GusNIP Produce Prescription (PPR) Projects

Data gathered by the Nutrition Incentive Program Training, Technical Assistance, Evaluation, and Information Center (NTAE) also demonstrated that produce prescriptions improved fruit and vegetable (FV) intake, household food security, and perceived health. In addition, pilot data demonstrated improvements among select clinical outcomes.

Healthcare professionals at clinics provided PPR participants with an incentive, commonly referred to as a produce prescription. The produce prescription could be exchanged for free or reduced cost FVs at farm direct (FD), brick-and-mortar (B&M), and clinic sites. Produce prescriptions are intended to help treat or prevent diet-related chronic disease and were based on specific eligibility criteria (e.g., having a chronic disease, such as type 2 diabetes). PPR projects are designed to improve participants' health outcomes by increasing FV intake, supporting food security, and improving healthcare utilization (e.g., reduced emergency department visits and hospitalizations).

All PPR grants awarded between 2019-2023 and active during GusNIP year five (Y5; September 1, 2023 to August 31, 2024) collected and shared core measures data with the NTAE. Core measures provide information related to the sites where PPR projects operated as well as the impact of those projects on participant outcomes. With this information, the NTAE tracked reach to various regions, communities, and individuals; quantified the dollar amount of produce prescriptions distributed and redeemed; and explored how sites implemented PPR projects.

GusNIP at PPR Sites: Operation and Reach

Grantees submitted site-level data for 94 PPR awards via the Nutrition Incentive Hub secure web portal. Site-level data provide context for how PPR projects were implemented across the United States. Researchers and practitioners use site-specific results to assess variations in project reach, project components, and effectiveness across different geographic, economic, and demographic settings. These insights help identify best practices, challenges, and other factors that influence continued program success.

Additionally, site-level data enable PPR projects to tailor interventions to meet the unique needs of participants and ensure ongoing impact. Evaluating site-level findings strengthens the overall impact of PPR initiatives by facilitating data-driven decision-making and continuous improvements in project impact and efficiency. See **Appendix 4** for descriptions of methods and measures used for site-level reporting. See **Appendix 9** for all PPR site-level results tables.

> "In this second year of our collaboration, **Produce Rx sales at the...Farmers Market have grown substantially.** Farmers Market staff frequently brag to visitors and even the County Inspector about how proud they are to be part of a program that is **connecting local farmers and their produce directly to the healthcare services of people living with diabetes!"**
>
> *—Western Region PPR Farmers Market Vendor*

Where Did PPR Projects Operate?

In year five, GusNIP PPR projects expanded access to FVs via produce prescriptions across 1,835 FD, B&M, and clinic sites (**Figure 18**). Most PPR sites (83.1%) were located in urban areas, while 17.0 percent were in rural areas. Less than 1 percent of PPR sites were in areas serving tribal populations (**Table 4**). It is important to note that sites in urban geographies may serve rural or tribal communities, so location alone does not describe the full reach of PPR sites. Participants most often screened and enrolled at clinic sites where produce prescriptions were distributed. Participants most often redeemed produce prescriptions at B&M or FD sites. Following year-over-year increases, year five data showed another rise in the number of PPR sites. Specifically, there was a 29 percent increase in the number of PPR sites from year four to year five. The increased number of PPR sites provided additional locations where participants could enroll in projects and redeem produce prescriptions.

Figure 18. PPR Project Site Types (2023-2024; n = 1,835)

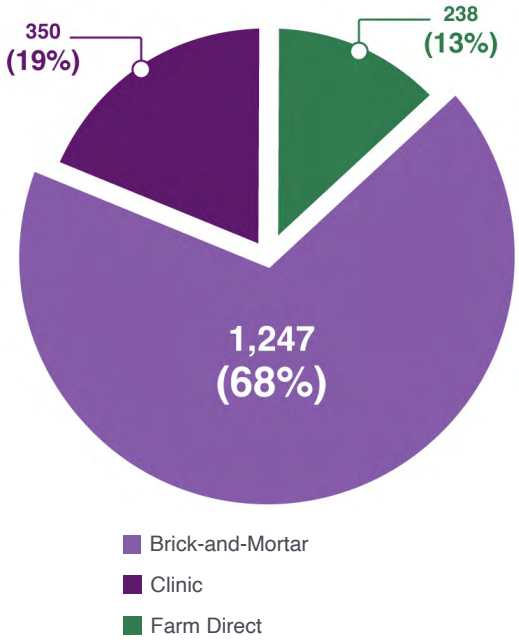


Table 4. Geographies Where PPR Sites Were Located (2023-2024; n = 1,822*)

Location	N (%)
Rural	307 (16.9%)
Rural and Tribal	1 (0.1%)
Urban	1,512 (83.0%)
Urban and Tribal	2 (0.1%)
Total	**1,882**

*The number of PPR sites in Table 4 (1,822) is less than the number of PPR sites in Figure 18 (n = 1,835) because multiple sites may operate in the same location if multiple projects use the same site location to distribute or redeem incentives.

How Many People Did PPR Projects Reach?

Reach is defined as the number of participants enrolled in a PPR project within a given timeframe. Tracking the unique number of participants served is crucial. Reach indicates the scale and effectiveness of PPR projects in improving FV access. Additionally, tracking participation trends over time can highlight changes in demand for PPR projects. Reach data can also provide timely opportunities to quickly address emerging challenges to project engagement. Finally, tracking the reach of PPR projects provides numbers that powerfully demonstrate PPR projects' contributions to families' food security and public health.

To measure reach, PPR sites were asked to report the number of newly enrolled participants each month (see **"Who Was Eligible to Participate in PPR?"** for details about enrollment). During year five, 21,648 PPR participants were enrolled. The number of participants reached was lower in year five than in year four (n = 22,571). This slight decrease from year four to year five was due to the greater number of PPR projects active in year four (n = 114) compared to year five (n = 101).

How Did PPR Participants Redeem Produce Prescriptions?

Those PPR participants who met income- and health-related eligibility criteria (e.g., eligible for SNAP or participating in Medicaid) were prescribed FVs by healthcare professionals. Participants could then exchange produce prescriptions for free or reduced cost FVs, often at B&M or FD sites.

Produce prescriptions were distributed using a variety of methods, including loyalty cards, tokens, vouchers, and community supported agriculture (CSA) boxes (see **Appendix 7** for definitions and examples). The most common method for prescription distribution across PPR sites was paper voucher or coupon (43.0%), followed by benefit/debit card (19.71%), token (19.4%), and CSA share or produce box (19.0%; **Table B1**). A smaller proportion of PPR projects reported other methods of distribution, such as a loyalty account (7.9%; **Table B1**).

There were also differences in distribution methods among PPR site types (**Figure 19**). Clinics were the most likely site type to distribute produce prescriptions. The most common distribution method at clinics was paper vouchers or coupons (55.2%). B&M sites were the least likely site type to distribute produce prescriptions. When B&M sites did distribute produce prescriptions, they most commonly did so in the form of CSA shares or produce boxes (47.1%). This likely indicates that the 17 B&M sites served as CSA pick up locations. FD sites most often distributed produce prescriptions in the form of tokens (60.0%), followed by CSA shares or produce boxes (34.0%; **Figure 19**).

As specified in the PPR Request for Applications, only fresh FVs were automatically eligible for redemption within PPR projects. However, grantees were able to seek an exemption from USDA NIFA to allow prescription redemption for non-fresh FVs (e.g., canned, frozen, dried). Such exemptions were granted to accommodate cultural preference, seasonality, and/or accessibility of fresh FVs in a project's geographic area.[41] Grantees could further decide what type of FVs were eligible for redemption within their project. For example, a grantee might have adjusted eligibility criteria to prioritize regionally or locally grown FVs. Eligibility requirements, exemptions, and modifications resulted in a wide variety of FV types eligible for prescription redemption across PPR sites. For example, most PPR sites specified only fresh FVs (75.2%) as eligible for prescription redemption. A smaller number of sites broadened eligibility to include all FVs (i.e., fresh, canned, frozen, dried, plants, and/or seeds; 14.8%). Another group of sites focused eligibility on state or regionally grown FVs (6.7%; **Table B2**). The ability for projects to modify FV eligibility allows for customization of operations to reliably and efficiently provide FVs that best meet participants' needs.

[41] United States Department of Agriculture, National Institute of Food and Agriculture. *Request for Applications: The Gus Schumacher Nutrition Incentive Program Produce Prescription Program (Fiscal Year 2024).* Accessed February 3, 2025. **https://www.nifa.usda.gov/grants/funding-opportunities/gus-schumacher-nutrition-incentive-program-produce-prescription.**

Figure 19. Most Common Prescription Distribution Methods Used Across PPR Projects by Site Type (2023-2024; n = 279)

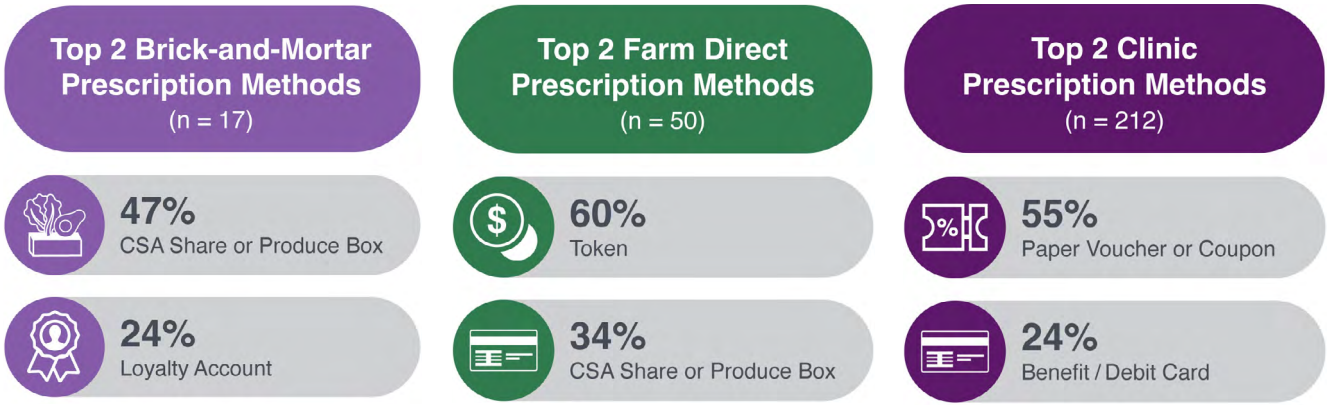
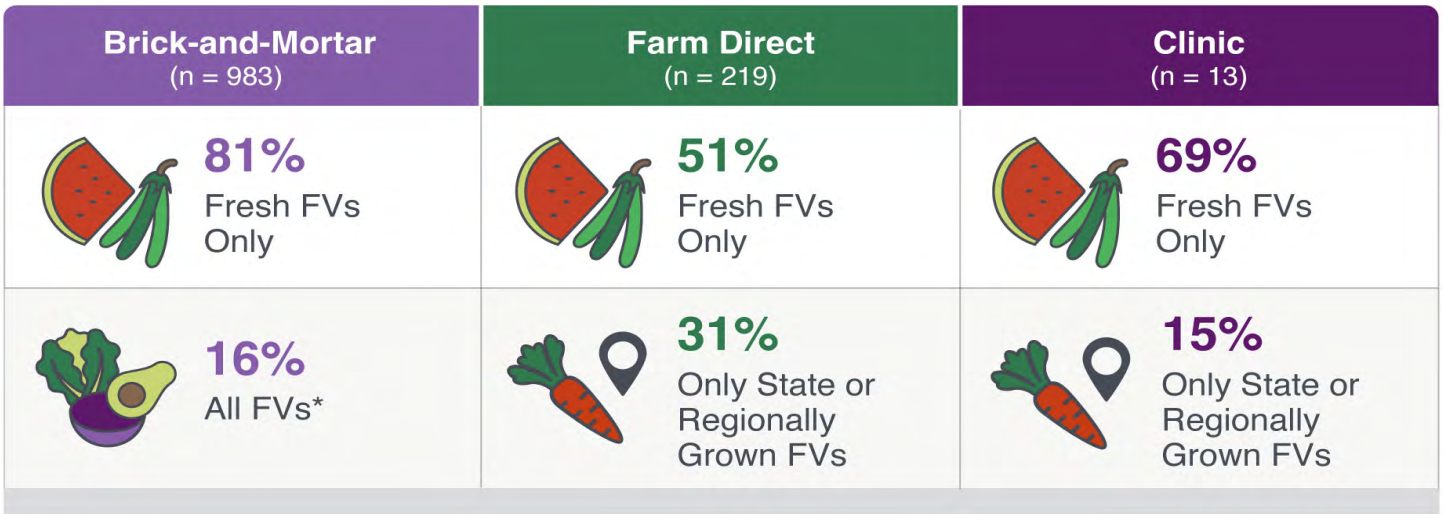


Figure 20 shows the most common FV types that were eligible for prescription redemption among the three types of PPR sites in year five. All three site types most commonly specified only fresh FVs as eligible for prescription redemption (B&M 80.7%; clinic 69.2%; FD 50.9%). However, a relatively large percentage of FD sites (30.9%) focused eligibility on state or regionally grown FVs, compared to clinic (15.4%) and B&M sites (1.1%; **Table B2**; **Figure 20**). FD sites (e.g., farmers markets) often sell a higher proportion of local FVs than B&M or clinic sites. Therefore, FD sites may be better suited and more likely to focus eligibility on state or regionally grown FVs.

PPR projects used a wide range of methods to distribute and redeem produce prescriptions for FVs. Therefore, the PPR portfolio offered a unique opportunity to investigate how distribution and redemption methods impacted health in local communities. For example, were health outcomes better among participants in programs that distributed produce prescriptions via CSA boxes versus those that used loyalty accounts? NTAE researchers actively leveraged data from PPR projects to identify how project design choices are associated with participant engagement and outcomes. See **"New Developments in PPR Evaluation"** to learn more about this and other examples of how PPR projects are answering key questions of interest to PPR practitioners, policymakers, and researchers.

Figure 20. Most Common Fruits and Vegetables Eligible for Prescription Redemption Across PPR Projects by Site Type (2023-2024; n = 1,215)*



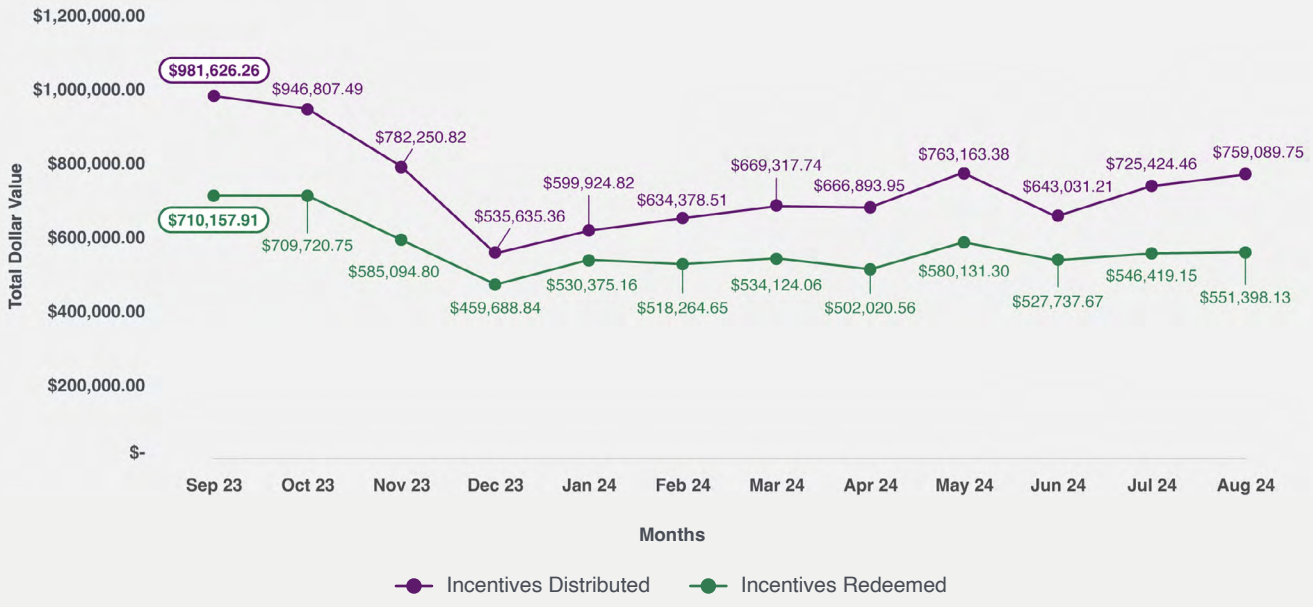
All FVs includes fresh, canned, frozen, dried, plants, and/or seeds.

How Many Produce Prescription Dollars Were Distributed and Redeemed?

In year five, $8,707,544 in produce prescriptions were distributed to PPR participants. Across 1,835 FD, B&M, and clinic PPR redemption sites, $6,755,133 worth of produce prescriptions were redeemed. An average of $4,077 in produce prescriptions were redeemed per site per month. This represented a 77.6 percent total annual redemption rate for Y5 (**Table B3**), a 3.0 percent increase from year four. Likewise, there were over $2.6 million more produce prescriptions redeemed in year five compared to year four. The increased redemption rates and dollars redeemed in year five could reflect the increased number of PPR sites operating in year five relative to year four as well as the increased efficiency of PPR projects.

Among all PPR projects, both prescription distribution ($535,635) and prescription redemption ($459,689) were lowest in December 2023 (**Figure 21**). Both prescription distribution ($981,626) and redemption ($710,158) were highest in September 2023 (**Figure 21**). Produce prescription distribution and redemption may peak in summer and early fall months because several PPR projects take advantage of increased fresh produce available during harvesting seasons at FD outlets, like farmers markets and CSA programs. Identifying and understanding seasonal variations in prescription distribution and redemption could reveal trends over time and allow PPR practitioners to plan for surges in enrollment and/or optimize marketing to potential participants.

Figure 21. Prescription Distribution and Redemption in Dollars for PPR Projects (2023-2024)

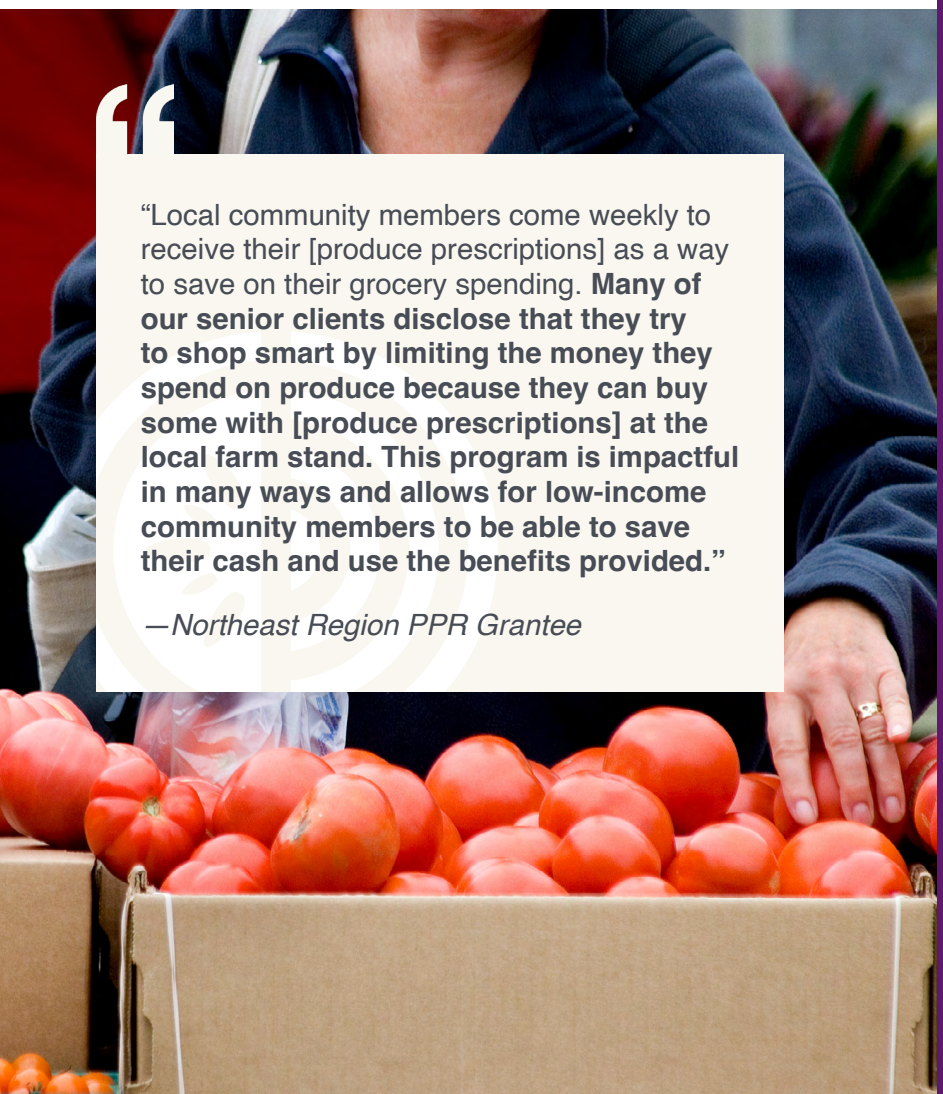


What Other Services Did PPR Sites Offer?

In addition to produce prescriptions, many PPR projects offered nutrition education resources, support services, and/or marketing activities (see **Appendix 7** for definitions and examples). NTAE researchers have found that offering complementary services in combination with nutrition incentive (NI) projects positively influenced incentive redemption.[14] Given these findings, NTAE researchers are currently conducting similar studies with PPR projects. Continued examination of complementary services will help practitioners, policymakers, and researchers support project models that lead to improved health outcomes and economic impact.

Tables B4, **B5**, and **B6** summarize the nutrition activities, support services, and marketing activities offered at PPR sites. **Figure 22 summarizes the nutrition education, support services, and marketing activities** most commonly offered at B&M, FD, and clinic sites.[42]

[42] Percentages displayed are of sites that offered any nutrition education, support services, or marketing activities respectively. Percentages do not add up to 100 percent as some PPR sites offered multiple services.



"Local community members come weekly to receive their [produce prescriptions] as a way to save on their grocery spending. **Many of our senior clients disclose that they try to shop smart by limiting the money they spend on produce because they can buy some with [produce prescriptions] at the local farm stand. This program is impactful in many ways and allows for low-income community members to be able to save their cash and use the benefits provided.**"

—Northeast Region PPR Grantee

Overall, in year five:

- **425 PPR project sites** offered one or more nutrition education activities to augment PPR projects and increase nutrition knowledge to support behavior change among PPR participants (**Table B4**). Nutrition education in PPR projects often focused on building participants' capacity to purchase, prepare, and eat FVs. Cooking demonstrations were overwhelmingly the most common nutrition education activity offered at PPR sites (88.0%; **Table B4**; **Figure 22**). Other nutrition education activities included one-on-one or small group nutrition education (37.8%), virtual or electronic nutrition education (29.1%), nutrition education by partner agencies (e.g., SNAP-Ed, EFNEP, or WIC; 27.2%), and food navigation or tours (12.0%; **Table B4**).
- **463 PPR sites** offered support services to address common barriers to access (**Table B5**). The most commonly offered support services were resource referrals (61.1%), shopping assistance (18.1%), produce delivery (16.9%), and transportation (13.6%; **Table B5**). FD sites and clinics most often provided resource referrals, while B&M sites, which included grocery stores with on-site pharmacies, provided COVID testing or vaccination much more often than resource referrals (**Figure 22**).
- **426 PPR sites** utilized marketing activities to increase awareness of and participation in the project (**Table B6**). The most common marketing activity among all PPR site types was on-site signage or announcements (70.3%; **Table B6**; **Figure 22**). Other marketing activities included direct promotions distributed by mail, email, or phone (54.3%); online advertisements (21.8%), and multilingual promotions (16.4%; **Table B6**).

Figure 22. Most Common Nutrition Education, Support Services, and Marketing Activities by PPR Site Types (2023-2024)[42]

	Nutrition Education	Support Services	Marketing Activities
Brick-and-Mortar	98% Cooking Demonstrations	66% COVID Testing or Vaccination	84% On-Site Signage or Announcements
Farm Direct	84% Cooking Demonstrations	69% Resource Referrals	62% On-Site Signage or Announcements
Clinics	87% Cooking Demonstrations	91% Resource Referrals	71% On-Site Signage or Announcements

GusNIP PPR Participants: Impacts on Households, Nutrition, and Health

PPR grantees with active projects[43] collected participant-level data in year five. Analysis of participant-level outcomes for PPR projects is essential for understanding the impact of produce prescriptions on participants and their households. PPR projects evaluate changes in FV intake, food security status, and self-reported health. Analyses of these changes illustrate the impact of PPR projects on nutrition and overall well-being. Additionally, participant-level reporting clarifies who is reached by PPR projects. Participant-level data is a key component to determining the effectiveness of these programs and refining strategies for maximizing their reach and impact.

The following subsections use year five baseline survey data to describe characteristics of PPR participants. After discussing the characteristics of year five PPR participants, the remainder of the section uses data from projects that completed award requirements in year five to illustrate the impact of PPR participation on health.

[43] All PPR grantees with active projects are expected to collect participant-level surveys throughout the life of their award.

Who Was Eligible to Participate in PPR?

To participate in a PPR project, an individual must have been eligible for SNAP or enrolled in medical assistance (e.g., Medicaid) and currently at risk for a diet-related health condition. Beyond these eligibility requirements, PPR projects could further define their areas of focus with additional enrollment criteria. For example, many PPR projects also included screening positive for food insecurity as an indicator of risk for diet-related health conditions. Flexibility to focus on specific health and nutrition concerns allows projects to address issues of the greatest concern in their communities (e.g., high blood pressure or diabetes).

What Were the Characteristics of PPR Program Participants?

A total of 6,327 participants across 71 PPR projects completed baseline surveys at enrollment in year five. The number of baseline surveys collected per project ranged from as few as three to as many as 673, with an average of 89 baseline surveys collected per PPR project. Variability in the number of baseline surveys per project is related to the amount of time elapsed since a project's start date (e.g., whether the project is in its first or third year). The number of baseline surveys collected also reflects whether the project reached its cumulative participant recruitment goal in a prior year. Although the number of baseline surveys collected per site ranged widely, the baseline survey sample size in year five was nearly six times greater than the year four sample size (n = 1,062). This significant increase is likely due to the larger number of PPR grantees that started data collection in year five. Additionally, on average, year five PPR projects collected more surveys per project than year four.

The resulting participant-level data represented all four USDA NIFA regions **(Appendix 8)**. The highest percentage of baseline surveys were collected from the Southern region (49.1%; **Table 5**). Distribution of surveys across geographic regions is influenced by the number of active PPR projects in each region and by different sample size requirements based on award type and capacity.

Table 5. Number of PPR Surveys Collected Across U.S. Regions (Defined by USDA NIFA)

Region	N (%)
Southern	3,104 (49.1%)
Northeast	1,819 (28.8%)
Western	960 (15.2%)
North Central	444 (7.0%)
Total	**6,327**

Baseline survey data indicated a varied sample of PPR participants. Most PPR participants who completed a baseline survey for year five were 45 years of age or older (61.5%) with an average age of 49.8 years, female (75.8%), White (36.4%), and non-Hispanic/Latino (62.5%; **Table B7**). Many participants described themselves as Black (20.8%), another race (12.9%), and/or Hispanic/Latino (35.8%; **Table B7**). Below, outcomes related to food security, FV intake, and health are detailed. Due to skipped questions or partially completed surveys, the number of participants completing each measure varied.

Of the 5,801 participants who completed the baseline measure for household food insecurity[44] in year five, only 30.2 percent reported household food security within the past 30 days.[45] More than double that percentage (69.8%) reported experiencing household food insecurity within the previous 30 days (**Table B8**). Comparatively, USDA reports 13.5 percent of all U.S. households in 2023 experienced food insecurity in the past 12 months.[46] The relatively high prevalence of household food insecurity among PPR participants at baseline is anticipated. PPR participation is limited to people with low incomes, and food insecurity is strongly associated with living under the federal poverty line.

[44] *Food Security in the U.S. - Survey Tools* | Economic Research Service. Accessed February 19, 2025. **https://www.ers.usda.gov/topics/food-nutrition-assistance/food-security-in-the-us/survey-tools#six**.

[45] Household food security includes participants reporting high household food security or marginal food security. Household food insecurity includes participants reporting low household food security or very low household food security.

[46] Rabbitt MP, Reed-Jones M, Hales LJ, Burke, MP. *Household food security in the United States in 2023*, ERR-337, U.S. Department of Agriculture, Economic Research Service; 2024. **https://doi.org/10.32747/2024.8583175.ers**.

Of the 5,614 participants who completed the 10-item Dietary Screener Questionnaire (DSQ) to measure daily FV intake at baseline in year five, the average FV intake was 2.33 cups/day (**Table B9**; DSQ is described in **Appendix 3**). These baseline results fall below the 2020-2025 U.S. Dietary Guidelines for Americans (DGA) recommendation of 3.5 to 5 total FVs cups/day. PPR participants' average reported vegetable intake at baseline (1.44 cups/day) was slightly lower than U.S. adults' average reported vegetable intake levels (1.55 cups/day).[47] PPR participants' average fruit intake (0.89 cups/day) was similar to the U.S. adult average (0.88 cups/day).[47] These results underscore the opportunity for PPR projects to make progress toward the goal of improving participants' health through increased consumption of FVs.

Of the 6,258 participants who self-reported their health status at baseline, 14.0 percent reported poor health status, 46.4 percent reported fair health status, and 37.9 percent reported a health status of good, very good, or excellent (**Table B10**). This finding is considerably different from the perceived health status of most U.S. adults, among whom approximately 80 percent reported a health status of good, very good, or excellent.[48] Since self-reported health is positively correlated with actual health,[49] the high number of PPR participants who reported fair or poor health at baseline indicates that PPR projects enrolled participants who are at risk for a diet-related health condition.

[47] U.S. Department of Agriculture, Economic Research Service. *Food Consumption, Nutrient Intakes, and Diet Quality*. Updated February 25, 2025. Accessed February 28, 2025. **https://www.ers.usda.gov/data-products/food-consumption-nutrient-intakes-and-diet-quality**. (FVI in cups/day estimates were calculated using FVI in cups/day for females, age 20+ and males, age 20+ cohorts and applying sample size proportions.)

[48] *Adult Self-Reported Health Status*. KFF. Accessed February 19, 2025. **https://www.kff.org/other/state-indicator/adult-self-reported-health-status/**.

[49] Health Status - Health, United States. Published June 2023. Available at: **https://www.cdc.gov/nchs/hus/topics/health-status.htm**.

[50] Most projects set at least a 60-day minimum as the time period between baseline and follow-up surveys, but the amount of time between baseline and follow-up surveys varied among projects.

How Did We Analyze the Impact of PPR Participation?

Participant-level impact of PPR projects was evaluated by comparing individual participants' baseline and follow-up surveys. Baseline surveys were administered around the time of enrollment to capture a snapshot of participants' food security, FV intake, and perceived health experiences prior to PPR participation. Follow-up surveys were administered after participants were in the project for a period of time determined by the PPR project.[50] Follow-up surveys measured participants' food security, FV intake, and perceived health experiences after receiving services through the PPR project. Comparative analysis of baseline and follow-up surveys included data from all participants who: (1) participated in a PPR project that completed its award in year five, (2) had a matched baseline and follow-up survey from any year of the PPR project, (3) had not participated in the PPR project prior to completing the baseline survey, and (4) had engaged with the PPR project to receive FVs at least once prior to completing the follow-up survey. These criteria ensured the analysis included participants from throughout the entire lifecycle of completed projects. Criteria also ensured that baseline and follow-up data were collected from the same participants, rather than different groups of people. Additionally, these criteria limited the analysis to participants who were new to the project at baseline but had engaged with the project prior to completing the follow-up survey.

In this way, changes in participants' responses from baseline to follow-up reflect changes from before engagement to after engagement with the project. These changes are therefore useful to demonstrate the impact of PPR participation on key outcomes.

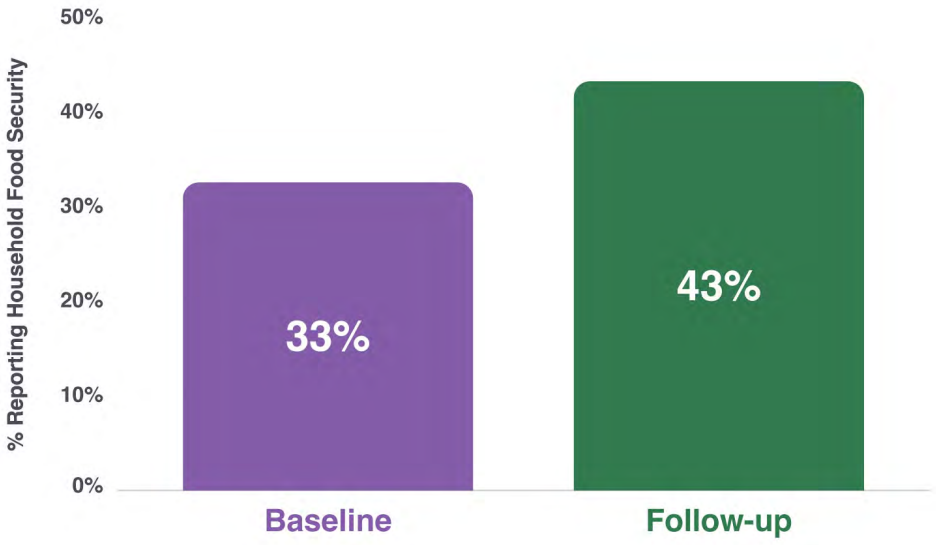
Of the 31 PPR projects that completed awards in year five, 22 projects provided baseline and follow-up surveys from 1,962 participants who met the previously mentioned inclusion criteria. These 22 projects operated between 2020-2024 and collected baseline and follow-up surveys at any point during those years.

Appendix 9 presents a comprehensive set of tables that describe the 1,962 participants whose data were used to describe PPR project impact on participants. The average age of participants included in the year five impact analysis was 55.8 years. Most participants were female (75.9%) and non-Hispanic/Latino (80.1%; **Table B7**). Many participants described themselves as White (33.4%) and/or Black or African American (32.4%; **Table B7**). Additional information about participants' age, sex, race, ethnicity, and region is reported in **Table B7**.

[50] Most projects set at least a 60-day minimum as the time period between baseline and follow-up surveys, but the amount of time between baseline and follow-up surveys varied among projects.

PPR projects are intended to support participants' household food security. Household food security was assessed using the U.S. Household Food Security Survey Module: Six-Item Short Form.[51] Within the 22 projects included in this analysis, 1,861 participants completed the food security measure at baseline and follow-up. At baseline, 32.6 percent of participants reported household food security within the previous 30 days and 67.4 percent reported experiencing household food insecurity within the previous 30 days. At the time of the follow-up survey, 43.3 percent of participants reported household food security and 56.7 percent reported experiencing household food insecurity within the previous 30 days (**Table B11**; **Figure 23**). These results demonstrate a meaningful increase in household food security after participation in a PPR project. In other words, household food security improves after participation in a PPR project. Increased household food security among PPR participants from baseline to follow-up aligns with results observed in other studies of produce prescriptions.[52, 53, 54, 55]

Figure 23. Percentage of PPR Participants Who Reported Household Food Security Increased from Baseline to Follow-up (2023-2024; n = 1,861)*



[51] Household food security includes participants reporting high household food security or marginal food security. Household food insecurity includes participants reporting low household food security or very low household food security.

[52] Jones LJ, Van Wassenhove-Paetzold J, Thomas K, et al. *Impact of a fruit and vegetable prescription program on health outcomes and behaviors in young navajo children*. Curr Dev Nutr. 2020;4(8):nzaa109. **https://doi.org/10.1093/cdn/nzaa109**.

[53] Ridberg RA, Bell J F, Merritt KE, et al. *A pediatric fruit and vegetable prescription program increases food security in low-income households*. J Nutr Educ Behav. 2019;51(2):224-230.e1. **https://doi.org/10.1016/j.jneb.2018.08.003**.

[54] Aiyer JN, Raber M, Bello RS, et al. *A pilot food prescription program promotes produce intake and decreases food insecurity*. Transl Behav Med. 2019;9(5):922-930. doi:10.1093/tbm/ibz112. **https://doi.org/10.1093/tbm/ibz112**.

[55] Hager K, Du M, Li Z, et al. *Impact of produce prescriptions on diet, food security, and cardiometabolic health outcomes: A multisite evaluation of 9 produce prescription programs in the United States*. Circ Cardiovasc Qual Outcomes. Sep 2023;16(9):e009520. **https://doi.org/10.1161/CIRCOUTCOMES.122.009520**.

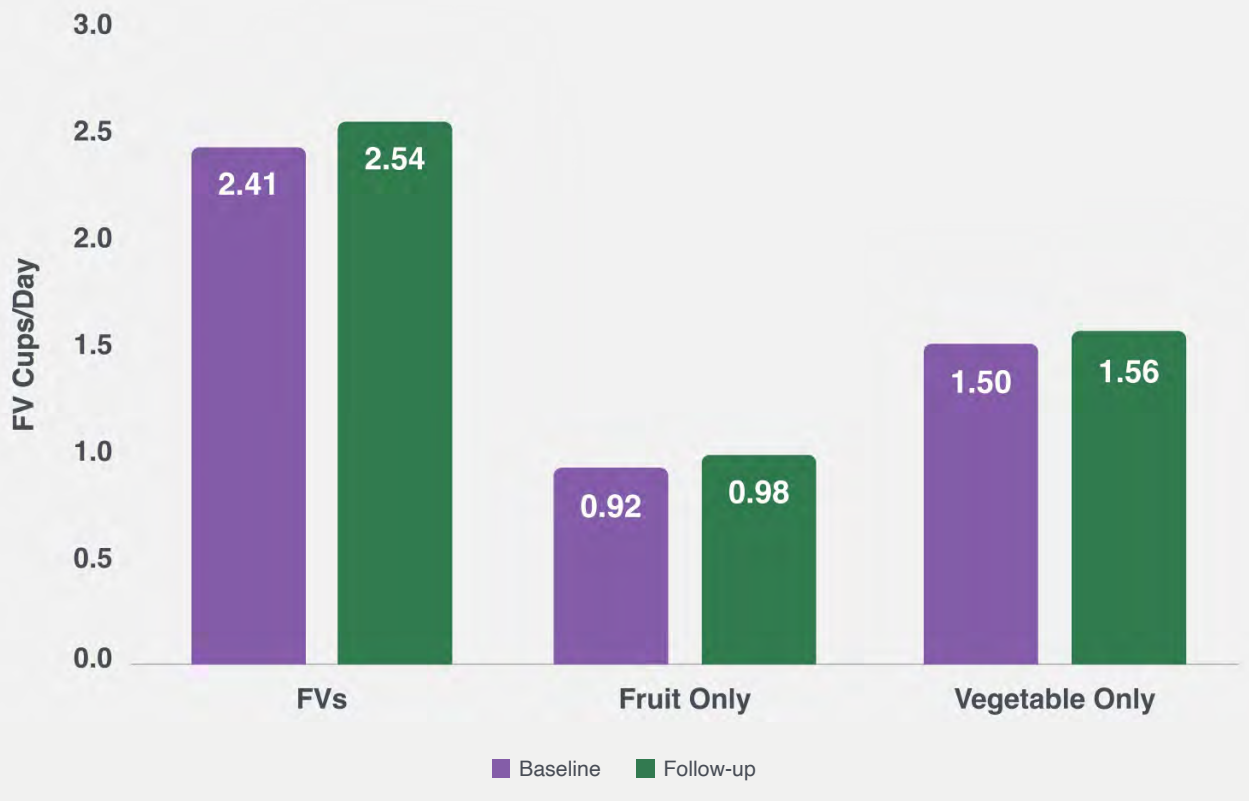
PPR projects aim to improve health outcomes through increased consumption of FVs. The year five results indicate progress towards this goal. Previous research has established that FV intake is associated with improved health outcomes.[56] In other words, as FV intake increases, instances of death and disease decrease. Achieving adequate FV intake can be challenging for households living below the federal poverty line, especially due to the increasing cost of purchasing FVs.[1] FV intake for PPR survey respondents was calculated using the 10-item DSQ (described in **Appendix 3**).

Within the 21 projects included in this analysis,[57] 1,740 participants completed the DSQ for daily FV intake at baseline and follow-up. The average baseline FV intake was 2.41 FV cups/day (**Table B12**; **Figure 24**). **At follow-up, PPR participants reported an average FV intake of 2.54 cups/day, a 0.13 FV cups/day increase from baseline.** This increase included a 0.06 cups/day increase in fruit intake (from 0.92 to 0.98 cups/day) and a 0.06 cups/day increase in vegetable intake (from 1.50 to 1.56 cups/day; **Table B12**; **Figure 24**). **This increase represents a small but meaningful[37] step toward consuming the recommended number of daily cups of FVs.**

[56] Wallace TC, Bailey RL, Blumberg JB, et al. *Fruits, vegetables, and health: A comprehensive narrative, umbrella review of the science and recommendations for enhanced public policy to improve intake.* Crit Rev Food Sci Nutr. 2020;60(13):2174-211. **https://doi.org/10.1080/10408398.2019.1632258**.

[57] Twenty-two projects provided baseline and follow-up surveys from participants that met the inclusion criteria for this analysis. Of these 22 projects, one project was excluded from the analysis because its surveys were missing data needed to calculate FV intake.

Figure 24. Average Daily FV Cup Equivalents Among PPR Participants at Baseline and Follow-up (2023-2024; n = 1,740)*



Participants included in this figure are from 21 projects that completed their award in Y5 and collected both baseline and follow-up surveys from participants.

The 0.13 cups/day increase in FV intake among participants in the 21 projects that completed their award in Y5 is consistent with the 0.19 cups/day increase reported in the GusNIP Year Four Impact Findings by the four projects that completed awards that year.

Among the 21 projects, FV intake change varied widely. At the highest end of the range, participants from one project increased FV intake by an average of 0.33 cups/day. Conversely, participants in two projects increased FV intake by an average of only 0.05 cups/day.

Variations in FV intake across projects may be related to variations in PPR project design. PPR projects vary in intensity, duration, and complementary services offered. These differences can lead to variations in participant engagement and prescription redemption, which can in turn affect FV intake. As noted above, NTAE researchers are leveraging data from PPR projects to show how project design choices are associated with participant engagement and outcomes. See "**New Developments in PPR Evaluation**" for details.

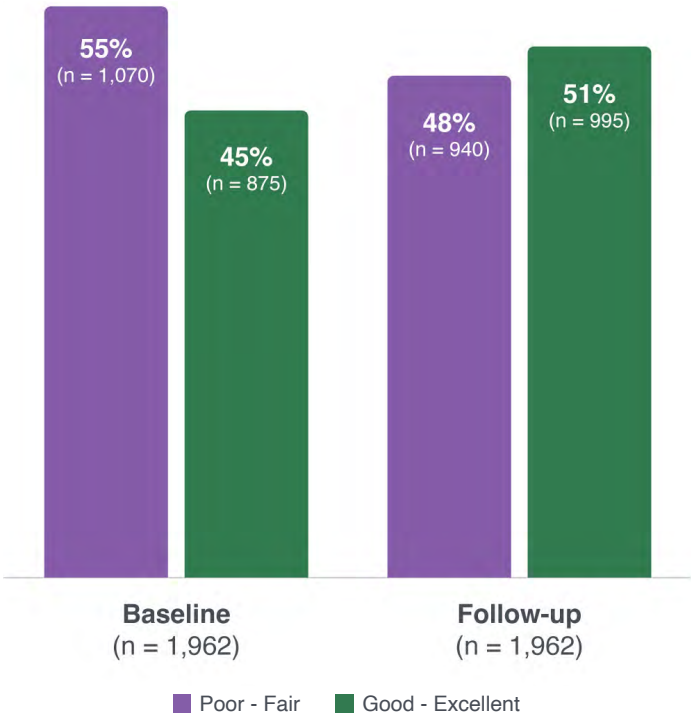
"Before the [PPR] program, I had been in and out of the hospital with uncontrolled diabetes. I signed up on the program not knowing if I would even be able to stand long enough to cut a tomato. But it turns out that coming to the market helped me in ways I didn't expect. **I loved the program and used it as a way to keep fighting towards getting my blood sugars under control.** I would force myself to go to the market no matter how bad I felt and the program gave me a reason to look forward to the weekend. The program provided an easier way to get the garden goodies without all the extra hard work of actually growing a garden. **My A1c lowered from a 13 to a 10!"**

—Southern Region Participant

How Did PPR Projects Impact Perceived Health?

As previously noted, a goal of PPR projects is to improve health through increased consumption of FVs. Therefore, PPR participants were asked to self-report on their health as either poor, fair, good, very good, or excellent. Within the 22 projects included in this analysis, 1,962 participants reported perceived health[58] at baseline and follow-up (**Table B10**). **From baseline to follow-up, there was an increase in participants reporting good, very good, or excellent health** (baseline = 44.7%; follow-up = 51.0%; **Figure 25**). Moreover, from baseline to follow-up there was a decrease in the number and proportion of PPR participants who reported poor health (baseline = 11.4%; follow-up = 8.7%) or fair health (baseline = 43.4%; follow-up = 39.5%; **Table B10**).

Figure 25. Perceived Health of PPR Participant at Baseline and Follow-up Assessment (2023-2024; n = 1,962)*



NOTE: This figure does not include the following categories: don't know/prefer not to answer and missing.

**Participants included in this figure are from 22 projects that completed their award in Y5 and collected both baseline and follow-up surveys from participants.*

Improvements in perceived health status after PPR participation are promising.

Single-item assessments of perceived health (such as the one used for PPR projects) are used as proxies for actual health.[59] Moreover, self-reporting worse perceived health has been consistently associated with higher morbidity[60] and mortality risk.[61] People living below the federal poverty line tend to report fair or poor health status more often than people with higher income levels.[59] This is important to note because PPR participants must be eligible for SNAP or enrolled in medical assistance, both of which are limited to participants with low incomes. In addition, these improvements in perceived health status are particularly meaningful because PPR participants already had or were at risk for a chronic condition at the time of enrollment.

[58] Self-reported health was measured using a single-item tool developed by the Centers for Disease Control and Prevention. Citation: *Centers for Disease Control and Prevention. Measuring healthy days: Population assessment of health-related quality of life*. Atlanta Georgia CDC. 2000. **https://stacks.cdc.gov/view/cdc/6406**.

[59] Health Status - Health, United States. Published June 2023. Available at: **https://www.cdc.gov/nchs/hus/topics/health-status.htm.**

[60] Latham K, Peek CW. *Self-rated health and morbidity onset among late midlife U.S. adults*. J Gerontol B Psychol Sci Soc Sci. 2013;68(1):107-116. **doi:10.1093/geronb/gbs104**.

[61] DeSalvo KB, Bloser N, Reynolds K, et al. *Mortality prediction with a single general self-rated health question*. J Gen Intern Med. 2006;21:267-75. **https://doi.org/10.1111/j.1525-1497.2005.00291.x**.

How Satisfied Were Participants With PPR Projects?

The PPR follow-up survey asked participants to rate their satisfaction with PPR projects. Among the 1,962 participants who responded to this question, the overwhelming majority (93.1%) felt positive or very positive about their PPR participation (**Figure 26**; **Table B13**). A small percentage (1.1%) felt negative or very negative. Participants' consistent satisfaction is a strong indication that PPR projects are meeting or exceeding participants' expectations. This high level of satisfaction coupled with consistent evidence of PPR projects' positive impact are indicative of successful implementation of PPR in communities across the United States.

Figure 26. Program Satisfaction Among PPR Project Participants (2023-2024; n = 1,962)*

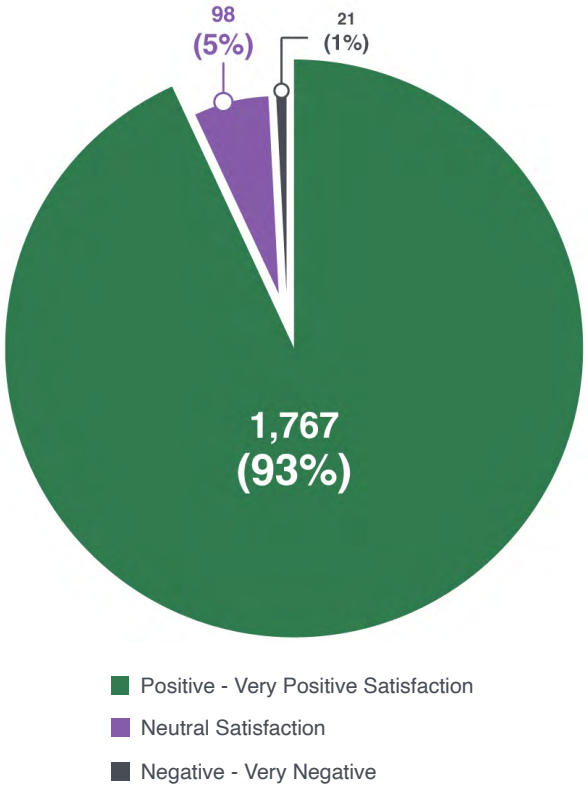


*Figure excludes missing responses.

"We try to get some exercise and try to find food that's halfway reasonable in the store. When you're limited (financially), you know it seems really high with all the changes of food prices...This program means a lot to me, to be able to get some healthy food."

—North Central Region PPR Participant and Veteran

New Developments in PPR Evaluation

Year five was an exciting year in PPR evaluation. NTAE researchers worked closely with grantees and other partners to conduct data collection and analysis for three studies designed to answer questions of interest to GusNIP practitioners, policymakers, and researchers. Given that the GusNIP PPR program is the only nationwide initiative of its scale, there is a unique opportunity to learn how to design and deploy effective PPR projects within dozens of distinctive communities across the United States. One of the studies will identify characteristics shared among PPR projects with the highest levels of prescription redemption. The second study will demonstrate the utility of a powerful and low-burden survey that can estimate the impact of PPR participation on healthcare utilization when insurance claims data are unavailable. The third study will show the opportunities for using electronic health records to calculate the health impacts of PPR participation across a growing group of PPR projects sharing data with the NTAE. Interpretation of the three studies described below is ongoing, and full results are forthcoming.

How does the design of PPR projects affect participant engagement and outcomes?

The NTAE partnered with the American Heart Association's Health Care by Food initiative to study the association between project design characteristics and participant engagement. Specifically, NTAE researchers categorized 77 current and past PPR projects according to different design characteristics (e.g., Does the project offer home delivery of FVs? What types of nutrition education does the project offer?). Researchers then used grantee-provided prescription redemption data to determine which characteristics were associated with participants remaining active in the projects as opposed to dropping out early.

The research team also interviewed PPR grantees with high redemption rates as well as those facing redemption challenges to learn lessons about redemption. Results of this study are under peer review and the NTAE plans to make them publicly available later in 2025. Based upon this study, the NTAE will release a best-practices guide to help current and future PPR practitioners optimize the impact and efficiency of their projects. The best practices guide will be available on the **Nutrition Incentive Hub Website** as soon as it is ready.

To what extent is PPR participation associated with changes in participants' healthcare utilization?

PPR practitioners, policymakers, and researchers are motivated to learn about the types of healthcare utilization that PPR projects may improve (e.g., Will PPR participation decrease emergency department visits? Will PPR participation increase preventive care visits?) However, for regulatory and privacy reasons, it is extremely difficult to access insurance claims data. Seven PPR grantees pilot tested a brief survey adapted by the NTAE to measure PPR participants' healthcare utilization. Participants from the seven projects were asked to complete the survey around the time of PPR enrollment and again several months later. As an alternative to requesting insurance claims data, the survey assessed participants' visits to the doctor for regularly scheduled checkups, emergency department visits, overnight hospital visits, and more. Analysis of survey data from 382 participants is complete. The NTAE will share results in a peer-reviewed scientific publication later in 2025. Findings from this study will help demonstrate the usefulness and effectiveness of the self-report measure of healthcare utilization. GusNIP provides an opportunity for a nationwide group of PPR practitioners to use this self-report measure and compare results with those from PPR practitioners who are able to access insurance claims data.

To what extent is PPR participation associated with changes in participants' health indicators?

The NTAE analyzed electronic health records from a pilot of 1,489 participants from five GusNIP PPR projects to estimate the impact of PPR participation. Results showed clinically and statistically significant improvements in HbA1c and blood pressure. From pre-enrollment to follow-up, participants' HbA1c decreased by 0.5 units (8.2% to 7.7%). Improvements were more pronounced among participants with HbA1c greater than 9 percent at baseline, decreasing by 1.9 units (11.1% to 9.2%). From pre-enrollment to follow-up, systolic blood pressure (SBP) decreased by 1.8 mmHg (from 131 to 129.2) and diastolic blood pressure (DBP) decreased by 2 mmHg (78.8 to 76.8). Improvements were notable among participants with stage 2 hypertension, with decreases in SBP by 10.7 mmHg (148.5 to 137.8) and DBP by 5.7 mmHg (85.6 to 79.9). The magnitude of these improvements is similar to assumptions used in an influential produce prescription microsimulation study[62] which showed that if health and diet improvements (including HbA1c decrease of 0.6 units) held up at scale and over time, they would result in healthcare savings of approximately $40 billion dollars. The NTAE expects to share results in a peer-reviewed scientific publication later in 2025. Additionally, the study will identify how the changes differ among the five projects. This study represents the first in a series of NTAE studies that rely on a standard electronic health record data template. As this dataset grows, the NTAE will partner with grantees to answer more nuanced questions about the variability of health impact according to PPR project design. This line of research will benefit the work of practitioners, policymakers, and researchers to implement PPR projects that demonstrate consistent improvement in health through increased consumption of FVs.

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[62] *True cost of food: Food is medicine case study*. Tufts University and the Rockefeller Foundation; 2023; **https://tuftsfoodismedicine.org/wp-content/uploads/2023/09/Tufts_True_Cost_of_FIM_Case-Study_Report_Sep_2023.pdf**.

Learn more at **www.nutritionincentivehub.org**

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