

# Food Security and Health Outcomes Following the COVID-19 Pandemic in Northern New England

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The University of Vermont

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## What we do know... The world changed

On 3.11.20 WHO General Dr. Tedros Adhanom Ghebreyesus declared COVID-19 a global pandemic.<sup>1</sup>

Two days later COVID-19 was declared a national emergency and stay – at – home orders were issued throughout the U.S.<sup>2</sup>

Profound social and economic impacts reverberated across all areas of the economy and continue to do so.<sup>3</sup>

Hit hardest from the socio-economic fallout were/are (and continue to be) poor families, the elderly, individuals in precarious jobs, those with insecure housing, and ethnic minorities.<sup>4</sup>

## What we also know...

Food insecurity affected 11% of households, the majority being families with kids < 185% FPL and rural PRIOR to the COVID-19 pandemic. <sup>5,6</sup>

Food insecurity is key indicator of health and well-being. <sup>7-9</sup>

- “A social determinant of health”.
- Driver of chronic disease and chronic disease burden.

Unprecedented rise in unemployment, inflation, and other household pressures, food insecurity has a “new face”.<sup>10, 11</sup>

## What we don't really know

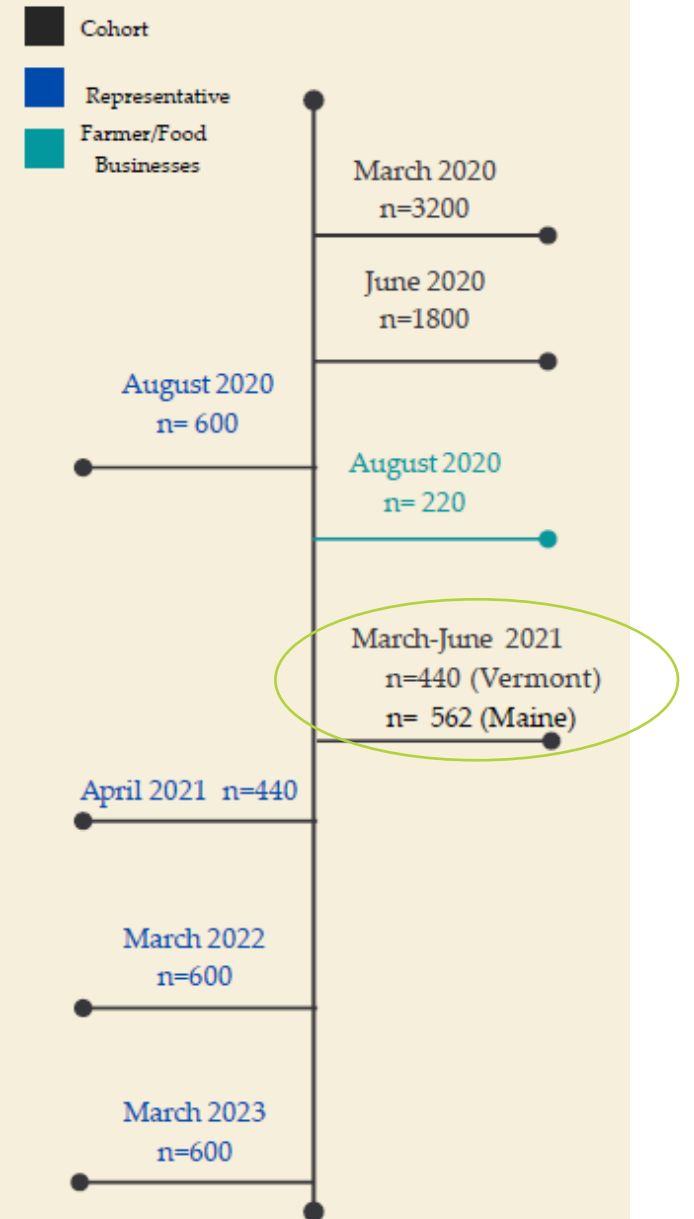
The prevalence and impact of the COVID-19 pandemic on food security, health behaviors, and how this relates to health behaviors and chronic disease.

Specifically in Vermont and Maine, the 2 most rural states in the U.S.

What are we in for in the upcoming years?!

# Our approach

- Collectively six surveys of Vermonters since the beginning of the pandemic.
  - Cohort (3 surveys)
  - Representative (2 surveys)
  - Farmers and food businesses (1 survey)
  - Collectively 6,700 Vermonter responses
- Data presented **today** is a statewide representative sample from **March-June of 2021** from VT and ME.
  - Representative of race, income, ethnicity
  - “snapshot”



# What we asked participants

Qualitative aspects of **lifestyle behaviors** and **substance use** including temporal variations pre/post the onset of COVID-19.

Prevalence and temporal diagnosis of **HTN, DMT2, and affective conditions** including stress.

**Medication use** – addition or increasing use, skipping or stopping of medications directly related to lack of \$\$.



## Definitions

Food insecurity: households lacked access to enough food at all times for a healthy, active lifestyle [USDA module].

Temporal variations:

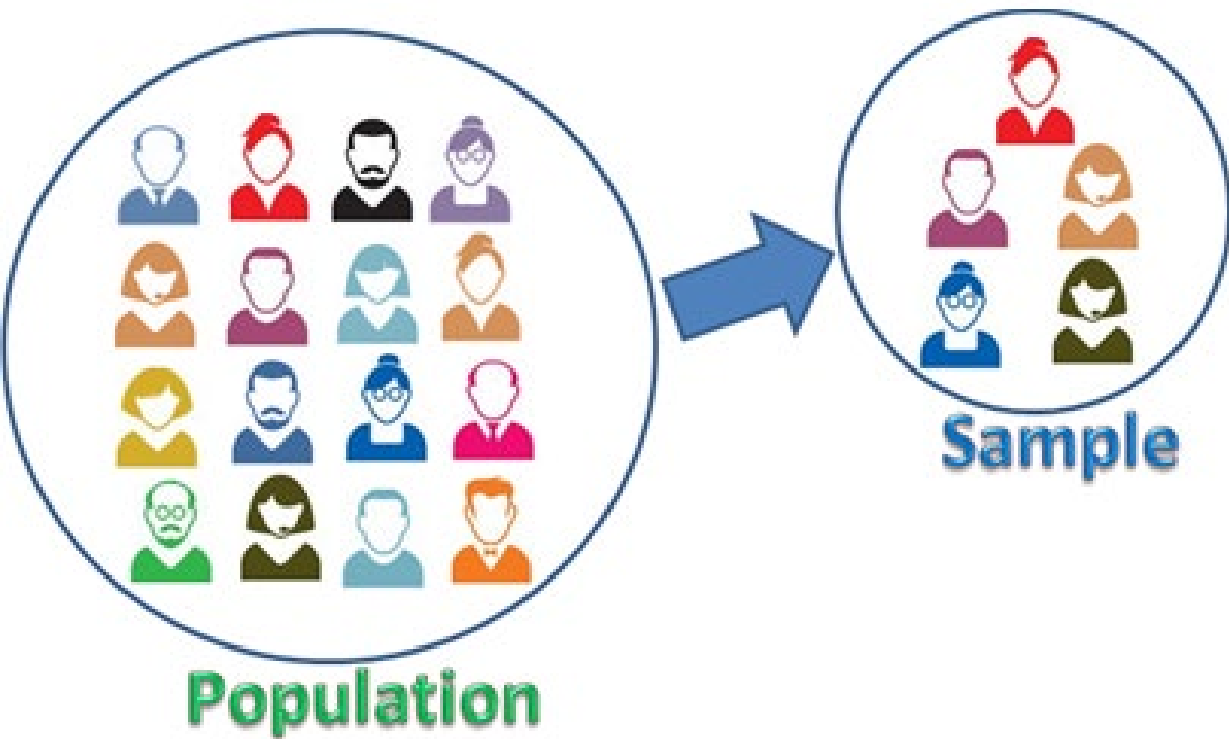
- Food insecure prior to the COVID -19 pandemic ---> **Chronic food insecurity (cFI)**
- Food insecure following the onset of the COVID -19 pandemic ---> **Food insecure post (pFI)**
  - ~ 15 months



# Analytic considerations



- Chi square tests with pair-wise comparison and ANOVA were computed to examine differences in health-related behaviors.
- Series of logistic regression models determined relationships (i.e., odds ratio (OR)) between health-related behaviors, disease prevalence and medication adherence.
  - Predictor: Food security status
  - Standard co-variates: age, gender, income, education, race/ethnicity, & state weighting variable
- Significance was set at  $p < .05$ , two sided.
- SPSS v. 28



Unless otherwise noted  
aggregate data is presented.  
Very few between State  
differences.

## Our sample

- 922 respondents (Vermont, n=426; Maine, n=562)
- Mean age was 47 years (18-90± 17.1)
- 68.3% of the sample identified as female
- 91.5% were non-Hispanic White
- 70.7% had a college degree or higher
- 46.7% with household income  $\geq$  \$50,000
- Food insecure are working
  - 71% of food insecure were working, retired or homemakers

# The face of food insecurity



**Prior to** the prior to the COVID-19 pandemic

- Lower household income brackets < \$25,000 ( $p < .001$ )
- Under 62 years of age ( $p < .001$ )
- Less educated ( $p < .001$ )

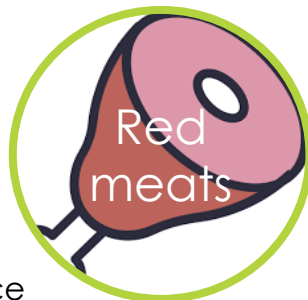
**Following** the onset of the COVID-19 pandemic

- Under 62 years of age ( $p < .001$ )
- Household income brackets < \$75,000 ( $p < .001$ )
- Black, indigenous, and people of color (BIPOC;  $p = .012$ )
- Male (trend;  $p = .056$ )

# Health behavior disparities for those with food insecurity\* post COVID-19



7.86 v. 6.51 tsp/day,  
p<.001



No difference

1.47 v. 1.38 cups/day  
p=.008



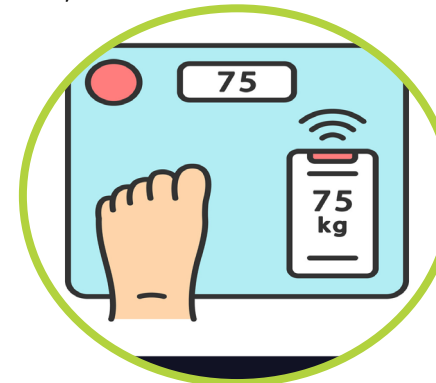
1.87 v. 1.38,  
p<.001



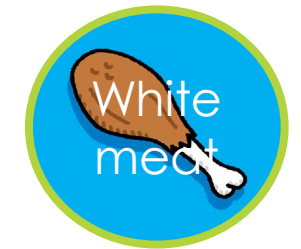
Pearson  $X^2=5.48$ ,  
p=.065



24.92 v. 22.6  
tsp/day, p=.009



BMI 29.2 v. 28.8,  
p=.044



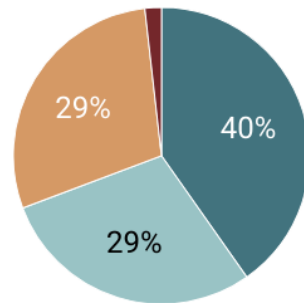
4.89 v 4.32,  
p<.001

\*Unadjusted

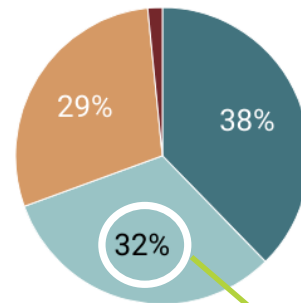
## A note on BMI

69% were obese or overweight with a mean body mass index of 29.2, and 41% indicating weight gain since March of 2020.

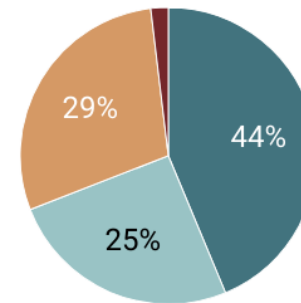
- Obese
- Overweight
- Normal weight
- Underweight



Overall



Maine



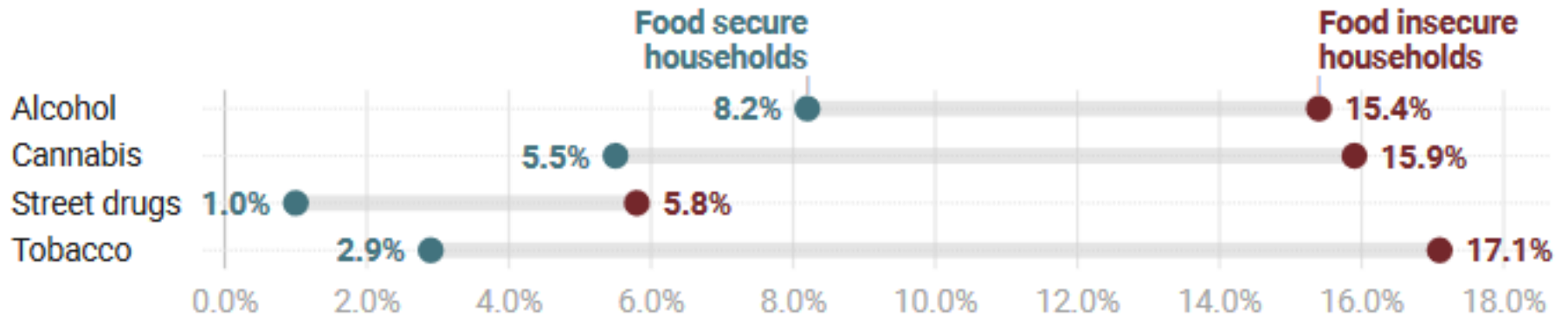
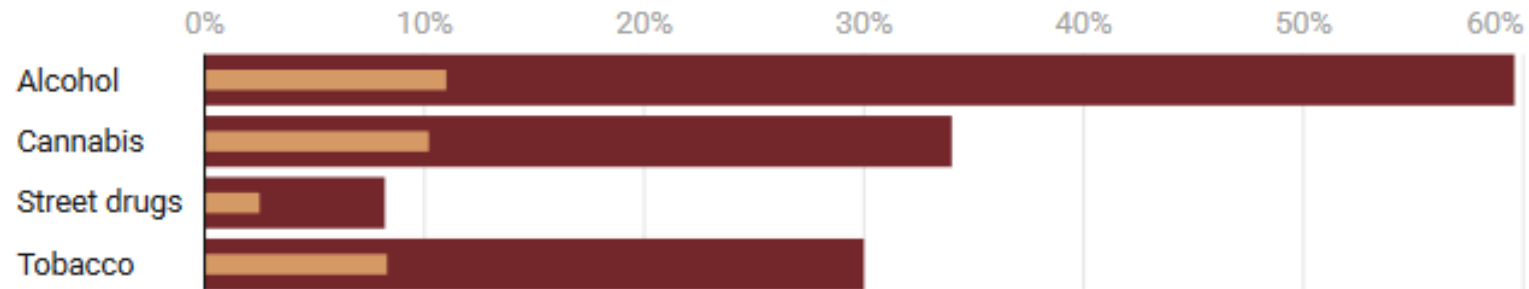
Vermont

$\chi^2 = 5.68, df=3, p<.05$

# Substance use\*



Any use Increased use



\*Unadjusted

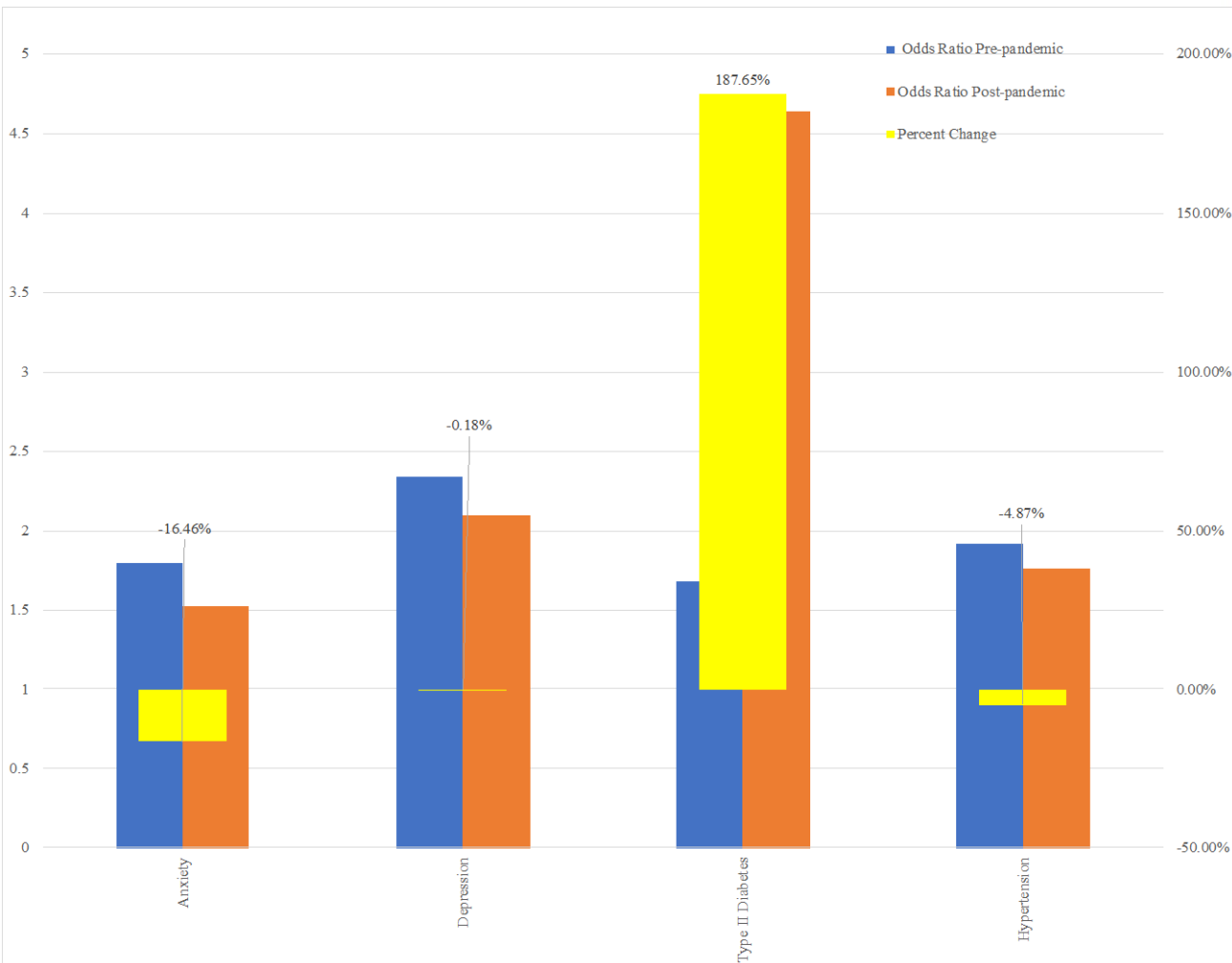


# Chronic disease & food insecurity

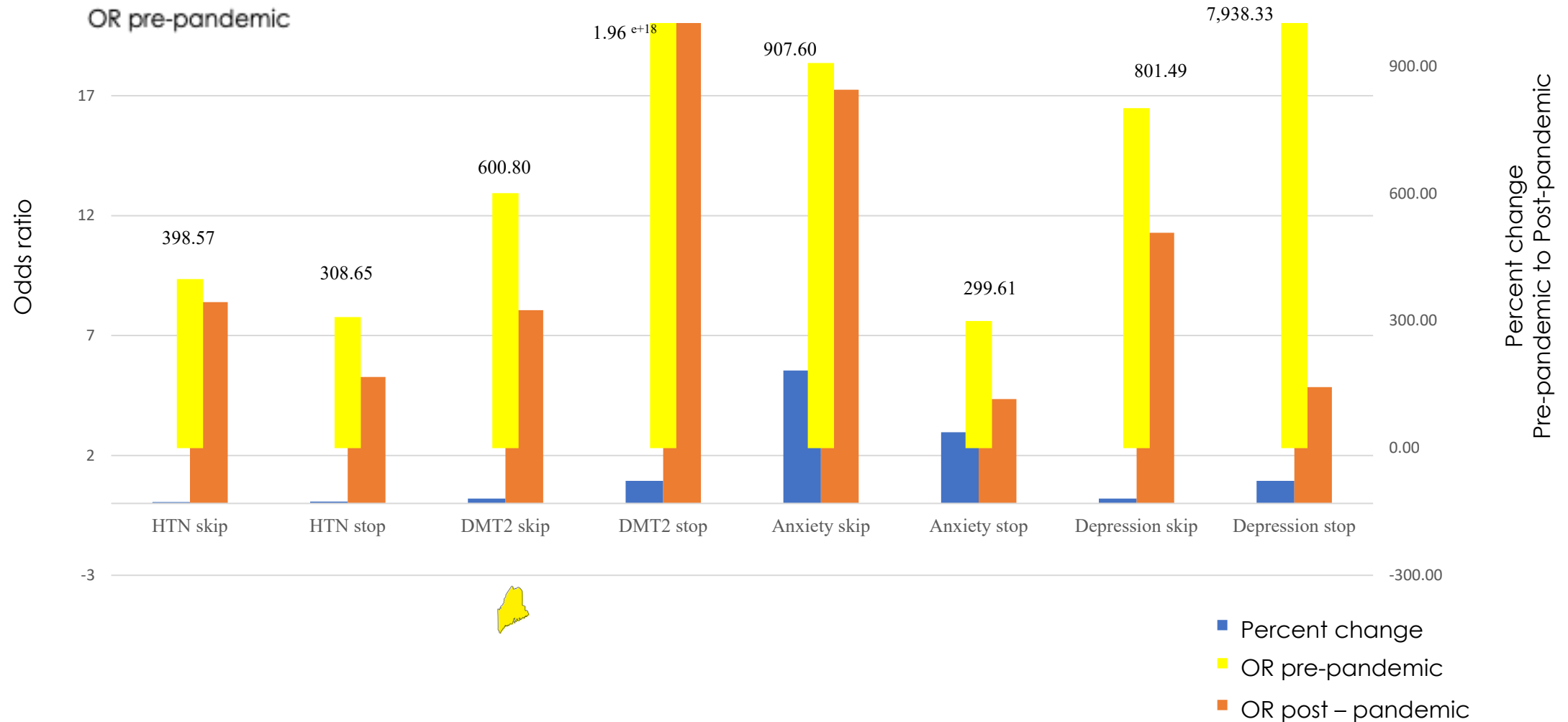
Individuals with cFI before the COVID -19 pandemic were more likely to have chronic disease.

In the time following the pandemic this didn't change much with the exception of DMT2 (OR 4.64, 95% CI .95-.97,  $p < .001$ )

Perceived stress scores were greater for those with cFI, pFI, nFI (OR's 1.3,  $p$ 's  $< .001$ )



# Medication: Skipping or stopping due to lack of \$\$





## I lost my job after COVID-19.



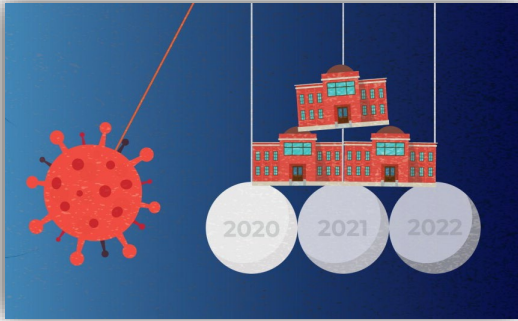
Prior to the COVID-19 pandemic, **income and education** were strongly associated with food insecurity.

Following the COVID-19 pandemic **job loss** was a greater predictor of food insecurity than income and education.

Household incomes **less than \$100,000** ( $p < .001$ ), education level less than **post-graduate** ( $p$ 's  $< .05$ ) and identifying as **male** ( $p = .03$ ) with job loss were more likely to be food insecure.

Identifying as **female was protective** against food insecurity.

# What to make out of this?



- Youth, identifying as male, and lesser educated were more likely to be food insecure post COVID-19 without job loss.
  - Less opportunities? More precarious jobs?<sup>12</sup> Lack of resource “buffer”<sup>13</sup>
- Older women fared “better” during this time period.
  - Hmm?
- **Job loss** played a tremendous role in food insecurity regarding of income and education.
  - Precarious nature of the “middle class”<sup>13, 14</sup>
- Weight gain was endorsed by the majority and OWO prevalence was 69%.
  - “lock down”, emotional eating, lack of usual PA opportunities. <sup>15</sup>
- Substance use is escalating.
  - 51% report **depression** and 58% report **anxiety** (compared to 22% in pre-COVID statistics)
  - “self - medicating” <sup>19, 20</sup>
- People are making really hard choices between food, medications, and other living expenses.

# Food insecurity & health post COVID-19

Escalation of food insecurity and heightened risk of chronic disease<sup>16-18</sup> is the perfect storm now and for years to come.



- Diets higher in added **sugar**, **red meats** and lower in F/V.
- **Significantly** higher prevalence of **Type 2 diabetes**
- 7x more likely to **stop or skip** depression/anxiety **medications**.
- 10<sup>e+19</sup>x more likely to **stop** diabetes medications.
- **Substance use** is 2-5x greater.

# Health policy: Implications moving forward



Layer support systems- food security, health care, medications, substance abuse.

Co-location of resources including mental health drop-in at food access points.

Medication vouchers.

Prioritized initiatives that address health disparities and potential health inequities during recovery.

Reinvestment of preventive efforts aimed directly at obesity and chronic disease.



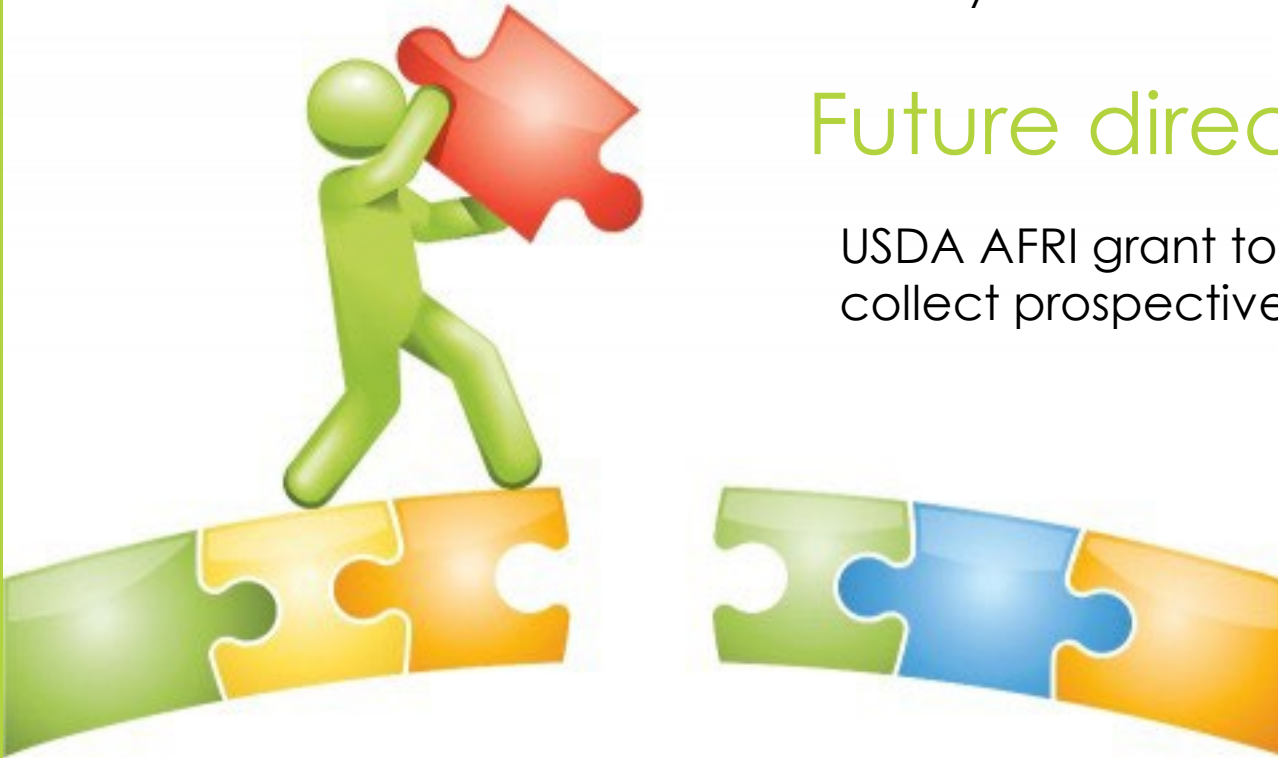
## Limitations

Cross sectional and causation cannot be implied.

Survey limitations.

## Future directions

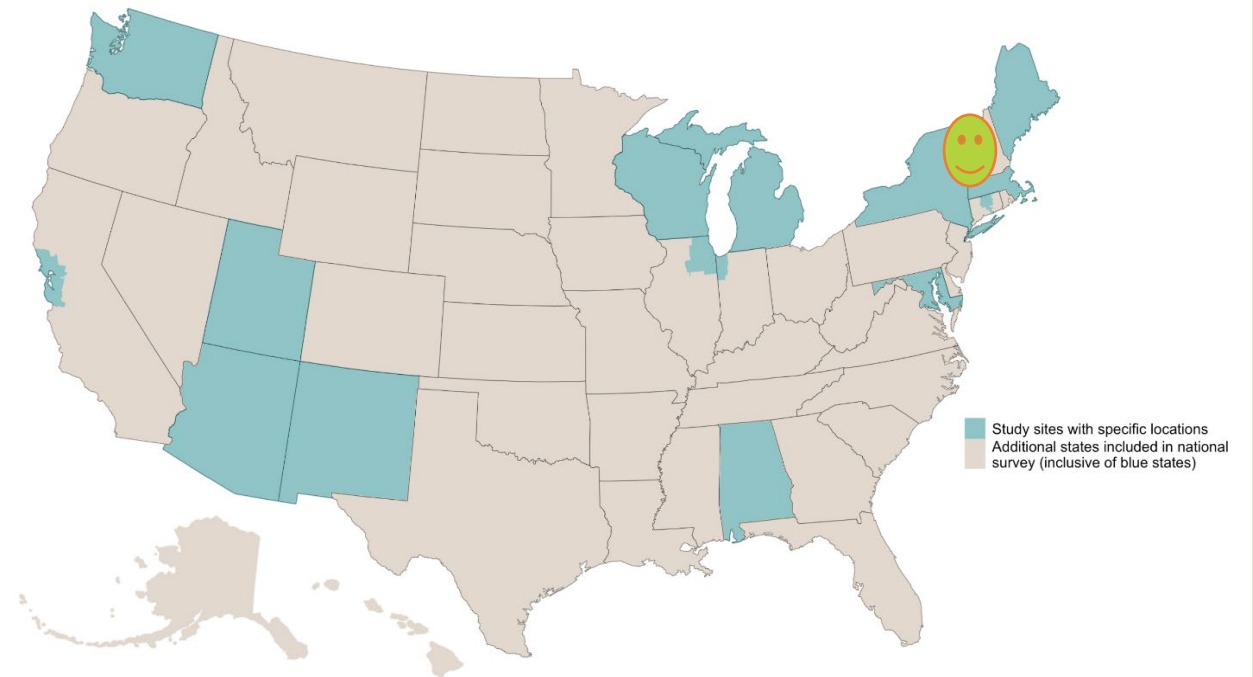
USDA AFRI grant to expand our survey and collect prospective data.



# Our Vermont team

- Meredith Niles, PhD- Associate Professor
- Mattie Alpaugh- Research Assistant
- Farryl Bertmann, PhD, RDN- Senior Lecturer
- Emily Belarmino, PhD- Assistant Professor
- Sam Bliss, PhD student
- Jennifer Laurent, PhD, FNP-BC, APRN- Professor
- Ashley McCarthy, PhD- post-doctorate fellow
- Scott Merrill, PhD- Research Professor
- Students:
  - Maddie Burke, Katie Rogomentich, Emma Spence, Kristen Wrikkala, Emma Frank, Shenna Tyer

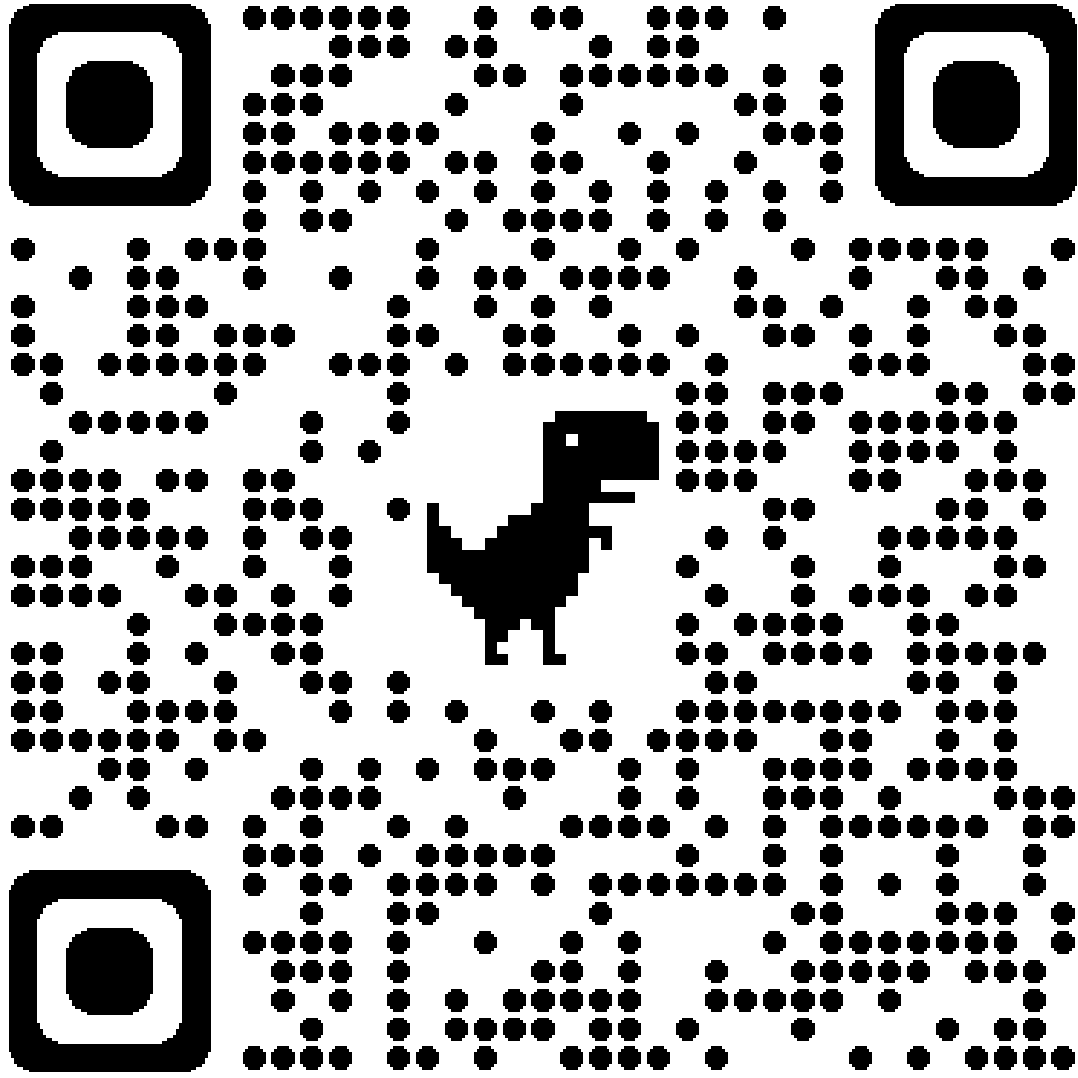
- Founders and leaders of the National Food Access and COVID research Team (NFACT)
- 18 study sites in 15 states (including Maine)



**NFACT**

National Food Access and COVID Research Team

# References



Additional policy briefs and publications available through NFACT website:

<https://www.nfactresearch.org>

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# Questions?



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