



Arraigados Juntos: Lessons Learned from a Cross-Sectoral Food as Medicine Pilot

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Introduction and Objectives

"Hypertension is the #1 cause of premature death in the world and US. Here in Durham there is a lot of uncontrolled blood pressure and a huge racial disparity."
- 2020 Durham Community Health Assessment¹

1 in 10 Durham County, NC residents report skipping or cutting the size of their meals because they didn't have enough money to buy food.
- This proportion increases for **Black/African American** and **Hispanic/Latinx** Durham residents²

An emerging but compelling body of research indicates that **evidence based food and nutrition interventions delivered in the healthcare system** might be associated with improved health outcomes and reduced healthcare usage and costs³

- Previous "food as medicine" research in the US has **not explicitly emphasized outcome of interventions on diverse on-white population**

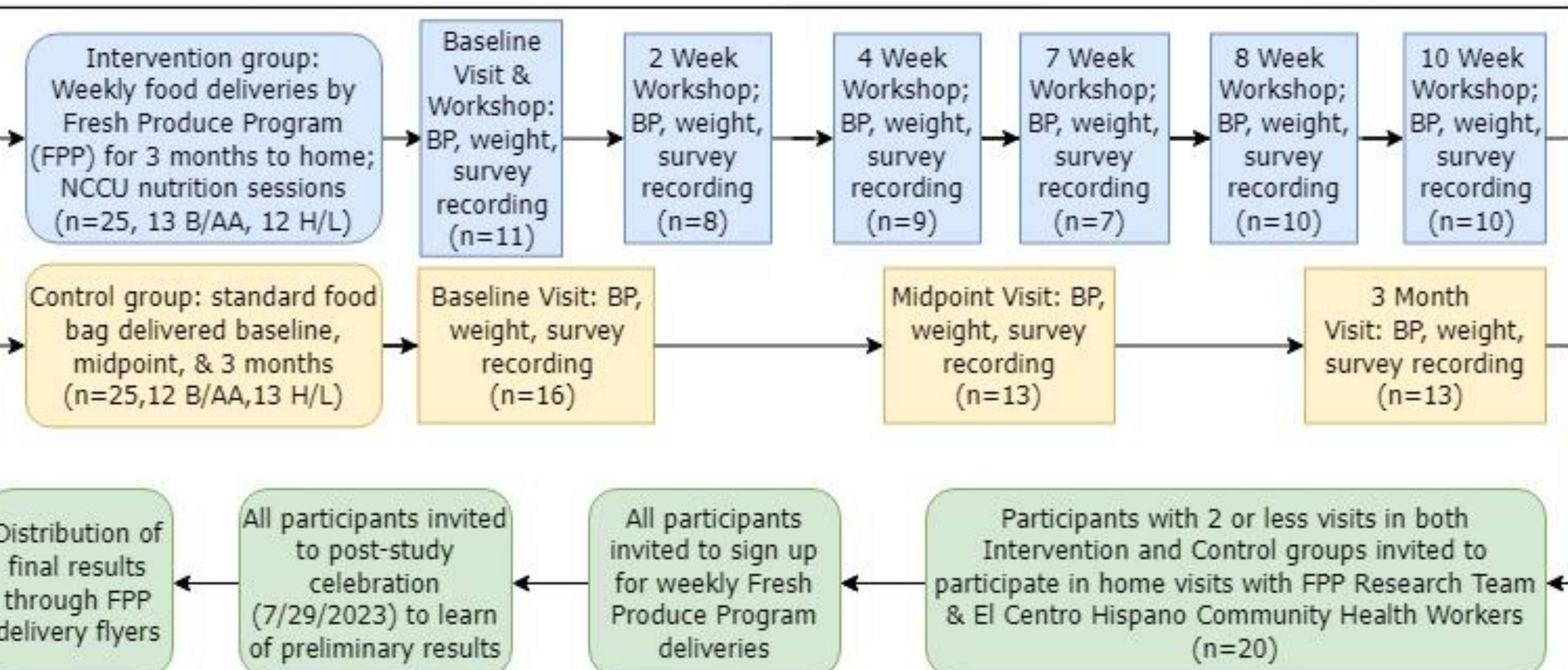
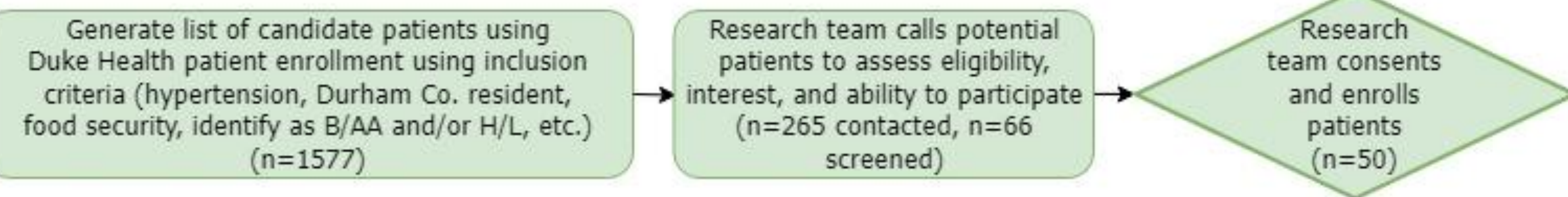
Research Question: What is the health impact that an intervention consisting of weekly deliveries of medically tailored produce paired with nutrition education sessions for hypertensive Black/African-American and Hispanic/Latinx Durham, NC residents?
Secondary Research Question: Can a student group in collaboration with community based organizations feasibly implement a long-term produce-based health intervention?

Duke Partners
Faculty/staff (3) & student group
Root Causes' Fresh Produce Program (11 undergraduate, 8 graduate/medical students)

El Centro Hispano
ECH Staff (3) & contracted bilingual community health workers or CHWs (3)

North Carolina Central University
Dietetics students (2) fulfilling internship component of program with faculty preceptor

Methods



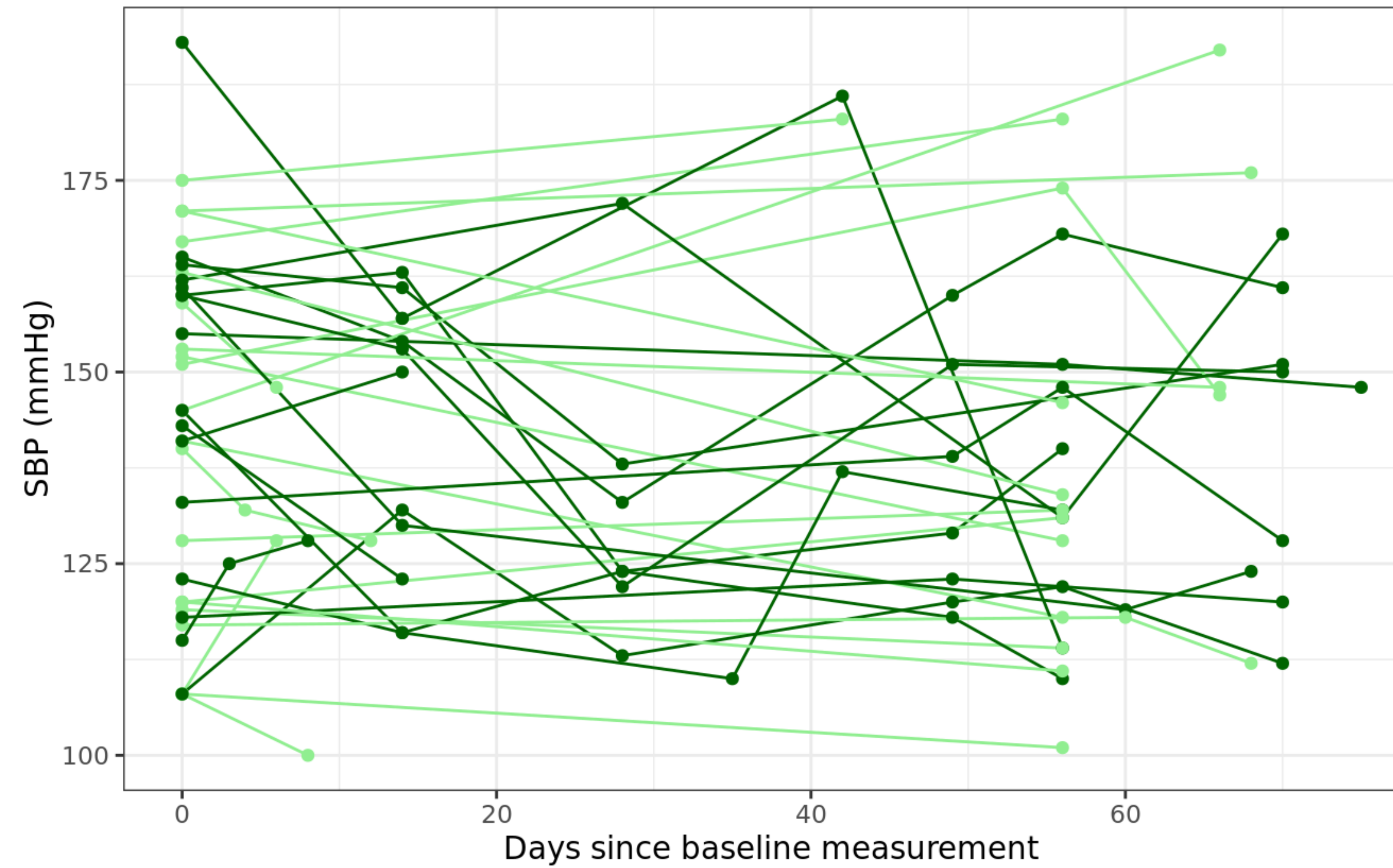
Results

Following the results of a linear mixed-effects model with interaction effects analyzing blood pressure and weight, compared to those in the control group, for those in the intervention group, **for each additional day** a participant was in the study, on average,

- systolic blood pressure decreased by 0.121 mmHg**
- diastolic blood pressure decreased by 0.078 mmHg**
- weight increased by 0.008 lbs.**

Systolic Blood Pressure (SBP) change over time

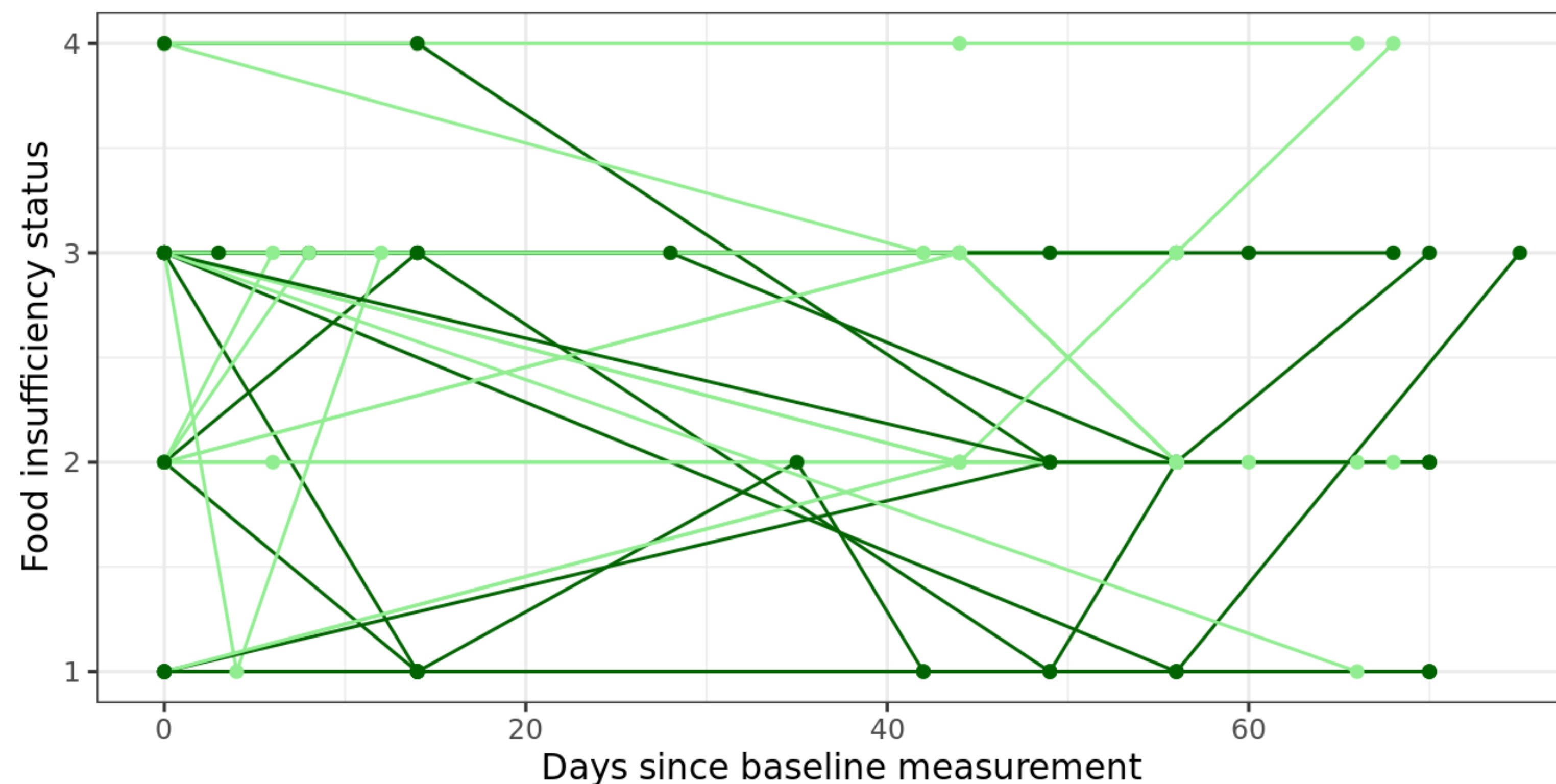
Each line represents the changes in Systolic Blood Pressure (SBP) for a participant
Dark green: Intervention / Light green: Control



Changes in food insufficiency status for participants

Each line represents the changes for a participant
Dark Green: Intervention / Light Green: Control

- 1 = Enough of the kinds of food (I/we) wanted to eat
- 2 = Enough, but not always the kinds of food (I/we) wanted to eat
- 3 = Sometimes not enough to eat
- 4 = Often not enough to eat



Implications and Takeaways

Participant Feedback

"Learned to cook differently. Like the delivery of fresh foods. I thought of the variety of produce as a TV show 'Chopped' made food tasty"

"Fueron muy importantes aprendí mucho sobre cómo [cocinar] saludable y que la comida [estuviera] rico."

"Thank y'all & appreciate y'all this was important. I got my AIC down 3 points!"

"I feel it is a Big help for the community you don't always have money to buy fruit and veggies"

Limitations to Consider

- There was a relatively small number of active participants and trends lost when participants missed in person sessions, making analysis of remaining data difficult. Over **50% of participants missed 2 or more sessions** per group
- The intervention occurred over a **relatively short period of 3 months**
- Bias** may have occurred in recruitment as only **previous patients of the Duke Health System were included** which systematically excluded Durham residents outside of the Duke Health System

Study Reflections and Future Directions

- Regulatory barriers** in working with students and community based organizations, particularly in Spanish, **slowed the timeline of the project**, reducing the intervention period from 6 to 3 months
- CHW turnover** combined with regulatory barriers **delayed their involvement** in project until last month of intervention
- Student inclusion garnered allowed for **greater labor at reduced cost**, particularly for specific skills/attributes including bilingualism, RedCap design, EHR access, statistical analysis, etc. at expense of **greater turnover**, particularly in transition from Spring to Summer
- Future studies should extend this research into other chronic diseases (e.g. Diabetes) with **longer intervention periods**, a determination of the impact of nutrition education vs. produce deliveries, and continue to emphasize inclusion of historically excluded communities

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References

- Durham County Department of Public Health, Duke Health, & #38; Partnership for a Healthy Durham. (2021). Durham County Community Health Assessment 2020. <https://www.dcopublichealth.org/home/showpublisheddocument/35452/637642751171270000>
- ibid.
- Downer, S., Berkowitz, S. A., Harlan, T. S., Olstad, D. L., & #38; Mozaffarian, D. (2020). Food is medicine: Actions to integrate food and nutrition into healthcare. *BMJ*, m2482. <https://doi.org/10.1136/bmj.m2482>
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