



FOOD INSECURITY

MS2 PHC: 2018

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WHAT DOES IT MEAN TO BE FOOD INSECURE?

- Defined by the USDA as "Households are uncertain of having, or unable to acquire, at some point during the year, enough food to meet the needs of all their members because they had insufficient money or other resources for food "

HOW DOES FOOD INSECURITY DIFFER FROM HUNGER?

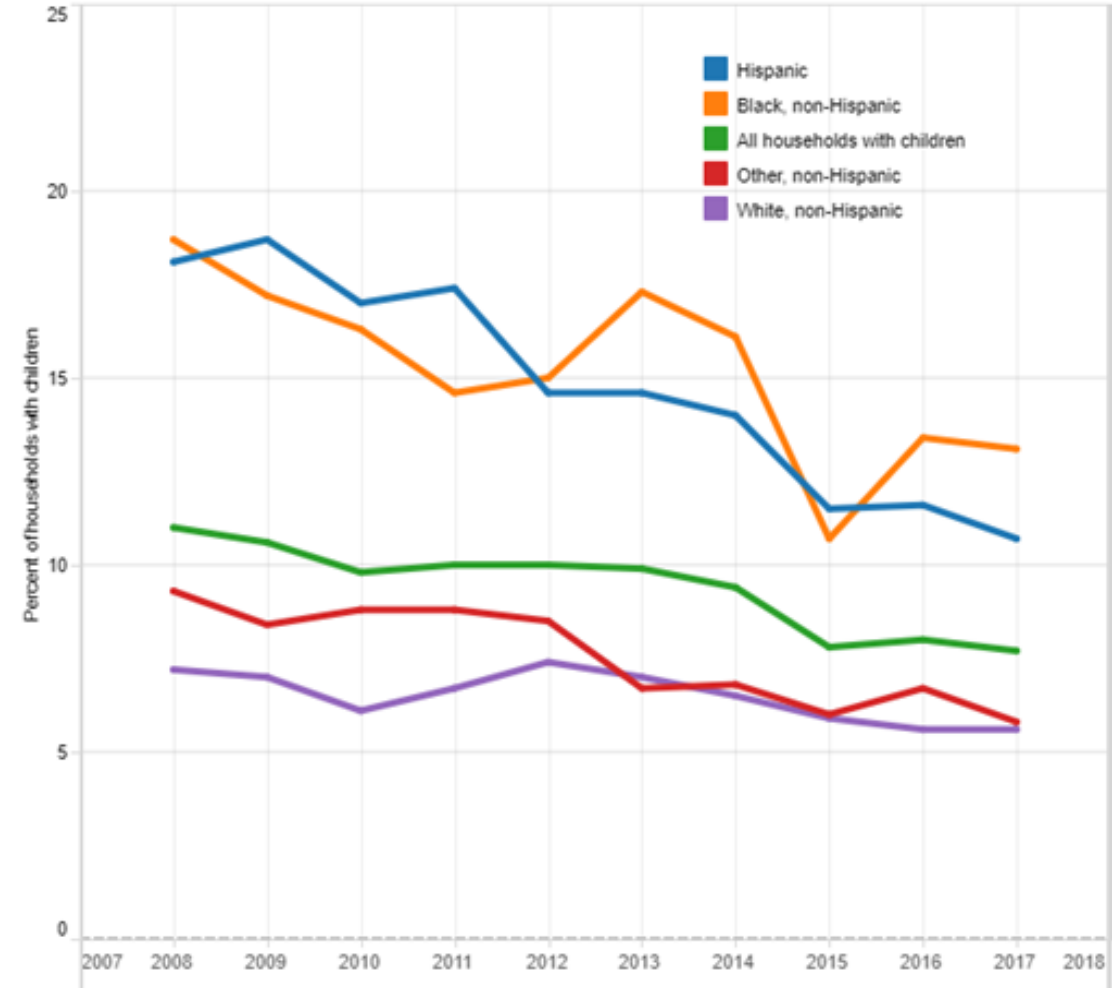
- Hunger: potential consequence of food insecurity that, because of prolonged, involuntary lack of food results in discomfort, illness, weakness or pain that goes beyond the usual uneasy sensation



POPULATION OF FOCUS

- About **10% of households and 12% of children in Massachusetts** experience food insecurity
 - Nationally: **1/8 people** and **17.5% of children are food insecure** (USDA*)
- The highest food insecure counties are **79% rural and 89% in the south**
- Food insecurity has consistently been **greatest in Black and Hispanic households** compared to White and other non-Hispanic households
- Prevalence of food insecurity also **varies based on household composition**: highest in households with a female (~30%) or male (~20) head with children and no spouse

Food insecurity among children by race and ethnicity of household head, 2008-17



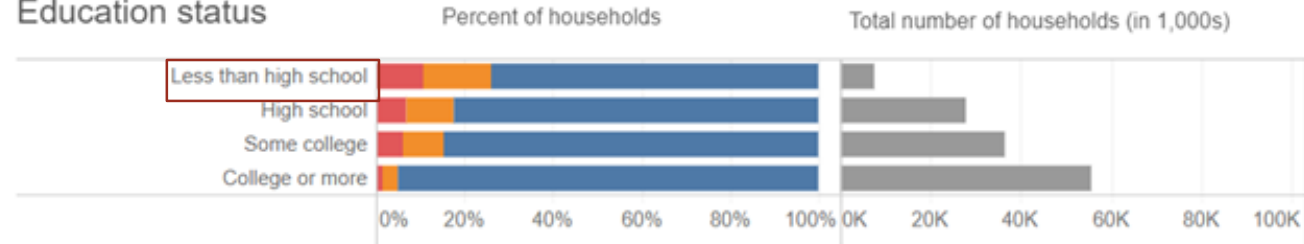
Source: Calculated by USDA, Economic Research Service, using Current Population Survey Food Security Supplement data.
<https://www.ers.usda.gov/topics/food-nutrition-assistance/food-security-in-the-us/>



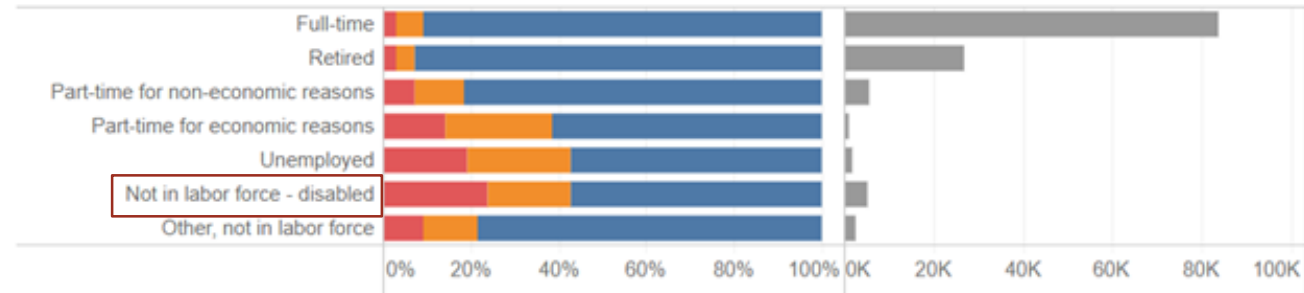
Prevalence of food insecurity by education, employment, and disability status, 2017

Very low food secure Low food secure Food secure

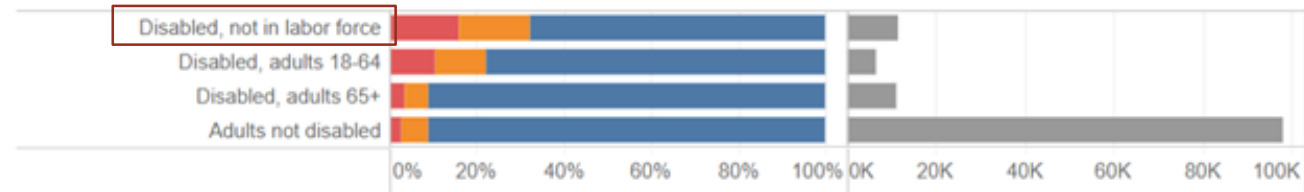
Education status



Employment status



Disability status

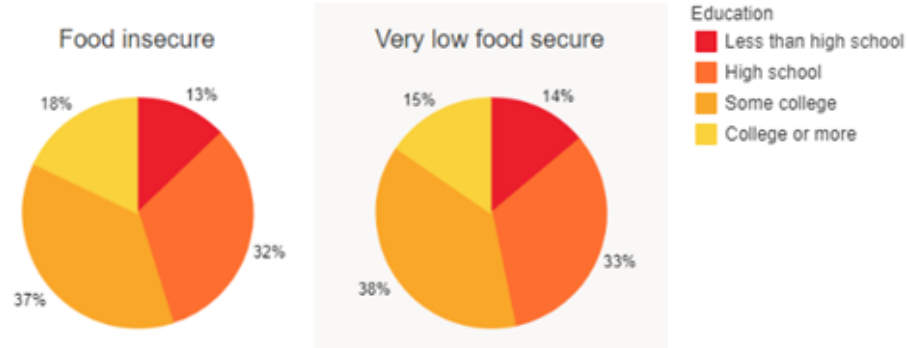


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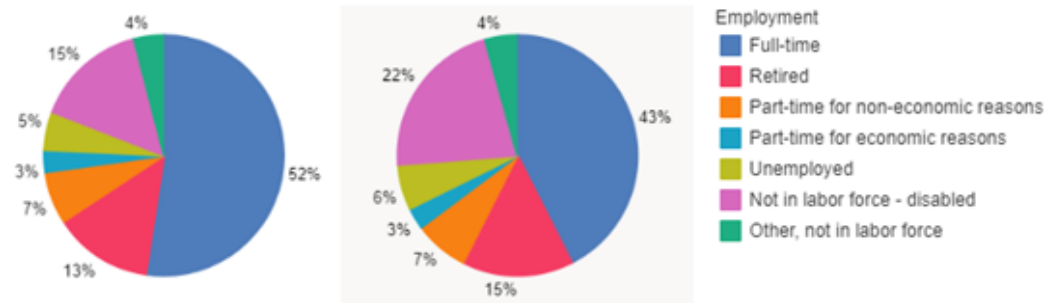
Education status

What is the education status of food-insecure and very low food-secure households?



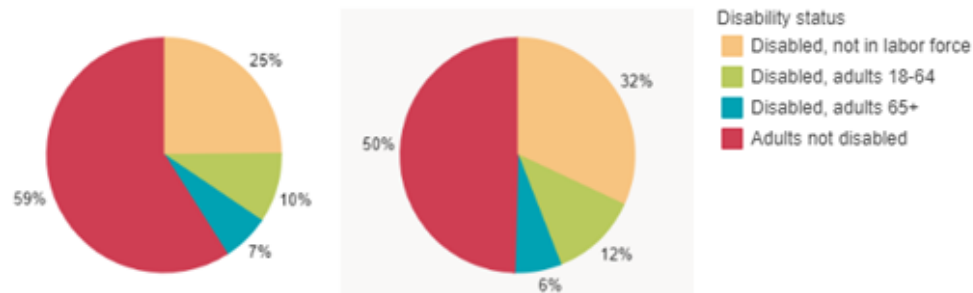
Employment status

What is the employment status of food-insecure and very low food-secure households?



Disability status

What is the disability status of food-insecure and very low food-secure households?



WHY FOOD INSECURITY MATTERS

- **Infancy/Childhood**
 - Birth complications, Low infant birthweight
 - Stunted development, anemia, asthma, oral health problems, increased hospitalizations
 - Academic, social, behavioral impacts in school aged children
- **Increased prevalence of Diabetes, Disability, Obesity**
- **Difficult Choices with Medical Implications**
 - Paying for food vs. Medical care
 - Paying for food vs. Housing
 - Paying for food vs. Utilities -heating



EXPLORATION OF INTERPROFESSIONAL TEAMS OF CARE

- Research has clearly demonstrated an association between poor nutrition and long-term health consequences.
 - The food insecure population may see increased incidence, worsened prognosis, and increased mortality by certain diseases compared to the general population.
 - Utilization of community-based resources, such as food pantries, has been shown to improve diets of the food insecure, thereby reducing risk.
- **Health care providers** should address food insecurity like any other risk factor.
 - A team-based approach should be utilized, emphasizing communication between care providers and community-based resources in order to minimize the adverse effects of inadequate nutrition.
- **Epidemiologists** can conduct research regarding health outcomes and the efficacy of certain resources in order to maximize benefits with limited funding.
- **Public health workers** can advocate for vulnerable populations and connect patients to available resources.



EXPLORATION OF INTERPROFESSIONAL TEAMS OF CARE

- Despite improved health outcomes in those reached by community-based organizations, various challenges still prevent many from receiving adequate nutrition.
 - Awareness of patients as well as providers
 - Funding for community resources
 - Stigmatization of receiving assistance
- A restructuring of health care institutions to incorporate nutritional resources, such as hospital-centered food banks, can more closely connect diet and health care.
 - Staff additions such as social workers can strengthen ties between health care organizations and community resources, such as SNAP, WIC, food pantries, kitchens, and mobile markets, in order to improve outcomes.



EXPLORATION OF INTERPROFESSIONAL TEAMS OF CARE

- As a medical student and future health care provider, we can already advocate for food insecure patients.
 - Directly educating patients on resources
 - Discussions with health care providers that may not know about potential resources
- Additionally, we can be aware of the other unique challenges faced by those battling food insecurity.
 - Resources for finding employment, affordable housing, education opportunities, etc.



ADVOCACY FOR FOOD INSECURE INDIVIDUALS AND FAMILIES

- **Massachusetts Food is Medicine State Plan**
 - Estimated \$2.4 billion for health-related costs of food insecurity and hunger in MA
 - Planning councils at hospitals throughout MA and community organizers
 - Assess distribution of need and access --> develop strategy
 - Early statistics support benefits of medically-tailored meals interventions



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ADVOCACY FOR FOOD INSECURE INDIVIDUALS AND FAMILIES

- The Role of **Physician**
 - Healthcare Provider Survey suggests certain barriers (lack of confidence, time, consistency and incentive)
 - Improving medical education
- The Role of **Community-based Organizations** (e.g., meal provider, food bank, food pantry)
- The Role of **Health Insurers**
 - 50% pay for medically-tailored meals, 50% don't
 - Incentive: cost reduction





MOBILE MARKETS BACKGROUND

- Overview of 4 studies investigating **Fruit and Vegetable mobile markets** have been conducted between **2010-2018** in four locations:
 - Michigan, North Carolina, Rhode Island, and South Carolina
- Approach
 - Randomized Cluster Trials, Single Group Studies, and Focus Groups
 - Target groups: Low income communities
 - **General Results**: mobile markets (which were sometimes coupled with incentives and education programs) resulted in an increase in fruit and vegetable consumption among participants, and programs were generally viewed as beneficial by participants



CLUSTER RANDOMIZED CONTROL STUDIES

- **Veggie Van** (North Carolina, 2010-2015)
 - VV was a mobile produce market, run by the nonprofit organization Community Nutrition Partnership, that offered high-quality produce aggregated from multiple local farms to customers at a reduced price, and accepted SNAP payments.
 - Two arms
 - Intervention: F&V market offered to low income communities
 - Control: delayed intervention, F&V market offered 6 months later.
 - Results: VV customers F&V consumption **increased 0.41 cups/day** (n = 30) compared to a 0.25 cups/day decrease for 111 non-customers (p = 0.04).
- Leone, L. A. et al. A Cluster randomized controlled trial of a mobile market intervention to increase fruit and vegetable intake among adults in lower-income communities in North Carolina.. International Journal of Behavioral Nutrition and Physical Activity, (2018).



CLUSTER RANDOMIZED CONTROL STUDIES

- **Fresh to You Market** (Rhode Island, 2010-2011)
 - Discount, mobile fresh F&V markets--‘Fresh To You’ (FTY) —in conjunction with a nutrition education intervention
 - Two arms
 - Intervention: Education, plus regularly-scheduled, discount, fresh F&V markets for one year (SNAP accepted).
 - Control: Offered physical activity and stress reduction programming
 - Results: significant increase in children’s fruit and vegetable consumption.
 - Consumption increased for fruit without juice (0.20 cups)
 - Vegetables without potatoes (0.28 cups),
 - **Fruits and vegetables combined (0.48 cups)**
- Gorham, G. et al. Effectiveness of Fresh to You, a Discount Fresh Fruit and Vegetable Market in Low-Income Neighborhoods, on Children’s Fruit and Vegetable Consumption, Rhode Island, 2010-2011. *Prev. Chronic. Dis.* 12, E176 (2015).



ONE-GROUP STUDY

- **Farmers Market** (South Carolina 2011)
 - University of South Carolina and Family Health Centers, Inc collaboration to bring farmer's markets and incentives for low-income diabetics in rural South Carolina
 - Details: Onsite produce-only FMs operated a once per week for 22 weeks (June-October 2011)
 - Financial incentive of \$50 toward fruits and vegetables
 - SNAP accepted
- Results:
 - FV consumption **increased by 1.6 servings per day** from baseline to the mid-point (August) of the intervention and remained about half a serving higher than baseline after the market ended (November)
- Freedman, D. A., Choi, S. K., Hurley, T., Anadu, E. & Hébert, J. R. A farmers' market at a federally qualified health center improves fruit and vegetable intake among low-income diabetics. *Prev. Med.* 56, 288–292 (2013).



ONE-GROUP STUDY

- **Fresh Rx Program** (13 Weeks, Michigan 2015)
- Collaboration between the Ecology Center and Community Health and Social Services located in southwest Detroit
 - Details: Participants allotted up to \$40 (\$10 per week for up to four weeks) for purchase of produce from farmers' market (no control)
 - Results:

	Pre-Fresh Rx mean	Post-Fresh Rx mean	<i>t</i>	<i>p</i>
Weight (lbs.)	208.3	209.0	- 0.76	0.45
Systolic BP (mm Hg)	135.1	135.8	- 0.39	0.70
Diastolic BP (mm Hg)	79.3	77.6	1.40	0.17
HbA ₁ C (%)	9.54	8.83	3.54	0.001

- Bryce, R. et al. Participation in a farmers' market fruit and vegetable prescription program at a federally qualified health center improves hemoglobin A1C in low income uncontrolled diabetics. *Prev. Med. Rep.* 7, 176-179 (2017)





MOBILE MARKETS

- GREATER BOSTON FOOD BANK MOBILE MARKET SITES
 - Charles River (since 2016)
 - Lawrence
 - Fall River
 - Edith Nourse Rodgers VA
 - Framingham
 - Lynn
 - Revere
 - Wareham (new! 2018)

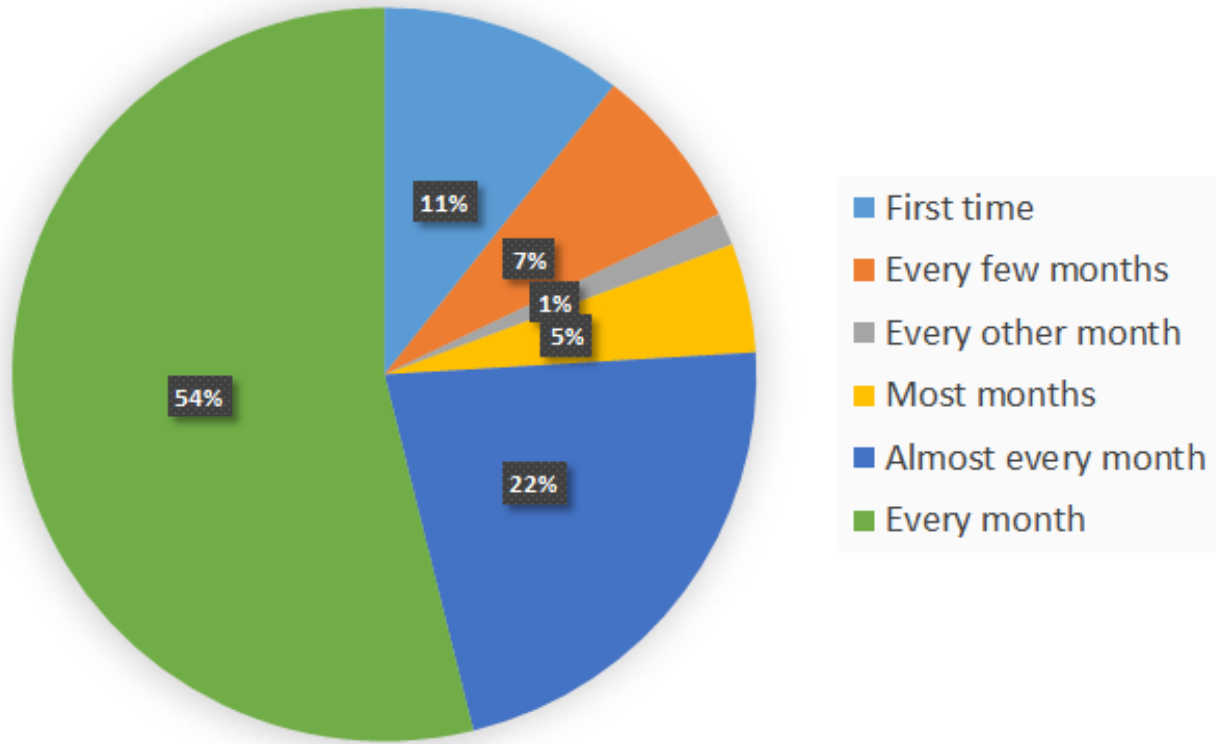


Health Center	Market began	Markets held	People reached at most recent market	Total pounds distributed	Food Insecurity Prevalence from Hunger Vital Sign Screening
Charles River Community Health*	April 2016	31	440	87,138	NA
Greater Lawrence Family Health Center (GLFHC)*	August 2016	26	2,220	288,525	67%
Stanley Street Treatment and Resources (Fall River)*	March 2017	19	590	90,810	59%
Edith Nourse Rogers Memorial Veterans Hospital	April 2017	18	650	117,084	NA
Edward M. Kennedy Community Health Center, Framingham*	June 2017	16	700	90,728	NA
Lynn Community Health Center*	July 2017	15	1,140	128,405	NA
Cambridge Health Alliance (CHA) – Revere*	March 2018	8	417	24,128	51%
Greater New Bedford Community Health Center of Wareham*	September 2018	1	499	3,893	NA
East Boston Neighborhood Health Center	NA	NA	NA	NA	57%
Habit OPCO	NA	NA	NA	NA	59%

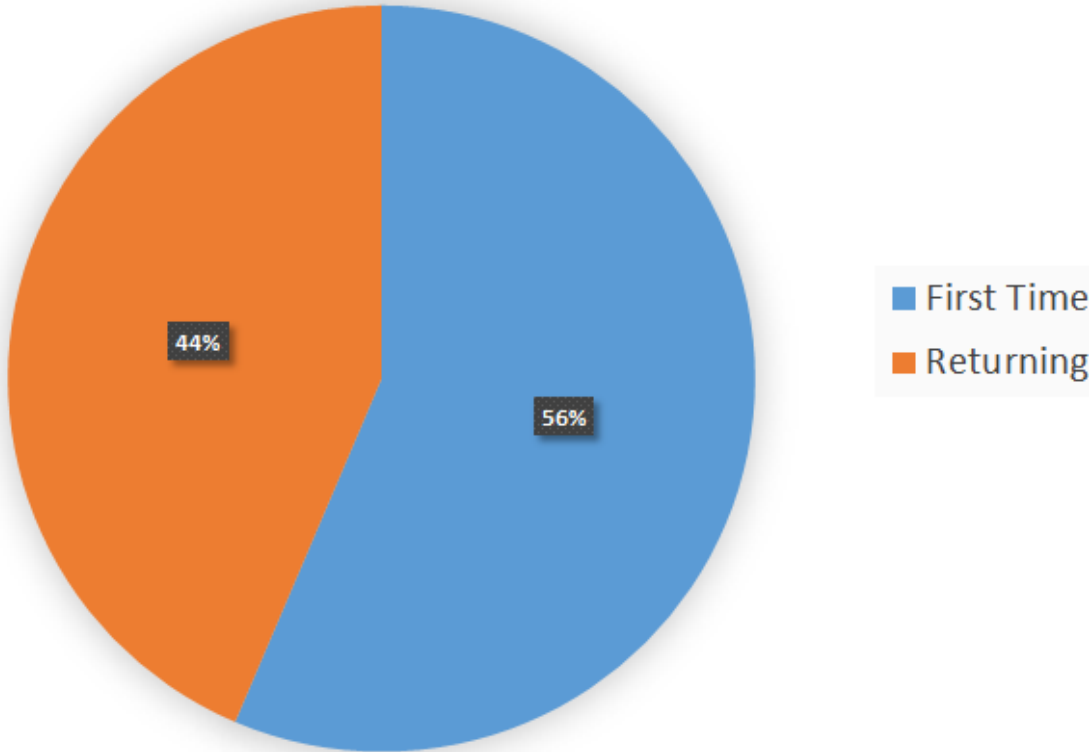
Source: GBFB

MOBILE MARKETS

Mobile Market Attendance



Attendance at Wareham Mobile Market

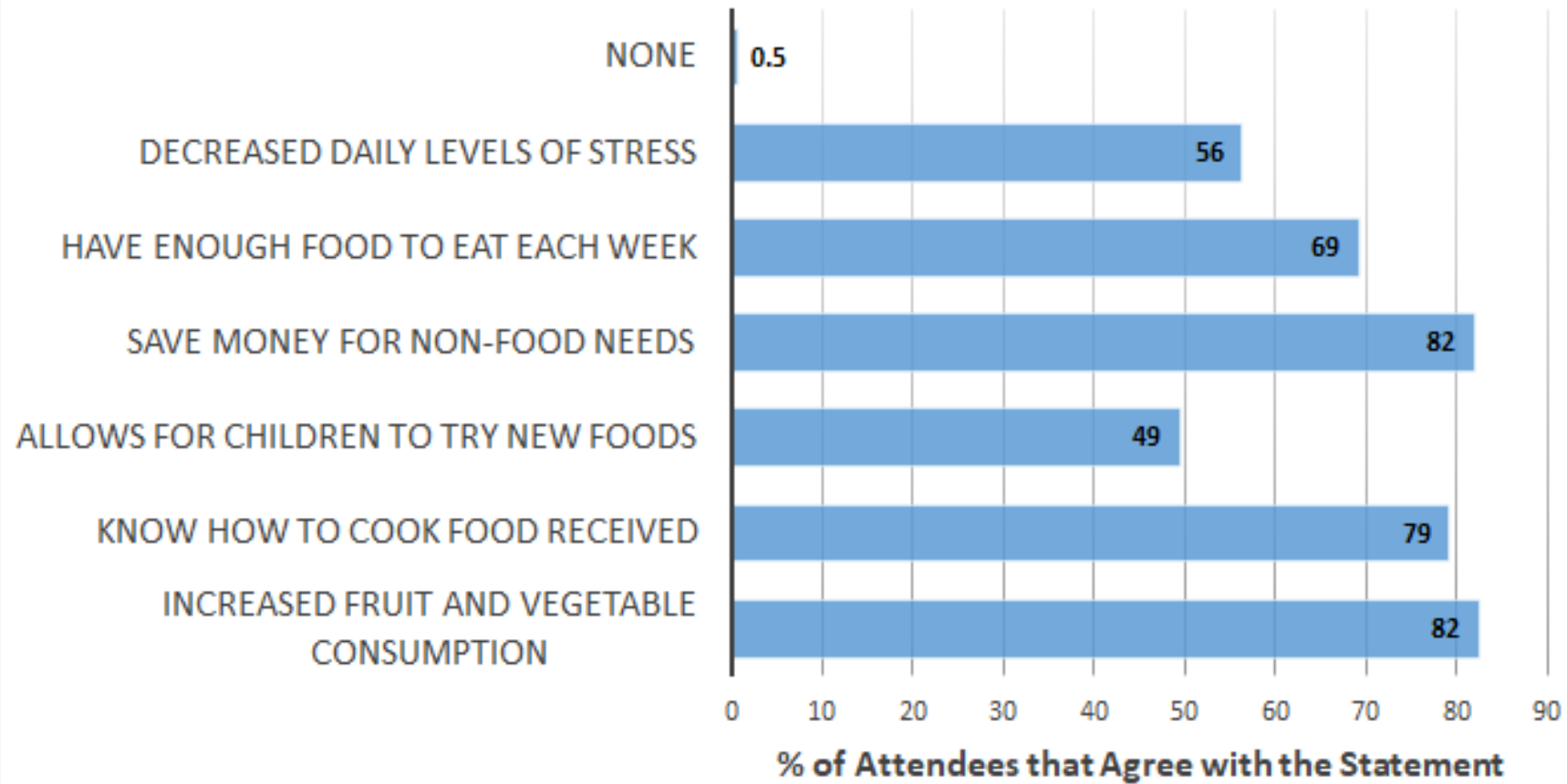


*Excludes Lawrence, VA, and Wareham

MOBILE MARKETS RESEARCH/ANALYSIS



Percieved Benefits of Mobile Markets

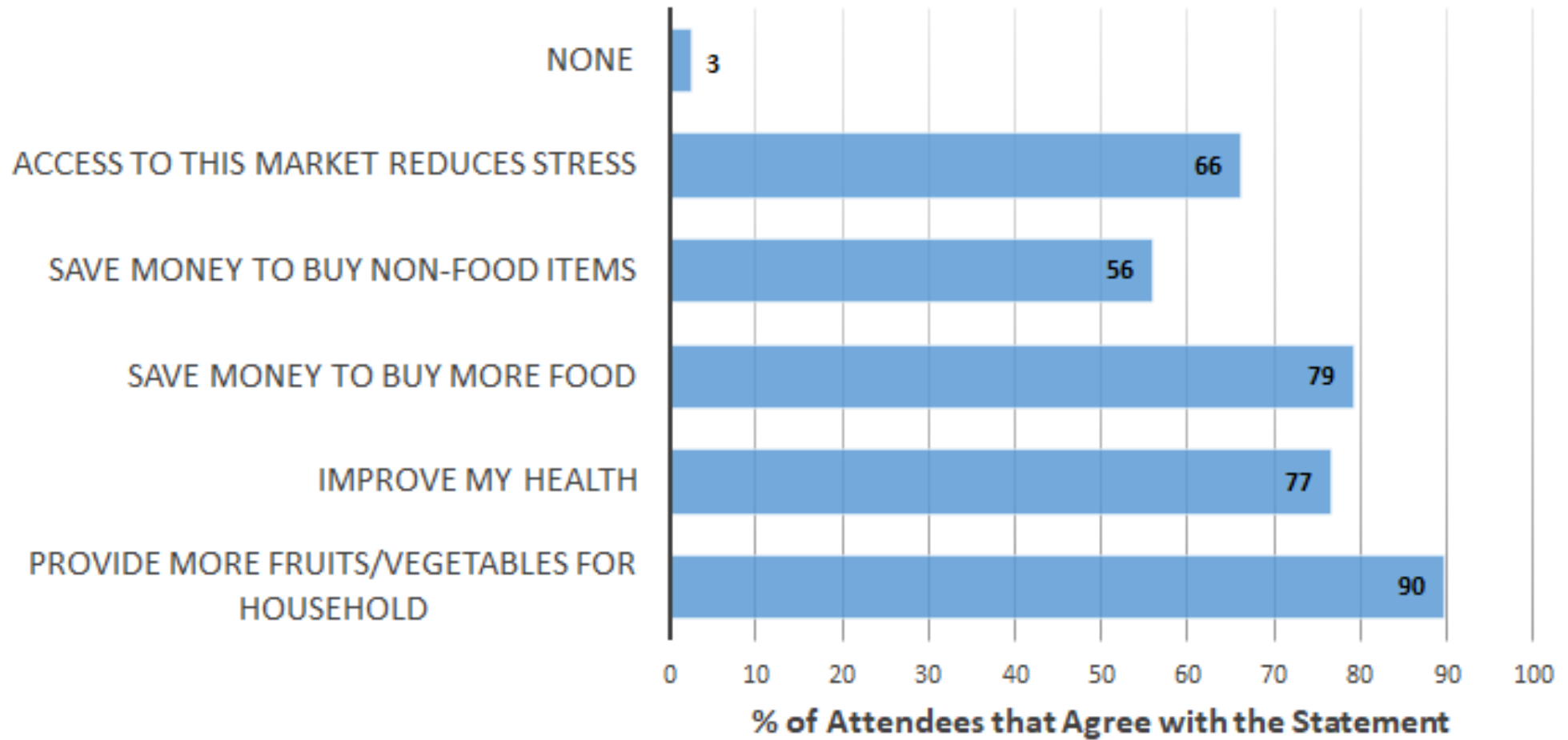


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MOBILE MARKETS RESEARCH/ANALYSIS



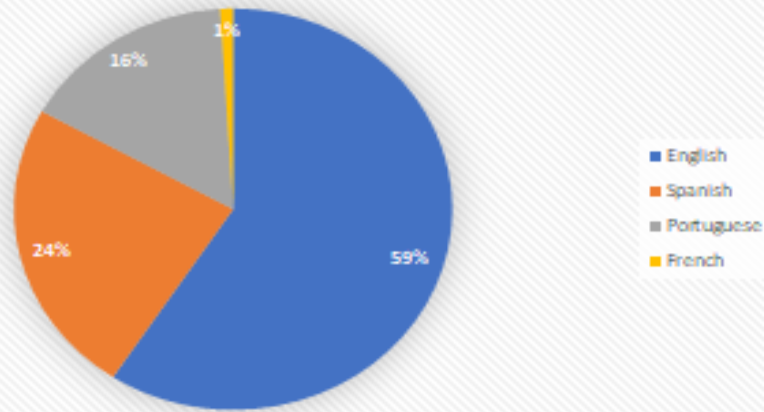
Percieved Benefit of Wareham Mobile Market



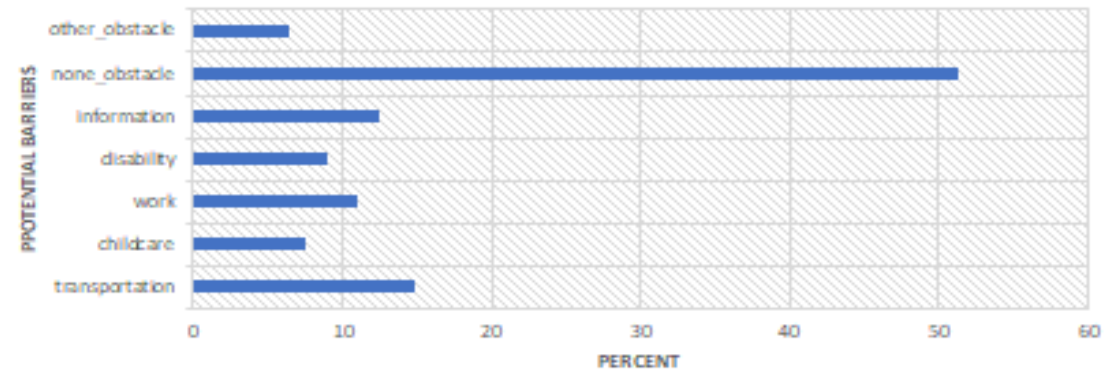
MOBILE MARKETS RESEARCH/ANALYSIS



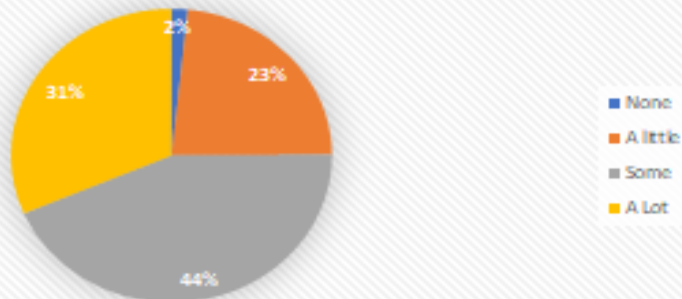
Completed Surveys by Language



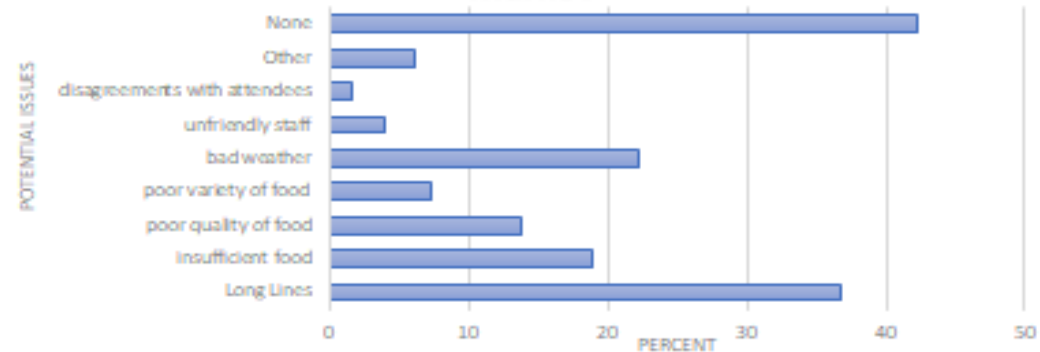
Barriers That Inhibited/Impeded Clients From Coming To Mobile Market



Monthly Fruits & Vegetables Consumed From Mobile Market



Issues Encountered While Attending Mobile Market



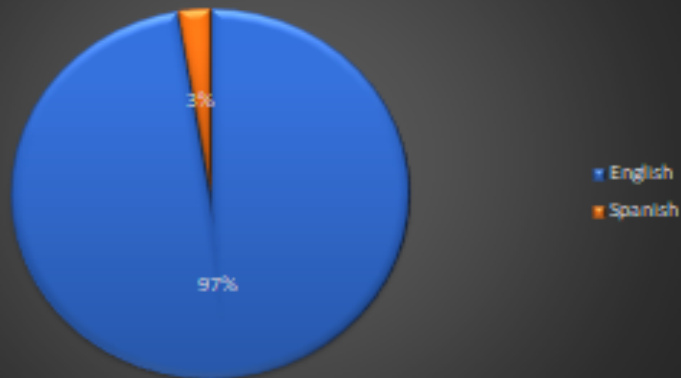
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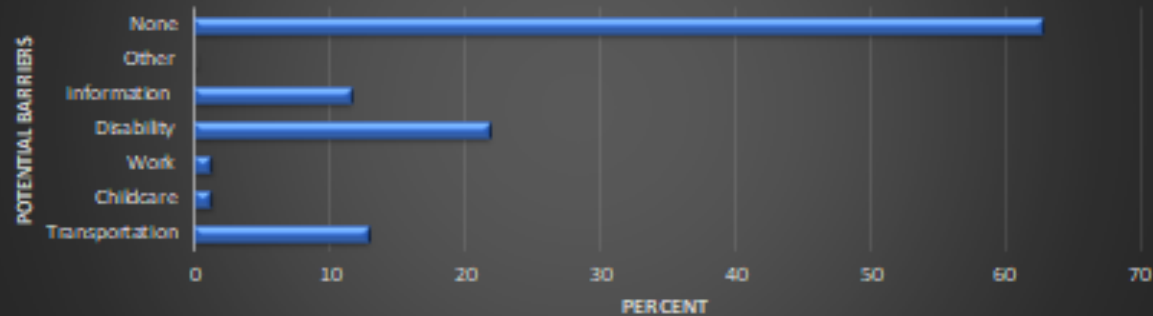


WAREHAM

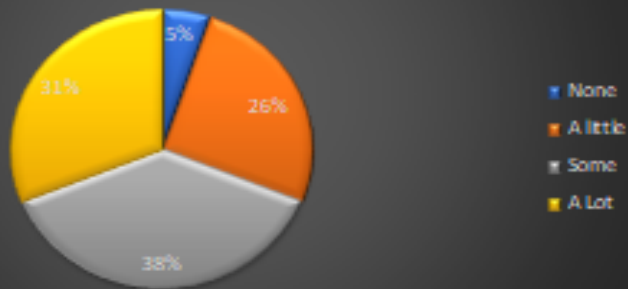
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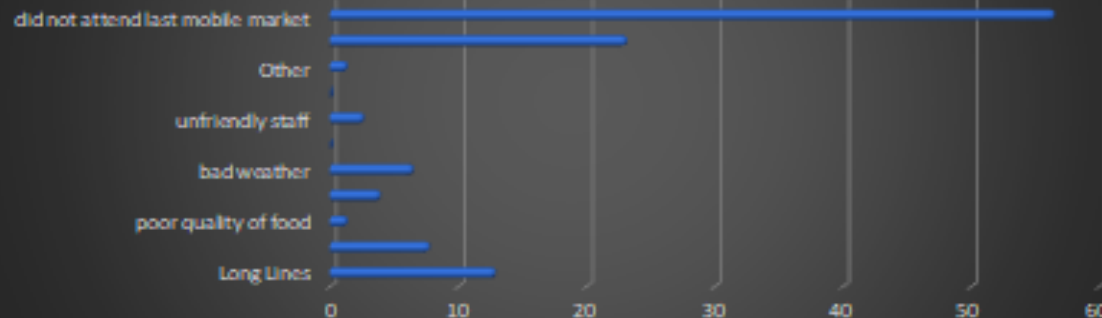
Barriers That Inhibited/Impeded Clients From Coming To Mobile Market



Monthly Fruits & Vegetables Consumed From Mobile Market



Issues Encountered While Attending Mobile Market



MOBILE MARKETS RESEARCH/ANALYSIS



MOBILE MARKET - SUGGESTIONS FOR IMPROVEMENT

- Top barriers to attendance of mobile markets:
 - Transportation
 - Information
- Transportation solutions:
 - Discounted MBTA fair for seniors, low income youth, and people with disabilities
 - Tap local resources (volunteer groups, religious groups) that support food insecurity and have access to vans or transportation options
 - Encourage carpooling among attendees to also foster community and supportive relationships
- Information solutions:
 - Hand out flyers at other food pantries/markets
 - Give information to local doctors/community resources so they can refer their patients if needed



MOBILE MARKET - SUGGESTIONS FOR IMPROVEMENT

- Top issues faced at mobile markets:
 - Long lines
 - Bad weather
 - Insufficient food
- Long lines solutions:
 - More frequent markets
 - New "reservation" app
- Bad weather
 - Move markets indoors where possible
 - If not possible, use tents over food/line areas to reduce exposure
 - If outside make sure attendees are aware so they can dress appropriately
- Insufficient food
 - Analyze data between number of attendees, food distributed and food left over at the mobile markets and try to better distribute food to match the needs
 - GBFB has sufficient food stores but with more data collected they will be better able to match the demand of each market



CURRENT SURVEY

1. Is this your first time at this mobile market?

2. Do any of the following make it difficult for you to attend this mobile market?

- Transportation, childcare, work, disability, lack of information about mobile market, other, none

3. How did you hear about this mobile market?

- flyer, poster, friend/family, health center staff, other

4. Which of the following statements do you agree with

- I am attending the mobile market so I can provide more fruits and vegetables for myself/my family

- I am attending the mobile market to improve my health

- I am attending the mobile market to save money to buy more food for myself/my family.

- I am attending the mobile market to save money for non-food needs

- Having access to this mobile market will help decrease my dialy levels of stress.

5. Prior to attending the mobile market, how many fruits and vegetables were you/your family consuming regularly?

- none, a little, some, a lot

6. If you attended last month, did you consume everything that you received?

- yes, no, did not attend last month

7. If you attended last month, did you encounter any of the following problems:

- long lines, insufficient food, poor quality food, poor variety of produce, bad weather, food I was unfamiliar with/didnt know how to prepare, unfriendly staff, disagreements with fellow attendees , other, none, did not attend last month



SURVEY SUGGESTIONS

~~1. Is this your first time at this mobile market?~~

2. Do any of the following make it difficult for you to attend this mobile market?

- Transportation, childcare, work, disability, lack of information about mobile market, other, none

3. How did you hear about this mobile market?

- flyer, poster, friend/family, health center staff, other

4. True/False Statements:

- I am attending the mobile market so I can provide more fruits and vegetables for myself/my family

- I am attending the mobile market to improve my health

- I am attending the mobile market to save money to buy more food for myself/my family.

- I am attending the mobile market to save money for non-food needs

- Having access to this mobile market will help decrease my dialy levels of stress.

- Before the mobile market my family ate a lot of fruits/vegetables



SURVEY SUGGESTIONS

6. If you attended last month, did you consume everything that you received?

- yes, no, did not attend last month

7. If you attended last month, did you encounter any of the following problems:

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8. Do you have any suggestions for improving the mobile market?

- **Encouragement of a more standardized survey delivery:**
 - Reading the survey to the patient vs. having them fill it out
 - Discretion for more sensitive/stigmatized portions of survey
 - A standard way to read questions with multiple answer selections (reading them all at once and allowing the client to select answers vs. Reading each option individually in a true/false format)



ACKNOWLEDGEMENTS

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- Greater Boston Food Bank
- Community Servings
- American Red Cross Food Pantry
- Boston Medical Center- Preventive Food Pantry

