



**Nourishing  
Tomorrow**  
*Food Is Medicine*



**Mitigating Food Insecurity in High -Risk  
Pregnant Patients through Integrated  
+ Community -Clinical -Academic Partnership**

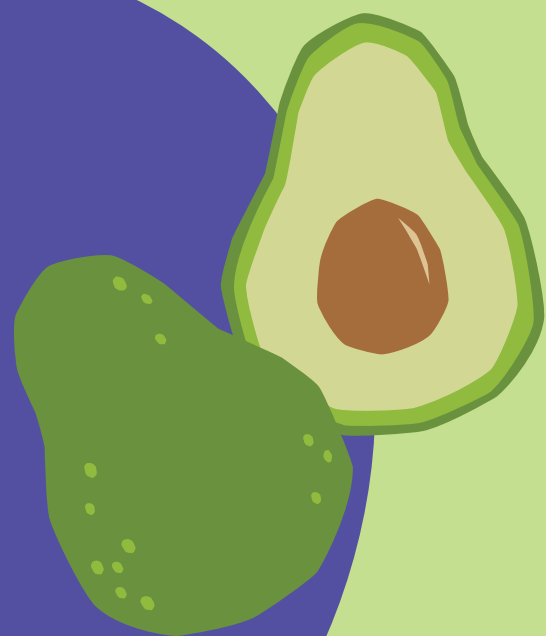
*Co-Principal Investigators:*

**Elaine A. Borawski, PhD, FAAHB**

Case Western Reserve University School of Medicine

**Alissa C. Glenn, PhD, MSPPM**

Greater Cleveland Food Bank



# Nourishing Tomorrow Funders and Partners



National Institute  
of Nursing Research

R01NR021490, 2024 -2029



# TODAY'S PRESENTATION

- **Background**

- Food Insecurity and its Impact
- Evolution of Regional Collaborations in FIM
- Food is Medicine in Ohio

- **Nourishing Beginnings** - the pilot

- Design, findings and lessons learned

- **Nourishing Tomorrow** - current trial

- Partnerships
- Conceptual framework and study design

- **Early Wins, Lessons Learned and Moving Forward**



# PREMISE OF OUR WORK

- Pregnancy is a consequential period for food insecurity because inadequate access to nutritious food may affect maternal health and birth outcomes.
- Preterm birth is a major driver of infant mortality, and food insecurity and poor nutrition are associated with increased risk of adverse birth outcomes.
- Medically tailored groceries are a promising Food Is Medicine strategy that may improve food access while supporting healthier eating and food preparation —but we still need to understand whether, how, and under what conditions they work.



# HISTORY AND BACKGROUND

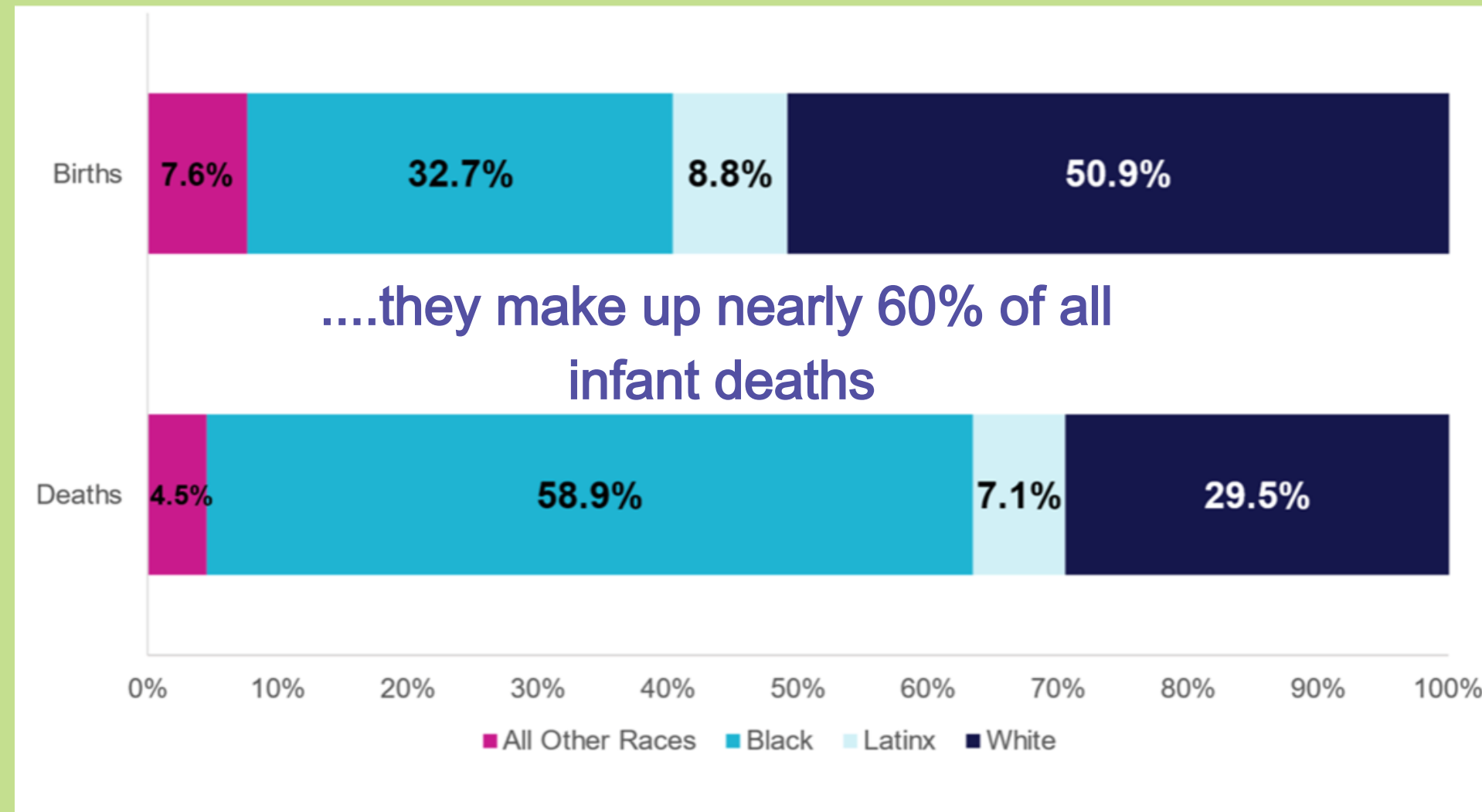


## Problem : Staggering rates of infant mortality in Cuyahoga County and Cleveland

- One of the highest rates in the US
- Substantial racial disparities



First Year Cleveland,  
<https://firstyearcleveland.org/data/>

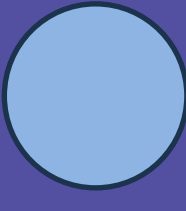


While black babies make up roughly a third of all newborns....

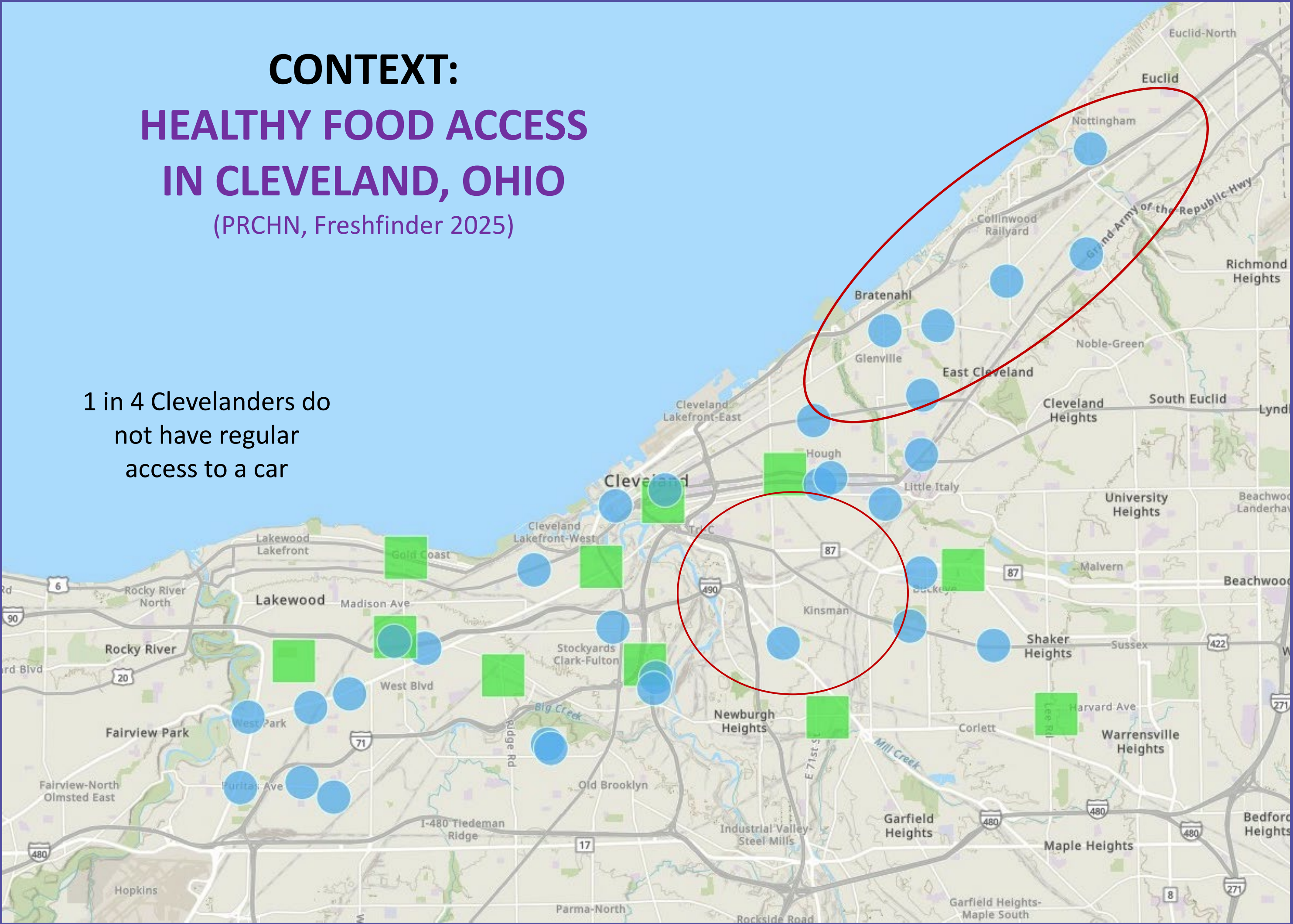
- **Prematurity** is the leading cause of infant death in Cuyahoga County, accounting for 35% of all infant deaths
- **Food Insecurity** is highly correlated with prematurity and priority of FYC

**CONTEXT:**  
**HEALTHY FOOD ACCESS**  
**IN CLEVELAND, OHIO**  
(PRCHN, Freshfinder 2025)

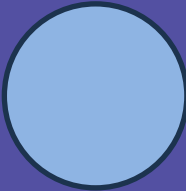
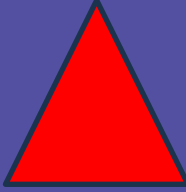
 Full Access  
(Supermarket)

 Good Access  
(Large grocery, no  
bakery or deli)

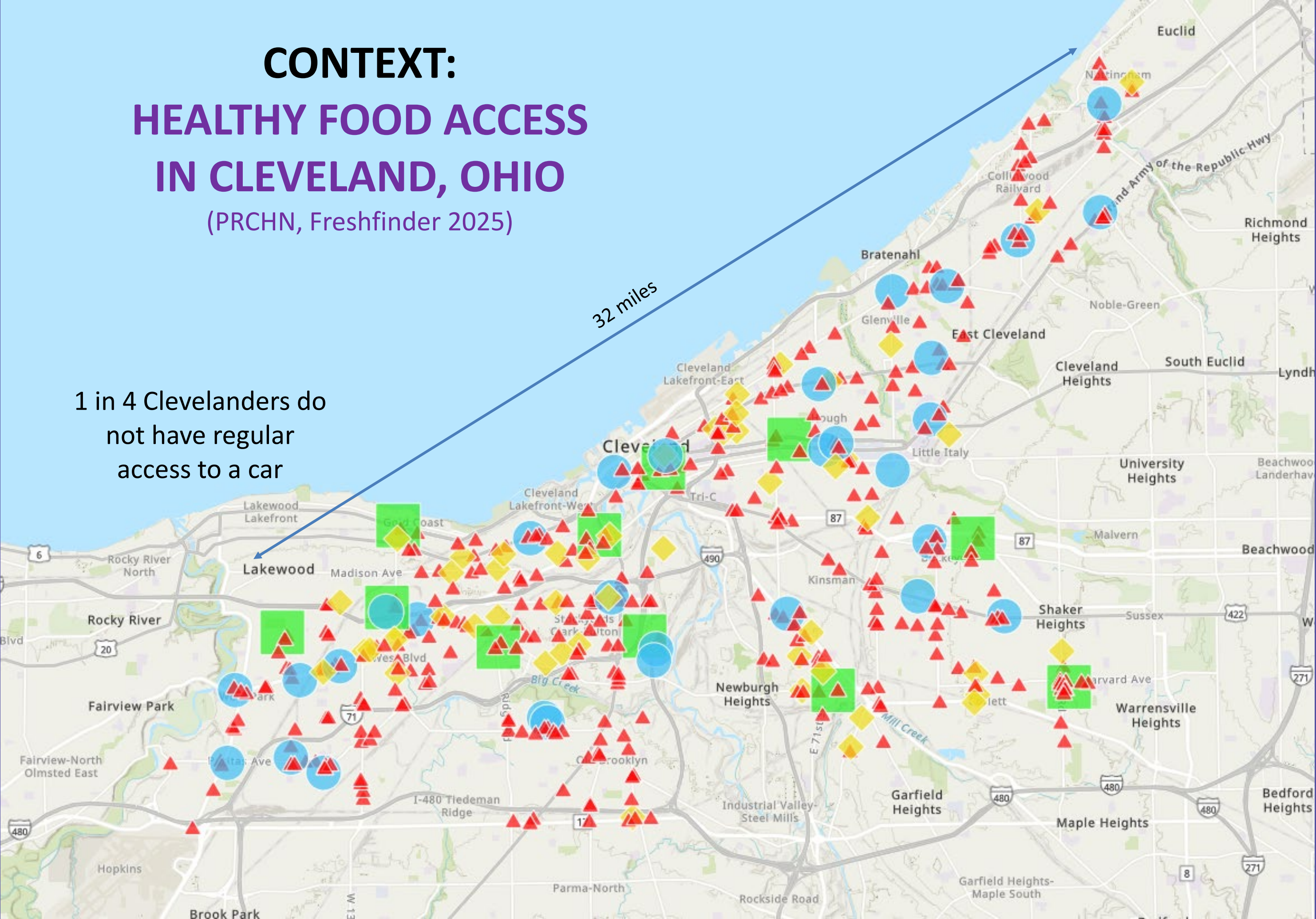
1 in 4 Clevelanders do  
not have regular  
access to a car



**CONTEXT:**  
**HEALTHY FOOD ACCESS**  
**IN CLEVELAND, OHIO**  
(PRCHN, Freshfinder 2025)

-  Full Access  
(Supermarket)
-  Good Access  
(Large grocery, no  
bakery or deli)
-  Limited Access  
(Cornerstore with  
some healthy options)
-  Minimal Access  
(cornerstore, few  
healthy options)

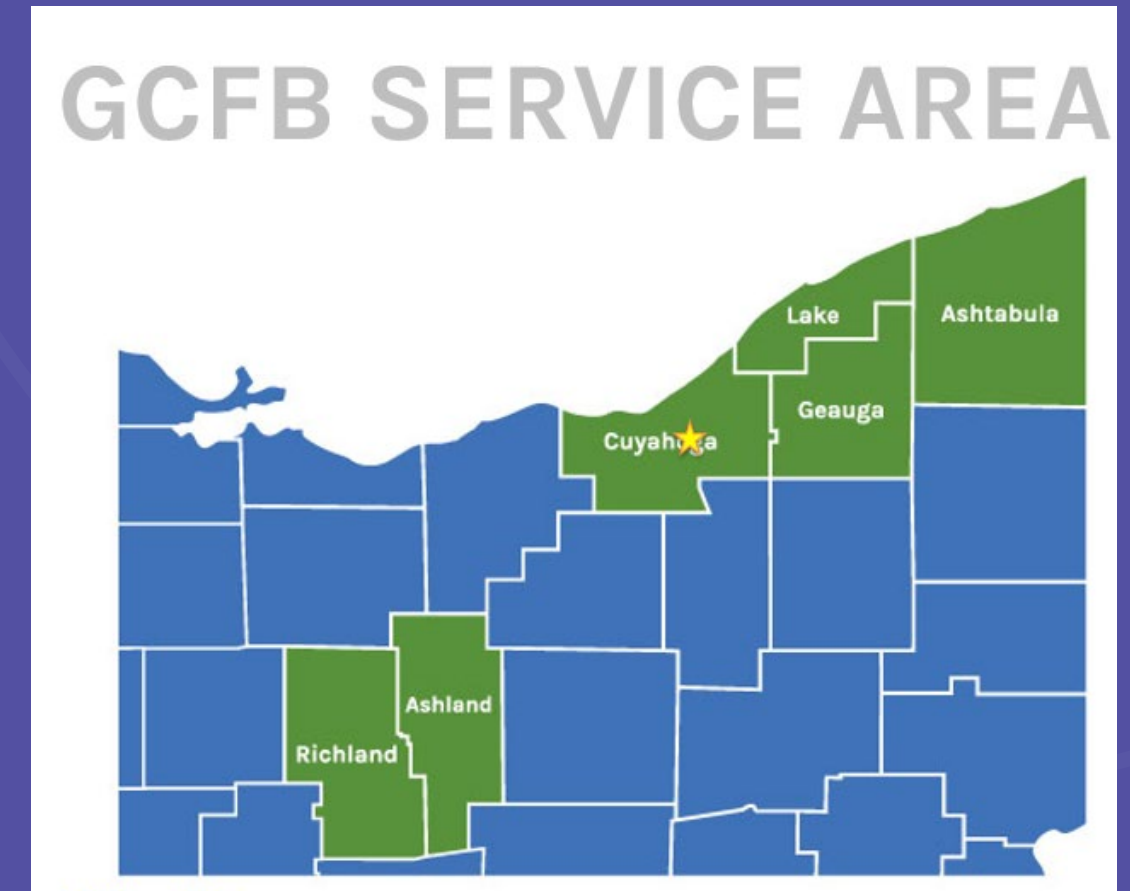
1 in 4 Clevelanders do  
not have regular  
access to a car



# FIM BACKGROUND

- **Food banks** – large regional food distribution centers
  - GCFB provides over 50MM lbs of food per year to 6 counties, through programs and partnerships (1000+)
  - Provide food to over 200 food pantries and hundreds of other programs that are geographically dispersed throughout service territory
  - Independent orgs, but coordinated through state, nation (12 in Ohio, 199 in USA)
- **Food is Medicine**
  - Foundational research that led to an increase in collaboration between food banks and health care organizations
    - Foodbanks -> Feeding America – Hunger in America 2014
    - Healthcare -> Hood et al., 2016 and McGinnis et al., 2002

*\*Food banks and health care are seeing the same high-risk patients, and have become increasingly invested in creating referral systems and innovative programs to improve diet-related conditions*



# Evolution of Regional Collaboration in FIM

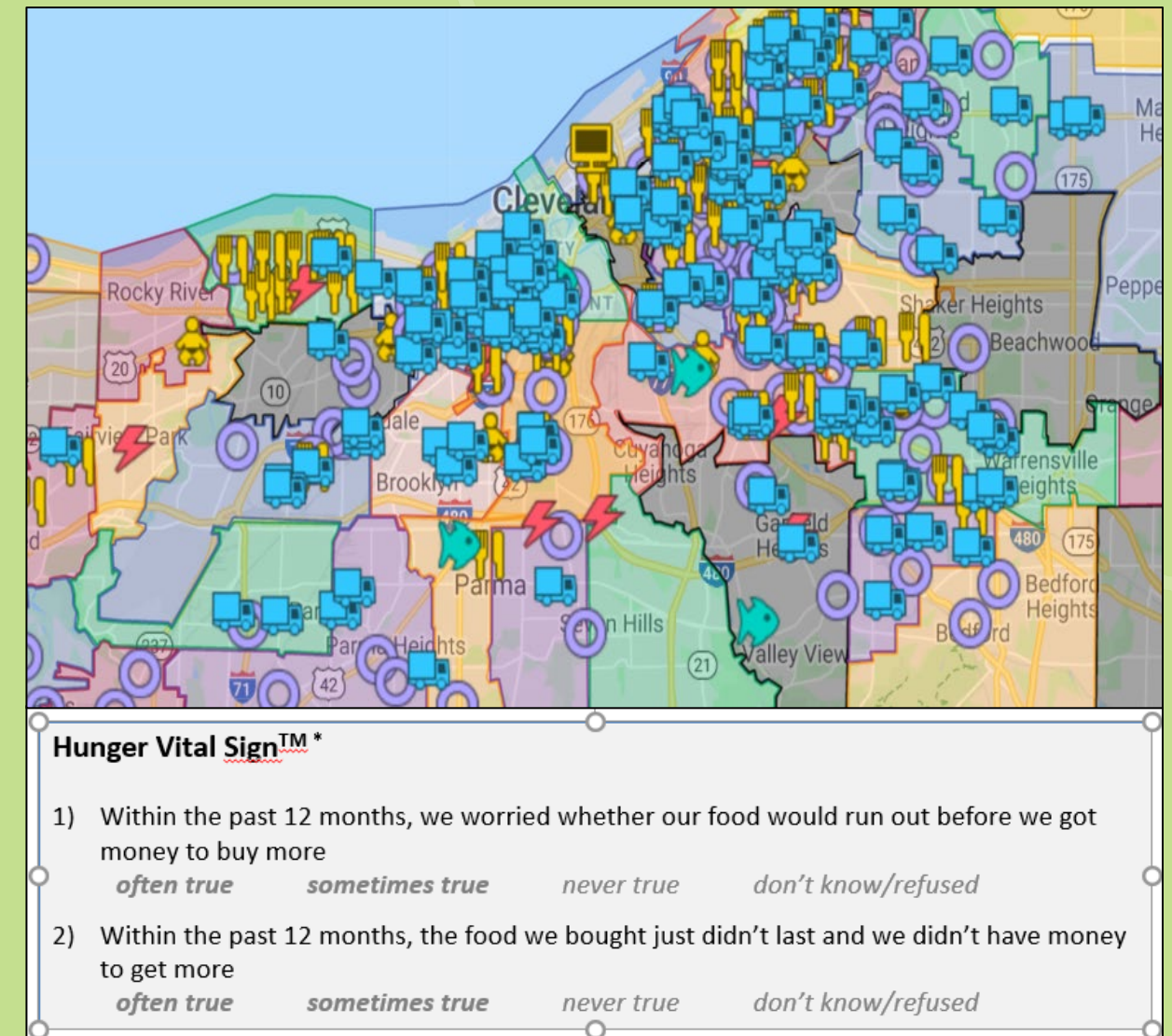
Since 2018, we have been building programs and infrastructure to connect food-insecure patients with appropriate food resources

- FAM clinics/pantries – Medically supportive groceries are provided onsite with nutrition coaching (11 sites across 6 health systems, **8,500 patients**)
- Mobile produce – Onsite, monthly produce distributions in high need areas (24 sites across 6 health systems, **44,000 patients**)
- FI screen and refer – Patients are screened for food insecurity at medical apt and electronically referred to GCFB Root Cause Coordinator for resource navigation to food, public benefits, resources (**18,000+ patients**)

*Through this work we built substantial and productive relationships with partners at multiple major hospital systems, FQHCs, free clinics, and specialized non-profits like dialysis centers.*

*“We want to understand the right intervention for the right patient”*

*Karen Cook, MetroHealth*



# Food is Medicine in Ohio



## Service Availability

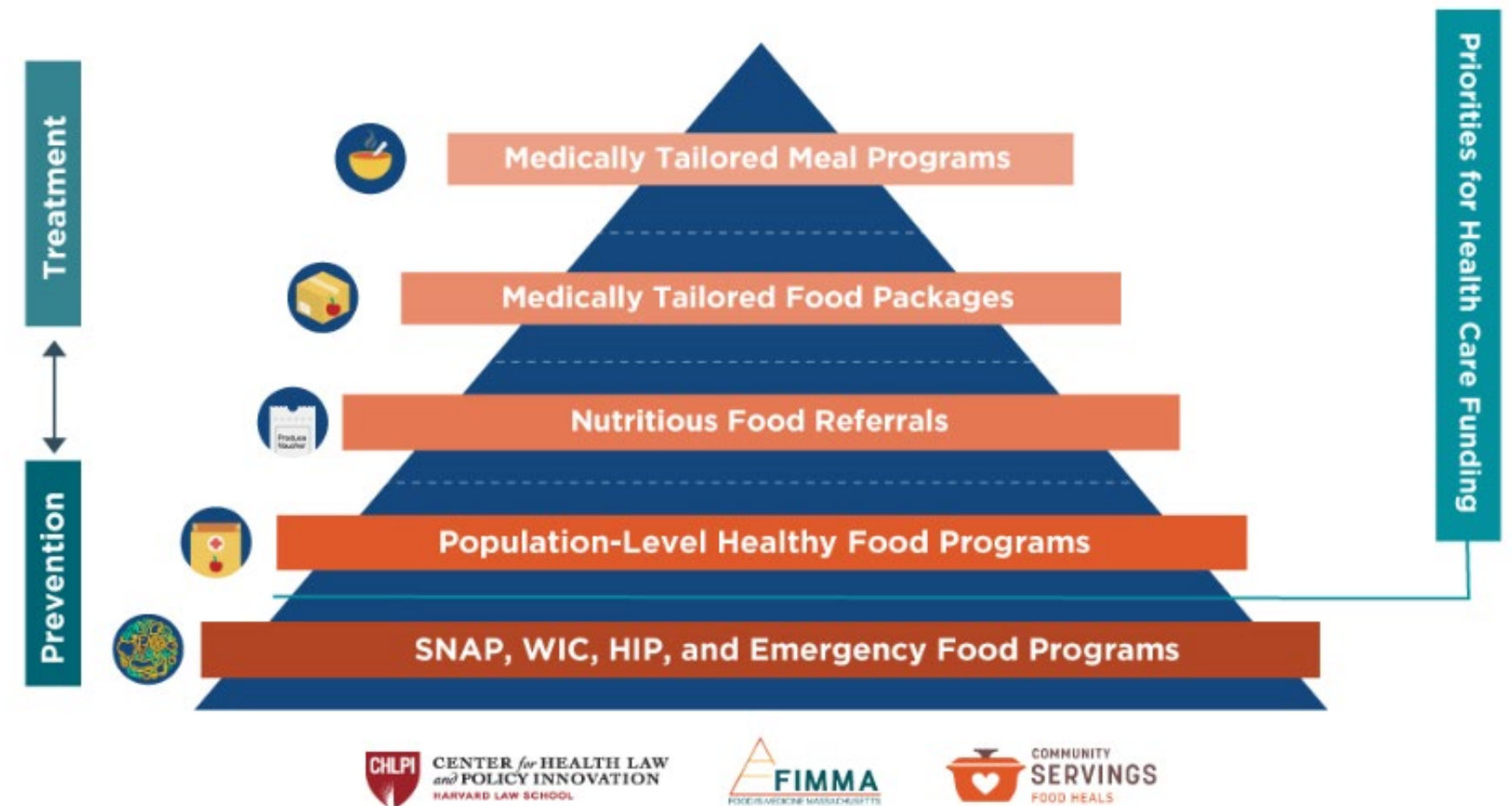
- Most Food Banks in Ohio, including GCFB already provide neighbors with 3 lower layers of FAM pyramid
- Certain patient populations need more due to health and transportation challenges, as well as nutrition knowledge/behavioral factors

## MTG and MTM

- MTM research demonstrates compelling cost-effectiveness for high-risk patients
- MTG have this potential for broader population, but need more research



## FOOD IS MEDICINE PYRAMID



*Food Banks are well-positioned to provide MTGs: state-wide coverage, coordination and collaboration, close health care partnerships, and we're already serving high-risk households.*

*Vision is to be able to navigate patients and households, based on current need, to different levels of FAM pyramid*

# COVID – CREATIVE DISRUPTION

## Rewind back to the early pandemic days of 2020

- FAM programs established and growing
- GCFB provides food for approximately 240 food pantries through 6 counties
- Increase in community need for resources, paired with a reduction of food pantry availability

## GCFB had to think about how to serve more people through different distribution processes

- Tremendous community generosity and public resources opened up resources to acquire and distribute food
- Started direct distribution, often through drive-through
- Governor DeWine deployed the National Guard to support food banks onsite



# Nourishing Beginnings Emerges

## Home Delivery and CHW Engagement are Piloted

- First Year Cleveland, an organization dedicated to reducing infant mortality in NEO, engaged GCFB to provide food and resources to pregnant people
- Drove targeted collaboration with FQHCs, CHWs, and our Pathways HUB to trial delivery methods
- Positive feedback from recipients and CHWs - food packages enabled successful patient engagement

## Long -Term Vision Created

- Understanding our regional infant health outcomes, many organizations and individuals came together to discuss how we can better serve our pregnant neighbors with nutrition resources
- CWRU CTSC provided planning grant for program and research study development
- Nearly 2 years of development by GCFB, Better Health Pathways HUB & CWRU School of Medicine -> **Nourishing Beginnings**



### GOALS

- **Improve nutrition to drive better health outcomes**
  - **High-quality data to drive sustainable funding**
    - **Neighbor-centric design**
    - **Align existing systems**



# NOURISHING BEGINNINGS: THE PILOT





- Heart of the program
- Provides all food
- Coordinated Food delivery
- Nutritional guidance
- Follow up with clients on food preferences and satisfaction

**Greater Cleveland Food Bank**

*Co-PI: Alissa Glenn*

- Connection to CHW organizations
  - CHW service reimbursement through Medicaid supported Pathways
  - Clinical data collection

**Better Health PATHWAYS HUB**

*Co-PI: Chris Mundorf*



- Overall study design, data collection, analyses
- Conduct parent surveys and 24-hour recalls
- Manage all participants payments

*Co-PI: Elaine Borawski*  
Case Western Reserve University School of Medicine  
Prevention Research Center for Healthy Neighborhoods

**Community Health Worker Partner Organizations**

- Community- based organizations
- Provided CHWs who recruited clients and addressed other social needs
- Critical connection to the participants

- ❖ Pregnant with Possibilities
- ❖ Village of Healing
- ❖ MetroHealth
- ❖ United Way
- ❖ BeachBrook
- ❖ Mom's First (Cleveland Dept of Health)

## MULTI-SECTOR COLLABORATION

**Funded by: Vitamix Foundation, Bruening Foundation, CareSource of Ohio, Robert Wood Johnson Foundation**





## All Participants Receive:

- \$100 cooking tools
- Ongoing CHW support and resources
- Assistance with SNAP/WIC
- Produce Perks information

Participant Name: \_\_\_\_\_ ID Number: \_\_\_\_\_ Program: \_\_\_\_\_

### COOKING TOOLS SURVEY

Please circle items you need. Also circle items you own if they are broken or in poor condition.

|                |              |                  |                               |                                  |                   |                |               |
|----------------|--------------|------------------|-------------------------------|----------------------------------|-------------------|----------------|---------------|
| Baking Sheets  | Bowls        | Can Opener       | Casserole Dish                | Chef's Knife                     | Colander/Strainer | Cutting Board  | Dish Towels   |
| Drinking Cups  | Food Storage | Grater           | Measuring Cups & Spoons (Dry) | Measuring Cups & Spoons (Liquid) | Meat Thermometer  | Mixing Bowls   | Mixing Spoons |
| Muffin Tin     | Plates       | Potholders       | Rubber Spatula                | Saucepan                         | Skillet           | Sponge/Dishrag | Tongs         |
| Spatula/Turner | Utensils     | Vegetable Peeler | Vegetable Scrubber            | Dish Drying Rack                 | Fire Extinguisher | Slow Cooker    | Juicer        |
| Freezer        | Microwave    | Oven             | Refrigerator                  | Stove                            |                   |                |               |

Are you missing any of these items? →

Participants randomly assigned into intervention group

n=162

**Food Box Group  
Receives:**

- Food box delivery (every 2 weeks) based on food preference form
- Pantry Box (spices, oils, etc)
- Delivery-specific recipe cards
- Bi-weekly nutrition education tips
- Bi-weekly feedback text

**\$\$/Navigation  
Group Receives:**

- \$30 every 2 weeks
- CHW Healthy food navigation (FreshFinder)
- Easy recipe cookbook
- Nutrition education tips
- Bi-weekly feedback text



# Demographics of Nourishing Beginnings (n=153)



*Program reached those most in need:  
highest risk for infant mortality*

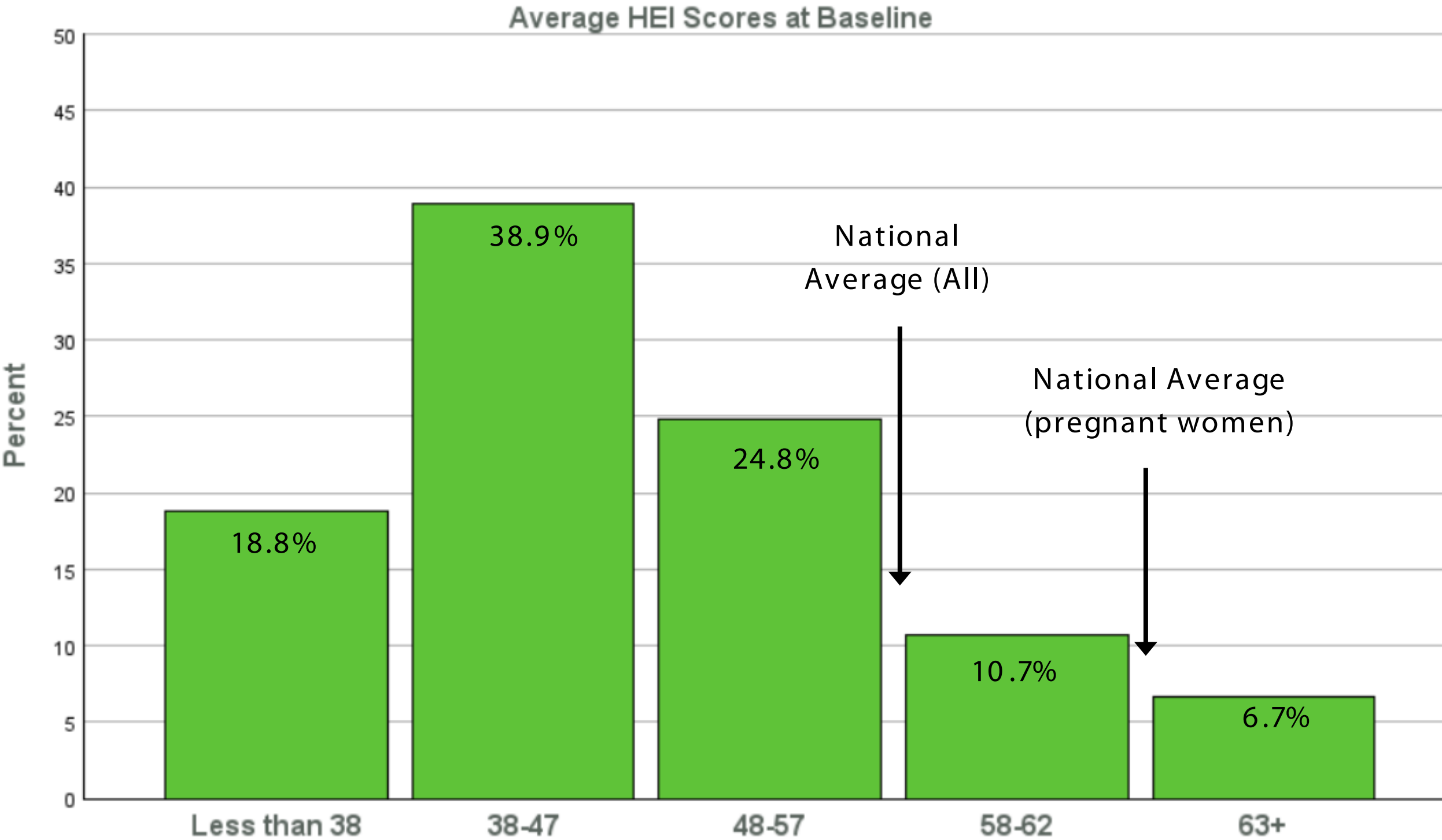
- All on Medicaid
- Predominantly minority (80.4% Black, 8.5% Hispanic)
- 79.5% HS educated or less
- 79.1% on SNAP and/or WIC
- 75% with household income <\$10,000
- 46% have at least one kitchen appliance that is not working.
- 21% with prior LBW baby (8.6% national rate)

# Baseline Healthy Eating Index Score (range 0-100)

*(based on average of two, 24 -hour food recalls (NDSR))*



82.5%  
below the  
national  
average



# Baseline Dietary: Pregnancy Related Nutrients

**12 Nutrients/Components:** Vitamin D, Vitamin B12, Niacin (B3), Vitamin K, Zinc, Omega 3, Calcium, Choline, Folate, Iron, Folate, and Omega3.

**PREGNANCY  
SPECIFIC  
NUTRIENT INDEX**  
(MAX SCORE 12)

# of recommendations  
met (out of 12)

0-1      35.5%

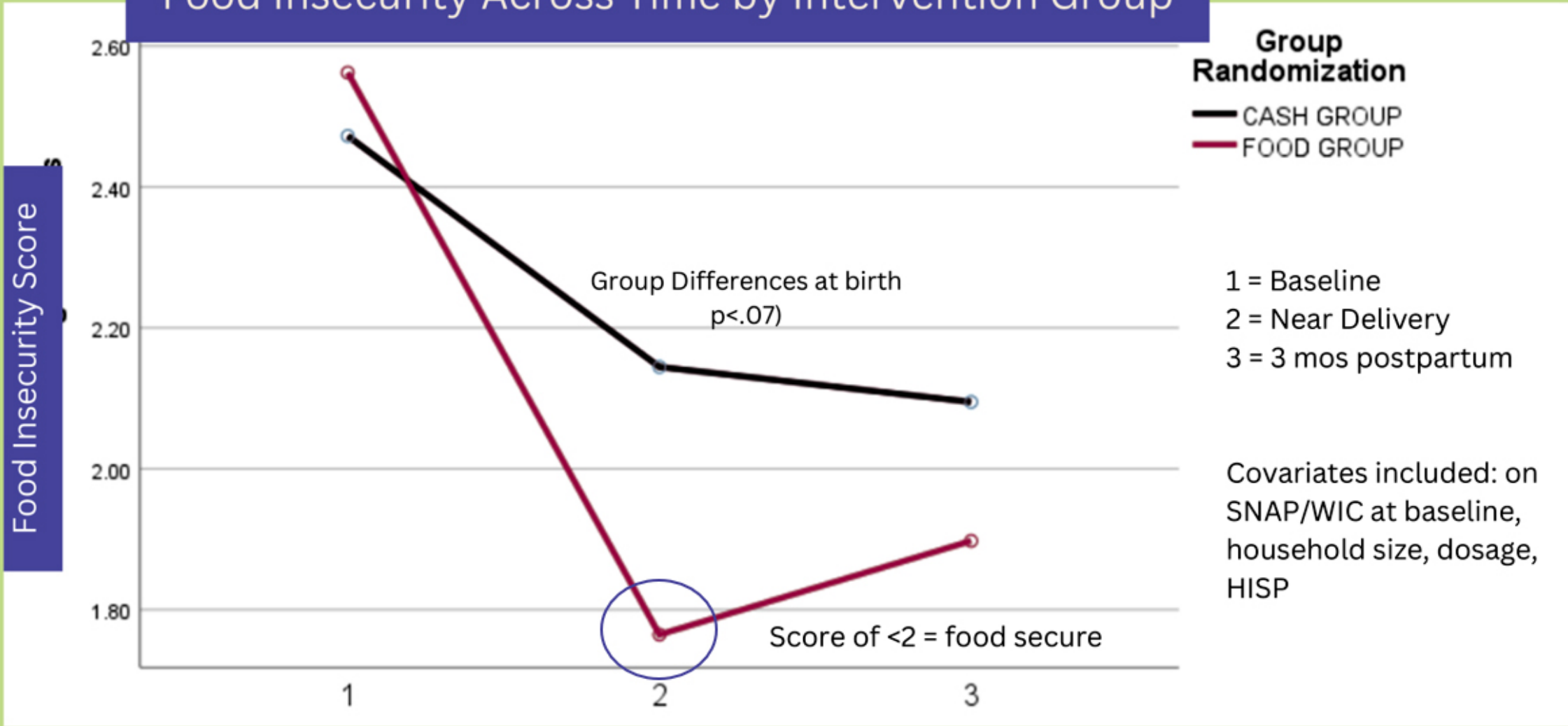
2-4      41.8%

≥5      22.7%

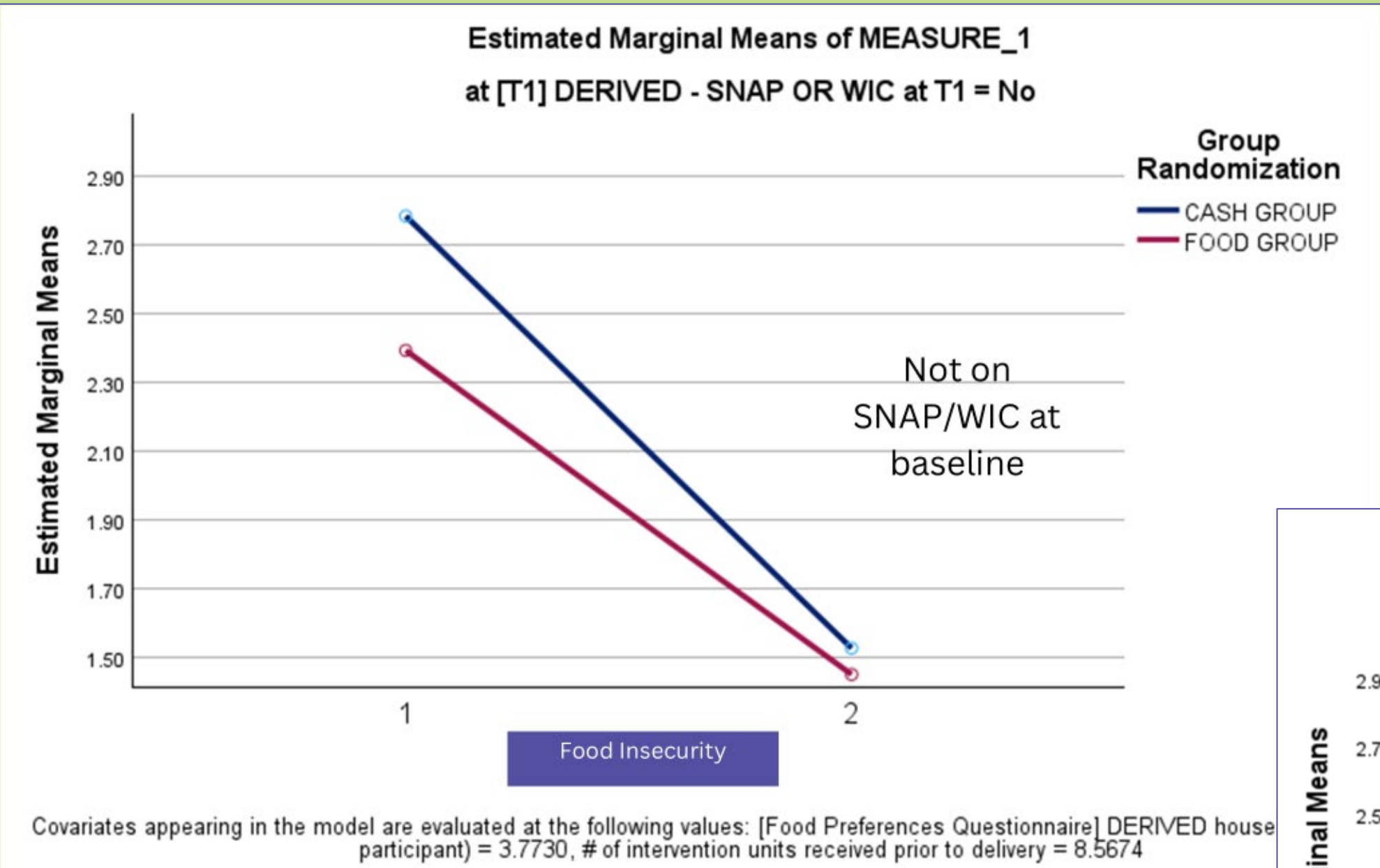
# Primary Outcome: Food Insecurity (Baseline-> 3 mo PP)



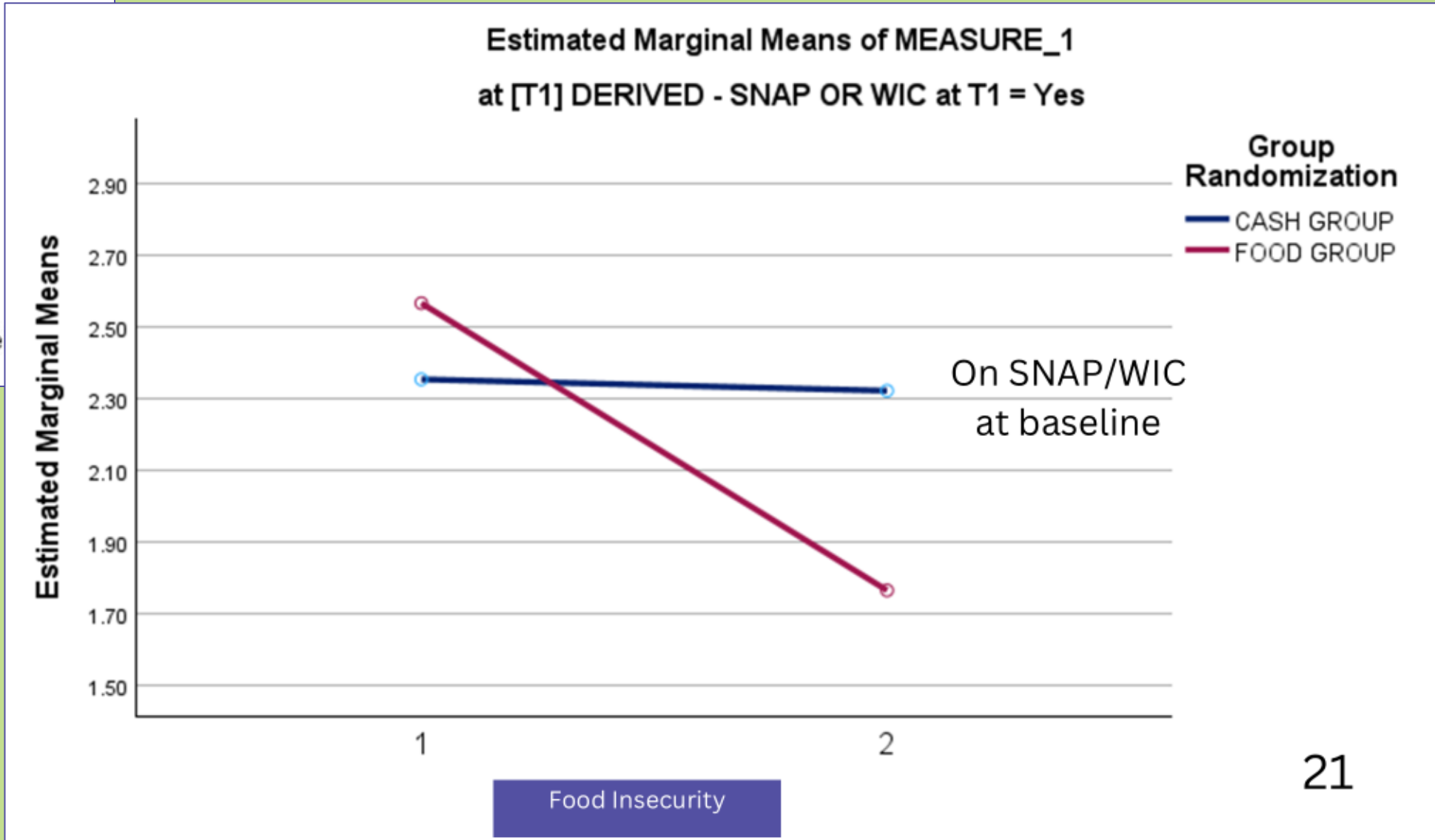
Food Insecurity Across Time by Intervention Group



# Change in Food Insecurity by SNAP/WIC Enrollment at Baseline



NOT ON SNAP/WIC AT BASELINE



ON SNAP/WIC AT BASELINE

# Summary of Results

Longitudinal linear mixed models, T1-T3 (birth)



Significant decreases (time) in:

- Food insecurity  $F= 5.221, p = .006$
- Perceived stress  $F= 5.146, p = .007$
- Depression  $F= 4.928, p = .008$

Significant increases (time) in:

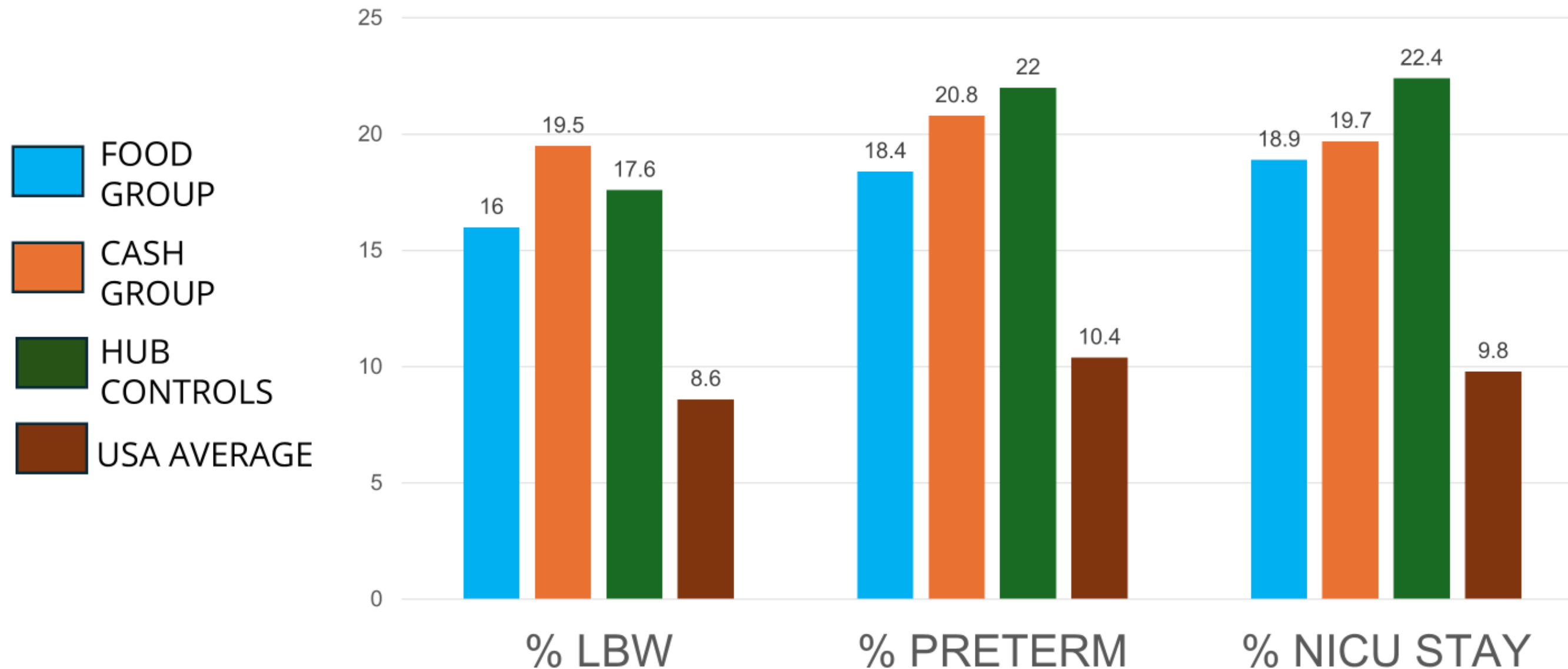
- Healthy food efficacy  $F= 15.223, p < .001$
- Attitudes about cooking  $F= 6.150, p = .003$

However,  
no significant  
time -by- group  
interactions

**Conclusion:** Both food and cash impact FI and psychosocial outcomes. One does not appear to be better than the other

# Group Comparisons of Birth Outcomes (n=153)

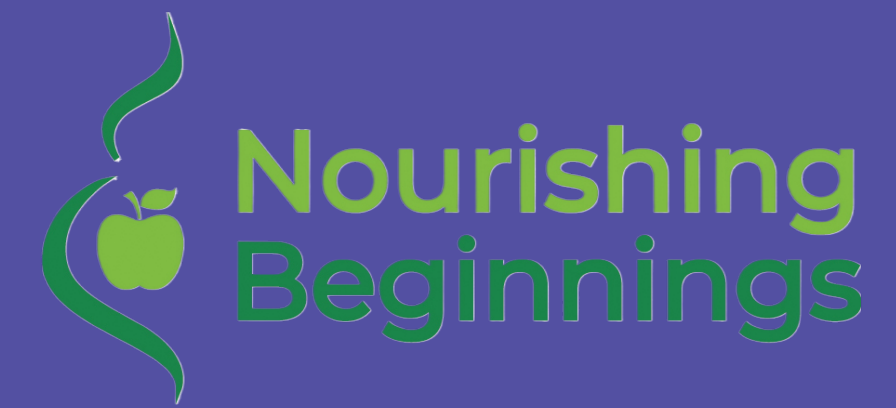
## PROPORTION OF LBW (<2500 GMS), PRETERM (<37 WKS) & NICU STAYS: INTERVENTION (FOOD, CASH) VS. HUB COMPARISON & US AVERAGE



\*\* Ohio LBW Rates (2021-2023)

Overall: 10.9% White Infants: 7.3% Black Infants: 14.8%

# WHAT WE LEARNED



- Medicaid enrolled does not = food insecurity
- Cash group (cash) also received significant support – not the best control group although insightful.
- MTG dosage may have been too low for impact – need to enroll earlier
- Role of existing resources (SNAP/WIC) – need to track SNAP and WIC enrollment over the study period.
- Need more rigorous clinical measures (confirmed gestational age, identify multiple births prior to enrollment, more detail on birth complications – reasons for NICU stays)
- Dietary and nutrient quality based on 24 –food intake – need to add detail on supplements.
- Better understand impact of competing social needs (housing instability; cooking environment)

## What impact has receiving food boxes every other week had on you?

“food is expensive and **food stamps don't last the month when you buy the right things you're supposed to** , and sometimes my kids wanted fruit and yogurt and the food boxes would come and it was nice for me”

“It helped a lot with grocery shopping, as I **do not receive food stamps** . I have a big household (6 kids), **so these boxes were a big help** ”

“It helped to not worry about groceries because you know something was coming in case you're out of food; **it was always something healthy** so you don't eat unhealthy”

“Food boxes **introduced me to a lot of healthy meals** that I ended up really liking”

## What have you liked most about the program?

“I actually like **the surveys** because they **keep me updated with how I am feeling** .  
So, I check in with myself while taking the surveys.”

“It helps out with food and also helps me get supplies  
like **the kitchen supplies that I needed** . Its helpful.”

“Just all the information, all the resources and that **you guys like care about us**  
because you ask us these questions over to see if anything has changed.  
So, **just the level of care** .”

“food boxes help a lot; especially at the end of the month; love the recipes with the  
kids, easier to use the food box items since they're healthier and tries to save money  
on the EBT card when the food runs out; **like teaching the kids healthy choices** ”

**“NB did a lot for me and my family, a village for me”**



**Nourishing  
Tomorrow**  
*Food Is Medicine*

# NOURISHING TOMORROW: THE TRIAL



# STUDY METHODS

**Participants (n=360)** recruited from high social needs, OB clinics at MetroHealth and University Hospitals, who screen positive for food insecurity (2-item Hunger Vital Sign) and referred to hospitals' FIM program.

**Eligibility:** 18 years or older, less than 22 weeks pregnant, singleton pregnancy (verified by ultrasound); English speaking. Population is Medicaid -eligible, low -income.

**Randomization**, 3 intervention arms (MTG picked up or delivered every 2 weeks). 120 per group.

1. Clinic -based, MTGs picked up by patient (standard of care)
2. Home delivered MTGs
3. Home delivery MTGs + supplemental education and support

**Data collection**: Baseline, near delivery and 3 months postpartum

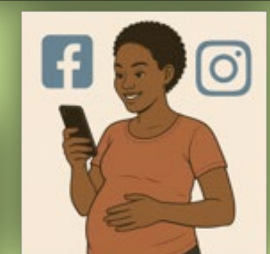
**Built -In Additional Control Group:** Approx. 50% of Group 1 expected to pick up one box of MTGs or less (zero).

**Group Comparisons:** Clinic -based vs. Home -Delivered MTGs, Each group against each other, including no/low vs. high dose Group 1.

Group 1



Group 2



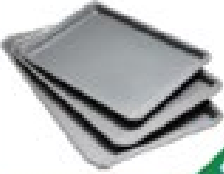
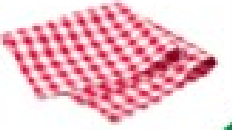
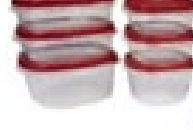
Group 3

All  
Participants  
Receive up  
to \$100 in  
Cooking  
Tools

Participant Name: \_\_\_\_\_ ID Number: \_\_\_\_\_ Program: \_\_\_\_\_

## COOKING TOOLS SURVEY

Please circle items you need. Also circle items you own if they are broken or in poor condition.

|                                                                                                                              |                                                                                                             |                                                                                                                   |                                                                                                                              |                                                                                                                                 |                                                                                                                    |                                                                                                               |                                                                                                              |
|------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------|
| Baking Sheets<br><br>\$9                  | Bowls<br><br>\$12        | Can Opener<br><br>\$15         | Casserole Dish<br><br>\$15                | Chef's Knife<br><br>\$18                     | Colander/Strainer<br><br>\$16   | Cutting Board<br><br>\$10  | Dish Towels<br><br>\$9    |
| Drinking Cups<br><br>\$10                 | Food Storage<br><br>\$12 | Grater<br><br>\$14             | Measuring Cups & Spoons (Dry)<br><br>\$11 | Measuring Cups & Spoons (Liquid)<br><br>\$15 | Meat Thermometer<br><br>\$14    | Mixing Bowls<br><br>\$14   | Mixing Spoons<br><br>\$10 |
| Muffin Tin<br><br>\$15                   | Plates<br><br>\$18      | Potholders<br><br>\$10        | Rubber Spatula<br><br>\$10               | Saucepan<br><br>\$17                        | Skillet<br><br>\$20            | Sponge/Dishrag<br><br>\$6 | Tongs<br><br>\$10        |
| Spatula/Turner<br><br>\$10              | Utensils<br><br>\$16   | Vegetable Peeler<br><br>\$14 | Vegetable Scrubber<br><br>\$10          | Dish Drying Rack<br><br>\$15               | Fire Extinguisher<br><br>\$20 | Slow Cooker<br><br>\$28  | Juicer<br><br>\$10      |
| Are you missing any of these items?<br> |                                                                                                             |                                                                                                                   | Freezer<br>                             | Microwave<br>                              | Oven<br>                      | Refrigerator<br>         | Stove<br>               |

# Food Preference Form

*Confidential*

*Nourishing Tomorrow -- Recruitment and Enrollment  
Page 1*

## Food Preference Questionnaire

---

Record ID \_\_\_\_\_

---

Disclaimer: This document is collected for all participants. Completing this does not guarantee you will be in one of the groups who receive home delivered food boxes from the Greater Cleveland Food Bank.

The following information will be forwarded to the Greater Cleveland Food Bank as they prepare the food boxes for the Nourishing Tomorrow program.

---

Name: [client\_fname] [client\_lname]

---

Current Address Information

Street Address: \_\_\_\_\_  
City: \_\_\_\_\_  
State: \_\_\_\_\_  
Zip: \_\_\_\_\_

If the address needs to be updated, please go to the [form-link:current\_contact\_information:Contact Information Form] to make changes.

---

Household Information:

Household Size: \_\_\_\_\_  
# of Adults, including yourself (18-59) \_\_\_\_\_  
# of Kids (17 and under) \_\_\_\_\_  
# of Seniors (60+) \_\_\_\_\_

---

This is the current phone number we have for you: \_\_\_\_\_  
If you need to update this phone number, please do so in the [form-link:current\_contact\_information:Contact Information Form]

We would like to send you a confirmation reminder within 24 hours of your food delivery, via text or call.  
Is this ok?

☐ Yes    ☐ No

---

### Food Preferences and Considerations

Do you or anyone in your household have any food allergies?

☐ Yes    ☐ No

---

What are the food allergies?

Page 2

---

ic diet we should know about? Select all that apply.

---

---

ips: Vegetables, Fruit, Protein, Dairy, and Grains/Starches. Are  
you prefer NOT to receive (e.g., no strawberries in the fruit

---

hat you really like and WOULD like to receive in your food box  
protein group)?

e items, but they will make any effort to include them if they

---

**ik**

ants. Completing this does not guarantee you will be in one of  
om the Greater Cleveland Food Bank.

---

rrow participants must designate GCFN as proxy so that we  
ryTrak), which allows GCFB to provide the home delivery

z permission to sign on my household's behalf:

---

d, certify that my current gross household income is at or below  
rtment of Job and Family Services Federal and State Funded Food

\_state\_tools], [curr\_zip\_tools]



Collected on all clients, regardless of intervention arm.

Form goes directly to the GCFB to allow personalized food boxes (collects info on allergies, special diets, preferences).

## Preferences confirmed first delivery

All participants  
receive helpful  
tips about eating  
healthy during  
pregnancy

- *designed by registered  
dietitians at GCFB*

## VEGETABLES



Greater Cleveland  
Food Bank



### WHY ARE VEGETABLES IMPORTANT DURING PREGNANCY?

Vegetables are an important part of any diet and are a great source of vitamins and minerals. Regularly including vegetables in your meals will help you and your baby get the nutrients you need. Vegetables also provide fiber, which helps with digestion. Eating a variety of vegetables can also provide you and your baby with the vitamins and minerals you need, including iron, folate, and potassium — essential for a healthy pregnancy.

### WHAT ARE THE BEST SOURCES OF VEGETABLES?

Dark leafy green vegetables like kale and broccoli are some of the best sources of vitamins and minerals that mom and baby need during pregnancy. Eating a variety of vegetables can also provide you and your baby with the vitamins and minerals you need, including iron, folate, and potassium — essential for a healthy pregnancy.

- Asparagus
- Beets
- Broccoli
- Brussels Sprouts
- Carrots
- Cauliflower
- Collard Greens
- Kale

### HOW DO I GET ENOUGH VEGETABLES?

Many of us do not eat enough vegetables to meet the recommended daily intake. A good starting point is to eat at least one cup of vegetables a day to your diet is a great starting point. Once you are more comfortable with vegetables, you can increase the amount you eat. Eating a variety of vegetables can also provide you and your baby with the vitamins and minerals you need, including iron, folate, and potassium — essential for a healthy pregnancy.

15500 South Waterloo Road | Cleveland, OH | 44110 | 216.738.2265 | GreaterClevelandFoodBank.org

## FOODS TO AVOID DURING PREGNANCY



### WHY SHOULD I AVOID CERTAIN FOODS DURING PREGNANCY?

Some foods are more likely to contain harmful bacteria or chemicals than others. Eating these foods can increase the risk of complications during pregnancy. It is important to avoid alcohol as it has no known benefits and can cause birth defects.

### FOODS TO AVOID DURING PREGNANCY

- Processed meats: hot dogs and lunch meats
- Soft cheeses: feta, brie, queso blanco, queso fresco, and queso panela
- Deli salads: ham salad, chicken salad, tuna salad, and egg salad
- Meat-based pates or spreads
- Raw, unpasteurized milk or foods containing unpasteurized milk
- Raw fish and seafood high in mercury: tilefish, shark, swordfish, and king mackerel

### PRACTICING FOOD SAFETY

One way to avoid harmful bacteria is to always practice food safety when cooking. This includes:

- Washing your hands and surfaces before and after preparing food
- Using separate cutting boards for produce and meat/fish/poultry
- Cooking foods to proper internal temperatures:
  - Poultry (turkey/chicken): 165°F
  - Fresh pork: 145°F with 3 minute rest time
  - Precooked ham: 165°F
  - Eggs: cook until yolk and white are firm
  - Fish/seafood: cook until flesh is opaque (145°F for fish)
- Refrigerating any perishable foods or leftovers within 2 hours of serving

15500 South Waterloo Road | Cleveland, OH | 44110 | 216.738.2265 | GreaterClevelandFoodBank.org

## VITAMIN D



Greater Cleveland  
Food Bank



### WHAT IS VITAMIN D?

Vitamin D is an important vitamin found in our food and is made by our bodies when we spend time in the sun. During pregnancy, vitamin D helps develop your growing baby's teeth, bones, kidneys, heart, and brain.

### WHERE DOES VITAMIN D COME FROM?

While we make vitamin D in our bodies through our skin, we also need to get vitamin D through the foods we eat. Examples of food high in vitamin D include:

- 2% Vitamin D Fortified Milk
- Fortified Breakfast Cereals
- Cod Liver Oil
- Liver
- Egg Yolks
- Mushrooms, especially Shiitake
- Salmon
- Sardines
- Soy, Almond, Oat Milk; Vitamin D Fortified
- Trout
- Tuna

### HOW DO I GET ENOUGH VITAMIN D?

Getting enough vitamin D is important, as it helps us absorb other important minerals like calcium. Along with taking a daily prenatal vitamin, including one of the foods in the above list to your daily meals will help you meet your vitamin D goals. Pair any of these foods with healthy fats like nuts, seeds, avocado, or olive oil for maximum absorption!

15500 South Waterloo Road | Cleveland, OH | 44110 | 216.738.2265 | GreaterClevelandFoodBank.org



# Group 1: Clinic -Based MTG

MetroHealth: Food as Medicine Clinic

University Hospitals: Food for Life Market

- Patient must make appointment
- Patient must pick up MTGs
- Some transportation assistance is provided

- **Standard of Care** for Food Insecurity Referrals
- FIM Clinic/Market staffed by RD and diet techs
- All food is provided by the GCFB
- Patients receive a standardized volume of MTGs, adjusted, per guidelines, by household size.
- Number of selections within each food category by household size follow the Food Choice Selection Guide.



|                | Household Size (# People) |         |          | FOOD CHOICE SELECTION GUIDE                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |  |
|----------------|---------------------------|---------|----------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--|
| Food Group     | 1 to 2                    | 3 to 4  | 5+       | Choice Description                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |  |
| Vegetables     | 6 to 7                    | 9 to 11 | 14 to 16 | <ul style="list-style-type: none"> <li>• Fresh vegetables: 1 head, 1 bunch or 1 pound = 1 choice</li> <li>• Canned vegetables (no salt added), 15 oz = 1 choice</li> <li>• Spaghetti sauce, 15 oz = 1 choice</li> <li>• Frozen Vegetables, 16 oz = 1 choice</li> </ul> <b>*Aim 1/2 perishable and 1/2 shelf-stable</b>                                                                                                                                                                                                      |  |
| Fruits         | 4 to 5                    | 8 to 10 | 12 to 14 | <ul style="list-style-type: none"> <li>• Fresh fruit: 1 bunch, 1 pound, or 4 pieces = 1 choice</li> <li>• Frozen Fruit, 12 - 16 oz = 1 choice</li> <li>• Canned Fruit, 15 oz = 1 choice</li> </ul> <b>*Aim 2/3 perishable and 1/3 shelf-stable</b>                                                                                                                                                                                                                                                                          |  |
| Proteins       | 3 to 4                    | 6 to 7  | 8 to 10  | <ul style="list-style-type: none"> <li>• Canned Beans, 15 oz = 1 choice</li> <li>• Dried beans, 1 pound = 1 choice</li> <li>• Peanut Butter, 18 oz = 2 choices</li> <li>• Dozen eggs = 1 choice</li> <li>• Frozen meat, fish, poultry, 1 lb = 2 choices</li> <li>• Canned chicken, tuna, salmon, 5 oz, 1 can = 1 choice</li> <li>• Tofu, 14 oz package = 1 choice</li> </ul> <b>*Aim slightly more shelf-stable than perishable</b>                                                                                         |  |
| Dairy          | 4 to 5                    | 7 to 9  | 9 to 11  | <ul style="list-style-type: none"> <li>• 1/2 gallon milk, 1% or skim = 1 choice</li> <li>• Shelf Stable milk, 1% or skim quart = 1 choice</li> <li>• 4 yogurts, 6 oz each = 1 choice</li> <li>• Cottage Cheese, 8 oz = 1 choice</li> <li>• Mozzarella, Cheddar, Swiss cheese, 8 oz = 1 choice</li> </ul> <b>*Aim 1/2 perishable and 1/2 shelf-stable</b>                                                                                                                                                                    |  |
| Grains/ Starch | 2 to 4                    | 5 to 6  | 8 to 9   | <ul style="list-style-type: none"> <li>• Whole grain bread, 1 loaf = 1 choice</li> <li>• 6 rolls or bagels = 1 choice</li> <li>• Package Tortillas, whole grain = 1 choice</li> <li>• Brown Rice, 1 bag, 16 oz = 1 choice</li> <li>• Pasta, 16 oz = 1 choice</li> <li>• Oatmeal, 18 oz = 1 choice</li> <li>• Ready to Eat Cereal, 12 - 16 oz = 1 choice</li> <li>• Corn, 15 oz = 1 choice</li> <li>• Potatoes, yams, 1lb bag = 1 choice</li> </ul> <b>*Aim half and half, OR slightly more shelf-stable than perishable</b> |  |

# Group 2: Home -Delivered MTG

## Medically tailored groceries



## 2-3 Recipes in each box



Core ingredients provided in each box



Cooking oils (every 1 -2 months)

- Food boxes delivered to patient's home biweekly.
- Packing of food box follows same standardization as Group 1



- Food selection based on preferences and household size

# Group 3: Home-Delivered MTG PLUS

*(MTG + education and support)*

Medically tailored groceries



2-3 Recipes in each box

Sweet Potato Oven Fries



#### INGREDIENTS

- 1 large sweet potato (yam) or 1 pound
- Up to 1/4 tsp salt
- 1-2 tsp cornstarch
- 1 1/2 Tbs cooking oil
- Non-stick cooking spray

#### DIRECTIONS

1. Place oven rack in center; heat to 425° F.
2. Wash and scrub potatoes; dry then slice into 1/2-inch rounds.

Prep: 10 minutes  
Cook: 45 minutes  
Makes: 4 servings

Brown Rice Burrito Bowl



#### INGREDIENTS

- 1 1/2 cup dry brown rice
- 1 (15oz) can beans (black, pinto, etc.); drained and rinsed
- 1 (15 oz) can of corn, drained
- 1 tomato, chopped (or 1 cup of prepackaged salsa)
- 1 tsp olive oil
- 1/2 tsp kosher salt
- Optional add ins: Avocado, red onion, lettuce, cheese, cilantro, sour cream, cooked chicken

#### DIRECTIONS

1. Cook the rice according to package instructions. Once cooked, add oil and sprinkle with salt to taste.
2. Add beans, corn, and tomatoes (or salsa) together in a large bowl. Sprinkle with salt to taste.
3. Assemble salad bowls by combining rice, bean mixture, and any optional add ins. Enjoy!

#### MAKE IT A MEAL

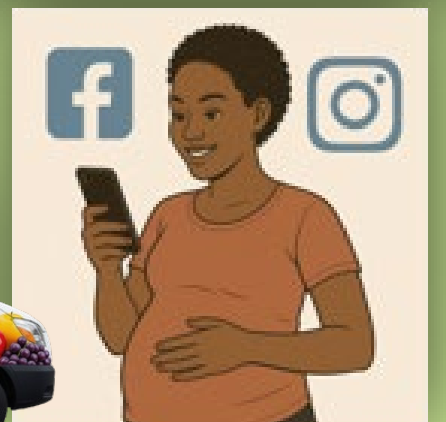
This bowl is a meal in itself! Pair with a colorful fruit salad for an even more nutrient packed meal.

**WHOLE GRAINS**  
Brown rice is a great source of whole grains! It contains important nutrients like iron, B vitamins, and fiber, all important for overall health and wellness!

Core ingredients provided in each box

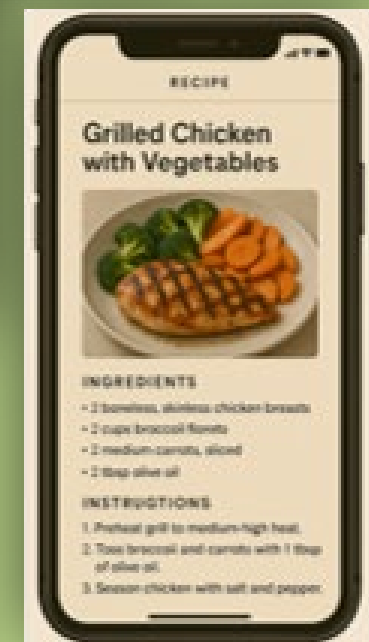


Cooking oils (every 1-2 months)



- Packing of food box same as Group 1 and 2.
- Food selection based on preferences and household size

- 1:1 and group support
- Use of multiple social media platforms
- Live demonstrations.
- Cooking and education videos



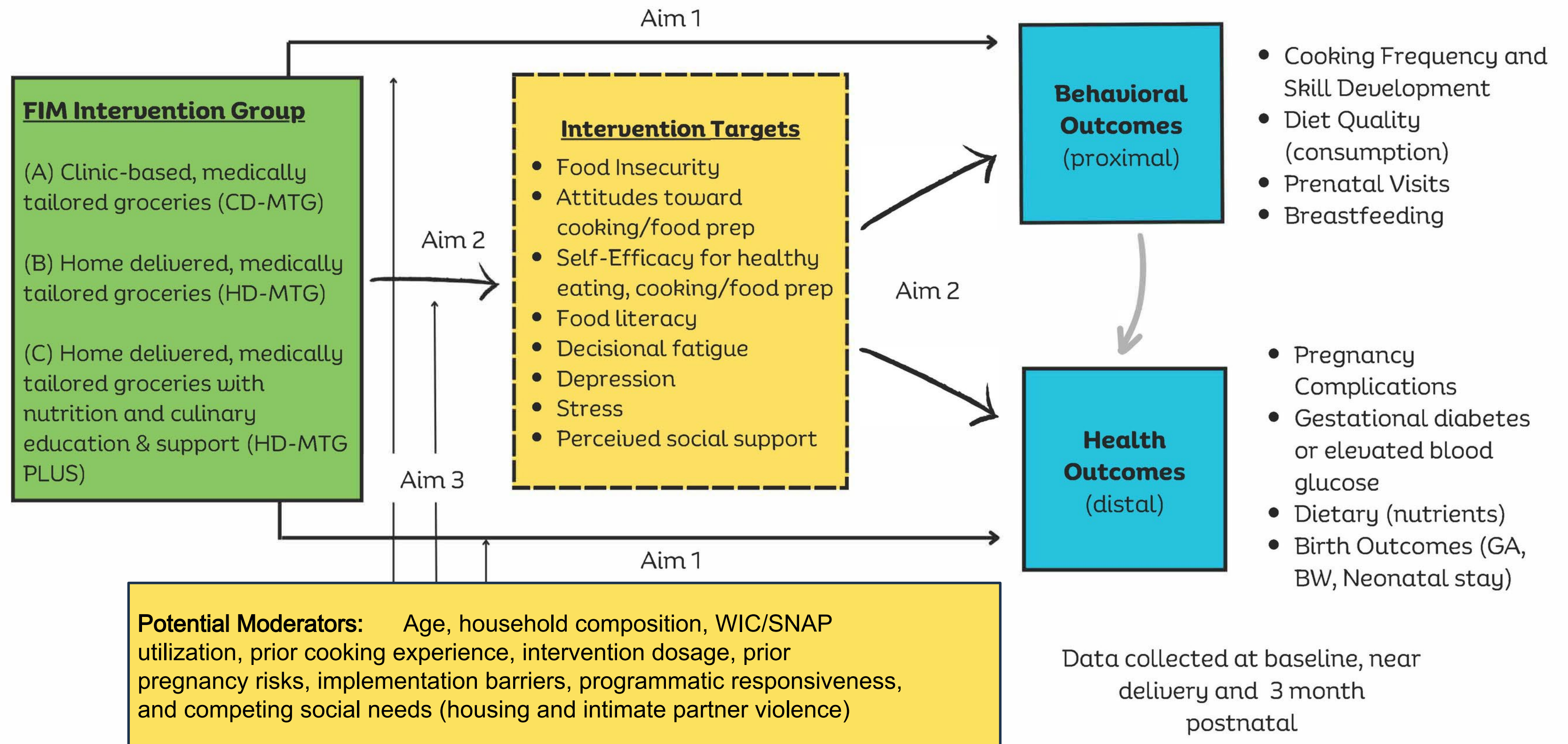
# STUDY AIMS

*(as written in the grant)*



- 1. Compare the **effects of three distinct approaches** (CB-MTG, HD-MTG, and HD -MTG PLUS) on **behavior** (i.e., cooking skills, dietary choices, prenatal visits), **maternal health** (pregnancy complication, gestational diabetes, nutrient intake), and **fetal health** (gestational age, birthweight, birth complications and hospital stay
- 2. Explore the **impact** of the three approaches **on intervention targets** and their **possible mediating relationships** with behavioral and health outcomes, such as food literacy, self-efficacy, stress, and decisional fatigue.
- 3. Explore potential **moderators** (e.g., housing stability, cooking environment, SNAP/WIC use, dosage, ) and process indicators (e.g., intervention dosage) on intervention uptake, intervention targets, behavior, and health outcomes.

**Figure 1: Nourishing Tomorrow Study: Impact of Three Medically Tailored Groceries (MTG) Approaches on Behavioral and Health Outcomes Among Food Insecure Pregnant Individuals**



# Current Status

(Oct, 2025 – Aug, 2026)

RECRUITMENT  
GOAL=360

|                                  |             |                                                                             |
|----------------------------------|-------------|-----------------------------------------------------------------------------|
| # referred based on FI screening | 255         |                                                                             |
| # consented                      | 168 (65.9%) | Not interested (n=31)<br>Unable to reach (n=51)<br>No longer eligible (n=3) |
| # randomized                     | 145 (86.3%) | In progress (n=11)<br>Baseline data incomplete (n=12)                       |

Group 1 – Clinic-Based MTG (n=48)

Group 2 – Home Delivered MTG (n=48)

Group 3 – Home Delivered MTG Plus Education And Support (n=49)

## Follow Up Status

# Post randomization pregnancy losses

n=5 (3.4%): 4 <24 weeks, 1 @ 24+ weeks

Anticipated study retention at birth (T2): 93%

# Early Wins, Lessons Learned and Moving Forward





# EARLY WINS

- A highly engaged, functioning multisector partnership.
  - Research, GCFB, two health systems, and multiple FIM clinics are operating as one coordinated trial.
- Recruitment has gone smoothly
  - Successful integration into real -world clinical environments.
  - Recruitment/referral and food access aren't occurring in a research vacuum.





# LESSONS LEARNED

- Data sharing across health systems require coordination and compromise
  - Two separate REDCap systems
- Burden on the Food Bank
  - Reduced end point from 6 mos. to 3 mos. postpartum
- Harmonizing the EHR data
  - Both use EPIC, but where data are actually recorded in the EHR matters
- Household/financial stability
  - Patients moving, changing phones, switching providers

# Moving Forward

## What we hope to learn

- By studying pathways (nutrition, stress, social support), determine what elements of MTGs are most beneficial and effective
- Understand who are the best candidates for MTGs and is there useful segmentation that can distinguish who benefits from delivery/pick-up?

## Future questions :

- Are some patients better served by MTMs? Is so, who and under what circumstances/during what timeframes (e.g., first three months postpartum)?
- What happens when the intervention stops?
- How do we successfully off-ramp, and when, to other resources?

## Standardization and Sustainability Plan is Needed

- Continue to advance Ohio's Food is Medicine Collaborative to identify viable opportunities for sustained funding
- Work with national networks like Feeding America and the Food is Medicine Coalition to advance research, implementation, and dissemination



# COMMUNITY -RESEARCH COLLABORATION

Nourishing Tomorrow is successful because we assembled a group of partners **who are aligned in a vision of better health outcomes for our community**, who are willing to work through challenging logistics, awkward conversations, differing institutional norms, and extra work, because we believe we can be successful at changing the status quo.

# FUNDING ACKNOWLEDGMENT

Research reported in this presentation on the **Nourishing Tomorrow Study** was supported by the **National Institute Of Nursing Research** of the National Institutes of Health under Award Number **R01NR021490**. The content is solely the responsibility of the authors and does not necessarily represent the official views of the National Institutes of Health.

Research reported in this presentation on the **Nourishing Beginnings Study** was provided, in part, by the Robert Wood Johnson Foundation's Systems for Action research program, Grant #80574.

Programmatic and research support for **Nourishing Beginnings and Nourishing Tomorrow** was also provided by:

- Vitamix Foundation
- Bruening Foundation
- CareSource of Ohio
- JunAid Family Foundation
- Mt. Sinai Health Foundation



# THANK YOU!

## QUESTIONS?



CASE WESTERN RESERVE  
UNIVERSITY  
School of Medicine



MetroHealth