



# Homegrown Program Evaluation Results

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**2015-2017**

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## Introduction

Since 2013, the Homegrown program of Phipps Conservatory and Botanical Garden (Phipps) has worked with households in the Homewood neighborhood of Pittsburgh to install backyard gardens, provide mentoring and support in gardening, and offer Garden Club classes in gardening and cooking.

Homegrown began with 10 households in 2013, and it added another 20 households in 2014. From 2015-17, Phipps expanded outreach further, with a target of adding 180 households to the program by the summer of 2017. Each household makes a commitment and receives support for two years, including the initial construction of raised bed gardens, starter seeds and seedlings, and follow-up consultation and support throughout the two years.

The program was designed to impact individuals and the extended community in a number of different ways (see box, right). Over the last three years, a program evaluation was undertaken as an effort to measure and document the extent of achievement of these goals and the nature of impact on the families who have participated. This process began by identifying a set of indicators that could be used to measure each of these outcomes, and interim evaluation reports have kept the team apprised of their progress and supported continual improvement.

This report presents results from three years of data gathering (2015-2017) with program participants and alumni to report on evidence of its impact overall.

### Homegrown Program Goals

#### Participants will:

- **Gain skills to be self-sufficient gardeners;**
- **Maintain gardens beyond the two-year program support;**
- **Improve wellness and/or reduce obesity;**
- **Have increased access to fresh produce;**
- **Increase consumption of fresh vegetables;**
- **Improve eating habits overall;**
- **Extend the impact of Homegrown through engagement with neighbors, friends, and family.**

### Gardens Installed

#### Target:

- 180 gardens installed (60 per year)
- Accommodate everyone with interest

Between 2015 and 2017, 181 gardens were installed with program participants in Homewood, meeting the intended target. Upon starting the program, nearly all participants did not have full-scale vegetable gardens at their home (with just a few exceptions), although some had experience with ornamental gardens or small container gardening. Over the three years, the program was able to meet demand for the program within Homewood; individuals on the wait-list were primarily from adjacent neighborhoods, not currently eligible for Homegrown participation.

## Methods

Several methods have been used for this study, including surveys of program participants and a qualitative study of program alumni.

### Participant Surveys

A set of three questionnaires were developed to survey program participants at different points in their experience: at the start of the program (Pre), at the end of their first growing season (Post-Y1), and at the end of their two years of support (Post-Y2). The questionnaires included questions to measure change between pre- and post-program, and some measures asked as retrospective-pre/post (where the respondent is asked to think back about how they would rate their abilities at the beginning and how they would rate them now). The latter method was used for outcomes where it may be difficult for a person to self-assess their level of skill or readiness prior to a program (i.e., when someone doesn't know what they don't know). Some measures were asked only in pre- or post-tests, as appropriate to the indicator.

All surveys were collected via pencil/paper questionnaire distributed to program participants, with a goal of obtaining one completed adult response per household. The pre-program survey was distributed during an in-person visit to the home by program staff at the time of garden installation for new households. The post-program survey was distributed in the Fall to participating households by program staff at one of multiple face-to-face interactions. In addition, Year 2 post-data were collected in the Fall with households completing their two-year cycle. Staff assigned each household an anonymous ID number to allow for pairing of pre/post data for analysis.

Table 1 (below) shows the response rates by each cohort at the time of surveying. The response rate to the pre-survey was relatively high (77%) and response rates to subsequent surveys were 48%.

Survey data, collected from 2015-17, were compiled into a single dataset for analysis of overall program impact. Most participants did not have a complete data record (i.e., data at Pre, Post-Y1, and Post-Y2). As a result, we analyzed pre-post program data as a merged set of all Post-Y2 data (n=61 from 2014, 2015, and 2016 cohorts), supplemented with Post-Y1 data for individuals who did not submit Y2 responses (n=54). This resulted in a final post-program dataset of 115 responses, of which 91 participants included paired pre/post data. While this approach cannot distinguish differences between first- and second-year impact, it provides the broadest representation of participant experience, based on the data available. On a few indicators, where it was warranted, data were explored for potential differences between first- and second-year responses.

### Analysis

Responses to open-ended questions were coded into thematic categories and the frequency of each theme analyzed. The themes were identified in the first year of analysis and revisited each subsequent year to ensure continued fit with data; as necessary, codes were modified, and previous data recoded. Results present descriptive statistics (distributions, means, medians), and inferential statistics for comparing pre/post data. Due to small sample sizes and nature of measurements, non-parametric statistics were used for these tests.

**Table 1. Population sizes and response rates, by cohort and time-period of surveys**

Cohort (Year Started)	Population Size	Pre-Responses (Rate)	Post-Y1 Responses (Rate)	Post-Y2 Responses (Rate)
2014	20	n/a	n/a	10 (50%)
2015	62	52 (84%)	29 (47%)	34 (55%)
2016	44	30 (68%)	21 (48%)	17 (39%)
2017	75	57 (76%)	36 (48%)	n/a
<b>TOTAL</b>	<b>201</b>	<b>139 (77%)</b>	<b>86 (48%)</b>	<b>61 (48%)</b>

## Alumni Interviews

In order to explore the longer-term impact of the program on its participants, the evaluation incorporated a qualitative study of program alumni to explore in Year 3. Alumni are gardeners who had completed their two years of supported gardening, and who are now on their own to continue gardening.

Semi-structured telephone interviews were used with a random sample of 30 alumni. The purpose was to determine the extent to which gardening practices continued, as well as to explore the nature of the impacts that program participants experience in greater depth to help interpret survey data.

### Sampling & Response Rate

Three cohorts had alumni eligible for the interviews: those who had received support in 2013-14, 2014-15, and 2015-16. This was a population of 92 households. About one-third of all households were sampled for interviews (n=30). Interviews were divided across the three alumni cohorts, with the sample in each cohort reflecting its relative size in the overall alumni population. Within each cohort, names were randomly selected for inclusion in the sample. Table 2 (below) shows the proportional breakdown of the sample.

To encourage participation, Homegrown staff contacted alumni who were targeted for the sample, by letter and telephone, to let them know to expect a call from the evaluator within the next several weeks. An incentive (a \$20 gift card to a local retailer) was also offered to those who completed the interview as a thank-you for their time. The evaluator called the randomly sequenced names, including up to 3 follow-up calls to ensure multiple opportunities to respond.

The interviews obtained a high response rate, with 79% of those contacted participating. Messages were left at the other 21%, but calls were not returned. This high response rate increases the confidence in the validity of the results.

### Analysis

Interviews were audio recorded (with permission) and transcribed. Following review of transcripts, a code book was developed consisting of a set of overarching thematic categories that represented the ideas expressed in interviews. The overall structure reflected some of the pre-defined interests of the study (e.g., impact areas such as eating habits or wellness), but it was primarily created using an inductive approach, where the themes were drawn from the patterns and language used by interviewees. This approach allows the analysis to reveal patterns and trends that may be different than the expectations of program or evaluation team members.

With a code book established, each transcript was carefully reviewed, and excerpts were coded into the themes they communicated. From this coding, data were able to be quantified in terms of the frequency with which each theme was mentioned in the sample to provide a sense of how common or rare a certain perspective was among the broader population of Homegrown alumni.

**Table 2. Homegrown alumni interview sample, broken down by cohort**

	# Alumni in Cohort	% of Alumni Overall	# in Sample
<b>2013-14 Gardeners</b>	10	11%	3
<b>2014-15 Gardeners</b>	20	22%	7
<b>2015-16 Gardeners</b>	62	67%	20
<b>TOTAL Alumni</b>	92	100%	30

## Method Limitations

While there was a reasonably high completion rate with pre-program surveys, the response rate for post-program surveys was lower, with about half of participants responding to end-of-year surveys. While this is not atypical in a program of this nature, it should be considered in the interpretation of results, as self-selection is a factor in this type of response rate. Conservative interpretation should assume that post-program responses may be from the more motivated or engaged participants, and that some results may be considered as “best case” data.

Because of the variation in who responded at each time period, visual comparisons of responses between aggregated sets of pre- and post- data include some differences in respondents (i.e., the graph includes someone who responded in the pre-test, but did not respond to the post-test). However, statistical analyses were performed on paired data, rather than aggregated group comparisons. This means that analysis looked at evidence of change within an individual with pre- and post- data; this controls for the variation in different respondents, and allows for the most robust statement of whether differences are valid.

The interview sample seems likely to be less impacted by this type of response bias, given the use of randomized sampling within the groups and the high response rate to those selected for interviews. There were still some refusals or those who could not be reached (i.e., non-working phone numbers on file), but this effect seems to have been minimal, and results can be presumed to be a reasonable approximation of the alumni population.

# Results

## Gardening Skills

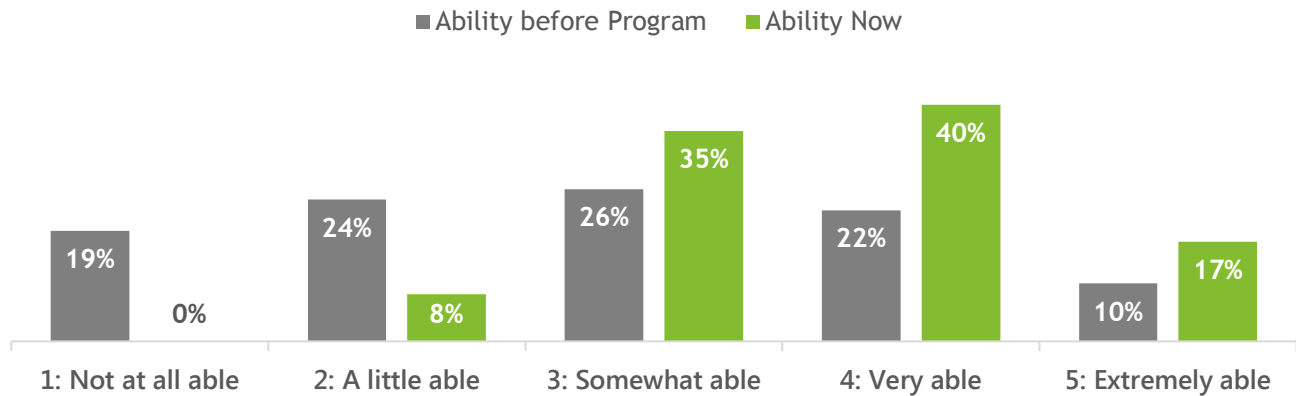
### Indicators:

- Increase in reported ability to garden
- Can name several sources to “troubleshoot” a gardening problem (Y2)
- Feel confident enough to maintain their garden after the program (Y2)
- Intend to maintain their garden (Y2)
- Continuation of gardening by alumni

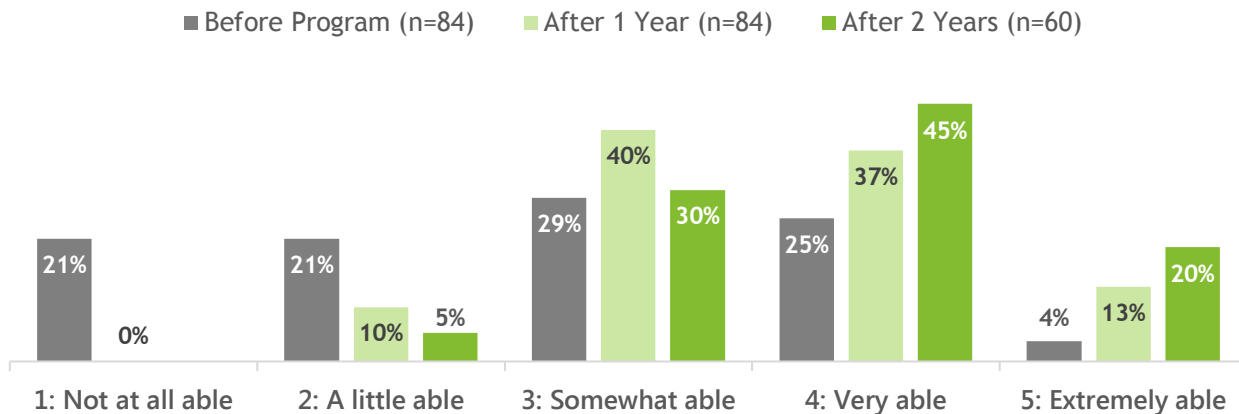
## Feeling of Ability

**There were substantial increases in participants’ self-assessments of their ability to maintain a garden before and after the program.** Self-rated ability increased from a median of 3 to 4, indicating a shift from feeling “I need some help” to “I can do this on my own.” Figure 1 shows the distribution of pre- and post-ratings<sup>1</sup> for the combined sample. Statistical analysis confirmed that these gains were significant,<sup>2</sup> with 66 respondents reporting an increase, and only five people reporting a decrease. Visually comparing responses from first- and second-year gardeners (Figure 2), we see further evidence of steady increases in confidence over the two years of mentoring.

**Fig 1. Ability to maintain a vegetable garden: self-reported ratings of ability before and after the program, including the most recent data-point from each participant, whether after Y1 or Y2 (n=113, Y1 and Y2 responses combined in green bars)**



**Fig 2. Ability to maintain a vegetable garden: self-reported ratings of ability before and after the program, separated by responses that came after Y1 and responses that came after Y2 in the program**



<sup>1</sup> This question was asked as a retrospective-pre/post.

<sup>2</sup> Wilcoxon Signed Ranks Test (Z=-6.30, p<.001, n=113)

## Learning & Problem-Solving Skills

To measure a final indicator of participants' preparedness to be self-sufficient gardeners, second-year gardeners were asked to name where they would look to for information to address gardening problems in the future. Almost 80% of second-year gardeners responded to the question; of these, **73% were able to name two or more distinct information sources that they would use (57% of the full sample)**. The most common information sources they referenced were:

- Homegrown staff/project (48%)
- Internet (e.g., Google, YouTube, general) (44%)
- A friend, neighbor, or family member (35%)
- Phipps Garden Center (27%)
- Public Library or reference books (19%)
- Home Improvement / Garden Store (13%)
- Other sources (21%)

**In interviews with alumni, about two-thirds of the sample indicated ways that they had developed knowledge or skills over the course of the program.** Just under half of alumni (43%) specifically talked about various things they had learned from being in the program and/or attending ongoing classes with the Garden Club.

*"I'd never done it before, and so I learned a lot, and that's the main thing. When my grandkids would come over and ask Pap-Pap questions, I could answer them for them, and I felt confident that I was giving them the right answers." (Interview 17, Cohort 2015)*

*"Just the information about seeding, arrangements, you know, how you arrange your plants, how to make the most space out of what you have, and the boxes, and just how much dirt and compost you need and how much fertilizer you need. And, you know, it showed me how to compost and just a lot of information that I didn't have before." (Interview 2, Cohort 2013)*

About 40% of these alumni indicated skill-gains in descriptions of ways they had successfully been able to deal with and solve problems that arose in their garden since they started gardening independently. This is a key indicator of the applied knowledge and skills gained through Homegrown and suggests the potential for sustained impact well beyond the conclusion of formal support phases.

*"We had those pesky groundhogs, but you all solved that problem with the fencing around it, although I don't have the fencing [on all of my beds]. The tubs that you all planted for me, the containers, I plant herbs and peppers in there because the groundhogs will not touch them, so they don't have to be covered up. ...The other vegetables, I plant them in laundry tubs and they're up high and then I have the screening around there." (Interview 5, Cohort 2014)*

*"I think we had more bugs this year than last year. Something was eating away the cabbage. ...I had some bugs on my leaves on my greens. I came out a couple of times and there's holes all through the leaves. I went and got some organic spray and sprayed it. I don't think I have anything eaten them up since then." (Interview 28, Cohort 15)*



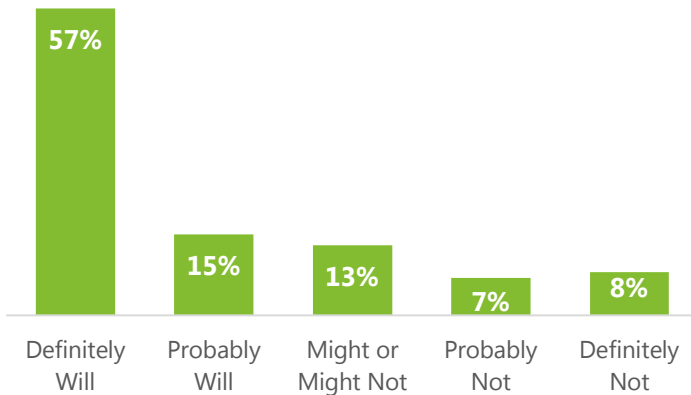
## Intent to Continue Gardening

Among second-year gardeners, **more than two-thirds (68%) reported they felt very or extremely able to continue their garden next year, without Homegrown support**, with ratings that primarily indicated feeling “very able to do it on my own.” Similarly, **72% reported they would definitely or probably maintain their garden after Homegrown support ends, with the majority indicating they definitely intended to continue** (see Figure 3, below).

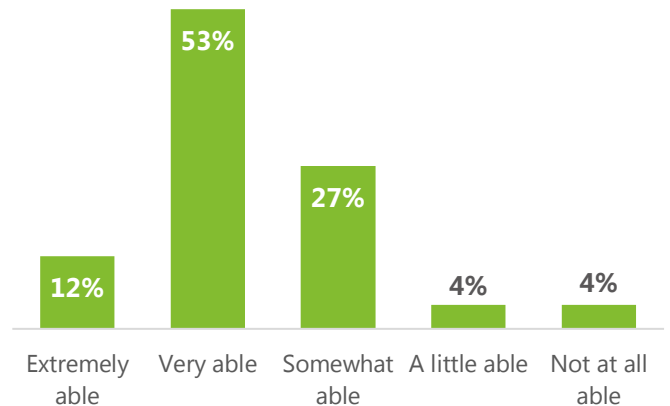
Among the just 17 respondents who indicated they were unlikely or unsure about continuing, seven provided a reason why they might not continue. Three were unable or unsure about continuing due to a move, one felt physically unable to do it alone due to age, another felt they had more to learn, and two others reported challenges with finding or affording good seeds or starter plants on their own.

Fig 3. Year 2 gardeners’ intent and confidence to continue gardening after the end of direct support

Do you think you will start and maintain a garden next year? (n=60)



How confident do you feel in your ability to start and maintain your garden next year? (n=51)



## Sustained Gardening by Alumni

Interviews with program alumni confirmed these intentions and that Homegrown has achieved great success at sustaining gardening across program alumni. **70% of interviewed alumni reported they had continued gardening in 2017.** Another 17% indicated their efforts were diminished in some way, but that they had at least partially continued their garden. This group included people who got a late start and were only planting fall crops, or people who were simply harvesting from plants that had regrown, but had not planted new crops in 2017. **This means that 87% of past Homegrown participants were still using their gardens to some degree in 2017.**

Only 13% of alumni reported they had not continued gardening at all in 2017. The barriers expressed by these non-gardeners (and those who only partially gardened) were generally short-term issues that they hoped could be overcome. These included the primary garden caretaker being away from home, balancing available time and money with other considerations (e.g., home or car maintenance), and illness. **Everyone interviewed – whether or not they had been able to garden in 2017 – expressed a desire to continue to garden the following year.**

*“Well, I didn't really decide not to garden. I wanted to, but I took a job that kind of forced – matter of fact, I'm away from home more than I'm at home.” (Interview 3, Cohort 2013)*

*“I have some of the same stuff already in there, so I didn't have to replant too much and I also – some of the timing didn't work out. ... It's a time issue right now because I'm trying to make as much money as I can before my daughter goes back to college.” (Interview 15, Cohort 2015)*

*“I just had other things on the house that were more pressing, and I needed to get taken care of once the weather got easy.” (Interview 12, Cohort 2015)*

*“Well my son went away for a summer vacation this year and the garden is his baby, so we just decided not to plant this year and we have to weed too, so we just took this summer off, but we'll be planting again next year.” (Interview 9, Cohort 2015)*

The interviews also indicated that some gardeners continued to develop and improve their knowledge and skills at gardening in the time since the direct support from Homegrown ended. They were exploring new crops and approaches to their gardens. **The majority of sustained gardeners reported they were trying out new crops in their gardens,** and at least one person talked about plans for new crops they intended to try in the future. **About one-third of the sustained gardeners reported they had expanded or had plans to expand** their garden in some fashion, such as adding new beds on their own or merging gardens with a neighbor to increase the variety of produce they could access. The prevalence of these stories highlighted how committed some of the Homegrown gardeners become to this activity and how motivated they are to sustain, nurture, and improve their backyard gardening.

*“Sweet potatoes were new [crops this year], pole beans were new, beets were new, carrots were new, the Swiss chard was new, and peppers were new. So, we planted a lot of new stuff. Between her and I we planted some stuff that we normally would not have planted just to try something different.” (Interview 10, Cohort 2015)*

*“I think that I really want to try to do the red cabbages the next time either in the back yard or the front yard or even on the porch instead of flowers. So that's where I'm at with that one.” (Interview 7, Cohort 2015)*

*“Each year, I'm going to try something different. Matter of fact, next spring, I'm going to plant some onions and garlic, and then we'll plant some spices, you know, parsley and stuff like that. We're experimenting this year with what we added and expanding the garden because I dug up around the back of the house where I had those flowers. I turned the soil over and put some organic fertilizer and stuff there, and some organic top soil and cow dung, and planted in there and that stuff just blew up within a matter of four days. ... Maybe I might even have to get another box along the fence next year. I might have to build a real long box along that fence, you know, because we don't really use that grass area over there by the walkway. I might even just go on and build another box over there.” (Interview 28, Cohort 2015)*

## Improved Wellness

### Indicators:

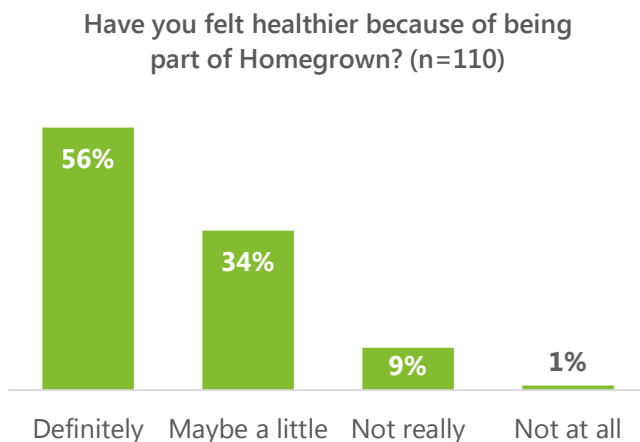
- Self-reported feeling of being healthier
- Self-reported ways in which they felt healthier
- Self-reported increase in time per week spent doing outdoor activities

### Self-Reported Wellness

Across Y1 and Y2 gardeners, there was a strong sense that participants tend to feel healthier as a result of being in the program; **56% of participants reported they definitely felt healthier because of Homegrown**, and another 34% felt a little healthier (Figure 4, below).

In open-ended explanations of ways in which they felt healthier, **the most common reason was improved eating habits** (mentioned by 60%, 44 people), whether this was eating more/fresher produce or bigger dietary changes. **Another 22% described specific ways that they felt physically healthier due to their diet** – including greater energy, clearer skin, better digestion, and losing weight. Other ways of feeling healthier that were mentioned were divided between emotional wellness or enjoyment (e.g., joy, satisfaction, or peace provided by the garden) and increased physical activity – from gardening or a broader change in activity levels.

Fig 4. Gardeners' responses about feeling healthier due to program (Y1 + Y2)



These patterns were reiterated in the interviews with program alumni. During these more in-depth conversations, multiple ways in which the garden impacted participants were revealed. The themes directly mirrored those seen in the survey responses. **Nearly all alumni (93%) indicated at least one way that the garden had impacted their eating, cooking, or food shopping in some way.** We will discuss these results in more detail in the following sections on eating habits.

As with survey respondents, around half of alumni each noted that they were eating more fresh produce due to the garden and/or that they were eating higher quality produce. These comments included people who felt healthier from the certainty about how their food was grown, as well as those who focused on the higher quality of flavor from freshly picked produce.

In addition to eating habits, nearly all interviewed alumni (93%) also indicated at least one specific way that the garden had impacted other aspects of their well-being, which aligned with survey results. Most common was a psychological benefit: **two-thirds of alumni expressed experiencing a sense of pride in accomplishment** from their gardening experience. These statements expressed pride or the feeling of reward from their hard work, accomplishment in their success, or responsibility.

**Many (40%) reported feeling some aspect of physical wellness related to eating healthier.** The specifics included having more energy, fewer digestive issues, or losing weight, as well as a general sense of feeling better when one eats better. **One-third reported that the garden helped them be physically active**, primarily through the work it took to maintain it.

Other wellness themes mentioned by fewer interviewees were: emotional wellness (experiencing peace, stress relief, or focus from working in the garden); enjoyment (joy or happiness from the garden); and a sense of connection with nature or spirituality from the garden.

The next page contains some quotations from gardeners' surveys and interview responses that describe different ways the program has made them feel healthier.

## Eating Better

*Eating a more balanced diet. (Y2 survey)*

*Eating more fresh food pushes out packaged and processed food. I don't buy as much of it. (Y1 survey)*

*I looked for ways to use the produce each day, which led to eating more vegetables. (Y1 survey)*

*"It made me look at a lot of stuff. Like I said, you go to the store, and you got \$40, and your options are you can get a whole bunch of junk or you can get fruits and vegetables. ...You have to make a choice and in the last two years, I've made a lot better choices when it comes to stuff like that, since I've been doing gardening. I don't eat junk as much as I used to. I'd rather have fruits and vegetables." (Interview 18, Cohort 2015)*

*"[Before] with my work schedule and me running back and forth, I would try to buy things that were already packaged, pre-packaged, quick foods ... but since gardening I can ...in the evening when I get home from work, instead of running to the store, I could go right to the garden, grab my cabbage, chop it up, put it in my Crock Pot and it's ready the next morning. So that's a lot better and it's a lot healthier because now that I've started eating fresher vegetables." (Interview 23, Cohort 2015)*

## Physical Well-Being

*Better for me. It gives me more energy, smooth skin, and eating more balanced meals.(Y2 survey)*

*Not as heavy feeling after eating. (Y1 survey)*

*It might sound crazy but I sleep better. (Y1 survey)*

*"Yes, I believe it has [impacted my health], because it's those small choices that go a long way. When I went to my doctor's appointment I wasn't really expecting to see a result on the scale, but I had lost 10 pounds." (Interview 27, Cohort 2015)*

*"I can feel the difference in my body instead of eating canned or even frozen, ...So when I fix something from right outside my garden I feel totally different. It's just like a B12 shot or something. You get extra energy." (Interview 23, Cohort 2015)*

## Pride & Accomplishment

*Feeling like I accomplished something when I pick and eat veggies... (Y1 survey)*

*It's inspiring to grow fresh vegetables and try different healthy recipes. (Y2 survey)*

*"I'm just proud of being consistent with going out there and getting my hands dirty." (Interview 29, Cohort 2014)*

*"Just getting the product when you harvest, whatever you harvest. It doesn't [matter] whether it's the first red tomato or the beets that we harvest or watching it grow, it's more so when you put it in and you see it growing that's great. But when you harvest that actually means so much because you've planted it, you've nurtured it, and you've now harvested and can eat it." (Interview 10, Cohort 2015)*

## Emotional Well-Being

*"When I have things on my mind, I go to my yard and look at my garden. I sit there. I sit there and I'm like, "Wow, that's amazing." And I just be into my garden, just admiring it and relaxing. ...When spring comes, I'm excited just to be able to turn the dirt, just to be able to play in it and turn the dirt and pick out little things out of the dirt. I mean it just really relaxes me. (Interview 7, Cohort 2015)*

*"It gives me a peace of mind. I can go out and I really don't have to concentrate on nothing else but just trying to get that together. And it's more than rewarding, it's helpful to me. I'm home most of the time. I take care of my mother, she's 87... she's bed-ridden, she had dementia, so [gardening] gives me an out." (Interview 25, Cohort 2015)*

## More Physically Active

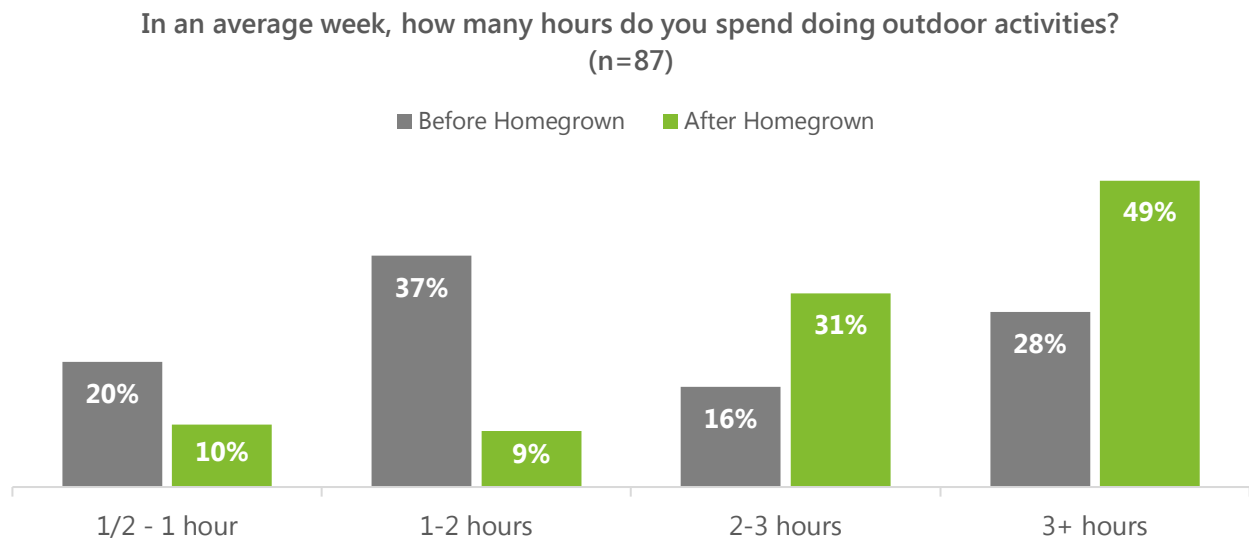
*Walking more. (Y1 survey)*

*"Yes, it did [impact my health] because usually when I would go home I would sit down and fall asleep on the couch. Now when I go home I would go back and do some gardening and then go in the house, wash it, and you'd kind of get invigorated after you'd do the little gardening stuff even though sometimes it was tiring." (Interview 24, Cohort 2014)*

## Time Spent Being Active

Finally, a measure was added to instruments beginning in 2016, which asked participants to select approximately how much time per week they spent doing outdoor activities before and after participating in Homegrown. **The percentage of participants indicating they engaged in three or more weekly hours of activity increasing from 28% before the program to 49% after the program.**<sup>3</sup> (See Figure 5, below.) These data showed a significant increase<sup>4</sup> in the time-ranges participants selected, with half of the respondents (42) indicating an increase, and nearly all others indicating activity level had stayed the same.

Fig 5. Distribution of selected responses to a retrospective-pre/post item about time spent doing outdoor activities.



<sup>3</sup> This was a retrospective-pre/post measure.

<sup>4</sup> Wilcoxon Signed Ranks Test ( $z=-5.75$ ,  $p<.001$ ,  $n=84$ )

## Consumption of Fresh Produce

### Indicators:

- Report eating more fresh produce (Y2)
- Report eating greater variety/diversity of fresh produce (Y2)
- Descriptions of changes in produce consumption by alumni

### Eating More Fresh Produce

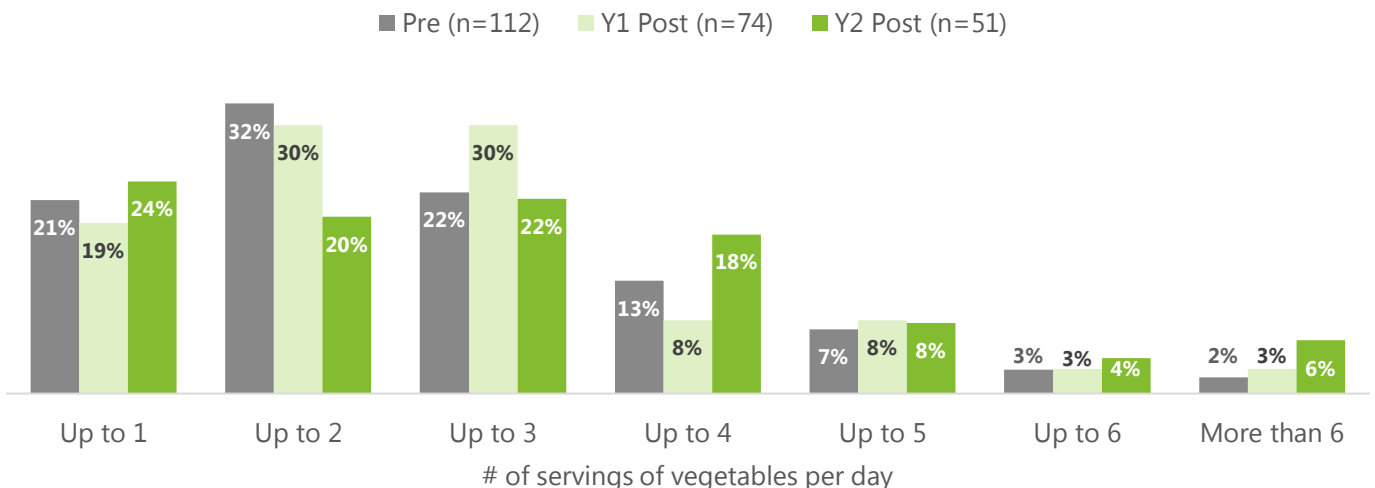
**Based upon participants' estimates of total number of fresh produce servings per day, there was not strong evidence of increase in servings between pre- and post-surveys, at Y2 or Y1.<sup>5</sup>**

The median number of servings was 2 servings per day in pre, Y1 post, and Y2 post data (see distribution in Figure 6, below). The overall average number of servings showed very slight gains: from 2.54 at Pre, to 2.65 after Year 2, to 2.93 after Y3. However, statistical comparisons for gardeners' paired pre/post data showed no significant differences among first- or second-year gardeners.<sup>6</sup> Among second-year gardeners, the main focus for this indicator, 49% (23 people) indicated an increase; others reported no change or a decrease.

This result seems to contradict reports from gardeners about how the program provides greater access to fresh produce. However, this type of recalled estimate of consumption can be hard for respondents to reliably report. In fact, many respondents entered a range, rather than a single number; analysis used the mid-point of the range as the response analyzed here. This highlights the unreliability of these data.

In the interview data, just fewer than half of alumni indicated they felt they ate *more* fresh produce due to having the Homegrown garden. Of the others, many alumni reported that they were already eating a lot of produce in their diets *before* Homegrown started. These individuals stated that the program had not increased the *amount* of produce they ate, but had other impacts on their eating habits – such as improving the quality of what they ate, the variety of what they ate, and/or making it much more convenient to obtain produce.

**Fig 6. Distribution of estimated number of daily vegetable servings, from pre, post-Y1, and post-Y2**



<sup>5</sup> These indicators were intended for measurement after two years (allowing a longer time for impact on eating habits), but because the measure is also collected after Y1, we analyzed results at both time periods.

<sup>6</sup> Y1 Gardeners: Wilcoxon Signed Ranks Test ( $Z=-.98$ ,  $p=0.329$ ,  $n=47$  pairs); Y2 Gardeners: ( $Z=-.23$ ,  $p=0.822$ ,  $n=25$  pairs)

Because recalled behavioral data of this nature is not highly reliable, other measures were used to triangulate data about participants' eating behaviors. At the end of participation, gardeners were asked to rate, retrospectively, how true several statements were for them before and after program participation (on a 1 to 5 scale). Results in Table 3 (below) show that **gardeners' median ratings increased by 1 or 2 points**. In particular, more than half of gardeners strongly agreed that, after the program, they ate at least one fresh vegetable per day and felt like they could easily get fresh fruits and vegetables.

Looking across the 99 gardeners responding to these questions, statistical analysis showed these reported increases in the feeling that they were eating more produce were significant, with around half of respondents reporting increases, and only a handful of gardeners reporting decreases on any items.

**Table 3. Participants' retrospective-pre/post ratings of agreement with statements about eating habits in relation to the program after one year in the program; includes combined Y1 and Y2 post.**

	Median PRE	Median POST	N	% Report Increase	Z	p-value*
I eat at least one fresh vegetable per day.	3	5	99	53%	-6.03	<.001
I feel like I can easily get fresh fruits and vegetables.	4	5	97	49%	-5.51	<.001
I feel like I eat a healthy diet on most days.	3	4	99	51%	-6.10	<.001

\*p-value from Wilcoxon Signed Ranks Test for Y1 gardeners; p-value below .05 indicates significant difference; n.s. = not a significant difference between pre and post

## Variety of Vegetables Consumed

Among all gardeners, when asked if they felt they had changed their eating habits:

- 73% agreed or strongly agreed they had eaten more fresh vegetables
- 68% agreed or strongly agreed they had eaten more different types of vegetables

Looking at the detailed breakdown in Figure 7 (below), there was a stronger impact on the consumption of fresh vegetables overall, with 51% strongly agreeing with this statement. Consumption of more variety of vegetables was also strong, but just over one-third of respondents strongly agreed this was true.

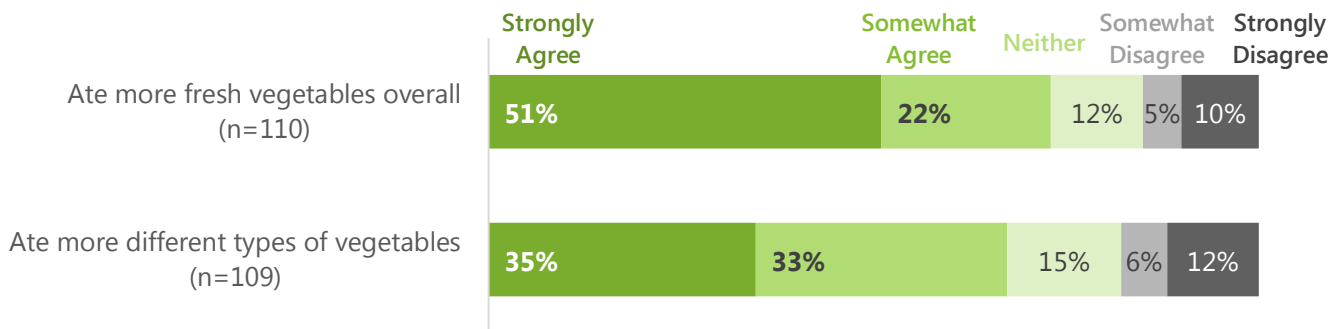
The full dataset of different types of vegetables consumed suggested a substantial change in varieties of produce eaten. **There were increases of more than 13 percentage points in respondents who had, in the past year, eaten eggplant, summer squash, collard greens, kale, green beans, and swiss chard** (Table 4, right). As evidence of the direct impact of the garden, these were all vegetables that were grown in Homegrown gardens.

**Table 4. Proportion of responding participants who reported eating each type of fresh produce in the past year.**

	Pre (n=139)	Post (n=115)
Eggplant	17%	39%
Summer Squash	35%	53%
Collard Greens	72%	88%
Kale	58%	73%
Green Beans	58%	72%
Swiss Chard	14%	28%
Winter Squash	14%	22%
Beets	27%	34%

In aggregate, there was only a very small change in the overall diversity of the listed produce items (i.e., the 20 items included in the inventory) eaten between pre and post; the median number selected increased from 11 to 12. Comparing individuals' pre/post responses indicated no significant change in the number of produce eaten from the list.<sup>7</sup> Of 85 paired pre/post responses, **49% selected more items at the post-survey, but 35% selected fewer items at the post-survey.** These data suggest that respondents feel that they are eating more and different types of vegetables, but that may translate into having tried and eaten more new types of vegetables without necessarily increasing the total variety eaten within a given year. Moreover, the 20-item food inventory is far from an exhaustive measure of all types of produce that one could consume in a year.

**Fig 7. Distribution of agreement ratings regarding consumption of fresh vegetables (Y1 & Y2)**



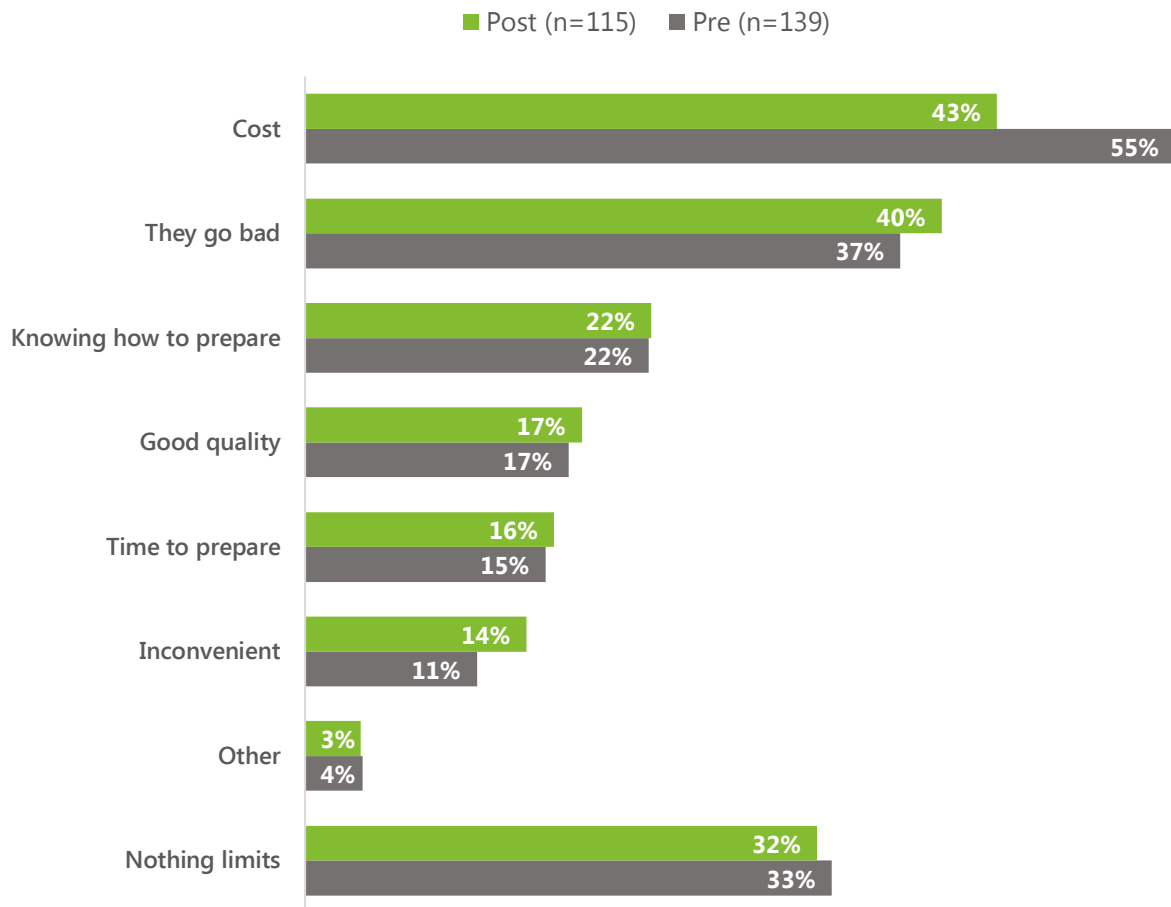
<sup>7</sup> Wilcoxon Signed Ranks Test (Z=-1.03, p=.305, n=81)



## Barriers to Eating Fresh Produce

The evaluation also explored reported barriers to eating more fresh produce, both before and after participation. Because the barriers and reasons for consumption habits are very complex, it was not anticipated that the program would affect any/all of these metrics, but was an area of interest for exploration. The results showed that, in fact, the perceptions of barriers stayed quite stable (Figure 8, below). **The only perceived barrier that seemed to reduce (by 11 percentage points) was cost.** No other barriers saw reductions. No barriers saw increases of more than three percentage points, which seemed generally a negligible difference.

Fig 8. Distribution of responses to barriers to eating fresh produce at pre- and post-program (Y1 & Y2)



## Improved Eating Habits

### Indicators:

- Report learning how to prepare a vegetable they've never cooked before
- Report learning a new way to prepare a familiar vegetable
- Report trying at least one vegetable they've never tried before
- Report eating less pre-packaged food than before the program
- Descriptions of changes in eating or shopping habits by program alumni

### A majority of participants reported that they had engaged in new eating habits since joining the program:

- 56% reported learning a new way to cook a familiar vegetable.
- 54% reported learning how to cook/prepare a vegetable they've never used before.
- 44% reported they had tried at least one new vegetable in the past year.

The produce that participants had explored in new ways in the past year covered a wide variety of vegetables and herbs. See Table 5 for a list of tallied responses and Figure 9 (next page) shows a word cloud of the vegetables named across the three questions (with larger vegetables being those mentioned more often). On the whole, these responses reflect the types of produce grown in Homegrown gardens, as well as some of the ingredients and techniques featured in cooking classes offered by the program.

In terms of a favorite vegetable, there were 50 respondents where pre- and post- answers could be paired. Respondents were fairly evenly split, with about one-third giving a completely different answer, one-third giving a slightly different answer (at least one new item added), and one-third having no change in their response.

**Table 5. Responses of which vegetables were explored in a new way in the past year**

New vegetables cooked (n=43)	Familiar vegetables cooked in a new way (n=45)	New vegetables tried (n=32)
Eggplant (12)	Zucchini / Summer Squash (10)	Greens: Chard / Collards / Kale (10)
Greens: Chard / Collards / Kale (12)	Greens: Chard / Collards / Kale (9)	Eggplant (7)
Squash / Winter Squashes (8)	Techniques/Recipes – pickling, grilling, stir fry, steaming, smoothies (8)	Squash / Winter Squashes (5)
Beets / Beet Greens (7)	Tomato (6)	Sun Gold Tomatoes (2)
(Green) Tomatoes (3)	Eggplant (4)	Zucchini (2)
(Purple) Green Beans (2)	Squash / Winter Squashes (3)	Beets / Beet Greens (2)
Multi-veggie recipes (2)	Beets / Beet Greens (3)	Asparagus
Zucchini (2)	Herbs / Pesto (2)	Cucumber
Nasturtium	Corn	Melons
Pickles	Peas	Jicama
Sweet potatoes	Peppers	Peppers



## Descriptions of Eating Habit Changes

As noted earlier, nearly all of the interviewed alumni (93%) indicated experiencing at least one specific way that Homegrown impacted their eating, cooking, or food shopping. Some of these themes support the survey-based data presented in this section. As noted earlier, just under half of the interviewed alumni felt they were eating more fresh produce due to having the garden. Around 40% also noted that the garden was impacting their family members' eating habits in some way.

*"I think we kind of strategically planned ...what we're eating [around] what we could pull from the garden. So, if you eat salads or tacos or whatever, you're like, 'Well, we already have this ingredient.'" (Interview 30, Cohort 2015)*

*"Absolutely [it changed our eating habits], because I had a lot more vegetables then, like zucchini. I never ate zucchini before. It was easy to grow, so we ate a lot of zucchini. We had a lot of tomatoes, which, you know, tomatoes were kind of pricey. We had greens, different types of peppers, you know, actually some that I still have ... I cut them up and put them in the freezer." (Interview 3, Cohort 2013)*

*"My daughter doesn't even live with us and she comes over and she's like, 'Mom, how's the greens doing?' I'm like, 'They're doing good,' and she's like, 'Okay, I'm going to come past and get some.' ... I had cucumber one year too, and her boyfriend and my husband also, they like cucumber and tomato salad so I had cucumbers and the tomatoes in the garden. They were always – I was like, 'Okay, what happened to my cucumbers?' 'I came and got a couple for a salad.'" (Interview 23, Cohort 2015)*

*"[The garden] is a positive reminder to eat healthy, and especially for the kids, because they're always out there [in the garden] and it's just like, 'Okay yeah, we've got to eat our vegetables.'" (Interview 14, Cohort 2015)*

Another theme in interview data was alumni (about half) reporting they ate higher quality produce because of their garden. This included both people who noted that garden-fresh vegetables had better flavor than store-bought and those who focused on knowing how their food was grown, including that it was truly organic.

*"The fact that you can just go outside and pick what you need, and it's so incredibly fresh; it's unbelievable. To just snap the cucumbers, oh my god, they just snap. It's just the freshness of it all." (Interview 5, Cohort 2014)*

*"Anyone who comes in my backyard, I'm forcing them to 'smell this'. You know what I mean, it's just the freshness of how it transforms a meal, that you thought was great before, until you put fresh herbs and it just changes the whole game. It's a game changer." (Interview 29, Cohort 2014)*

*"You just have no way of understanding the difference between a fresh-picked ear of corn cooked and something that you get you know that may be a day or two since it was picked." (Interview 4, Cohort 2014)*

*"You know in the past you go to the store and you're not sure really if it's fresh, what it's going to taste like, whether it's ripe or unripe. Sometimes you get peppers and they're rotten, part of it is rotten, or sugar snap peas, the ones you buy don't seem to be as good as the ones you grow." (Interview 8, Cohort 2014)*

*"Where it came from. A lot of the stuff that we eat, we don't know where it came from and it tastes way better when you actually grew it and it's not in a can. Or a lot of the stuff that you buy from the store, it's the same thing. It doesn't taste the same because there's no love in it. It's just let's just grow this and put in a package and sell it to people. Where when you're growing it yourself, you know, okay, I watered this." (Interview 18, Cohort 2015)*

*"Growing my food. I just love the flavor of the food when it's grown naturally like that, without any pesticides." (Interview 26, Cohort 2014)*

About one-third of the interviewed alumni reported that they now eat new or different kinds of vegetables, as a result of their garden. In many cases, this was because Homegrown introduced new vegetables or varieties. But there were also individuals who reported that, as they continued to garden, they also continued to explore new vegetables they experiment with introducing into their garden (and diet). Another 23% of those interviewed noted that they had learned new cooking techniques – either from the Homegrown classes or from their own research – to use or preserve the harvest from their garden.

*“The Swiss chard, it started me eating Swiss chard because I never – I mean, you don’t really even see it in the store; I don’t anyway see Swiss chard in the store. So, in that sense, yes, I’ve eaten Swiss chard, which I never would’ve eaten before going on my own.” (Interview 5, Cohort 2014)*

*“There were some things that I was introduced to, like eggplants. I’d never had that before until last year. [Phipps asked] would you like to try this, and would you like to try that. And I said yeah, I’ll try it. And so, it was a lot of new specials, a lot of new foods, but I stuck to my old standards also.” (Interview 17, Cohort 2015)*

*“I looked into some different type of vegetables from different parts of the world that I never even knew existed.” (Interview 12, Cohort 2015)*

*“One [change] being... thinking about different ways to feed our family through what we’re growing. With the tomatoes, you know, even trying to change up the variety besides just putting it on a salad. Maybe doing kind of a salsa or roasting them or something like that. And we’ve also tried this year, we’ve grown for specific dishes. So, I think we’ve grown peppers specifically for a dish that we wanted to try and then just trying some new things. ...We definitely grew beets because that was something that we didn’t really ever kind of cook with.” (Interview 30, Cohort 2015)*

One theme indicated a broader change in eating habits, beyond the use of vegetables from their gardens. Just under one-quarter of interviewed alumni reported that had made broader dietary changes to avoid less-healthy foods, as a result of Homegrown. This included avoiding pre-packaged food or trans-fats, eating fewer carbohydrates, selecting lower-fat dairy, among others. It should be noted that, as with produce consumption in general, some gardeners came into the program having already made these types of dietary changes. Coded statements represent those who specifically described a change made after being part of Homegrown.

*“Because of the health aspect of vegetables, I switched from whole milk to two percent. Let’s see. I read the packages to see what the calories were and the fat content and the trans fats and all those things I never even considered before.” (Interview 12, Cohort 2015)*

*“Before I would go and get like, say, some ice cream, and [now] I would rather have a cucumber and put dressing on it and eat it.” (Interview 21, Cohort 2015)*

*“The garden... it has deterred me from eating a lot of rice and pasta because the vegetables taste so good that... I could just sit down and eat a bowl of vegetables and a piece of chicken breast or boneless, skinless chicken thigh and be happy, and don’t need any past or noodles.” (Interview 23, Cohort 2015)*

The other broader change in eating habits that was heard in the interviews was becoming pickier produce shoppers. Just under one-quarter of alumni mentioned this, and it included becoming a better judge of freshness or quality of produce and starting to buy exclusively organic produce.

*“Because now I can tell like what’s really, really fresh from something that might have been sitting there or like the color for what it looks like.” (Interview 14, Cohort 2015)*

*“I go to the Farmer’s market. I don’t go to Giant Eagles. And I go Trader Joe’s, where organic fruits and vegetables are... I don’t go to, you know, Giant Eagles and things like that, where there could be pesticides on the vegetables. (Interview 2, Cohort 2013)*

## Access to Fresh Produce

### Indicators:

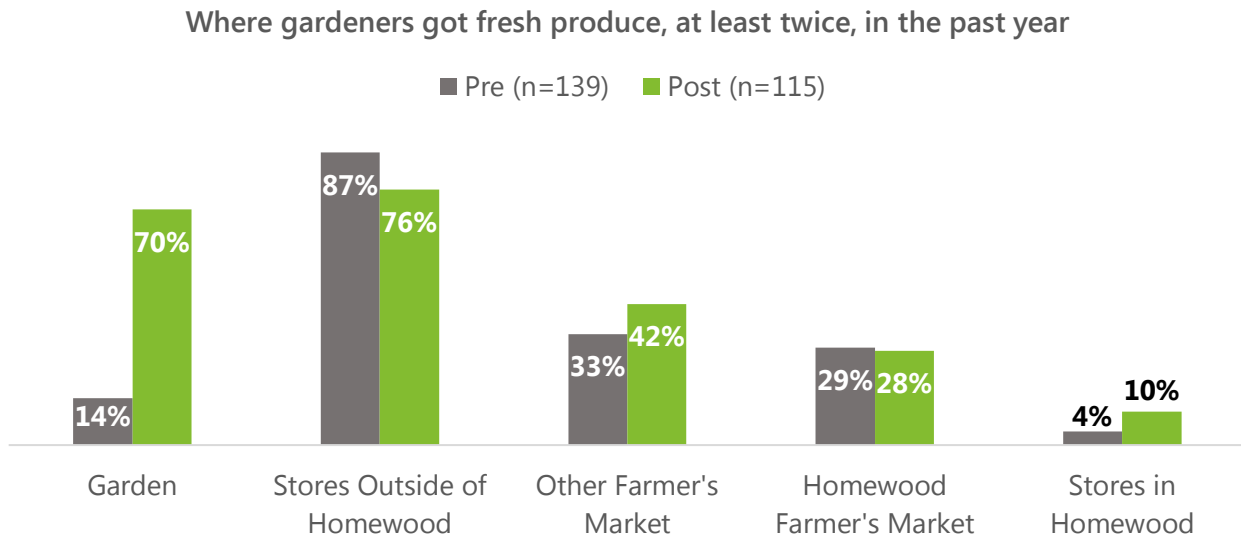
- Use of new and/or more variety of produce shopping sources
- Increase in percentage of participants with access to a food garden
- Number of individuals who ate something from the garden
- Feel as though they spent less money and had more produce than before the garden
- Descriptions of increased produce access by program alumni

## Access to a Food Garden

Participants reported a **dramatic increase in the number of participants who had obtained food from a garden – 14% to 70%** (Figure 11); analysis confirms the obvious significance of this result.<sup>8</sup> In other categories, results showed slight uptick in shopping at Farmers’ Markets and stores in Homewood, and a slight drop in shopping at stores outside of Homewood (the most common overall source).<sup>9</sup> This last point may reflect the introduction of new stores in the Homewood neighborhood within the past three years. But for these other or other produce sources, there was not a significant relationship between use of a source and pre/post.

There are, however, some concerns about the reliability of these self-reported data. While the increase to 70% of respondents who accessed produce through a garden was dramatic, it was lower than expected, considering the success rate of Homegrown gardens over the project years. The phrasing of this item might need to be revisited and simplified for future measurement.

Fig 11. Responses about typical shopping sources by program participants, before and after Homegrown



<sup>8</sup> Chi-Square=84.957, p<.001, df=1

<sup>9</sup> Answer-options for this question were changed between in 2016; 2015 data were re-coded to best fit the current categories (i.e., Supermarkets and specialty stores were coded into “stores outside of Homewood”).

## Sharing Produce from Garden

In estimating how many people had eaten something from their garden, all gardeners between 2015 and 2017 estimated that a total of **1,609 people ate produce that came from Homegrown gardens during the study period. The median was 9 people eating from a single Homegrown garden** (Table 6, right). This is striking when you consider that the average household size was about 2.5 people, showing the extended reach of the program-grown produce.

These numbers do not reflect the number of people whose diet was consistently supplemented throughout the growing season; rather, they show the potential social reach of each garden, with gardeners sharing produce and meals with friends, neighbors, and others in their community. Interviews confirmed this, with 93% of alumni interviewed reporting they shared either fresh or cooked produce from their garden with family, friends, coworkers, community groups, etc. Sharing the harvest was the most common impetus for personal interactions related to the garden.

*"When the tomatoes come in there's an overabundance of them. Last year... I gave sandwich bags of cherry tomatoes to neighbors every week." (Interview 10, Cohort 2015)*

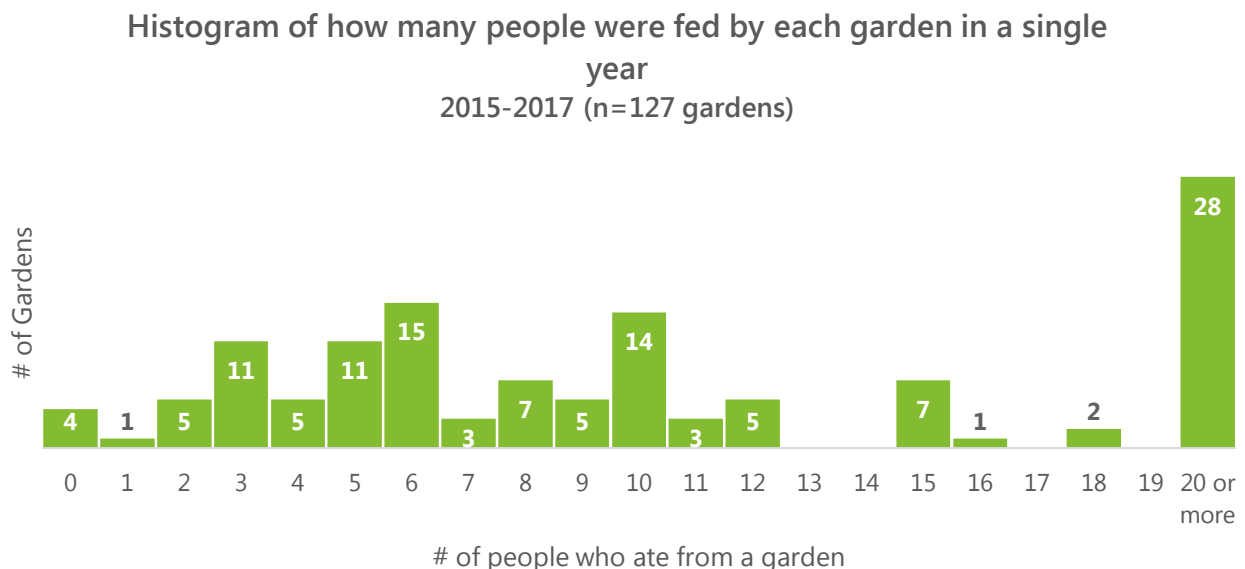
**Table 6. Reported totals of people who ate something out of Homegrown gardens**

	All gardens (n=127)
Total people (est.) who ate from Homegrown gardens 2015-17	1,609
Median number of people, per garden	9

Figure 12 (below) shows the distribution of the responses to this question. **Most people reported they fed between 3 and 10 people from their garden.** The graph shows that around one-quarter of data were outliers, with reports of feeding more than 14 people; one person indicated 100 people ate from the garden. These outliers typically were from people who prepared dishes for large social gatherings, such as a church picnic or reunion. Because of these outliers, the median is more valid depiction of a typical garden's impact than is the median. Below is a quotation from a gardener who described using this large-scale sharing to talk about the garden with their community.

*"I do attend church, and I take some of the vegetables down there... or some of my recipes. Like, if I take a covered dish to somewhere, which I'm always doing, I'll say, 'This came out of my garden.' And we start talking about gardening like that, and I'll tell them about [Homegrown]."* (Interview 2, Cohort 2013)

**Fig 12. Histogram depicting how many gardens each reported feeding a specific number of people**



## Saving Money on Produce

Finally, looking at all Y1 and Y2 gardeners, **68% strongly or somewhat agreed that they had spent less money on fresh produce after getting their Homegrown garden.** The breakdown of these responses is presented in Figure 13 (below), which shows that over one-third of respondents strongly agreed with this statement about a larger impact on their eating habits.

Interview data strongly supported these findings; **two-thirds of interviewed alumni mentioned that their garden allowed them to shop less often and/or to save money on groceries.** This was the most common impact related to eating habits identified across the interviews. These comments ranged in the degree of savings that was realized from the garden. The strongest impact was for one alumni who reported cutting their family food bill nearly in half due to their garden. Others talked about the cost savings that came from comparing the cost of growing the plants to the high cost of produce, such as tomatoes or strawberries, at supermarkets. Still others focused their comments on the fact that the garden reduced food waste, since they could pick just what was needed for a meal, and leave the rest in the garden for later use. The quotations to the right demonstrate the breadth of the comments made by alumni to describe how they have saved money due to their Homegrown garden.

*"[Getting the garden] was greatest thing we could do because it helped cut our food costs. Because my wife has Celiac [disease] and she cannot anything but organic and gluten free foods, you know. It has really cut our food bill almost in half." (Interview 28, Cohort 2015)*

*"Well I didn't have to go to the store and buy greens to cook them. Even if I wanted to just go out and pull off enough leaves for me to cook just a meal for me I could do it. ...So, I didn't have to worry about going to the store to buy green vegetables. I live alone ...so it just makes it easier for me to have that green vegetable without overspending and throwing some away that I can't use because I can't eat it fast enough." (Interview 10, Cohort 2015)*

*"The stuff ion the store is – I couldn't believe how much money they want for all these little vegetables we got [in our garden]. ...Watermelon, shoot, that's \$5.00, and at different places is \$6.00 and \$7.00. I said, it's crazy, and the watermelons [at the store] aren't even that big." (Interview 1, Cohort 2015)*

*"I would say it's less expensive than going to the store because I priced some green tomatoes at the store and they were really pricy, about – something like \$3 a pound and one of those tomatoes can weight a pound." (Interview 16, Cohort 2013)*

**Fig 13. Distribution of gardeners' feeling about the overall amount of money spent as a result of Homegrown**





## Impact on Personal Interactions

### Indicators:

- Reports of involving others in the garden
- Reports of sharing surplus produce with a neighbor or other community members
- Reports of sharing daffodils with a neighbor or other community members

## Caring for the Garden

Across all of the gardeners surveyed, the vast majority of responding gardeners (75%) had help caring for their gardens. The most common helpers were children, a spouse/partner, grandchildren, or a neighbor (see Table 7). This shows that other people in the family and neighborhood are getting involved in the garden.

Table 7. Frequency of who helped care for the garden during the year

	all gardeners (n=111)
Me	77%
My children	27%
Wife/Husband/Partner	22%
My grandchildren	19%
My neighbor	17%
My friend	12%
Other	6%
Other children	5%
Parent	3%

## Talking with Neighbors about Garden

In addition, a large majority of gardeners (85%) reported they had talked with their neighbors around or about their garden and shared vegetables with a neighbor (92%). (See Table 8, below.) In addition, Y1 gardeners were asked if they had met any new people due to Homegrown activities; 60% those who responded (32 out of 53 gardeners) indicated they had.

Table 8. Frequencies of those who reported having connected with neighbors around their garden activities.

	all gardeners (n=111)
Talked with neighbors around/about your garden	85%
Gave vegetables to a neighbor	82%

In an effort to measure change on these topics, participants were asked to retrospectively think about whether their time outside or interaction with neighbors had changed after the program. Results are shown in Table 9, with an indication of changes in median ratings of agreement. **Statistical comparison of ratings by all gardeners (first- and second-year combined) show all of the measured indicators had significant increases.** Anecdotal observations by program staff confirm that while some participants had pre-existing strong ties in their neighborhoods, the garden seemed to be a particularly valuable catalyst for meeting one's neighbors among young families.

Table 9. Comparison of retrospective-pre/post ratings regarding community engagement (5-point agreement scale); includes combined Y1 and Y2 post.

	Median PRE	Median POST	N	% Report Increase	Z	p-value*
I regularly spend time outside in my yard.	3	4	98	54%	-5.63	<.001
The children regularly spend time outside in the yard.	3	4	77	39%	-4.26	<.001
I regularly talk or interact with my neighbors.	3	4	95	41%	-5.18	<.001

## Descriptions of Personal Interactions

**When asked, 100% of alumni reported some type of personal interaction that occurred, related to their garden.** These interactions took many different forms – from simply sharing their harvest to actively discussing or promoting gardening. Not all gardeners felt that it had *changed* the nature of their relationships with others, but it had certainly been part of their interactions with people in their lives and communities.

**Neighbors were a main group with whom gardeners interacted; nearly all indicated talking with neighbors about their garden.** Around 70% of alumni described interactions with family or friends related to their garden. Less frequently mentioned were interactions with children (23%), community groups (20%), or other connections (23%). Not all gardeners had children or grandchildren, which accounts for some of these lower numbers.

The most common type of interaction, as described earlier, was sharing their harvest; 93% of alumni reported giving fresh or cooked produce from their garden to others. Beyond sharing vegetables, two-thirds of alumni interviewed described ways that they had promoted Homegrown by encouraging others to participate (67%).<sup>10</sup>

*“Everybody I talk to I’ll be like, ‘Y’all need to go down to the Y. They do the classes on Thursdays.’ ...A cousin I recently saw was starting to garden and I was like, ‘You should come down – even though you’re out of the area you should come down for the classes at least.’ I’ve made copies of fliers for people who had some questions and I’ll be like... ‘We just learned this in class and they gave me a paper. I’m going to copy it for you.’”*  
(Interview 24, Cohort 2014)

*“If I take a covered dish to somewhere, which I’m always doing, I’ll say, ‘This come out of my garden.’ And we start talking about gardening like that, and I’ll tell them about [Homegrown].”*  
(Interview 2, Cohort 2013)

Homegrown also created a community among the gardeners; **just under half of interviewees (43%) reported that they started to discuss gardening with their neighbors who gardened** – many of whom were also part of Homegrown. **The same percentage (43%) reported interactions around caring for the garden.** While this mainly consisted of involving family members or children in garden care, there were several who reported lending a hand in a neighbor’s garden when someone was unable to fully care for it (or being the beneficiary of such help). In at least one instance, two gardeners were sharing plots, care, and harvest to maximize the variety they could grow together.

*“We got to bond with our neighbors a little bit more as well. ...We would go around to see who was planting what ...we were just enjoying communicating and learning about different things in the garden like, ‘Oh you’ve got to put some of this on your garden. Use some oil on this garden and then spray that with whatever.”*  
(Interview 9, Cohort 2015)

*“We have garden challenges. ...We try to see who does the most vegetables and stuff like that. We’ll take pictures and send them to each other. Like because a couple of my girlfriends have gardens and we’ll try to outdo each other in our gardens.”*  
(Interview 14, Cohort 2015)

*“In the beginning, when I first got the boxes, it was just me out there doing stuff. But then as time – and when my grandkids started to see stuff growing... they were like, ‘Get me some gloves. I want to help. Can I help pick this? Can I help do this? Next year can I help plant this?’ ...At first it was just me and now I’ve got all this help.”*  
(Interview 23, Cohort 2015)

*“[Neighbors] knew that I was having my medical problems. They came over to pitch in and they helped me out. Yeah, I think it did bring [together] the people around you who you don’t know that well. ...They know that I’m a nice guy, but right now, I’m living alone and it’s kind of hard to do a lot of things.”* (Interview 17, Cohort 2015)

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<sup>10</sup> The interview asked alumni if they had encouraged others to participate in Homegrown, but responses were only coded if their response provided specifics about how or with whom they had promoted Homegrown.

Other interactions described by alumni included more casual conversation and interaction with neighbors who were not gardeners. About 30% of interviewees described talking with curious neighbors who asked about their garden, for instance how it was doing or what they were growing.

*"Okay with the neighbor, the one neighbor, I think we talk more because we have adjoining backyards. The other neighbor has a fence up, but I shared a couple of things with her. But then the other neighbor, where we don't have a fence up, we talk more definitely over the garden, handing them vegetables, and it was like, "Oh, I see you have a garden." We talk more because of the garden. That's definite." (Interview 24, Cohort 2014)*

*"If I'm not out in the yard every day in the spring and the summer then something is just not right. So, my neighbor will say, 'Are you okay? ...Because I didn't see you.' I said, 'Well I was in the back so therefore you couldn't see me.' (Interview 22, Cohort 2014)*

A small portion of Homegrown gardeners became gardening cheerleaders within their personal networks. These individuals (17% of those interviewed) gave examples of supporting, encouraging, or advising others who lived outside of Homewood (and thus, could not be part of the program) on how to begin to garden.

*"I've watched it influence colleagues of mine, close friends who went out and live in other neighborhoods and said, 'Well I'm going to get me a raised bed' and have asked me [for help]. I've been over to a friend of mine and helped them plant some different herbs and stuff in their raised bed. I think it's contagious, people just want to be a part of this, and experience it themselves" (Interview 29, Cohort 2014)*

*"The people who have yards, I'm like the Little Red Hen, 'You can plant your own. You have space to do it, so do it.'" (Interview 5, Cohort 2014)*

*"Everybody that came, ...they would come over and they would say, 'Okay, what are you doing this time?' But I would encourage them, even though they didn't live in [Homewood], my mom and my sister, they would be like, 'Well maybe we can start off small and do a little – go to the store and buy a little box and just plant a couple of things for ourselves.' (Interview 23, Cohort 2015)*

*"They come and look at [my garden], my neighbors. They'll be like, 'Wow.' I'm like, 'You don't have a yard, but we can get some dirt and we can start planting.' And some of them have [tried], but when it didn't go right, [I said,] 'Well try it again and I'll help you.'" (Interview 7, Cohort 2015)*

## Other Outcomes

### Connection with Natural World

**72% of respondents indicated the program had definitely helped them feel more connected to the natural world.**<sup>11</sup> 55 people responded about why they felt more connected, and the answers covered several themes. Most responses reflected the contribution of being outdoors, being in the garden, and/or the process of watching plants grow as a route for connecting with nature. For example:

*Being outdoors and working on my garden is peaceful. (Y2 survey)*

*Being outdoors makes me want to spend more time outdoors, I have begun to take long walks. (Y1 survey)*

*I see my own fresh vegetables grow from seedlings puts me in a closer relationship on how God transitions them to full maturity. (Y1 survey)*

*The smell of the soil reminds me of my grandparents who live in a rural area of PA. (Y1 survey)*

Other themes that arose in responses included those who described being more knowledgeable about gardening practices and related concepts or changes in actions they were taking, such as shopping for foods that complement their harvest, composting waste, etc.:

*[I am] more centered with the Earth and the environment, keep the blocks clean, litter- and debris-free, beautify the corner with flowers from spring to winter. (Y2 survey)*

*Spent more time outside this year. Read a lot more about various techniques and tried out new planting styles. Started composting regularly and more interested in what flowers/plants draw more birds and butterflies. Tried some new veggies. (Y1 survey)*

*I pay more attention to the weather now, what's good to plant and what is not. What prevents pests and not. (Y2 survey)*

A handful of people referenced the connections with other people in the program – meeting likeminded individuals or learning from their fellow gardeners. A few others described other, unrelated themes.

*Sharing ideas and getting tips from experienced gardeners and passing along acquired gardening information. (Y2 survey)*

*Connecting to the earth and people with like interests. (Y2 survey)*

*Passersby would comment on my daffodils. (Y2 survey)*

*My children and friends and neighbors are into me cooking everything. (Y1 survey)*

The experience of feeling a connection with the natural world was not a dominant theme in the alumni interviews, but it did come up among a few participants. About five alumni made comments that described some sense of connection with nature or connection with their spirituality. These comments included sentiments that gardening had heightened their sense of the abundance of nature.

*"Being able to share, learning the infiniteness, if there's such a word, of nature. How just one plant it never ends with the seeds you get from one plant. There's no reason for anyone to be starving, if we're doing this right. ...sometimes when I'm just dealing with planting and the ground and the whole bit. I feel closer to the Creator at that moment because I think nature is it. That's my church, being in the ground." (Interview 29, Cohort 2014)*

*"I know when it's come it's going to be plentiful. So I always dedicate the first thing to the Lord, and then myself, and then my neighbors." (Interview 7, Cohort 2015)*

*"The Homegrown program is getting people in touch with nature and learning how to produce their own foods. ...it's totally different when... you go and you plant it and you watching it grow and grow and grow, and now you see all of that hard work turn into something beautiful and it tastes good." (Interview 18, Cohort 2015)*

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<sup>11</sup> Question was only asked of 2016 and 2017 cohorts after their first year of participation.

## Impact on Children

Many of the Homegrown gardens were installed in homes where children reside or homes where children spend a lot of time (e.g., a grandparent's home or a residence with a childcare facility). From these settings, a theme arose in alumni interviews about **the positive impacts that the garden had on children in their lives; over one-third of all interviewees raised this theme.** These alumni described high levels of enjoyment and interest among children for the garden, the rich knowledge gained by children from watching a plant's lifecycle over time, and that children gained a sense of ownership, pride, and enthusiasm for helping to care for the garden.

*"I always did stuff with the grandkids but it's fun to watch them out there in the garden. It's fun to watch them planting and get all excited about planting and watering and doing the hose and doing the bucket." (Interview 24, Cohort 2014)*

*"Oh, just the information that was obtained and eating healthier. I have a home daycare, so we all eat healthy. The kids are involved with [the garden]. And we just – you know, they love it. I use it as part of our science projects and everything – the gardening." (Interview 2, Cohort 2013)*

*"You know, my grandchildren were amazed that they would grow in that small of an area. They had a chance to understand to be diligent with watering and maintaining the garden area." (Interview 12, Cohort 2015)*

*"Oh, my grandkids... I was at [my daughter's] house yesterday. She said, "Mom, I don't know what you started. The lady down the street has a garden and she told the kids she had to leave it alone." And [my grandson] told the lady, 'My grandma gardens. I have my own gloves and garden tools and I know how to garden and I can help you plant stuff and pull weeds.' He was so serious, and... [my daughter] had to explain to her, 'No, my mother does have a garden and they have helped her with the garden.'" (Interview 10, Cohort 2015)*

*"Even my grandkids, when they come over here, they are looking forward to coming and helping me in the yard. ...the eight-year-old, they were over here last week, and he said, 'Momma, let's go ahead out here to the garden.' He said, 'Wow. It was that small.' I said, 'Yeah. We need to start taking pictures.' And he took pictures of it. So the next time he comes over, you know, he'll see how the flowers and the vegetables are growing up." (Interview 1, Cohort 2015)*

*"For my grandchildren... they know stuff comes from a garden, but they never experienced how things grow because when we go places it's already grown. So, my granddaughter, she just turned 6, they gave her a carrot seed last year from school. She was like, "Grandma, is this going to grow?" So, we grew the carrot seed, we put it in the ground, and she watched the tomatoes grow, she watched her carrot grow, ...and she was just, 'Oh my goodness, what is that little thing,' and I said, "That's a pepper. That's a tomato." And she's like, "But no, that's not the right kind of tomato. You don't get that at the store." I said, "This is how it grows." So, it was knowledge also for my grandchildren because they got to experience how stuff starts from a seed and grows all the way fully so you can eat it." (Interview 23, Cohort 2015)*

*"To me it's very helpful, especially for the children, especially for the kids. Give them something else to do besides just sitting at home with the video games. Because my granddaughter, she'll stay outside with me for hours and not even worry about Nickelodeon or The Disney Channel.... Everybody [at Homegrown] should be patted on the back. I'm telling you, if you can beat The Disney Channel and Nickelodeon, y'all are bad. Y'all are some bad people." (Interview 23, Cohort 2015)*

## Pre-Program Goals & Concerns

Prior to starting the program, participants were asked to reflect on what they most wanted to learn in the program and what they were most concerned or nervous about with their garden. Coded responses showed that there was a diverse range of learning interests (Figure 14, below), with **one-third wanting to learn about general care for the garden** (how to keep it alive, care for it properly, etc.). More specific interests had to do with planning or planting (16%), harvesting or preserving (12%), and pest control (10%).

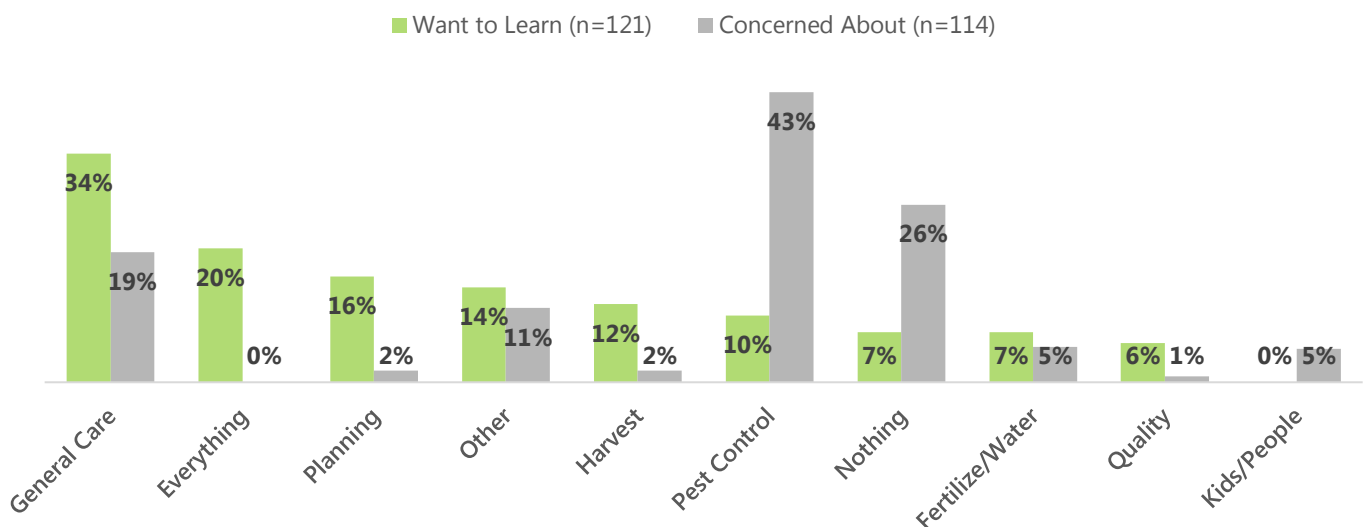
**Among concerns, the biggest, by far, was pest control** (43%), with quite a few participants worried about groundhogs, deer, and other animals. Also interesting was that about one-quarter indicated they had no major worries prior to the program; however, another 20% indicated they were worried about general care issues.

## The Homegrown Garden Club

In survey data, just over half (53%) reported attending at least one Garden Club meeting in the past year. Among these respondents, most respondents' comments indicated that they came because they wanted to learn – these responses ranged from general learning, learning about gardening techniques, and learning about cooking. A smaller subset indicated they came for the benefit of meeting and connecting with other gardeners.

Those who indicated they had not attended a Garden Club (as well as some who had attended) primarily indicated that the challenge was with scheduling or time availability to attend. The range of specific barriers included work responsibilities, school, family care, being out of town, health issues, among other reasons. Others more generally stated the date or time was difficult for them.

Fig 14. Coded pre-program answers about what participants want to learn and are most concerned about.



## Most Liked about Gardens

In post-program responses, **more than half of participants said they most liked the fresh food (51%), the convenience of it being in the backyard (37%), and taking pride in their gardens (33%)**. Interviews echoed many of these comments in sentiments expressed. As noted earlier, two-thirds of alumni expressed a sense of pride in accomplishment from gardens, and the quality and convenience were often mentioned in describing how the garden impacted eating or shopping habits.

Other aspects of gardens that were mentioned in survey responses among the most-liked qualities were the opportunity for family time (10%) and the opportunity to share produce with others (5%). See Figure 15, below. Some example comments from survey responses are to the right.

*I especially loved seeing how many pumpkins I grew and how large they were. Squash, beets, tomatoes in such abundance. (Y2 survey)*

*The variety of vegetables, the quantity and quality of the vegetables. I grew a vegetable that I hadn't ate in a while because of price and size was too big just for one person. (Y2 survey)*

*To be able to decide what to use in my meals and pick it fresh off the plant. Able to give / share with family and friends. (Y2 survey)*

*Being able to go outside and pick vegetables to make salads. [It was] nice not having to go to the supermarket all the time. (Y1 survey)*

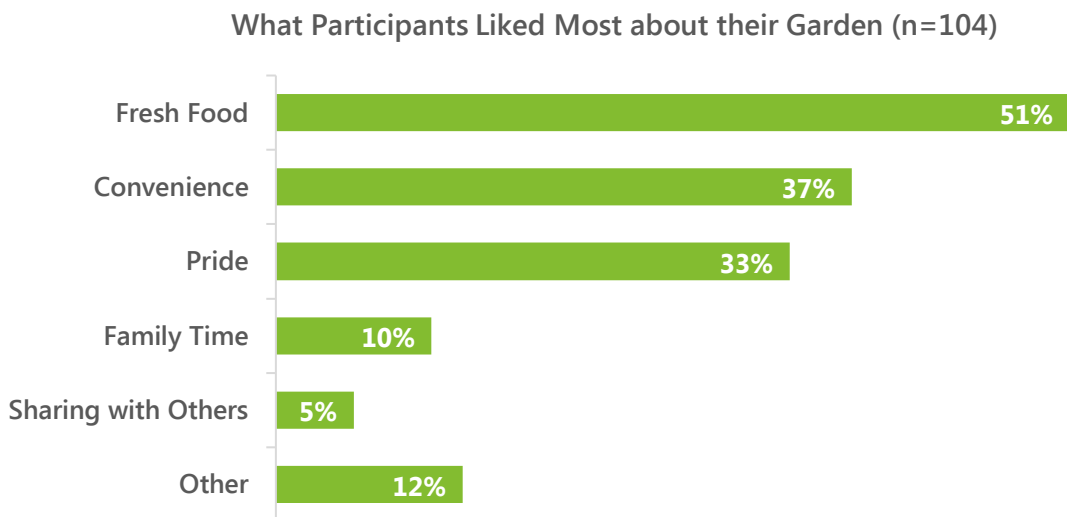
*It felt empowering, I was excited my vegies didn't expire before I got to use them! If I forgot any I could just go out the back door! (Y1 survey)*

*We enjoyed having a family project together and being outside, as well as sharing our produce with neighbors. We also liked the convenience and freshness of the vegetables as well as the garden being organic. (Y1 survey)*

*It was beautiful, a sense of accomplishment seeing everything grow. (Y1 survey)*

*My first experience planting promoted me to relax more, watching my garden grow enable me to nurture by watering and sensing the sun. (Y1 survey)*

Fig 15. Coded post-program answers about what participants liked most about their garden.



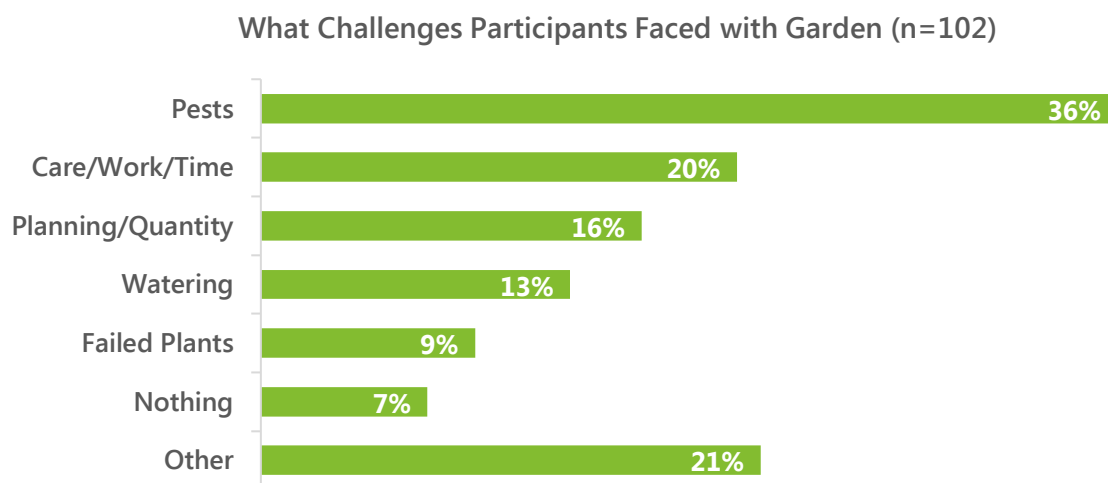
## Challenges & Support from Phipps

In terms of challenges, **the most common challenge was dealing with pests – whether insects or mammals – mentioned by 36% of gardeners.** The next most common challenge was the general time commitment, work, and tasks of caring for the garden (20%). This was followed by challenges with planning the garden, including issues with overcrowding and plants that over-produced (16%), and challenges with watering (13%) – either remembering to water or not over-watering. See Figure 16, below.

In interviews, respondents talked about how the initial Phipps support helped them sustain gardening. The biggest help was start-up materials and construction, including raised beds, composting bins, soil, seedlings, and protective cages. This last item was a key way that Phipps helped them problem-solve with the most common challenge of pests – particularly groundhogs or deer.

About one-third of alumni gardeners noted that the Homegrown Garden Club classes have been a support, providing “just in time” information and idea-sharing. Beyond the Garden Club, alumni reported gaining knowledge and skills directly from Phipps staff during the two years of mentoring. Moreover, a handful noted that they benefit from the continued accessibility of the Homegrown staff, being able to rely on staff for ongoing support and advice. The accessibility, knowledge, and supportive approach of the staff is a great benefit for alumni.

Fig 16. Coded post-program answers about challenges faced by participants with their gardens.





## Discussion & Conclusions

**Homegrown has achieved meaningful impacts in most of its target areas with program participants in the Homewood neighborhood.**

Results from three years of data gathering with Homegrown participants and alumni highlight a number of ways in which the program has achieved its core goals. With data from well over 100 households during their two years of mentorship, as well as in-depth interviews with 30 program alumni, results show meaningful impacts in participants' gardening knowledge and skills; commitment to sustained gardening; feelings of wellness; eating habits; and interactions with neighbors and community.

Taken together, the data suggest that the program was successful in its larger goal to empower community residents. The results show that residents in the program are confident, can be successful as home gardeners, and can use these tools to make changes in their access to produce and overall well-being. Further, the addition of data from program alumni supports the conclusion that, after two years in the program, gardeners have gained a set of skills, a sense of motivation, and successfully continue gardening independently.

The findings also highlighted that the Homegrown program's success grows out of an asset-based model of impact. The evidence indicates that by providing mentoring and support, it taps into participants' existing interests and builds their skill and empowerment; it offers a wide variety of wellness benefits, to reinforce pre-existing healthy behaviors and introduce new options; and it taps into existing, robust social networks within this community, using gardening and fresh vegetables as a catalyst for social connections.

These conclusions are supported through three major patterns within the evaluation results, discussed here.

**Participants demonstrate confidence in their greater knowledge and skills and an ongoing commitment to gardening independently.**

The program's underlying theory of change is that sustained, long-term impact will result as Homegrown builds residents' skills and confidence as home vegetable gardeners, rather than simply providing them with produce directly. The evidence collected from 2015-17 strongly supports that, for the vast majority of participants, this theory holds true.

The data shows evidence of a progression of confidence and abilities. During their two years of mentorship, participants report significant gains in confidence in their abilities as gardeners, with a majority of participants moving to a sense that they are "able to do it on my own." This is the achievement level that the program seeks to achieve with participants.

At the end of their two-year Homegrown mentorship, the data also show that a large majority of participants feel confident in their ability to continue gardening independently and that they intend to continue their gardens in the next year. Notably, 57% of Year 2 gardeners report their intent to continue gardening is "definite," with another 15% reporting it's probable that they will garden again.

These numbers were validated by the interviews with Homegrown alumni, with 70% reporting they continued gardening fully in 2017, and another 17% indicating they partially continued their garden, but in a diminished way (such as getting a late start or relying on perennial crops). Moreover, interviews indicated that most continuing gardeners also continue to try new crops and varieties of produce in their gardens, and about one-third were working on expansions to their gardens – putting in new beds or merging gardens with neighbors to increase capacity. These stories highlighted the level of commitment to gardening that transpired among some of the gardeners, with high levels of motivation to sustain, nurture, and improve this part of their lives.

**Participants reported positive impacts in a variety of areas of health, including eating habits, physical health, and emotional wellness.**

In survey data, participants express very strong sentiments about feeling that they experienced improved health due to the program, and they report a feeling that they increased vegetable consumption and changed eating or cooking habits. In seeming contrast, participants' recall of quantity of typical produce consumption does not show change; however, recall measures are unreliable and difficult to estimate with accuracy.

Interview data helped highlight that there was a fairly broad range of ways that participants felt Homegrown had affected their eating habits. Nearly everyone identified at least one specific way their eating habits changed, but not everyone had the same type of change. The changes ranged from shopping less (and saving money) on produce to eating higher quality produce (fresh-picked and fully organic) to slightly fewer than half who reported they were eating more fresh vegetables. Nearly one-quarter even reported the program spurring bigger dietary changes, such as less pre-packaged food, or becoming pickier shoppers. Survey and interview data also pointed to gardens spurring some participants to try new kinds of vegetables and develop new cooking techniques to prepare the produce they grow. In fact, during planting in 2017, Homegrown staff specifically encouraged gardeners to pick one vegetable they had never had before, in an effort to further promote variety and experimentation with produce.

Similarly, nearly all alumni reported at least one way that the program had affected a feeling of wellness, but each person experienced different areas of impact. Pride in accomplishment was the most common psychological benefit expressed; however, 40% reported a physical health improvement, such as more energy, weight loss, digestive health, etc. Another benefit, confirmed in survey data, was an increase in outdoor physical activity, required for garden maintenance. For a smaller portion, the garden provided support for emotional wellness, as a provider of stress relief, happiness, or a connection with nature or spirituality. All of these data highlight the broad range of potential wellness benefits, and how each person may take a different set of impacts from the experience.

**In a number of different ways, the Homegrown garden serves as a catalyst for personal interactions and community connections.**

Although measuring relationship changes is a difficult impact area to measure, with indicators being diffuse, varied, and subject to many external influences, evidence suggests that the program provides support for Homegrown gardeners to connect with their families and communities. The most common type of garden-instigated interaction is sharing of produce, which is reported by a large majority of participants in all measures. Survey data indicated that produce from each Homegrown garden was shared with about by 9 people, while the average household size was about 2.5 people. This indicates that a typical gardener shared at least some of their harvest with 5 or 6 people outside of the home. Interviews confirmed that gardeners shared with family, friends, neighbors, and community groups.

In survey data, participants reported an increase in conversations with neighbors about or around the garden, positive relationships with neighbors, and that the Garden Club was motivating not only for the learning opportunity, but for the opportunity to connect with a community of fellow neighborhood gardeners. Interview data confirmed that conversations about gardening were a common form of personal interaction. The forms of interaction ranged from those who encouraged neighbors to join Homegrown, to those who discussed gardening among fellow gardeners, to those who talked with curious non-gardener neighbors asking about their garden, to a few who actively supported and encouraged people outside of Homewood to try gardening. It was not that the garden necessarily created new connections, but it provided an entry-point for deepening and expanding interactions within the existing social networks of the neighborhood and residents.

Another form of interaction came through caring for the garden. The majority of surveyed gardeners report having help caring for the garden; and around half of interviewees also talked about sharing garden care. While this was mostly within a family, a handful of alumni reported neighbors helping one another when someone was unable to fully care for a garden themselves. This indicates that the act of gardening was not a socially isolated experience for most participants.

## Future Recommendations

As the Homegrown program looks to its future, several key ideas emerged as recommendations for growth and continued impact:

**Expanding to New Neighborhoods:** Given the success of the Homegrown model, the current level of penetration within Homewood, and interest demonstrated from other communities, the program has great potential for expansion into other neighborhoods with similar conditions.

**Expanding Cooking Classes:** The data suggest that cooking classes successfully impact participants' abilities to prepare different produce and use new techniques in the kitchen. Given that "time to prepare" and "spoiling" are consistently challenges for community members, continuing to expand classes on ways to use more produce, ways to store or preserve produce for the winter, or to prepare it quickly could be of value.

**Continue Encouraging Experimentation:** One impact found was that some gardeners try new vegetables while in the program, and that alumni continue to experiment with growing new crops or varieties. To grow this impact area, the program should continue with their 2017 strategy of encouraging gardeners to select at least one item for their garden that they have never had before. This encourages variety of eating while in the program, and perhaps will increase the proportion of alumni who continue to experiment and try new varieties when they garden independently.

**Organizing a Community Support Network:** Alumni interviews revealed cases where gardeners have stepped up to help with their neighbors' gardens when it was difficult for the neighbor to maintain it independently. Given that physical challenges with age or illness can be a significant barrier to continued gardening, the Homegrown program could more formally initiate this type of community support network, which arose organically in the community already. This may include recruiting volunteers among alumni who would be willing to assist an elderly or ill neighbor who would otherwise not be able to maintain a garden alone. It would help maintain the garden access; it would also provide another opportunity for gardeners to take ownership of the program within their communities.

**Future Evaluation:** Continued evaluation work is always recommended to support ongoing program monitoring and improvement. However, after the completion of this study, it may be useful to reflect on what are the highest priority outcomes to evaluate as the program expands into new neighborhoods. It may be worthwhile to pare down evaluation instruments and data-gathering when beginning work in a new neighborhood to reduce burden on participants, while still collecting the most relevant and actionable results to guide decision-making by program staff.

Some initial suggestions for streamlining survey data collection are:

- Pre: Remove question about having a garden before the project began, as it caused confusion for respondents. (Data were not reported here due to clear inaccuracies.) A step could be added to the installation process, where the staff member records the level of existing gardening (if any) to more reliably gather data.
- All: Remove Q1 (estimated number of daily vegetable servings). Estimations of this nature are largely unreliable, and not much meaning could be taken from these data.
- All: Remove "barriers to fresh vegetable consumption" question. Barriers are not an anticipated to change (other than access), and consistency in responses over three years mean that it is safe to work from the reported profile of barriers going forward.
- All: Remove "favorite vegetable" open-ended question. This proved to be any kind of change; other more direct measures are preferred.
- Post: Remove "daffodil bulbs" item if no longer a common program element or if the timing does not align with survey collection.
- Post: Consider revising the question about Garden Club attendance to be more specific and provide answer choices for "why not," based on collected open-ended data.
- Post Y2: Consider revising language in the "Next Year" section in case the language "without the help of Homegrown" is misleading about what they can expect.
- Post: One item about "meet any new people" was added to the Y1 survey, but not Y2.