

# The influence of environmental context on farmer and consumer participation and operations in two direct-to-consumer food system innovations

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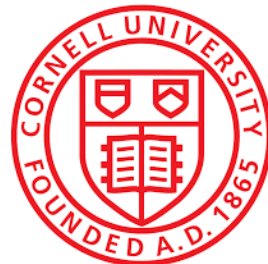
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Central to the concept of Direct to Consumer (DTC) retail food system models:

## **PLACE MATTERS!**

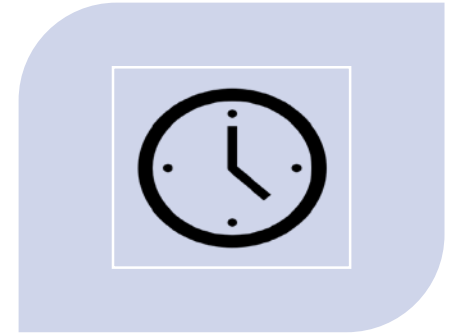
Environmental context of both producer **AND** consumer might influence the success of the producer-consumer relationship.



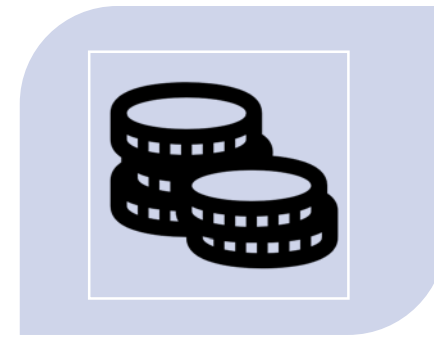
Farmers have great reasons for site selection to distribute their product via direct marketing:



**EFFICIENCY**



**TIME**



**COST**



# But...

Can the traditional approach still work  
when trying to reach low-income  
individuals, who may have additional  
barriers to overcome?

# Why do a CSA for low-income individuals?

1

Have limited access to foods that are affordable and healthy

2

Flexible distribution points

3

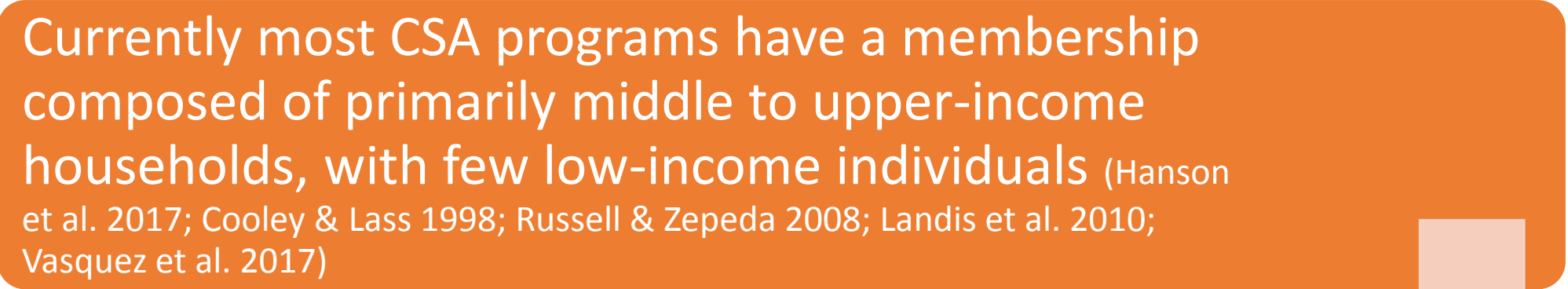
Increase exposure to healthy foods

4


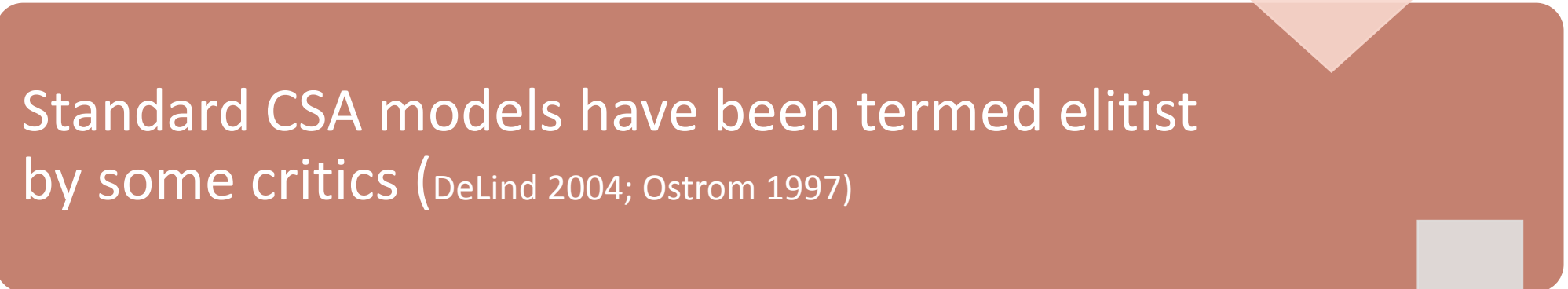
Increase customer base for farmers

# Issues with CSA for low-income

Currently most CSA programs have a membership composed of primarily middle to upper-income households, with few low-income individuals (Hanson et al. 2017; Cooley & Lass 1998; Russell & Zepeda 2008; Landis et al. 2010; Vasquez et al. 2017)



Standard CSA models have been termed elitist by some critics (DeLind 2004; Ostrom 1997)



This is likely because few CSA programs have been designed for lower-income populations (Quandt et al. 2013; Leone et al. 2017)



# Factors that influence food shopping for low-income



All of these  
are related  
to  
geographic  
space!



## Two questions:

Where does a farm wanting to reach a high-income audience go to sell produce?

Where does a farmer wanting to reach low-income audience go to sell produce?

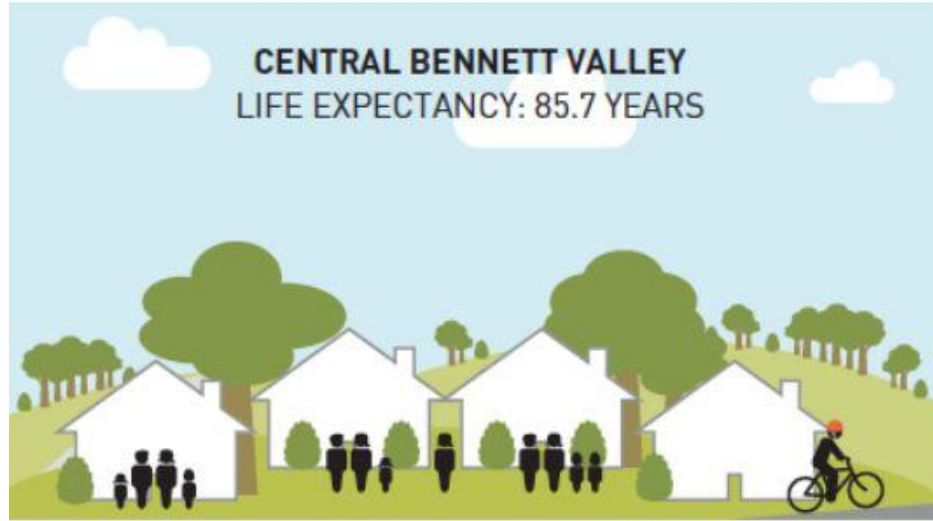
Often to the same place...



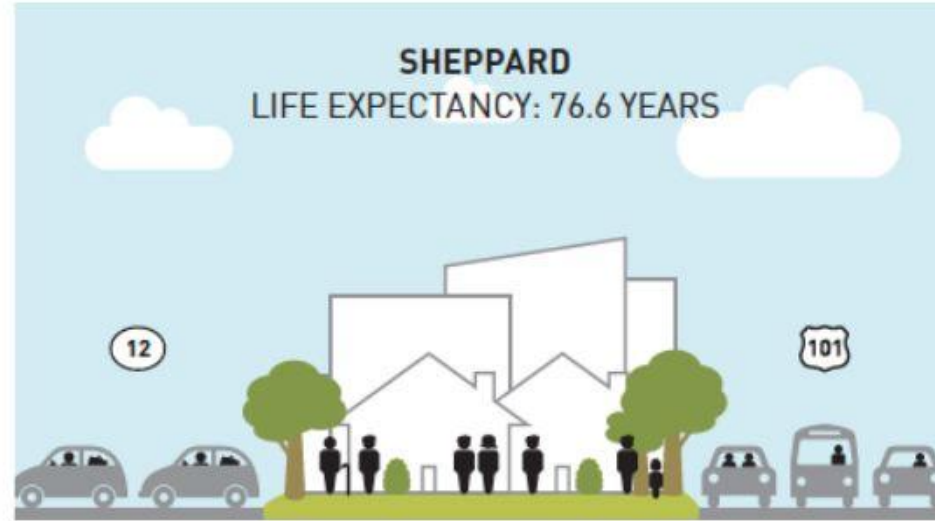
- **Most of the focus has been on financial access, but what about:**

- **Physical accessibility**
- **Competing food sources**
- **Sociodemographic environment**

# A TALE OF TWO NEIGHBORHOODS



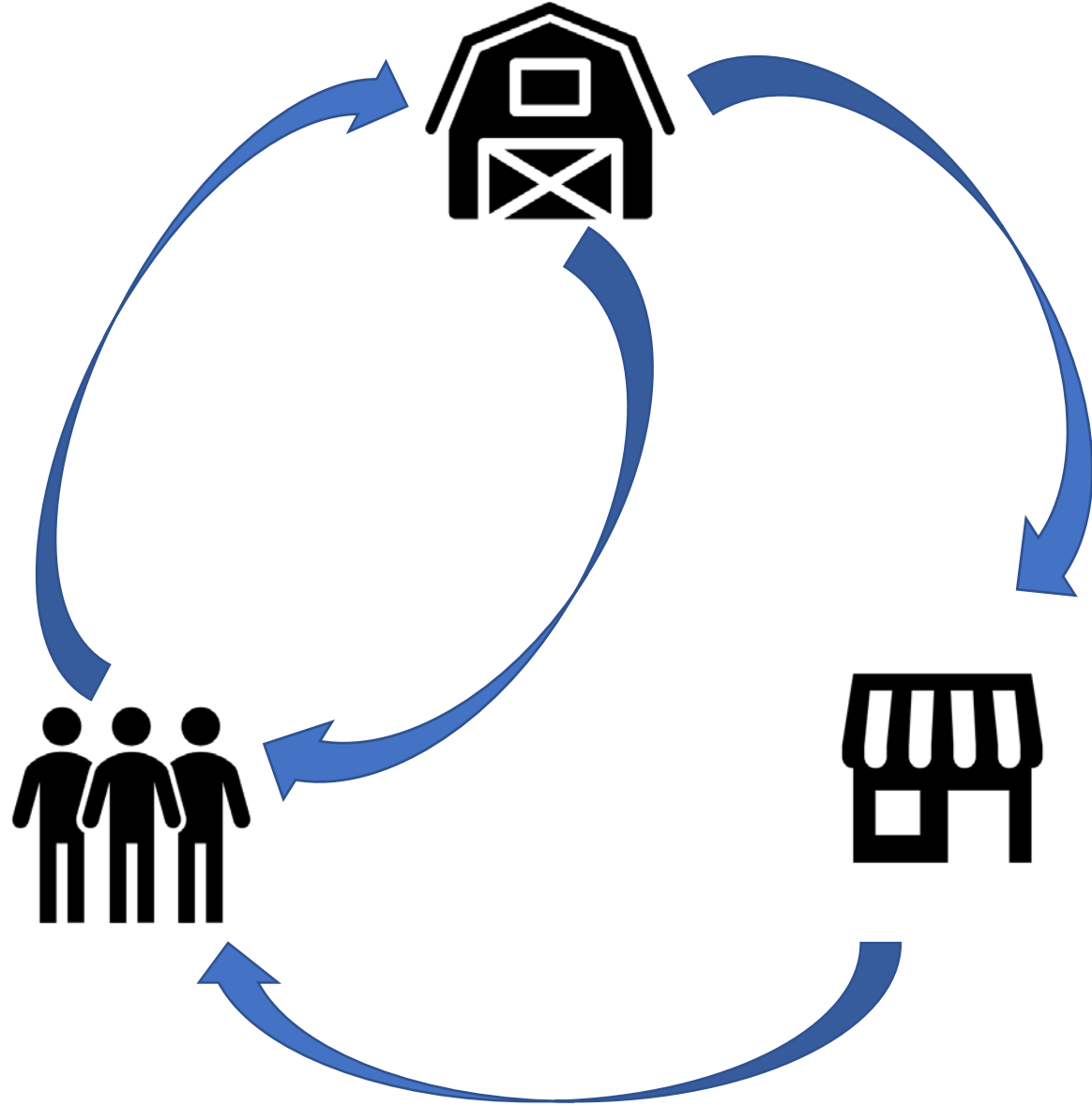
- **6.6%** living in poverty
- **extensive** parks and green space
- **40.8%** at least bachelor's degree
- **\$44,564** median personal earnings



- **18.7%** living in poverty
- **limited** parks and green space
- **8.2%** at least bachelor's degree
- **\$22,068** median personal earnings

# Our previous research

- Location of CSA a significant factor to low-income consumer willingness to participate in CSA programs<sup>1</sup>
  - Willingness to participate in CSA influenced by distance to the supermarket.
  - Willingness decreased as distance and price increased.
  - Reaching a low-income audience might require modifications to typical CSA models
- <sup>1</sup>McGuirt J, Jilcott Pitts S, Hanson K, DeMarco M, Seguin R, Kolodinsky J, Becot F, Ammerman A. “A modified choice experiment to examine willingness to participate in a Community Supported Agriculture (CSA) program among low-income parents”. Renewable Agriculture and Food Systems. 2018





## PROJECT TEAM



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## Cost-offset CSA share

- 15-24 week summer share
- Share size and pick-up location selected by participant
- Share price subsidized 50%
- Balance of share price paid weekly (\$8-\$21 depending on share size)
- SNAP/EBT accepted for payment



- **Farmers** offer weekly box at retail sites easy for consumers to access.
- **Retailers** provide drop-off points with nominal fee, and advertise box
- **Customers** pre-order a weekly box at the retail site or online. Can use SNAP/EBT



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ARE THESE PICKUP LOCATIONS  
IN THE BEST PLACE?



WHAT'S GOING ON  
AROUND THEM?



# Purpose

- Better understand demographic and environmental context of both DTC producers and consumers within this type of DTC model using a mixed methods approach:
  1. Examine differences in spatial sociodemographic variables for farms, patrons, and pickup sites
  2. Review participant and farmer post-season interviews for discussion of spatial environment

# Qualitative Methods

- Focus groups conducted with participants (F3HK only)
- In-depth interviews with farmers, after completion of season
- Relevant quotes/themes were extracted from transcripts



# GIS Methods

- Collected physical addresses of farms, F3HK program participants (n=92 with home address info), and distribution points (pickup sites).
- Obtained food store competition (supermarkets, etc.) from RefUSA business database and geocoded in GIS.
- Obtained US Census data: American Community Survey (2012-2016, 5 year estimates)
  - Block Group level demographic information (percent minority, percent poverty level, etc.)



# GIS Methods

- Used the Walkscore website to generate WalkScore and proximity to public transit
  - Higher score → more walkable
- USDA Food Desert Locator
  - Low-income census tracts where a significant number or share of residents is more than 1 mile (urban) or 10 miles (rural) from the nearest supermarket.



# GIS Methods

- ArcGIS and Google API used to:
  - Generate road network distance between farms and participant residences to pick-up sites
  - Joined Census tract level modified Retail Food Environment Index (m-RFEI) to participant data
    - Ratio of healthy stores to less healthy stores
  - Joined US Census Block Group level demographic information (percent minority, percent poverty level, etc.) for farms, pickup sites, and participants.
- Descriptive statistics were generated for spatial and demographic variables

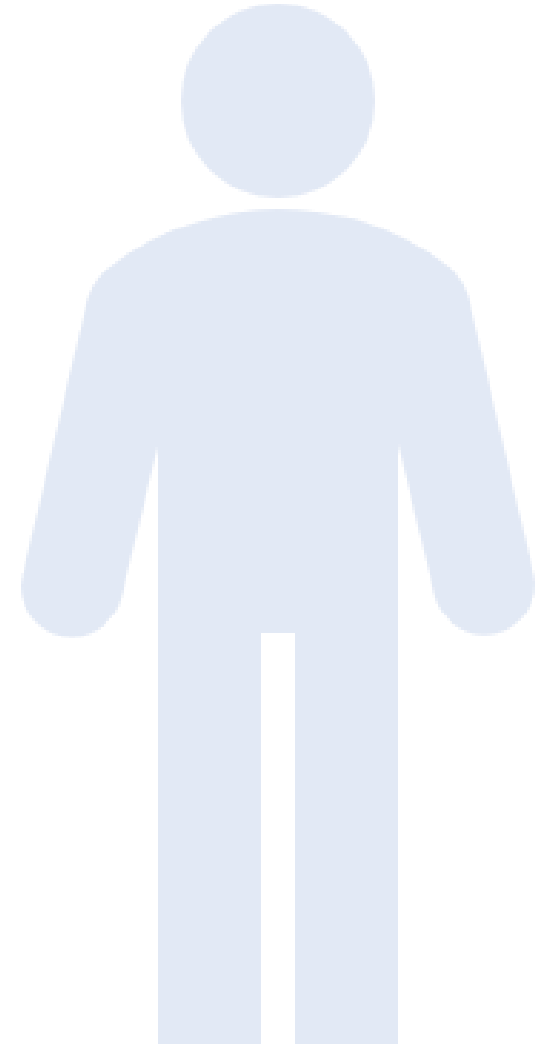


# RESULTS





Participants



# Participant Focus Group Results (F3HK)<sup>1</sup>

- **Getting to the pick-up site was a significant challenge for participants across all focus groups**
- Distance was a major obstacle for picking up CSA shares
- Trouble integrating the pick-up into normal travel routines, including children's school and extracurricular activities
- For many participants, produce pick-up was 'an extra errand' requiring more 'distance travelled'.

<sup>1</sup>White MJ, Pitts SB, McGuirt JT, Hanson KL, Morgan EH, Kolodinsky J, Wang W, Sitaker M, Ammerman AS, Seguin RA. The perceived influence of cost-offset community-supported agriculture on food access among low-income families. Public health nutrition. 2018 Jul:1-9.



# F3HK Participant Quotes

- “Distance. I'm in [location] so it's a little far out. It's one of the- ya know ya hear the winter it's like- definitely not doing it in the winter. Just because of it.”
- “It's literally a mile from my house. It was very easy to just hop in the car, hop over there in the afternoon and then be done with it for the day. I know that's not the case for everyone.”
- “I struggled a little bit finding ways to make my box. Like how to pick it up... so I kind of just opted out by not picking it up.”



GIS



# F3HK-GIS Results



	Distance to SM (miles)	Distance to pickup	Distance to closest pickup	Distance to furthest pickup	M-RFEI	Food Desert	Walk Score	Transit w/ 1 mile
<b>Pickups (n=16)</b>	<b>2.4 miles</b> (sd=3.12)	---	---	---	<b>7.6</b> (Range 0-40; SD=12.8)	<b>13%</b> (2/16)	<b>40</b> (range= 4-81; sd=24.8)	<b>56%</b> (9/16)
<b>Participants (n=92)</b>	---	<b>6.6</b> (range=0-20.9; sd=5.3)	---	---	<b>8.82</b> (range= 0-67; sd=13.6)	---	<b>26.3</b> (sd=23.2, range=0-74)	<b>38%</b> (35/92)
<b>Farms (n=13)</b>	<b>5.3</b> (range=1.1-11.8; sd=3.6)	---	<b>10.6</b> (sd=11.3)	<b>13.1</b> (range 0-36.5; sd=11.3)	---	---	---	<b>8%</b> (1/13)

# F3HK-Census variables



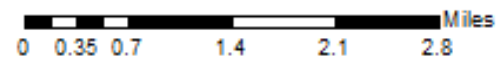
	MHHI	% Poverty	% Minority	% Food Stamps	Age (median)	%Car to work	%Public Transit to work
<b>Pickup Sites</b> (n=16)	<b>\$48,113</b>	<b>17%</b> (sd=15%)	<b>18%</b> (sd=15%)	<b>20%</b> (sd=17%)	<b>37.9</b> (sd=8)	<b>83%</b> (sd=14%)	<b>4%</b> (sd=5%)
<b>Participants</b> (n=92)	<b>\$54,694</b> (sd=\$24,519)	<b>13%</b> (sd=14%)	<b>20%</b> (sd=17%)	<b>15%</b> (sd=12%)	<b>40.2</b> (sd=9)	<b>87%</b> (sd=10%)	<b>2.6%</b> (sd=5%)
<b>Farms</b> (n=13)	<b>\$61,836</b> (sd=\$20,330)	<b>11%</b> (sd=9%)	<b>14%</b> (sd=14%)	<b>13%</b> (sd=12%)	<b>42.5</b> (sd=8)	<b>87%</b> (sd=8%)	<b>1%</b> (sd=3%)

# NC

Low % Pov.



High % Pov.

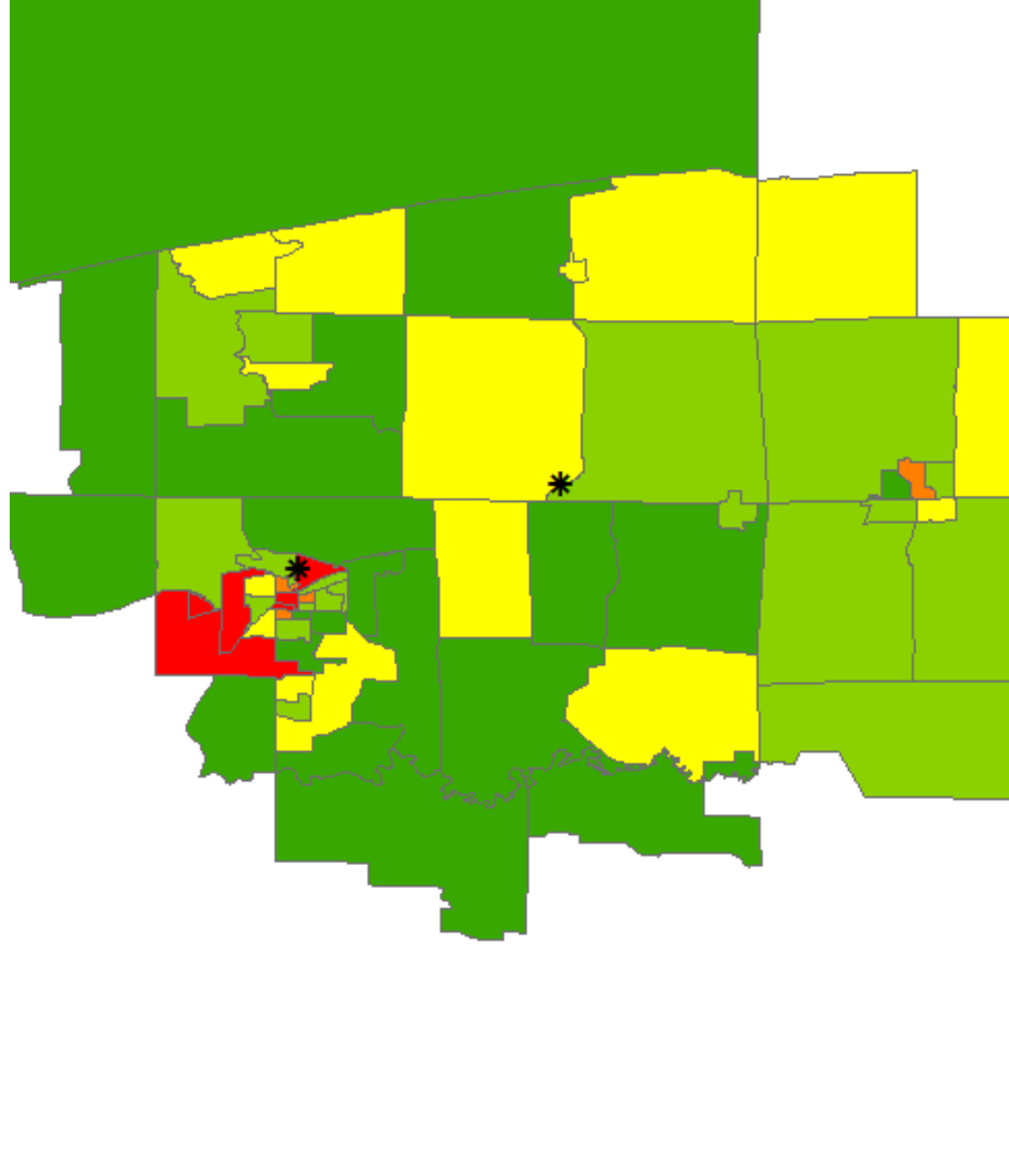


NY

Low % Pov.

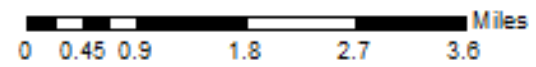
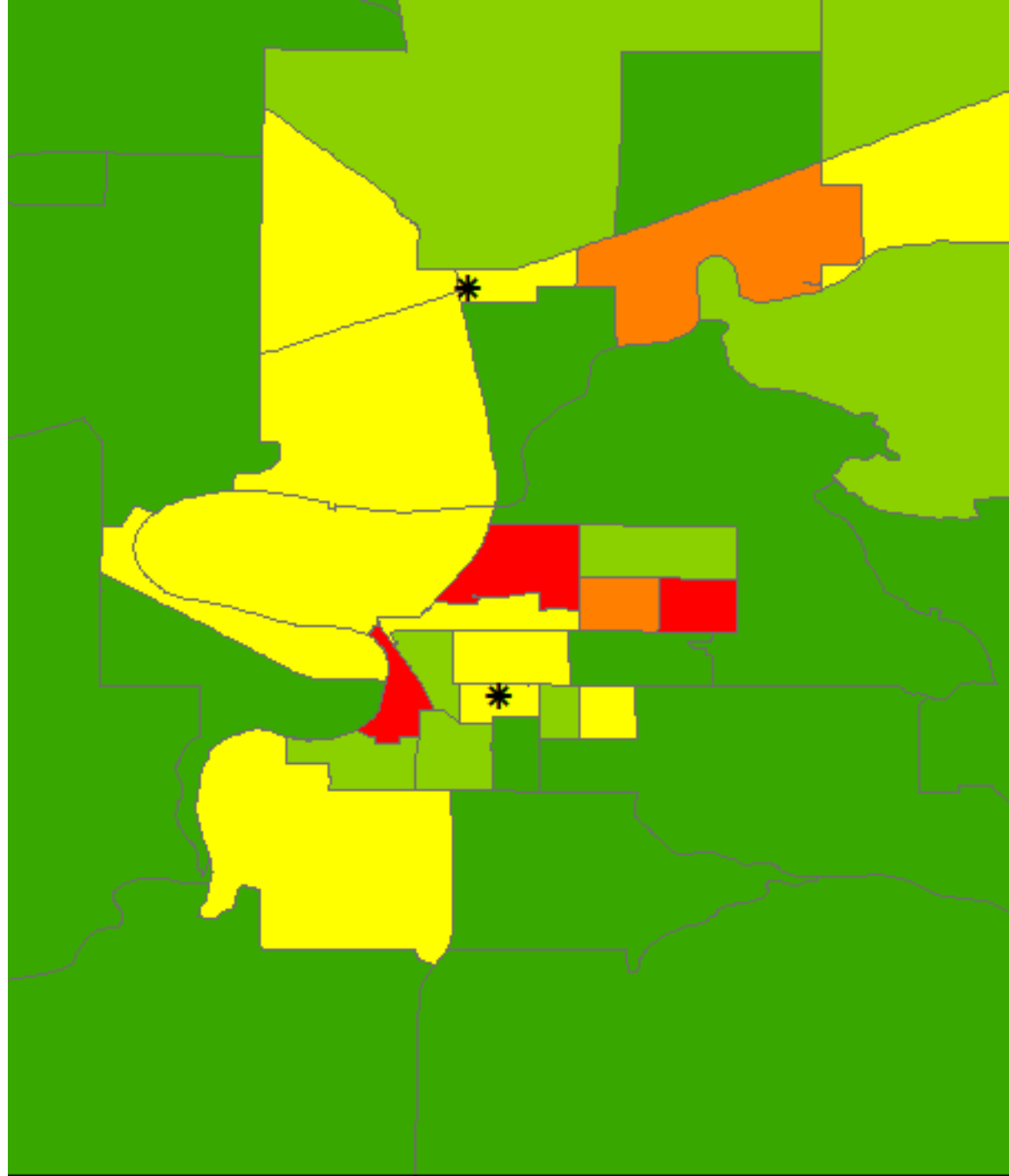
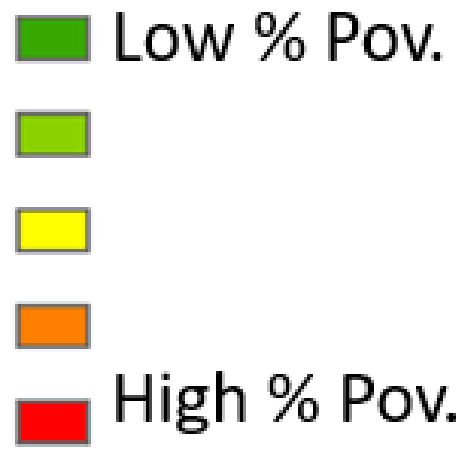


High % Pov.



0 1.5 3 6 9 12 Miles

WA

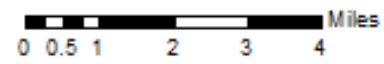
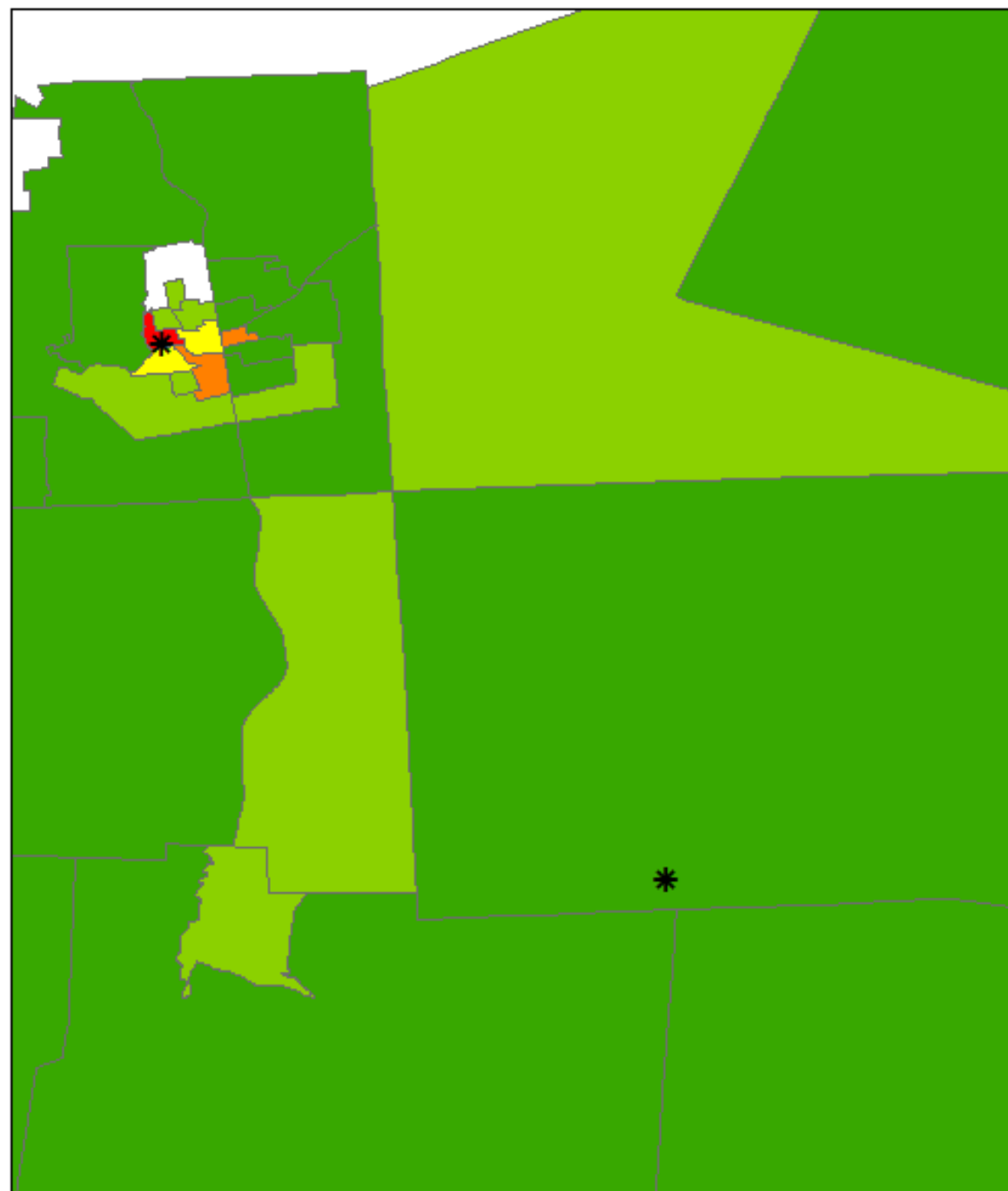


VT

Low % Pov.



High % Pov.





# F3B-GIS Results



	Distance to SM (miles)	Distance to closest pickup/drop-off	Distance to furthest pickup	Food Desert	Walk Score	Transit w/ 1 mile
<b>Pickup/ Drop-off Sites (n=8)</b>	<b>4.9</b> (sd=5.8, range=0.2-18.3)	---	---	<b>13%</b> 1/8	<b>26.8</b> (sd=20.29, range=3-65)	<b>50%</b> (4/8)
<b>Farms (n=7)</b>	<b>4.4</b> (sd=3.4, range=1.2-11.4)	<b>3.8</b> (sd=3.5, range=0.5- 9.9)	<b>4.0</b> (sd=.28)		---	<b>29%</b> (2/7)

# F3B-Census variables



	MHHI	% Minority	% Food Stamps	% Poverty	Age (median)	%Car to work	%Public Transit to work
<b>Pickup/Drop off Sites</b>	<b>\$67,986</b> (sd=\$28,310)	<b>7%</b> (sd=8%)	<b>15%</b> (sd=16%)	<b>8%</b> (sd=7%)	<b>41.1</b> (8.7)	<b>86%</b> (10%)	<b>&lt;1%</b> (sd=<1%)
<b>Farms</b>	<b>\$60,833</b> (sd=\$27,954)	<b>5%</b> (sd=3%)	<b>11%</b> (sd=10%)	<b>6%</b> (sd=6%)	<b>46.9</b> (sd=5.5)	<b>90%</b> (sd=5%)	<b>1%</b> (sd=2%)



Farmers



# Qualitative Results-Summary

1

Some differences between desire to reach and action to reach

2

Some farmers mentioned adding in flexibility to better reach participants, including moving pickup sites

3

Many farmers mentioned moving pickup sites back to farms or other locations that might be challenging for low-income

# NC Farmer 1

## Desire

- “It drives me crazy that the idea of good food is only for the wealthy and that it has some sort of elitist connotations to it. And so I’ve been thinking about this for a long time, how to get good, healthy, organic food into the hands of people who probably couldn’t afford to buy it.”

## Action/Plans

- “We started staying until 6:30...And that was because people needed a little bit more...Yeah, to get off of work and get across town in the traffic to get to us.”
- “It’d be great if a lot of them would pick up in Pittsboro at the farmers market. But wondering if it would be possible – if we need to add a pickup, if it could be an on-farm pickup.”

# NC Farmer 2

## Desire

“We have always been interested in social justice. So the idea that we could create a business model that in part was funding and supporting and reaching a wider audience was definitely a positive.”

## Action/Plans

“I offered to switch pickup locations. Just gave them a lot more flexibility and customer support...So I think I moved fairly far away from the traditional CSA model to a more customer service subscription model.”

“We were not going to be able to sustain the program in the future because they required a substantial amount of additional legwork and organization and flexibility that just wasn't a great fit for our farm, and potentially could be difficult for any farm...The locations that we'd arranged were difficult.”

# VT Farmer 43

## Desire

“...seemed right up my alley, and why I got into farming – to support people that need food. I thought it was a great opportunity for the participants to access and try out a CSA share. So it fit with my goals and ethics... And also it was going to be a huge benefit for our farm to have 10 to 20 new CSA members”

## Action/Plans

“So it was an issue to come pick up their food...And my perspective is we have 3 different times and places...But the way I was thinking of it was there’s no other CSA in the area that’s as available and flexible. I was just surprised in general the irritation with having to come get their veggies which in my head I was like, man, you’ve got a sweet deal, you should be psyched to come get these veggies.”

# WA Farmer 21

## Desire

"I think it just felt like a good thing to do. I also thought that it would be a nice way for us to get set up for food stamps in general. But I like the idea basically...I like the idea that the produce that we produce is not just for the carriage trade."

## Action/Plans

"I would like to make a couple of changes but the main one being I'd like to discuss the possibility of having the pickup site be at our fruit stand. "



# WA Farmer 22

## Desire

“So I think long term, getting the word out there and making it more accessible will increase profitability for the farm.”

## Action/Plans

“It was really hard for people to keep up with meeting with the driver every two weeks, or every week. And this way made it so much easier to have central locations. It was really good. People were really happy.”

“Well, we were talking about having the dropsite at the POWER office. I think that could change things and might make it more accessible to people – {with} a window of time....”

# New York Farmer 12

## Desire

“It was mostly because just the demographics of [local town]. There’s a lot of people – there are so many people on benefits in [local town] In fact, if we’re in the city limits, it really is a way to potentially expand our customer base and impact those in a very local community.”

## Action/Plans

**“We’re close to where they live. I’m sure that helps.”**

# NY Farmer 13

## Desire

“Because offering subsidized shares and increasing access for lower income families is part of our business goal. It opened up a whole new market for us, being able to offer shares to people who may not otherwise be able to afford them.”

## Action/Plans

“I found for some people between work and their kids getting out of school, the timeframe of that market I don’t think it was most convenient for quite a few of the members. So we’re looking at a couple hour farm stand {with business owners} to distribute our CSA.”

“And there were a couple of instances where people would ask to pick it up at the farm and they didn’t pick up and the food sat in the cooler and it did go to waste.”

“I know just walking through the regional market, the downtown market sucks. There’s virtually no grocery stores in that neighborhood. To be able to have a distribution point where people come with their WIC checks and EBT cards and not have to go out of their way to go to a market...”

# Discussion

- Farmers/program staff appeared to make efforts to reach low-income, but maybe wasn't enough?
  - How much accommodation can be made?
- Physical accessibility more on the mind of consumers than CSA farmers in post-season interviews
- Participant Home versus Work address

# Discussion

- Strategic placement along high traffic areas
- Keeping it on the farm: will that work for low-income participants?
- Farmers/CBO's → tap into publicly available data and participant level feedback to better reach low-income population

# Future Research



MORE  
FOCUSED  
EXAMINATION



TEST APPROACHES TO  
INCREASE FARMER  
AWARENESS OF LOW-  
INCOME NEEDS



DEVELOP APPROACH TO  
HELP FARMERS BETTER  
EVALUATE CONTEXT OF  
MARKET ENVIRONMENT  
FOR LOW-INCOME  
PARTICIPANTS



DEVELOP OPTIMIZATION  
MODELS THAT HELP  
BALANCE OUT BOTH  
CONSUMER AND  
PRODUCER NEEDS. WHICH  
VARIABLES MATTER MOST?