MICHIGAN PRODUCE PRESCRIPTION COALITIONS

Produce Prescription Descriptive Assessment and Cost Study

Michigan

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Public Policy Associates is a public policy research, development, and evaluation firm headquartered in Lansing, Michigan. We serve clients in the public, private, and nonprofit sectors at the national, state, and local levels by conducting research, analysis, and evaluation that supports informed strategic decision-making. publicpolicy.com

The Michigan Produce Prescription Coalitions are facilitated by the Michigan Farmers Market Association and include a Steering Committee, Statewide Learning Network, and Participant Advisory Council. Together, they advance local Michigan Produce Prescription programs to address the critical link between nutrition access and health. mifoodrx.org

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Acronym List

CSA: Community Supported Agriculture

FIM: Food is Medicine

FQHC: Federally Qualified Health Center

FTE: Full-time equivalent

ILOS: In Lieu of Services

IRB: Institutional Review Board

MDHHS: Michigan Department of Health and Human Services

MIFMA: Michigan Farmers Market Association

PPA: Public Policy Associates

PPR: Produce Prescription

SDOH: Social Determinants of Health

SNAP: Supplemental Nutrition Assistance Program

Executive Summary

A descriptive assessment and cost study was conducted early in 2025 by Public Policy Associates (PPA) on behalf of the Michigan Farmers Market Association (MIFMA) and their Michigan Produce Prescription (PPR) Coalitions. The purpose was to understand the true cost to administer and operate PPR programs in Michigan. PPR programs were asked to complete a detailed workbook covering a descriptive assessment of their program, direct costs (billable and in-kind) of various program components, and indirect costs.

PPR programs are evidence-based interventions that improve access to fruits and vegetables for individuals who are experiencing nutrition challenges such as food insecurity, lack of access to nutritious food, and diet-related chronic diseases. PPR programming is fostered by partnerships among health care, community-based organizations, and food retailers. Traditional PPR models include a referral to the program by a health care provider. Enrolled participants receive a prescription, typically in the form of a voucher to exchange for produce at qualifying food retail locations or a produce box that can be picked up or is delivered directly to a participant's home. Produce prescriptions are commonly paired with nutrition education or other comprehensive services to further support healthy behavior change. Long-term goals include improving health outcomes, addressing Social Determinants of Health (SDOH), and lowering health care costs.

The Programs

The cost study included 12 PPR programs across the state of Michigan that served 15,610 people annually in 2023 or 2024. On average, these programs had been in operation for 7.3 years and ran for 35 weeks out of the year (range 16 to 52 weeks).

The most common method of distributing fruit and vegetable incentives was through vouchers, and the most common redemption site location was at farmers markets, followed by farm stands and grocery stores. The programs were engaged with at least 78 health care partnerships, or an average of 7 per program.

Participants could redeem from $30 to $1,080, with a median value of $160. Participants could participate in programs for an estimated 22 weeks on average, with a range of 6-52 weeks. A total of $1,187,648 worth of fruit and vegetable incentives were issued across the 12 programs and $697,445 (59%) were redeemed. Most programs offered nutrition education, in addition to the fruit and vegetable incentives.

Programs were committed to working within Michigan's local food system, reaching underserved populations, and reaching underserved geographies. Programs reported that these commitments increase cost due to staff time invested in traveling, providing nutrition education, coordinating deliveries, and conducting participant outreach.

There is notable variability across programs in approach, size or scope, and costs.

Throughout the report averages are provided, along with other context information such as median and maximum, to help interpret the average.

Program Costs

Total costs. The average total annual cost of a program was $247,506, with an actual range of at least $25,073 and a maximum of $1,065,664. Proportionally:

- About half of the total cost (49%) was salary (billable, in-kind, and value of volunteer labor)
- One-quarter (25%) was participant costs (food and non-food incentives, such as giveaways, and stipends for transportation, or participation in evaluations and education)
- 15% of total costs were other direct costs
- 17% of total costs were indirect costs (averaged across the 7 programs reporting indirect costs)

Per participant. The total cost *per participant* enrolled averaged $519, with an actual minimum of $32 and a maximum of $1,110.

Per participant per week. The total cost *per participant per week* the program ran for averaged $15.46, with an actual minimum of $0.61 and a maximum of $30.84.

To understand how theoretical changes in enrollment would impact program costs, a marginal cost statistical model was computed. This model assessed whether the per participant cost would decrease the more people enrolled in a program due to economies of scale from program efficiencies. The most accurate model in predicting total costs for programs with enrollment rates between 77 and 800 participants was a linear one. This estimate predicts that enrolling one more participant would increase programs costs by $426. This implies that an economy of scale is not yet reached by an enrollment of 800 participants. It is possible that an economy of scale could be achieved in higher enrollment programs.

Next Steps

This study highlights areas for future research to support PPR program expansion and policy, including research on (1) which program characteristics contribute to cost efficiencies and how value-added services influence cost, (2) cost-effectiveness studies looking at how program characteristics and costs compare against their outcomes and (3) at what program size would the per participant cost start to decrease from an economy of scale. To accomplish this, future studies would need to include more PPR programs overall and more programs that serve more than 800 participants.

Introduction

The Food is Medicine (FIM) movement is gaining national attention as a promising way to improve health through access to nutritious food. FIM interventions such as Produce Prescription (PPR) and Medically Tailored Meals aim to treat, prevent, and manage chronic disease for patients with specific clinical and social risk factors by increasing access to food through clinical-community partnerships. According to Mozaffarian, Hager, and Kleinman (2023), "[*FIM] interventions provide medically appropriate food to improve clinical outcomes and reduce health care costs*." These programs target individuals experiencing food insecurity, chronic illness, or other social and economic barriers to health.

There is growing evidence that these interventions can lead to both health improvements and economic savings. In a national case study report, Mozaffarian et al. (2023) explains that "*simulations in this report used cost estimates from real-world FIM programs and projected significant net savings, especially after 5 to 10 years of program operation."*

Similarly, the evaluation of a Michigan-based medically tailored grocery program found that 98% of participants reported the program helped them improve their lifestyle and dietary habits (Hudak et al., 2025). However, this same study noted that many programs lack the resources and systems to measure their true costs: *"There was no formal workflow to track program costs, making it difficult to plan for sustainability."* (Hudak et al., 2025).

In Michigan, a new policy pathway has become available for FIM. Starting in 2025, the state's Medicaid program began to allow reimbursement for non-clinical health-related nutrition needs services under In Lieu of Services (ILOS) authority.[1] This creates an opportunity for FIM programs, like PPR and Medically Tailored Meals to receive sustainable health care funding, especially if they can demonstrate credible cost and outcome data to support integration. Cost studies can provide critical information for health care reimbursement strategies, like ILOS, and for strengthening the financial case for community-based PPR programs. The need for this data is urgent, as many community organizations currently operate with minimal financial transparency due to varied funding sources and informal accounting systems.

[1] In Lieu of Services are "services the state deems to be medically appropriate and cost effective when provided as substitutes for other Medicaid covered services." In Michigan, beginning January 2025, Medicaid managed care plans may offer nutrition-focused ILOS – like produce prescription and medically tailored meals – to address food insecurity and health-related nutrition needs (Michigan Department of Health and Human Services [MDHHS], 2024).

A compelling example of what is possible when strong data supports FIM programs comes from North Carolina's Healthy Opportunities Pilot. According to a 2025 study, Medicaid enrollees who participated in the pilot experienced a significant reduction in health care costs (−$2,502) when they remained enrolled for over 90 days (Berkowitz et al., 2025, as cited in UNC Health News, 2025). These savings were tied directly to social interventions such as food assistance, housing support, and transportation. The program demonstrated that tracking both outcomes and program costs can make a powerful case for integrating these services into Medicaid.

Despite promising results, most FIM programs across the country—and in Michigan—do not track their costs in a standardized way. As Hudak et al. (2023) note, *"There is a critical need for standardized, systematic cost tracking in order to support the case for funding and scale."* Without this kind of information, it is difficult for funders or policymakers to understand what resources are required or how to set appropriate reimbursement rates. Mozaffarian et al. (2023) also caution that *"reimbursement and integration into healthcare systems will require clear economic data to show value."* This is especially important now, as states like Michigan move toward Medicaid transformation models that include nutrition support.

In conclusion, cost studies play a critical role in advancing the long-term sustainability of FIM programs. They help fill key information gaps by identifying the true costs of implementation, revealing variation across program models, and highlighting hidden or indirect expenses. These insights are essential for informing sustainable reimbursement models, guiding funders and policymakers, and supporting readiness for health care integration. As interest in PPR programs grows across the country, cost studies provide the data infrastructure needed to support scaling, equity, and impact.

Benefits of the Current Study

For the Michigan PPR community, study results can inform resource creation, educational advocacy, and technical assistance. The intended benefits for Michigan PPR programs include:

- Better position Michigan Farmers Market Association (MIFMA) and the Michigan PPR Coalitions to advocate, educate, and support community-based PPR programs to prepare and equitably engage in health care integration opportunities, like ILOS. A lack of standardized cost data remains a barrier to integration into health care payment systems (Mozaffarian et al., 2023). Cost studies are essential to overcoming this barrier.
- Each program, having delved into the internal research to generate their participant responses, will gain a more complete picture of their fiscal situation.
- Inform PPR program implementers' future approach to funders.

- Help stakeholders to better understand the cost parameters for starting, operating, or expanding a PPR program. The *True Cost of Food* report emphasized that cost insights vary across demographics and program models, and should inform tailored pricing and design decisions (Mozaffarian et al., 2023).

About the Study

To address this information gap, Public Policy Associates (PPA) conducted a statewide descriptive assessment and cost study in early 2025 on behalf of MIFMA and their Michigan PPR Coalitions. The study attempted to gather financial and operational data from all known PPR programs connected to MIFMA's Michigan PPR Coalitions that operated in 2023 and/or 2024, though not all programs were able to participate. The target respondents were program managers responsible for leading and managing the PPR program, including providing program oversight and engaging with their partner organizations. The study aimed to capture both direct costs and indirect costs.

The Michigan statewide study was conducted prior to the full implementation of the 2025 ILOS policy. Accordingly, the cost results may not translate directly to programs working with Michigan's Medicaid Managed Care Plans (Medicaid Health Plans) because it does not capture additional costs that may be incurred by working with these plans through ILOS, such as billing for services or needed upgrades to technology systems or other infrastructure.

A detailed methodology is shared in the appendix. The results shared in this report describe 12 out of the 16 programs connected to MIFMA's Michigan PPR Coalitions that operated in 2023 and/or 2024.

Program Description

The wide variability in approach, size or scope, and costs of PPR programs in this study reflect the community-driven nature of these programs where community organizations with various resources and relationships are making decisions on how best to serve their communities within each community's particular contexts and constraints.

The study results demonstrate this notable variability across programs. Throughout the report, averages along with medians and ranges may be provided to help interpret the average. Averages can be based on all 12 programs or a subset of relevant programs. Where not all programs are reporting, it usually means some did not have a particular expense, rather than missing data. Detailed tables are in Appendix A.

The programs surveyed have been in operation on average for 7.3 years, with start dates ranging from 2008 to 2024. Both urban (9) and rural (3) programs were included in the study. Programs provided their most recent data from either 2023 or 2024. The descriptions throughout this report reflect annual numbers for the reporting year.

Program Parameters

Finding: The amount of time programs ran during the year varied across the 12 programs and averaged nearly 9 months.[2]

- Range in the number of weeks programs ran during the year: 16 to 52 weeks
- Median number of weeks programs ran: 36.5 weeks
- Average number of weeks programs ran: 35 weeks

Finding: Around 7 of 10 enrolled participants completed the PPR program.[3]

- The 12 programs collectively enrolled 15,610 individuals
- 10 of 12 programs tracked completion rates
- Of the 10 programs that tracked completion, 73% of participants completed the program.

[2] Program run time does not necessarily equate to the length of time a single participant could participate in the program. A program could run one or more participant cohorts within the program year.

[3] What constituted "completion" varied across all programs. Some defined it as attending a certain amount of nutrition education opportunities, or completing all potential classes, while others based it on number of visits to participating retail sites like farmers markets. Completion is not defined as proportion of food incentives redeemed.

Fruit & Vegetable Incentives

Distribution

Finding: Vouchers are the most common mode for distributing fruit and vegetable incentives, while the frequency of distribution of the incentives varied.

- Most programs used vouchers as the mode for sharing the fruit and vegetable incentive (9 of 12).
- A total of $1,187,648 worth of fruit and vegetable incentives were issued across 12 programs. Some programs had a variety of health care partners and the amount of incentives distributed differed by health care partner.

TABLE 1. HOW OFTEN FRUIT AND VEGETABLE INCENTIVES ARE DISTRIBUTED TO PARTICIPANTS

FREQUENCY	NUMBER REPORTING
Monthly	4
One per farmers market visit	1
One per health care provider visit	1
One per nutrition education class	3
One time lump sum	1
Weekly	1
Other	1
Total	**12**

Amount Offered

Finding: The most common total fruit and vegetable incentive offered per participant enrolled was $100.

- The total value of incentives offered per participant ranged from $30 to $1,080.
- About half of programs provided a total incentive of $160 or less.
- Participants could participate in programs for an estimated 22 weeks on average, with a range of 6-52 weeks.
- The amount of incentive offered to each participant averaged $12 per week of participation.

Redemption

Finding: About 6 of 10 fruit and vegetable incentive dollars were redeemed. This varied across programs such that the average program redemption rate was 78%.

- Of the $1,187,648 worth of fruit and vegetable incentives issued, $697,444.50 or 59% were redeemed, which includes imputed redemption for one program.
- The value of the food redeemed varied widely across programs but on average, participants reaped the value of $97, and a maximum of $268 per participant for a program.
- This resulted in the average participant redeeming just over $5 per week that they were estimated to be enrolled for, with one program being as high as $10.

Nutrition Education

Finding: Nutrition education is typically embedded in programs and often required for program participants to engage with. The average total cost to provide nutrition education was $108 per participant.

- The majority of programs offer nutrition education (10 of 12), such as cooking classes, online modules, or handouts.
- Nutrition education is required for about half of programs (6 of 10 offering, or 6 of 12 programs overall).
- For programs that reported a nutrition education cost, the average was $29,234 with a minimum of $4,659 and a maximum of $90,442. The per participant cost was an average of $108.11 with a minimum of $6.32 and a maximum of $360.54.[4]

[4] These costs included staff hours, professional services and participant incentives to participate in nutrition services. These do not include indirect costs such as any facility cost to host or supply costs for materials.

Approach to Community Programming

Finding: Virtually all programs had an orientation to larger community commitments and could describe how these values impact programmatic cost or efficiency.

- All programs were committed to working within the local food system, reaching underserved populations, and virtually all (11 of 12) were committed to reaching underserved geographies.
- Some PPR programs acknowledged inefficiencies in working within local food systems (e.g., related to program expansion and digitization). Nonetheless, they reaffirmed their commitment and described how strong partnership and communication with local food systems creates efficiency and benefits for participants. This is consistent with the literature highlighting the importance of community-engaged approaches in FIM initiatives. For instance, programs that embed local food systems and equity-driven practices are seen as more culturally responsive and aligned with the long-term vision of sustainable, person-centered care (Mozaffarian et al., 2023).
- Multiple programs described increased costs associated with their commitment to local food systems and reaching underserved populations and geographies, such as by increasing staff time on tasks such as traveling, education, and coordinating deliveries. Some respondents felt the influence of these commitments on programmatic costs was minimal.

PPR program feedback is consistent with the literature. The literature notes that while integration with local systems can create value for participants, it may also introduce operational complexity that affects scalability and cost-effectiveness (Mozaffarian et al., 2023).

Other values PPR programs prioritize that significantly influenced programmatic cost or efficiency included:

- Multiple programs noted that program evaluation efforts increased programmatic costs and required dedicated staff time, with one program also noting how prioritizing community input to inform program improvement increases costs. While evaluation can increase program costs, FIM researchers advocate for evaluation as a core element of implementation strategy to both improve internal processes and to build the evidence base for policy and payer alignment (Hudak et al., 2025).
- For some, programs' dedication to serving specific populations (e.g., people who are pregnant or diagnosed with or at risk of chronic disease) also increases cost. This aligns with recommendations in the *True Cost of Food* case study, which highlighted the importance of tailoring services to high-need populations, even when doing so increases programmatic demands (Mozaffarian et al., 2023).

Additional Services

Finding: Half of the PPR programs reported that they provide services other than nutrition education. These programs reported a higher average cost per participant ($655 vs $383) and higher median cost per participant ($584 vs $159).

- The most common service, other than nutrition education, provided was connecting participants to additional community or government services and resources, including the Supplemental Nutrition Assistance Program (SNAP).
- Multiple programs provided food delivery.
- Other additional services included SDOH screenings and community health workers who provide participants with peer social support, remote support via phone, and assistance with goal setting and reminders.

These additional service offerings aligns with literature documenting the utility of attending to health-related social needs. For example, in a Federally Qualified Health Center (FQHC) based program, participants received nutrition coaching and home delivery of healthy groceries to overcome transportation barriers (Hudak et al., 2025).

Finding: Future program upgrades that would influence the cost to deliver the program were under serious consideration from PPR program managers.

- Most common upgrades under consideration included digitization for benefits and implementing new or expanded education models, including expansion to other formats and curriculum lengths. Another upgrade mentioned was "streamlined technology for program administration."
- Program expansion efforts mentioned include expansion to other stores, other areas, and longer periods of service provision; and adding administrative staff.
- One PPR program specifically noted potentially pursuing ILOS reimbursement in future years with potential program cost impacts.

The Tufts *True Cost of Food* case study highlights similar priorities in national FIM efforts, including calls for improved digital infrastructure and the integration of evidence-based educational programming (Mozaffarian et al., 2023).

Staff Roles and Hours

Finding: On average, programs leveraged 3,092 hours or 1.5 FTE (full-time equivalent) of staff for annual program operations and the maximum for any program was 6.5 FTE.

- Broken down by program role, the largest FTEs were for program coordination, program management, and education, which ranged from 0.26 to 0.34 FTE.
- The greatest use of in-kind hours were for education and project management.

TABLE 2. STAFF HOURS PER YEAR BY BILLABLE ROLE, ACROSS PROGRAMS

PROGRAM BILLABLE	MAXIMUM HOURS	MAXIMUM FTE	AVG. HOURS	AVG. FTE
Total In-Kind Staff Hours	2,080	1	672	0.3
Total Billable Hours	12,480	6	2,762	1.3
Total Staff Hours	13,520	6.5	3,092	1.5

Partners

Retail Partnerships

Finding: The most common type of produce retail redemption partner was farmers markets.

- 10 of 12 programs had farmers market partners, with a maximum of 22 farmers markets in any one program and an average of five across programs.
- Other common partners were farm stands and grocery stores.
- The average number of retail partners sites per program was ten.

Health Care Partnerships

Finding: Programs engaged a large number of health care partners and a wide range of provider settings.

- The most common partnerships were with general outpatient medical clinics (8 of 12 PPR with at least one partnership), hospitals (7 of 12), and FQHCs (7 of 12).
- Total number of health care organization sites the program partnered with:
  - Range: 1 to 26
  - Average: 6.9
  - Total across PPRs: 78

Program Costs

Total Costs

Finding: The average total annual cost of a program was $247,506, with an actual range of at least $25,073 and a maximum of $1,065,664.

- The average cost of staffing was $126,036 per program.
- Nearly half of the program cost was salary (billable, in-kind, and value of volunteer labor), while one-quarter (25%) was participant costs (fruit and vegetable and non-food incentives).

TABLE 3. TOTAL COSTS

EXPENSE	PROGRAMS REPORTING	AVERAGE	MINIMUM	MAXIMUM
Total Cost	**12**	**$247,506**	**$25,073**	**$1,065,664**
All salary costs	12	$126,036	$10,035	$666,800
Billable salary costs	11	$111,597	$6,500	$591,531
In-kind salary costs	9	$30,453	$2,000	$121,502
Value of volunteer labor	5	$2,573	$190	$5,000
All participant costs (fruit and vegetable and non-food incentives)	12	$60,449	$4,773	$257,364
All billable participant costs	11	$64,167	$4,773	$257,364
All in-kind participant costs	2	$9,772	$50	$19,493
All other direct costs (professional, supplies materials, services)	12	$39,631	$320	$141,500
Billable other direct costs	11	$39,741	$320	$141,500
In-kind other direct costs	7	$5,489	$1,000	$15,000
All direct costs	12	$226,289	$25,073	$1,065,664
All billable direct costs	11	$215,506	$12,073	$990,395
All in-kind direct costs	12	$28,742	$190	$136,502

TABLE 4. PERCENTAGE OF TOTAL COST BY LINE ITEM

TOTAL COST*	NUMBER OF PROGRAMS	MEAN PERCENTAGE
Salary	12	49%
Participant costs	12	25%
Other direct costs	12	15%
Indirect (only programs with indirect rates)	7	17%

**More detailed analysis and finding related to each line item (i.e., salary, participant costs, and indirect) is in Appendix B.*

Finding: The total cost of the program per participant ranged widely.

- The total cost per participant enrolled averaged $519 and was an actual minimum of $32 and a maximum of $1,110.
- The total cost per participant per week that the program ran for averaged $15.46, with an actual minimum of $0.61 and a maximum of $30.84.

Policy Relevance - Benchmarking to ILOS

One driver for this study was to inform Michigan's new ILOS policy, where the state's Medicaid program now allows for reimbursement of non-clinical services like PPR programs. This study shows that programs average total cost was $15.46 per enrolled participant each week the program ran and $30 per completed participant per week. With a 95% confidence interval, this falls far below MDHHS' suggested ILOS range as of August 2025 of $43.77 to $60.26 (MDHHS, 2025). However, this is not to say that operating these programs is cheaper than expected. There are a few major differences between the PPR programs in this study and the cost assumptions in the state's suggested range. Under the purpose of this study, cost is assessed on redeemed incentives across PPR programs enlisting both voucher and box models, in variance with the state's assessment, which is based on the issuance of vouchers only.

The state's suggested ILOS range includes a higher dollar voucher per participant per week than was provided by programs in this study. The State suggested range is based on a midpoint of $52.01 per week, which includes $44.21 dollars per person per week on fruit and vegetables. This amount is intended to cover 50% of an individual's food needs (MDHHS 2025). A larger total value of vouchers would need to be offered to meet this cost because not all vouchers are fully redeemed. For programs in this study, participants were redeeming just over $5 worth of food per week of enrollment with a maximum voucher amount of approximately $12 per week. Adding $30 of food costs would likely put estimates into the State's guide ranges.

Furthermore, the range suggested by MDHHS may not meet the administrative costs of the PPR programs included in this study. While the administrative costs shown in the study are in line with the state's ILOS suggested range, the administrative costs in this study reflect costs before ILOS was implemented. It is possible that administrative costs would rise for these programs in order meet the ILOS requirements.

One program explained that, *"To meet the demands of [ILOS], we are using the medical record to track member participation. This requires additional training and patient management for our staff."* These challenges echo experiences from North Carolina's Healthy Opportunities Pilot, which found that implementing FIM services under Medicaid required substantial investment in infrastructure, data management, and staff

development to meet compliance requirements (Berkowitz et al., 2025, as cited in UNC Health News, 2025).

Marginal Cost Model

To understand how theoretical changes in enrollment would impact program costs, a marginal cost statistical model was computed using the current study data. Marginal costs are a measure of how much the cost of the program increases with each additional participant enrolled.

With economies of scale the expected administrative cost per participant would decrease when a program enrolls more participants. This is because there is expected administrative efficiency. For instance, a program would likely not have to increase staffing for every new participant, so each participant they add without having to increase the number of employees would drive down the per participant cost.

Model results showed that the most accurate model in predicting total costs for programs with enrollment rates between 77 and 800 participants was a linear one. This estimate predicts that enrolling one more participant would increase programs costs by $426. This implies that an economy of scale has not yet been reached by an enrollment of 800 participants.

It is possible that an economy of scale is achieved in higher enrollment programs somewhere in between 1,000 and 11,000 participants. One larger program in the study did have a comparable cost to smaller programs, which may indicate a potential economy of scale. However, analysis showed that other program factors that reduced participant costs, such as lower redemption rates, may have been more influential than any economies of scale. Any cost savings that result from reduced participant benefits may hinder programs' ability to support the health of program participants.

Analysis of more programs that enroll over 800 participants is required to determine if and when an economy of scale could be achieved for PPR programs.

A detailed methodology of the marginal cost model is shown in Appendix C.

Next Steps

While this study provides valuable information about true costs of PPR programs, it also raises some additional questions, such as what program characteristics contribute to cost efficiencies and how value-added services influence cost. Due to the relatively few programs in the study and the wide variability in how programs operated—such as how much and how often the fruit and vegetable incentives were offered, the partners involved, and what other services were provided—the study team could not generalize conclusions about how program characteristics may influence program costs. The study team recommends future studies include a greater number of PPR programs to not only allow for more robust analysis of characteristics that could create program efficiencies, but also how these program characteristics and costs compare against their outcomes. It is also important that the field defines and measures a standard set of program outcomes to allow for analysis across programs.

Furthermore, the study results indicate economies of scale were not reached for PPR programs up to 800 participants. However, there could be an economy of scale in programs that enroll even larger numbers of participants. The study team recommends future cost studies include more PPR programs with larger participant numbers to show if and when PPR programs could reach economy of scale, in other words, when the cost of adding another participant would start to decrease.

However, the study team cautions against a sole focus on cost-efficiency. While it is a measure that is undoubtedly important to health insurers and providers given how our health care system is structured, it is important not to lose sight of the ultimate goals of PPR programs. The PPR programs in this study were designed to meet the needs and context of the communities in which they are located, and as such, there is a wide variability in the programs and therefore the costs. Any study on economies of scale should consider whether the community-driven nature of PPR programs is maintained at larger scales, and if it is not, what is lost and if what is lost outweighs the benefits of greater cost efficiency.

Appendix A: Program Characteristics

This appendix provides more detailed information on program characteristics. The descriptive factors provide context to the costs of the program.

In many tables, each row has been calculated separately, according to how many programs provided that information. Because of this, averages in table columns often are not intended to add up to 100%. Average dollar figures provided in this situation do not readily transform to percentages.

TABLE 5. NUMBER OF WEEKS PROGRAMS RAN DURING THE YEAR

NUMBER OF WEEKS	NUMBER REPORTING
16 weeks	2
20 weeks	2
26 weeks	1
36 weeks	1
37 weeks	1
52 weeks	5

TABLE 6. HOW FRUIT AND VEGETABLE INCENTIVES ARE DISTRIBUTED

MODE	NUMBER REPORTING
Vouchers	9
Box or voucher	1
Food box	1
Electronic card	1
Total	**12**

Note: Some programs used multiple methods which are not fully captured in this table.

TABLE 7. AVERAGE STAFF HOURS PER YEAR BY PROGRAM ROLE, ACROSS PROGRAMS

PROGRAM ROLE	AVG. IN-KIND HOURS	AVG. BILLABLE HOURS	AVG. HOURS
Program Coordination	0	710	710
Program Management	208	487	695
Education	216	333	549
Research and evaluation	17	391	409
Program leadership	39	219	256
Other Program Staff	19	220	239
Admin and Support Staff	60	174	234

TABLE 8. NUMBER OF RETAIL SITES PER REDEMPTION PARTNER TYPE

REDEMPTION PARTNER N=12 PPR REPORTING	PROGRAMS WITH AT LEAST ONE RETAIL SITE	AVERAGE NUMBER OF RETAIL SITES, FOR THOSE REPORTING	MAXIMUM NUMBER OF RETAIL SITES
Farmers market	10	4.7	22
Farm stand	5	4.4	14
Grocery store	4	11.25	20
Community Supported Agriculture (CSA) or food box programs	2	-	1
Mobile market	1	-	1
Food pantry	1	-	1
All retail site types		**9.8**	**25**

TABLE 9. PROGRAM HEALTH CARE PARTNERSHIPS

HEALTH CARE PARTNERSHIPS N=12 PPR REPORTING	NUMBER OF PROGRAMS WITH AT LEAST ONE PARTNER PER CATEGORY
Other Outpatient Medical Clinic (provides outpatient health care services)	8
Hospital (provides inpatient health care; may also provide outpatient health care services)	7
Federally Qualified Health Center (FQHC) or Native American health service providers	7
Pediatric Clinic only (provides outpatient medical care to pediatrics)	5
Cardiac Rehab or Diabetes Education Center (provides outpatient cardiac rehabilitation or diabetes education)	4
Women's Health Clinic only (provides outpatient women's health care only)	3
Mental Health Treatment Center only (provides inpatient or outpatient mental health treatment only)	2
Pharmacy (e.g. within a drug store; not associated with medical institutions)	1
Mobile Medical Clinic (provides outpatient health care services out of a mobile unit such as a van)	1
Other	7

Appendix B: Cost Results

Key findings related to total costs are presented in the body of the report. This appendix provides more detailed analysis and findings related to cost by line item (i.e., salary, participant costs, and indirect), including according to billable and in-kind, and per participant enrolled and per participant per week that the program ran.

The study results demonstrate the notable variability across programs in approach, size or scope, and costs. Throughout the report averages are provided, along with other context information such as median and maximum, to help interpret the average. It should be noted that averages are sometimes based on all 12 programs, or on a subset of relevant programs. Where not all programs are reporting, it usually means some did not have a particular expense, rather than missing data.

In many tables, each row has been calculated separately, according to how many programs provided that information. Because of this, averages in table columns often are not intended to add up to 100%. Average dollar figures provided in this situation do not readily transform to percentages.

Program Staff Costs

Finding: The majority of staff costs were billable (81%); the value of in-kind and volunteer labor was relatively small compared to billable costs.

- Of programs that reported billable and in-kind salaries, billable was 73% of the salary costs.
- 11 of 12 programs incurred billable staff costs, while 9 leveraged in-kind value and 5 leveraged volunteer value.
- The value of staffing costs, i.e., billable and estimated, averaged $126,036 annually.
- Breaking down staffing costs per participant, revealed an average cost of $288 and a maximum of $695 annually.

TABLE 10. PROGRAM STAFF COSTS, PER PARTICIPANT AND PER PARTICIPANT PER WEEK THE PROGRAM RAN WITHIN THE YEAR

EXPENSE	SALARIES, PARCED BY NUMBER OF PARTICIPANTS		SALARIES PER PARTICIPANT PER WEEK	
	AVG.	MAXIMUM	AVG.	MAXIMUM
Billable staff salary, wages, taxes, and benefits (i.e., salary/wages + fringe)	$223	$616	$6.47	$17.12
Value of *in-kind employee* salary, wages, taxes, and benefits	$110	$391	$3.02	$8.12
Value of volunteer labor (non-employee)*	$4	$6	$0.15	$0.31
Total	**$288**	**$695**	**$8.23**	**$19.29**

**Definitions of program staff costs are shown in Appendix D.*

Participant Costs

Finding: The value of the food redeemed varied widely across programs but on average, programs expended $97 per participant.

- Based on any type of food incentive redeemed, programs spent an average of $97 per participant, and a maximum of $268 per participant for a program.
- Programs expended an average of $3.13 per participant per week that the program ran, with a maximum of $9.09 per participant per week on food incentives redeemed.
- Most of the value of food incentives issued were billable; only one program reported the in-kind value of food incentives.

TABLE 11. FRUIT AND VEGETABLE INCENTIVE DOLLARS ISSUED AND REDEEMED

Fruit and Vegetable Incentive Dollars Issued	Fruit and Vegetable Incentive Dollars Redeemed
Program Average=$98,971	Program Average= $58,120
Program Minimum=$5,000	Program Minimum =$3,000
Program Maximum= $474,360	Program Maximum= $257,124

TABLE 12. REDEMPTION FIGURES BY INCENTIVE DISTRIBUTION TYPE

	BILLABLE AVG.	BILLABLE MAXIMUM
REDEMPTION FIGURES FOR VOUCHERS		
Value of incentives issued	$108,162	$474,360
Value of incentives redeemed	$48,085	$158,520
FOOD BOX FIGURES		
Value of food in boxes delivered or picked up	$90,936	$257,124

Note: In-kind figures are not shown due to only one program reporting the in-kind value of food incentives. Similarly, redemption figures for electronic cards are not shown due to the small number of programs reporting. One program reported third-party delivery fees or charges. These costs are also not shown.

Finding: Most programs offered non-food incentives to participants (9 of 12).

- The most common form of incentive was giveaways such as cookbooks or utensils (8 of 12), a program expenditure which averaged $1,451.
- Two programs offered stipends for participation in evaluation which cost on average $3,733.
- At an average cost of $820, two programs offered stipends for nutrition education participation.

TABLE 13. DISTRIBUTION OF NON-FOOD PARTICIPANT INCENTIVES

EXPENSES	NUMBER OF PROGRAMS REPORTING COST	NUMBER OF PROGRAMS WITH BILLABLE COST	NUMBER OF PROGRAMS WITH IN-KIND VALUE
Participant giveaways (Examples: kitchen utensils, cook books, etc.)	8	7	1
Transportation stipends provided to participants	3	2	1
Stipends provided to participants for participating in nutrition education	2	1	1
Stipends provided to participants for completing evaluation components	2	1	1
Other participant costs	0	0	0
Any participant incentive costs	9	8	2

TABLE 14. COST OF NON-FOOD PARTICIPANT INCENTIVES

NON-FOOD EXPENSES	NUMBER OF PROGRAMS	AVG. FOR RELEVANT PROGRAMS
Participant costs used for giveaways	8	$1,451
Participant costs used for transportation	3	$268
Participant costs used for education participation	2	$820
Participant costs used for completing evaluation	2	$3,733

TABLE 15. NON-FOOD PARTICIPANT INCENTIVE COSTS PER PARTICIPANT

NON-FOOD COSTS BREAKDOWN	AVG.	MAXIMUM
Incentives per participant	$6	$14

Other Direct Costs

Finding: Most of the programs reported using some type of professional services, primarily in the areas of nutrition education, evaluation, accounting, and marketing.

- Where programs leveraged in-kind services, it was in the areas of nutrition education, accounting, and (health care or retail) partner stipends.
- Of all the professional services expenses, the largest expenditures were for evaluation and accounting.
- Each program spent about $31,700 on one or more professional services on average, and the most spent per program was $90,000 annually on services.
- On average, materials and supply costs were $11,534, the bulk of which was billable, and the most spent was $51,500.
- Ten programs reported billable expenses for any materials and supplies and 4 reported in-kind value for materials and supplies. Most of the expenses in this line item were for (general) supplies and technology.

Other direct costs included contractual costs and materials, supplies, and services. For more information about what is included in the other direct cost category, see Appendix D.

TABLE 16. PROGRAMS USING PROFESSIONAL/CONSULTANT SERVICES

EXPENSE	BILLABLE: NUMBER OF PROGRAMS REPORTING	IN-KIND: NUMBER OF PROGRAMS REPORTING	AVERAGE % SPENT ON PROFESSIONAL SERVICES
Any professional services	9	5	NA
Marketing (including design, outreach, & communications)	3	0	3.3%
Evaluation (including IRB)	4	0	58.4%
Nutrition education	2	3	6.9%
Accounting	1	3	9.4%
Legal	0	0	.
Health care partner(s) fee or stipend	1	1	3.7%
Retail partner(s) fee or stipend	2	1	2.7%
Other professional services	1	0	15.6%

TABLE 17. PROFESSIONAL/CONSULTANT SERVICES EXPENSES

	BILLABLE OR IN-KIND		BILLABLE	IN-KIND VALUE
EXPENSE	AVG.	MAXIMUM	AVG.	AVG.
Marketing (including design, outreach, & communications)	$3,855	$7,000	.	.
Evaluation (including IRB costs, if applicable)	$50,875	$90,000	.	.
Nutrition education	$4,830	$10,000	.	.
Accounting	$8,222	$16,162	.	.
Health care partner(s) fee or stipend	$6,369	.	.	.
Retail partner(s) fee or stipend	$4,679	$6,000	.	.
All professional services*	**$31,700**	**$90,000**	**$35,020**	**$6,704**

**Numbers reflect only those 9 that reported any service, not all 12 programs.*

Note: Separate billable and in-kind averages are not shown for individual expense categories due to the limited number of programs reporting. Similarly, the "health care partner(s) fee or stipend" maximum is not shown due to the small number of programs reporting. One program reported "other professional services". These costs are also not shown.

TABLE 18. PROGRAMS SPENDING ON MATERIALS AND SUPPLIES

EXPENSE	BILLABLE: NUMBER OF PROGRAMS REPORTING	IN-KIND: NUMBER OF PROGRAMS REPORTING	AVERAGE % SPENT ON MATERIALS AND SUPPLIES
Any materials and supplies	10	4	NA
Outreach, Communications, Marketing	4	0	5%
Staff development and travel	7	1	5%
Technology / software	5	0	16%
Supplies	11	0	63%
Other supplies or materials	4	4	11%

TABLE 19. MATERIAL AND SUPPLY EXPENSES

	BILLABLE OR IN-KIND		BILLABLE	IN-KIND VALUE
EXPENSE	AVG.	MAXIMUM	AVG.	AVG.
Outreach, communications, and marketing	$1,442	$5,000	.	.
Staff development and travel	$971	$3,000	.	.
Technology / software	$3,978	$10,000	.	.
Supplies	$7,280	$51,300	.	.
Other supplies or materials	$3,586	$6,000	.	.
All materials and supplies*	**$11,534**	**$51,500**	**$12,198**	**$1,225**

**Numbers reflect only those 11 that reported in the category, not all 12 programs.*

Note: Separate billable and in-kind averages are not shown for individual expense categories due to the small number of programs reporting in-kind spending on materials and supplies.

Indirect Costs

Finding: There was much variability in how programs approached indirect costs. The average rate applied was 21.6%.

- A total of 7 programs reported an indirect rate, which ranged from 3% to 31%, and averaged 21.6%
- The cost study aimed to understand how indirect cost is applied to the programs. Five programs did not report applying an indirect rate.

TABLE 20. INDIRECT COST APPROACHES

QUESTION	ANSWER
Did you apply a de minimus rate for the program?*	2 (Yes)
Did you apply a federally negotiated indirect rate for the program?	5 (Yes)
If applicable, what was the indirect cost rate applied?	21.6% average Range 3% to 31% For 7 programs reporting

**At the time the data was collected the de minimus rate was 10%. A "de minimus rate" is a simplified flat rate of total direct cost that organizations use when they do not have a higher federally-negotiated indirect rate.*

Appendix C: Marginal Cost Results

A marginal cost estimate was created using a simplified log-log hedonic regression as well as a simple linear regression using the number of participants as the predictor. In the simple linear regression 2, observations were muted for being influential outliers.

Per Participant Cost. Utilizing a (log-log) hedonic model to predict total cost using the number of participants, the PPA team see that increasing enrollment by 1% increases the total cost of the program by 0.55%. In an example, we would expect that a hypothetical program with enrollment of 100 participants would have a total cost of approximately $65,000 dollars and that an increase of 1 participant would increase the total cost (including billable, in-kind and an indirect rate applied to the combination of the two) by nearly $360 ($357.90).

Given that the median enrollment of participants in this study was 333, it is expected that the total program costs would be calculated as $126,289.17 in this model. If the average program increased enrollment by 1 it is expected that costs would go up to $126,498.11, which is only $208.94 more. This smaller change is due to economies of scale, which this model assumes.

With economies of scale the expected administrative cost of each participant would decrease when a program enrolls more participants. This is because there is expected administrative efficiency. For instance, a program would likely not have to increase staffing for every new participant, so each participant they add without having to increase the number of employees would drive down the per participant cost.

For example, assuming the average food cost per participant of $97, it is expected that the administrative costs (salary, supplies, materials, services) would increase by $260 when adding the 101st person, but only $101 when adding the 334th person. However, this may not be the best way to describe the relationship between participation and costs. One larger program in the study did have a comparable cost to smaller programs, which may indicate a potential economy of scale somewhere in between 1,000 and 11,000 participants. However, there are too few very large programs to identify at what scale such economies could be achieved and analysis shows that other program factors that reduced participant costs, such as lower redemption rates, could be more influential than any economies of scale.

In the study, there are two programs that exist on noticeably larger scales than the others. If both outlier cases are removed from the prediction, a linear estimate fits the data better and is thus more appropriate. This implies that these programs do not operate at an economy of scale and that adding one more participant is the same cost

at any participation point between 77 and 800. Using this estimate, enrolling one more participant would result in an additional $426 dollars.

Appendix D: Methods

The study was conducted by PPA, on behalf of MIFMA in March 2025. The purpose was to collect data on the true cost to administer and operate PPR programs for participating members.

The target participants were program managers responsible for leading and managing the produce prescription program including oversight and engagement with their partner organizations. It was assumed that they would need to work closely with internal fiscal staff to complete the workbook. The study was a census of all program implementers known to MIFMA that operated a produce prescription program in any of the past two years.

Respondents were asked to identify and provide data for either 2023 or 2024, whichever one had the most complete data.

An excel file workbook was used to collect data from program managers. Topics were reflected in the workbook tabs:

About the study tabs to help programs prepare and indicate consent
- Introduction
- Consent
- Instructions

Narrative tabs asked for qualitative information to provide context for the dollar figures
- Program description
- Staff FTE and roles
- Partners

Dollars and figures tabs to gather data from accounting or financial tracking systems
- Staff costs
- Participant costs
- Other direct costs
- Indirect costs

The amount of time needed for the invitee to conduct internal research and generate output was not known in advance. Efforts involved at least the following touchpoints: (1) review of the worksheet including instructions (2) sharing request internally and/or gathering data internally and (3) populating the worksheet. The entirety was estimated to take 2-3 hours which was the outer limit of acceptable effort per the Learning Network input.

Informed consent information was provided in a dedicated tab of the workbook; consent was given by respondent check box and the respondent continuing after the

introduction to complete the workbook. Incoming workbooks were triaged for a valid consent checkbox. No staff names were collected and only PPA has access to individual program results.

An advance message from MIFMA was sent alerting program managers to the forthcoming invitation to participate. PPA research staff then sent individual emails with workbooks, instructions and contact information for technical assistance and questions. Reminder emails and phone calls were issued weekly by research staff, along with offers of technical assistance. No direct incentives were offered. The data collection worksheet was intended to benefit programs to think about their work in fiscal terms and orient them to ILOS opportunities. Support materials and assistance were shared during data collection.

Data quality checks were conducted as responses were received, and questions and support provided to respondents as needed to gain a complete and final response. Open-ended responses were managed, reviewed, and coded into themes using Excel.

Extensive data cleaning, formatting, and management was undertaken in STATA® in preparation for analysis, and descriptive statistics were generated for quantitative data.

In most cases, missing responses were assumed to be 0, as in no cost for the given category. In certain instances, missing responses were imputed to decrease non-response bias, and to prevent the sample from being decreased. The method for the imputation differed depending on the instance. In cases where the redemption was not provided (two), the reported completion rate of participants was multiplied by the amount issued. In the case (once) the total average completion rate was applied to the issue amount because the number of enrollees who completed was not provided. In one instance a provider provided information that overlapped with 2023 and 2024. In this instance some responses were pro-rated.

Responses from separate sites for “Program A” were gathered separately. These were then later rolled into one record, as they represented small populations with shared resources. These acted more like separate distribution centers than as individual programs. Other programs like these were submitted as one entity, so as to not create biases. The multiple Program A records were aggregated together into one record, resulting in 12 analytic records total.

Responses were tabulated for whether or not a given respondent had provided costs and answers on every given measure. These costs were then aggregated into larger buckets, of professional services, supplies material and services, salary, participant incentives, and food costs. These groups were then compared by in-kind and billable costs, as well as percentages of total costs.

Final total costs were computed by combining the total billable and in-kind direct costs and then applying an indirect rate, if one was provided, to that total. These totals were broken down by urban and rural indicators, as well as whether they provided other services. These costs were then divided by the enrollment numbers to get a per participant score, as well as weeks to get a per week score. These two methods were also combined to get a participant per week cost, which can be compared to the ILOS Medicaid service rate. A 95% confidence interval was applied to the average of the number to estimate if it had an overlapping range with the suggested rate.

Definitions

Program Staff Costs

Program staff costs include a combined total of salary, wages, taxes, and benefits for the entire year in which you are reporting. This represents all staff costs combined for the total time dedicated to the program. This accounts for relevant time from salaried staff, hourly staff, and volunteers, from the reporting entity's organization, only for the PPR program. This does not include contractor or partner efforts. The estimated value of in-kind is employee in-kind labor and estimated non-employee volunteer labor, for roles that are not billable to a grant or funder.

The estimated value of volunteer labor is based on $31.59 per hour. This figure is the 2023 estimated value of a Michigan volunteer hour reported by the Independent Sector.[5] The figure represents the value of volunteer effort including fringe benefits but is not considered an estimate of wages that would be earned if they were non-volunteer.

Materials, Supplies, and Services Expenses

Technology/Software. Examples include scanning technology for voucher redemption tracking, participant management software, participant communication software (such as text messaging services), evaluation software, redemption technology, and cards.

Staff Development and Travel. Examples include staff travel to redemption or referral site, conference travel (including lodging and meals) + registration fees, and professional development training for staff. Only include travel and professional development costs

[5] For more information about the Independent Sector, https://independentsector.org/resource/value-of-volunteer-time

by your staff or volunteers associated with the program. Do not include staff salary time.

Supplies. Example include printing and mailing of vouchers and re-issued vouchers, boxes, printing and mailing of materials (including materials for participant enrollment and partner site training materials), supplies for nutrition education classes if performed inhouse, and iPads for enrolling participants.

Outreach/Communications/Marketing. Expenses related to participant recruitment. Examples include displays, social media, and signage at health care/retail sites.

Other Direct Costs

Other direct costs included contractual costs and materials, supplies and services. Contractual costs included costs paid to consultants and partner organizations. It does not include staff or direct costs for any service completed in-house. Any in-kind contractual services or material expenses were a best estimate of value. Materials and supplies do not include the cost of food or redeemed vouchers.

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