



Exploring healthy food access and consumption among low-income central Texas residents during COVID-19: the FRESH Austin Study

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Setting the Stage: Background on Food Insecurity, Food Access and Disparities

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“A limited or uncertain availability of nutritionally adequate and safe foods or limited or uncertain ability to acquire acceptable foods in socially acceptable ways”

Food Insecurity and Food Access



Availability

Access

- Geographic Food Access
- Economic Food Access

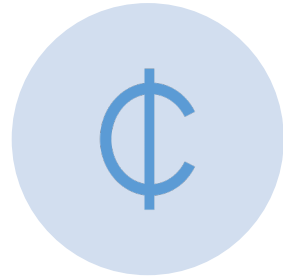
Utilization

Stability Over Time

Food Insecurity and Food Access Disparities



RACE/ETHNICITY



INCOME



URBAN/RURAL
STATUS



EMPLOYMENT



TRANSPORTATION

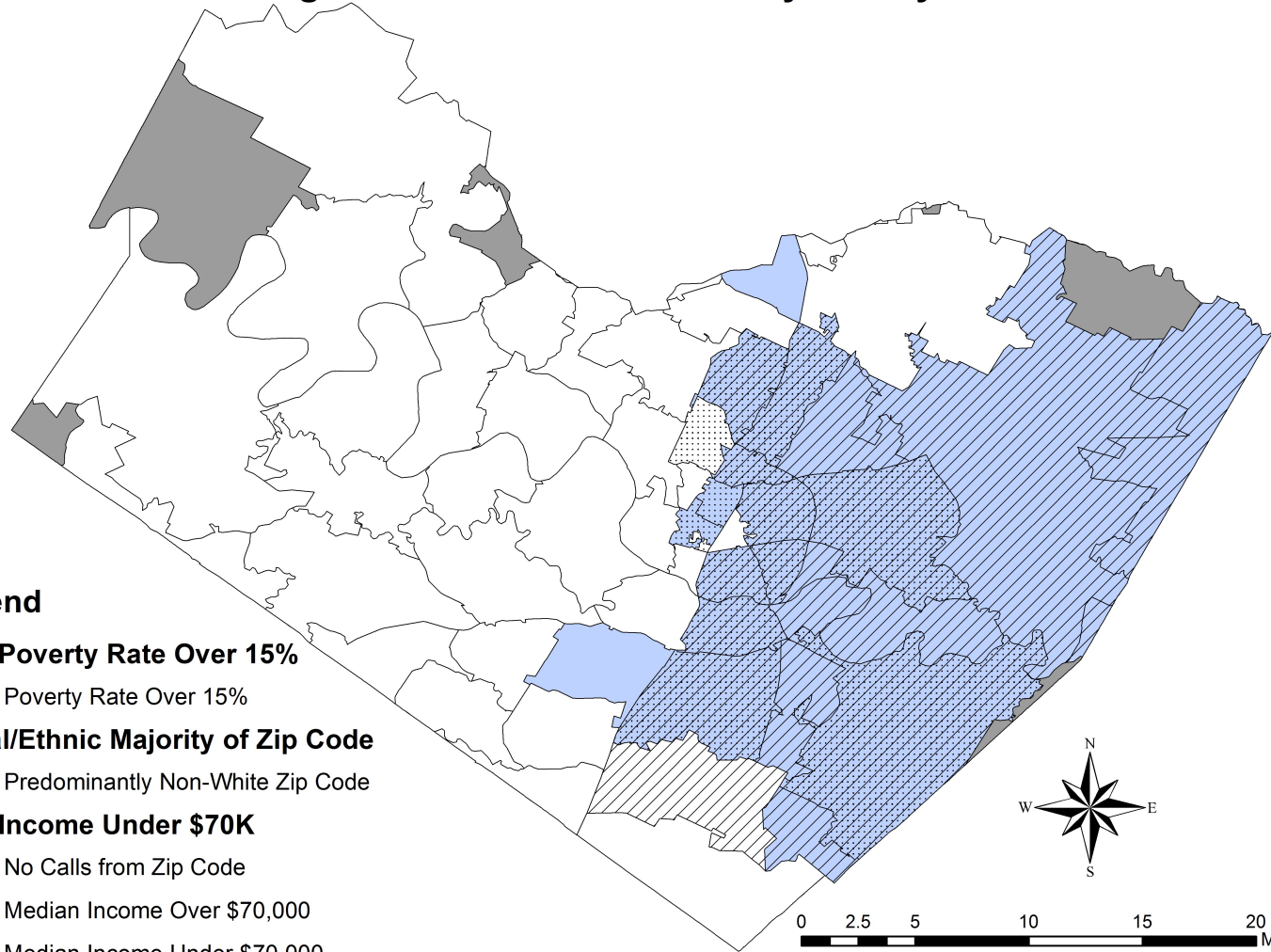
Food Insecurity and Food Access in Austin



- **Prevalence of Food Insecurity Before COVID-19 Pandemic**
 - 11.8% of American households were food insecure in 2017
 - 14% of families in Texas identified as food insecure from 2015-2017
 - Over 15% of families in Austin experienced food insecurity in 2016
- **Austin/Travis County is a Diverse Area**
 - 48.3% White
 - 34.3% Hispanic/LatinX
 - 7.8% Black
 - 7.3% Asian
- Residents of the Eastern Crescent of Austin are more likely to have experienced **limited geographic food access** and **food insecurity**
- **Various Health Conditions and Unhealthy Dietary Behaviors are Associated with Food Insecurity and Limited Food Access**



Demographics of Travis County by Zip Code Using 2018 American Community Survey Data




Legend


2018 Poverty Rate Over 15%

 Poverty Rate Over 15%


Racial/Ethnic Majority of Zip Code

 Predominantly Non-White Zip Code

2018 Income Under \$70K

 No Calls from Zip Code

 Median Income Over \$70,000

 Median Income Under \$70,000

Food Insecurity and Food Access Data During COVID-19



- 17.1 million more Americans could become food insecure due to COVID-19
- At its peak, there were over 700,000 more Texans on SNAP during the pandemic
- Census Pulse survey data estimated that food insecurity prevalence in Texas more than doubled from 2019 to November 2020 (14% → 27.9%)
 - Food insecurity disparities
 - Households with Children
 - Black/Latino Households
- Experienced issues with food access due to store closures, lines at food banks, individual-level factors (age, pre-existing conditions, issues with transportation), and other factors etc.



Gaps in the Literature



- Little was known about the experiences of residents in Central Texas from their own perspective:
 - How have these experiences shaped food access and food insecurity among Central Texans?
 - What needs do Central Texans have during the pandemic?
- The majority of food insecurity/food access literature looks solely at supermarkets/grocery stores or one type of food retail, rather than multiple aspects of the food environment

Food Retail: Evaluating Strategies for a Healthy Austin (FRESH Austin) COVID-19 sub-study

Aida Nielsen, MPH
Project Director, FRESH Austin





City of Austin's Healthy Food Access Initiative (*Fresh for Less*):

- Improved access to fresh, affordable, and nutritious food in low food access areas
- 3 non-profit organizations



Background continued

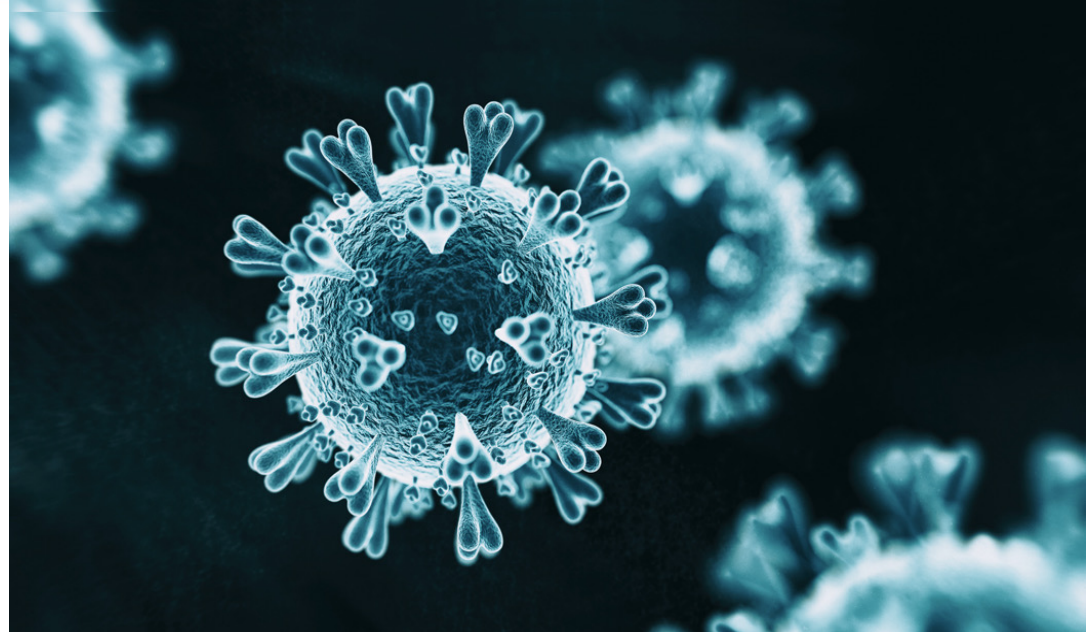


- SFC received a grant from the Foundation for Food and Agriculture Research
- UTHealth SPH subcontracted to conduct the evaluation of the Fresh for Less Initiative and develop an agent-based model to predict healthy food purchasing and consumption
- Study follows a cohort of community residents (n=400) over a 3-year period (started in 2018)

SARS-CoV-2

Pandemic happens.

Austin prohibits Community Gatherings of 250 persons+ in Travis County as of 3/15/20. Then an order was issued on 3/19 for avoiding 10 or more people, and schools closed.



End of March we discuss a COVID survey to explore any associations between “sheltering-in-place” and people’s food behaviors.

IRB and FFAR (supplemental funding) approves survey 5/28

Surveys



- Cohort participants contacted
- Survey taken from June 2020 -July 2020
- In total, 242 cohort individuals + 125 referrals completed the 1st online survey
- \$20 Amazon or Walmart gift card to all who completed a survey and \$5 if a referral took and completed a survey
- Data collection took place again from Dec. 2020 - Jan 2021 (n=304)

Participant demographics



Age

Mean Age: 43, Min: 18 Max: 84

Gender

Female: 249 (83%)

Male: 52 (17%)

*Ethnicity

Black or African American: 18 (6%)

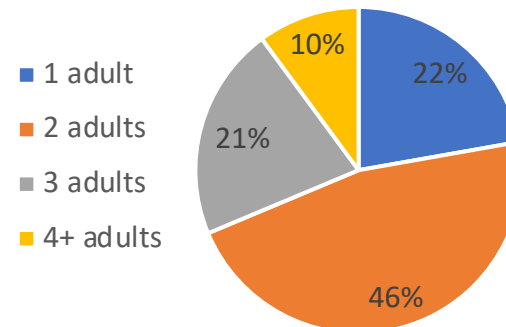
Hispanic: 174 (57%)

White: 85 (28%)

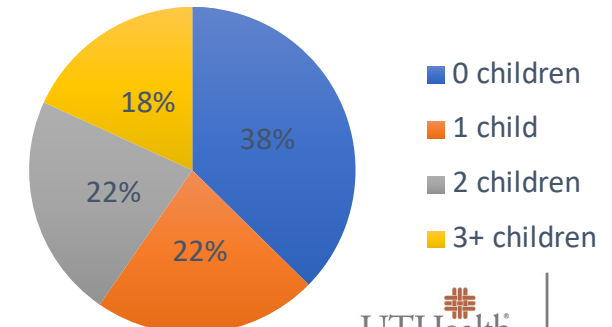
Other: 26 (9%)

What was the annual household gross income for your household in 2019? (n=303)	Frequency (%)
\$25,000 or less	72 (24%)
\$25,001-\$45,000	83 (27%)
\$45,001-\$65,000	47 (16%)
\$65,001 or greater	101 (33%)

Adults in household, n=296



Children in household, n=300



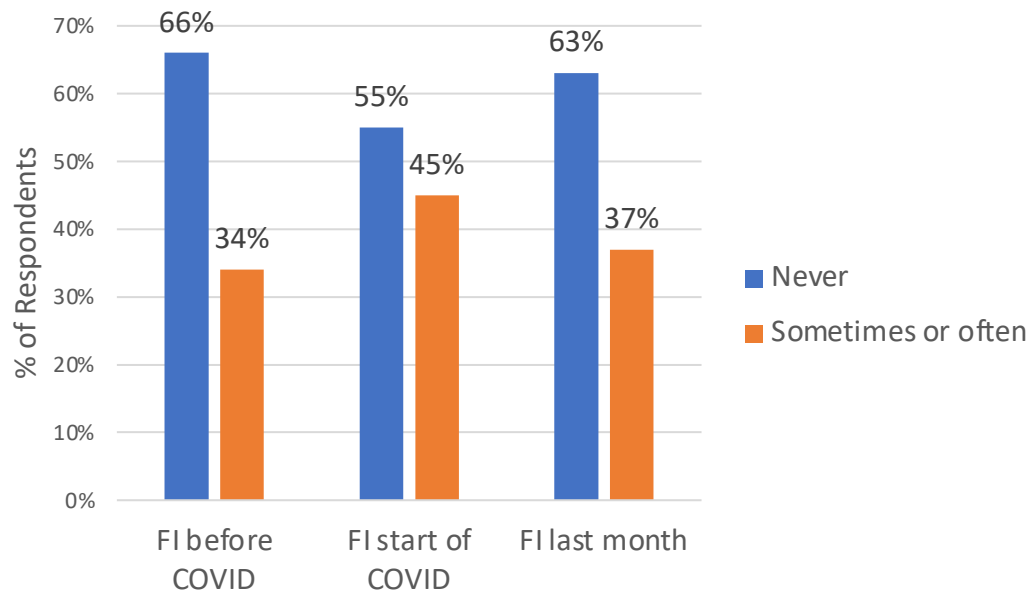
Food Insecurity: Pre & During COVID-19



2-item screener for food insecurity

- We (I) worried whether our food would run out before we (I) got money to buy more.
- The food that we (I) bought just didn't last and we (I) didn't have money to get more.

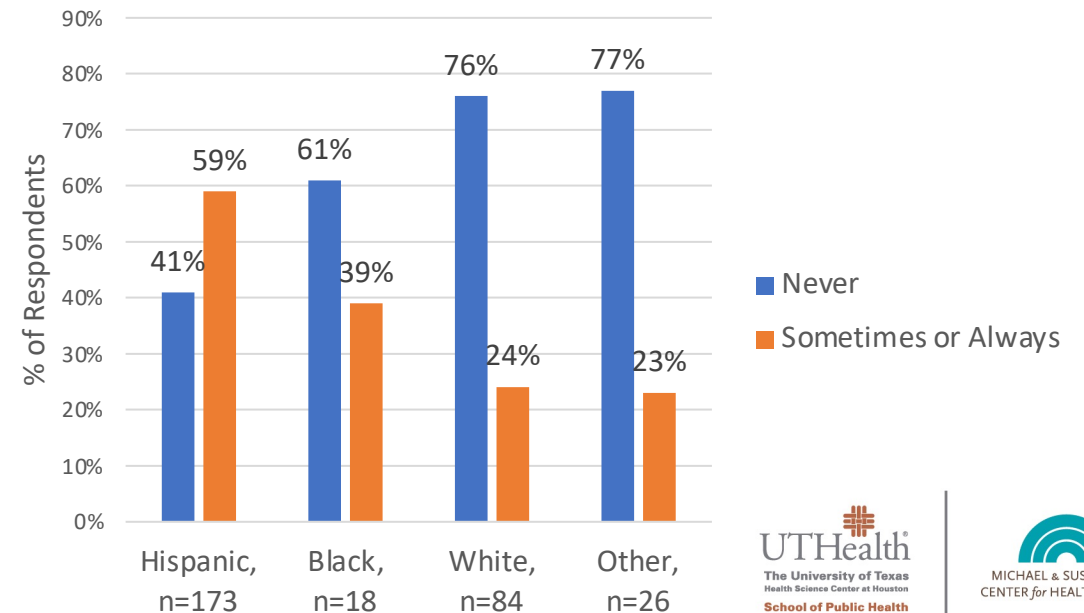
Food Insecurity among Respondents,
n=303



Food Insecurity across race/ethnicity

- 60% of Hispanics reporting being food insecure at the start of COVID compared to 24% of White
- Hispanic respondents had 4.6 times the odds of being food insecure compared to White respondents, $p < 0.001$

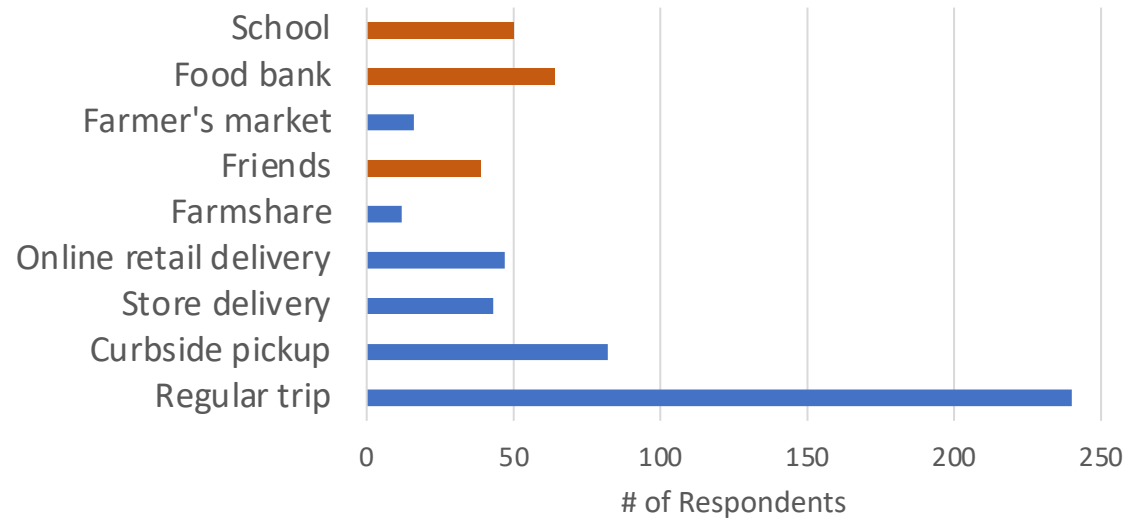
Food Insecurity, start of COVID,
n=301



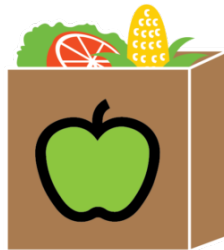
Food Assistance



During the last month, my family was able to get food through... (select all that apply)



- Out of 50 respondents who selected “school”, 44 identified as Hispanic
- Out of 64 who selected “food bank”, 54 identified as Hispanic
- Out of 39 who selected “friends”, 19 are Hispanic, 11 White



Compared to the first 3 months of COVID, how often do you use food pantries/food bank?

	Freq. (%)
Decreased use of food pantry/bank	20 (7%)
Haven't changed frequency of use of food pantry/bank	33 (11%)
Increased use of food pantry/bank	48 (16%)
Not applicable - don't use food pantry/bank	201 (67%)

Conclusion



With the 2nd COVID-19 survey we were able to see how people's food insecurity status changed from the start of the pandemic.



Findings from our survey found that food related issues were not the only concerns facing our respondents during COVID, which allowed us to explore these concerns in greater detail.

Concerns among Central Texas Residents during COVID-19 Pandemic (COVID-19 sub-study)

Yuzi Zhang, MS
Graduate Research Assistant



FRESH: COVID Survey



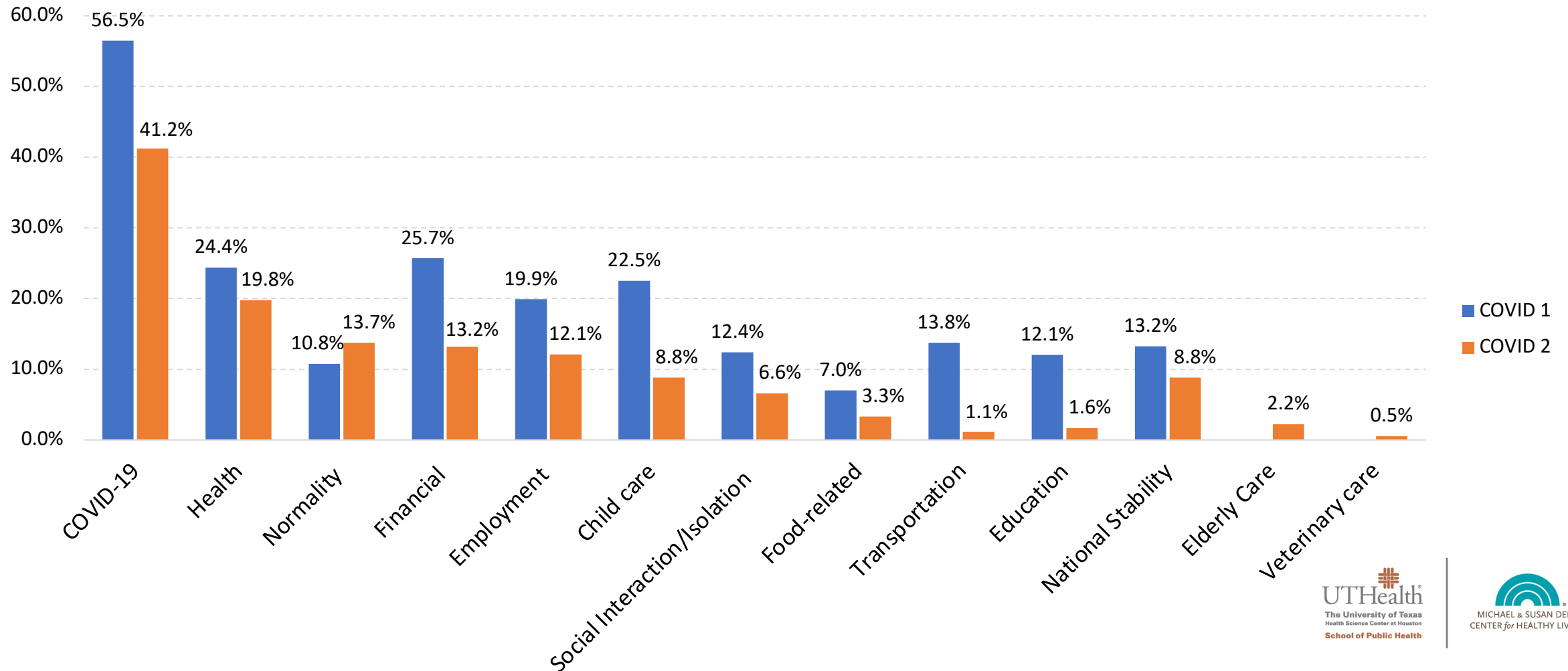
- The last question in the survey
“Please share your greatest concern at this time, or any other thoughts you would like to let us know.”
- Survey 1: June 2020 -July 2020 (N= 282)
- Survey 2: December 2020 - January 2021 (N= 182)



Concerns during the COVID-19



Concerns among Central Texas Residents during COVID-19 Pandemic

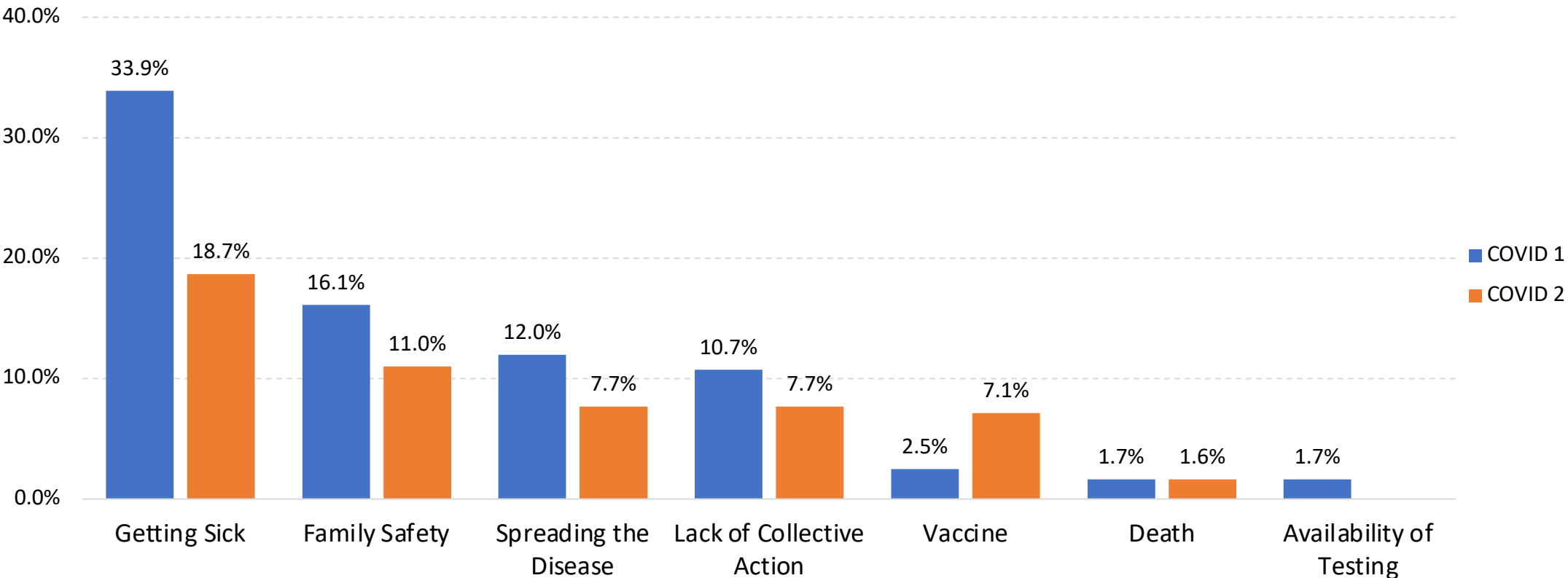


Concerns during the COVID-19

– Subcategories of Concerns



COVID-19 Subcategories Concerns



Quotes



“It worries me when I see people **wearing masks with their nose not covered or gaping openings on the sides**. I am also concerned that a lot of people won't voluntarily get a **COVID-19 vaccine** when it becomes available.”



“My **child** isn't getting enough normal **social interaction**, and I'm not getting the **social instigation to exercise** that I once did (meeting friends for exercise).”



“We are all in this together and it sucks and yet **spending time with my loved one and having time to cook more has been the positive part of all this**. I've learned to bake sourdough bread and taken online cooking classes. I've also baked more cookies and cakes (rarely before, and don't eat bread or gluten before) but **I started swimming and I think I get more sleep** (bc no commute!). My weight has stayed the same so I'm feeling good about it mostly.”

Conclusion

- COVID-19 was the most cited concern 3 months and 6 months into the pandemic.
- Vaccine was cited more 6 months into the pandemic.
- Adapt to new daily routine, stay healthy and positive.



BE-SAFE
FACE MASK



Qualitative Interviews (FRESH Austin) COVID-19 sub-study

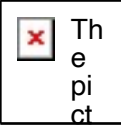
Viridiana Ortiz, MPH, CHES
Graduate Research Assistant

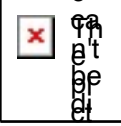


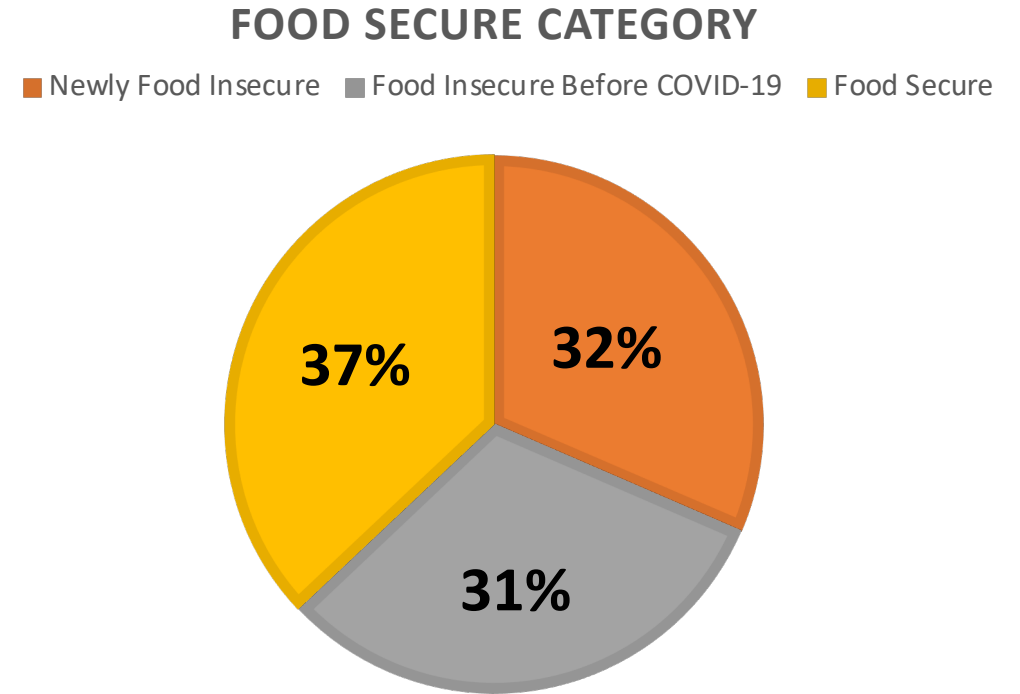
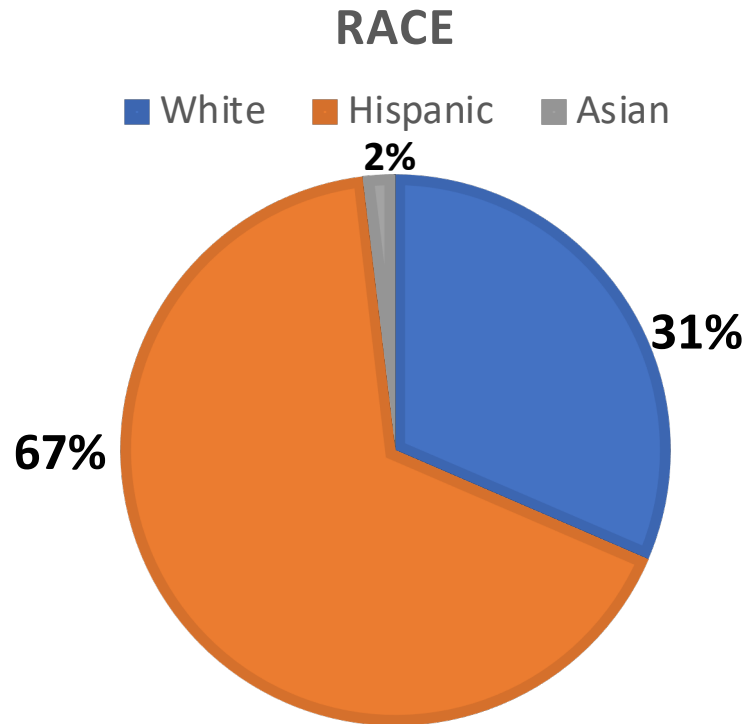
Qualitative Interviews: Demographics



54 interviews were conducted via telephone

 The picture
n = 47, 87%

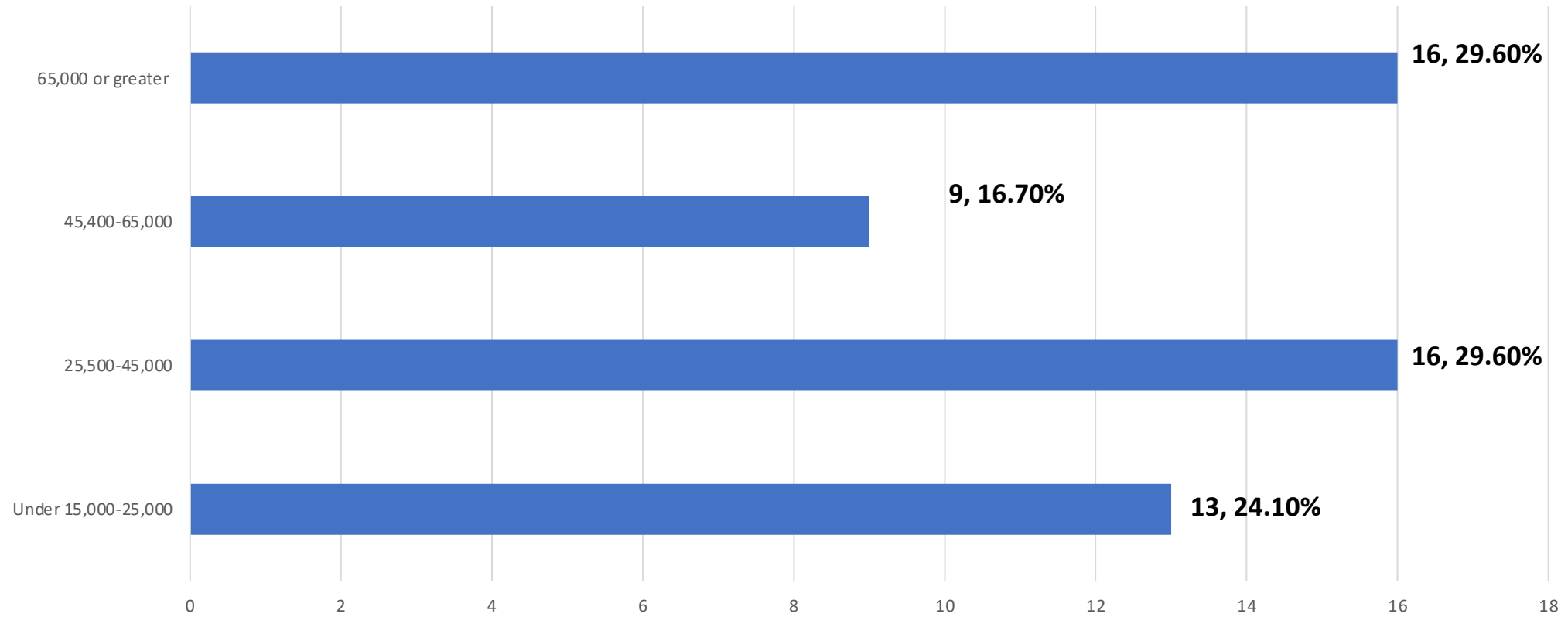
 The picture
n = 7, 13%



Qualitative Interviews: Demographics



Income



Newly Food Insecure



Among those interviewed, 17 were newly food insecure:

- **Employment:** 2 remote work, 3 decrease of hours
- **Financials:** 6 financial issues; 9 no issues
- **Food Bank:** 9 use of pantry/ food donation centers, 8 do not use food pantry
- **Eating and Cooking Habits:** 7 cooking more, 2 increase in food and vegetables
- **Shopping Habits:** 12 in-person, 4 curbside, 1 delivery
- **Food purchases:** 11 longer lasting produce



“We spend less money on food than before, I avoid buying meats because they are very expensive and working hours decreased.”

Food Insecure Before COVID-19



Among those interviewed, 17 were food insecure before COVID-19:

- **Employment:** 1 remote work, 3 reduced hours
- **Financials:** 2 late payments, 2 cancelling services, 3 low-income programs, 6 no problems
- **Food Bank:** 11 use of pantry/ food donation centers, 6 do not use food pantry
- **Eating and Cooking Habits:** 4 cooking more, 5 increase in food and vegetables, 3 more take out
- **Shopping Habits:** 13 in-person, 2 curbside, 1 delivery, 1 smaller stores
- **Food purchases:** 8 longer lasting produce, 3 only what necessary, 1 more F&V
- **Financials:** 2 late payments, 2 cancelling services, 3 low-income programs, 6 no problems
- **Food Bank:** 11 use of pantry/ food donation centers, 6 do not use food pantry



“Now I have to cook more healthy food, because my children are at home. All the meals I prepare are from scratch with healthy ingredients.”

Food Secure

Among those interviewed, 20 participants were food secure:

- **Employment:** 4 working less/unemployed, 3 working remotely
- **Financials** 12 no problems, 1 buying only what is necessary, 1 financial issues
- **Food Bank-**6use of pantry/ food donation centers, 14 do not use food pantry
- **Eating and Cooking Habits:** 13 cooking more, 3 increase in food and vegetables
- **Shopping Habits:** 14 in-person, 4 curbside, 2 delivery,
- **Food purchases:** 4 purchasing more, 4 more F&V, 3 normal shopping, 2 readjusted budget



"My husband works fewer hours than before the pandemic. Now we do not go out to restaurants, walk to the park or visit relatives. We were very stressed because we could not visit a relative who died in Mexico (didn't die from COVID)"

Conclusion

Whether categorized as “food secure”, “newly food insecure” or “food insecure before COVID-19”, interviewees had similar behavior changes:

- Cooking habits
- Eating habits
- Purchasing habits

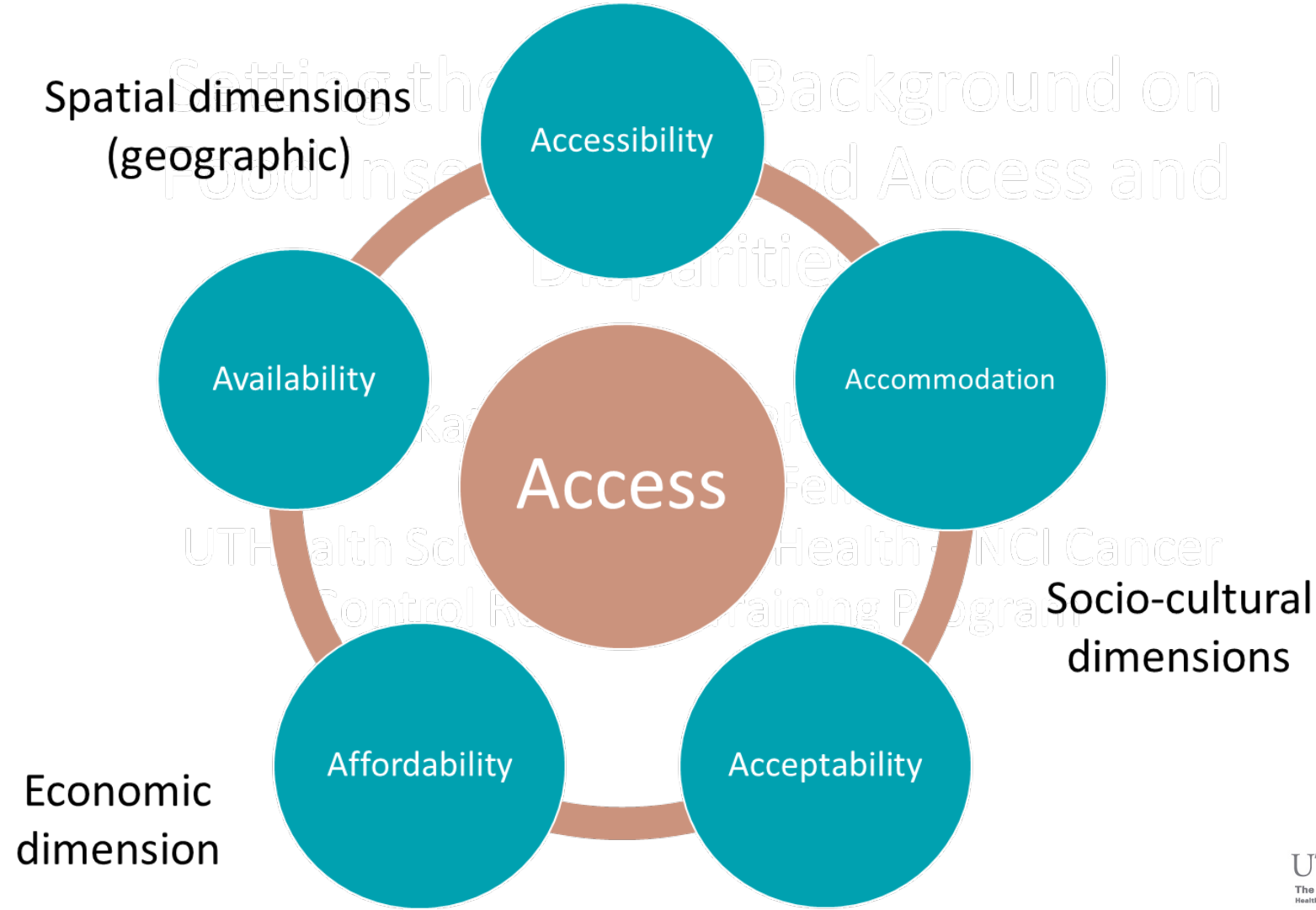


Using novel methods to understand the spatial dynamics of food access before and during COVID-19

Deborah Salvo, PhD
Assistant Professor
Prevention Research Center
Brown School, Washington University in St. Louis



Food access: a complex construct



Using GPS and GIS data to understand spatial food availability and accessibility patterns



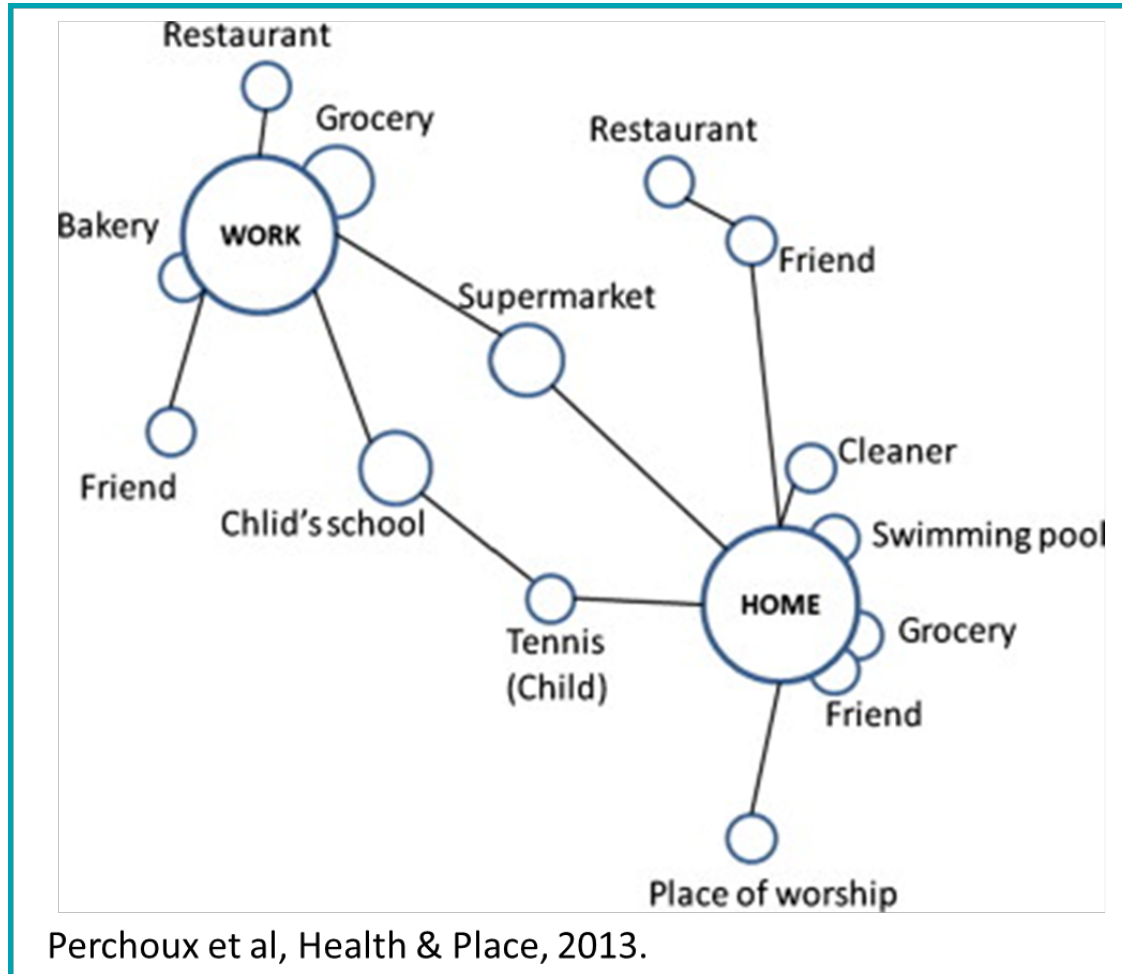
Geographic Information Systems

- Characterize the spatial distribution of food outlets.
- If used alone:
 - can be used to generate static, participant-centric spatial indicators of access.
 - assume that spatial/geographic access to food is only determined by participant's home location.

Geographic positioning systems (monitors)

- Can collect spatially and time-stamped data.
- If used in conjunction with GIS data:
 - allow for the characterization of complex spatio-temporal patterns of food access.
 - do not assume that geographic access is only relative to the home location – consider full “activity spaces”

Using GPS and GIS data to understand spatial food availability and accessibility patterns



- We geocoded:
 - Inventory of food stores and restaurants in Austin, Texas (City of Austin data)
 - Participant's home addresses
- At baseline, a subsample of participants wore time-matched accelerometer and GPS monitors for 7 days
- GPS, accelerometry, and GIS data were integrated and analyzed to:
 - Identify number and duration of confirmed visits to food access points
 - Determine if trips to/from food access point were from/to home location
- The majority of visits to food access stores **do not originate from home, but most end there.**

Developing an agent-based model to simulate food access policy scenarios



- Steps:
 1. Model development
 - Developing the environment (a simulation of Austin, Texas)
 - Populating the environment: adding agents (agents are simulated people)
 - Developing the rules of the behavior (food purchasing patterns)
 2. Model calibration
 - How well does the model predict current food purchasing patterns?
 - Iterative process until a close representation of reality is achieved
 3. Scenario testing
 - Implementing different food access policies to predict how they would impact food purchasing patterns
 - E.g., what if the availability of small grocers were to double in low-income neighborhoods over the next 5 years?

Developing an agent-based model to simulate food access policy scenarios



- Rules in our pre-COVID-19 model:
 - Agents want to shop close to home
 - Agents want to save time
 - Agents want to save money
 - Cultural background influences food preferences (e.g., Hispanics & vegetables)
- Rules in our COVID-19 model:
 - Same as above, plus:
 - Agents want to avoid COVID-19 risk

- Initial results (calibration phase):
 - Our model predicts vegetable purchasing and intake relatively well
 - Use of supermarkets is underestimated and use of convenience stores is overestimated
 - Will include a new rule:
 - Agents want to shop at places that offer a high variety of food and non-food items and services available.

Thank You!

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