# VeggieRx and GroceryRx Produce Prescription Programs Evaluation: Preliminary Findings of Pre/Post Patient Surveys and Results from a Qualitative Journey Mapping Process

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## Evaluation Summary

### Purpose

This evaluation presents patient outcomes and experiences with two produce prescription programs in South Carolina, including:

(1) To measure the change in patient diet, food security, nutrition security, and perceived health during participation in the prescription programs.

(2) To understand processual experiences of the program from the perspective of the program implementers (food and healthcare organizations) and patients and also identify common successes, challenges, and recommendations for program improvement and scale-up.

Each program offers free produce for six months to patients diagnosed with prediabetes or diabetes. The programs, however, have different distributions models, as shown in the table below.

| | VeggieRx | GroceryRx |
|---|---|---|
| **Implementing organization** | FoodShare SC | Lowcountry Street Grocery |
| **Box/bag contents** | 9 to 11 varieties of fresh fruits and vegetables that changes | Seasonally focused vegetables and fruit and 12 eggs |
| **Box/bag sizes** | Large box (18-22lbs) or small box (15-18lbs) | Bags sized based on number of people in household |
| **Produce distribution** | Boxes picked up by participants at select locations | Bags delivered to participant's home |
| **Produce frequency** | Bi-weekly | Weekly |

### Approach

To address both above aims, a mixed-methods approach was taken. For aim one, a quantitative pre/post survey was conducted wherein patients completed a baseline survey before beginning the program and another survey after the 6-month program period. To address aim two, a qualitative journey mapping method was undertaken wherein relevant food and healthcare organizations participated in interviews to describe their process in implementing the program and reflections on key challenges and improvements. Food and healthcare organizations were interviewed at the beginning of the study period. Patients were interviewed at the beginning and the end of the program experience with monthly check-ins during the program. After interviews were completed, maps were drawn depicting the journeys taken to identify key steps, challenges, and successes of the program models. Findings for both aims are presented for both programs collectively and independently.

### Findings

**Aim 1. To measure the change in patient diet, food security, nutrition security, and perceived health during participation in the prescriptions programs**

**Fruit and vegetable intake**

- Increased for whole sample (2.88 to 3.1 daily cup equivalents)
- Increased for GroceryRx (3.05 to 3.27 daily cup equivalents)
- Increased for VeggieRx (2.8 to 3.03 daily cup equivalents)
- No increases for any sample were statistically significant

**Food security**

- Increased for whole sample (38.3% to 53.3%)
- Increased for GroceryRx (15.8% to 31.6%)
- Increased for VeggieRx (48.8% to 63.4%) participants.
- Increases were statistically significant for GroceryRx participants and for the whole sample

**Nutrition security**

- Increased for whole sample (n=60, 60% to 85%)
- Increased for GroceryRx (n=19, 52.6% to 68.4%)
- Increased for VeggieRx (n=41, 63.4% to 92.7%)
- No increases for any sample were statistically significant

**Rating of good health**

- Increased for whole overall (n=60, 35.0% to 50.0%)
- Increased for VeggieRx sample (n=41, 39.0% to 58.5%)
- Increased for GroceryRx sample (26.3% to 31.6%)
- Increases were statistically significant for VeggieRx participants and for the whole sample

**Participant transition from Rx program to regular customer of food organization**

- 15% (n=9) of the whole sample (n=60) continued to get produce boxes through FoodShare SC or Lowcountry Street Grocery after the produce prescription program ended

**Aim 2. To understand processual experiences of the program from the perspective of the program implementers (food and healthcare organizations) and patients and identify common successes, challenges, and recommendations for program improvement and scale-up.**

**Patient successes**

- Eating more healthy foods
- Trying new foods
- Positive health impact
- Positive impacts on household budget

**Patient challenges**

- Logistics of produce pickup or delivery
- Issues with the contents of the produce boxes or bags

**Food organization challenges**

- Complications around using EHR and coordinated-care systems

- Communication around missed box pickups or deliveries
- Internal capacity limitations in implementing the programs

**Healthcare organization challenges**

- Issues of patient appointment follow-up
- Having dedicated staffing and funding to implement the programs

**Recommendations for improvement and scale-up**

*Food and healthcare organizations*

- Standardizing the use of the same EHR and coordinated-care systems
- Ensuring funding and staffing for program implementation
- Ensuring adequate coverage of under-resourced areas

*Patient*

- Ensuring convenience of produce pickup locations
- Employing a mobile model, such as mobile markets where the produce prescription program can move to different clinics

# Part 1. Preliminary Produce Prescription Quantitative Study Results

## Demographic Characteristics of Patients at Enrollment

As shown in table 1, for the total sample of patients (n=307) who completed a baseline survey, most participants (75%) were over the age of 45. The largest age group represented in the sample was 46 to 60 years old (41%). Almost 74% of the sample identified as women and 58% identified as Black or African American, with 83% identifying as being Non-Hispanic.

At the 6-month post survey period, the age, sex, and race/ethnicity sample distribution trends continued with 80% of the sample aged over 46 years and 44.2% aged between 46 and 60 years old. Almost 78% of participants identified as women and 61% identified as Black or African American, with 80.5% identifying as Non-Hispanic.

**Table 1. Demographic Characteristics of Patients at Enrollment in Produce Prescription Programs**

| Demographic Characteristics | GroceryRx | | VeggieRx | | All | |
|---|---|---|---|---|---|---|
| | Baseline (n=93) | Post (n=19) | Baseline (n=214) | Post (n=58) | Baseline (n=307) | Post (n=77) |
| **Age Group (Years) n (%)** | | | | | | |
| 16-25 | 1 (1.1%) | 1 (5.3%) | 6 (2.8%) | 1 (1.7%) | 7 (2.3%) | 2 (2.6%) |
| 26-35 | 3 (3.2%) | 0 (0.0%) | 10 (4.7%) | 2 (3.4%) | 13 (4.2%) | 2 (2.6%) |
| 36-45 | 12 (12.9%) | 3 (15.8%) | 43 (20.1%) | 8 (13.8%) | 55 (17.9%) | 11 (14.3%) |
| 46-60 | 41 (44.1%) | 6 (31.6%) | 85 (39.7%) | 28 (48.3%) | 126 (41.0%) | 34 (44.2%) |
| 61-69 | 17 (18.3%) | 5 (26.3%) | 54 (25.2%) | 15 (25.9%) | 71 (23.1%) | 20 (26.0%) |
| >69 | 19 (20.4%) | 4 (21.1%) | 16 (7.5%) | 4 (6.9%) | 35 (11.4%) | 8 (10.4%) |
| **Sex n (%)** | | | | | | |
| Man | 21 (22.6%) | 3 (15.8%) | 59 (27.6%) | 14 (24.1%) | 80 (26.1%) | 17 (22.1%) |
| Woman | 72 (77.4%) | 16 (84.2%) | 154 (72.0%) | 44 (75.9%) | 226 (73.6%) | 60 (77.9%) |
| DK | 0 (0.0%) | 0 (0.0%) | 1 (0.5%) | 0 (0.0%) | 1 (0.3%) | 0 (0.0%) |
| **Race n (%)** | | | | | | |
| American Indian or Alaska Native | 1 (1.1%) | (0.0%) | 1 (0.5%) | (0.0%) | 2 (0.7%) | (0.0%) |
| Black or African American | 62 (66.7%) | 11 (57.9%) | 116 (54.2%) | 36 (62.1%) | 178 (58.0%) | 47 (61.0%) |
| White | 21 (22.6%) | 7 (36.8%) | 54 (25.2%) | 13 (22.4%) | 75 (24.4%) | 20 (26.0%) |
| More than one | 4 (4.3%) | (0.0%) | 7 (3.3%) | 1 (1.7%) | 11 (3.6%) | 1 (1.3%) |
| Other Pacific Islander | 0 (0.0%) | (0.0%) | 1 (0.5%) | 4 (6.9%) | 1 (0.3%) | 4 (5.2%) |
| Other race | 1 (1.1%) | (0.0%) | 20 (9.3%) | (0.0%) | 21 (6.8%) | (0.0%) |
| Prefer not to answer | 1 (1.1%) | (0.0%) | 10 (4.7%) | 2 (3.4%) | 11 (3.6%) | 2 (2.6%) |
| DK | 3 (3.2%) | 1 (5.3%) | 5 (2.3%) | 2 (3.4%) | 8 (2.6%) | 3 (3.9%) |
| **Ethnicity n (%)** | | | | | | |
| Hispanic | 7 (7.5%) | 2 (10.5%) | 40 (18.7%) | 13 (22.4%) | 47 (15.3%) | 15 (19.5%) |
| Non-Hispanic | 85 (91.4%) | 17 (89.5%) | 171 (79.9%) | 45 (77.6%) | 256 (83.4%) | 62 (80.5%) |
| DK | 1 (1.1%) | 0 (0.0%) | 3 (1.4%) | 0 (0.0%) | 4 (1.3%) | 0(0.0%) |

Our sample size for the remaining analysis was 60 participants (19 GroceryRX; 41 VeggieRX). Only patients with a completed pre and post test at the time of analysis who completed the full 6-months of program interventions were included.

## Fruit and Vegetable Intake

Participants were asked a series of questions related to their frequency of eating specific types of foods, such as fruits and different types of vegetables. Estimated average daily cup equivalents of fruit and vegetable intake were then calculated using an established scoring algorithm provided by the National Cancer Institute

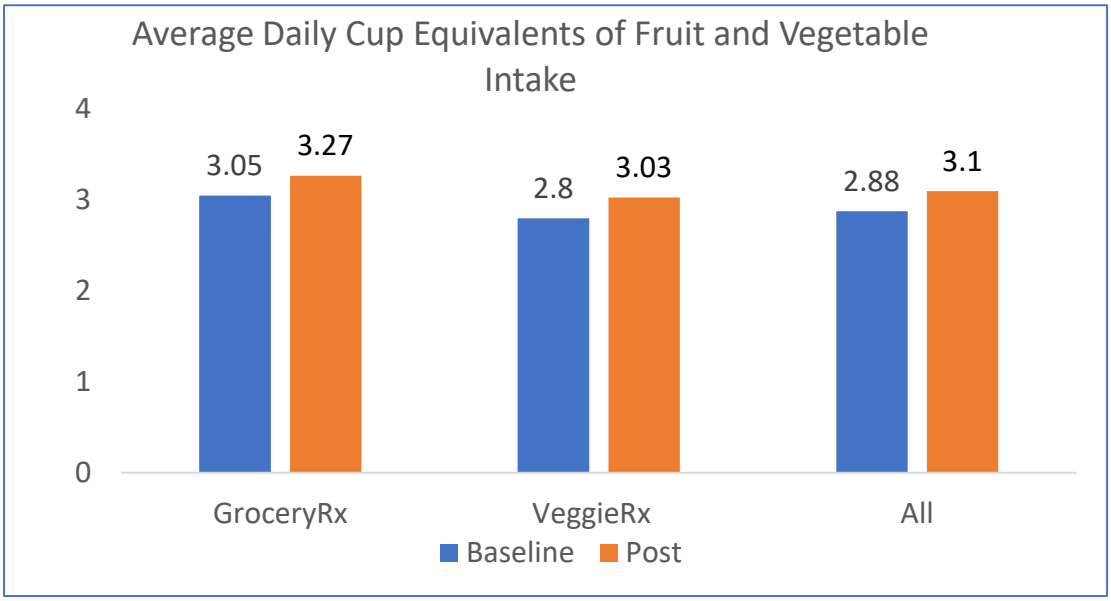


**Figure 1**. Average Daily Cup Equivalents of Fruit and Vegetable Intake: Baseline vs. Post. The data are presented as means and were analyzed using a paired Student's t-test

(https://epi.grants.cancer.gov/nhanes/dietscreen/scoring/current/develop.html). As shown in figure 1, there was an increase in the average daily cup equivalents of fruit and vegetable intake between baseline and post-assessment overall (2.88 to 3.1 daily cup equivalents) and for Grocery Rx (3.05 to 3.27 daily cup equivalents) and Veggie Rx (2.8 to 3.03 daily cup equivalents), however the difference was not statistically significant. The baseline and improved post period daily cup equivalents found for this sample, however, are mostly in line with current dietary recommendations. For example, the Dietary Guidelines for Americans recommend 1.5-2 daily cups of fruit for adult women and 2-2.5 cups for adult men. Recommendations for average daily intake of vegetables is 2.5-3 cups for adult women and 3-4 cups for men. As shown in table 2, for men in the sample there was an increase in average daily cup equivalent fruit and vegetable intake from 3.16 to 3.43 and an increase in women from 2.81 to 3.02 average daily cups.

| Average Daily Cup Equivalents of Fruit and Vegetable Intake | GroceryRx (n=19) | | VeggieRx (n=41) | | All (n=60) | |
|---|---|---|---|---|---|---|
| | Baseline | Post | Baseline | Post | Baseline | Post |
| Grand Total | 3.05 | 3.27 | 2.8 | 3.03 | 2.88 | 3.1 |
| **Age Group (Years) n (%)** | | | | | | |
| 18-25 | 2.35 | - | 1.99 | 3.02 | 2.17 | 3.02 |
| 26-35 | - | - | 5.45 | 3.63 | 5.45 | 3.63 |

| | | | | | | |
|---|---|---|---|---|---|---|
| 36-45 | 2.54 | 3.21 | 2.11 | 2.39 | 2.27 | 2.74 |
| 46-60 | 3.31 | 3.84 | 3.29 | 3.35 | 3.29 | 3.48 |
| 61-69 | 3.22 | 2.65 | 2.34 | 2.84 | 2.63 | 2.8 |
| >69 | 2.91 | 3.08 | 2.39 | 2.75 | 2.62 | 2.91 |
| **Sex n (%)** | | | | | | |
| Man | 3.37 | 3.47 | 3.09 | 3.43 | 3.16 | 3.43 |
| Woman | 2.99 | 3.24 | 2.72 | 2.91 | 2.81 | 3.02 |
| **Race n (%)** | | | | | | |
| Black or African American | 3.5 | 3.28 | 3.03 | 3.09 | 3.16 | 3.14 |
| White | 2.43 | 3.25 | 2.04 | 2.83 | 2.23 | 3.02 |
| More than one | - | - | 2.63 | - | 2.63 | - |
| Other race | - | - | 2.63 | 3.4 | 2.63 | 3.4 |
| Prefer not to answer | - | - | 2 | 2.54 | 2 | 2.54 |
| DK | 2.35 | - | - | - | 2.35 | - |
| **Ethnicity n (%)** | | | | | | |
| Hispanic | 1.99 | 6.96 | 2.17 | 2.81 | 2.13 | 3.32 |
| Non-Hispanic | 3.17 | 3.04 | 2.95 | 3.08 | 3.03 | 3.06 |
| DK | - | - | - | - | - | - |

**Table 2.** Average Daily Cup Equivalents of Fruit and Vegetable Intake

## Food Security

As shown in figure 2, there were increases in food security for the total sample (38.3% to 53.3%), as well as for GroceryRx (15.8% to 31.6%) and VeggieRx (48.8% to 63.4%) participants. These differences were statistically significant for GroceryRx participants and for the sample overall. Table 3 depicts the largest percentage increase in food

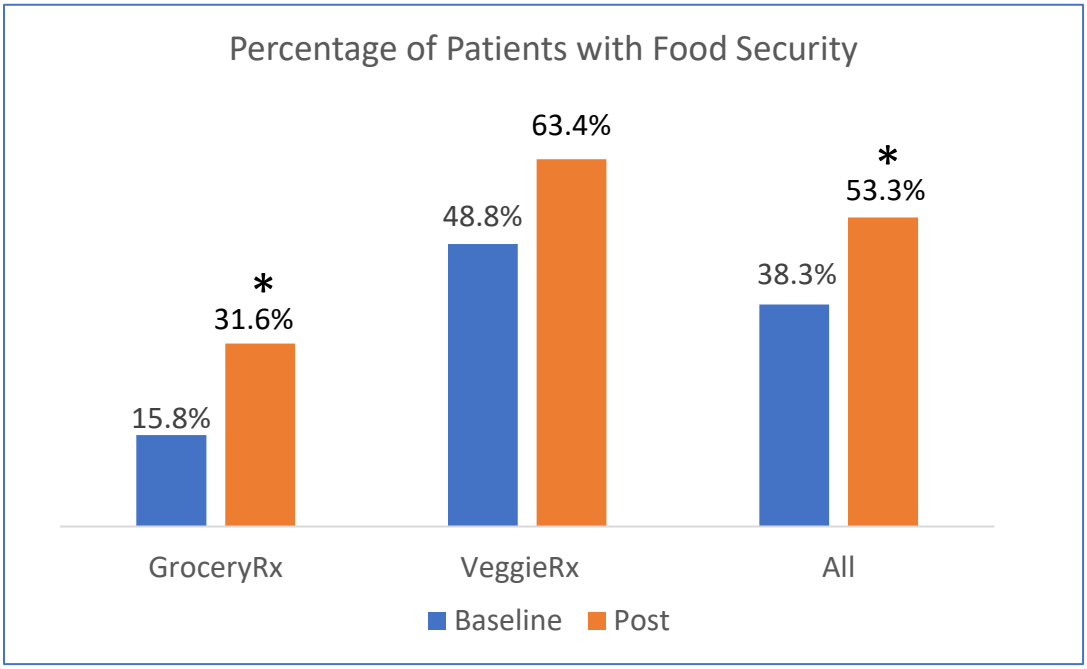


**Figure 2.** Percentage of Patients with Food Security. The data is presented as 'Percentage of Patients with Food Security' and was analyzed using a paired Student's t-test. Asterisks (*) indicate $p < 0.05$, statistical significance between baseline and post-assessment.

security among 46 to 60 year olds (13.3% to 23.3% of the total sample).

| Number of Patients with Food Security | GroceryRx (n=19) | | VeggieRx (n=41) | | All (n=60) | |
|---|---|---|---|---|---|---|
| | Baseline | Post | Baseline | Post | Baseline | Post |
| Grand Total | 3 (15.8%) | 6 (31.6%) | 20 (48.8%) | 26 (63.4%) | 23 (38.3%) | 32 (53.3%) |
| **Age Group (Years) n (%)** | | | | | | |
| 18-25 | 1 (5.3%) | 1 (5.3%) | 1 (2.4%) | 1 (2.4%) | 2 (3.3%) | 2 (3.3%) |
| 26-35 | 0 (0.0%) | 0 (0.0%) | 1 (2.4%) | 1 (2.4%) | 1 (1.7%) | 1 (1.7%) |
| 36-45 | 0 (0.0%) | 0 (0.0%) | 3 (7.3%) | 3 (7.3%) | 3 (5.0%) | 3 (5.0%) |
| 46-60 | 0 (0.0%) | 1 (5.3%) | 8 (19.5%) | 13 (31.7%) | 8 (13.3%) | 14 (23.3%) |
| 61-69 | 2 (10.5%) | 3 (15.8%) | 5 (12.2%) | 6 (14.6%) | 7 (11.7%) | 9 (15.0%) |
| >69 | 0 (0.0%) | 1 (5.3%) | 2 (4.9%) | 2 (4.9%) | 2 (3.3%) | 3 (5.0%) |
| **Sex n (%)** | | | | | | |
| Man | 1 (5.3%) | 3 (15.8%) | 4 (9.8%) | 7 (17.1%) | 5 (8.3%) | 10 (16.7%) |
| Woman | 2 (10.5%) | 3 (15.8%) | 16 (39.0%) | 19 (46.3%) | 18 (30.0%) | 22 (36.7%) |
| **Race n (%)** | | | | | | |
| Black or African American | 1 (5.3%) | 3 (15.8%) | 6 (14.6%) | 16 (39.0%) | 7 (11.7%) | 19 (31.7%) |
| White | 0 (0.0%) | 2 (10.5%) | 0 (0.0%) | 7 (17.1%) | 0 (0.0%) | 9 (15.0%) |
| More than one | 0 (0.0%) | 0 (0.0%) | 1 (2.4%) | 0 (0.0%) | 1 (1.7%) | 0 (0.0%) |
| Other race | 0 (0.0%) | 0 (0.0%) | 1 (2.4%) | 1 (2.4%) | 1 (1.7%) | 1 (1.7%) |
| Prefer not to answer | 1 (5.3%) | 0 (0.0%) | 0 (0.0%) | 2 (4.9%) | 1 (1.7%) | 2 (3.3%) |
| DK | 0 (0.0%) | 1 (5.3%) | 0 (0.0%) | 0 (0.0%) | 0 (0.0%) | 1 (1.7%) |
| **Ethnicity n (%)** | | | | | | |
| Hispanic | 1 (5.3%) | 1 (5.3%) | 7 (17.1%) | 7 (17.1%) | 8 (13.3%) | 8 (13.3%) |
| Non-Hispanic | 2 (10.5%) | 5 (26.3%) | 13 (31.7%) | 19 (46.3%) | 15 (25.0%) | 24 (40.0%) |
| DK | 0 (0.0%) | 0 (0.0%) | 0 (0.0%) | 0 (0.0%) | 0 (0.0%) | 0 (0.0%) |

**Table 3.** Number of Patients with Food Security. Food security was evaluated using the U.S. Household Food Security Survey Module: Six-Item Short Form guide. A raw score between 0-1 is considered food security, while a raw score between 2-6 is considered food insecurity.

## Nutrition Security

Nutrition security, which incorporates dietary healthfulness within the concept of food security, and is defined as having consistent access to foods that promote well-being, was increased from baseline to post periods for the overall sample (n=60, 60% to 85%) as well as for GroceryRx (n=19, 52.6% to

68.4% ) and VeggieRx (n=41, 63.4% to 92.7%) as seen in figure 3. There was no significant difference between baseline and post-assessment in all three categories, however.

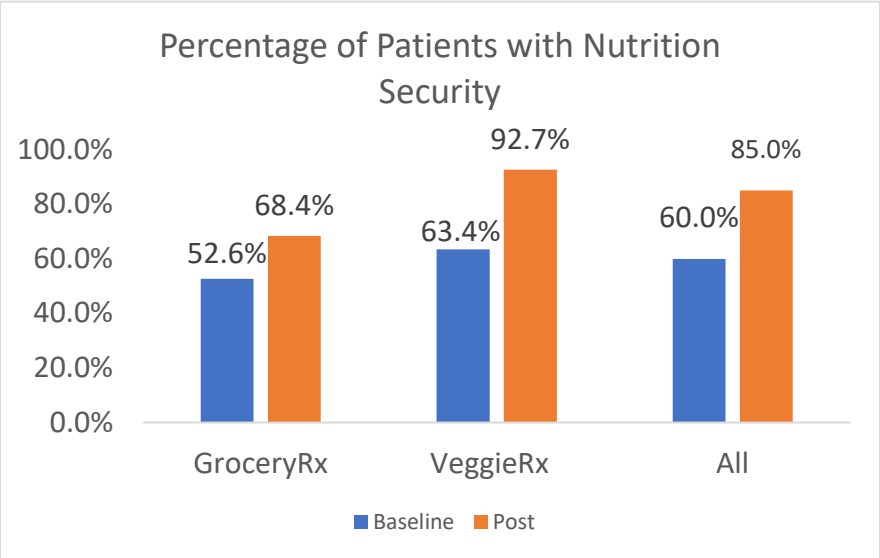


**Figure 3.** Percentage of Patients with Nutrition Security: Baseline vs. Post. The data is presented as 'Percentage of Patients with Nutrition Security' and was analyzed using a paired Student's t-test.

| Number of Patients with Nutrition Security | GroceryRx (n=19) | | VeggieRx (n=41) | | All (n=60) | |
|---|---|---|---|---|---|---|
| | Baseline | Post | Baseline | Post | Baseline | Post |
| **Grand Total** | 10 (52.6%) | 13 (68.4%) | 26 (63.4%) | 38 (92.7%) | 36 (60.0%) | 51 (85.0%) |
| **Age Group (Years) n (%)** | | | | | | |
| 18-25 | 1 (5.3%) | 1 (5.3%) | 1 (2.4%) | 1 (2.4%) | 2 (3.3%) | 2 (3.3%) |
| 26-35 | 0 (0.0%) | 0 (0.0%) | 0 (0.0%) | 1 (2.4%) | 0 (0.0%) | 1 (1.7%) |
| 36-45 | 2 (10.5%) | 3 (15.8%) | 4 (9.8%) | 4 (9.8%) | 6 (10.0%) | 7 (11.7%) |
| 46-60 | 2 (10.5%) | 3 (15.8%) | 12 (29.3%) | 17 (41.5%) | 14 (23.3%) | 20 (33.3%) |
| 61-69 | 4 (21.1%) | 4 (21.1%) | 6 (14.6%) | 11 (26.8%) | 10 (16.7%) | 15 (25.0%) |
| >69 | 1 (5.3%) | 2 (10.5%) | 3 (7.3%) | 4 (9.8%) | 4 (6.7%) | 6 (10.0%) |
| **Sex n (%)** | | | | | | |
| Man | 2 (10.5%) | 3 (15.8%) | 6 (14.6%) | 9 (22.0%) | 8 (13.3%) | 12 (20.0%) |
| Woman | 8 (42.1%) | 10 (52.6%) | 20 (48.8%) | 29 (70.7%) | 28 (46.7%) | 39 (65.0%) |
| **Race n (%)** | | | | | | |
| Black or African American | 4 (21.1%) | 10 (52.6%) | 7 (17.1%) | 28 (68.3%) | 11 (18.3%) | 38 (63.3%) |
| White | 0 (0.0%) | 2 (10.5%) | 1 (2.4%) | 7 (17.1%) | 1 (1.7%) | 9 (15.0%) |
| More than one | 0 (0.0%) | 0 (0.0%) | 2 (4.9%) | 0 (0.0%) | 2 (3.3%) | 0 (0.0%) |
| Other race | 0 (0.0%) | 0 (0.0%) | 1 (2.4%) | 1 (2.4%) | 1 (1.7%) | 1 (1.7%) |
| Prefer not to answer | 1 (5.3%) | 0 (0.0%) | 0 (0.0%) | 2 (4.9%) | 1 (1.7%) | 2 (3.3%) |
| DK | 0 (0.0%) | 1 (5.3%) | 0 (0.0%) | 0 (0.0%) | 0 (0.0%) | 1 (1.7%) |
| **Ethnicity n (%)** | | | | | | |
| Hispanic | 1 (5.3%) | 1 (5.3%) | 8 (19.5%) | 7 (17.1%) | 9 (15.0%) | 8 (13.3%) |
| Non-Hispanic | 9 (47.4%) | 12 (63.2%) | 18 (43.9%) | 31 (75.6%) | 27 (45.0%) | 43 (71.7%) |

| | | | | | | |
|---|---|---|---|---|---|---|
| DK | 0 (0.0%) | 0 (0.0%) | 0 (0.0%) | 0 (0.0%) | 0 (0.0%) | 0 (0.0%) |

**Table 4.** Numbers of Patients with Nutrition Security. Nutrition security was evaluated using the 'Assess Household Nutrition Security, Healthfulness Choice, and Dietary Choice Scoring and Interpretation Guide.' A mean score above 2.00 is considered nutrition security, while a mean score of 2.00 or below is considered nutrition insecurity. Some patients did not complete all four questions, so questions without responses are omitted when calculating the mean score.

## Patients' Self-Reported Health Status

As shown in figure 4, there were statistically significant increases in the perceived ratings of good health among the sample overall (n=60, 35% to 50%) and the Veggie Rx sample (n=41, 39% to 58.5%). There was an increase in perceived ratings of good health among the Grocery Rx sample (26.3% to 31,6%), but this increase was not statistically significant.

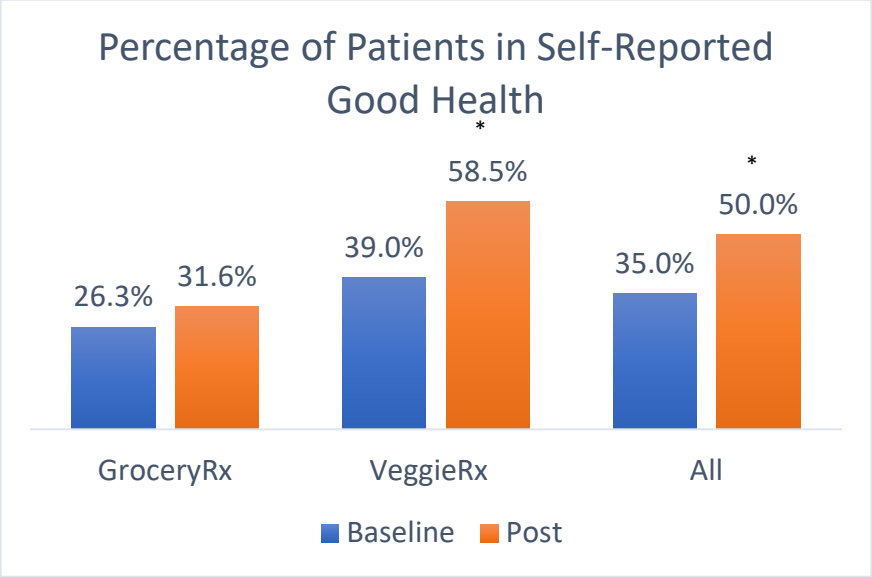


**Figure 4.** Percentage of Patients in Good Health: Baseline vs. Post. Note: The data is presented as 'Percentage of Patients in Good Health' and was analyzed using a paired Student's t-test. Asterisks (*) indicate $p < 0.05$, statistical significance between baseline and post-assessment.

| Number of Patients in Good Health | GroceryRx (n=19) | | VeggieRx (n=41) | | All (n=60) | |
|---|---|---|---|---|---|---|
| | Baseline | Post | Baseline | Post | Baseline | Post |
| Grand Total | 5 (26.3%) | 6 (31.6%) | 16 (39.0%) | 24 (58.5%) | 21 (35.0%) | 30 (50.0%) |
| **Age Group (Years) n (%)** | | | | | | |
| 18-25 | 0 (0.0%) | 0 (0.0%) | 1 (2.4%) | 1 (2.4%) | 1 (1.7%) | 1 (1.7%) |
| 26-35 | 0 (0.0%) | 1 (5.3%) | 1 (2.4%) | 3 (7.3%) | 1 (1.7%) | 4 (6.7%) |
| 36-45 | 0 (0.0%) | 0 (0.0%) | 1 (2.4%) | 10 (24.4%) | 1 (1.7%) | 10 (16.7%) |
| 46-60 | 0 (0.0%) | 4 (21.1%) | 6 (14.6%) | 8 (19.5%) | 6 (10.0%) | 12 (20.0%) |
| 61-69 | 4 (21.1%) | 1 (5.3%) | 5 (12.2%) | 2 (4.9%) | 9 (15.0%) | 3 (5.0%) |
| >69 | 1 (5.3%) | 0 (0.0%) | 2 (4.9%) | 0 (0.0%) | 3 (5.0%) | 0 (0.0%) |
| **Sex n (%)** | | | | | | |
| Man | 1 (5.3%) | 1 (5.3%) | 2 (4.9%) | 5 (12.2%) | 3 (5.0%) | 6 (10.0%) |
| Woman | 4 (21.1%) | 5 (26.3%) | 14 (34.1%) | 19 (46.3%) | 18 (30.0%) | 24 (40.0%) |

| | | | | | | |
|---|---|---|---|---|---|---|
| **Race n (%)** | | | | | | |
| Black or African American | 3 (15.8%) | 3 (15.8%) | 3 (7.3%) | 17 (41.5%) | 6 (10.0%) | 20 (33.3%) |
| White | 0 (0.0%) | 3 (15.8%) | 1 (2.4%) | 5 (12.2%) | 1 (1.7%) | 8 (13.3%) |
| More than one | 0 (0.0%) | 0 (0.0%) | 1 (2.4%) | 1 (2.4%) | 1 (1.7%) | 1 (1.7%) |
| Other race | 0 (0.0%) | 0 (0.0%) | 0 (0.0%) | 1 (2.4%) | 0 (0.0%) | 1 (1.7%) |
| Prefer not to answer | 0 (0.0%) | 0 (0.0%) | 0 (0.0%) | 0 (0.0%) | 0 (0.0%) | 0 (0.0%) |
| DK | 0 (0.0%) | 0 (0.0%) | 0 (0.0%) | 0 (0.0%) | 0 (0.0%) | 0 (0.0%) |
| **Ethnicity n (%)** | | | | | | |
| Hispanic | 0 (0.0%) | 0 (0.0%) | 4 (9.8%) | 5 (12.2%) | 4 (6.7%) | 5 (8.3%) |
| Non-Hispanic | 5 (26.3%) | 6 (31.6%) | 12 (29.3%) | 19 (46.3%) | 17 (28.3%) | 25 (41.7%) |
| DK | 0 (0.0%) | 0 (0.0%) | 0 (0.0%) | 0 (0.0%) | 0 (0.0%) | 0 (0.0%) |

**Table 5.** Numbers of Patients in Good Health. Note: Health status was evaluated using the methods introduced in the "Gus Schumacher Nutrition Incentive Program (GusNIP) report." Patients who responded to the health status as good, very good, or excellent are considered to have a good health status, while those who responded with poor or fair are considered to not have a good health status.

## Participant transition from Rx program to regular customer of food organization

Of the 60 participants included in this analysis, 15% (n=9) transitioned to purchasing food through the FoodShare SC or Lowcountry Street Grocery as a customer after their produce prescription program ended.

## Part 2: Produce Prescription Journey Mapping Results

Next are provided synthesized findings of a journey mapping process with VeggieRX and GroceryRX programs, focusing on processual experiences from the perspectives of the organizations that initiate the programs (healthcare), enroll patients and distribute the produce (food organizations), and the patients that participate in the programs. Below includes:

**1**. Overall findings across distribution models, healthcare organizations, and patients.

**2.** Program-specific findings within each distribution model and representative patient cases.

**3.** Program challenges and recommendations for scale-up.

## Overall Findings

Presented below are the synthesized journeys that patients take from the initial health clinic visit through completion of the VeggieRx or GroceryRx programs, highlighting common and less common patient experiences. This evaluation includes perspectives from the coordinators (n=2) that implement the VeggieRx and GroceryRx programs, several partnering healthcare organizations (n=4), and patients that participated in the program (n=10). Each main stage of the programs is described from the patient as well as from the food and healthcare organizations' perspectives to triangulate and summarize the patient journeys.

***Office Visit and Informing the Patient about the Program***

*Patient perspectives*. Overall, most patients regularly attended their clinic or doctor's office appointments for management of their diabetes or other chronic conditions and it was during one of these regular appointments that they learned about the produce prescription program. However, the way they learned about the program differed across patients. For example, most were informed about the program by their doctor or other healthcare specialists, such as nurses, dieticians, nutritionists, or diabetic counselors during their appointment. However, several patients learned of the program from other means, such as front desk staff during appointment intake or passively through program flyers with the patient initiating the conversation. As one GroceryRx patient, who learned of the program through a flyer described, *"I'm diabetic, and I saw a brochure in, in the doctor's office [so] I asked them... inside the room I was waiting in, 'Was I able to get some fruit and vegetables and stuff like that for six months?'"*

Patients' experiences with the conversations about the specifics of the program ranged from detailed to simplistic. Some clinic staff would describe the program details such as the length of the program, the manner of delivery or pick up, the types of foods in the boxes or bags, and how the enrollment process would work. Other clinic staff would simply mention that it was a produce program where you get free produce for 6 months. Typically, when informing patients of the program during an appointment this context was discussed at the end and patients were told that someone from the relevant food organization would reach out to them by phone, text, or mail.

*Organizational perspectives*. From the perspective of the healthcare organizations this process was detailed in much the same way as from the patient perspective. For example one healthcare organization described their process for informing eligible patients by stating, *"I usually have flyers and consent forms at each of our locations, so each of our nine locations. And the staff explain the*

*program to [the patients], they let them know that, because not only do we have the VeggieRX side, we actually have a diabetic educator. So the physician informs them about this program and then they usually send them to our diabetic educator. They set up an appointment for the diabetic educator, and once they set up the appointment for the diabetic educator, she'll go through all the steps of the program."*

Healthcare organizations described the process of determining patient eligibility as one in which there was communication between themselves and the corresponding food organization around the two main components of eligibility: a diagnosis of diabetes or prediabetes and risk of food insecurity. For example, one VeggieRx clinic recalled the discussion of setting the A1C threshold for patients such that it would serve patients that were diabetic or prediabetic but limited enough to not exceed the organizational capacity of servicing all eligible patients. She stated, *"First we were thinking 12, do the higher range from 12 on up. Then we were like, 'Well, no.' We were trying to look at the data that we already had as far as our patients and what was the average means here. But when we talked [with the food organization], we decided to go with the 6.5 and up. So like I said, we're going through 6.5 and up, and then once again, when they see this level and they realize ... Some of these doctors, they look at other factors too, because if they've got hypertension, diabetes, we were like, 'Well, maybe we need to work on one entity and maybe that'll help the other issue.'"* The other component of eligibility, food insecurity, was typically not as focused on as diabetes from the clinic perspective and this bore out in the perspectives of the patients, many of whom did not recall being asked food insecurity screener questions. This may have been due to recall bias or, as in some cases, patients thought it was possible that they had been asked the questions but it was combined with a lot of other paperwork so they were usure. Clinics shared that they do screen the patients but for some clinics, the determination of the patient being "at risk for food insecurity" was secondary to their diabetes diagnosis. For example, one VeggieRx clinic, when asked if the food insecurity screener is included when determining eligibility for the produce prescription program, shared, "*No, because honestly most of the patients that we see literally are diabetic. So they're going to fall in this program usually anyway."*

After eligible patients were informed of the program and agreed to participate or learn more about the program, typically through casual verbal assent, a referral was made in an EHR or coordinated-care system by healthcare organization staff that was then received by the food organization.

***Referral***

There were a range of different EHR and coordinated-care systems used by the clinics, for example EPIC, Unite Us, and Carelink, which led to varied approaches used by different healthcare and food organizations. Depending on the structure and service approach used by the healthcare organization, different staff made the referrals, such as doctors, nurses, community health workers, nutritionists, or diabetes educators. Specifically, this meant that there were differences in processes and varying levels of communication required between a healthcare organization and the partnering food organization to open, manage, and close referrals. Detailed referral processes and specific challenges for VeggieRx and GroceryRx are presented in the program specific results section below.

For all healthcare and food organization participants interviewed, the referral stage was viewed as a key step and functioned in most cases as a transition point, or a *"handing off"* of the patient from the healthcare to food organization. There was variance, however, in the levels of communication

between the healthcare and food organizations as the program progressed through the remaining stages, with some experiencing frequent communication and others much more limited after the referral stage.

### ***Enrolling***

*Organizational perspectives*. Once a referral has been entered and received by the relevant food organization, FoodShare SC or Lowcountry Street Grocery, dedicated staff reach out to the patient. The number of staff that conduct the patient referral and enrollment processes is limited, with one person at FoodShare SC and two at Lowcountry Street Grocery being responsible for all patient enrollment. When patients are contacted by the relevant food organization they have already been informed of the program by healthcare organization staff but the food organization takes up the conversation and focuses on the details of their program model to confirm that the patient does indeed want to participate and then officially enrolls them in the program. As one food organization staff member stated, "*So even though at the clinic level they shared with the patients an overview of what the program entails, I'm really getting down to the nitty-gritty of saying, 'This is it. These are your pickup times. This is your location that you're going to pick up.'"* Details included sharing the pickup or delivery schedule, communication procedures, such as text or phone call reminders before pickups or deliveries, expectations of continued pickups, and from one food organization, confirmation that the participant has the means to store and cook fresh foods. Both food organizations highlighted the importance of describing the program in detail and overtly asking the patient if this program is one in which they want to participate. Both food organizations felt that this was an important step to increasing the likelihood of the patient successfully completing the program, with one food organization staff member calling it a "*critical question*". For example, after describing the program in detail one food organization staff member asks each patient, *"Does this [produce prescription program] sound like something that you would like to participate in or would it be a burden on you participating?"* A staff member from the other food organization shared a similar set of questions when enrolling patients, asking them, *"'Do you [name of participant] want this? We got this referral for you, but can you use it? Do you want it?' And again, 99% of the time, people say yes, at least at first. We occasionally do have people that call in and say, 'I no longer need this. I would rather you be able to give this to someone else. I got a job and I'm in a different situation,' or, 'It turns out I actually can't get through that amount of food.'"* Once patients confirm that they do want to participate in the program, the food organization goes back into the EHR or coordinated-care system and *"closes"* or *"addresses"* the referral.

*Patient perspectives*. Patients shared a range of perspectives related to the enrollment process. Most variability centered on the length of time from being informed about the program through their healthcare organization and then the food organization reaching out to enroll them. According to patients, the range in time was between a few days to two weeks. Once patients were first contacted about enrollment by the food organization they received information about the program, as described by the food organizations above. One GroceryRx patient recounted what the first conversation covered from her perspective stating, "*It was explained to me that my deliveries would be every two weeks on a Tuesday, and it was explained to me what I would be getting. It would not be the same items every two weeks, but it would be fresh fruits and vegetables and eggs. And it was also explained to me that if I was not going to be home, I can leave a cooler outside the door, and the delivery person would put the items inside of that cooler. She also explained to me that I would get a*

*text message from the delivery driver when he or she was on the way to my location."* Overall, patients had positive experiences with the enrollment process and felt that they were given enough information to know what to expect from the program and were clear on communication processes. However, there were some challenges for some patients. For example, one VeggieRx patient shared a communication issue where they thought they had been enrolled but their name was not on the list for pickups. She stated, *"Enrollment took a long time. I thought she [healthcare organization staff] had put... I signed my name down for the [produce] box, but a couple of times they said my name wasn't on the book. So, the girl said she was kind of busy holding up, or turning in [the referrals], or whatever else it is. But she got me straightened out."*

***Beginning and Continuing Getting Produce Boxes***

*Organizational perspectives*. After the patients have been officially enrolled there is a transition from the enrollment-focused staff to the distribution staff at the food organizations for both the VeggieRx and GroceryRx programs. For the distribution and pickup model of VeggieRx an internal tracking software system is used to create produce orders for patients through the relevant hub for patient pickup at sites most conveniently located for the patient. In some cases, the healthcare organization serves as the site for patient pickup. For the GroceryRx program, once a patient is enrolled they are handed off to the scheduling and delivery arm of the Lowcountry Street Grocery organization, as described in the previous section. As the patients moved through the program there were varying levels of continued communication between the food organizations and the healthcare organizations, with some healthcare organizations frequently communicating with the food organizations, relating information about patients picking up produce or otherwise acting as a conduit of communication between the patient and food organization, such as communicating back with the food organizations if a patient had stopped attending follow-up appointments. This was true more often for patients that were regularly seen at their healthcare organization, such as for regular diabetes check-ups. Other healthcare organizations had very infrequent communication beyond the referral point. Food organization communication with patients, however, was much more frequent. Primarily this related to the logistics of sending pickup or delivery schedules and troubleshooting any issues that patients might have had.

*Patient perspectives.* Overall patients from both programs held positive feelings around beginning the programs. One participant described their overall feeling as "*grateful*" and "*felt proud that somebody actually cared*". Several patients also described goals they had around participating in the program with personal health being the most commonly cited, with a few patients also hoping to meet a goal of increasing the amount of food in their house for less money. Describing a personal health goal, one GroceryRx patient stated that, *"What made me want to participate in the program is because I knew I wasn't eating well, and I knew that my nutrition was not adding up. I felt like because of the things that I was eating or was not eating was affecting my health. Like I said, I was feeling fatigue, and really tired, and sometimes, like, when I ate something unhealthy, I still felt very hungry, and it was because it was a lot of carbohydrates, and I was missing something in my diet, like protein, or, um, green vegetables."* Another patient, also, with GroceryRx, stated that their goal was to *"get my diabetes, blood pressure, and BMI under control"*. Describing a goal related to the financial impacts of the program, one participant shared that when her SNAP benefits were cut after COVID-19 stimulus increases ended, the program allowed her to have enough produce to eat without the constrictions of her limited $20 a month SNAP allotment.

As the programs continued over the remaining months, patients shared their experiences and perspectives around what had been going well and not well. Unanimously, patients stated that communication with the VeggieRx and GroceryRx programs was consistent and appropriate, with staff being available to answer any questions and frequently communicating about produce pickup or delivery, or resolving any issues that arose. Other positives focused on the healthful impacts the produce afforded, such as having increased fresh produce in the household and the ability to cook healthier meals. One VeggieRx participant stated that, *"Everything is good. I'm getting a little better because I'm eating good food. I used to get canned food from the store. The little salad bag be good. I'm looking forward to it always."* Another VeggieRx patient echoed this sentiment, stating, *"I have been able to eat a lot more fruits and vegetables in my daily life."*

There were, however, some areas where patients felt that the experience could have been better. The two main areas were related to the produce itself and acquiring the boxes. More specifically, patients that had challenges related to the produce cited receiving produce that they did not like or typically eat, with several patients wondering if there would ever be an option to tailor the produce types towards their own preferences. Some other patients experienced instances where they felt the proportion of the types of produce did not suit their preferences. For example, one GroceryRx participant stated that that they only received one onion so had to *"use it in quarters just to make it last"* as they used onions as a flavoring component of their cooking. Further, several of the participants intermittently received produce that was either rotten or was too ripe to eat, although it was indicated that these experiences were not the norm. Lastly, some patients had challenges related to pickups and deliveries. One VeggieRx participant recalled that they arrived too late to their pickup location and so missed retrieving their box and several others recounted that logistically it could be complicated to make every pickup due to unreliable transportation.

### ***Transitioning***

*Organizational perspectives.* As the program is ending for patients, each food organization communicates directly with each patient leading up to the final pickup or delivery through a formal letter, text, or phone call. Both food organizations also include information about the cost of continuing to participate in their regular produce distribution program though Lowcountry Street Grocery or FoodShare SC. In addition to communication from the food organizations, some healthcare organizations also communicate with patients when the program is ending, letting the patient know during appointments that they have a certain amount of distributions remaining through the program.

*Patient perspectives.* From the patient perspective, most indicated that they were contacted to inform them that the program was ending. However, some patients stated that they learned of the program ending from the food organization and others from their healthcare organization. Some patients were encouraged to reach out to their clinic to attempt to get another produce prescription to continue the program. Additionally, most patients recalled receiving information about purchasing produce through their food relevant food organization and that there was a discount if SNAP was used. However, each patient that recalled receiving this information felt that they were not intending to switch to purchasing boxes at the time of the study. As one patient articulated when asked about transitioning to purchasing produce boxes through their food organization, *"Oh no, I'm not paying a $25 for that box.*

*Because if I go to the store, I'm not going to buy $25 worth of vegetables like that. I won't be able to do that."*

## Program Specific Summaries

Below, program-specific findings are presented beginning with a program description and perspectives from the staff from the two food organizations, FoodShareSC and Lowcountry Street Grocery, and healthcare organizations highlighting process, goals, successes, and challenges. Next, program-specific patient successes and challenges are shared across participants and a representative patient case for each program is presented.

### VEGGIERX

***Food and healthcare organization perspectives.***

From the food organization perspective, moving from the referral to completion of the program for the VeggieRx program included a number of steps, along with some challenges and rewarding experiences, as shown in figure 1. To begin, VeggieRx clinics using the Unite Us coordinated-care system were trained on the system, along with FoodShare SC. Once a patient was deemed eligible at the clinic and informed about the program, a referral was made by the clinic, then received and reviewed for completeness by FoodShare SC. Information in the referral included the patient's address, contact information, birthday, and some health metrics, such as weight and blood pressure. Missing patient information in the referral can be a challenge because, as the FoodShare SC interviewee shared, Unite Us had a recent software change that required acceptance of the referral before full review of the record so that if there is any missing information FoodShare SC must decline the referral, make a note for the reason for declining, and then the clinic makes the revision and re-issues the referral. This has created an added step and complicated the workflow and transition between patients being referred by their clinic and enrolled by FoodShare SC into VeggieRx. As the FoodShare SC interviewee shared, *"I've definitely shared with [Unite Us] that that's added additional steps on my part as well as the clinic's part. And I'm already trying to do everything in my power to eliminate as much work on the clinic side as possible because they're seeing patients left and right. Not that I'm not busy, but just trying to alleviate some of the work that they have to do."*

Once all information is present, FoodShare SC accepts the referral and moves to calling the patient. While it can be challenging reaching patients intially, FoodShare SC calls each patient up to five times in attempting to enroll them in the program. If a patient is not reached after five attemtps, FoodShare SC informs the clinic that the referral is going to be rejected due to non-contact and the clinic may try to reach the patient. Once a patient is reached, FoodShare SC describes the program in more detail, ensuring that the patient is clear on expectations of pickups and that three missed boxes results in unenrollment from the program. When a patient agrees to participate, FoodShare SC then sends them a welcome letter and a calendar of their 12 pickup dates. On the back end, the patient is added to the text or call notifcation system and the 12 scheduled pickup dates are added into FoodShare SC's internal tracking software, OneBox, for that patient so that their orders can be filled by the appropriate hub and delivered to the appropriate pickup site for that patient.

From this point, the patient is fully enrolled and will begin receiving boxes. One challenge during this stage of the program, as related by the FoodShare SC interviewee, is missed box pickups. Typically,

when a patient misses picking up a box, the site informs the VeggieRx coordinator and they will then contact the patient to remind them. As the interviewee states, "*We should never have missed pickups, but that's a different story and that's pretty much my routine every day, every week, I'm just constantly getting those notifications and just going through that process of reaching the patient.*" Adding to this challenge is the reality that sometimes sites do not share back that a patient has missed a box. For example, some of the VeggieRx partner healthcare organizations also serve as produce box pickup sites and will reliably inform FoodShare SC of any missed boxes, however some do not. One VeggieRx healthcare partner organization provided context from their perspective around missed pickups as a past patient pickup site stating, "*I know that [missed pickups] can be an issue because we were at one time a FoodShare drop point and they'd bring 20 boxes of vegetables in here on Wednesday and Friday when we were closing. We'd have five left because people didn't come get them. So, I'd give it to whoever was here and staff would take what they wanted. I can't store a bunch of vegetables all weekend. They'll spoil and stink. So, I had to get out of that business [being a pickup site].*"

Coupled with the workload of enrolling new patients, communicating with patients around scheduled and missed pickups, the VeggieRx coordinator at FoodShare SC also helps to pack boxes for distribution at the hub in which they work. FoodShare SC has staff but also relies on volunteers, especially during the box packing days. The FoodShare interviewee shared that this is especially challenging for VeggieRx clinics that have the same pickup week. She described how she manages this challenge, stating, "*So it's a little bit difficult, a little bit challenging because four of the six clinics have the same pickup week. Three of them are on Wednesday. One of them is on Thursday, and it happens to fall the week of our packing and distribution. So basically, next week for example, we have packing where we are packing our regular boxes on Tuesday. So when I get to the office on Tuesday and I try my hardest to go ahead and set those text message alerts up as early as possible because you can schedule them in the system. So every time I have the time to do that, I try to do it early on because I know the week that they're receiving those boxes, I'm extremely busy and away from my desk.*"

As the program period ends for a patient, the VeggieRx coordinator sends the patient a letter stating the end date along with information about participating in the regular FoodShare program, which requires purchasing boxes. The information includes the cost of boxes, the discounted price of boxes if the participant is using SNAP, and the location at which they could continue to pick up boxes. The FoodShare SC interviewee shared that typically patients want to continue with the VeggieRx program and their main question is "*Can you re-enroll me in the program*?"

Although there were challenges identified in the processes involved in enrolling and managing VeggieRx patients, the FoodShare SC interviewee felt that overall, she greatly enjoyed helping patients be able to get free produce. She derives a sense of accomplishment and feels rewarded when she hears success stories from patients, stating, "*It touched my heart and I try to stay focused and strong, but just hearing some of their stories, for the ones that like to share their story, it's very touching. But at the end, I've had several patients that started out with sad, sad stories and it's hard not to feel sad with them, but at the end, it's very rewarding to me when they share with me, 'These boxes really helped me these past six months. I've turned things around or I've gone to the clinic and have you seen the results yet?'*"

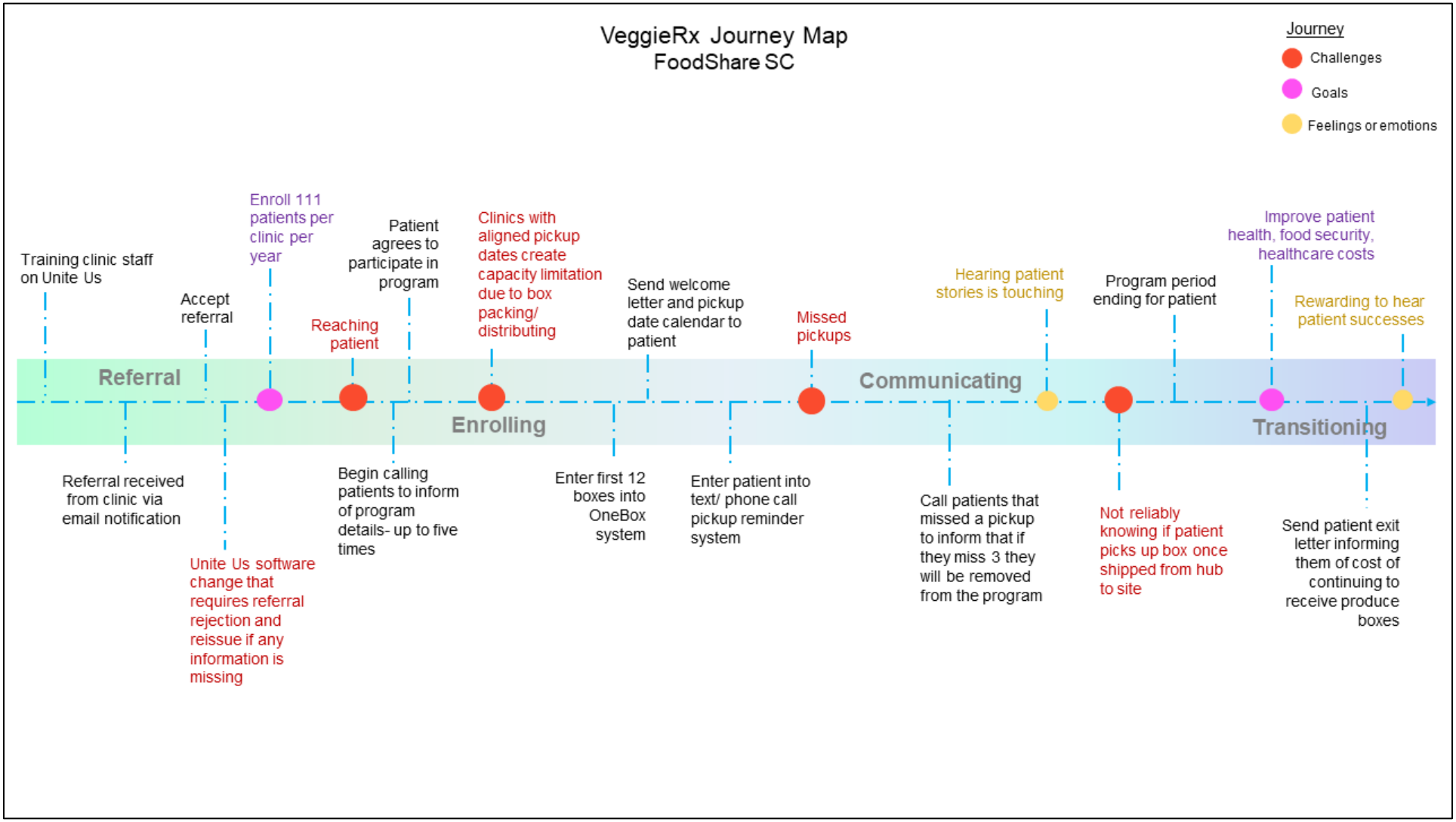


***Figure 1.*** *VeggieRx food organization journey map.*

***Patient challenges and successes***

*Challenges*. Common VeggieRx patient challenges (see figure 2) centered primarily on issues with box contents and the logistics of box pickups. Some patients indicated that the boxes contained foods that they do not eat and a few experienced boxes with rotten produce that was inedible. These challenges, however, were not as frequently mentioned as challenges related to box pickups. For example, one patient was concerned that if she missed a pickup that the box would then no longer be available. Several others described the logistical complications of having to pick up their box at a specific location, date, and time when they had no reliable transportation, and a few others stated that, while they had reliable transportation, their designated pickup site was inconvenient for them to drive to.

**Figure 2. CHALLENGES EXPERIENCED BY VEGGIERX PATIENTS**

**Box Contents**

- Rotten produce
- Produce they don't eat in box

**Box Pick Up**

- Missed box pick up
- Inconvenient pickup location
- No reliable transportation to pick up boxes
- Concern if missed pickup is box no longer available

**Ending of VeggieRx**

- Impact on budget and logistics of having to go to store to buy produce after VeggieRx
- Cost of regular FoodShare boxes prohibitive

Many of the VeggieRx patients stated that the ending of the program presented a challenge as no longer receiving free produce would have financial and logistical impacts on their household due to having to go to a store to buy produce again. Financial reasons were also cited by nearly all VeggieRx patients as to why they were not immediately intending to transition to purchasing FoodShare SC boxes after the program ended, finding the price of the boxes to be cost prohibitive.

*Successes*. Overwhelmingly, patients had positive experiences around the level of communication from FoodShare SC and felt that the pickup reminders were very helpful (see figure 3). Logistically, for some patients the pickup location was very convenient. Often patients that shared this perspective picked up their boxes at their clinic. Other patients related the reduced financial and logistical burden of not having to go to the store to buy produce as being a meaningful success of the program. Many of the patients also spoke about personal successes related to their diet and health. Several of the participants felt that the recipe cards included in each box were helpful in showing them how to use produce they were not familiar with cooking. Some participants indicated that, because of the boxes, they were trying new foods that they had not previously. For one participant, this notion

**Figure 3. SUCCESSES EXPERIENCED BY VEGGIE RX PATIENTS**

**Logistics**

- Convenient pickups
- Not having to go to store to buy produce
- Helps with budget

**Diet and Health**

- Recipe cards helpful
- Trying foods never tried before
- Easier to eat healthy
- Eating more healthy meals
- Reduced A1C

was related also to the reduced financial burden the program afforded such that they felt there was no financial risk in trying a new food that they otherwise would not purchase in the store. Many of the participants stated that the program allowed them to eat more healthful foods and eat a healthier diet overall, with one participant stating that their A1C had reduced from 13 to 6 during the course of the program.

***Representative patient journey***

Figure 4 depicts the VeggieRx journey for a patient at Affinity Healthcare as she moved through the stages of the program. Diagnosed at an earlier time with HIV, this patient visited her doctor's office for a checkup and she was informed that her blood sugar was elevated and so she was diagnosed with pre-diabetes. The patient spoke to a dietician who informed her about the VeggieRx program using a program flyer. Due to her existing HIV diagnosis and general feelings of unwellness, the patient was very concerned about altering her diet because she did not want to lose any weight, stating, "*I was just worrying about she wants to put me on a diet and I don't want to lose weight. I already weigh 150 pounds. I lost three pounds and [the] dietician put stuff for me to be able to keep my sugar under control. But I was mostly worrying about my weight loss because I have HIV."* The patient agreed to participate in the program and a referral was made to the food organization, FoodShare SC.

FoodShare SC reached out to the patient and she was told about the specifics of the program and specifically recalled that they mentioned that if she missed three pickups she would be un-enrolled from the program. The patient experienced a challenge when she missed one pickup due to her memory, but she was happy that FoodShare SC reached out to her after that missed box to make sure she was able to continue picking up boxes in the future. As the program progressed and the patient picked up more boxes, she experienced a challenge related to the boxes sometimes containing *"harsh foods"* that she does not eat, such as broccoli and collard greens. Over the course of the program the patient felt that participation led her to make healthy diet changes, stating, "*It gave me a chance to be able to change my diet, eating the vegetables, the right kind of vegetables that you had in the box."*

The patient's dietician informed her that the program was ending, but that she did not remember anyone from FoodShare communicating with her about this. The patient was hoping to participate in the program again in the future because she experienced success in reducing her blood sugar but she knew that without the program she would have to get produce at the store. She stated, "*My [blood sugar ]numbers were low. My doctor told me to keep up doing what I'm doing. So now I got to go and buy the stuff that was in the box, trying to remember all the stuff that was in the box that helped my sugar to go down to eat healthy food."*

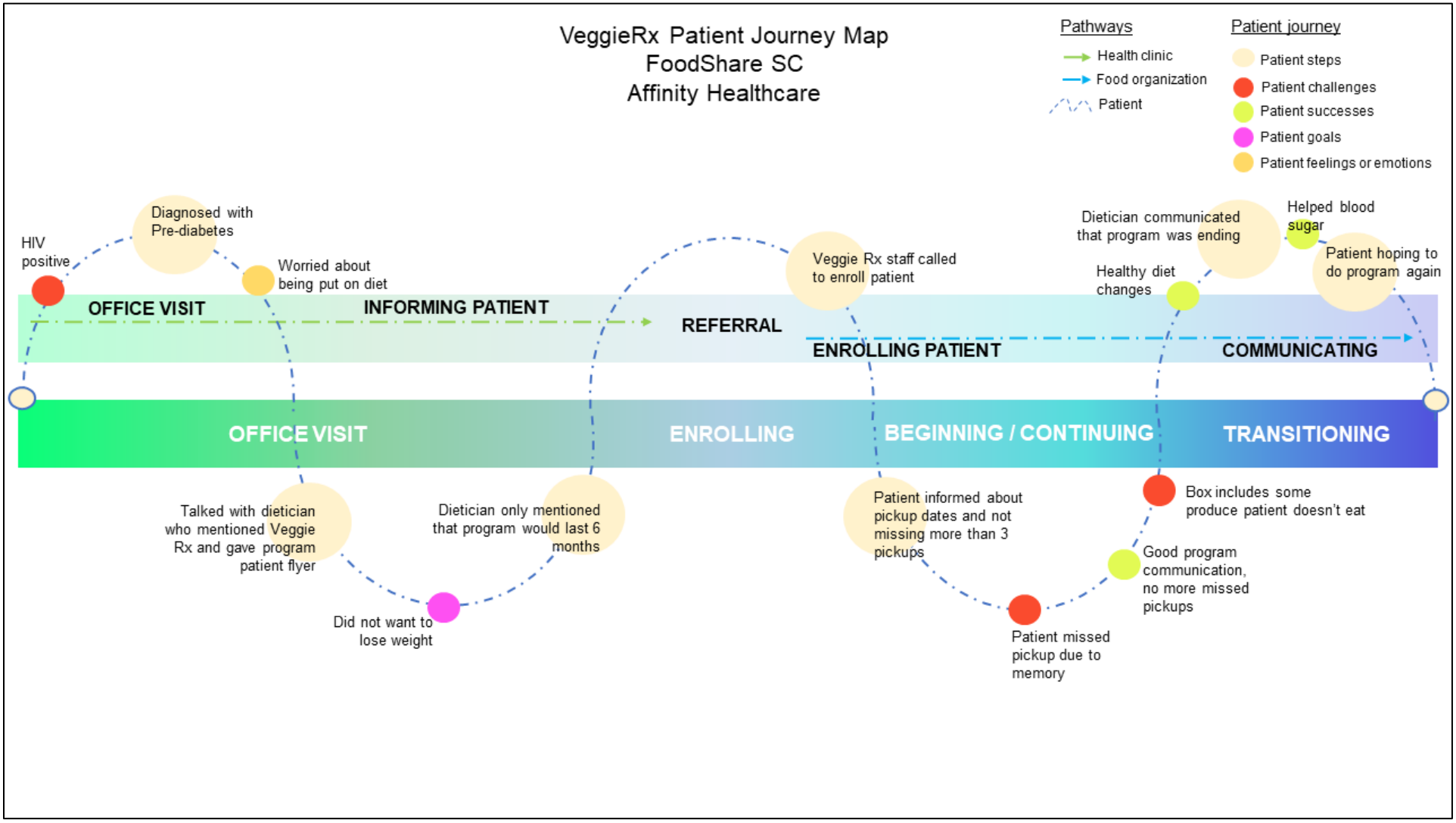


***Figure 4***. *VeggieRx patient journey map.*

## GROCERYRX

### ***Food organization perspectives.***

The healthcare organization for this produce prescription program did not participate in the interviewing process so their perspectives are not presented. For Lowcountry Street Grocery, the food organization that delivers GroceryRx, there are many steps to move a patient through the program, with several challenges, as shown in figure 5. Patients are seen at the healthcare organization, and if they are diagnosed with pre-diabetes or diabetes and are at risk for food insecurity the patient is informed about the program and, if they agree to participate, a referral is made in the EHR system eClinicalworks. When the referral comes into the EHR system Lowcountry Street Grocery then transfers the patient information to their own internal spreadsheet for tracking and adds a note on the EHR referral with specifics such as, *"patient referred for grocery deliveries, spoke with on this date, deliveries will start this date and last until this date".* Then the food organization marks the referral as *"addressed"*. This serves as the transition point from the healthcare organization to the food organization.

Next, Lowcountry Street Grocery reaches out to the patient. As the Lowcountry Street Grocery interviewee discussed, patients are typically aware of what the program entails through that initial introduction from their clinic so that when the food organization reaches out to enroll the patients, they are expecting the call. During the initial call the patients are informed of the program specifics such as delivery schedules and are asked to share their delivery address, demographic information, number of people in their household, whether they participate in SNAP, any food allergies or restrictions, and if they have the ability to store and cook fresh food. Once a patient is officially enrolled they are put on the appointment schedule in the EHR system so that the healthcare organization can see them as a note on the patient's chart, which the Lowcountry Street Grocery interviewee stated was decided between them and the healthcare organization to *"be helpful to them so that they can actually see what their referral is doing."* This is done by scheduling an appointment with them in the past onto which notes can be made. Then the referral is closed. The Lowcountry Street Grocery interviewee cited this as a challenge in terms of being a logistical and time burden, stating that she would "*like to be less involved with the healthcare organization's EHR system because that's really administratively heavy.*"

Once a patient is scheduled to begin receiving deliveries the *"delivery arm"* of Lowcountry Street Grocery is provided with a new patient *"tag"* that includes what the patient will receive and their delivery information. Due to issues with liability, volunteers are no longer used for food delivery so the delivery arm of the program is handled by paid staff and managed using the Shopify app and routing system called Easy Routes. Transferring GroceryRx patient information to the delivery arm, therefore, creates a challenge due to the two arms of the program using different tracking software. As the Lowcountry Street Grocery interviewee stated, *"Delivering is the hardest thing that we do, point blank."* In practice this means that there is constant internal communication between the GroceryRx staff and the delivery arm related to patient deliveries and any issues with patients not receiving them.

When making deliveries, drivers send text messages or phone calls to the patients to let them know when the delivery will be made and then send a confirmation message after delivery has been made. One concern that some patients have is around being home when deliveries are due to the potential of produce spoiling or theft. In those cases, the delivery drivers receive specific instructions as to the

manner of the delivery, such as only delivering if the person is home or to put foods in a designated cooler outside the home.

Patients are notified approximately one month from the program completion date that the program will be ending and they recommend making another appointment with their healthcare provider to see if they can get another prescription to continue participating in the program. However, this was an area, the Lowcountry Street Grocery interviewee stated, where there could be some program improvement, primarily around providing more concrete next steps for patients, such as informing them that, "'*If you have SNAP EBT and you want to continue groceries just where it's more sustainable for you, then we can definitely merge you onto that.' And then we'll just say, 'Call us or text us, and we'll reach out to you and get you on for that.'*" Although many patients do wish to continue the program, the Lowcountry Street Grocery interviewee indicated that there was currently a capacity limitation around receiving more referrals than they were currently handling, resulting in a waiting list for new referrals. This pointed to the need for continued program evaluation to see where capacities could be increased.

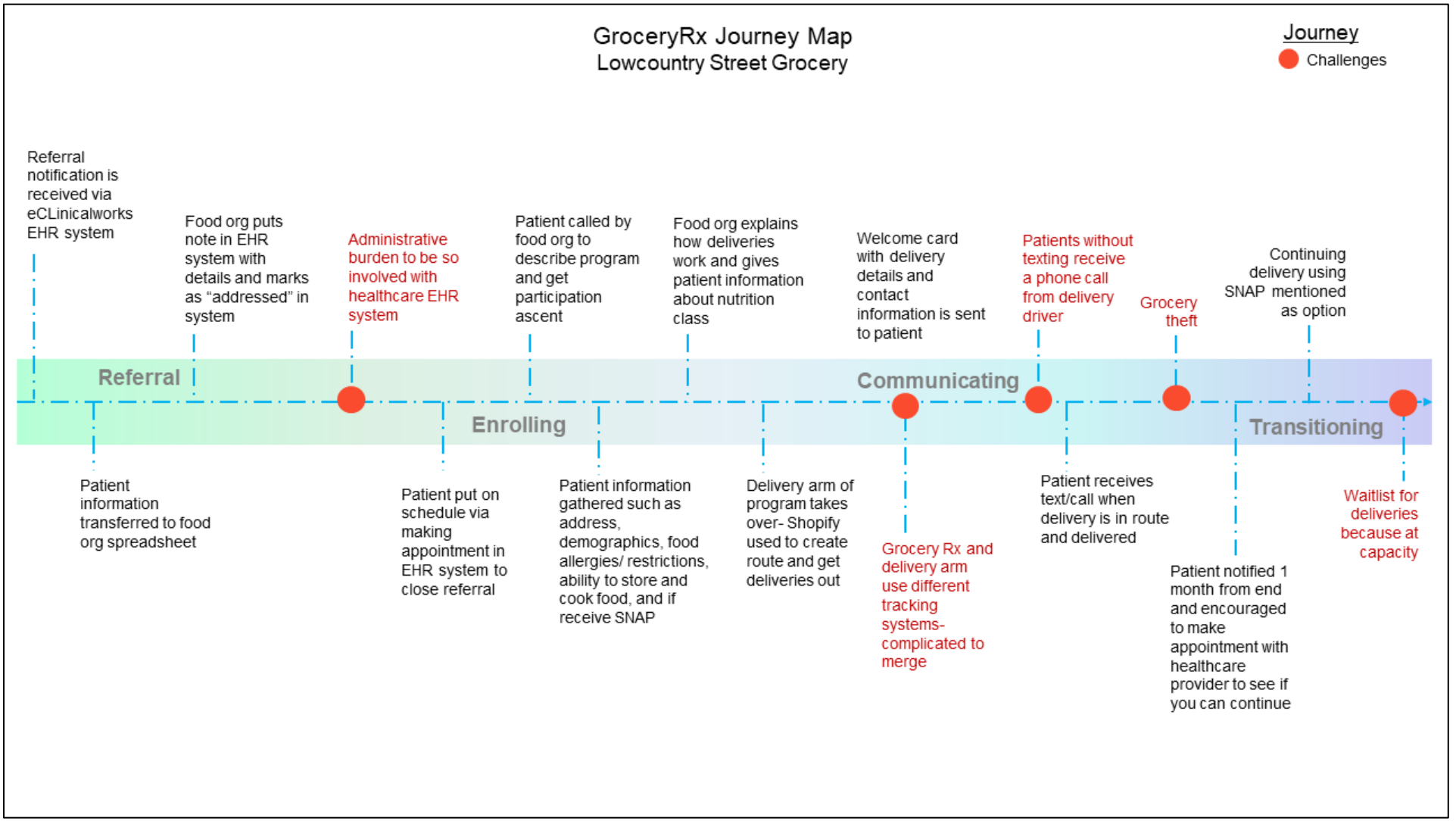


***Figure 5***. *GroceryRx journey map.*

***Patient challenges and successes***

*Challenges*. Common GroceryRx patient challenges (Figure 6) centered primarily on issues with bag contents and delivery. Some patients indicated that the bags either did not contain enough food for their household or that the proportion of certain types of produce did not align with their preferences. Further, some patients stated that some bags included foods that the patient did not eat. The patients that raised these challenges speculated that it would be beneficial to have some control over the types and proportions of the produce in the bags. Secondarily, one patient had their bag stolen from their porch before they could retrieve it and another stated that the incorrect food bag was delivered to her, which was evident from comparing the accompanying receipt with the contents of the bag.

**Figure 6. CHALLENGES EXPERIENCED BY GROCERYRX PATIENTS**

**Bag Contents**

- Not enough food
- Prefers box to bag
- No control over proportions of produce type
- No control over selection of produce type
- Includes some produce patient doesn't eat
- Unfamiliarity with some produce types

**Delivery**

- Theft of bags from porch
- Incorrect food delivered

*Successes*. Common GroceryRx patient successes (figure 7) centered primarily on delivery and diet and health. Overall, patients had good experiences with the delivery aspect of the program. Most stated that communication was good, and the delivery model made participation much easier. One patient was initially concerned about what would happen if they were not home during the delivery time but were instructed to put out a cooler and the delivery driver would receive a notification to place the bag in the cooler. This occurred and the patient was very pleased, and her concern satisfied. Patients also indicated that they viewed the freshness and quality of the produce as a program success. Participation in GroceryRx also allowed them to try new foods and many felt that they were able to eat more healthy food overall.

**Figure 7. SUCCESSES EXPERIENCED BY GROCERYRX PATIENTS**

**Delivery**

- Delivery modifications
- Communication from delivery driver

**Diet and Health**

- Freshness of produce
- Good quality vegetables
- Trying new foods
- Eating more healthy food

***Representative patient journey***

Figure 8 depicts the GroceryRx journey for a patient at Fetter Healthcare as she moves through the stages of the program. This patient was a bus driver for the local school district for approximately twenty years until she suffered a back injury that forced her to retire. Due to resulting mobility issues she became sedentary and eventually was diagnosed with diabetes by her doctor. During a previous office visit her doctor mentioned the GroceryRx program but the patient was not interested because she felt she was able to purchase all the produce she needed through her SNAP allotment, which was increased during this period as a result of the COVID-19 pandemic. However, once the allotment

was decreased to pre-pandemic levels the resulting financial burden prompted the patient to ask about the program during her next doctor visit, describing the experience by stating, *"I was getting $20 worth of food stamps, when they was giving you the stimulus, they give you $100 and something more dollars [so] I didn't really need [the GroceryRx program] because it's only me [in the house]. So, that was good for me. At that time, I didn't need it. But right now, I'm back to the regular $20 worth of food stamps I get a month and so, the vegetables are so fresh, it's like I just picked them out, picked it out myself."* The patient viewed being able to have access to affordable produce as a goal that was met through participation in the program. Additionally, considering the potential health impacts of the program, she also declared a goal of not gaining any more weight in order to help control her diabetes.

After the patient reached out to her healthcare organization about participating in the program the patient was then contacted by staff at the Lowcountry Street Grocery food organization where she was told more information about the program and what to expect regarding deliveries and program duration.

As the program progressed the patient indicated that she had good experiences with the level of communication from Lowcountry Street Grocery around the deliveries and that participating in the program gave her the opportunity to cook foods that she usually did not. Additionally, the delivery model was crucial due to her mobility issues, with the food being delivered directly to her door stating that she, *"Never met the person who actually brings it, they just come drop it and then, I guess when they get in the car they email me or text me and saying your food is in front of the door. And then I get up and either, sometimes I use my mobile chair, sometimes I use my walker [to get the food]."*

One challenge related to the delivery model, however, was that she experienced more than one instance of neighbors stealing her food before she could retrieve it, describing her experience by saying, "*Sometimes your neighbors steal whatever's put in front of your door, but I've been talking to the landlord, telling the landlord that sometimes the neighbor said one day something about strawberries being in my bag. And that's how I knew that she was looking in my bag. And so I said, well, how do you know strawberries were in my bag and my bag is missing? So I went back into house and when I came back out, my bag was back out there."*

As she neared the end of the program period, the patient received communication from Lowcountry Street Grocery that her deliveries would stop soon and that she should reach out to her doctor to get another produce prescription. The patient stated that she forgot to mention it to her doctor when was last in the office for an appointment but did intend to try to get another prescription to continue the program.

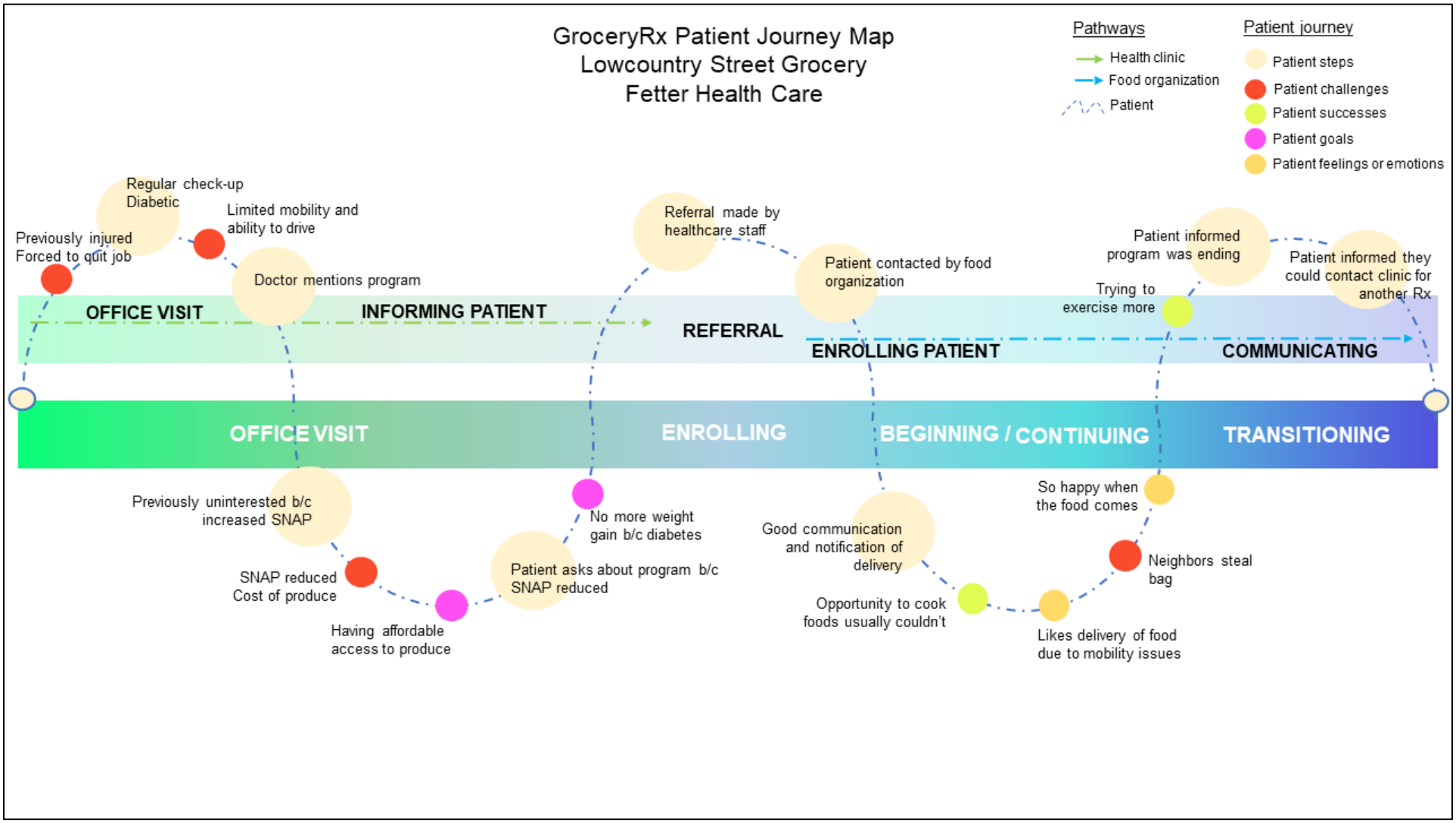


***Figure 8.*** *GroceryRx patient journey map.*

## Program Challenges and Recommendations for Scale-Up

Below is a summary of common challenges across program types experienced in the administration of the program from the patient, food organization, and healthcare organization perspectives. For program specific challenges see the Veggie and GroceryRx sections above. Additionally, recommendations for program improvement and scale-up from the perspective of food organizations, healthcare organizations, and patients are presented.

| Challenges | |
|---|---|
| Patients | *Produce box or bag*<br>• Not enough food<br>• Prefers box to bag<br>• No control over proportions of produce type<br>• No control over selection of produce type<br>• Includes some produce patient doesn't eat<br>• Unfamiliarity with some produce types<br>• Rotten produce<br>• Produce they don't eat in box<br><br>*Delivery or pickup*<br>• Theft of bags from porch<br>• Incorrect food delivered<br>• Missed box pick up<br>• Inconvenient pickup location<br>• No reliable transportation to pick up boxes<br>• Concern if missed pickup is box no longer available<br><br>*Ending of VeggieRx*<br>• Impact on budget and logistics of having to go to store to buy produce after VeggieRx<br>• Cost of regular FoodShare boxes prohibitive |
| Food Organizations | • Communication around missed pickups or deliveries<br>• Complicated procedures using EHR and coordinated-care referral systems<br>• Lack of unified referral system<br>• Staffing capacity limitations to manage patient enrollment and retention<br>• Making initial contact with patients after referral is made<br>• Internal logistics and capacity limitations, such as patient tracking across RX program and larger organization |
| Healthcare organizations | • Patient follow-up and consistency<br>• Dedicated staffing and funding for this type of program |
| | |

| Recommendations for Program Improvement and Scale-Up | |
|---|---|
| Food Organizations | • More cohesion or standardization in EHR and coordinated-care systems across entities<br>• Ensuring adequate staffing that can focus solely on patients in the program and not other duties within the organization |
| Healthcare Organizations | • Standardizing use of the same EHR and coordinated-care systems<br>• Education for providers on why this type of program is beneficial<br>• Patient education on why this type f program is beneficial<br>• Making sure that the program can adequately cover all geographic areas, especially areas with inequitable access to resources like rural communities<br>• Funding to ensure adequate coverage and staffing<br>• Employing a delivery service model for produce to reduce transportation and logistical burdens on patients to participate |
| Patients | • Ensure convenience of pickup locations<br>• Use healthcare setting to provide connections to other assistance programs like the Senior Farmers Market Nutrition Program<br>• Add a mobile component, such as a mobile market, to the program that can go to different clinics<br>• Integrate more choice in types of produce received |