

# Exploring the impacts of a fresh produce market program: a realist economic evaluation

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Food insecurity, or the inability to afford or access regular, sufficient, safe, nutritious and culturally appropriate food in a socially acceptable way, remains a wicked problem for developed countries.<sup>1</sup> Food insecurity results in increased levels of ill-health, both physical and mental, and social exclusion.<sup>2,3</sup> Social exclusion contributes to the poverty cycle by limiting an individual's ability to develop social connections in their community and access the necessary goods and services to promote health, increasing their vulnerability to food insecurity.<sup>2</sup> Inadequate household income, an established key predictor of household food insecurity, also impacts regular access to nutritious food by interrupting a family's ability to afford and cook healthy meals regularly.<sup>2</sup> Australia, similar to many other developed nations, continues to predominantly respond to food insecurity through the food relief sector. As a result of the impacts of COVID-19, over half of Victorian food relief service providers reported servicing more people, including international students, temporary visa holders and casual employees and 40% needed to extend the type of services delivered.<sup>4</sup> As a result, addressing food insecurity and social exclusion has become ever more critical for those tackling these issues in the developed world. There is a need for alternative approaches.

Food relief includes food vans, food parcels, supermarket vouchers and food pantries, and aim to alleviate hunger by enhancing access to food.<sup>5,6</sup> These initiatives were developed based on a traditional model of food relief and have limited focus on recipient dignity

## Abstract

**Objective:** To determine the contexts under which a fresh food market program is cost-effective in improving dignified access to nutritious food for food-insecure individuals.

**Methods:** A realist economic evaluation was employed. Purported cost related theories about how the program may function, known as context-mechanism-outcome configurations were developed. In-depth interviews with key stakeholders (program developers, funder, local food relief agencies, volunteers) involved in the program (n=19) as well Photovoice with focus groups with market attendees (n=8) were conducted and coded for contexts, mechanisms and outcomes. A cost-effectiveness analysis of the program was calculated whereby the cost inputs associated with operating the program were compared to the quantity and value of produce distributed. Alternative cost scenarios were evaluated in a sensitivity analysis. The cost-effectiveness analysis was used together with qualitative data to refine theory.

**Results:** Food insecure individuals attending a partnership fresh food market with a small fee, experienced improved, yet infrequent access to nutritious food through community connections and support a more dignified, viable access to fresh nutritious food.

**Conclusions:** Food relief should consider alternative models.

**Implications for public health:** More dignified food relief programs that support local connections may be part of the solution to addressing food insecurity.

Key words: emergency food relief, realist evaluation, photovoice

or the specific needs of the communities in question.<sup>7,8</sup> Their effectiveness and appropriateness to address the complexity of food insecurity is questionable. In particular the lack of dignity, negative feelings associated with receiving handouts, lack of food choice and poor food quality for participants accessing emergency food relief further compounds the impact of the lived experience of food insecurity. While the short-term goal of hunger alleviation may be achieved, the increasing demand for such services provides evidence that traditional models of food relief do little to address the underlying determinants of food insecurity.<sup>9,10</sup> In addition, the food often 'handed out' does little to improve nutrition

and health, often being energy dense and nutrient poor.<sup>11,12</sup> To justify government and private sector investment in emergency food relief, alternative models need promoting.

The Farms to Families Thrive (FTFT) Program, hereafter referred to as 'the program', was a collaborative initiative between the Victorian State Government, not-for-profit organisations, community health agencies and a local government in the north-west of Melbourne, Australia. It was developed with the aim to address dignity in accessing emergency food relief and improving the nutritional quality of food provided. The program, which ran over three locations, on eight occasions over 13 months, provided free fruit, vegetables and dairy foods to low

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income households referred by community health agencies via farmer's market style pop-up events. While there was a notional amount of food available per household, no limits were enforced in terms of what families could take. In addition to the market, complementary activities including provision of tea and coffee, hot food, communal seating areas, attendance by local service providers, a children's play area, provision of written health information, recipe cards and seedlings, attempted to strengthen social connection for market attendees. To the authors' knowledge this novel emergency food relief model is one of a few in Australia developed to respond to the need for a change in approach from traditional models.

The impact of approaches that address issues of dignity and social connection has been somewhat explored in the literature internationally. Approaches that have shown promise in addressing the issue of dignified access to nutritious food include farmers' market models. In an Australian example, evaluations have found that customers report feeling connection to community and have improved access to affordable fruits and vegetables.<sup>13</sup> A United States example also has shown increases in purchasing of fresh fruit and vegetables at a farmers' market program.<sup>14</sup> Both studies describe the challenges of evaluating the impact of these market programs.<sup>13,14</sup> There is a need for alternative approaches to evaluation of these complex interventions that develop our understanding of not only if an intervention or program works, but under what conditions, for whom and why and at what cost.

Realist approaches to evaluation offer a potential solution to managing the evaluation of complex nutrition interventions. Grounded in realist philosophy, realist evaluation privileges understanding causation, or the underlying factors that cause outcomes to occur.<sup>15</sup> Realist approaches are theory-led in that they are designed to develop and test a theory (called initial program theory) for how a program or intervention works (or does not). As a research method, it investigates the complex relationships and interactions which exist between the contexts (the social environment programs are implemented), mechanisms (the resources and reasoning as to why a program has a particular effect) and outcomes (the sum of the intended and unintended results) of the program, policy or intervention of interest.<sup>15-17</sup> Realist economic evaluation is one form of realist evaluation

and while not used widely, offers a theory-informed approach to economic evaluation that aims to understand the mechanisms (resources), as well as participants' reasoning in response<sup>18</sup> to why programs work (or do not). Realist economic evaluators<sup>19</sup> suggest that realist evaluations can focus on the economic aspects of contexts, mechanisms and outcomes. By focusing on the cost-sensitive features of contexts, mechanisms and outcomes, realist economic evaluation can provide an antidote to the explanatory weakness of traditional economic evaluations, and further strengthen realist evaluation per se.<sup>18</sup> That is, explaining how outcomes are produced and the causal links that are cost sensitive. It therefore develops and tests cost-related program theories that explain how and why programs are expected to have cost-benefit in specific contexts.<sup>19,20</sup> To date, economic evaluations of large scale food assistance programs have been performed with limited tailoring to specific contexts, mechanisms and outcomes.<sup>21,22</sup>

The aim of this study was to determine the program contexts under which a fresh food market program was cost-effective in improving dignified access to nutritious food for food-insecure individuals. More specifically, we answered the research questions:

1. What cost-sensitive contexts and mechanisms are at play for achieving program outcomes?
2. What are the economically optimal program fees and do they translate across mechanisms or outcomes?

## Methods

A preliminary realist economic evaluation design was employed. The study was not initially designed as a realist evaluation as the evaluation was originally designed to meet funding requirements. Realist approaches were employed post-hoc.

### Study Design

Ethics approval from Monash University Human Research Ethics Committee (project number 0732) was obtained. To answer our first research question, we drafted an initial program theory based on existing literature on food relief, the program logic developed by the key stakeholders involved in development and implementation of the program as well the theory of cost-benefit

analysis. This draft was discussed between researchers. Only cost sensitive theory was tested as part of this evaluation. Our initial theory hypothesised that:

Food insecure individuals attending the program (context) where fresh food is provided free of charge (mechanism) results in greater access to fresh nutritious food and networks in the community (outcome). While objective measures of dietary intake were not performed, the theory assumed that the distribution of fresh food translated to increased intake. In this theory the resource of free fresh food was considered the cost-sensitive mechanism for achieving the cost-sensitive outcome of greater access to food. The study follows the RAMESES II reporting standards for realist evaluation.<sup>23</sup>

The realist economic evaluation employed multiple methods. Specifically, we employed qualitative methods including in-depth interviews with key stakeholders and Photovoice with follow up focus groups. The focus groups with market attendees aimed to facilitate sharing and provide rich descriptions of the experiences of the program to support or refute findings from economic evaluation. Key stakeholders included program steering committee members who were employees of local community-based agencies with a mandate to improve health. Key stakeholders also included program volunteers recruited through local agencies, corporate volunteers, local emergency relief agencies and the government funder. An economic evaluation was undertaken to understand the costs associated with the intended program outcomes. The narrative data aimed to enrich the economic data.

### Data collection

In-depth interview participants were recruited by researchers via email and were provided with a consent form and a copy of the study's explanatory statement prior to the commencement of data collection. These interviews, which were semi structured in nature, were conducted either face-to-face or via the telephone by JM, focusing on the participants' perspectives of the program. Interviews explored the different stakeholders' experiences and perceptions of the program's processes, partnerships and impact. All stakeholders (n=28) were invited to participate.

Recruitment to focus groups took place in person where program attendees (n=26) were approached by program volunteers at

markets, indicated interest in participating and were introduced to researchers. Their details were recorded by researchers following the provision of an explanatory statement outlining the study and were later contacted by phone and then mail or email to attend a focus group. Participants were then invited to participate in Photovoice method,<sup>24</sup> whereby they were asked to take photos of participants' experiences of accessing and utilising food from the market and use these photos as a prompt discussion around the impact of the program. Prompt questions explored stories of their use of the foods accessed at markets, impact on their eating patterns and whether they would be prepared to pay a small fee to participate in the program (Table 1). An Arabic translator attended the first focus group and a Persian (Farsi) translator attended the second focus group to support respondents who were not fluent in English. The focus groups were community led by a program volunteer and guided by two researchers (JM & SK), allowing the experiences of market attendees to be explored. All in-depth interviews and focus groups were voice recorded and transcribed verbatim to enable subsequent data analysis.

### Data analysis

Nineteen stakeholders (nine steering committee, three program volunteers, four emergency food relief agency, two corporate volunteers, one funder) completed in-depth interviews and eight market attendees participated in one of the two focus groups (focus group one n=3; focus group two n=5). Interviews ranged between 25-65 minutes and focus groups between 62-

81 minutes duration. Interview and focus group transcripts were analysed against the initial program theory. This process involved coding data to the context, mechanism and outcomes proposed by the program theory. Data that could not be coded to the existing contexts, mechanism and outcomes described in the initial theory were coded inductively. In this way the initial program theories were affirmed, refined or refuted. Illustrative quotes from the data were extracted. The economic evaluation was also used to support the cost-sensitive features of the context, mechanisms and outcomes identified in the initial theory, aiming to explain how and why programs are expected to be beneficial in terms of cost in specific contexts.

A cost-effectiveness analysis was undertaken, whereby the main outcome was measured by the quantity of produce distributed at each market. The three main cost inputs that were considered as part of this economic evaluation were those pertaining to program funders, and included labour (program staff time at actual wages plus 30% on-costs), the costs of produce and other variable costs (including transport, utilities and other market supplies). The program relied on volunteers (about 100 hours) at each market, which was not costed. The travel time and costs incurred by market attendees was also excluded from the model and all donated food was costed at \$0 (Table 2). The produce distributed at each market (outcome) was valued at market prices (\$AUD) to enable a quasi-cost-benefit analysis of the program. The 'benefit' of the program was therefore measured in terms of the average total value

of all produce distributed to participants at a market. It is considered a quasi-cost benefit analysis because other potential benefits such as wellbeing improvements or changes to dietary intake were not included in the evaluation. A sensitivity analysis was conducted under different participant fee and produce valuation scenarios (Table 3). In calculating the costs a number of assumptions were made (see Supplementary Information for more detail).

## Results

RQ1: What cost-sensitive contexts and mechanisms are at play for achieving program outcomes?

Key cost-sensitive outcomes, mechanisms and contexts identified through the qualitative data analysis are described below.

### Cost-sensitive outcomes

#### Access to fresh nutritious food

The produce available through the program was praised by both program stakeholders and market attendees as being both fresh and of a high quality. Many study respondents reported being surprised that this was food relief produce as it surpassed what was available at some food retailers.

*The quality I found very good, better than the supermarkets. A lot fresher I thought. (Market attendee focus group 2)*

**Table 2: Estimation of average costs per Farms to Families Thrive market.**

|                               | Average Cost (\$) |
|-------------------------------|-------------------|
| <b>Labour</b>                 |                   |
| Foodbank staff                | 2,534             |
| Other staff                   | 6,332             |
| Volunteers                    | 0                 |
| Total labour costs            | 8,866             |
| <b>Produce</b>                |                   |
| Purchased produce             | 2,798             |
| Donated produce               | 0                 |
| Total produce costs           | 2,798             |
| <b>Other variable costs</b>   |                   |
| Transporting produce          | 71                |
| Transporting staff            | 25                |
| Transporting volunteers       | 58                |
| Other costs                   | 190               |
| Total other variable costs    | 344               |
| Average total cost per market | 12,008            |

Notes:

Costs were calculated from the perspective of the program funder and are in 2017 AUD. Participant and volunteer costs were excluded. Cost of produce purchased for all eight markets was based on the average cost of produce supplied at the final three markets in 2017. See Supplementary Information for more details on the assumptions behind the cost inputs.

**Table 1: Photovoice focus groups discussion guide.**

|                                                                                                                                                                                                                                                                                                                                     |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| How did you get to/from market - accessibility and transport to and from the market What do you like best about the market? What do you like least about the market? Acceptability of the produce (variety, quantity), atmosphere, access to health information, having a tea/coffee, kids colouring in table, hot food, seedlings? |
| What do you think about the food you have received? (Variety, Familiarity, Quality, Quantity, Cultural prompt)                                                                                                                                                                                                                      |
| How do you use market produce? (meals, leftovers, recipes)                                                                                                                                                                                                                                                                          |
| How far does the produce stretch (how many meals are made)?                                                                                                                                                                                                                                                                         |
| How long does the produce last for?                                                                                                                                                                                                                                                                                                 |
| Are there any barriers/limitations to preparing meals from the produce (e.g. cooking and storage facilities)?                                                                                                                                                                                                                       |
| What do your mealtimes look like? Who are you eating with?                                                                                                                                                                                                                                                                          |
| Any changes in access to/consumption of fruit and vegetables?                                                                                                                                                                                                                                                                       |
| Any changes to overall dietary patterns? - meals                                                                                                                                                                                                                                                                                    |
| Other uses for the market produce? (e.g. food as medicine)                                                                                                                                                                                                                                                                          |
| Any changes to shopping habits?                                                                                                                                                                                                                                                                                                     |
| Are you purchasing more or less fresh produce in between markets?                                                                                                                                                                                                                                                                   |
| Does attending the market free up money in your budget to purchase other foods? If so, what types of foods?                                                                                                                                                                                                                         |
| Can you please tell us what the Farms to Families pop up market means to you and members of your household? If you had to pay for this produce (less than in the shops) how would this impact on your overall budget? Would you still come to the market?                                                                           |

Given that the produce provided was based on what was available and seasonal at the time, there were some limitations on what specific foods were available to recipients. Market attendees however were understanding of this and embraced the opportunity to try new foods, resulting in improvements in the variety and quality of the diets of these families. The quality of the produce was so high some market attendees revealed it lasted longer than expected, providing a more positive and sustained impact on their food security status.

*One of the values is that people might be trying food they might not have tried before.* (Stakeholder 12)

The infrequency of the markets only operating once per month meant that this variety and quality in the diet was only present for 1-2 weeks following a market as food would be consumed during this time and participants would not have an opportunity to obtain more.

**Cost-sensitive mechanisms**

*The emotional consequences of seeking food aid*

The idea of being given food for free was not perceived by study respondents as something that is wanted by the community seeking food relief. Most stakeholder respondents perceived the provision of free food as a degrading experience for the community who want to contribute financially to the food they receive.

Stakeholders reported that society's understanding of what is acceptable food

relief was skewed and did not align with the desires of those seeking it, indicating a change in approach is needed. When participants were asked about whether they would pay to access the produce and the market atmosphere they were supportive of this concept driven by their perception that by paying a small fee it would enable the program could continue.

*It's just a shame it's going. Even if it was subsidised or something, or a fee (was charged), I think it would be very worthwhile for the community.* (Market attendee focus group 2)

Other stakeholders had diverse views about whether participants should pay for the market with some stakeholders feeling strongly that there should not be a cost to participants and others recognising that by paying a fee may provide a perception of more dignified food access.

*[Free food is] embarrassing for some clients in some cultures. [They] may feel quite embarrassed that they're coming to receive something for nothing.* (Stakeholder 1)

*... People didn't want handouts. They're happy to pay, they wanted to engage with it... They were actually quite offended by what is perceived to be charitable.* (Stakeholder 14)

**Community connection and support beyond food**

Interviews demonstrated that whilst seeking food aid, market attendees simultaneously sought out meaningful social interactions with market volunteers and other members of the community. The welcoming, casual

atmosphere of the markets enabled this, with market attendees reporting the complementary activities and market enhancements specifically supported them in socialising with other members of the community.

*We don't have a lot of relatives to visit and a lot of time to spend, so we like the [Farms to Families Thrive] environment with the activities.* (Market attendee focus group 1)

*I had a recipe from a friend [I met at the market].* (Market attendee focus group 2)

The market staff and volunteers were also reported to positively improve community connections for market attendees as a result of their friendly, helpful and supportive nature. In turn, the program was also reported to yield benefits for volunteers through employment opportunities generated from their participation in the markets.

*It's been fulfilling in regard to, I'm doing something for the community, I'm around children, I'm helping in some way, which is a great thing. ... I'm learning a lot about what's actually out here ...* (Stakeholder 2)

**Cost-sensitive contexts**

*Role of partnership in food relief*

The resources provided that resulted in collaboration on the program, inclusive of partnerships across multiple agencies and sectors, was perceived as being beneficial in allowing the program to support those accessing food relief. Respondents acknowledged that no one stakeholder could have successfully been able to develop and implement this program alone and thus there was a reliance of multiple parties and agencies to ensure each market went ahead. The teamwork that occurred between stakeholders was attributed by respondents to their shared goal of improving food security.

*What [Farms to Families Thrive has] done, its [getting organisations] congregating around food ... [and increasing] access to service providers. Agencies are working collaboratively for the one cause.* (Stakeholder 1)

RQ2. What are the economically optimal program fees and do they translate across mechanisms and outcomes?

**Economic evaluation and sensitivity analysis**

The cost per program/market was on average AUD\$12,008 and resulted in the distribution

**Table 3: Cost benefit and sensitivity analysis – under different participant fee scenarios.**

|                                                                   | (1)<br>\$0 fee | (2)<br>\$5 fee | (3)<br>\$10 fee | (3)<br>\$25 fee |
|-------------------------------------------------------------------|----------------|----------------|-----------------|-----------------|
| <b>Costs</b>                                                      |                |                |                 |                 |
| Operational cost per market (\$) <sup>a</sup>                     | 12,008         | 12,008         | 12,008          | 12,008          |
| Participant contribution per market (\$) (fee x 135 participants) | 0              | -677           | -1,354          | -3,384          |
| Total costs per market (funder perspective) (\$) <sup>b</sup>     | 12,008         | 11,331         | 10,654          | 8,623           |
| <b>Benefits</b>                                                   |                |                |                 |                 |
| Total value of produce distributed per market (\$) <sup>c</sup>   | 11,695         | 11,695         | 11,695          | 11,695          |
| <b>Net value of each market</b>                                   |                |                |                 |                 |
| Total benefits – costs per market (\$)                            | - 313          | 364            | 1,041           | 3,072           |
| <b>Sensitivity analysis – lower value of produce</b>              |                |                |                 |                 |
| Net value of each market (\$):                                    | -1,482         | -805           | -128            | 1,902           |
| A) 10% lower value of produce distributed (\$10,526 per market)   |                |                |                 |                 |
| B) 25% lower value of produce distributed (\$8,771 per market)    | -3,237         | -2,560         | -1,883          | 148             |

*Notes:*  
 Under the sensitivity analysis, it is assumed that total costs per market remain the same as shown in the top panel. All costs are in AUD.  
 a: costs included labour, produce and other variable costs (e.g. transporting produce). Participant and volunteer costs were excluded.  
 b: cost of produce for all eight markets was based on the average cost of produce supplied at the final three markets in 2017.  
 c: quantity of produce distributed was assumed to equal the quantity of produce supplied. In order to estimate the market value of produce distributed, data on the price of each produce line was collected from a local supermarket (on April 21 2017) and online supermarket (on June 16 2017)



of produce to an average of 135 participants per market (1,083 participants across eight markets) with 3,354 kg of produce distributed with this amount of produce valued at about AUD\$11,695 (if it were purchased at a nearby supermarket in 2017 prices). Using the average number of participants (and assuming all supplied produce is distributed to participants in the program), about 25kg of produce, worth about \$86 was distributed to each participant. As shown in Table 2 column (1), the net value of each market (that is, benefits minus the cost per market) was calculated to be -\$313. It is possible that the value of the produce received by participants may be less (or more) than the average value of the produce supplied at each market. The sensitivity analysis re-estimated the net value under two conservative scenarios: if the average value of produce is 10% lower (\$10,526) or 25% lower (\$8,771) than the estimated value of produce supplied per market. This resulted in an estimated net value of each market of -\$1,482 and \$2,560 respectively. The economic evaluation allowed us to measure whether the value of the fresh produce distributed at the markets at no charge to participants outweighed the operating costs. It revealed that on average, the market operated at a loss. That is, the costs of the program exceeded the value of the produce that was distributed. The net value under three hypothetical scenarios where each participant is charged a fee of \$5, \$10 or \$25 per market were also calculated (see columns 2-4 in Table 2). This reduced the costs to the market operators from \$12,008 (no fee) to \$11,331 with a \$5 fee to \$10,654 with a \$10 fee and to \$8,623 with a \$25 fee. Assuming no change in the total value of produce distributed (\$11,695), all scenarios where a fee is charged resulted in a positive net value for each market. Even in the sensitivity analysis where the value of the produce was assumed to be 25% lower, the cost of operating each market would outweigh the benefits (in terms of the produce distributed) by \$148 if a \$25 were charged per participant.

### Modified program theory

The combined results suggest that food insecure individuals attending a partnership fresh food market program with a fee (from \$5 per participant per market) (CONTEXT), experience improved, yet infrequent access to nutritious food (OUTCOMES) through community connections and support, and

more dignified and viable access to fresh nutritious food (MECHANISMS).

### Discussion

This preliminary realist evaluation is the first of its kind to describe for whom and under what circumstances this alternative model of food relief, improve dignified access to nutritious food for participants. Our findings show a number of positive outcomes were triggered through this fresh produce pop-up market program including improvements in access to nutritious food through community connection for families where there was effective collaboration between engaged project partners. The findings suggest that a 'free' food handout model employed remains disempowering and its overall impact to address regular food access is limited due to its irregular supply of produce. Charging a fee of \$25 (about a third of the value of the produce if purchased at a supermarket), would address dignity and create a more cost-viable program. This assumes similar costs to those of this program can be maintained; most importantly, the supply of donated produce and volunteers. More research is needed to determine the ideal fee, and to understand under what circumstances a fee is not plausible.

Evidence suggests produce quality, or lack thereof, can act as a barrier in other food relief initiatives to individuals and families accessing the service.<sup>10</sup> This reiterates the importance of food relief being fresh and of a high quality to ensure its delivery is meeting the expectations of those it's aiming to reach. The provision of seasonal produce at this program's markets enabled increased exposure to new fruits and vegetables improving diet quality and variety. This program offers a new approach to existing models that have indicated that food relief recipients found lack of choice in food aid to be disrespectful, degrading and inconsistent with their rights as human beings.<sup>9,25</sup> Although market attendees were grateful for the food relief, some aspects of the program remained disempowering, resulting in emotional costs to market attendees. These issues were largely centred around the food handout model employed in this program, resulting in market attendees receiving food free of charge and the infrequent nature of the markets. This handout paradigm was perceived by stakeholders to negatively impact the emotional wellbeing of food aid

recipients. This finding is concurrent with existing literature, illustrating that other food relief programs, which distributed food for free, were also received negatively by recipients, fostering feelings of embarrassment and stigma when accessing this service.<sup>26,27</sup> This ultimately challenges the suitability of programs which provide infrequent produce free of charge to those experiencing food insecurity, potentially rendering this model ineffective. Our study provides evidence for the need to engage end users and communities to have a say in the program's design as critical for success, a well-established theory in public health practice.<sup>28</sup> Future models must consider more viable access to nutritious food to enable better nutrition to be realised.

Our preliminary realist economic evaluation provides the first evidence that a small cost to participants provides an alternative cost model that has the potential to uphold dignity. While evaluations of other dignified food relief models such as a café meals program that provides subsidised meals in mainstream local cafés,<sup>29</sup> show improved food access for marginalised groups, this is the first realist economic evaluation that provides evidence of the costs and benefits. Other alternative models such as the Community Grocer that provides local low-cost, convenient, dignified and nutritious food have been shown to be successful.<sup>13</sup> Given the findings of this study, models of dignified food access must be the future and the cost community members are willing to pay more clearly defined. Further research should explore the feasibility and impacts of participation under fee-paying scenarios with more frequent market offerings. In addition, more objective measures of nutritional outcomes from innovative yet alternative fresh food access models is recommended in future research.

Given the impact of social isolation and loneliness on food insecurity, food relief programs which encompass a social element are becoming more prominent in the literature.<sup>9,30</sup> The notion that those who are food insecure desire assistance beyond food relief is explored in this paper and shared in many other studies.<sup>10,30</sup> The complementary activities in this program were specifically found to assist in fostering social connections for recipients, demonstrating the ability of food relief programs to offer more than just subsistence. Participants appreciated the meaningful social networks that were

shown to be an important resource for improving access to fresh food. This finding has been demonstrated elsewhere in other literature and has led to the development of a foodbank plus model. This approach embodies more than just a food relief component and recognises the need for other complementary services to work together with food provision to alleviate the impact of food insecurity within the community.<sup>9</sup> Additionally, the friendly atmosphere of the markets further increased the programs ability to generate connections.

Whilst this study was ultimately successful in identifying and exploring the economic circumstances in which the outcomes of the program were realised, it was also met with some limitations. An example of this includes the use of sampling methods to recruit study participants in the primary study. This meant that not all stakeholders and market attendees involved in the markets had an equal opportunity to participate in data collection, impacting the transferability of study findings. However, the Photovoice method provided true lived experiences of participants who had engaged in the program providing detailed objective and rich subjective evidence on the value of the program. In addition, the assumptions made in the costing model, including not costing volunteer or participant time and costing donated produce at \$0, with no data collection on food waste may not reflect the full economic costs of the program. No objective measures on diet or nutrition outcomes were collected therefore the impact of the program outcomes are postulated not measured.

## Conclusion

Our findings suggest that food relief programs must evolve to allow those experiencing food insecurity to contribute financially to the food they receive and develop toward being recipient focused, allowing communities to have a say in the program's design and enhance viability.

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