Disparities in Minnesota’s COVID-19 Vaccination Rates

Colin Planalp, MPA
Senior Research Fellow, SHADAC

Tuesday, Nov. 14, 2023
Technical Items

• Participant audio has been automatically muted and video turned off
• Submit questions using the Q&A feature at any time during the webinar
• Problems:
  • Ask for help using the chat feature
  • Send a support request to Zoom at: https://support.zoom.us/hc/en-us/requests/new
• Slides can be viewed and downloaded at: https://www.shadac.org/publications/MN-covid-vax-webinar
• Webinar recording will be posted on SHADAC’s website
  • Email notice will be sent to all registrants
Why focus on COVID-19 vaccine disparities?

• This isn’t about Monday-morning quarterbacking

• COVID-19 isn’t going anywhere

• More pandemics are coming, probably sooner than we’d hope

• Vaccine disparities aren’t new, but they aren’t inevitable
Minnesota COVID-19 vaccination data

• Minnesota EHR Consortium — partnership between Minnesota health care organizations and public health entities in the state
• Established during the pandemic to enable better data for COVID-19 surveillance
• Pairs data from electronic health records with data from the state’s Minnesota Immunization Information Connection (MIIC)
  • Captures nearly all COVID-19 vaccinations administered in the state
“Persistent health disparities ... have put members of some racial and ethnic minority populations at higher risk for COVID-19 infection, severe illness, and death.”

– U.S. Centers for Disease Control and Prevention
U.S. COVID-19 deaths per 100,000 by race and ethnicity, 2020

- American Indian and Alaska Native: 187.8
- Asian: 66.7
- Black: 151.1
- Latino: 164.3
- Native Hawaiian or Pacific Islander: 122.3
- White: 72.5
U.S. COVID-19 deaths per 100,000 by age category, 2020
Minnesota vaccine priority groups

1. Health care workers and nursing home residents

2. Elderly adults (age 65+); school and childcare workers

3. People at medically high risk (e.g., cancer); food processing workers

4. People with other chronic conditions (e.g., diabetes); other “essential workers” in sectors such as agriculture, manufacturing and transit

5. Adults age 50-64; workers in other selected sectors

6. Remaining general population
Minnesota vaccine priority groups

1. Health care workers and nursing home residents

2. Elderly adults (age 65+); school and childcare workers

3. People at medically high risk (e.g., cancer); food processing workers

4. People with other chronic conditions (e.g., diabetes); other “essential workers” in sectors such as agriculture, manufacturing and transit

5. Adults age 50-64; workers in other selected sectors

6. Remaining general population
Age 65+ by racial and ethnic groups in Minnesota, 2020

- American Indian and Alaska Native: 8%
- Asian and Native Hawaiian or Pacific Islander: 7%
- Black: 6%
- Latino: 5%
- White: 20%
Disparities in COVID-19 Vaccination Rates
Measuring vaccine inequities

• First, measuring the number of months until sub-population groups reached a threshold of 50% “fully vaccinated” (i.e., when half each sub-group was vaccinated)

• Second, reporting the COVID-19 vaccination rate for each sub-population group at the end of 2022
Months to 50% threshold, by age

<table>
<thead>
<tr>
<th>2021</th>
<th>JAN</th>
<th>FEB</th>
<th>MAR</th>
<th>APR</th>
<th>MAY</th>
<th>JUN</th>
<th>JUL</th>
<th>AUG</th>
</tr>
</thead>
<tbody>
<tr>
<td>19-24</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>8 months</td>
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<tr>
<td>25-44</td>
<td></td>
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<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>5 months</td>
</tr>
<tr>
<td>45-64</td>
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<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>5 months</td>
</tr>
<tr>
<td>65+</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>3 months</td>
</tr>
</tbody>
</table>

Source: SHADAC analysis of Minnesota EHR Consortium data.
Fully vaccinated by age, end of 2022

Source: SHADAC analysis of Minnesota EHR Consortium data.
## Months to 50% threshold, by race/ethnicity

<table>
<thead>
<tr>
<th></th>
<th>2021</th>
<th></th>
<th>2022</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>JAN</td>
<td>FEB</td>
<td>MAR</td>
</tr>
<tr>
<td>A/NHPI</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>AIAN</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Black</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Latino</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>White</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

- **A/NHPI**: 6 months
- **AIAN**: 15 months
- **Black**: 12 months
- **Latino**: 12 months
- **White**: 6 months

Source: SHADAC analysis of Minnesota EHR Consortium data.
A/NHPI: Asian and Native Hawaiian or Pacific Islander. AIAN: American Indian or Alaska Native.
Fully vaccinated by race and ethnicity, end of 2022

<table>
<thead>
<tr>
<th></th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>A/NHPI</td>
<td>80%</td>
</tr>
<tr>
<td>AIAN</td>
<td>53%</td>
</tr>
<tr>
<td>Black</td>
<td>61%</td>
</tr>
<tr>
<td>Latino</td>
<td>61%</td>
</tr>
<tr>
<td>White</td>
<td>65%</td>
</tr>
</tbody>
</table>

Source: SHADAC analysis of Minnesota EHR Consortium data.
A/NHPI: Asian and Native Hawaiian or Pacific Islander. AIAN: American Indian or Alaska Native.
Months to 50% threshold, by age and race/ethnicity

<table>
<thead>
<tr>
<th></th>
<th>2021</th>
<th>2022</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>JAN</td>
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<td></td>
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<tr>
<td>19-24</td>
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<tr>
<td>A/NHPI</td>
<td></td>
<td></td>
</tr>
<tr>
<td>AIAN</td>
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<tr>
<td>Black</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Latino</td>
<td></td>
<td></td>
</tr>
<tr>
<td>White</td>
<td></td>
<td></td>
</tr>
<tr>
<td>65+</td>
<td></td>
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</tr>
<tr>
<td>A/NHPI</td>
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</tr>
<tr>
<td>AIAN</td>
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<td></td>
</tr>
<tr>
<td>Black</td>
<td></td>
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</tr>
<tr>
<td>Latino</td>
<td></td>
<td></td>
</tr>
<tr>
<td>White</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Source: SHADAC analysis of Minnesota EHR Consortium data.
A/NHPI: Asian and Native Hawaiian or Pacific Islander. AIAN: American Indian or Alaska Native.
Fully vaccinated by age and race and ethnicity, end of 2022

Source: SHADAC analysis of Minnesota EHR Consortium data.
A/NHPI: Asian and Native Hawaiian or Pacific Islander. AIAN: American Indian or Alaska Native.
Months to 50% threshold, by urbanization

<table>
<thead>
<tr>
<th>Year</th>
<th>Jan</th>
<th>Feb</th>
<th>Mar</th>
<th>Apr</th>
<th>May</th>
<th>Jun</th>
<th>Jul</th>
<th>Aug</th>
<th>Sep</th>
<th>Oct</th>
<th>Nov</th>
<th>Dec</th>
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<tbody>
<tr>
<td>Rural</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>12 months</td>
</tr>
<tr>
<td>Small town</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>9 months</td>
</tr>
<tr>
<td>Exurban</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>12 months</td>
</tr>
<tr>
<td>Urban/Suburban</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>5 months</td>
<td></td>
</tr>
</tbody>
</table>

Source: SHADAC analysis of Minnesota EHR Consortium data.
Fully vaccinated by urbanization, end of 2022

Source: SHADAC analysis of Minnesota EHR Consortium data.
Months to 50% threshold, by gender

<table>
<thead>
<tr>
<th></th>
<th>JAN</th>
<th>FEB</th>
<th>MAR</th>
<th>APR</th>
<th>MAY</th>
<th>JUN</th>
<th>JUL</th>
<th>AUG</th>
<th>SEP</th>
<th>OCT</th>
</tr>
</thead>
<tbody>
<tr>
<td>Female</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>7</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Male</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>10</td>
</tr>
</tbody>
</table>

Source: SHADAC analysis of Minnesota EHR Consortium data.
Fully vaccinated by gender, end of 2022

- **Female**: 71%
- **Male**: 64%

Source: SHADAC analysis of Minnesota EHR Consortium data.
Fully vaccinated children, end of 2022

Source: SHADAC analysis of Minnesota EHR Consortium data.
Recent COVID-19 Vaccination Rate Data
Later COVID-19 vaccinations, Oct. 2023

- 42% 1st boosters (2021)
- 12% 2nd boosters (2022)
- 29% Bivalent boosters (2022)
- 4% Updated 2023 vaccine
Bivalent boosters by race and ethnicity, Sept. 2023

<table>
<thead>
<tr>
<th>Race/Ethnicity</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>A/NHPI</td>
<td>28%</td>
</tr>
<tr>
<td>AIAN</td>
<td>20%</td>
</tr>
<tr>
<td>Black</td>
<td>17%</td>
</tr>
<tr>
<td>Latino</td>
<td>18%</td>
</tr>
<tr>
<td>White</td>
<td>30%</td>
</tr>
</tbody>
</table>
Bivalent boosters by age, Sept. 2023

- 5-11: 11%
- 12-18: 16%
- 19-24: 13%
- 25-44: 21%
- 45-64: 30%
- 65-74: 75%
- 75+: 82%
Bivalent boosters by urbanization, Sept. 2023

- Rural: 20%
- Small town: 23%
- Exurban: 21%
- Urban/Suburban: 32%
Bivalent boosters by gender, Sept. 2023

- Female: 20%
- Male: 23%
MN EHR Consortium: COVID-19 and Beyond

Tyler Winkelman, MD, MSc
Hennepin Healthcare
Tuesday, November 14, 2023
Outline

• Development of MN EHR Consortium

• MN EHR Consortium Data Model

• Current/Future Directions
MN EHR Consortium

**Mission:** To improve health by informing policy and practice through data-driven collaboration among members of Minnesota’s health care community

**Key Principles:**
- Prioritize privacy through a distributed data model
- Voluntary collaboration
- Good governance through our Governance Board and Executive Committee
- Adaptable and nimble
What is Driving the Need?

• Communities in crisis – epidemics, disasters, public emergencies
• Lack of data to identify and act on place-based risk in a timely manner
  • Traditional data sources are at the county or ZIP code level
• Recognition that many conditions affect a person’s ability to be healthy
• Increasing health costs – disease prevention is critical
• Community health (needs) assessments (CHA/CHNA)
Strengths and Limitations

Electronic Health Record Data

**Strengths**
- Timely
- Granular geographic information
- Large sample size (~90% of MN)
- Established collection methods

**Limitations**
- Only includes care-seeking population
- Limited qualitative data (in current state)
- Currently does not include data from small clinics and FQHCs
- Some data quality issues (missingness)

Population Health Survey Data

**Strengths**
- Can capture knowledge, attitudes, beliefs, perceptions, health behaviors
- Can include qualitative data
- Customizable

**Limitations**
- Self-report bias
- Time lags
- Resource intensive + declining responses
- Disproportionate response by certain demographic groups
MN EHR Consortium Data

- Electronic Health Record (EHR) Data
- Distributed data model (OMOP)
- Data sharing governed via an 11 system Data Use Agreement
- Central management by Administrative and Technical Cores
- Includes:
  - MN residents
  - Encounters within a look-back period (2, 3 or 5 years)
  - Not known to have died (statewide data)
- Deduplication process to avoid double counting
- Merge with external sources for SDoH and vaccination data
Current Projects

• Hennepin County Substance-Related Healthcare Use

• Health Trends Across Communities (HTAC)

• MDH Telehealth Evaluation

• CDC Modeling Project
Current Projects

• Hennepin County Substance-Related Healthcare Use

• Health Trends Across Communities (HTAC)

• MDH Telehealth Evaluation

• CDC Modeling Project
Hennepin County SUD Project

**EXHIBIT 2**

Selected drug-involved hospital and emergency department (ED) visits in Hennepin County, Minnesota, July 2012–June 2023

*Health Information Technology*

By Riley D. Shearer, Rebecca Rosson, Paul J. Christine, Madison Hoover, Julie Bau, Peter Bodurtha, Nopponget Poo Ral, Michelle Cregg, Bjorn C. Westergard, Kirsten R. Ehresman, Amy L. Hevrett, and Tyler M. A. Wikelman

**Minnesota Data Sharing May Be Model For Near-Real-Time Tracking Of Drug Overdose Hospital And ED Trends**

![Graph showing hospital and ED visits for opioids, methamphetamine, cocaine, and sedatives from 2012 to 2023.]

**Source** Authors’ analysis of data from the Minnesota Electronic Health Record Consortium. **Note** Data points are three-month rolling averages.
Hennepin County SUD Dashboard

Substance involved emergency and hospital visits in Hennepin County

Monthly opioid involved visits by race/ethnicity

<table>
<thead>
<tr>
<th>Month</th>
<th>Sep 2022</th>
<th>All Visits</th>
<th>% Visits</th>
<th>Oct 2022</th>
<th>All Visits</th>
</tr>
</thead>
<tbody>
<tr>
<td>Race/ethnicity</td>
<td>Visits</td>
<td>All Visits</td>
<td>% Visits</td>
<td>Visits</td>
<td>All Visits</td>
</tr>
<tr>
<td>American Indian</td>
<td>83</td>
<td>849</td>
<td>9.8%</td>
<td>93</td>
<td>819</td>
</tr>
<tr>
<td>Asian/Pacific Islander</td>
<td>16</td>
<td>1,295</td>
<td>1.2%</td>
<td>&lt;11</td>
<td>1,308</td>
</tr>
<tr>
<td>Black or African American</td>
<td>276</td>
<td>10,173</td>
<td>2.7%</td>
<td>252</td>
<td>10,322</td>
</tr>
<tr>
<td>Hispanic</td>
<td>40</td>
<td>2,737</td>
<td>1.5%</td>
<td>42</td>
<td>2,984</td>
</tr>
<tr>
<td>Multiple races</td>
<td>37</td>
<td>682</td>
<td>5.4%</td>
<td>34</td>
<td>685</td>
</tr>
<tr>
<td>White</td>
<td>412</td>
<td>23,708</td>
<td>1.7%</td>
<td>420</td>
<td>24,153</td>
</tr>
<tr>
<td>Unknown race/ethnicity</td>
<td>20</td>
<td>1,407</td>
<td>1.4%</td>
<td>25</td>
<td>1,474</td>
</tr>
<tr>
<td>Total</td>
<td>884</td>
<td>40,912</td>
<td>2.2%</td>
<td>874</td>
<td>41,749</td>
</tr>
</tbody>
</table>

Data is updated monthly and currently available through 9/30/2023.

Substance description
Opioids including prescription pain relievers, heroin, and synthetic opioids such as fentanyl.

Please contact PublicHealthData@hennepin.us with any questions or feedback about this report. Visit Microsoft's Power BI For Consumers page for more information on how to use Power BI.
## HTAC Indicators

<table>
<thead>
<tr>
<th>Substance Use</th>
<th>Mental Health</th>
<th>Chronic Conditions</th>
<th>Maternal &amp; Child Health</th>
<th>Other</th>
</tr>
</thead>
<tbody>
<tr>
<td>Opioid use</td>
<td>Depression</td>
<td>Hypertension</td>
<td>Maternal morbidity</td>
<td>Gun violence</td>
</tr>
<tr>
<td>Alcohol use</td>
<td>Anxiety</td>
<td>Obesity / Overweight</td>
<td>Maternal opioid use</td>
<td></td>
</tr>
<tr>
<td>Methamphetamine use</td>
<td>PTSD</td>
<td>Hyperlipidemia</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cocaine use</td>
<td>Bipolar disorder</td>
<td>Diabetes</td>
<td></td>
<td></td>
</tr>
<tr>
<td>THC use</td>
<td>Psychotic disorders</td>
<td>CAD / IHD</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Other substance use</td>
<td>Suicide</td>
<td>Heart failure</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Chronic kidney disease</td>
<td>Childhood vaccination</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Asthma</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>COPD</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### Mental Health
- Depression
- Anxiety
- PTSD
- Bipolar disorder
- Psychotic disorders
- Suicide

### Chronic Conditions
- Hypertension
  - Obesity / Overweight
  - Hyperlipidemia
  - Diabetes
  - CAD / IHD
  - Heart failure
  - Chronic kidney disease
  - Asthma
  - COPD

### Maternal & Child Health
- Maternal morbidity
- Maternal opioid use
- Childhood vaccination

### Other
- Gun violence
- Climate change
Health Trends Across Communities

Prevalence

- Count of population with indicator: 943,612
- Percent of population with indicator: 25.1%

Percent of population with condition:
- American Indian/Native American: 26.3%
- Asian/Pacific Islander: 28.3%
- Black/African American: 33.5%
- Hispanic/Latino: 23.7%
- Other, unknown, missing: 6.3%
- White: 25.7%

Prevalence by gender:
- Female: 23.0%
- Male: 27.7%
- Other or unknown: 3.0%

Percent of age group with indicator:
*Age is top-coded at 89
Health Trends Across Communities

Geography

Indicators
- Inhalants
- Lung cancer
- Opioids
- Pregnancy
- Psychostimulants
- Psychotic disorder
- PTSD

Region
- Central
- Metro
- Northeast
- Northwest
- South Central
- Southeast
- Southwest
- West Central

Social vulnerability
- High vulnerability
- Mid-High vulnerability
- Mid-Low vulnerability
- Low vulnerability

Prevalence

Race/ethnicity
- Selected area
- Minnesota

Gender
- Male
- Female
- Other or unknown

Age
- Infants
- 1-4
- 5-11
- 12+
Conclusions

• Collaboration across public health, research, health systems, and analytics has been essential to developing actionable data

• COVID-19 provided a spark to develop this collaboration

• MN EHR Consortium actively extending well beyond COVID

• HTAC will result in one of the most robust, real-time, cross-sector data sources in the United States
Questions & Contact

• Tyler Winkelman, MD, MSc
• tyler.winkelman@hcmed.org

• Website: www.mnehrconsortium.org
Question & Answer

Please submit questions using the Q&A feature.
Thank you for joining us!

*SHADAC*

Please email cplanalp@umn.edu or shadac@umn.edu with any follow-up questions, and find the brief on our website: www.shadac.org.

*MN EHR Consortium*

Please email tyler.winkelmann@hcmed.org with any follow-up questions, or visit the website: www.mnehrconsortium.org