Food Access Pilot Project

Outcomes & implementation: an evaluation conducted by the University of California, San Francisco (June 2020)
Acknowledgments

We would like to thank all of the Food Access Pilot Project stakeholders at The Health Trust, the California Department of Public Health Office of AIDS (CDPH/OA), and in Humboldt, San Joaquin, and Napa Counties who helped make this evaluation possible. We would also like to thank the interviewees who shared their thoughts and perspectives with us as part of this evaluation.

We would also like to acknowledge Hannah Kleiner for her efforts in launching the initial phases of this evaluation, and Aron O’Donnell for his support with qualitative coding.

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Additional funding was provided by the UCSF School of Medicine Dean’s Yearlong Fellowship.

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Suggested Citation:
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## Abbreviation Guide

<table>
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<tr>
<th>Abbreviation</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>aRR</td>
<td>Adjusted relative risk ratio</td>
</tr>
<tr>
<td>ARIES</td>
<td>AIDS Regional Information and Evaluation System</td>
</tr>
<tr>
<td>CDPH/OA</td>
<td>California Department of Public Health Office of AIDS</td>
</tr>
<tr>
<td>FAPP</td>
<td>Food Access Pilot Project</td>
</tr>
<tr>
<td>PLHIV</td>
<td>People living with HIV</td>
</tr>
<tr>
<td>RD</td>
<td>Registered Dietitian</td>
</tr>
<tr>
<td>THT</td>
<td>The Health Trust</td>
</tr>
<tr>
<td>UCSF</td>
<td>University of California, San Francisco</td>
</tr>
<tr>
<td>VL</td>
<td>Viral load</td>
</tr>
</tbody>
</table>
Executive Summary

Background
The Food Access Pilot Project (FAPP) is a food support program that provides personalized, medically appropriate food support to people living with HIV (PLHIV) in three underserved, rural counties in California: Humboldt, Napa, and San Joaquin Counties. It is funded by the California Department of Public Health Office of AIDS (CDPH/OA) via Ryan White dollars, and coordinated remotely by The Health Trust (THT), a non-profit health services agency in Santa Clara County.

In this independent evaluation of the FAPP program by the University of California, San Francisco (UCSF), we assessed for changes in client health outcomes over time, as well as program and process outputs, using a Ryan White client management database. We also interviewed program stakeholders to understand their perceptions of client impact and the benefits and drawbacks of the program model.

Summary of Evaluation Findings

1. FAPP enrollment was associated with improvement in HIV health outcomes.
   • On average, FAPP clients had a 61% increased probability of achieving viral suppression (viral load ≤200 copies/mL), an 18% increased probability of achieving a CD4 count >500, and a 30.9 CD4 cells/mm$^3$ increase in continuous CD4 count, for every 6 months in the program.
   • Amongst clients with data within one year prior to enrollment and any time after enrollment, there was an increase in the proportion of clients who achieved viral suppression (83% to 90%) and CD4 count >500 (54% to 62%).

2. Program stakeholders perceived improvements in client nutrition and health.
   • The most common improvements reported by stakeholders were increased access to nutritious meals, increased knowledge of healthy meals and food preparation skills, decreased stress of food procurement and preparation, and improved energy and motivation amongst clients to manage their health.

3. Program stakeholders perceived many benefits to the FAPP model, which were largely attributed to its utilization of online meal vendor companies.
   • Key benefits included its ability to serve a diverse range of client needs, overcome rural barriers to healthy food access, and support healthy eating behaviors and food preparation skills.

4. Program stakeholders also perceived a range of drawbacks the FAPP model.
   • These included limitations to using online meal vendor companies, such as a limited ability to tailor meals to specific medical conditions, as well as client concerns regarding the delivery model.
Results at a Glance

From January 2017 through March 2019, the Food Access Pilot Project coordinated:

88k meal deliveries and 600+ pantry boxes to 191 clients in 3 counties

2/3 received meal kits
1/3 received prepared meals

Client health outcomes: Trends over time

For every 6 months of FAPP enrollment:

- **Viral Suppression**: 61% increased* probability (*p<0.01)
- **Undetectable viral load**: 19% increased probability (p=0.125)
- **CD4 count >500**: 18% increased* probability (*p<0.001)
- **Continuous CD4 cell count**: 30.9 increase* in cells/mm³ (*p<0.05)

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- [Pg. 35]
- [Pg. 38]
- [Pg. 39]
Results at a Glance

**Client health outcomes:**
**Paired analysis of pre- and post-enrollment data**

Amongst clients with data within 1 year prior to enrollment and any time after enrollment:

<table>
<thead>
<tr>
<th>Health Outcome</th>
<th>Proportion of clients prior to enrollment</th>
<th>Proportion of clients after enrollment</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Viral Suppression</strong></td>
<td>83%</td>
<td>90%</td>
</tr>
<tr>
<td><strong>Undetectable viral load</strong></td>
<td>71%</td>
<td>72%</td>
</tr>
<tr>
<td><strong>CD4 count &gt;500</strong></td>
<td>54%</td>
<td>62%</td>
</tr>
</tbody>
</table>

*Proportion of clients prior to enrollment: Increase*  
*p=0.05*  
*Proportion of clients after enrollment: No change*  
*p=0.84*  
*Proportion of clients after enrollment: Increase*  
*p<0.05*

**Changes in food insecurity level**

- At enrollment: 100% of FAPP clients screened positively* for food insecurity
- At 6 months: 50%** were food insecure
- At 12 months: 38%** were food insecure

*Improving food security over time*  
**p<0.0001**

[Page links: Pg. 36, Pg. 37, Pg. 40, Pg. 41]
**Results at a Glance**

*Perceived client impact (by stakeholders): Summary*

**Food Access Pilot Project**

**Domains of perceived client impact**

**Asterisks indicate most common themes**

**Nutritional**
- **Increased knowledge of healthy meals and food preparation skills** [Pg. 47]
- **Improved access to nutritious meals** [Pg. 49]

**Mental health**
- **Decreased stress of food procurement and preparation** [Pg. 50]
- **Increased social connection and sense of community** [Pg. 51]
- **Increased sense of stability, particularly during times of acute need** [Pg. 53]
- **Maintainence of self-sufficiency and independence** [Pg. 54]

**Behavioral**
- **Improved medication adherence due to availability of food to take with medications** [Pg. 55]
- **Increased healthcare engagement due to client desire to remain enrolled in the FAPP program** [Pg. 56]

**Overall client health**
- **Improved energy and motivation** to manage HIV health and other comorbidities [Pg. 57]
- **Improved physical health**, including HIV health, weight, and symptom management [Pg. 59]
- **Decreased acute healthcare utilization** (e.g. hospitalizations) [Pg. 61]

This schematic draws from the food insecurity and HIV health framework developed Weiser et al 2011¹.
Results at a Glance

Core Features of the FAPP Model

Our stakeholder interviews revealed 5 core features of the FAPP model that reflect fundamental design choices with significant impact on program implementation.

1. Utilization of online meal vendor companies

2. Centralized coordination by a non-profit agency serving multiple counties remotely

3. Oversight of food support and nutrition education by a Registered Dietitian (RD)

4. Partnership with county case managers

5. Ongoing client engagement by the RD and program coordinator
Results at a Glance

*Perceived Benefits & Drawbacks of the FAPP Model*

<table>
<thead>
<tr>
<th>Summary by core feature of the model</th>
</tr>
</thead>
<tbody>
<tr>
<td>Themes are ordered by saliency, and asterisks (**) indicate highly salient themes.</td>
</tr>
</tbody>
</table>

### Core Feature 1:
Utilization of *online meal vendor companies*

#### Perceived Benefits

1. ** Availability of multiple vendor options (meal kit, prepared meal and pantry box) serves a *diverse range of client needs* [Pg. 63]
2. ** Delivery model overcomes *rural barriers* to healthy food access [Pg. 68]
3. ** Delivered meals, particularly meal kits, are an effective educational tool for *healthy eating behaviors* and *food preparation skills* [Pg. 73]
4. Large companies operate at scale, thereby offering *extensive, reliable delivery coverage* and large, *reasonably-priced menu selections* [Pg. 75]

#### Perceived Drawbacks

1. Some online meal vendors have *limited ability to tailor meals to medical conditions* [Pg. 77]
2. Delivery model raised *concerns for some clients*, such as fears about HIV status disclosure [Pg. 78]
3. Online meal vendors are not primarily designed to address *food insecurity amongst vulnerable populations* [Pg. 81]
4. Online meal vendor menus may exhibit *limited cultural diversity and accessibility* [Pg. 82]
5. Clients were *unable to choose their weekly meals* due to limitations in meal vendor infrastructure [Pg. 83]
6. Long-term viability of online meal vendor industry is *uncertain* [Pg. 83]
# Results at a Glance

**Perceived Benefits & Drawbacks of the FAPP Model**

## Core Feature 2: Centralized coordination by a non-profit agency serving multiple counties

<table>
<thead>
<tr>
<th><strong>Perceived Benefits</strong></th>
<th><strong>Perceived Drawbacks</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Program can expand to additional counties without significant additional infrastructure [Pg. 84]</td>
<td>1. Non-profit staff had limited ability to provide information on local food resources in planning for transitions off the program [Pg. 86]</td>
</tr>
<tr>
<td>2. Streamlined infrastructure can serve multiple counties simultaneously, equalizing access to program staff and decreasing costs of administrative overhead [Pg. 85]</td>
<td>2. Remote relationships between non-profit staff and county case managers offered limited opportunities for organic, in-person interactions [Pg. 86]</td>
</tr>
<tr>
<td></td>
<td>3. Some clients incorrectly believed that non-profit staff worked for meal vendor companies [Pg. 87]</td>
</tr>
<tr>
<td></td>
<td>4. Involvement of multiple organizations increased communication complexity [Pg. 88]</td>
</tr>
</tbody>
</table>

## Core Feature 3: Oversight of food support and nutrition education by a Registered Dietitian (RD)

<table>
<thead>
<tr>
<th><strong>Perceived Benefits</strong></th>
<th><strong>Perceived Drawbacks</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>1. RD provided individualized nutrition education and support [Pg. 89]</td>
<td>None perceived by stakeholders</td>
</tr>
<tr>
<td>2. RD oversight ensured that FAPP food was medically appropriate [Pg. 90]</td>
<td></td>
</tr>
<tr>
<td>3. RD involvement enhanced the credibility of program recommendations to clients [Pg. 91]</td>
<td></td>
</tr>
</tbody>
</table>
Results at a Glance

Perceived Benefits & Drawbacks of the FAPP Model

Core Feature 4:
Partnership with county case managers

**Perceived Benefits**
1. Case managers were critical for maintaining client communication [Pg. 92]
2. County case manager involvement facilitated high referral flow [Pg. 93]

**Perceived Drawbacks**
1. None perceived by stakeholders

Core Feature 5:
Ongoing client engagement by the Registered Dietitian and program coordinator

**Perceived Benefits**
1. Program staff were able to adapt the program for clients to best serve their needs [Pg. 94]
2. Regular client follow-up served as a source of social support [Pg. 95]
3. Ongoing engagement allowed clients to reflect upon their experiences and learnings from the program [Pg. 96]

**Perceived Drawbacks**
1. None perceived by stakeholders
Background

Food insecurity amongst people living with HIV

Food insecurity, a state of limited access to nutritionally adequate food, impacts over 10% of adults in the United States and nearly 50% of people living with HIV (PLHIV). Within HIV care, it is associated with negative immunologic and virologic outcomes, increased risk of transmission, decreased antiretroviral therapy (ART) adherence, increased acute care utilization, and increased mortality. In light of this evidence documenting the serious health consequences experienced by food-insecure PLHIV, improving food access for PLHIV has become an increasingly recognized priority in community and healthcare settings.

Provision of medically-appropriate food support

Amongst currently existing food-based interventions, medically-appropriate food support — the provision of food that meets basic nutritional needs and follows medical guidelines for disease prevention and management — has been shown to dually improve food security and HIV-related outcomes. Additionally, there is also growing evidence that meal delivery programs may decrease healthcare expenditure costs. However, most of these interventions have been implemented by centralized non-profit organizations to serve urban areas, thus geographically limiting the population of PLHIV who may benefit, and highlighting the need for food support models that serve PLHIV outside of densely populated, urban areas.

Food Access Pilot Project

The Food Access Pilot Program (FAPP) is an ongoing intervention launched in January 2017 by The Health Trust (THT), a non-profit organization in Santa Clara County, to provide personalized, medically-appropriate food support to PLHIV in 3 underserved, rural counties in California (Humboldt, San Joaquin, and Napa).

Program Overview (schematic on next page)

In this program, case managers from the three counties referred food-insecure, Ryan-White eligible clients from within their case loads to the FAPP program staff at THT. Once enrolled in the program, clients received weekly deliveries of meal kits or prepared meals through commercially-available online meal vendors such as HelloFresh and Freshly. Those with additional need were also eligible for monthly pantry boxes with non-perishable food items, which were coordinated directly by program staff. Moreover, the program closely involved a THT Registered Dietitian, who oversaw the nutritional content of the meals provided and provided nutritional support and education as needed.
Background

Overview of FAPP Program Structure

Non-profit service agency

RURAL PATIENTS WITH HIV

Humboldt, Napa, San Joaquin Counties

County case managers

Online meal delivery vendors

Summary of FAPP enrollment process:
1. County case managers refer food-insecure, Ryan White eligible patients to program staff at The Health Trust (THT), the coordinating non-profit health services agency.
2. THT program staff (program coordinator and Registered Dietitian) reach out to clients to discuss the program and their preferred meal option (e.g. meal kits or prepared meals). Clients are then enrolled into the appropriate online meal delivery vendor service.

Evaluation overview

Our research team at the University of California, San Francisco, was asked to conduct an independent program evaluation of the FAPP for THT and the CA State Office of AIDS. We were interested specifically in assessing for changes in client health outcomes over time, client impact (as perceived by stakeholders), benefits and drawbacks of the program model (as perceived by stakeholders), and program and process outputs. Our approach involved quantitative health outcomes analysis of a statewide client management database, as well as qualitative analysis of key informant interviews with FAPP stakeholders. The main findings from our investigation are summarized in the following pages.
Client demographics

Characteristics at FAPP enrollment, as of March 31, 2019

County distribution

Humboldt 62
Napa 36
San Joaquin 93
Santa Clara (THT)

Gender

- Men: 42%, 23%, 31%
- Women: 57%, 76%, 68%
- Transgender women*: 17%, 81%, 68%

Age

- <25: 42%, 23%, 31%
- 25-34: 57%, 76%, 68%
- 35-44: 81%
- 45-54: 42%
- 55-64: 57%
- 65-74: 81%
- 75+: 68%

*See Technical Appendix for more details on demographic data.
# Client demographics

## Race & ethnicity

*Percentages represent the proportion of clients within each county*

<table>
<thead>
<tr>
<th>Race Category</th>
<th>Humboldt</th>
<th>San Joaquin</th>
<th>Napa</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Non-Hispanic African American</td>
<td>8%</td>
<td>46%</td>
<td>3%</td>
<td>26%</td>
</tr>
<tr>
<td>Hispanic</td>
<td>10%</td>
<td>24%</td>
<td>64%</td>
<td>27%</td>
</tr>
<tr>
<td>Non-Hispanic White</td>
<td>76%</td>
<td>26%</td>
<td>25%</td>
<td>42%</td>
</tr>
<tr>
<td>Asian, Pacific Islander</td>
<td>2%</td>
<td>4%</td>
<td>0%</td>
<td>3%</td>
</tr>
<tr>
<td>Native American, Native Alaskan</td>
<td>5%</td>
<td>0%</td>
<td>3%</td>
<td>2%</td>
</tr>
<tr>
<td>Unknown</td>
<td>0%</td>
<td>0%</td>
<td>6%</td>
<td>1%</td>
</tr>
</tbody>
</table>

## Race & ethnicity, by gender

*Reported for the three largest categories above only*

<table>
<thead>
<tr>
<th>Race Category</th>
<th>Humboldt</th>
<th>San Joaquin</th>
<th>Napa</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Non-Hispanic African American</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>All</td>
<td>8%</td>
<td>46%</td>
<td>3%</td>
<td>26%</td>
</tr>
<tr>
<td>Women*</td>
<td>5%</td>
<td>28%</td>
<td>0%</td>
<td>15%</td>
</tr>
<tr>
<td>Men</td>
<td>3%</td>
<td>18%</td>
<td>3%</td>
<td>11%</td>
</tr>
<tr>
<td>Hispanic</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>All</td>
<td>10%</td>
<td>24%</td>
<td>64%</td>
<td>27%</td>
</tr>
<tr>
<td>Women*</td>
<td>3%</td>
<td>4%</td>
<td>19%</td>
<td>7%</td>
</tr>
<tr>
<td>Men*</td>
<td>7%</td>
<td>20%</td>
<td>45%</td>
<td>20%</td>
</tr>
<tr>
<td>Non-Hispanic White</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>All</td>
<td>76%</td>
<td>26%</td>
<td>25%</td>
<td>42%</td>
</tr>
<tr>
<td>Women*</td>
<td>13%</td>
<td>10%</td>
<td>0%</td>
<td>9%</td>
</tr>
<tr>
<td>Men*</td>
<td>63%</td>
<td>16%</td>
<td>25%</td>
<td>33%</td>
</tr>
</tbody>
</table>

*Transgender women are included in the "Women" category due to small sample size.*

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Client demographics

Marital status†

- Single
- Married
- Domestic partnership or cohabitation
- Divorced, separated or widowed
- Unknown

<table>
<thead>
<tr>
<th>Location</th>
<th>Single</th>
<th>Married</th>
<th>Domestic partnership or cohabitation</th>
<th>Divorced, separated or widowed</th>
<th>Unknown</th>
</tr>
</thead>
<tbody>
<tr>
<td>Humboldt</td>
<td>11%</td>
<td>72%</td>
<td>17%</td>
<td>1%</td>
<td>11%</td>
</tr>
<tr>
<td>San Joaquin</td>
<td>20%</td>
<td>57%</td>
<td>14%</td>
<td>1%</td>
<td>16%</td>
</tr>
<tr>
<td>Napa</td>
<td>14%</td>
<td>67%</td>
<td>16%</td>
<td>1%</td>
<td>11%</td>
</tr>
<tr>
<td>Total</td>
<td>16%</td>
<td>64%</td>
<td>20%</td>
<td>1%</td>
<td>16%</td>
</tr>
</tbody>
</table>

Sexual orientation†

- Heterosexual
- Lesbian, Gay, Bisexual
- Unknown or declined to state

<table>
<thead>
<tr>
<th>Location</th>
<th>Heterosexual</th>
<th>Lesbian, Gay, Bisexual</th>
<th>Unknown or declined to state</th>
</tr>
</thead>
<tbody>
<tr>
<td>Humboldt</td>
<td>50%</td>
<td>47%</td>
<td>3%</td>
</tr>
<tr>
<td>San Joaquin</td>
<td>29%</td>
<td>29%</td>
<td>18%</td>
</tr>
<tr>
<td>Napa</td>
<td>53%</td>
<td>39%</td>
<td>11%</td>
</tr>
<tr>
<td>Total</td>
<td>39%</td>
<td>40%</td>
<td>55%</td>
</tr>
</tbody>
</table>

Education level†

- No high school
- Some high school
- High school diploma/GED
- Some college education
- College degree
- Some graduate education
- Graduate degree
- Trade/technical
- Unknown

<table>
<thead>
<tr>
<th>Education Level</th>
<th>Humboldt</th>
<th>San Joaquin</th>
</tr>
</thead>
<tbody>
<tr>
<td>No high school</td>
<td>2%</td>
<td>4%</td>
</tr>
<tr>
<td>Some high school</td>
<td>18%</td>
<td>29%</td>
</tr>
<tr>
<td>High school diploma/GED</td>
<td>23%</td>
<td>35%</td>
</tr>
<tr>
<td>Some college education</td>
<td>34%</td>
<td>13%</td>
</tr>
<tr>
<td>College degree</td>
<td>10%</td>
<td>3%</td>
</tr>
<tr>
<td>Some graduate education</td>
<td>3%</td>
<td>1%</td>
</tr>
<tr>
<td>Graduate degree</td>
<td>3%</td>
<td>0%</td>
</tr>
<tr>
<td>Trade/technical</td>
<td>2%</td>
<td>3%</td>
</tr>
<tr>
<td>Unknown</td>
<td>10%</td>
<td>11%</td>
</tr>
</tbody>
</table>

n=155; data not available for Napa county.

†These ARIES categories do not specify the date of data collection and/or may not be updated to reflect a client’s life circumstances at enrollment.
Client demographics

Primary language

- English: 95% (Humboldt), 95% (San Joaquin), 61% (Napa), 88% (Total)
- Spanish: 5% (Humboldt), 5% (San Joaquin), 39% (Napa), 12% (Total)

Housing situation†

- Stable*: 77% (Humboldt), 68% (San Joaquin), 61% (Napa), 70% (Total)
- Temporary*: 15% (Humboldt), 25% (San Joaquin), 31% (Napa), 20% (Total)
- Unstable*: 11% (Humboldt), 24% (San Joaquin), 17% (Napa), 15% (Total)
- Unknown: 8% (Humboldt), 8% (San Joaquin), 9% (Napa), 9% (Total)

Average household size†

- 1 person: 8% (Humboldt), 15% (San Joaquin), 14% (Napa), 13% (Total)
- 2 people: 24% (Humboldt), 60% (San Joaquin), 69% (Napa), 69% (Total)
- 3+ people: 81% (Humboldt), 24% (San Joaquin), 17% (Napa), 18% (Total)

†These ARIES categories do not specify the date of data collection and/or may not be updated to reflect a client’s life circumstances at enrollment.

*See Technical Appendix [Pg. 97] for more details on demographic data.
Client demographics

**Income* relative to federal poverty level prior to enrollment†**

<table>
<thead>
<tr>
<th></th>
<th>Under 100%</th>
<th>100-200%</th>
<th>Over 200%</th>
<th>Unknown</th>
</tr>
</thead>
<tbody>
<tr>
<td>Humboldt</td>
<td>58%</td>
<td>35%</td>
<td>6%</td>
<td></td>
</tr>
<tr>
<td>San Joaquin</td>
<td>74%</td>
<td>19%</td>
<td>4%</td>
<td></td>
</tr>
<tr>
<td>Napa</td>
<td>58%</td>
<td>31%</td>
<td>11%</td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>66%</td>
<td>27%</td>
<td>6%</td>
<td></td>
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</tbody>
</table>

The eligibility threshold to qualify for CalFresh (aka food stamps) is 130% of the federal poverty level (FPL). Amongst FAPP clients, 82% of clients fall at or below 130% of FPL (81% of Humboldt clients, 87% of San Joaquin clients, 69% of Napa clients).

**Insurance source prior to enrollment†**

Categories as defined in ARIES*:

- Medicaid
- Medicare
- Medicaid/Medicare
- Private
- AIDS Drug Assistance Program (ADAP)
- No insurance
- Other/Unknown

Due to eligibility criteria for FAPP participation, all clients received services under Ryan White. As Ryan White is a payer of last resort, this indicates that all clients had at least some gaps in their insurance coverage with regard to HIV care.

†These ARIES categories do not specify the date of data collection and/or may not be updated to reflect a client's life circumstances at enrollment.

*See Technical Appendix [Pg. 97] for more details on demographic data.
### Client demographics

**Other sources of social and financial support**

#### Housing support

**Enrollment in Housing Opportunities for Persons with AIDS (HOPWA)**

<table>
<thead>
<tr>
<th></th>
<th>Humboldt</th>
<th>San Joaquin</th>
<th>Napa</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Enrolled prior to FAPP</td>
<td><img src="chart1.png" alt="Bar Chart" /></td>
<td><img src="chart2.png" alt="Bar Chart" /></td>
<td><img src="chart3.png" alt="Bar Chart" /></td>
<td><img src="chart4.png" alt="Bar Chart" /></td>
</tr>
<tr>
<td>Enrolled after FAPP</td>
<td><img src="chart5.png" alt="Bar Chart" /></td>
<td><img src="chart6.png" alt="Bar Chart" /></td>
<td><img src="chart7.png" alt="Bar Chart" /></td>
<td><img src="chart8.png" alt="Bar Chart" /></td>
</tr>
<tr>
<td>Never enrolled</td>
<td><img src="chart9.png" alt="Bar Chart" /></td>
<td><img src="chart10.png" alt="Bar Chart" /></td>
<td><img src="chart11.png" alt="Bar Chart" /></td>
<td><img src="chart12.png" alt="Bar Chart" /></td>
</tr>
<tr>
<td>Humboldt</td>
<td>79%</td>
<td></td>
<td></td>
<td>13%</td>
</tr>
<tr>
<td>San Joaquin</td>
<td>31%</td>
<td>65%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Napa</td>
<td>47%</td>
<td>50%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>50%</td>
<td>7%</td>
<td>43%</td>
<td></td>
</tr>
</tbody>
</table>

\[n=191\]

#### Supplemental Security Income (SSI) & Social Security Disability Insurance (SSDI) status at enrollment†

<table>
<thead>
<tr>
<th></th>
<th>Humboldt</th>
<th>San Joaquin</th>
<th>Napa</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>% receiving SSI</td>
<td><img src="chart13.png" alt="Bar Chart" /></td>
<td><img src="chart14.png" alt="Bar Chart" /></td>
<td><img src="chart15.png" alt="Bar Chart" /></td>
<td><img src="chart16.png" alt="Bar Chart" /></td>
</tr>
<tr>
<td>Humboldt</td>
<td>27%</td>
<td></td>
<td></td>
<td>34%</td>
</tr>
<tr>
<td>San Joaquin</td>
<td>46%</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Napa</td>
<td>11%</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>34%</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

\[n=191\]

#### CalFresh (food stamps) status at enrollment†

**Data available for San Joaquin county only**

<table>
<thead>
<tr>
<th></th>
<th>Humboldt</th>
<th>San Joaquin</th>
<th>Napa</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>% receiving food stamps</td>
<td><img src="chart17.png" alt="Bar Chart" /></td>
<td><img src="chart18.png" alt="Bar Chart" /></td>
<td><img src="chart19.png" alt="Bar Chart" /></td>
<td><img src="chart20.png" alt="Bar Chart" /></td>
</tr>
<tr>
<td>Humboldt</td>
<td>not available</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>San Joaquin</td>
<td>22%</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Napa</td>
<td>not available</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>not available</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

\[n=20\]

Prior to June 2019, SSI recipients were not eligible for CalFresh regardless of whether they qualified according to other criteria. As of June 2019, SSI recipients can now receive CalFresh without reduction in SSI benefits.

†These ARIES categories do not specify the date of data collection and/or may not be updated to reflect a client's life circumstances at enrollment.
Client health characteristics

As reported at FAPP enrollment

Body Mass Index (BMI)
Based on self-reported weight and height at enrollment

<table>
<thead>
<tr>
<th></th>
<th>Humboldt</th>
<th>San Joaquin</th>
<th>Napa</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Underweight</td>
<td>3%</td>
<td>3%</td>
<td>3%</td>
<td>3%</td>
</tr>
<tr>
<td>Normal weight</td>
<td>55%</td>
<td>37%</td>
<td>42%</td>
<td>44%</td>
</tr>
<tr>
<td>Overweight</td>
<td>25%</td>
<td>31%</td>
<td>30%</td>
<td>29%</td>
</tr>
<tr>
<td>Obese</td>
<td>17%</td>
<td>29%</td>
<td>24%</td>
<td>24%</td>
</tr>
<tr>
<td>Unknown</td>
<td>3%</td>
<td>0%</td>
<td>8%</td>
<td>3%</td>
</tr>
</tbody>
</table>

Average BMI by county: Humboldt (25.1), San Joaquin (28.4), Napa (27.6).

Underweight = BMI<18.5, normal weight = BMI between 18.5 and 25, overweight = BMI between 25 and 30, obese = BMI>30.

Nutritional risk level*

<table>
<thead>
<tr>
<th></th>
<th>Humboldt</th>
<th>San Joaquin</th>
<th>Napa</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Low risk</td>
<td>16%</td>
<td>19%</td>
<td>31%</td>
<td>25%</td>
</tr>
<tr>
<td>Moderate risk</td>
<td>63%</td>
<td>68%</td>
<td>50%</td>
<td>55%</td>
</tr>
<tr>
<td>High risk</td>
<td>17%</td>
<td>8%</td>
<td>3%</td>
<td>17%</td>
</tr>
<tr>
<td>Unknown</td>
<td>15%</td>
<td>11%</td>
<td>31%</td>
<td>19%</td>
</tr>
</tbody>
</table>

Special needs†

Data available for San Joaquin county only

Of the 93 clients living in San Joaquin county, over 1 in 5 clients (22 clients) reported a special need.

Mobility was the most common, followed by vision, hearing, speech, and respiratory needs.

†These ARIES categories do not specify the date of data collection and/or may not be updated to reflect a client’s life circumstances at enrollment.

*See Technical Appendix [Pg. 98] for more details about demographic data.

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Client health characteristics

Years on Antiretroviral Therapy (ART)†
Amongst clients with available data (n=136)

<table>
<thead>
<tr>
<th>Percentile (%)</th>
<th>10th</th>
<th>25th</th>
<th>50th</th>
<th>75th</th>
<th>90th</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>1.6 years</td>
<td>4.9 years</td>
<td>9.5 years</td>
<td>13.1 years</td>
<td>15.3 years</td>
</tr>
</tbody>
</table>

50th percentile, by county: San Joaquin (8.8 years), Humboldt (9.3 years), Napa (10.2 years)

Centers for Disease Control (CDC) disease stage†

Categories as defined in ARIES*:
- HIV positive, asymptomatic
- HIV positive, symptomatic, not AIDS
- CDC-defined AIDS
- Disabling AIDS
- Unknown

<table>
<thead>
<tr>
<th>Location</th>
<th>HIV positive, asymptomatic</th>
<th>HIV positive, symptomatic, not AIDS</th>
<th>CDC-defined AIDS</th>
<th>Disabling AIDS</th>
<th>Unknown</th>
</tr>
</thead>
<tbody>
<tr>
<td>Humboldt</td>
<td>16%</td>
<td>5%</td>
<td>69%</td>
<td>3%</td>
<td>6%</td>
</tr>
<tr>
<td>San Joaquin</td>
<td>15%</td>
<td>13%</td>
<td>60%</td>
<td>3%</td>
<td>9%</td>
</tr>
<tr>
<td>Napa</td>
<td>42%</td>
<td>13%</td>
<td>25%</td>
<td>11%</td>
<td>11%</td>
</tr>
<tr>
<td>Total</td>
<td>20%</td>
<td>10%</td>
<td>57%</td>
<td>5%</td>
<td>8%</td>
</tr>
</tbody>
</table>

Increasing severity of HIV/AIDS disease stage

CDC criteria for a person with AIDS includes at least one of the following at any time following their HIV diagnosis: CD4 count <200, CD4 percent <14, or an AIDS Indicator Disease.

Once a client meets any of these criteria, they are always diagnosed as having AIDS regardless of changes in their health. Thus, this ARIES category indicates the most severe HIV/AIDS disease stage a client has reached following diagnosis. It does not capture the client’s disease stage at the time of FAPP enrollment.

†These ARIES categories do not specify the date of data collection and/or may not be updated to reflect a client’s life circumstances at enrollment.
*See Technical Appendix [Pg. 98] for more details about demographic data.
Client health characteristics

Baseline* viral load & CD4 count levels

Proportion of clients who are virally suppressed
Viral suppression is defined as a viral load (VL) at or under 200 copies/mL (VL≤200), which indicates low viral activity and decreased risk of HIV-related illnesses.

Proportion of clients with an undetectable viral load
An undetectable viral load is defined in this report as a viral load (VL) at or under 40 copies/mL (VL≤40). Maintained levels of undetectable load indicate effectively no risk of viral transmission.

Proportion of clients with a CD4 count >500
A CD4 count >500 is defined as a “normal” CD4 count, which is associated with greater immune health.

*The most recent viral load or CD4 count during the 6 months prior to FAPP enrollment.
Program outputs

From January 2017 through March 2019, the FAPP coordinated:

**88k** meal deliveries* and **600+** Amazon pantry boxes to **191** clients in 3 counties

---

**Meal type distribution:**

2/3 received meal kits and 1/3 received prepared meals

- **Meal kits**
- **Prepared meals**
- **Amazon pantry box only**

![Meal type distribution chart]

Note: if a client switched between meal kits and prepared meals, they have been categorized under the meal type they received for a longer period of time.

---

**Amazon pantry box recipients:**

60% received at least one Amazon pantry box, with the majority of recipients residing in Humboldt county

- **Received 1+ Amazon box**
- **Did not receive Amazon box**

![Amazon pantry box recipients chart]

*See Technical Appendix [Pg. 99] for more details.
Process outcomes

Enrollment data from January 2017 through March 2019*  
*FAPP is ongoing as of May 2020.

Total FAPP enrollment

New client enrollment per month, by county

Humboldt | San Joaquin | Napa

Total FAPP enrollment data from January 2017 through March 2019*

*FAPP is ongoing as of May 2020.
Process outcomes

Enrollment data from January 2017 through March 2019

FAPP enrollment duration
Total length of enrollment for clients, excluding periods of disenrollment

<table>
<thead>
<tr>
<th>Months in FAPP</th>
<th>Number of clients</th>
</tr>
</thead>
<tbody>
<tr>
<td>0-6</td>
<td>31</td>
</tr>
<tr>
<td>6-12</td>
<td>38</td>
</tr>
<tr>
<td>12-18</td>
<td>64</td>
</tr>
<tr>
<td>18-24</td>
<td>17</td>
</tr>
<tr>
<td>24-30</td>
<td>41</td>
</tr>
</tbody>
</table>

Note: due to the addition of San Joaquin county in October 2017, San Joaquin clients have a maximum possible enrollment length of 18 months through March 31, 2019.

FAPP program retention

Amongst clients with a possible enrollment length of 12+ (12 or more) months (i.e. clients enrolled prior to March 31, 2018) or 24+ months (i.e. clients enrolled prior to March 31, 2017), the proportions of clients who remained enrolled at each 6 month interval are shown below.

Clients with a possible enrollment duration of 12+ months

Clients with a possible enrollment duration of 24+ months

“All” indicates that a client remained in the program for all months following enrollment.

*FAPP is ongoing as of May 2020.
## Process outcomes

### Active disenrollment from FAPP (n=29)

<table>
<thead>
<tr>
<th>9% of clients experienced life changes that led to disenrollment</th>
</tr>
</thead>
<tbody>
<tr>
<td>18 total clients reported the following:</td>
</tr>
<tr>
<td>• Relocation outside of San Joaquin, Napa, or Humboldt counties (n=11)</td>
</tr>
<tr>
<td>• Inability to continue receiving meals due to unstable or inconsistent housing (n=3)</td>
</tr>
<tr>
<td>• Improved food security &amp; decreased need (n=2)</td>
</tr>
<tr>
<td>• Inability to eat meals due to health deterioration (n=2)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>6% of clients reported program-related issues that led to disenrollment</th>
</tr>
</thead>
<tbody>
<tr>
<td>The majority of these clients (8 of 11) were receiving prepared meals.</td>
</tr>
<tr>
<td>Feedback included:</td>
</tr>
<tr>
<td>• Dislike of food (n=3)</td>
</tr>
<tr>
<td>• Repetition of meals (n=2)</td>
</tr>
<tr>
<td>• Preference for food vouchers to purchase groceries* (n=2)</td>
</tr>
<tr>
<td>• Inability of meals to accommodate specific health needs (n=1)</td>
</tr>
<tr>
<td>• Too much packaging (n=1)</td>
</tr>
<tr>
<td>• Difficulty opening packaging (n=1)</td>
</tr>
<tr>
<td>• Difficulties with deliveries (n=1)</td>
</tr>
</tbody>
</table>

*Note: specific to San Joaquin county, which no longer funds this program*

---

<table>
<thead>
<tr>
<th>Average time to disenrollment:</th>
</tr>
</thead>
<tbody>
<tr>
<td>10 months</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Average time to disenrollment:</th>
</tr>
</thead>
<tbody>
<tr>
<td>6 months</td>
</tr>
</tbody>
</table>

### Other cases of disenrollment (n=30)

- Clients who passed away (n=5)
- Clients who were lost to follow-up (n=9) or disenrolled for unknown reasons (n=6)
- Clients who disenrolled, then re-enrolled (n=10)
Health outcomes: **Overview**

**Methods (Pg. 29)**
- Quantitative data sources
- Assessing for ARIES data completion
- Definitions of outcomes
- Approach to analysis of viral load and CD4 count trends
- Approach to analysis of viral load and CD4 count paired data

**Section I: Results - Viral load (Pg. 34)**
- Trends in achieving 1) viral suppression and 2) an undetectable viral load over time
- Proportion of individuals with 1) viral suppression and 2) an undetectable viral load prior to and after enrollment

**Section II: Results - CD4 count (Pg. 38)**
- Trends in 1) achieving CD4 count >500 and 2) continuous CD4 count over time
- Proportion of individuals achieving CD4 count >500 prior to and after enrollment

**Section III: Nutritional assessment outcomes (Pg. 41)**
- Food insecurity status at baseline, 6 months, and 12 months

**Section IV: Sensitivity analysis (Pg. 42)**
- Viral load and CD4 count trend analysis with county as a covariate

**Section V: Limitations (Pg. 43)**
- Quantitative analysis limitations
Health outcomes: Methods

Quantitative Data Sources

AIDS Regional Information and Evaluation System (ARIES)

The ARIES database is a centralized HIV/AIDS client management system funded by the California Department of Public Health Office of AIDS to help track and coordinate the provision of care for patients living with HIV who are covered by the Ryan White HIV/AIDS Care Act. It is used to track client demographics and to coordinate medical care and other client services provided under Ryan White, such as the Food Access Pilot Project (FAPP). Prior to participating in the program, all clients agreed to release their ARIES data for program and evaluation use as a condition of participating in the FAPP.

ARIES data can be input by clinicians, case managers, and other Ryan White service providers, such as The Health Trust team. During the FAPP, it was used extensively by The Health Trust team and the county case managers to track and document client updates. For this evaluation, The Health Trust team provided the evaluation team with de-identified ARIES data (i.e. no names, birthdates, addresses or phone numbers). The dataset included the following:

- Client demographics
- Viral load results
- CD4 count results

The Health Trust Nutritional Assessment

The Health Trust also administered its own health assessment, which included the following components, uploaded into ARIES:

- Food insecurity status, based on a validated, two-question screening tool
- Nutritional risk level, adapted from the HIV/AIDS tool kit from the Academy of Nutrition and Dietetics
- Body mass index (BMI)*, based on self-reported height and weight

*Please see the Technical Appendix [Pg. 99] for more details.
Health outcomes: Methods

Viral load and CD4 trends over time: our approach

Assessing for ARIES data completion

The ARIES dataset available for this study included 7 years of client data, spanning from 4.5 years prior to enrollment to 2.5 years after enrollment. The highest rate of data completion was seen during a 36 month window from 24 months prior to enrollment to 12 months after, with significant drop-off in data availability outside of this time frame (see graph below). This may be attributable to overall gaps in ARIES data completion, as well as rolling enrollment during the program.

Given these limitations in data availability, we utilized data from the aforementioned 36 month window in our main viral load and CD4 count trend analysis. However, we also included results from our analysis of all available ARIES data as an "alternate analysis," which are presented in the Technical Appendix.

Of note, though many clients were enrolled in the program for longer than 12 months, our viral load and CD4 count trend analysis captures changes by 12 months of enrollment.
Health outcomes: Methods

Viral load and CD4 trends over time: our approach, continued

Outcomes

- **Viral suppression (binary outcome)**, defined as a viral load (VL) at or below 200 copies/mL (VL≤200). Viral suppression suggests low viral activity and decreased risk of HIV-related illness.
- **Undetectable viral load (binary outcome)**, defined as a viral load at or below 40 copies/mL (VL≤40). Individuals who maintain an undetectable viral load and take their HIV medications as prescribed are effectively at no risk of transmitting HIV.
- **CD4 count above 500 cells/mm³ (binary outcome)**. Individuals in this range tend to be at decreased risk for opportunistic infections and other illnesses.
- **CD4 count/mm³ (continuous outcome)**. Generally, higher CD4 counts are a sign of improved immune health and function.

Methods

- **Overview**: We utilized individual-level data from ARIES across 36 months to generate population-averaged trends in the 24 months prior to FAPP enrollment and 12 months after FAPP enrollment.
- **Step 1: Individual-level data processing**
  - Using each client’s enrollment date as their time \( t=0 \), we defined 6-month intervals prior to and after enrollment spanning available data.
  - We then identified the most recent lab result available within each 6-month interval for each of the above outcomes.
  - Due to limitations of data availability in ARIES, not every client has a lab value in every interval.
- **Step 2: Generate population-averaged trends**. Individual client data were pooled together to calculate the following population-averaged trends, both spanning 18 months:
  - **Program trend**: Starting from baseline* and extending through 12 months
  - **Pre-program trend**: Starting at 18 months prior to enrollment up through baseline*

*Because HIV lab monitoring is generally recommended every 3-6 months, we defined our baseline outcomes as the most recent result within the 6 month period preceding FAPP enrollment.

**Data for each time period were included regardless of the individual’s enrollment status during each period (i.e. some clients disenrolled or went on and off the program).
Health outcomes: **Methods**

**Approach to viral load, CD4 count trend analysis**

![Graph showing months relative to FAPP enrollment with pre-program trend, baseline, and program trend.](image)

**Analysis**

**Statistical approach**

- We used **generalized-estimating equations (GEE) regression models** with time (in 6 month intervals) as the explanatory variable, adjusted for age, gender, and race/ethnicity.

- These models result in **odds ratios**, the ratio of the odds of an outcome at time $t$ compared to the odds of an outcome in the previous time period (6 months prior) within the pre-program, or separately, the program trend.
  - An odds ratio of 1 indicates no difference in the odds of an outcome at time $t$ compared to the odds of an outcome in the previous time period. An odds ratio greater than 1 indicates increased odds over time, and an odds ratio less than 1 indicates decreased odds over time.

- **All odds ratios, confidence intervals and p-values were calculated separately for the pre-program and program trends and represent comparisons within the pre-program or program trends. They do not represent a direct comparison between the pre-program and program trends.**

- In this report, **we converted the odds ratios from our GEE regression models into relative risk ratios**, the ratio of the probability of an outcome at time $t$ compared to the probability of an outcome in the previous time period (6 months prior). All relative risk ratios are presented as **adjusted risk ratios (aRR)**, as our trend analyses are adjusted for age, gender, and race/ethnicity.

**Sensitivity analysis**

In addition to age, gender, and race/ethnicity, we added county as a covariate as a variation on our main analysis to determine how controlling for county location affected the program trend results.
Health outcomes: Methods

Analysis of paired viral load and CD4 count data prior to and after FAPP enrollment: our approach

Outcomes
- Viral suppression (binary outcome)
- Undetectable viral load (binary outcome)
- CD4 count >500 cells/mm³ (binary outcome)

Analysis
This analysis aims to compare the proportion of individuals achieving the above clinical outcomes after FAPP enrollment compared to prior to enrollment, amongst individuals with data within 1 year prior to enrollment and anytime after enrollment (“paired data”). The cutoff of 1 year prior to enrollment was utilized in order to capture the data most representative of clients' HIV status at FAPP enrollment.

For each of the above outcomes:
- We identified individuals with data within 1 year prior to enrollment and anytime after FAPP enrollment (viral load: n=106; CD4 count: n=94)
- Amongst this group, we identified each individual's most recent lab value prior to enrollment (e.g. labs taken closest to enrollment, prior to their day of enrollment) and most recent lab value after enrollment (e.g. labs taken farthest from enrollment, after their date of enrollment).
- We then compared the proportion of individuals achieving each outcome prior to and after enrollment.

Statistical approach
- McNemar’s test, which returns a p-value that indicates whether there is a statistically significant difference between paired proportions.
Results: *Viral load*

**Probability of achieving viral suppression over time**

For every 6 months of enrollment in the FAPP program, there was a 61% greater probability of becoming virally suppressed when adjusted for age, gender, and race/ethnicity. Prior to FAPP enrollment, there was no identifiable trend.

*An aRR of 1 indicates no difference in the probability of an outcome between time periods. For more detailed results, please refer to the Technical Appendix [Pg. 103].

Return to: Table of Contents | Results at a Glance
Results: Viral load

Probability of achieving an undetectable viral load over time

There was no identifiable trend in the probability of achieving an undetectable viral load during or preceding the FAPP program.

Proportion of virally suppressed individuals over time

Comparison of adjusted risk ratios (aRR) for pre-program and program trends

For more detailed results, please refer to the Technical Appendix [Pg. 105].
Results: Viral load

Proportion of virally suppressed individuals prior to and after FAPP enrollment

There was an increase in the proportion of virally suppressed individuals post-enrollment compared to pre-enrollment, amongst clients with data both prior to and after enrollment.

Almost all individuals who were virally suppressed prior to enrollment remained suppressed after enrollment. 55% of individuals who were virally unsuppressed prior to enrollment became virally suppressed after enrollment.

Viral suppression: paired analysis

Prior to enrollment:
88 of 106 clients (83%) were virally suppressed.

85 remained suppressed
3 became unsuppressed

After enrollment:
95 of 106 clients (90%) were virally suppressed.

11 of 106 clients (10%) were not virally suppressed.

\( p = 0.05, \text{ McNemar’s test} \)
Results: *Viral load*

Proportion of individuals with an undetectable viral load prior to and after FAPP enrollment

There was no statistically significant change in the proportion of individuals with an undetectable viral load post-enrollment compared to pre-enrollment, amongst clients with data both prior to and after enrollment.

**Undetectable viral load: paired analysis**

<table>
<thead>
<tr>
<th></th>
<th>Undetectable</th>
<th>Became undetectable</th>
<th>Detectable</th>
<th>Became detectable</th>
</tr>
</thead>
</table>

**Prior to enrollment:**

75 of 106 clients (71%) had an undetectable viral load.

- 63 remained undetectable
- 12 became detectable

76 of 106 clients (72%) had an undetectable viral load.

**After enrollment:**

31 of 106 clients (29%) had a detectable viral load.

- 13 became undetectable
- 18 remained detectable

30 of 106 clients (29%) had a detectable viral load.

\[ p=0.84, \text{McNemar’s test} \]
Results: CD4 count

Probability of achieving CD4 count >500 over time

For every 6 months of enrollment in the FAPP program, there was an 18% greater probability of achieving a CD4 count >500 when adjusted for age, gender, and race/ethnicity. Prior to FAPP enrollment, there was no identifiable trend.

Comparison of adjusted risk ratios (aRR) for pre-program and program trends

For more detailed results, please refer to the Technical Appendix [Pg. 107].

Return to: Table of Contents | Results at a Glance
Results: *CD4 count*

**Trends in continuous CD4 count over time**

For every 6 months in the FAPP program, there was a statistically significant increase in CD4 cell count of 30.9 cells/mm³ when adjusted for age, gender, and race/ethnicity. Prior to FAPP enrollment, there was no identifiable trend.

*Comparison of CD4 count increase per 6 month interval in pre-program and program trends*

For more detailed results, please refer to the Technical Appendix [Pg. 109].

*Return to: Table of Contents | Results at a Glance*
Proportion of clients with CD4 count >500 prior to and after enrollment

There was a statistically significant increase in the proportion of individuals with a CD4 count >500 post-enrollment compared to pre-enrollment, amongst clients with data both prior to and after enrollment.

Almost all individuals who had a CD4 count >500 prior to enrollment maintained a high CD4 after enrollment. 19% of individuals with a CD4 count <500 prior to enrollment achieved a CD4 count >500 after enrollment.

CD4 cell count >500 cells/mm³

**Prior to enrollment:**

51 of 94 clients (54%) had a CD4 count >500

50 maintained a CD4 count >500

1 dropped below this threshold

**After enrollment:**

58 of 94 clients (62%) had a CD4 count >500*

8 achieved a CD4 count >500

35 maintained a CD4 count ≤500

43 of 94 clients (46%) had a CD4 count ≤500

36 of 94 clients (38%) had a CD4 count >500*

*p<0.05, McNemar’s test
Results: *Nutritional assessment*

### Food insecurity level

The proportion of clients reporting food insecurity was significantly decreased at 6 and 12 months compared to at enrollment, amongst clients who had data at both enrollment and 6 months, and enrollment and 12 months.

- **At enrollment...**
  - **100%** of FAPP clients screened positively* for food insecurity

- **At 6 months...**
  - **50%** were food insecure

- **At 12 months...**
  - **38%** were food insecure

---

*See Technical Appendix [Pg. 99] for details regarding the food insecurity screening tool.

**p<0.0001, McNemar's paired analysis comparing food insecurity at enrollment to 6 months (n=104), and separately at enrollment to 12 months (n=62).
### Results: Sensitivity analysis

**Program trend analysis of viral load and CD4 count, with county included as a covariate**

The inclusion of county as a covariate in our program trend analysis did not affect the results seen in the main analysis, suggesting that trends within any one individual county were not driving the overall results.

#### Program trend: comparison of adjusted risk ratios

<table>
<thead>
<tr>
<th>Outcome</th>
<th>Main analysis</th>
<th>Sensitivity analysis</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>aRR</td>
<td>p-value</td>
</tr>
<tr>
<td>Probability of viral suppression</td>
<td>1.61</td>
<td>0.003</td>
</tr>
<tr>
<td>Probability of undetectable viral load</td>
<td>1.19</td>
<td>0.125</td>
</tr>
<tr>
<td>Probability of CD4 count &gt;500</td>
<td>1.19</td>
<td>0.001</td>
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</tbody>
</table>

#### Program trend: comparison of coefficients

<table>
<thead>
<tr>
<th>Outcome</th>
<th>Coeff.</th>
<th>p-value</th>
<th>Coeff.</th>
<th>p-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Continuous CD4 count</td>
<td>30.9</td>
<td>0.013</td>
<td>32.2</td>
<td>0.010</td>
</tr>
</tbody>
</table>

All results with a p-value <0.05 are bolded.
Health outcomes: Limitations

Quantitative analysis limitations

This evaluation of the The Food Access Pilot Project was conducted after the program had been in place for over two years. Therefore, there are a number of limitations to our analysis related to the real-world nature of the program and the limited resources and time-frame to conduct the evaluation. Our results should be interpreted in light of these limitations.

Lack of a control group

Our evaluation utilizes data on health outcomes before and after FAPP enrollment to investigate whether there is a trend in improvement in the program period. While we observed improvements in both viral load and CD4 count outcomes, it is possible that these were due to other factors rather than participation in the FAPP. Without a comparable control group, we cannot rule out that the trends we observed are due to external factors, such as ongoing, statewide “Getting to Zero” efforts to decrease HIV transmissions and eliminate HIV-related deaths, or other local efforts to improve the care of people living with HIV in Humboldt, San Joaquin, and Napa counties.

Incomplete and irregularly spaced data on HIV clinical outcomes

Our quantitative analysis is limited by a high degree of missing data on viral load and CD4 count in the ARIES database. We found that only ~50% of clients had at least one viral load or CD4 count available both prior to and after FAPP enrollment. Data on clinical outcomes are also spaced irregularly, as these are real-world clinical data being entered by providers during health care visits. Additionally, if patterns of missing data are related to patterns of change in viral load and CD4 count data, this would lead to bias in our results (for example, if the people with more missing data are also the people with worsening health outcomes).

To account for the irregular and sparse data structure, we constructed 6-month time waves to maximize the chance that at least one data point would be available in each wave, and conducted a time-restricted analysis spanning the 18 months before and after baseline when the most data were available.
Health outcomes: *Limitations*

**Limited outcomes data**
We did not have access to a number of potentially meaningful outcomes through ARIES, such as diet-sensitive metrics (e.g. blood pressure readings, diabetes indicators such as HbA1C, lipid panel results) and healthcare utilization data (e.g. inpatient hospitalizations and emergency department visits). These outcomes may be of interest in future studies to further our understanding of the health impact of this food support model.

**Limits to generalizability**
This program evaluation was conducted for three rural counties that each have distinct demographic profiles and different geographic and economic contexts. Thus, these results may be limited in their generalizability to other settings, including other rural counties in California, urban settings in California, or rural settings outside of California.

**Analysis does not establish causal impact**
This evaluation was not designed to test the causal impact of the FAPP program and cannot be construed as direct evidence of impact. The results suggest a positive trend in improving HIV outcomes over the course of the program. Whether these indicate actual impacts of the program or changes due to external trends should be tested using a more rigorous design such as a randomized trial or quasi-experimental methods for impact evaluation.
Qualitative analysis: Overview

Methods (Pg. 46)
- Approach to stakeholder interviews and qualitative analysis

Perceived Client Impact (Pg. 47)
- In-depth findings by domain

Benefits & Drawbacks of the FAPP Model (Pg. 62)
- In-depth findings by core feature of the FAPP model
Qualitative analysis: Methods

Stakeholder interviews: our approach

Stakeholders (n=17)

- FAPP program staff, including current and former The Health Trust (THT) leadership and implementation staff (n=6)
- Case managers and other state/county public health staff (n=9)
- HelloFresh team members (n=2)

Interview process

- We created an interview guide that included topics such as perceived client impact, barriers and facilitators to implementation, and potential sustainability and scalability of the program.
- Qualitative, in-depth, semi-structured interviews were conducted with individual stakeholders in-person or via phone/video call for approximately 60 minutes.
- All interviews were recorded, transcribed, and verified for accuracy.

Analysis

- We developed a codebook, a compilation of key initial domains of interest based on a priori topics from the interview guide and updated with emerging domains of interest arising from the data.
- All stakeholder interviews were coded using this codebook, a process of identifying key ideas present within the interview excerpts. A subset of interviews were double-coded for reliability.
- All coded excerpts were then analyzed for patterns to identify key themes. Team discussions throughout the coding process helped to build team consensus of key themes arising from stakeholder perspectives.
**Perceived Client Impact**

**In-depth findings, by domain**

**Domain: Nutritional changes**

**Increased knowledge of healthy meals and food preparation skills**

Stakeholders reported that many clients gained exposure to new recipes for healthy, affordable meals, and were more mindful of their dietary habits and food choices.

- **Increased exposure to recipes for healthy, affordable meals**

  "Having a program where foods are delivered every week, whether that be healthy meals that they get to prepare themselves, or having the dinners already prepared for them, has been really life-changing for a lot of folks. We have noticed some health changes in individuals because it does give them a mindset of, 'oh! I can afford to make these foods. I would never put these things together.'"

  — County case manager (San Joaquin)

  "Folks [have said], 'I had this meal and it had this [ingredient] in it...I can go find this and add it to something and maybe add my own little spin to it.' [They] are getting inspired to try different things.

  Again, they initially wouldn't have tried if they didn't know about it. They were like, 'I didn't know how to cook that, so I never used it. Thanks to this [program], I know I can cook it this way and try it out.'"

  — County case manager (San Joaquin)

  "A lot of our clients previous to the Food Access Project...were making do with a lot of processed stuff that was easy to create and not really expanding into healthier options where they had to put the work into cooking themselves. And a lot of them didn't really necessarily know how to budget to stretch their food dollars. So I think that, especially [for] the people that are getting [the meal kits] as opposed to [the prepared meals], they have really enjoyed taking a look at what they're eating and learning how to fix new meals that taste good."

  — County case manager (San Joaquin)
** Perceived Client Impact **

*Domain: Nutritional changes, continued*

** Increased knowledge of healthy meals and food preparation skills, continued **

- Increased knowledge of foods appropriate for clients' health conditions

  "It's taught them how to make proper choices when it comes to food. You know, food that's going to help them. Let's say they can't keep anything down. They're able to speak to someone and a plan is able to be put together that will actually help them with some of the problems that they're having."

  — County case manager (San Joaquin)

- Improvement in clients' food preparation skills

  "[A client has talked] about how fresh the food is [and] how the recipe cards were very easy to follow and had taught him how to cook. He still...keeps those and then he refers to them. He [talked] about how delicious the meals were and how healthy they were and so it has made him think about what he's eating and just...be healthier."

  — FAPP program staff

  "[A] barrier to good eating for [one client] was that he wasn't really much of a cook. Now because the [meal kits] come with...little nice ingredients and instructions on how to prepare them, he's also expanded his food preparation skills."

  — County case manager (Humboldt)
Perceived Client Impact

Domain: Nutritional changes, continued

** Improved access to nutritious meals

According to stakeholders, clients often struggled to access healthy, nutritious food prior to the program, leading to missed meals and reliance on cheap, processed foods. The FAPP program provided healthy meals on a consistent basis, leading to improvements in the overall level of nutrition clients were able to obtain.

• Consistent access to nutritious meals

  "Well, [a client of mine] is able to...cook things that he likes without having to worry about running out of money for food — **he can have nutritious meals all through the month now.** Most people just get paid one time per month, and then even if they get CalFresh benefits, they're more than likely going to run out of those, too...especially if you like to cook...nutritious meals."

  — County case manager (Humboldt)

  "You know, there are some folks that were calling me quite frequently that weren't able to have meals....**I barely hear from them because they are able to have the foods now.** And they are able to balance their money out in a way where it's not so detrimental. They're not having to hit up the Dollar Store to try to make food stretch for the time being. So it's really been almost life-saving for a lot of folks."

  — County case manager (San Joaquin)

  "Clients [have said] they're eating more regularly throughout the day and across multiple days...Before they'd eat one meal a day because that's all they could scrounge up or afford, but **now they're eating like two or three meals a day...and they're having the healthier snacks to help keep their weight in check.**"

  — FAPP program staff

  "A lot of people...just [got] the [nutrition] shakes [prior to this program]...it was Ensure. That was all that people were drinking...That was their meals. **With this program, it gives them another alternative.**"

  — FAPP program staff

Return to: Table of Contents | Results at a Glance
Perceived Client Impact

**Domain: Mental health changes**

* **Decreased stress of food procurement and preparation**

Stakeholders reported that the program helped to alleviate stressors related to procuring and preparing healthy, nutritious food, resulting in a greater ability for clients to manage other aspects of their lives, as well as restored relationships with food and meal preparation.

- **Decreased stress around experiences of food insecurity**

  *“By them having access to food on an ongoing basis, it fuels their health by them not having to worry how to cook it, to go buy it, who’s going to get it for them. A lot of people don’t have family. A lot of people don’t have anyone they can depend on.”*  
  — County case manager (San Joaquin)

- **Decreased overall levels of stress (downstream impact)**

  *“I can think of one client to [who] is less stressed about making his appointments because he did mention that having a food delivery has cut down on his trips to town and it just overall easier on him to get, you know, to keep a life together.”*  
  — County case manager (Humboldt)

- **Restored relationships with food preparation**

  *“There’s one client who...had a lot of trauma around being in a kitchen with food. She’d had housemates who would take her food or get into arguments about food, and the kitchen had just become this very triggering, stressful [place]....Just thinking about food, preparing food was [something] she avoided because it was so stressful for her.

  She started getting the [meal kits] from us and we also did the [pantry] boxes for her and....it just made this huge change for her. It turned food from this difficult traumatic thing into, you know, she’s saying, ‘Oh I like to eat now, I’m looking forward to eating, I like preparing food, I’m learning how to be in the kitchen.’”*  
  — FAPP program staff

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Return to: Table of Contents | Results at a Glance
Perceived Client Impact

Domain: Mental health changes, continued

** Increased social connection and sense of community

According to stakeholders, the program created opportunities for social connection and community building amongst clients and their families.

- Food as a means of creating shared experiences and building community

  "In transitional housing, we can have [on] any given day anywhere between six to ten people. Because they all live in the same house, they all get their boxes there and eat meals together, and everybody puts in...some food and...they cook it together and they sit down and they eat together. So it's more like family style. We have one particular client [who] motivates everybody. So they have index cards [where] they put in their suggestions and then they come together. It's really awesome to see them. And with the food, I mean they really have fun with it...."

  The type of clients that we see, some may not have anybody. They have...just the [people in the house]. And so it makes it really nice — that unity, that moment, you know, and food does bring people together, so it's perfect...They cook together every day. They sit down every day. So they actually make their food last a little bit longer because everybody is putting in something and is contributing something or making something in particular. So it's awesome. It really is."

  — County case manager (San Joaquin)

  "I had a client who...she's not a citizen, she's married to a citizen. She speaks very little English and he doesn't speak any Spanish. So, she was telling me about when she started getting the [meal kits] meals with the recipes that it was bringing her and her husband closer because they would cook together. He would take the recipes out and he would have her read them, and so he was teaching her English as they were cooking. I thought that was just heartwarming when she told me that story."

  — County case manager (Humboldt)
Perceived Client Impact

Domain: Mental health changes, continued

** Increased social connection and sense of community, continued

- Increased opportunities for social engagement

  "[The FAPP food] gives [the clients] something to look forward to, even...just the little exchanges with the drivers that bring the food....I've had maybe 10 people where they actually have a consistency of the same driver. It's almost like a little friendly exchange with your mailman or whatever....It gives them that anticipated...human contact...to talk with somebody."

  — County case manager (San Joaquin)

- Program staff as a source of social support for clients

  "I've heard that [the clients] feel like they have someone that's watching out for them, someone supporting them where maybe they didn't have that before. So there's definitely a social aspect to it as well. I don't know if that was really planned when the project was planned but, it's definitely a huge part of it too."

  — FAPP program staff
Perceived Client Impact

Domain: Mental health changes, continued

Increased sense of stability, particularly during times of acute need

FAPP participation was cited as an important component of client stabilization, particularly amongst those who we were unstably or marginally housed. According to stakeholders, the FAPP meals served as a “starter” that enabled clients to “build up” their lives during periods of instability.

- FAPP program as a "starter" for clients experiencing acute instability

  "In the hospital a lot of times by the time I meet [some of my clients], practically I’ve really lost them, everything. And that’s where this program comes in. It’s been an amazing program. [For] a lot of our clients it’s really been the only food they’ve had or it helped them start from nothing, from zero, where they’re able to build up....

  They don’t have any money, they don’t have any benefits, but yet they have this meal coming in. It’s a starter. It’s something that helps them, you know, until we do get benefits in place.”

  — County case manager (San Joaquin)

  "We had recently a client who lost his housing and so wasn’t able to receive any food because he was just sleeping outside, and he got really bad really quick. He was not thinking well, not hydrating enough. He would come here and we would give him stuff from the Amazon boxes that we have here.

  But once we were able to put him in a motel, it was two days later and it was like he was a new person. I mean he was able to get some food, get some sleep. It’s just so important to some of our clients who are kind of fragile medically and mentally, you know, it just makes such a huge difference when they have a decent meal and a place to lay their head.”

  — County case manager (Humboldt)
Perceived Client Impact

Domain: Mental health changes, continued

- **Increased sense of stability**, particularly during times of acute need, continued

  - **Cooking as a means of regaining stability**
    
    Quite a few of our clients have been homeless and are trying to stabilize and... they’ve said...a big part of that is learning how to cook more. [Cooking] healthier foods has really helped them in the kind of the emotional, psychological part of that because they feel it’s **another part of their life they feel in more control of**, which has been really, really great to hear.”

    — FAPP program staff

- Maintenance of **self-sufficiency** and **independence**

  For clients who were unable to cook their own meals, the prepared meals provided an avenue for clients to continue eating and living independently.

  “I have a young man who is on dialysis. He originally was getting food that he would cook because he loves to cook, but as his health has declined it's left him not able to cook. So then what they did is they switched it to microwave. **Well, people might not realize this, but they just made someone very happy because they empowered him in another way. He had challenges with his health, but the program empowered him to continue to be able to eat and to do for himself.**”

    — County case manager (San Joaquin)
Perceived Client Impact

*Domain: Behavioral changes*

**Improved medication adherence** due to availability of food to take with medications

The FAPP program provided clients with food to take with their medications, improving medication adherence and decreasing side effects associated with taking medications on an empty stomach.

- **Availability of food to take with medications**

  “A lot of our clients, when they were introduced into the program, were really declining in their health and a lot of it had to do with nutrition. They weren’t eating well. They weren’t taking care of themselves. With the food...it...has helped them or encouraged them for the regimen to take their medications. Now they have a meal to take the medication with.”

  — County case manager (San Joaquin)

  “We’ve had specific clients who received the pantry boxes [who] will have granola bars or something and they’ll say, ‘Oh you know, those are so helpful to have in the morning when I don’t want to eat breakfast, but I have to take my meds with some food.’...There’s some science behind that that says...you need to take this medication with food because that helps them absorb better, so it’s going to be more effective if you eat it with food.”

  — FAPP program staff

- **Decreased side effects of medications**

  “I had one particular client who...I’d like to think the food has helped him get healthier, because it’s definitely helped him to take his meds. He’s like, ‘Now my stomach doesn’t hurt because I can take the medication with my meals.’ And it’s helped me to do a lot of other things. So it helped him get to an undetectable status...He wasn’t real high, but he was definitely getting sick. Definitely a recovery story.”

  — County case manager (San Joaquin)
Perceived Client Impact

Domain: Behavioral changes, continued

Some stakeholders discussed that the program served as an incentive for clients to remain engaged with their healthcare visits, both amongst clients who were already in the program who wanted to remain enrolled, as well as people who heard about the program from peers and were interested in enrolling.

“We’ve heard from the case managers that since we’ve had this program, some of their clients have been more engaged. So they’re coming in more because they know that if they just drop off, then they’re going to get dropped from the program….It’s been a good incentive for them, I think, to get clients to come in more.”

— FAPP program staff

“Even though Stockton where we live is growing, it’s still a small community in so many ways. So everybody knows, if somebody’s got a box, somebody else’s going to want a box, and they’re going to want to know how they got it, where did they get it from? So we may have not seen people for a year, two years, maybe even three years, but all of a sudden they’ve heard that there’s a box with food in it. So yes, definitely a motivator for people to seek out services. Incentives are very important. They really do play a large part in motivating people to go to the doctor, to stay connected, and this is a big part of that.”

— County case manager (San Joaquin)
Perceived Client Impact

**Domain: Changes in overall client health**

**Improved energy and motivation** to manage HIV health and other comorbidities

Stakeholders reported that some clients experienced a greater sense of energy, motivation and clarity to manage their lives and their health, resulting in changes such as an increased ability to attend to their healthcare appointments, to take medications as prescribed, and to pursue healthy habits related to their diet and their overall health.

- **Clarity and motivation to manage health and engage with daily activities**

  I think overall I'm noticing... something that's a common turn from pretty much everybody that's on the program, is they have this clarity. I don't know if it's just the simple fact that they're actually eating and they're just like 'I actually have these meals that are prepared. I don't have to worry about this.' It is the medication adherence, and it's not just for HIV. It's like having that time to be like, 'Okay, I've eaten, so I can take my blood pressure medication. I've taken all of my meds that I need for the day.'

  — County case manager (San Joaquin)

  So I had one in particular client who, honestly, when he came to the program, he was really quite unhealthy....I'm thinking a part of that had to do with he didn't really have the energy. He wasn't getting the proper vitamins and nutrients that he needed to even get up and do what he needs to do. He's someone who still kind of struggles with just getting himself together.

  But...the food will bring him back to do all the things that he needs to do. [It's] given him a lot of energy to get back, to get out of the house and travel. I think that has to do a lot with he isn't having to cook the meals. He isn't having to struggle, basically. He's one of those folks that gets the [prepared] meals delivered to him. And so he's like, 'That helps. I don't have to do a lot of work....I don't have to worry about that so much anymore.'

  — County case manager (San Joaquin)
Perceived Client Impact

**Improved energy and motivation** to manage HIV health and other comorbidities, continued

- Clarity and motivation to manage health and engage with daily activities, cont.

  “They have energy to go do things. A lot of people just sit in the house and they don't really become active. [Now] they're like, 'I'm going to get out and do some different things.' There's just a change in energy. Just a lot of folks overall have stepped up and stepped out a lot more. They're trying to...I think it's just a matter of they're trying. They're not just sitting at home and eating, in a sense.”
  — County case manager (San Joaquin)

  “[The food] also is very educational because of the portions and because of what's presented. For some people they've never had...this kind of food. So it's empowered people in educating themselves more in their nutrition and their medical, their mental, and in any other health status that they may have.”
  — County case manager (San Joaquin)

- Motivation to pursue healthy habits outside of food and nutrition

  “[One] client...was talking about how he’s on this program to eat healthier and be mindful about what he’s eating, so he's [also] thinking about changing his behavior by quitting smoking. I never got to follow-up as to how long he managed to quit smoking, but just the fact that he realized that smoking was bad for him and he needed to make this change — I think that's huge....

  I think it was not just that one client, but there were several others who were talking about how they either wanted to put on weight or lose weight. Whatever their goal was they were kind of inspired almost to participate in this.”
  — FAPP program staff

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Perceived Client Impact

Domain: Changes in overall client health, continued

Improved physical health, including HIV health, weight and symptom management

County case managers and program staff reported the following improvements in physical health:

- **Measures of HIV health and diet-sensitive comorbidities**

  "We've had clients report to us that they have gotten their blood work back and things are looking better. Their cholesterol is lower or their viral load...maybe was detectable before and now it's undetectable, their CD4 has gone up, a lot of things like that."

  — FAPP program staff

  "I've had people say that they've had improvements in blood sugar or like digestive symptoms or things like that...just based on not eating the processed kind of foods or the cheap food. There's one person...[who's] still quite a bit overweight but has made some progress. She definitely told me her blood sugar, her A1c - they show [improvement] - and she's one who actually is pretty involved in her own care and knows what the numbers should be and what they are."

  — FAPP program staff

- **Weight management**

  "So I've had clients that have gone from really starting the wasting process to actually now they're healthy — they're strong. Their weight is back, their health is stronger."

  — County case manager (San Joaquin)

  "We've seen a lot of improvements in the clients' weights, and so it's either they came in underweight and now they're at a healthy weight, or they came in overweight and now they're at a healthy weight....And then we've also had clients who will call in to check in and say, 'Oh yeah I just, I went to my doctor and they're really happy with my weight... I put on as much as they wanted me to, or I lost as much as they wanted me to."

  — FAPP program staff
Perceived Client Impact

*Domain: Changes in overall client health, continued*

**Improved physical health**, including HIV health, weight and symptom management, *continued*

- **Symptom management**

  “I have seen several of my clients go from being, you know, bad — barely getting up, [to] being able to put the meal in the microwave to regain their strength slowly. And I do believe it’s the food that helped that because if they didn’t have that proper nutrition, then they would continue to be weak, and they would really, I believe, decline.”

  — County case manager (San Joaquin)

  “I have a client who...gets the [prepared meals]....He has had some cognitive issues. And pretty severe. I was having to go over and check on him because he would forget to eat....

  His weight is stabilized. And he actually does better cognitively because he always would go downhill when he wasn’t eating or getting enough fluids. So he does better physically and cognitively now that he’s getting enough food and enough fluids and somebody to check on him regularly.”

  — County case manager (Humboldt)
Perceived Client Impact

Domain: Changes in overall client health, continued

**Decreased acute care utilization** (e.g. hospitalizations)

Case managers in San Joaquin county noticed a decrease in hospitalizations amongst their clients enrolled in FAPP.

> “We do have folks who are diabetic and they have heart issues and all these different conditions... *When I do think about it, the folks who are on the program aren't experiencing those rebound visits to the hospital.*"

— County case manager (San Joaquin)

> “Well, I can tell you that [amongst] the clients that I have, *their hospital visits have been less because everything - it's like a domino effect. It starts here, but then it affects something else and it affects something else in a positive way.*"

— County case manager (San Joaquin)
Our stakeholder interviews revealed five core features of the FAPP model that reflect fundamental design choices with significant impact on program implementation.

1. Utilization of **online meal vendor companies**

2. **Centralized** coordination by a **non-profit agency** serving multiple counties

3. Oversight of food support and nutrition education by a **Registered Dietitian (RD)**

4. **Partnership with county case managers**

5. **Ongoing client engagement** by the RD and program coordinator
Benefits & Drawbacks of the FAPP Model

In-depth findings, by core feature of the model

Core Feature 1: Utilization of online meal vendor companies

Perceived Benefits

For summary, see Results at a Glance [Pg. 10]

1. **Availability of multiple vendor options (meal kit, prepared meal and pantry box) serves a diverse range of client needs**

The diversity of meal vendor products available on the market allowed the program to serve clients with a large range of client life circumstances, needs and preferences, shown in the schematic below.

(Note: Clients were given a choice between meal kits and prepared meals during enrollment. Pantry boxes were an alternative option in case of limited kitchen access, and were a supplemental food source for those with additional need).

Limited kitchen access, due to unstable, marginal, or shared housing? Yes

No

Specific client needs?

- Need for ready-made meals due to lack of equipment to prepare meals, having a disability that limits food preparation ability, or time constraints
- Stricter adherence to a specific diet
- Closer monitoring of dietary intake

Yes

No

Specific client preferences?

- Meal preparation at home
- Instructional guidance on healthy meals preparation
- More opportunities to customize meals
- Reduced work of meal preparation

Yes

Pantry boxes

Prepared meals

Meal kits

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Benefits & Drawbacks of the FAPP Model

Core Feature 1: Utilization of online meal vendor companies

Perceived Benefits, continued

1. **Availability of multiple vendor options (meal kit, prepared meal and pantry box) serves a diverse range of client needs, continued**

County case managers shared many client stories illustrating how the different food options in the program were able to fit client needs.

**Meal kits**

- Allowed for greater customization of meals to client preferences

  "I think it came as a bit of a surprise that a lot of people chose to do the meal kits instead of the [prepared meals]. There was an idea that a lot of the people were just too ill to really do the cooking, but a lot of them wanted a little bit more freedom....to be able to change things around and make it their way."

  — FAPP program staff

  "I know certain cultural individuals...go for the [meal kit] boxes because they can add their own spin to a recipe. A lot of our Hispanic and our Asian families – those are the folks that are like, ‘I can add my own spices and things to it.’ They’re like, culturally it works for them [because] some of [the meals they] wouldn’t normally eat."

  — County case manager (San Joaquin)

- Reduced the physical work of meal preparation

  "One guy in particular, he didn’t really cook for himself. He liked cooking – he was actually a cook in the Army – but as he got older, he just was like, I didn’t really have the time, and I didn’t think about it.

  But he started getting the [meal kits] and he was like, I forgot how much I like and enjoy cooking. He’s like, it’s nice to have things already pre-chopped and cut for myself. [For] a lot of folks, it’s having to deal with their hands. Our older individuals, they find it difficult to sit and chop things anymore."

  — County case manager (San Joaquin)
Benefits & Drawbacks of the FAPP Model

Core Feature 1: Utilization of online meal vendor companies

Perceived Benefits, continued

1. **Availability of multiple vendor options (meal kit, prepared meal and pantry box) serves a diverse range of client needs, continued**

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**Meal kits, continued**

- Increased the convenience of cooking at home

  > *Families are really liking that they can come home and have everything they need...to just make the meal. Even some of our single people are saying, “It’s so hard to cook for one person,” [and receiving the meal kits] with [all the ingredients and recipes] laid out has been super helpful and convenient for them."

  — County case manager (Humboldt)

**Prepared meals**

- Ensured nutritious food access for clients who could not prepare their own meals

  > *Several of our clients have very poor health where actually the wasting has began and taken place. [They’re] not able to really go out and shop, and not able to put the meal together because they’re not very strong, [but] they’re able to put the meal in the microwave.*

  *By them having access to food on an ongoing basis, it fuels their health by them not having to worry how to cook it, to go buy it, who’s going to get it for them. A lot of people don’t have family. A lot of people don’t have anyone they can depend on. So this program has - it’s really been a great rescue really, because...it comes in, they can have it microwaveable and it helps."

  — County case manager (San Joaquin)
Benefits & Drawbacks of the FAPP Model

Core Feature 1: Utilization of online meal vendor companies

Perceived Benefits, continued

1. ** Availability of multiple vendor options (meal kit, prepared meal and pantry box) serves a diverse range of client needs, continued

Prepared meals, continued

- Allowed case managers to closely monitor client food intake

  “I have a client in Arcata who...I was having to go over and check on him because he would forget to eat. I would say, have you eaten today? And he would always say yes, whether he had or not because of his memory issues.

  [With the prepared meals] delivered to him, I would just go over and I would count his meals. I was able to just look in his fridge and see how many meals he had left, and then I would know. [I would tell him], “You need to have something to eat now. Just take this out and eat it now, because it doesn’t look like you ate your meal today.”

  — County case manager (Humboldt)

Pantry boxes

- Maintained food access for clients with unstable or marginal housing

  “We have clients that don’t have a place to live. They live under the bridge and out in the street, but they don’t go unserved because they...[are] able to come here to our [county office] and pick [up their pantry boxes]... which is all...food that they’re able to eat [without] a stove. [The pantry boxes]...fit their needs, the environment that they are in.”

  — County case manager (San Joaquin)
Benefits & Drawbacks of the FAPP Model

Core Feature 1: Utilization of online meal vendor companies

Perceived Benefits, continued

1. **Availability of multiple vendor options (meal kit, prepared meal and pantry box)**

serves a diverse range of client needs, continued

---

**Pantry boxes, continued**
- Increased access to high quality non-perishables

> Whenever they ask for cooking oil or something, they really like the quality of the cooking oil that they get. It’s something that they would never be able to choose if they were to buy it....It’s just kind of the expensive type that they wouldn’t be able to get on their own, probably because it’s more healthy. It’s olive oil rather than just the cheap veggie oil that they get. So yeah, I think it’s really helping people to use better quality food items when they’re preparing their food.”

— County case manager (Humboldt)

> Because of [the reasons] I mentioned (transportation [barriers], [reliance on inconsistent] alternative power sources), non-perishables are a good way to go around here. Fresh food is important, don’t get me wrong, but non-perishable staples are really important in our area because they’re expensive. [It’s] hard to get to the store to get them, and sometimes you don’t have a lot of storage space for perishables.”

— County case manager (Humboldt)
Benefits & Drawbacks of the FAPP Model

Core Feature 1: Utilization of online meal vendor companies

Perceived Benefits, continued

2. ** Delivery model overcomes rural barriers to healthy food access

Overall, stakeholders reported the FAPP’s delivery-based model was able to overcome the following rural barriers to healthy food access, many of which were particularly notable in Humboldt county.

### Summary: Rural food access barriers & FAPP impact

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Benefits & Drawbacks of the FAPP Model

Core Feature 1: Utilization of online meal vendor companies

Perceived Benefits, continued

2. ** Delivery model overcomes rural barriers to healthy food access, continued

Case managers described barriers to food access existing in their individual counties, and the ways in which the program was able to address these barriers.

Humboldt county

• Inadequate access to healthy, fresh food due to limited local food resources

  There was for many years a robust local food pantry that operated out of a church here in Garberville. That church burned to the ground last year and the Food Pantry has had a difficult time finding a home, so it's operating sporadically now.

  There was a...community meal at a local community center in Redway...for years, [which] offered wonderful lunches [three days a week]. That program ended because the non-profit is in some financial difficulty.

  Food for People out of Eureka comes down — [it’s a] seasonal [food surplus delivery] program — but they're here once a month with the Donate, Don’t Dump program."

  “Fresh healthy foods are really, really not available in some of our smaller towns and outlying watersheds.”

• Inaccessible grocery stores due to infrastructural barriers

  It’s hard for food trucks to get here, like roads close and such. Our public transportation here, too, it’s not great at all. It only goes to a certain time of day. There’s only one bus that runs on the weekends, and so [for] people who are disabled or who...don’t have access to a vehicle, it’s really hard for them to get to the grocery store.

  We [also] don’t have the same delivery options as the big cities here. Safeway doesn’t deliver here. Costco doesn’t deliver here. We don’t have the same access to that.”

  — County case managers (Humboldt)
Benefits & Drawbacks of the FAPP Model

Core Feature 1: Utilization of online meal vendor companies

Perceived Benefits, continued

2. ** Delivery model overcomes rural barriers to healthy food access, continued

Humboldt county, continued

- Inaccessible grocery stores due to infrastructural barriers, continued

  "If I look at...my clients I work with...people face...[an] hour to two-hour commute, one way... to the nearest grocery store...Depending on where you live, a third of that commute may be on a dirt road, and/or on a very poorly maintained county road."

- High cost of groceries

  "Gas is more expensive up here, and food is more expensive up here. It's not very affordable to be able to go to the store and buy healthy food, so we see people struggling with that often."

  A dozen eggs at the local grocery store [in Southern Humboldt costs]... five bucks....A dozen eggs [in Eureka costs] $2.49.

  And then buying bulk items like...walnuts — and these are not organic walnuts — at the local grocery store [in Southern Humboldt] are $17 a pound. And walnuts...in Eureka are like $4 a pound.

  So that's kind of an extreme example, but other bulk items like rice, quinoa, whole grains that we would like to see our clients eating - those items can be very, very expensive to purchase here."

- Existing socioeconomic challenges in Humboldt

  "If you look at our county picture in terms of percentage of people that live below the federal poverty line, our socioeconomic picture is challenging. The economy here for many years was based on extraction economy, fishing and logging, and [it] just went belly up. And now with the marijuana industry and such incredible plots in transition, times have gotten even harder for people."

  — County case managers (Humboldt)
Benefits & Drawbacks of the FAPP Model

Core Feature 1: Utilization of online meal vendor companies

Perceived Benefits, continued

2. ** Delivery model overcomes *rural barriers* to healthy food access, continued

**Humboldt county, continued**

- The FAPP program overcame rural barriers to food access in Humboldt

  "**It’s the best [food support program] I’ve seen because it goes right to the client. It goes right to the place.** And then we also have some backup food here to try to get to the clients who don’t have a house. And sometimes they can even have the food delivered somewhere else. And then if they have a friend who will let them prepare the food there, they can do that...I mean it’s a dream food project for people who have health issues."

  "**Home-delivered meals just make it so easy for people to eat well given the financial hardships and transportation barriers that people in my community experience.**"

  "[Food access] is like the one missing thing [from] our program. I mean we have the case management, we have the good doctors that we work with...We do have a couple of housing programs that we can help people out with...**The one missing thing was their connection to getting nutritious food, and so it’s like that missing piece of the puzzle has been filled.**"

  — County case managers (Humboldt)

**San Joaquin county**

- Inadequate access to affordable, fresh, healthy food

  "**We are what we like to call a food desert out here. We have a lot of...food banks...but a lot of the time, people are looking for meat or certain things...that are just not available.** Outside of that, there’s really nothing else we can do for [our clients] unless they find farmer’s markets or flea markets...where they’re finding...cheaper food at a different value, or cheaper fresh vegetables."

  — County case manager (San Joaquin)
Benefits & Drawbacks of the FAPP Model

Core Feature 1: Utilization of online meal vendor companies

Perceived Benefits, continued

2. ** Delivery model overcomes rural barriers to healthy food access, continued

San Joaquin county

- Inadequate access to affordable, fresh, healthy food, continued

> The bad thing with food banks is that a lot of times the food is already old. It’s already expired and it’s not healthy. We don’t want our clients getting parasites. It’s very easy when they have a very low immune system, their T cells are very low. Makes them really an open book for anything. So we do refer but we really don’t like to because the quality of the food.

There is a soup kitchen…they do a wonderful job, [and it’s] two meals a day, breakfast and lunch, and that’s good quality food. But it’s very limited. First come, first serve, and you have to wait in line. If they run out, they run out. And you have to wait in line. You need to go there. For the people that are sick, homebound or can’t get out of bed, they’re not going to be able to do that.

> A lot of times we end up trying to get some food together [from] different sources and taking it to [our clients] but...it’s not the same as it is now [with this program]. There’s no comparison.”

— County case manager (San Joaquin)

Napa County

- The FAPP program increased access to affordable, nutritious food in Napa

> Although there are food banks and the Friday markets, some of the population we serve are more on the outskirts of the county. [It] becomes a little more challenging when you’re getting to rural [areas] in terms of transportation access, so I know it’s been great for them to have these meals that are nutritionally balanced.

> I know with this program, it’s allowed us to assist individuals who may otherwise not have access to [this] level of nutrition with the funding that they have to obtain food.”

— County public health staff (Napa)
Benefits & Drawbacks of the FAPP Model

Core Feature 1: Utilization of online meal vendor companies

Perceived Benefits, continued

3. ** Delivered meals, particularly meal kits, are an effective educational tool for healthy eating behaviors and food preparation skills

- The FAPP meals addressed gaps in client knowledge and exposure regarding affordable, healthy meals appropriate for their medical conditions.

“Especially when you're first diagnosed with things, you don’t really know what you’re supposed to eat. **We run into a lot of folks who are diabetic who happen to be coinfected with HIV, who just don’t know what they’re supposed to eat or what they’re able to eat.** And so, I think a lot of the time that’s why folks don’t really go with adherence to it. They'll take the medication, but health-wise, but you’re still eating fried foods and a lot of starches....

I know that there are a lot of diabetes health management programs. Or folks when they're first diagnosed with hypertension there’s classes that they go through. But a lot of the times [the clients] don’t understand what that means long-term. How do I take what I learned from the class and go to the store and shop for that?

....If you had the meals delivered to you and you see them, and you’re like, I can still eat these things, I can just make simple modifications to them...**I think it's one thing to hear something, but to actually have examples sent to your house and be like, I can do this....It’s something that’s doable for folks.**"

“I think a lot of our clients needed to have more fruits and vegetables sent to them to really realize that oh, maybe I should be eating more of these every day and are noticing health benefits from it. And it’s kind of changing the way that they're looking at food now when they're using their own money."

“I think people have always thought, in order to eat healthy, you need to spend this exorbitant amount of money on certain things. **[Now] they’re learning [it’s] simple onions and bell peppers...you don’t have to break the bank to have a healthy meal.** You can make healthy food with just these couple of items and making minor changes to it."

— County case managers (San Joaquin)
Benefits & Drawbacks of the FAPP Model

Core Feature 1: Utilization of online meal vendor companies

Perceived Benefits, continued

3. **Delivered meals, particularly meal kits, are an effective educational tool for healthy eating behaviors and food preparation skills, continued**

- Delivered meals facilitated client learning around the use of local food resources

  "A lot of the time you have people telling you, well, it's really hard to buy fresh vegetables, and I get it. There's a lot of...food and vegetable wastelands in the areas that a lot of these folks live in, because it's a poor area. And there aren't a lot of main grocery stores. Where they do go, the vegetables aren't the best.

  It gives them a concept of how they can utilize the farmer's markets that we do have or the availability of vegetables that they can find, and they know how to actually [go] through [the vegetables] to figure out, oh! I got this in this meal. I can pair it up like this now."

  — County case manager (San Joaquin)

- Meal kits are an effective educational tool for teaching food preparation skills

  "Quite a few clients [getting meal kits] actually have said, 'You know, I never knew what I was doing in the kitchen, I was completely hopeless, but now I'm learning all these skills, I'm trying new foods.'

  They talk about making photocopies of the recipes to share with friends, their family, and some of them have also said they'll keep the recipe cards since they have all the nice pictures and they'll go and recreate the dish later on, on their own [when they] buy their own ingredients.

  That part of it is really cool because it's obvious that [the meal kit is] helping them right when it gets there, but then they're using it and learning new skills, and it's kind of carrying on...If the program ends, at least they've learned some more new skills, they're more comfortable in the kitchen, and I think it's broadened their horizons."

  — FAPP program staff
Benefits & Drawbacks of the FAPP Model

Core Feature 1: Utilization of online meal vendor companies

Perceived Benefits, continued

4. Large meal vendors operate at scale, thereby offering extensive, reliable delivery coverage and large, reasonably-priced menu selections

Robust delivery coverage:

- Large meal vendor companies have delivery networks inclusive of rural counties due to concurrent partnerships with multiple national and regional couriers.
- For example, according to HelloFresh stakeholders, the company is fully networked in every state in the continental United States.

  “Part of what we wanted to do was...[to] see if there's different ways to [deliver meals] with something that's already in place, [where] you don't have to figure out...everything on your own because they've already figured out shipping. If you look at how big [the meal vendors] are, they're going to figure out shipping better than we are because we don't know how to ship.”

  — FAPP program staff

Delivery reliability:

- Though stakeholders reported some delivery issues related to holiday delays and weather-related road closures, deliveries to clients were largely reliable overall.

  “[The clients] can always count on those meals coming. I've never really heard a complaint of I've been waiting and my food didn't come. So they're very timely and people know when to expect them.”

  — County case manager (San Joaquin)

Large menu selections:

- Stakeholders discussed that companies serving a nationwide customer base are able to offer a relatively large selection of meals, increasing the variety of client preferences that can be met and reducing the overall repetition of meals.

  “There's definitely more choice [in the meal vendor menus] than a lot of the community-based organizations can provide, at least in the prepared meals.”

  — FAPP program staff
Benefits & Drawbacks of the FAPP Model

Core Feature 1: Utilization of online meal vendor companies

Perceived Benefits, continued

4. Large meal vendors operate at scale, thereby offering extensive, reliable delivery coverage and large, reasonably-priced menu selections, continued

Large menu selections, continued:

- Companies operating at scale may also be better positioned to provide larger menu selections from a cost perspective.

“For the vendors that we selected, there's a full nutritional content breakdown that's already available. For non-profits like us, we have to do that manually. We put it into a software program - our dietitians put it in and then [do] the analysis and then we have to create new menus. There's a lot of expense in creating menus. There's a lot of expense in doing the nutritional analysis. [The meal vendors have] already done that. Because of the volume, they're pretty reasonably priced.”

— FAPP program staff
Benefits & Drawbacks of the FAPP Model

Core Feature 1: Utilization of online meal vendor companies

Perceived Drawbacks

1. Some meal vendors have limited ability to tailor meals to medical conditions

- The meals provided by HelloFresh and Freshly, while healthy and nutritious overall, are not designed specifically to be medically tailored meals.

  "I would say the most challenging [medical condition to accommodate] is probably the kidney issues...There is a certain amount of explaining to the client [that] these meals are meant to be healthy, but...in your particular case, you may have to adapt a little bit."

  — FAPP program staff

- The number of meal options fulfilling nutritional guidelines for specifically tailored meals (e.g. the renal diet) was often limited, which clients found to be repetitive over time.

  "[One]...client...just didn’t have the physical ability to prepare his own food. He had a lot of other medical conditions going on, saying he couldn’t stand up for a long time, couldn’t be that active. So really his only option was the prepared meals. But then he had a very extensive list of preferences for food.

  We tried our best for a really long time to really be careful and to pick meals that would work for him, and it limited the menu a lot. And then I think he just, he wound up dropping off because he just wasn’t satisfied. The meals weren’t really what he’s looking for, and then because we were so limited on what we could send him we had to send him duplicates sometimes, so he just got kind of like burnt out on the food."

  — FAPP program staff
Benefits & Drawbacks of the FAPP Model

Core Feature 1: Utilization of online meal vendor companies

Perceived Drawbacks, continued

1. Some meal vendors have **limited ability to tailor meals to medical conditions, cont.**

   • Some online meal vendors do not allow organizational customers to select meals for individual clients, limiting the level of nutritional oversight possible.
   
   • In this program, the meal kit vendor did not allow the Registered Dietitian to select meals for clients and instead utilized an internal team to complete the meal selection process. In contrast, the prepared meal vendor allowed the Registered Dietitian to select all weekly meals for clients.

   “For [the meal kits], we could ask [the vendor] to not include a recipe that has something that's going to be super high in carbs or sugars, which isn’t usually a problem [since] a lot of their dishes kind of lean on the healthier side. With a client who does have more specific requirements or limitations, it’s a little easier for us to do that kind of tailoring if they’re getting the prepared meals because [the RD] can select each specific meal for them.”

   — FAPP program staff

2. Delivery model raised **concerns for some clients**, such as fear of HIV status disclosure

Stakeholders reported the following infrequent concerns related to the delivery model used by FAPP, based on client feedback:

• Worry that large, non-discreet meal boxes may elicit questions by housemates, friends, or neighbors leading clients to feel pressure to disclose their HIV status

   “I had a client that stopped the program because they met somebody and they didn’t...want the partner to see the box coming in... She hadn’t disclosed her status and she didn’t want any questions. Why are you getting this food? Where’s it coming from? Why are they giving it to you? And so she just didn’t want to have nothing coming to the house, including the food.

   Though the box doesn’t say you’re HIV – the sort of person who’s HIV sees it everywhere. Even though the label’s not there, in their mind people are going to know.”

   — County case manager (San Joaquin)
Benefits & Drawbacks of the FAPP Model

Core Feature 1: Utilization of online meal vendor companies

Perceived Drawbacks, continued

2. Delivery model raised concerns for some clients, such as fear of HIV status disclosure, continued

- Dissatisfaction with excessive packaging and insulation materials in meal boxes, given:
  - Concern for environmental impact
  - Limitations in client ability to properly dispose of these materials

> A lot of our clients [in Humboldt county] complain about the amount of materials that are used [in the boxes] in terms of environmental impact. There [are] a lot of environmentalists that live...and study here...We have a lot of beautiful environment and people that are activists for it all the time. [Environmental awareness] is ingrained in you and a lot of our clients have been living here for a very long time."

> [There’s]...a client or two who has a landlord living close by, and the landlord doesn’t want to pay extra money to have the garbage picked up."

— County case managers (Humboldt)

- Neighborhoods with higher rates of theft may present a challenge for deliveries

> For some people...the deliveries are...a little bit of a logistical problem...if they can’t be at home to receive it...We’re pretty sure we’ve had a box stolen from time to time from different physical places because [the couriers] leave it.

It’s obviously not practical for the UPS guy to take it back to the warehouse and try the next day because that’ll be the last chance where it’s still going to be fresh, so they leave it and it’s meant to be safe sitting there. But in certain neighborhoods that’s not advisable. So people will definitely try to be home to on the day that they expect it."

— FAPP program staff

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Core Feature 1: Utilization of online meal vendor companies

Perceived Drawbacks, continued

2. Delivery model raised concerns for some clients, such as fear of HIV status disclosure, continued

- Preference to not have unknown delivery vehicles on personal property

  Initially...[I had a client who said], ‘I’m not sure I want the delivery truck coming up here.’ But then after he had been on the program awhile and realized everything was cool...he changed that up and he’s now getting his deliveries at home.

  [This] comes from people growing [in Humboldt]. It comes from a marijuana economy that’s been happening here for a few decades, and people who [were]...previously growing illegally or are currently growing - it’s legal [now], but they’re un-permitted....

  Even I, and I’ve lived here for almost 40 years, I don’t go up strange roads unless I know somebody....You don’t do it. It’s not cool. It’s not polite. It’s not the etiquette of the hills. And there are safety issues, sometimes."

    — County case manager (Humboldt)

- Pre-existing, negative impression of food provided by a “meal delivery service”

  A lot of the folks who got on our program initially thought it was something similar to Meals on Wheels...When I talked to people, [they said], ‘I’m not really interested in anything like that.’ And I’m like, ‘It’s not like that. It’s something that’s a lot...better for you.’

  I think a lot of the time, people don’t have a say in what the Meals on Wheels is going to be. It’s literally just a meal coming out and they don’t have an option on it. And so they’re like, if I don’t like it, then it’s just food that’s just sitting there."

    — County case manager (San Joaquin)
Benefits & Drawbacks of the FAPP Model

Core Feature 1: Utilization of online meal vendor companies

Perceived Drawbacks, continued

3. Online meal vendors are not primarily designed to address food insecurity amongst vulnerable populations

Online meal vendor companies designed for a commercial consumer base lack some procedures to optimally serve the needs of a vulnerable population. For example:

- **A client may not receive their meals for the week if the delivery is missed or delayed outside of the vendor’s “freshness guarantee” window.**

  “One of the disappointing...or frustrating things for us is that if something goes wrong in the delivery...[the meal vendor doesn’t] charge us, but the clients still [don’t] get their food.”

  — FAPP program staff

- **Online meal vendors are not set up to assume responsibility to help maintain client food access if they are no longer able to offer their product.**

  “If [a meal vendor company] goes bankrupt next week, they’ll just close their doors. They’re not like a non-profit that care[s] about - ‘We’re going to transition you to [another vendor]’...They’re not going to do that. They just go out of business.”

  — FAPP program staff
Benefits & Drawbacks of the FAPP Model

Core Feature 1: Utilization of online meal vendor companies

Perceived Drawbacks, continued

4. Online meal vendor menus may exhibit limited cultural diversity and accessibility

While HelloFresh and Freshly meals exhibited some level of cultural diversity, some recipes were unfamiliar to clients who did not normally eat the types of foods provided by the vendors.

"There is some variety...HelloFresh does definitely have some recipes that are either Asian or Mexican style, and Freshly too, [though] it errs more on the side of kind of American food.

I don't think they can get too much into the...different cuisines because they have to appeal to...thousands of people across the country. But I think they do try to get some interesting meals in there.

It would be nice to have some more different cultural variety. I've had people tell me, we take the ingredients and we just make it our way. We tweak it."

— FAPP program staff

Some stakeholders also noted that the [meal kit] recipe cards were only available in English, even though there was a significant proportion of Spanish-speaking clients, particularly in Napa County.

"We [have] some Hispanic clients who only [speak] Spanish and so we thought it would be nice if these vendors had culturally sensitive meals. They wouldn’t know some of the ingredients, or they’re unfamiliar with it. It would’ve been nice if either the recipe was translated into a different language, or [if] some of the...meal was from their culture."

— FAPP program staff

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Benefits & Drawbacks of the FAPP Model

Core Feature 1: Utilization of online meal vendor companies

Perceived Drawbacks, continued

5. Clients were unable to choose their weekly meals due to limitations in meal vendor infrastructure

Some stakeholders wished that clients had the ability to choose their own meals each week, which was unfortunately not possible due to limitations in meal vendor infrastructure.

“If it [were] possible for the client to go on the website and see what’s available...during their check-in phone call with us [they can ask], ‘Ooh, I want to try this - is this appropriate for me to try?’ That would have...sparked...conversations with the RD more.....

[Clients] could not log onto our own account because they would’ve seen all the other...subscriptions. If they had [the] option [to log in], they could also see the nutrition facts...ahead of time, [which] would be great for them to see.”

— FAPP program staff

6. Long-term viability of the online meal vendor industry is uncertain

There were some concerns regarding the volatility of the online meal vendor industry and its implications for long-term partnership.

“I...pushed...to always have another meal vendor lined up...There’s several articles in Forbes about a number of them that go bankrupt every week.”

— FAPP program staff
Benefits & Drawbacks of the FAPP Model

Core Feature 2: Centralized coordination by a non-profit agency serving multiple counties

Perceived Benefits

1. ** Program can **expand to additional counties** without significant additional infrastructure

Centralized coordination by a core team allows already-established procedures, best practices, and accumulated personnel experience to be easily leveraged when expanding to new counties.

“San Joaquin County...asked the state, “can we be included?” Then, instantly, we got referrals from them pretty quickly. I think because we already had our process in place for the - six to eight months before, we said, “Well, here’s what you do,” and we...really knew what we were doing. We had the referrals in place. It was just because the first two counties - we were figuring it out together, we were flying it as we were building the plane. With the third county, we knew how to implement it and it worked better.”

— FAPP program staff

“All [the] work [The Health Trust has] done with these companies is not something that would be easily duplicated, certainly at the county level because most accounting offices in the counties would not allow that program to exist. [The Health Trust] worked very, very hard in the beginning to figure out how to do the billing...with these companies, and I think that definitely would be easier to do in a non-profit world than in a government setting.”

— California public health staff

“I mean, [a community based organization] could do this for the whole state, really, if they [wanted to] - and I think that would be easier than having each county have their own FAPP program because I could see where - in that model, it might get a little unwieldy.”

— FAPP program staff

Return to: Table of Contents | Results at a Glance
Benefits & drawbacks of the FAPP Model

Core Feature 2: Centralized coordination by a non-profit agency serving multiple counties

Perceived Benefits, continued

2. Streamlined infrastructure can serve multiple counties simultaneously, equalizing access to program staff and decreasing costs of administrative overhead

Utilization of a centralized program coordinator and Registered Dietitian conferred the following perceived benefits:

- Rural counties without the funding or staffing ability to access a program coordinator and/or Registered Dietitian were still able to offer the program to clients.
- Centralization of the RD role ensured access to nutrition education for clients in all three counties.
- Decreased administrative overhead allowed the majority of program funding to be spent directly on food.

“[By] having a direct [community-based organization (CBO) run this program], I can guarantee you way more money is going to the food... than running it through the county.

You run it through the county, you have a person that oversees it, then you got the assistant, then you got the auditing team, which can be 3, 4 or 5 people. You know, and all of that’s going to be charged back to that, so that lessens the amount of money that’s available for food.”

— FAPP program staff

“Some questions that have come up from more rural counties [wanting] to be the hub organization [are], well we can’t find a full-time staff coordinator to run it, or...a dietitian. They were concerned about the time needed to do the invoicing and learning the invoicing process.”

— FAPP program staff
Benefits & Drawbacks of the FAPP Model

Core Feature 2: Centralized coordination by a non-profit agency serving multiple counties

Perceived Drawbacks

1. Non-profit staff had limited ability to provide information on local food resources in planning for transitions off the program

Some non-profit agency stakeholders expressed that they felt limited in their ability to support the rural clients in finding local food support resources, given their geographic distance and relative unfamiliarity with the rural communities served.

“We built into the program model a way to make sure that [the] coordinator would, to the best of their ability, make sure that the clients knew where there were other resources. So, we had to do a little digging ourselves, and not being familiar with those geographical regions, we just didn’t have the familiarity of where...the food [banks were located].

We did the best we could to make sure the case managers knew...the [FAPP] funding could end next year or in six months, [and to] keep in mind that the client doesn’t become less connected to other resources because of this regular source of funding that they had.”

— FAPP program staff

2. Remote working relationships between non-profit staff and county case managers offered limited opportunities for organic, in-person interactions

While FAPP non-profit staff and county case managers were able to establish multiple channels of communication to facilitate their remote relationship, some non-profit stakeholders still felt that there were some challenges in replicating the immediacy and spontaneity of in-person relationships.

“You can talk everything out in person like you can’t on the phone, and I think there’d be a lot of new ideas from that, ‘Well, can we try this,’ ‘Or what about this.’ All sorts of new things germinate when you get all these people in one place.”

— FAPP program staff
Benefits & Drawbacks of the FAPP Model

Core Feature 2: Centralized coordination by a non-profit agency serving multiple counties

Perceived Drawbacks, continued

2. Remote working relationships between non-profit staff and county case managers offered limited opportunities for organic, in-person interactions, continued

“Everything was faxed to us [from the county offices] and that was probably the most challenging part....If they did not send us all of the identifiers or send them accurately, we could not access our client, and then that would delay our assessment of our client and...getting that client connected to the food resources....We would [then] have to email or call and check in with the case manager and of course, they're really busy. It's not like they're down the street where can go in to pop our heads in and check in with them, so that's a little difficult working remotely. But other than that, if everyone was able to make their calls every week and we were able to debrief and go from there, it worked out really well.”

— FAPP program staff

3. Some clients incorrectly believed the non-profit staff worked for meal vendor companies

Because the FAPP clients did not have a prior relationship with the non-profit agency, some clients believed that the non-profit staff worked directly for the meal vendor companies. This resulted in some inaccurate assumptions that questions or concerns related to client meals could be resolved by talking with the non-profit staff, when in fact these concerns needed to be relayed to the meal vendors for resolution.

“The clients don’t really get the relationship either, that’s probably the biggest thing we learned. They don’t understand that...the dietitian that calls you and the program coordinator that calls you [are] in no way related to the delivery guy. I think a lot of them think that [the program coordinator] works for [a meal vendor]...

I think [there are things the clients] would want us to communicate, but there’s only so much we can say. They think that we can just like turn around to our co-worker, who would be the [meal vendor] person and just say, 'Hey so-and-so wants a different meal,' but it's not like that.”

— FAPP program staff

Return to: Table of Contents | Results at a Glance
Benefits & Drawbacks of the FAPP Model

Core Feature 2: Centralized coordination by a non-profit agency serving multiple counties

Perceived Drawbacks, continued

4. Involvement of multiple organizations increased communication complexity

Communication within the program was sometimes routed through multiple parties, including clients, case managers, non-profit staff, and meal vendors, leading to situations where troubleshooting felt complex and indirect.

“When you’re dealing with three different parties - so, you’re dealing with the vendor...you’re dealing with the case manager and you’re dealing with our coordinator and our RD, it just makes it all the more complicated when you’re trying to figure out a problem.”

— FAPP program staff
Benefits & Drawbacks of the FAPP Model

Core Feature 3: Oversight of food support and nutrition education by a Registered Dietitian (RD)

Perceived Benefits

1. Registered Dietitian provided individualized nutrition support and education

Many stakeholders emphasized the importance of having a Registered Dietitian available to serve as a resource for clients.

“There have been a couple of folks who are dialysis patients. And I think a lot of it was they didn't recognize that there were foods that could actually help them feel more energetic about themselves... Or some folks have been trying to get to a dietitian, but... that wasn't something that was a covered item [by their insurance].

...One individual, he got really sick because he's a dialysis patient and he struggles with a lot of other different issues as well. And so with him being able to talk to [the RD].... she was able to change up his boxes a little bit to give him something to help. I don't think people realize the power of healthy food [and] that... there are vitamins that can help you out.

I know it's him and two or three other ladies who are on dialysis that are like, it's been really helpful to have someone tell me, oh, I can miss these things. Or I don't need to eat these things. Or these things help."

“We... have people with HIV who are on dialysis, who have mental health issues, who have multiple problems, Hep C. That's why it's so important for them to be able to speak to someone when the food is not - they're not feeling well because something in their medical has changed."

“I've actually been really impressed with the program... just having the concept of not just providing [the clients] with [recipe] cards or anything, but actually having a dietitian who will help you go through that process and kind of guide you in what you need to be eating, or what are good foods for you."

— County case managers (San Joaquin)
Benefits & Drawbacks of the FAPP Model

Core Feature 3: Oversight of food support and nutrition education by a Registered Dietitian (RD)

Perceived Benefits, continued

1. ** Registered Dietitian provided individualized nutrition support and education, continued

   Stakeholders noted that nutrition support is particularly important for food-insecure individuals, who may be more likely to eat whatever supplemental meals they are receiving. In these situations, a Registered Dietitian can support clients in "self-tailoring" their meals to their own needs.

   “...If [clients] are provided food, they're probably more likely to eat it rather than...put [it] together...for themselves that I should not eat this. Especially if you're food insecure. I mean, you take what you get.

   If one of the [prepared] meals has more of a certain vegetable in it than...your doctor has told you you should eat, well either we can not send it to you or...you can just not eat it all at one time."  
   — FAPP program staff

2. Registered Dietitian oversight ensured that FAPP food was medically appropriate

   Given the large number of existing meal vendors and wide range of menus offered available, stakeholders felt that it was important for a Registered Dietitian to provide oversight of meals provided through the program.

   This was particularly important for clients with diet-sensitive comorbidities such as diabetes and hypertension which are associated with specific dietary guidelines.

   • The Registered Dietitian selected the weekly prepared meals for clients based on their health conditions and medical needs.

   “ For the [prepared] meals, probably the most common group that I have to select [meals] for is people with [high blood pressure]. They can't have too much sodium. We have full nutrition facts for all the meals so I can avoid the ones that are the higher end.”
   — FAPP program staff

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Benefits & Drawbacks of the FAPP Model

Core Feature 3: Oversight of food support and nutrition education by a Registered Dietitian (RD)

Perceived Benefits, continued

2. Registered Dietitian oversight ensured that FAPP food was medically appropriate, continued

- The Registered Dietitian created nutritional guidelines for the pantry boxes.

  “All the foods that we can send in those boxes are non-perishable, and [the RD] went through and made nutritional guidelines, saying you know, for items they can’t be over this much sodium, can’t be over this much fat, look for these things, make sure there’s no added this and that.

  So we have...[these] nutrition guidelines, and then we [choose] items that are a little on the healthier side, or we’ll find healthier versions of something. Yeah, and then the client has a lot of input in what they would like, and we try to get everything they want, as long as it falls in the nutrition guidelines and it’s in stock. Then we can usually do it.”

  — FAPP program staff

3. Registered Dietitian integration enhanced the credibility of program recommendations to clients

Some stakeholders felt that nutritional guidance coming from a Registered Dietitian impacted the way this information was received by clients.

  “We have tried to get [our clients] to purchase healthy foods, or given them options on, hey, there's places for this. It's always been kind of like, yeah, that's cool, but that's not what I want to do and that's not how I eat.

  But hearing it from a different individual was really helpful. And I think having the RD, that was probably what made it more, hey, if we do it this way, it makes it easier for them. And so it's almost like when you tell somebody something over and over again, but someone else comes in and tells you and you’re like, I just told you the same thing.”

  — County case manager (San Joaquin)
Benefits & Drawbacks of the FAPP Model

Core Feature 4: Partnership with county case managers

Perceived Benefits

1. **Case managers were critical for maintaining client communication**

Stakeholders discussed that the strong, pre-existing relationships between county case managers and the FAPP clients were key to maintaining communication with clients during the program.

**“Sometimes, you know, our clients, like I said, they’re very mobile — they’re very transient. Some of our clients are here today, and tomorrow they’re going to be somewhere else and not tell anybody. So working together and working close, having that relationship between all of us, I think...the client benefits from that.”**

— County case manager (San Joaquin)

**“I myself don’t have any problems in keeping contact with my clients. We work very close together, a partnership...When you’ve been here forever, you’ve got to really know where everybody’s going. You know, I’ve had clients that have been with me for 20, 21 years, so that, if the program can’t get ahold of them for whatever reason, then...they’ve either been in the hospital or something else has happened.”**

— FAPP program staff

A lot of the times the case managers have much closer contact with the clients than we do, and a lot of the times we will be having trouble getting ahold of someone for an assessment or just to check-in. The case managers are crucial in reaching that client because they can say, “I’m going to see them later this week,” or “I’ll give them a call, send them a text, let them know you’re getting a hold of them,” so they’re really helpful there.

A few times where a client will lose their housing very suddenly or they’ll move but they don’t always tell us, the case managers are really great about letting us know about those kinds of changes as soon as they know so...we can go in and change their address, or we can put a pause on it until they kind of get settled.”

— FAPP program staff
Benefits & Drawbacks of the FAPP Model

Core Feature 4: Partnership with county case managers

Perceived Benefits, continued

2. County case manager involvement facilitated high referral flow

Stakeholders also felt that the long-standing relationships between case managers and clients, which were built into the structure of the Ryan White program, were integral to achieving high referral numbers.

"The biggest strength of this program is...no other grant program that I've been a part of has the referrals just come in, like you don't have to do any outreach. When we opened it up to San Joaquin county, we got flooded, we got like 50 in one month. I've never seen that anywhere.

...I guess it's like the relationship with the case managers, but not just the relationships, I think it's more like the structure of maybe the Ryan White program. They're already connected closely with the case manager who they're supposed to checking in with at certain intervals, whereas in other programs, you may or may not see a social worker/case manager.

I think they already have that connection, and then we just connect with that case manager and then...so because of the program and the eligibility to be in the Ryan White program, it just makes all the difference."

— FAPP program staff
Benefits & Drawbacks of the FAPP Model

Core Feature 5: Ongoing client engagement by the Registered Dietitian and program coordinator

Perceived Benefits

1. Program staff were able to adapt the program for clients to best serve their needs

Due to the regularity and consistency of check-in's with clients, the program staff were able to quickly respond to changes in clients' lives to ensure the program continued to best serve their needs. This included changes such as switching between the meal kits and prepared meals options, or offering supplemental pantry boxes if clients were still experiencing additional need.

“I have a lady right now who has advanced Hep C. She, you know, HIV-wise she's okay, but her hepatitis has totally taken a huge, huge change. So some foods that she was eating, they're not setting well with her. So the menu has been changed, so they're trying different things, or you know, something that will sit well in her, you know. That's what makes it so wonderful with this program is that the staff, that the people that work in it, don't give up. They always try to find ways to help our clients, which in return gives us clients that have - that are very happy and they embrace us. Some of them [have said], this has saved my life, because [if] I didn't have this, I wouldn't have anything. And that's coming from our clients.”

— County case manager (San Joaquin)

“Honestly I feel like when clients' needs change, they were able to adjust it. Like we had a client who initially was getting the food that they needed to prepare. And then that didn't work so, so then they got the pre-prepared meals. So I feel like they were really good at addressing what the needs of the clients were.”

— County case manager (Humboldt)

Pantry box clients were also able to discuss their requests for non-perishable items each month, resulting in a personalized pantry box selection.

“We've had people who are like, 'You've got to see what's in these pantry boxes.' The fact that they can get them personalized to them is something they're awful impressed with.”

— FAPP program staff

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Core Feature 5: Ongoing client engagement by the Registered Dietitian and program coordinator

Perceived Benefits, continued

2. Regular client follow-up served as a source of social support

The Registered Dietitian and program coordinator followed up in regular intervals with clients, which some stakeholders felt was a source of longitudinal social support for some clients.

“[Some clients] would like to have someone to reach out and talk to [them] directly about what's going on and [be] able to access some of [their] medical history, and consistently check on [them]... just having that consistency of someone to check in on them, and seeing the results of, ‘if I actually listen to this plan and follow it, how much healthier I can be.' That's definitely been the plus of having that dietitian there.”

— County case manager (San Joaquin)

“I've had people say that [with] the personal contact, like us calling them...they feel more like somebody cares about them as opposed to applying for food stamps, [where] it's very much like you're a number. This [program] does involve, you know, more interaction. So some people like that because...whether they're just being polite or not...they'll thank [me] for calling [them] to check up on [them]."

— FAPP program staff
3. Ongoing engagement allowed clients to reflect upon their experiences and learnings from the program

Some stakeholders felt the FAPP program, beyond providing direct food access, also offered the added benefit of allowing clients to engage more directly and intentionally with their eating behaviors and habits.

“The FAPP clients appear more engaged than the clients that go to our food bank at The Health Trust. When clients come in to shop, there's very little interaction. Maybe they don't need it. They just come in and get their groceries and leave. [The FAPP] clients are talking to [the program staff] on a regular basis and they're discussing the food and their health.

I think there's something around talking about your food and how it - how you're using your food to maintain your health - just having that dialogue, I think there's a value in that that's not documented. Maybe it is documented but I don't know about it.

I think having the two tools together, in my opinion, is stronger than having one or the other. When someone just goes to a food bank or just receives a meal and they don't interact with a health professional, I think they're missing out on something and vice versa; when you just talk to a dietitian about how you should eat but yet you don't have an example of what they looks like, you're missing out on that, too. It's kind of like the value of experiential learning and having a conversation about your experience.”

— FAPP program staff
Technical appendix

Demographic data explanations

**Gender [Pg. 15]**
Our gender categories reflect those available in ARIES20 (male, female, transgender MTF (male-to-female), transgender FTM (female-to-male)) and likely include some misclassification. In reporting demographic data, we report those in the transgender MTF category as “transgender women.” No individuals in our dataset were in the transgender FTM category so these are not reported. ARIES does not include information about sex at birth or current gender identity other than these categories.

**Housing [Pg. 18]**

**Stable housing** was defined as the following ARIES categories, in decreasing order:
- Rental housing (stable/permanent)
- Rented room (stable/permanent)
- Living with relatives or friends (stable/permanent)
- Participant-owned housing (stable/permanent)
- Board & care or assisted living (stable/permanent)

**Temporary housing** was defined as the following ARIES categories, in decreasing order:
- Living with relatives or friends (temporary)
- Transitional housing (temporary)
- Homeless from emergency shelters (temporary)
- Rented room (temporary)

**Unstable housing** was defined as the following ARIES categories, in decreasing order:
- Homeless from streets (unstable)
- Homeless from emergency shelters (unstable)
- Living with relatives or friends (unstable)
- Hospital or other medical facility (unstable)

**Federal poverty level [Pg. 19]**
Federal poverty level (FPL) is calculated based on household income.

**Insurance status prior to enrollment [Pg. 19]**
“Other” includes unspecified public insurance and veteran’s insurance. The specific types of private insurance were unspecified.
Technical appendix

Demographic data explanations, continued

Nutritional risk level [Pg. 21]
Nutritional risk level was determined by the THT Registered Dietitian using risk stratification criteria from the HIV/AIDS Toolkit published by the Academy of Nutrition and Dietetics²¹. Examples of inclusion criteria for each of the risk levels are listed below:
- **Low risk:** stable HIV disease with no active infections, stable desirable weight, no oral or gastrointestinal symptoms or side effects, normal metabolic labs (e.g. blood glucose, cholesterol), normal liver and kidney function, stable psychosocial issues
- **Moderate risk:** hypertension, liver disease, kidney disease, abnormal metabolic labs (e.g. blood glucose, cholesterol), cancer, unstable psychosocial situation (e.g. homelessness, being homebound), substance use (current, or in recovery)
- **High risk:** poorly controlled diabetes, current illness or opportunistic infection, dialysis, severely dysfunctional psychosocial situation

CDC disease stage [Pg. 22]
The California Office of AIDS uses the US Centers for Disease Control and Prevention (CDC) classification system, which includes the following categories²⁰:
- **HIV positive, asymptomatic:** client is HIV positive, but experiences no symptoms associated with HIV
- **HIV positive, symptomatic, not AIDS:** client is HIV positive, experiences HIV-related symptoms, but does not meet the CDC definition of AIDS
- **CDC-defined AIDS:** client is HIV positive and matches the criteria for AIDS set by the CDC*
- **Disabling AIDS:** client is HIV positive, matches the criteria for AIDS set by the CDC*, and is incapacitated by their illness.
- **HIV positive, disease stage unknown:** client tested positive for HIV but the stage of infection is unknown

*CDC criteria for a person with AIDS includes at least one of the following at any time following their HIV diagnosis: CD4 count <200, CD4 percent <14, or an AIDS Indicator Disease. Once a client meets any of these criteria, they are always diagnosed as having AIDS regardless of changes in their health.
Technical appendix

Program outputs

*Total number of meals delivered* [Pg. 24]
The total number of meals delivered (~88,000) was calculated based on a total of 10,955 weekly meal deliveries and an average of 8 meals per weekly delivery.

Health outcomes
*Covariates included in regression models*

*Race*
Race in this analysis was included as a binary variable (white=1, non-white=0).

*Gender*
Gender in this analysis was included as a binary variable (women=1, men=0; transgender women were included with women).

*Age*
Age in this analysis was included as a continuous variable.

Nutritional assessment outcomes

*Food insecurity* [Pg. 41]
Clients were screened for food insecurity using the Hunger Vital Sign, a validated two-question screening tool: 1) Within the past 12 months, we worried whether our food would run out before we got any money to buy more. 2) Within the past 12 months, the food we bought just did not last and we didn’t have money to get more. An answer of “often” or “sometimes” true to either question indicated a positive screen.

*Body mass index (BMI)* [Pg. 29]
BMI was calculated based on self-reported height and weight. Due to concerns around the accuracy of using self-reported data to draw meaningful conclusions regarding changes in BMI over time, this report only includes baseline BMI data.
Technical appendix

Alternate analysis utilizing all available ARIES data

As described in the Methods section, the main analysis in this report utilized data spanning a 36-month period when the most ARIES data were available (area shaded in beige in the graph below).

*For purposes of comparison, the remainder of the Technical Appendix includes results from both our main and alternate analyses. The graph below shows the time span and data availability for each analysis.*

**Number of clients with viral load and CD4 count data per 6-month interval**

![Graph showing number of clients with viral load and CD4 count data per 6-month interval.](image)
### Technical appendix

*Full results of adjusted regression models, overall and by county*

**Probability of achieving viral suppression [Pg. 34]**

#### All counties

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#### San Joaquin county

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*In 6 month intervals. Abbreviations: CI, confidence interval; OR, odds ratio; RR, risk ratio (converted)

**All results with a p-value <0.05 are bolded.**

*Return to: Table of Contents | Results at a Glance*
Technical appendix

Full results of adjusted regression models, overall and by county

Probability of achieving viral suppression, continued

Humboldt county

<table>
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<tr>
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Napa county

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*Utilizes all ARIES data

Return to: Table of Contents | Results at a Glance
# Technical appendix

*Full results of adjusted regression models, overall and by county*

## Probability of achieving an undetectable viral load [Pg. 35]

### All counties

<table>
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<tr>
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### San Joaquin county

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*Utilizes all ARIES data*
# Technical appendix

Full results of adjusted regression models, overall and by county

## Probability of achieving an undetectable viral load, continued

### Humboldt county

<table>
<thead>
<tr>
<th></th>
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<th>Program trend (Main: n=40; All: n=42)</th>
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### Napa county

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*Utilizes all ARIES data*
Technical appendix

Full results of adjusted regression models, overall and by county

Probability of achieving a CD4 count >500 [Pg. 38]

All counties

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<tr>
<th></th>
<th>Pre-program trend (Main: n=117; All: n=127)</th>
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San Joaquin county

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*Utilizes all ARIES data
Technical appendix

Full results of adjusted regression models, overall and by county

Probability of achieving a CD4 count >500, continued

Humboldt county

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Alternate analysis*

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<th>95% CI</th>
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Napa county

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Alternate analysis*

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*Utilizes all ARIES data

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Technical appendix

Full results of adjusted regression models, overall and by county

Trends in continuous CD4 count [Pg. 39]

All counties

<table>
<thead>
<tr>
<th></th>
<th>Pre-program trend (Main: n=117; All: n=127)</th>
<th>Program trend (Main: n=137; All: n=142)</th>
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San Joaquin county

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<th>Pre-program trend (Main: n=64; All: n=69)</th>
<th>Program trend (Main: n=69; All: n=71)</th>
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<td>Change in CD4 cell count (cells/mm$^3$)</td>
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<td>Time</td>
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<td>-172.43, 226.24</td>
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<td>Race</td>
<td>5.8</td>
<td>-169.04, 180.59</td>
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*Utilizes all ARIES data
## Technical appendix

Full results of adjusted regression models, overall and by county

### Trends in continuous CD4 count, continued

#### Humboldt county

<table>
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<tr>
<th></th>
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#### Napa county

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<td><strong>Main analysis</strong></td>
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*Utilizes all ARIES data*
References