# Community Health Needs Assessment Data and Community Recovery From COVID-19

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**Introduction:** The COVID-19 pandemic has had a significant impact beyond physical morbidity and mortality. A mid-cycle Community Health Needs Assessment (CHNA) survey was administered in 1 community to generate data to evaluate change in community well-being since the beginning of the pandemic.

**Methods:** Surveys were mailed to 2,000 randomly selected residents in Olmsetd County, Minnesota. The surveys included the WHO Well-being Index (previously included in the 2018 CHNA and new subjective questions regarding behavior change. Changes in well-being were calculated using a propensity-matched cohort, and behavior change was reported as proportions of the whole. Data analysis was completed in 2021.

**Results:** Total survey respondents were 569 people in 2018 and 723 people in 2021. Well-being scores from the WHO Well-being Index showed a statistically significant decrease (score reduction of −8.44) from 2018 to 2021. All the 5 questions from the WHO Well-being Index also had an individual significant decrease; with the question regarding interest in life showing the greatest decrease. Individuals reported decreased subjective physical and mental well-being and increased substance use (alcohol, marijuana, and tobacco). Households also reported decreased household incomes and worse household finances since the start of the pandemic.

**Conclusions:** Using the CHNA infrastructure, 1 community was able to compare prepandemic with postpandemic data, which showed decreased well-being and increased substance use and financial stress. Other public health planners can similarly conduct interval surveys on the basis of their CHNA questionnaires to tailor ongoing Community Health Improvement Plan programming to postpandemic needs and track community mental health and well-being recovery.
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## INTRODUCTION

With each new wave of coronavirus disease 2019 (COVID-19), efforts to mitigate the impact of the pandemic on communities are ongoing and must be tailored to meet the unique needs of a given community. Previous studies have shown that the pandemic has contributed to increases in symptoms of depression and anxiety[1] and substance use[2] and a reduction in subjective well-being[3]—with some groups more impacted than others.[4] Furthermore, longitudinal tracking of these symptoms has shown that these changes have remained relatively stable over time,[1] with

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some rebound in well-being.[5] One way to track recovery from the mental health and well-being consequences of the pandemic is through the existing Community Health Needs Assessment (CHNA) infrastructure. This report describes 1 county's experience in administering a mid-cycle CHNA survey intended to compare with data collected during previous CHNA survey cycles and set a new baseline for the next cycle.

## METHODS

Data were collected from February to March 2021 from a random sample of residents in Olmsted County, Minnesota. Mailed surveys were sent out to 1 adult from 2,000 randomly selected County residential addresses. Initial survey packets included a cover letter, the survey, and a postage-paid return envelope. Participants who had not completed the survey received a reminder postcard and subsequently another survey packet. The remaining completed surveys were received over the next 4 weeks.[6] The WHO Well-being Index (WHO-5)[7] was included in the 2015, 2018, and 2021 surveys. The WHO-5 is a short, validated questionnaire that measures well-being, asking about being (1) cheerful, (2) calm and relaxed, (3) active, (4) fresh and relaxed, and (5) interested in life. The score ranges from 0 to 100 (consistent with worst to best self-determined well-being). Additional questions regarding subjective behavior change during the pandemic were also added that were not previously asked, including regarding changes in physical health; mental health; substance use; communication with family, friends, and neighbors; discrimination; finances; and delay to accessing health care.

### Statistical Analysis

To analyze the changes in well-being before and after the COVID-19 pandemic, propensity score matching was used to balance the difference between the 2018 and 2021 surveys. The propensity score was used to calculate each responder's probability of responding to the 2021 survey from the 2018 survey using a multi-variable logistic regression adjusting for age, sex (female versus male), marriage status (married versus others), race (White versus non-White), education (some college education and higher versus high school or lower), household income (annual income ≤$35,000 vs >$35,000), and multicomorbidity (≥2 comorbidities versus <2 comorbidities). Patients in the 2021 survey were then matched to those in the 2018 survey by their propensity score using the nearest-neighbor matching, with a minimum caliper of 0.1. The balance between the surveys for each covariate after propensity score matching was evaluated with a standardized difference <0.1. Changes in well-being before and after the COVID-19 pandemic were calculated with the matched cohort, with findings presented as mean difference for continuous outcomes and absolute risk difference for binary outcomes. Chi-square and Student's *t*-tests were used to compare binary and continuous outcomes and variables, respectively, before matching. Proportions of those responders in the 2021 survey with self-reported health, behavior, and situational changes since the start of the COVID-19 pandemic were also reported. All statistical analyses were conducted using Stata, version 17.0.

## RESULTS

Total survey respondents were 569 people in 2018 and 723 people in 2021. The response rate was 28% in 2018 and 37% in 2021. The characteristics for both the 2018 and 2021 surveys before propensity score matching can be seen in Table 1. Notably, most participants were White both in 2018 and 2021 (95.47% and 99.42%, respectively). The demographics after propensity score matching can be seen in Appendix Table 1 (available online).

A total of 504 responders in the 2021 survey were propensity score matched to 504 responders in the 2018 survey to adjust for the number of adults living

**Table 1.** Baseline Characteristics of Survey Responders Before Propensity Score Matching and WHO-5 Outcome Data

| Characteristics | Before propensity score matching | | |
| --- | --- | --- | --- |
| | Before COVID-19 pandemic (2018 survey) | Since the start of COVID-19 pandemic (2021 survey) | *p*-value |
| Number of responders | 574 | 737 | |
| Age, mean (SD), year | 59.44 (17.40) | 57.89 (18.40) | 0.12 |
| Female, *n* (%) | 344 (59.93) | 462 (62.69) | 0.19 |
| Race (White versus non-White), *n* (%) | 548 (95.47) | 681 (92.40) | **<0.001** |
| Marriage status (married versus others), *n* (%) | 356 (62.02) | 431 (58.48) | 0.15 |
| Household income (annual income ≤$35,000 vs >$35,000), *n* (%) | 93 (16.20) | 127 (17.23) | 0.74 |
| Multicomorbidity (≥2 comorbidities vs <2 comorbidities), *n* (%) | 287 (50.00) | 311 (42.20) | **0.03** |
| Education (some college education and above versus high school or lower), *n* (%) | 441 (76.83) | 561 (76.12) | 0.94 |

*Note*: Boldface indicates statistical significance (*p*<0.05).
WHO-5, WHO Well-being Index.

**Table 2.** Changes of Well-Being Since the Start of the COVID-19 Pandemic (2021)

| Variables | Effect (95% CI) | SE | z | *p*-value |
|---|---|---|---|---|
| WHO-5 | −8.44 (−11.24, −5.64) | 1.43 | −5.91 | **<0.01** |
| Q1: cheerful | −0.36 (−0.51, −0.21) | 0.08 | −4.75 | **<0.01** |
| Q2: calm and relaxed | −0.30 (−0.45, −0.15) | 0.08 | −3.85 | **<0.01** |
| Q3: active | −0.57 (−0.74, −0.41) | 0.09 | −6.71 | **<0.01** |
| Q4: fresh and relaxed | −0.27 (−0.44, −0.11) | 0.08 | −3.25 | **<0.01** |
| Q5: interested in life | −0.59 (−0.76, −0.42) | 0.09 | −6.87 | **<0.01** |
| Proportion impaired well-being (≤50 on WHO-5 or 0 on a single question) | 0.14 (0.08, 0.20) | 0.03 | 4.34 | **<0.01** |
| Proportion depressed (≤28 on WHO-5) | 0.05 (0.02, 0.09) | 0.02 | 2.83 | **<0.01** |
| Proportion socially connected | −0.12 (−0.19, −0.05) | 0.04 | −3.31 | **<0.01** |

*Note*: Boldface indicates statistical significance (*p*<0.05).
Q, question; WHO-5, WHO Well-being Index.

in each sampled household and mirror the age and sex distribution of those living in the county. The matching was successful with a standardized difference <0.1 for all covariates. Table 2 shows the changes in well-being for WHO-5 questions. Well-being scores from the WHO-5 showed a statistically significant effect size of −8.44 (Cohen's d= −0.19) from 2018 to 2021. All 5 questions from the WHO-5 individually also had a significant decrease in effect size; the fifth question regarding being interested in life showed the greatest decrease.

Table 3 shows the self-reported changes in behavior and social situation since the start of the COVID-19 pandemic that were not asked previously. Notably, most responders reported decreased communication with neighbors and family/friends. Although the majority reported that their substance use had remained the same, more individuals noted an increased use of alcohol, marijuana, and tobacco than reported decreased use. In addition, 14.51% of respondents reported a delay

in medical care, and 6.51% of respondents reported a delay in mental health care.

## DISCUSSION

As expected, decreased well-being was found in the community compared with prepandemic data. This is the first study comparing prepandemic with postpandemic well-being on a community level in the U.S. Previous cycles (collected every 3 years) of well-being data (WHO-5) collected in the community in 2015 and 2018 were stable.[6] Other U.S.-based surveys of mental health during the COVID-19 pandemic showed increased prevalence estimates of depression, anxiety, and suicidal ideation; increased unmet mental health needs; and increased mental distress in areas with high COVID-19 cases.[1,2,4,8] The results also showed increased reported substance use, including alcohol, marijuana, and tobacco, and increased financial stress, consistent with previous research.[2,9]

**Table 3.** Self-Reported Health, Behavior, and Situational Changes Since the Start of the COVID-19 Pandemic (2021 Survey)

| Variables | Subjective behavior change | | | | | |
|---|---|---|---|---|---|---|
| | Increased, *n* (%) | Remained the same, *n* (%) | Decreased, *n* (%) | Total responses, *n* | Gotten better, *n* (%) | Gotten worse, *n* (%) |
| Alcohol use | 92 (12.83) | 556 (77.55) | 69 (9.62) | 717 | — | — |
| Marijuana use | 12 (1.71) | 682 (97.01) | 9 (1.28) | 703 | — | — |
| Tobacco use | 16 (2.28) | 671 (95.72) | 14 (2.00) | 701 | — | — |
| Other drug use | 4 (0.57) | 687 (98.28) | 8 (1.14) | 699 | — | — |
| Communication with neighbors | 33 (4.53) | 306 (41.98) | 390 (53.50) | 729 | — | — |
| Communication with family and friends | 81 (11.13) | 293 (40.25) | 353 (48.49) | 727 | — | — |
| Household income | 66 (9.17) | 517 (71.81) | 137 (19.03) | 720 | — | — |
| Physical health | — | 582 (80.72) | — | 721 | 43 (5.96) | 96 (13.31) |
| Mental health | — | 517 (72.82) | — | 710 | 19 (2.68) | 174 (24.51) |
| Financial situation | — | 524 (72.18) | — | 726 | 97 (13.36) | 105 (14.46) |

WHO-5, WHO Well-being Index.

These data will be used in 2 ways. First, ongoing Community Health Improvement Plan initiatives will be adjusted to account for the significant impacts of the COVID-19 pandemic on data collected from previous CHNA. Because CHNAs are only conducted every 3 years, data collected before the onset of the COVID-19 pandemic may not provide the best basis for addressing community needs in a data-centric way. Secondly, collecting interval CHNA data on community well-being will help to track community recovery from the impact of the COVID-19 pandemic in a more granular way than would have been possible only when using the pre-pandemic data or waiting until the next CHNA assessment cycle to gather data.

### Limitations

Limitations of the analysis include the relative homogeneity of the population. The sample was primarily White, making it difficult to complete subgroup analyses with the data. The strengths of these results relate to using a validated instrument in a consistent way in survey cycles. Additional questions without a baseline were added to identify how health, substance use, and finances have changed since the start of the pandemic rather than objectively measuring the change. In addition, the analysis did not account for potential confounding factors (such as age).

## CONCLUSIONS

Now that health departments are emerging from the acute phase of the COVID-19 pandemic, efforts should be directed toward community recovery. Having more granular data to track community well-being outside of 3−5-year CHNA survey cycles may help communities to better target resources. Other hospitals and local health departments could implement similar subsets of questions from their CHNA to similarly better understand the ways that the pandemic impacted their community, track community recovery, and implement targeted efforts to aid recovery.

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## CREDIT AUTHOR STATEMENT

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## SUPPLEMENTAL MATERIAL

Supplemental materials associated with this article can be found in the online version at https://doi.org/10.1016/j.amepre.2022.02.010.

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