100,000, higher than the national rate of only 225. In completely rural counties (no town over 2,500) mortality was 290 per 100,000 in Iowa, far above the 210 death rate in other states. By contrast, Iowa's metropolitan counties had fewer COVID deaths than the nation (150 versus 180 per 100,000). Micropolitan counties in Iowa (containing a city of 10,000-49,999) had roughly the same mortality as the U.S. at 200-225 deaths per 100,000. Cumulative mortality rates across the rural-urban continuum is presented in figure 1.

Although the pandemic hit Iowa later than the rest of the country, the impact was more severe. Figure 2 shows change in COVID-19 mortality by national surges or waves. Iowa was relatively unaffected by the pandemic during wave 1 (January to July 2020) and wave 2 (July to October 2020), except in micropolitan communities that are home to many of the state's meat packing facilities. However, COVID deaths surged in Iowa during wave 3 (October 2020 to July 2021), far outpacing national rates. In short, the pandemic was far worse in rural Iowa than it was in either metro Iowa or other parts of rural America.

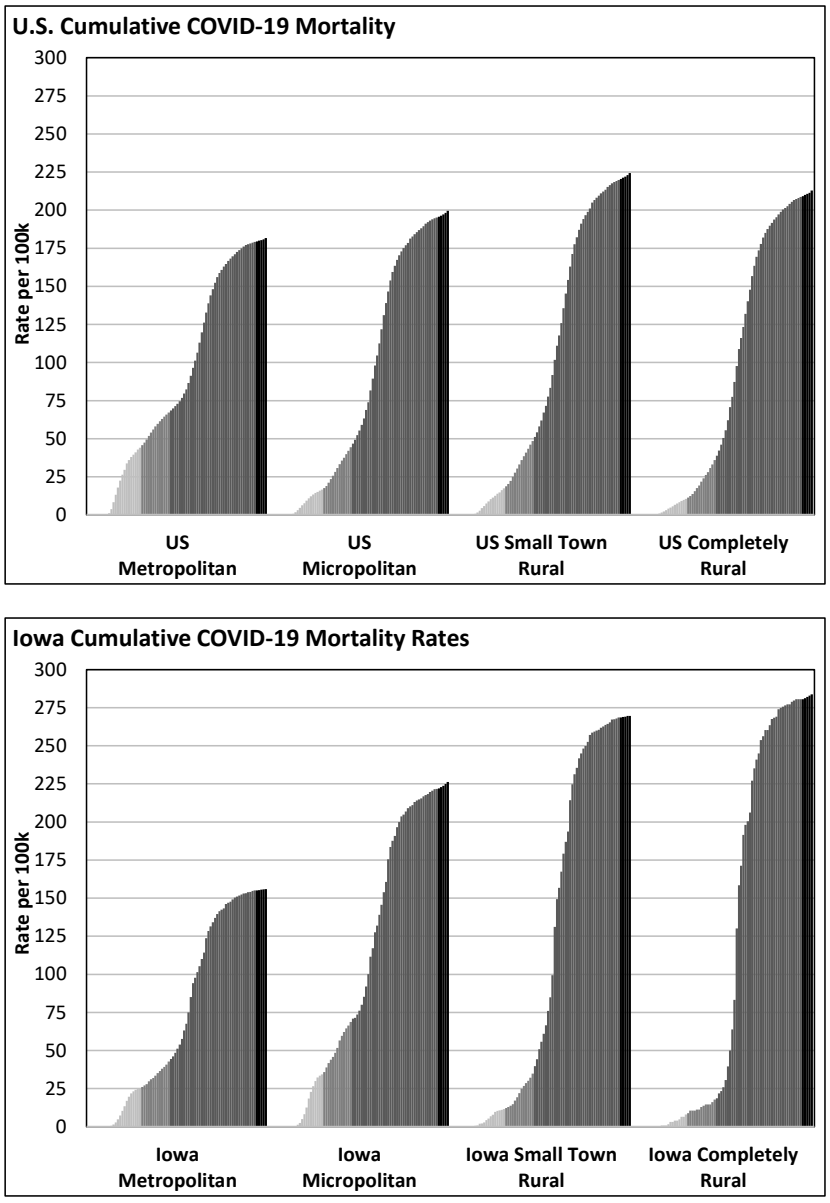
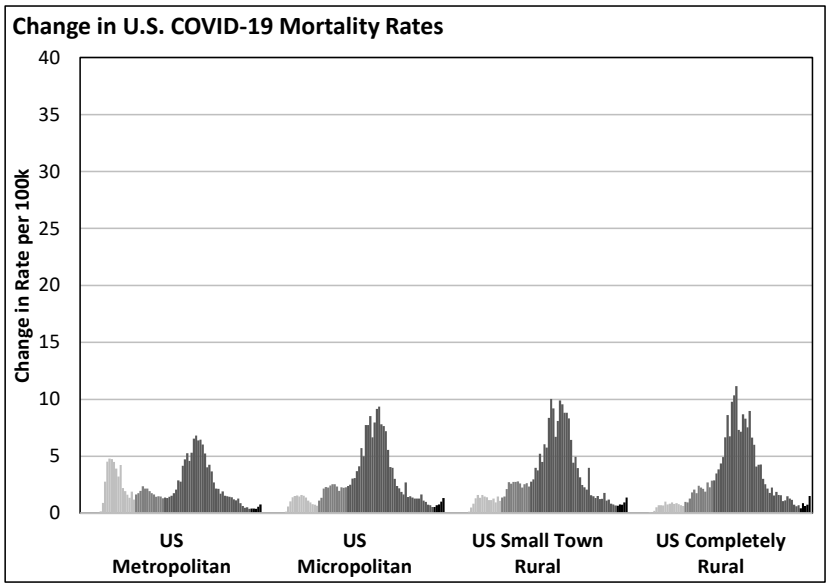


Figure 1. Cumulative weekly COVID-19 mortality rates in Iowa and the U.S.
Shading denotes wave 1 (1/26/2020-7/5/2020), wave 2 (7/12/2020-10/4/2020), wave 3 (10/11/2020-7/4/2021), and wave 4 (7/11/2021-8/29/2021). Source: CSSE Johns Hopkins University.



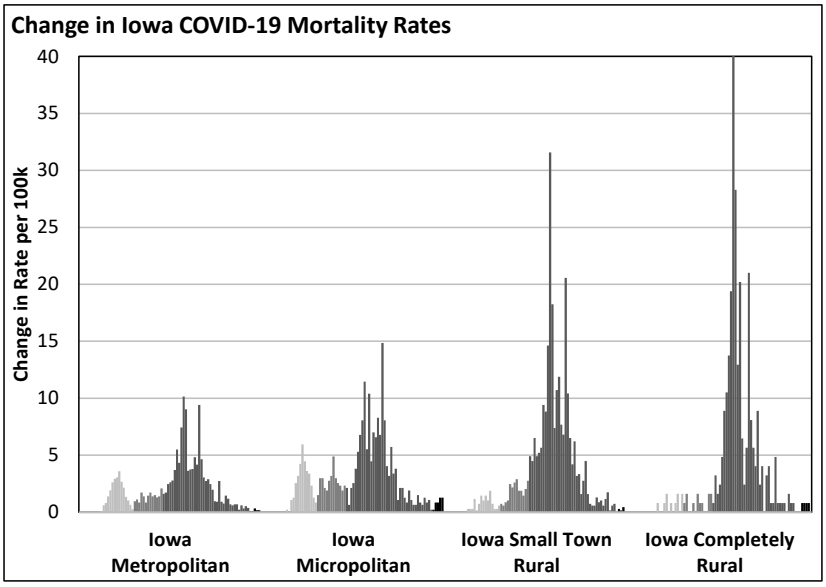


Figure 2. Change in weekly COVID-19 mortality rates in Iowa and the U.S.
Shading denotes wave 1 (1/26/2020-7/5/2020), wave 2 (7/12/2020-10/4/2020), wave 3 (10/11/2020-7/4/2021), and wave 4 (7/11/2021-8/29/2021). Source: CSSE Johns Hopkins University

Health and Economic Impacts of COVID-19

Rural Iowans clearly said the pandemic had a major impact on their mental and social well-being (see figure 3 below, or refer to the appendix for detailed tables). In the smallest towns, about 40 percent said the pandemic worsened their mental health and relationships with close friends, as well as relationships with family (32%). In larger towns over 3,000 people, the impacts were worsening relationships with friends (about 41%), worsening mental health (about 37%), and worsening family relationships. Other impacts were relatively minor in these communities. Rural Iowans living in meat packing towns also said their mental health (38%) and relationships with friends and family (around 30-35%) worsened during the pandemic. However, residents in packing towns were negatively impacted in other ways. For example, their financial (33 vs. 21%) and housing (16 vs. 5%) situations became much worse off during COVID. More people had issues with their spouses or partners (19 vs. 11%), worsening employment situations (20 vs. 14%), and slightly poorer physical health (25 vs. 19%) than those in other small towns.

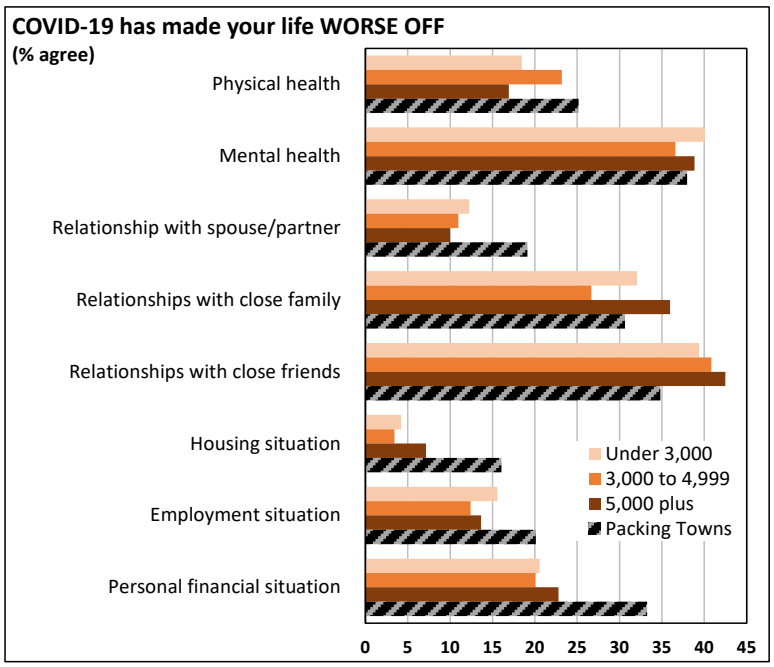


Figure 3. Overall impacts of COVID-19 by town size.

Focusing on *health impacts* specifically (see figure 4), we find over 50 percent of small town residents had been tested for COVID-19. Although under 20 percent tested positive for the virus, less than 2 percent were ever hospitalized for COVID complications. Despite low hospitalization, 25-30 percent of rural Iowans reported having symptoms of COVID, indicating some compromised health. About 40 percent also said they currently live or work in a situation that puts them at risk of contracting the virus. Rates of positivity, hospitalization, and risk of getting COVID are all higher for residents in meat packing towns. In terms of preventing COVID, 45-50 percent indicated they would definitely get a COVID vaccine if it was available. Vaccination intention is higher in larger towns and in packing communities.

About 15-20 percent of rural Iowans show signs of depression; and around 10 percent show signs of anxiety. However, few had sought mental health services in smaller towns, likely because few mental health providers exist nearby. Mental health outcomes tended to be

worse in larger towns and, especially, in meat packing communities.

In terms of *financial impacts*, about 27 percent of rural Iowans had their working hours reduced; and 18 percent had to use household savings to make ends meet. Despite these financial challenges, few people said they had to incur medical debt related to COVID, and few had trouble paying their housing costs. However, the financial impacts were much more severe in meat packing towns. More residents had their working hours reduced (38 vs. 24%), more had taken a pay cut (21 vs. 11%), and more had job benefits reduced (15 vs. 7%) compared to people in other towns. Residents in meat packing communities had more trouble paying their rent or mortgage (14 vs. 5%), had more trouble paying other bills (21 vs. 8%), and were more likely to take on debt to make ends meet (20 vs. 12%). By a smaller margin, workers in packing towns were also more likely to have lost their job during the pandemic. Simply stated, rural Iowans living in minority-dominated meat packing communities experienced major financial and economic stressors. Results are presented in figure 5, and data tables can be found in the appendix.

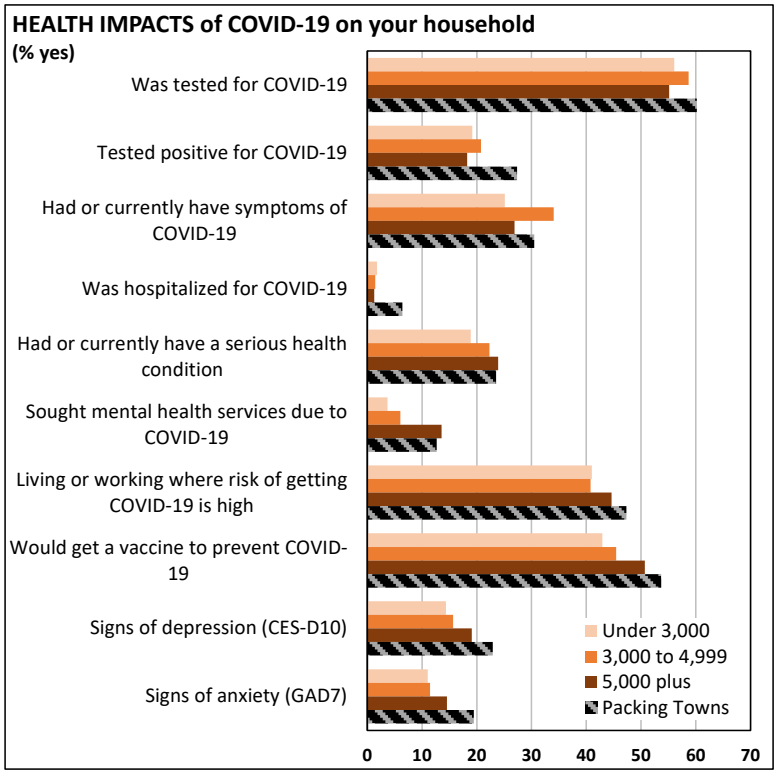


Figure 4. Health impacts of COVID-19 by town size.

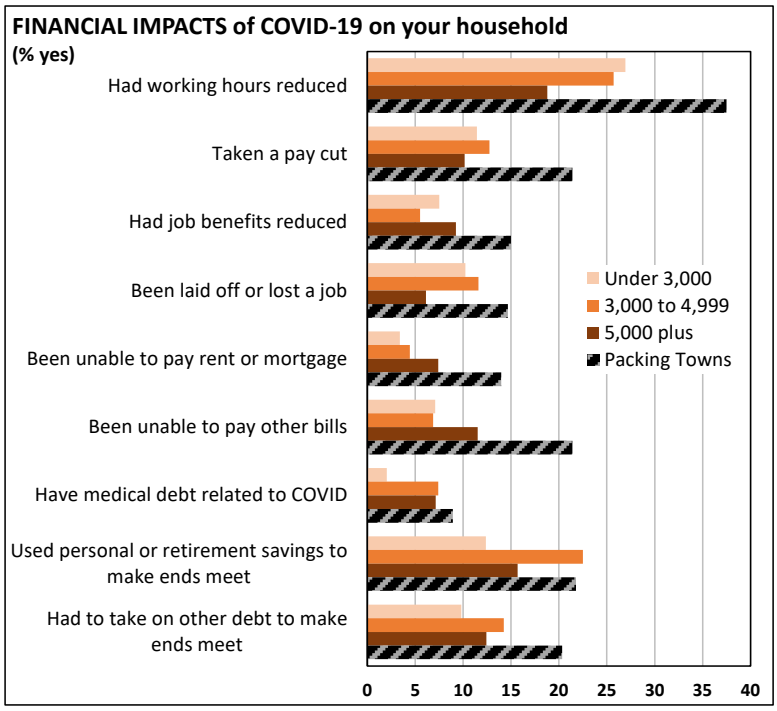


Figure 5. Financial impacts of COVID-19 by town size.

Social Perceptions of COVID-19

When asked how various organizations had *handled the impacts of COVID-19* in their community, most rural Iowans indicated local organizations did a better job than state or federal government (see figure 6). In communities without a meat packing plant, 85 percent of residents said their local healthcare providers did a good to very good job of handling the impacts of COVID. Residents also said local community groups, local K-12 public schools, and their city and county government officials did a good job (between 67-70% favorable).

Feelings were more mixed when it came to local businesses, with 63 percent thinking employers did a good job at protecting the health of their workers; and 62 percent thinking businesses did a good job at protecting the health of their customers. Public health agencies were also rated a bit less favorably in their handling of the pandemic, with 62 percent saying the Iowa Department of Public Health did a good job, and the federal Centers for Disease Control (CDC) scoring a 61 percent. On the other hand, less than half of rural Iowans thought Governor Reynolds (47%) and President Trump (45%), along with their respective administrations, did a good job at handling the pandemic. People in smaller towns held less favorable views about the government's response, but were more supportive of elected leaders than those in larger communities.

By contrast, Iowans living in meat packing towns were far less positive about how state and local organizations handled the pandemic. For example, favorable ratings of the Trump administration was 19 percentage points lower than in the other towns. Residents also had less favorable views of the local healthcare system response (71% favorable vs. 85%), thought local employers did a poorer job in protecting worker health (50 vs. 62%), and were less positive about the response of their city and county governments (50 vs. 62%). On the other hand, packing town residents rated CDC's handling of the pandemic slightly higher than other communities.

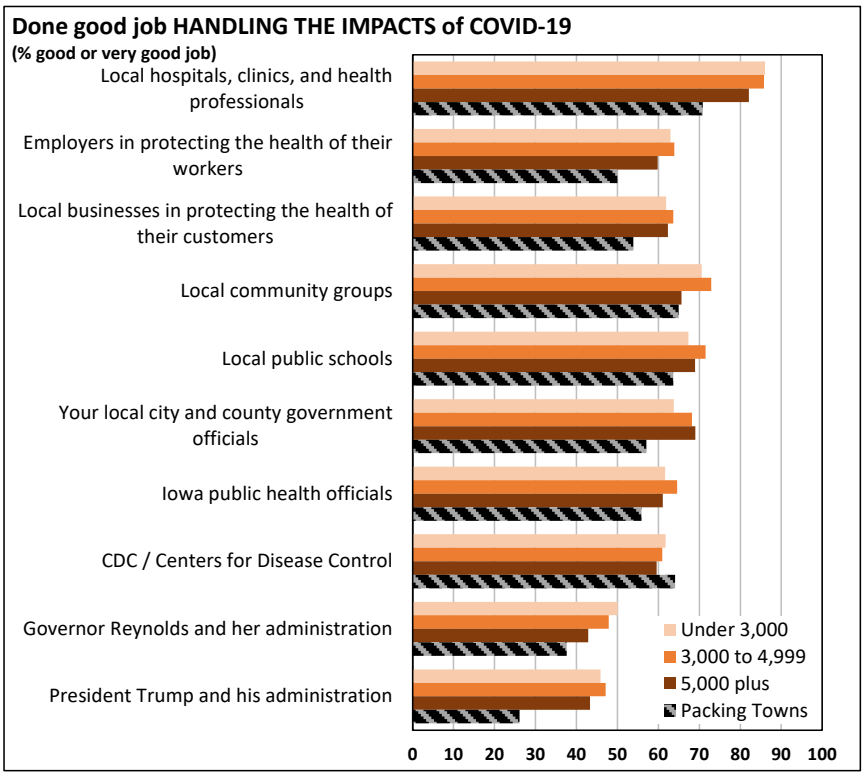


Figure 6. Organizational handling of COVID-19 by town size.

We asked Iowans living in small towns how the *COVID-19 pandemic feels to them*. Nearly 70 percent feel it is primarily a national problem, compared to only 5 percent who feel it is a local problem. Over two-thirds feel people can do something about the pandemic, while only 10 percent feel powerless to do anything about it. Most rural Iowans (60%) say COVID is spreading fast, while only 10 percent think the disease is spreading slowly. Over 40 percent think the response to COVID-19 is primarily the responsibility of individuals, and only a few think it is mostly the government's responsibility (15%).

Rural Iowans are split on how they feel the pandemic is being portrayed by the media. Between 40-45 percent feel it is being hyped by the media, while under 30 percent think it is not. When asked if COVID feels close to them personally, about 42 percent agree with this statement, while only 22 percent say it feels far away from them.

However, Iowans living in rural meat packing communities feel much differently about the pandemic. Pack town residents are much less likely to think COVID is being hyped by the media (24 vs. 45%), less likely to feel it is only the responsibility of individuals (26 vs. 43%), and less likely to say the pandemic feels close to them (29 vs. 40%). On the other hand, people in packing towns are more likely to say COVID-19 is spreading fast (77 vs. 61%), that it is a national problem (84 vs. 70%), and feel that people can something more about it (79 vs. 68%). Refer to figure 7 or the data table in the appendix.

Finally, rural Iowans were also asked about their *trusted sources of information* about COVID-19. Over 85 percent said they highly trust their healthcare provider to give them accurate information, followed by nearly 60 percent who trust information from public health agencies. By contrast, few trust information from social media platforms (such as Facebook, Twitter, and WhatsApp), the news media, and state and federal elected officials. Residents in meat packing communities tended to have higher trust in information from elected officials (10 percentage points higher), the news media (7 points higher), and social media (6 points higher). See figure 8.

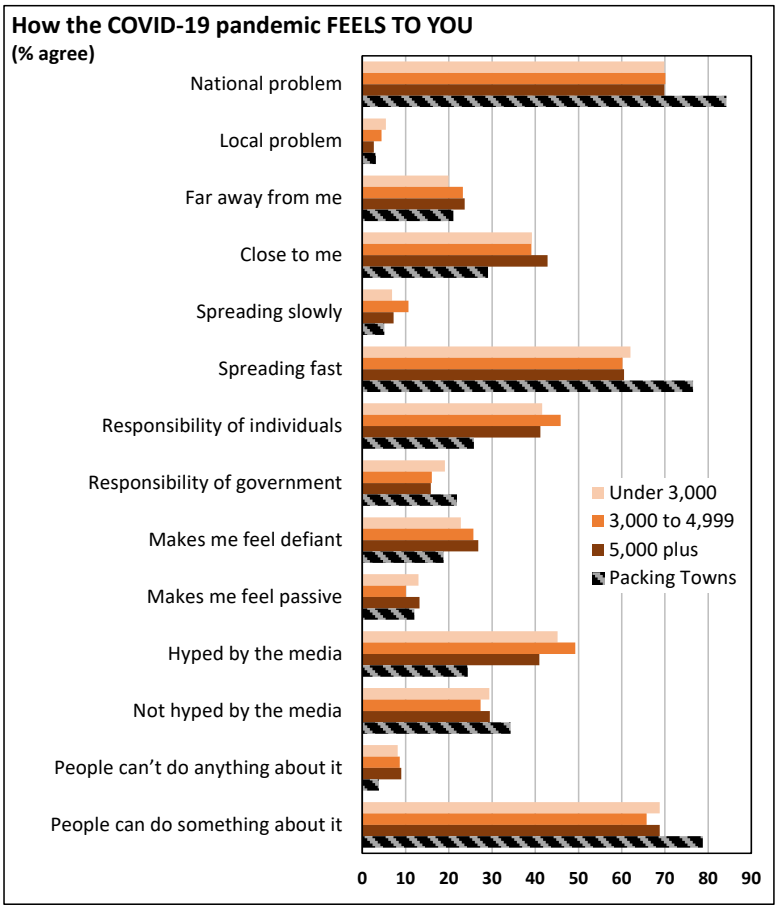


Figure 7. Perceptions about COVID-19 by town size.

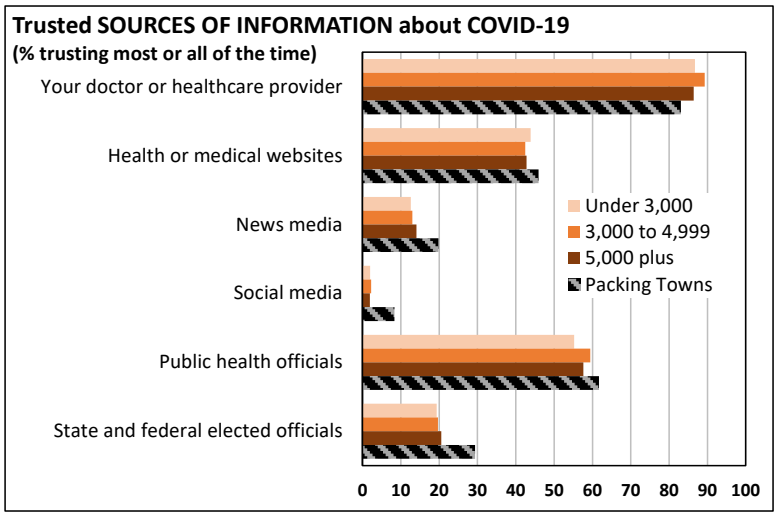


Figure 8. Trust in sources of information about COVID-19 by town size.

Summary and Implications

The COVID-19 pandemic has severely impacted rural Iowa. Mortality rates in rural Iowa far surpassed those in metropolitan Iowa and the rest of the nation. Since the start of the pandemic, a little over 2,200 rural Iowans have died from COVID-19. Among the living, between 25-30 percent of rural Iowans have experienced symptoms of COVID, yet very few were ever hospitalized for the virus. In addition to the impact on physical health, the pandemic also took a major toll on mental and social well-being. Nearly 40 percent said their mental health and relationships with close friends and family became much worse off during the pandemic. About 20 percent showed signs of depression and 15 percent signs of anxiety. COVID has also made rural Iowans worse off financially. About 30 percent had their working hours reduced, close to 20 percent had to use their savings to make ends meet, and around 10 percent lost their job or were unable to pay their bills due to COVID.

However, the impacts of the pandemic were far worse for Iowans living in communities with large animal slaughter and meat packing facilities, where the population is nearly 50 percent minority. Residents in pack towns had much worse health, mental health, and financial situations that rural Iowans living in other small towns. In short, COVID-19 hit meat packing workers and their communities especially hard.

To help rural Iowa recover from the pandemic, we recommend sizable investments in mental health and family services to help people cope with the emotional toll of COVID. Also needed is targeted financial assistance for low to moderate income households to offset lost earnings and savings caused by the pandemic. Meat packing towns and communities over 5,000 people should be given priority consideration for these programs, as residents in these places were more severely impacted by COVID-19.

Further, we find that information about COVID-19, and its associated variants, are best disseminated by healthcare providers and public health officials, as rural residents trust these sources the most. It is not ideal to use social media, news outlets, or elected officials to provide information on COVID, as few consider these trusted sources.

Lastly, the emergence of the new COVID-19 Delta variant has led to a resurgence of hospitalizations and deaths, the so-called "fourth wave" of the pandemic. The good news is that nearly 70 percent of rural Iowans think they can do something about the pandemic. To stop this next wave will require rural Iowans to

voluntarily get fully vaccinated for COVID and use masks to prevent community spread. Vaccine acceptance in rural Iowa hovers around 45-50 percent. This is a good start, but below what is recommended by public health experts.

There are encouraging signs that rural Iowans can pull together to keep COVID-19 at bay, allowing their communities to recover from the pandemic and thrive in the future.

Contributors

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Appendix – Data and Methods

Data for this project was obtained through a multistage cluster sample of n=13,679 households across 73 communities in Iowa, conducted between December 2020 through February 2021. First, we selected 70 small towns that are part of the Iowa Small Towns Project[6], where one town between 500 and 9,999 was randomly chosen in each of Iowa's 99 counties in 1994. In the current project, we dropped towns under 600 residents because many lack major employers and/or organizations (e.g. schools, health clinics, etc.) that might have been affected by the pandemic. In addition, we selected three additional communities that had large animal slaughter and meat packing facilities, two were micropolitan cities over 10,000 and one was a small town under 3,500. The 73 communities are shown in figure A-1.

Next, in each of the 73 communities we randomly selected the larger of 150 or 15 percent of total households (based on ACS Census data), resulting in a sample of n=12,545. In addition, we conducted a random oversample of minority residents in 9 communities where the non-white or Hispanic population exceeded 25 percent, for an oversample of n=734 households. The random mail survey used four contacts: (i) pre-notification letter; (ii) questionnaire packet that included informed consent, questionnaire, and business reply envelope; (iii) reminder or thank you postcard; and (iv) replacement questionnaire packet to non-respondents. Mailings were in dual English and Spanish in the minority oversample. Households were encouraged to complete the survey on-line using a secure website, with both English and Spanish versions available.

Second, we recognized from the beginning the likely low response to mail surveys in four meat packing communities where the minority population exceeded 60 percent. We designed a non-probability data collection strategy that included local partners in the each community, representing Latino, Asian, African, and food processing workers. Each organization in the four towns was given funds to assist with questionnaire design, translation, and data collection using a purposive sample of n=400 households. Multiple-language questionnaires were mailed to community partners, who then held multiple data collections events in various locations with selected groups. Partners assisted with informed consent, translation, addressed literacy barriers, and answered questions about the questionnaire and project.

There were 5,229 Iowans who responded to our survey, for a response rate of 38.2 percent (RR2). The response rate for the minority oversample was 31.0 percent. Data were weighted by sex, age, and minority status to ensure representativeness within each community based on current ACS Census data. Margins of error in each size class are: (i) ±1.77% in towns under 3,000 (n=2,575 in 54 towns); (ii) ±3.80% in towns 3,000-4,999 (n=529 in 9 towns); (iii) ±3.47% in towns 5,000 or more (n=639 in 4 towns); and (iv) ±3.01% in meat packing towns (n=862 in 5 towns)

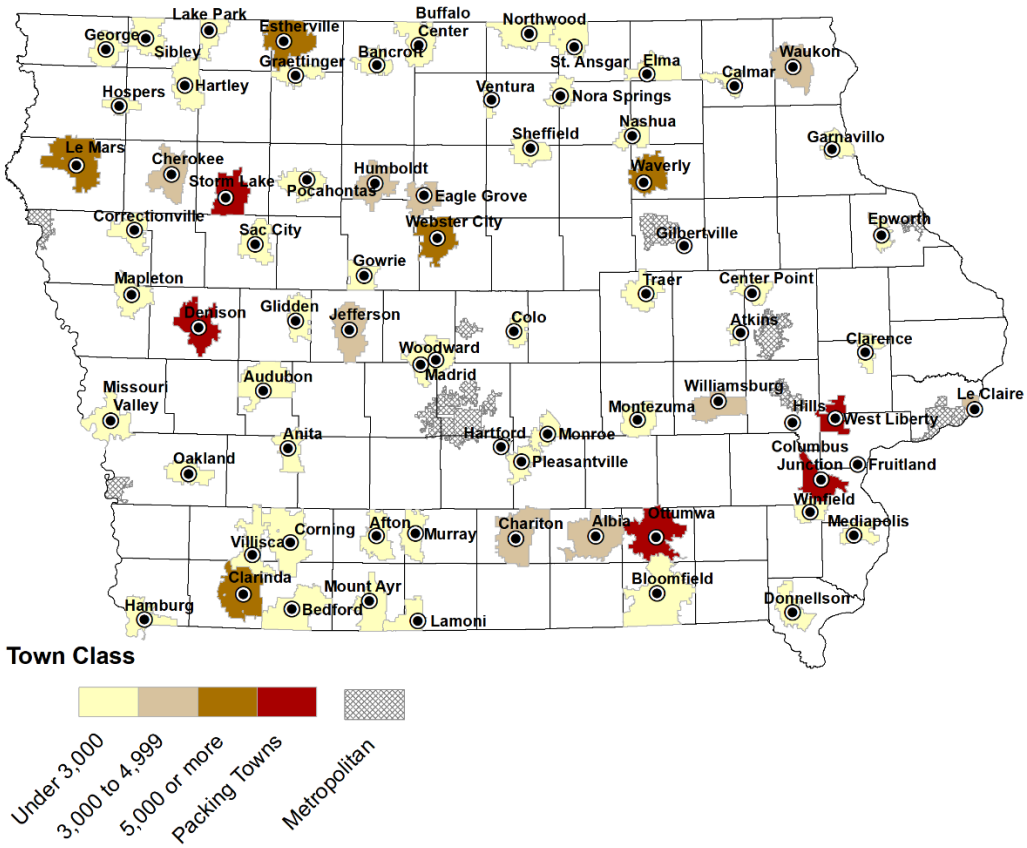

Figure A-1. Map of sampled communities by population size or class.
Dot represents location of town within ZIP code.

Appendix – Tables

COVID-19 has made my life WORSE OFF (% agree)	Under 3,000	3,000 to 4,999	5,000 plus	Packing Towns
Physical health	18.5%	23.2%	16.9%	25.2%
Mental health	40.1%	36.6%	38.8%	38.0%
Relationship with spouse/partner	12.2%	11.0%	10.0%	19.1%
Relationships with close family	32.0%	26.7%	36.0%	30.6%
Relationships with close friends	39.4%	40.8%	42.5%	34.8%
Housing situation	4.2%	3.4%	7.2%	16.1%
Employment situation	15.6%	12.4%	13.7%	20.1%
Personal financial situation	20.6%	20.1%	22.8%	33.3%
You and your family	22.9%	25.4%	18.1%	17.4%
People in your community	36.2%	39.1%	35.6%	34.3%
People in Iowa	43.1%	41.0%	40.1%	35.9%

HEALTH IMPACTS of COVID-19 on your household (% yes)	Under 3,000	3,000 to 4,999	5,000 plus	Packing Towns
Was tested for COVID-19	56.1%	58.7%	55.1%	60.2%
Tested positive for COVID-19	19.2%	20.8%	18.3%	27.4%
Had or currently have symptoms of COVID-19	25.1%	34.0%	26.9%	30.5%
Was hospitalized for COVID-19	1.8%	1.4%	1.3%	6.4%
Had or currently have a serious health condition	18.9%	22.3%	23.9%	23.5%
Sought mental health services due to COVID-19	3.7%	6.1%	13.6%	12.7%
Living or working where risk of getting COVID-19 is high	41.0%	40.8%	44.6%	47.3%
Would get a vaccine to prevent COVID-19	42.9%	45.4%	50.7%	53.7%
Signs of depression (CES-D10)	14.4%	15.7%	19.1%	22.9%
Signs of anxiety (GAD7)	11.0%	11.4%	14.5%	19.5%

FINANCIAL IMPACTS of COVID-19 on your household (% yes)	Under 3,000	3,000 to 4,999	5,000 plus	Packing Towns
Had working hours reduced	26.9%	25.7%	18.8%	37.5%
Taken a pay cut	11.4%	12.8%	10.1%	21.4%
Had job benefits reduced	7.5%	5.5%	9.2%	15.0%
Been laid off or lost a job	10.2%	11.6%	6.1%	14.7%
Been unable to pay rent or mortgage	3.4%	4.4%	7.4%	14.0%
Been unable to pay other bills	7.1%	6.9%	11.5%	21.4%
Have medical debt related to COVID	2.0%	7.4%	7.1%	8.9%
Used personal or retirement savings to make ends meet	12.4%	22.5%	15.7%	21.8%
Had to take on other debt to make ends meet	9.8%	14.2%	12.4%	20.3%

Done a good job HANDLING THE IMPACTS of COVID-19 (% good or very good job)	Under 3,000	3,000 to 4,999	5,000 plus	Packing Towns
Local hospitals, clinics, and health professionals	86.1%	85.8%	82.1%	70.8%
Employers in protecting the health of their workers	62.9%	63.9%	59.8%	50.0%
Local businesses in protecting health of their customers	61.9%	63.6%	62.3%	53.9%
Local community groups	70.6%	72.9%	65.6%	65.0%
Local public schools	67.3%	71.5%	68.9%	63.6%
Your local city and county government officials	63.8%	68.2%	69.0%	57.1%
Iowa public health officials	61.7%	64.6%	61.1%	55.9%
CDC / Centers for Disease Control	61.7%	60.9%	59.6%	64.1%
Governor Reynolds and her administration	50.1%	47.8%	42.9%	37.6%
President Trump and his administration	45.9%	47.1%	43.3%	26.1%

Trusted SOURCES OF INFORMATION about COVID-19 (% trusting most or all of the time)	Under 3,000	3,000 to 4,999	5,000 plus	Packing Towns
Your doctor or healthcare provider	86.8%	89.3%	86.4%	83.1%
Health or medical websites	43.9%	42.5%	42.8%	46.0%
News media	12.6%	13.0%	14.0%	19.8%
Social media	2.0%	2.2%	1.9%	8.3%
Public health officials	55.2%	59.4%	57.6%	61.7%
State and federal elected officials	19.4%	19.7%	20.5%	29.4%

How the COVID-19 pandemic FEELS TO YOU (% agree)	Under 3,000	3,000 to 4,999	5,000 plus	Packing Towns
National problem	69.9%	70.1%	69.8%	84.2%
Local problem	5.5%	4.4%	2.7%	3.1%
Far away from me	19.9%	23.3%	23.7%	21.1%
Close to me	39.2%	39.1%	42.9%	29.1%
Spreading slowly	6.9%	10.7%	7.2%	5.1%
Spreading fast	62.0%	60.2%	60.5%	76.5%
Responsibility of individuals	41.6%	45.9%	41.2%	25.8%
Responsibility of government	19.1%	16.1%	15.8%	21.9%
Makes me feel defiant	22.8%	25.7%	26.8%	18.8%
Makes me feel passive	13.0%	10.1%	13.2%	12.0%
Hyped by the media	45.1%	49.3%	41.0%	24.4%
Not hyped by the media	29.4%	27.4%	29.5%	34.3%
People can't do anything about it	8.2%	8.6%	9.0%	3.8%
People can do something about it	68.8%	65.8%	68.8%	78.7%

[1] Horowitz, J., Brown, A., & Minkin R. (2021) *A Year Into the Pandemic, Long-Term Financial Impact Weighs Heavily on Many Americans*. Pew Research Center, March 2021.
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[3] Karim, S. & Chen, H.-F. (2021) "Deaths From COVID-19 in Rural, Micropolitan, and Metropolitan Areas: A County-Level Comparison." *Journal of Rural Health* 37:124-132.
[4] Peters, D. (2020) "Community Susceptibility and Resiliency to COVID-19 Across the Rural-Urban Continuum in the United States." *Journal of Rural Health* 36:446-456.
[5] Noe-Bustamante, L., Krogstad, J., & Lopez, M. (2021) *For U.S. Latinos, COVID-19 Has Taken a Personal and Financial Toll*. Pew Research Center, July 2021.
[6] Iowa Small Towns Project https://smalltowns.soc.iastate.edu