

COVID and the Indoor Environment:

SEASONALLY-DRIVEN RISK FACTORS

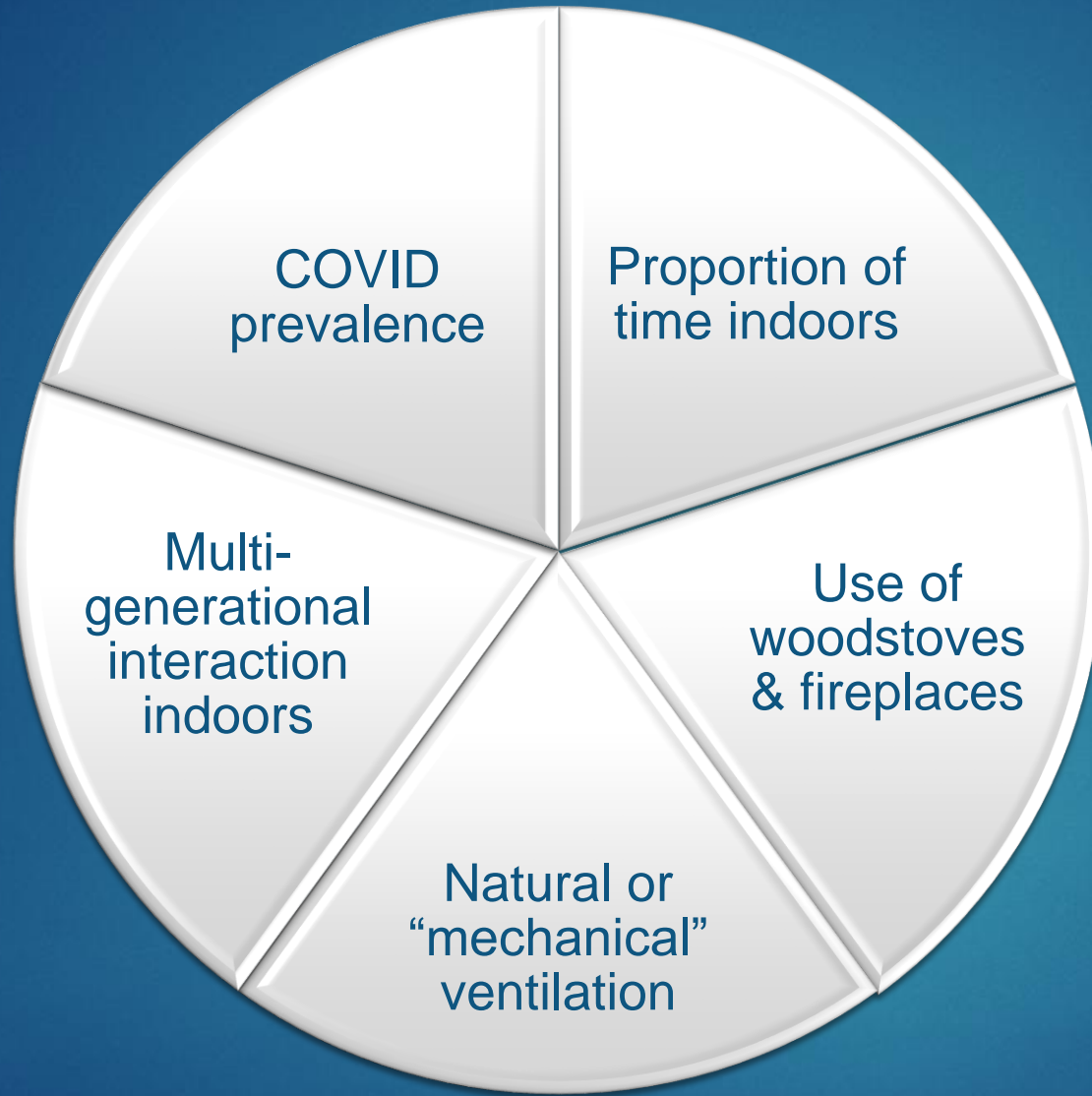
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www.thhnw.org

www.tribalindoorairfunding.org



CLEAN AIR. SAFE HOMES.
HEALTHY LIVES.



Seasonally-Driven Risk Factors

Factor 1:

↑ Proportion of Time Spent Indoors

Increase in *duration* of exposure to others in immediate household

Increase in gatherings outside our immediate “bubble”

Factor 2:

↑ Multi-Generational Occupancy and Activity

Children – distance-learning
Adults – working remotely
Elders – fewer outside activities

Essential and
front-line
workers

Young adults –
work and social
exposures

Factor 3:

↑ Use of Woodstoves and Fireplaces

Potential increase in indoor concentrations of fine particulate matter

Potential increase in indoor concentrations of volatile organic compounds (VOCs), hydrocarbons (PAHs), Carbon Monoxide

Factor 4:

↓ Use of Natural/Mechanical Ventilation

Potential increase of indoor concentrations of Carbon Dioxide (CO₂)

Potential increase of indoor levels of relative humidity (RH)

Factor 5:

↑ COVID prevalence and positivity rates

Increase in *total number* of
infected individuals

Increase in percentage of
positive tests among those
tested

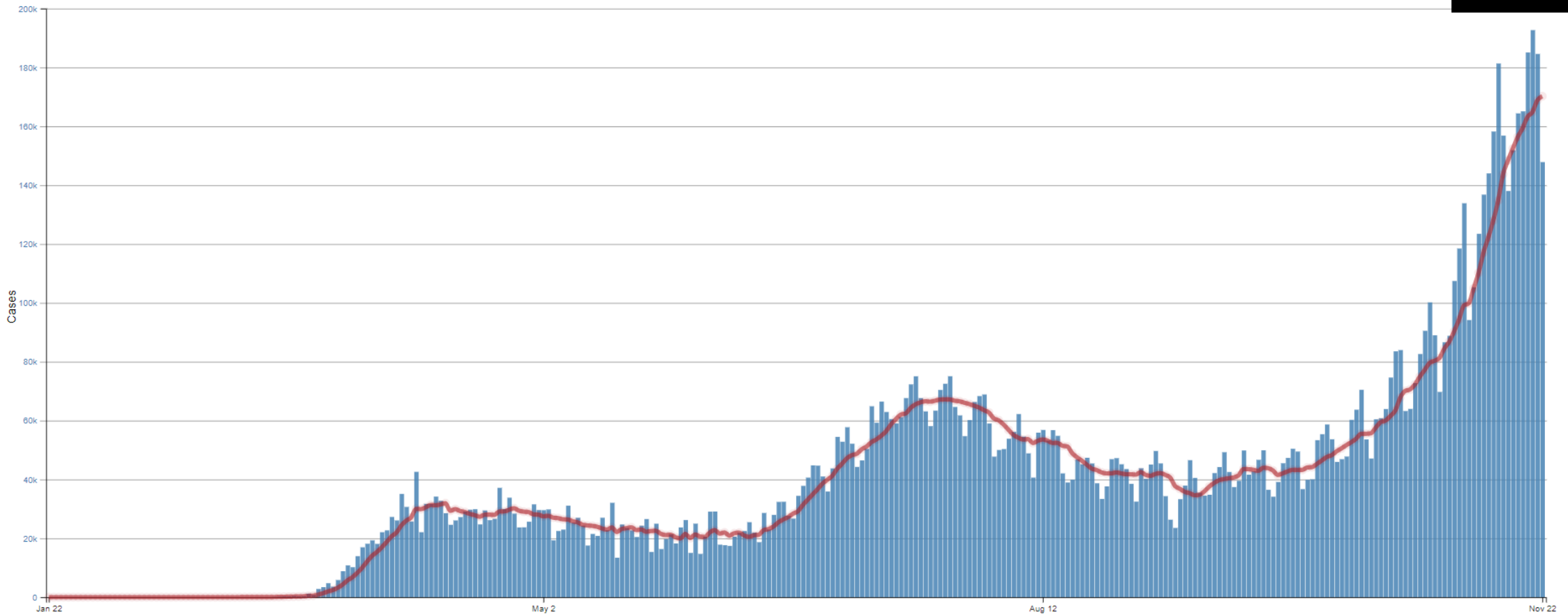
Centers for Disease Control: COVID Data Tracker

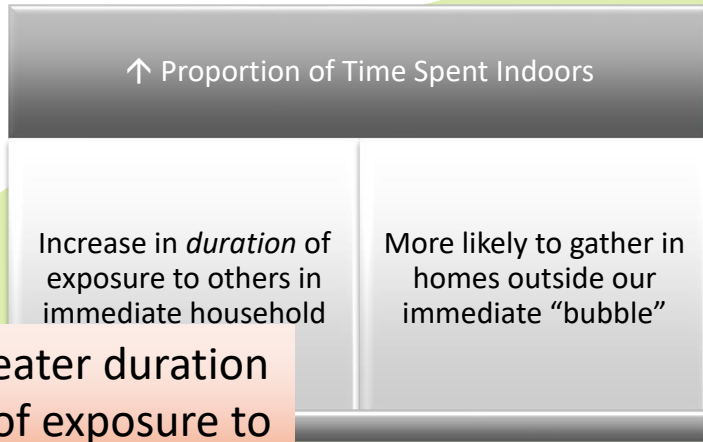
7-Day Moving National Average

Select a state or territory: View: Cases Deaths Metric: Daily trends Total and rate Show: 7-Day moving average

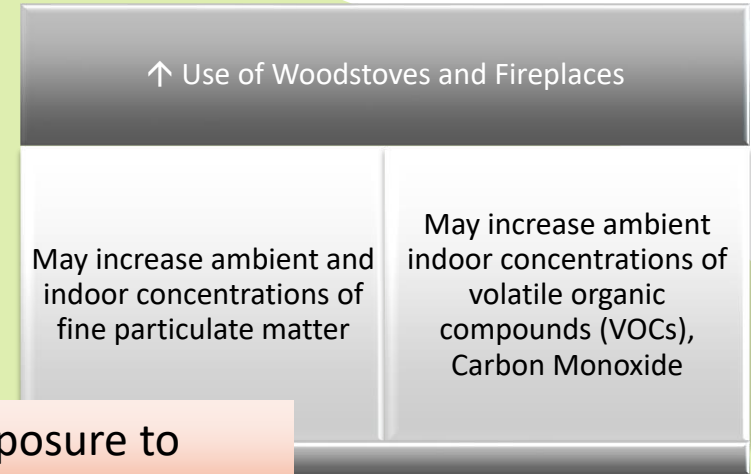
November 22nd

Daily Trends in Number of COVID-19 Cases in the United States Reported to CDC

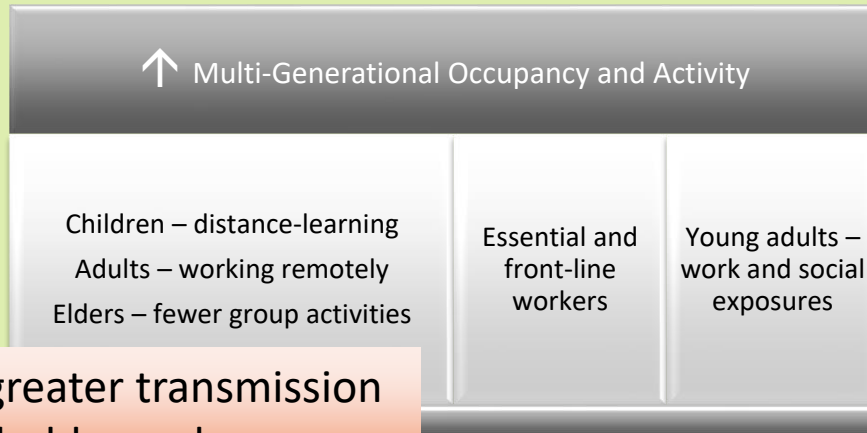




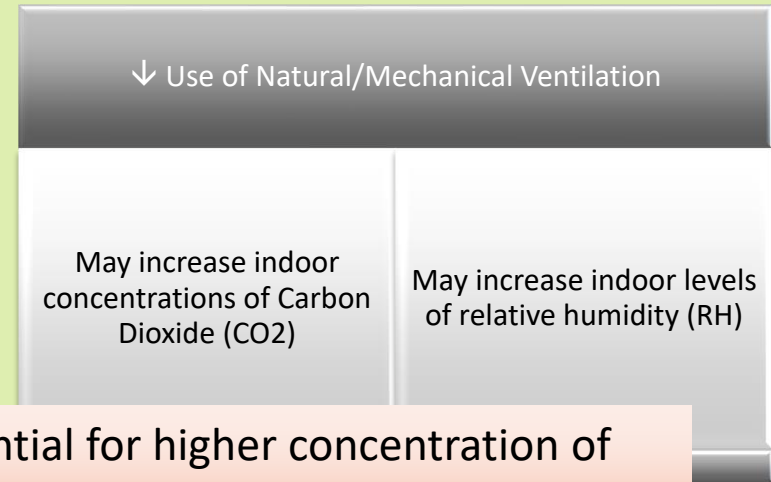
Potential for greater duration and frequency of exposure to COVID



Potential for exposure to immune suppressants



Potential for greater transmission among household members



Potential for higher concentration of aerosolized virus due to reduced air exchange

COVID-19 Cumulative Case Rate per 100,000 Population, by Percentage of County Population American Indian/Alaskan Native, Non-Hispanic

Select US, Region, or State:

United States

Select Classification:

Non-Hispanic, American Indian/Alaskan Native

View:

- Cases
- Deaths

Measure:

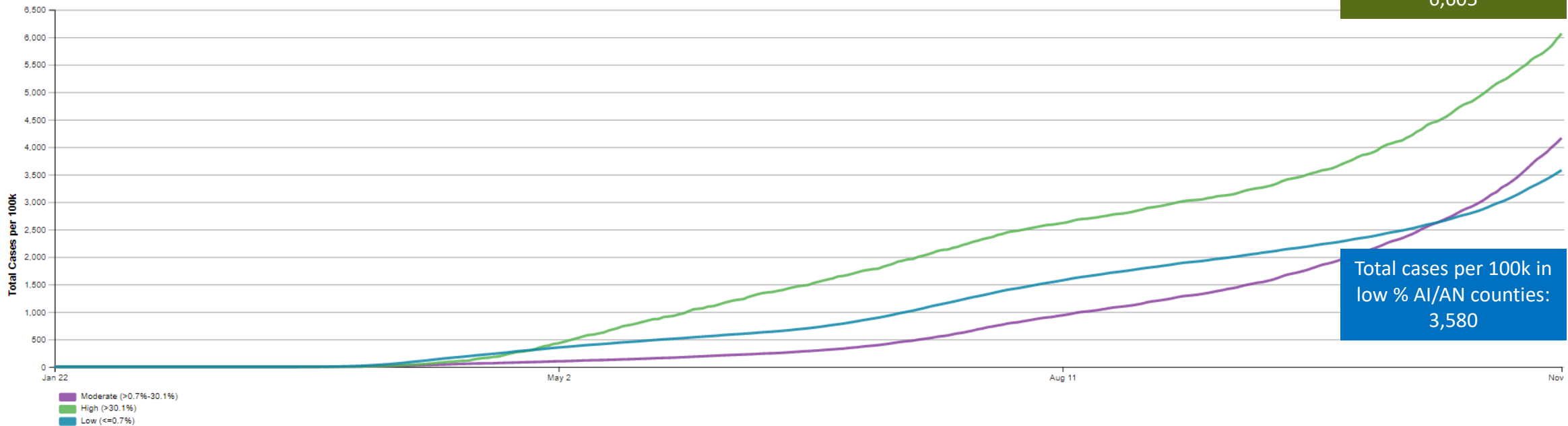
- New - 7 Days
- New - 14 Days
- Cumulative

Moderate (>0.7%-30.1%)

High (>30.1%)

Low (<=0.7%)

Total cases per 100k in high % AI/AN counties: 6,605



Total cases per 100k in low % AI/AN counties: 3,580

In counties with higher concentration of AI/AN population, the number of COVID cases per 100,000 is nearly double – 6,505 as compared to 3,580... *why?*

Counties with higher proportion of AI/AN population *may* have reservations and/or villages with...

- HUD-constructed homes without whole-house ventilation (**less ventilation and filtration**) (40% considered "sub-standard per NCAI)
- A housing wait list due to insufficient federal funding (**more overcrowding/exposure**) (30% per NCAI)
- Limited access to natural gas or affordable green energy, having to rely on older woodstoves for home heating (**more fine particle air pollution**)
- Limited indoor plumbing (**challenge for hand-washing/disease transmission**) (16% per NCAI)



A future question for researchers, tribal leaders, federal decision-makers and all who support tribes: Does substandard housing lead to indoor air quality risk factors that result in higher disease rates of infectious diseases such as COVID?

Factors within our control...

Mechanical Ventilation

Filtration (portable air cleaners or HVAC)

Social Distancing

Hand-washing

Use of Masks and PPE

Frequency and Number of Visitors

Regular, Safe Disinfecting of Surfaces