# Farm to Clinic: Connecting the Gap Between Food Waste and Food **Insecurity in Eastern North Carolina**

### Background

- Food insecurity is defined as inadequate access to food due to limited money or resources<sup>1</sup>.
- Twelve percent, or about **15.6 million** American households were food insecure in 2016<sup>1</sup>.
- Rural, southern households are more likely to experience food insecurity—N.C. is ranked 15th in the country<sup>1</sup>.

Figure 1: A choropleth map of food insecurity rates by household for each NC county in 2017. Wayne had a rate of 17.4%<sup>2</sup>.



- Food insecurity is linked to higher rates of diet-related chronic disease (e.g. heart disease, diabetes)<sup>3</sup>.
- An estimated 40 percent of food produced in the U.S. is lost or wasted along the supply chain, which is a loss of about **\$162 billion**<sup>4</sup>.
- Prescription produce programs provide at-risk, food insecure patients with access to produce in addition to dietary advice from their clinician<sup>5</sup>.
- There have been no studies specifically on prescription produce programs that rely on donations of unsold food to serve patients in rural areas<sup>5</sup>.



Figure 2: A comparison of diagnosed cases of diabetes in the country, state, and Wayne county.

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# Methods



Figure 4: The Leroy James Farmers Market in Pitt County was one of the produce collection locations.

### Results

- Most of the respondents each

Table 2. Fisher's Exact Test: Analysis of Associations Between Produce Use, Recipe Use, and

| <ul><li>week reported using most or all produce.</li><li>Over 70% of the respondents</li></ul>   |         | Produce Fami                                 | Produce Familiarity (n=76) |         |  |            |             |                      |     |
|--|---------|--|----------------------------|---------|--|------------|-------------|----------------------|-----|
|  |         |  |                            |         | Produce Use                                      |            |             |                      |     |
|  |         |  |                            | All     | Most   | Some       | None        | P-value <sup>a</sup> |     |
| each week agreed that  | at they | $\overline{Did}$ you use th                  | e provided                 |         |  |            |             | 1 (4140              |     |
| <ul> <li>were interested in using the produce again.</li> <li>Familiarity with the produce was linked to reported produce use (p=.000).</li> </ul> |         | No<br>Some                                   |                            | 47<br>1 | 9<br>1   | 3<br>0     | 0<br>0      | .578                 |     |
|  |         |  |                            |         |  |            |             |                      | Yes |
|  |         | How much produce were you unfamiliar with?   |                            |         |  |            |             | .000                 |     |
|  |         | <ul> <li>Recipe use was linked to</li> </ul> |                            | None    |  | 54         | 3           | 58                   | 0   |
| interest in using again (p=.007).  |         | Some   |                            | 2       | 8  | 10         | 0           |                      |     |
| Produce unfamiliarity was  |         | Most   |                            | 0       | 1  | 1          | 0           |                      |     |
| linked with recipe use $(n - 0.39)$  |         | All<br>No response                           |                            | 3       | 0  | 4          | 0           |                      |     |
| gain, and Produce Familiarity (n=76)<br>Recipe Use   |         |  |                            |         | Figure 6:Bivariate<br>analysis of<br>produce use |            |             |                      |     |
| No   |         | Some   | Yes                        |         |  | compare    | ed to       |                      |     |
| Interest in using again  |         |  |                            |         | .007   | recipe us  | se and      |                      |     |
| Yes  | 54      | 0  | 12                         |         |  | produce    |             |                      |     |
| Maybe  | 5       | 2  | 0                          |         |  | unfamilia  | arity.      |                      |     |
| No   | 0       | 0  | 0                          |         |  | Figure 7   | : Bivariate | S                    |     |
| How much of the produce  |         |  |                            |         |  | analysis   | of recipe   |                      |     |
| were you unfamiliar with?  |         |  |                            |         | .039   | use com    | pared to    | <sup>1</sup> A. (    |     |
| None   | 49      | 0  | 8                          |         |  | interest i | n using     | State                |     |
| Some   | 6       | 2  | 2                          |         |  | the prod   | uce again   | https                |     |
| Most   | 1       | 0  | 0                          |         |  | and proc   | duce        | <sup>3</sup> S. A    |     |
| All  | 2       | 0  | 2                          |         |  | unfamilia  | arity.      |                      |     |
| No response  | 1       | 0  | 0                          |         |  |            | -           | Reso                 |     |

This study was on the Farm to Clinic program (F2C) at the Wayne Action Teams for Community Health (W.A.T.C.H.) Clinic in Wayne County, North Carolina.

The research focus was on perceptions and experiences of patients participating in F2C.

Weekly bundles of unsold produce donated by local farmers were provided to 30 patients over 8 week, along with recipes.

• A weekly survey was provided to measure produce and recipe use, effects on produce and recipe use, produce familiarity, and interest in using the produce again.

Responses were grouped by week and SPSS was used to generate frequencies and percentages.

Bivariate analysis was performed on produce use, familiarity, recipe use, effects on produce/recipe use, and repeated use.



#### Discussion

- F2C.



# **Future Research**

# Sources

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• Results suggest a high rate of satisfaction and produce use by the patients who participated in

• This study demonstrates the potential of this model to increase produce consumption in at-risk patients. • Providing recipes was not enough to overcome patient unfamiliarity with produce.

 Patients' personal preferences likely play a role in produce consumption, but culinary literacy training could encourage patients to try new produce<sup>6</sup>. The seasonal variability of produce types and

amounts make it a challenge to provide a consistent source of fresh food for participants.

> Figure 5: The 2nd produce delivery to the WATCH Clinic in Goldsboro.

Future studies may investigate:

 Impact of food literacy interventions on personal taste, as a part of produce prescription. • Whether F2C has measurable effects on the diet

and overall health outcomes of participants. • Effects of the program on farmers and methods to decrease any burdens associated with F2C. • Strategies for dealing with produce variability

throughout the season.

Examine potential of the program to reduce food waste in a sustainable way.

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