Cultivating Total Health: Implementation of the Clinic-to-Community Integration Strategy to Intervene on Food Insecurity

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Cultivating Total Health: Implementation of the Clinic-to-Community Integration Strategy to Intervene on Food Insecurity

JEFFREY REYNOSO

A DELTA Doctoral Thesis Submitted to the Faculty of

The Harvard T.H. Chan School of Public Health

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Cultivating Total Health: Implementation of the Clinic-to-Community Integration Strategy to Intervene on Food Insecurity

Abstract

The United States (U.S.) is the country with the highest per-capita spending on healthcare services, but ranks near the bottom among peer countries for social services spending. This underinvestment in social services has been theorized to be a factor for why the U.S. healthcare system ranks among the bottom on access, quality, and population health outcome indicators. While improvements in medical care quality could prevent 10-15% of premature deaths, the remaining root causes include genetics, and the social, economic, and environmental determinants of health. Policy and program interventions to improve social and economic disadvantage, reduce poor social behaviors, and enhance built environments, could reduce population health inequities and improve health status overall. Yet, healthcare systems do not yet know how to translate this research evidence into effective and equitable interventions to improve population health and reduce health inequities. Stronger evidence of intervention effectiveness is needed, with accompanying implementation and dissemination research, to guide decision-making and secure funding for social determinants of health interventions in clinical settings.

This DELTA Project fills a gap in the literature by providing an in-depth, qualitative case study on the implementation of a Clinic-to-Community (CCI) integration strategy to intervene on one specific socio-economic determinant: food insecurity. In Part 1: Analytical Platform, I first provide a brief overview of the U.S. healthcare system performance and social determinants of health drivers contributing to poor healthcare access and status. Second, I conduct a comprehensive assessment of food insecurity, including definitions, burden, risk factors, and associated health outcomes. Third, I provide a review of government policies and healthcare system programs to address food insecurity. Finally, I introduce the program design for the CalFresh Enabled Enrollment Pilot Program, with special focus on the theoretical framework and implementation strategy. In Part 2: Results Statement, I utilize the descriptive case study methodology to assess the DELTA residency along the following stages: on-boarding months, planning months, and implementation months. In the concluding section, I articulate key learnings, including critical reflections on the original project theory and strategy, and discuss future directions.
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Acknowledgements

“The Doctor of Public Health degree is for exceptional individuals with proven potential who want to accelerate their careers, lead organizations, and have an important impact on people's health and lives.” The preceding description posted on the school of public health’s website was my first introduction to the Harvard Doctor of Public Health (DrPH) program nearly four years ago. As a prospective student seeking doctoral-level graduate study in public health, I never would have dreamed at the time that I would be selected to be a member of the inaugural cohort—the Centennial Fellows—of the DrPH program. Moreover, the two years on-campus in Cambridge and Boston were indeed transformative for my personal and professional development. This Doctoral Engagement in Leadership and Translation for Action (DELTA) Project is the culmination of thousands of hours of independent research and residency practice at Kaiser Permanente in the Southern California region. As this wild and wondrous journey comes to an end, I cannot move on without thanking all the individuals who made this milestone possible.

To start, I would like to thank the DrPH program staff and affiliated faculty who spent their time and talents to realize the vision of this entrepreneurial graduate degree program. I also want to thank my colleagues at Kaiser Permanente and Dr. Elizabeth McGlynn who provided a unique organizational perspective on my doctoral thesis committee. To Dr. Benjamin Sommers, I want to thank you for serving as my academic mentor and for
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And lastly, I would like to thank my loved ones who were my social support network throughout this entire process. Together we cried and celebrated, listened and learned, prodded and propelled one another towards this moment which is ours to share. To my parents Jesus and Alicia Reynoso, who immigrated to this country to ensure access to education and employment security for our family, *esta es tu tesis doctoral*. To my older brothers (Jose, Omar, Orlando) and my younger brother (Juan), this is your doctoral thesis. To the countless other family members, mentors, and friends who are my *pueblo* lifting me up throughout this journey and to yet unrealized heights, this is your doctoral thesis. It took a village to reach this point, but the work is just beginning. For the work of improving public health and realizing social justice is a movement that must be sustained with endless energy to be protected in this critical moment and future generations.

Sincerely,

Jeffrey Reynoso

Pasadena, CA

April 2017
Introduction

At the beginning of the 21st century, the then Institute of Medicine (IOM) published the seminal report *Crossing the Quality Chasm* which set forth clear aims for the transformation of the United States (U.S.) health care system (Richardson et al., 2001). Nearly a decade and a half later, the system has made some progress on the six healthcare system aims—safe, effective, patient-centered, timely, efficient, and equitable—but several country-level measures point to a health care system that is far from crossing the chasm. More recently, researchers have determined that although the U.S. spends more per-capita on healthcare expenditures when compared to peer high-income countries, the country ranks last on per-capita spending for social services (Figure 1). This finding is significant because there has been decades of literature to support the consequential role that social behaviors, influenced and interacting with the socio-economic and environmental conditions of individuals, together have a greater role in health outcomes for populations when compared to solely genetic and medical delivery factors (Kannel et al., 1991; Berkman & Breslow, 1983; Belloc & Breslow, 1983; Marmot et al., 1991; McGinnis, 2001; Institute of Medicine, 2001). Policy and program interventions to improve social and economic disadvantage, reduce poor social behaviors, and enhance built environments, could reduce population health inequities and improve health status overall (Adler et al., 2016). Indeed, this shift could be the catalyst that moves the U.S. closer to finally closing the quality chasm.
The healthcare sector is ramping up efforts to explore how to implement interventions that address social and economic determinants for individuals and broader communities (Dzau et al., 2017). The ethical implications of intervening on the social and economic determinants of health—especially for disenfranchised individuals and communities—are clear. But the cost savings and improvements in healthcare quality and associated outcomes are less clear.
To date, research studies that have examined impacts of increasing investments and/or partnerships between healthcare and social services have shown mixed results. Examples of programs that have resulted in positive outcomes include housing support (Larimer, 2009; Burns, Sumner, & Lee, 2013)\textsuperscript{11,12}, nutritional assistance (Foster, Jiang, & Gibson-Davis, 2010; Thomas & Mor, 2013a; Thomas & Mor, 2013b)\textsuperscript{13,14,15}, case management and community outreach (Olds et al., 2010, 2007, 2014, 2004)\textsuperscript{16,17,18,19}, and integrated health care and housing services (Center for Outcomes Research and Education, 2014).\textsuperscript{20} Furthermore, there is a gap in the literature in understanding the sufficient program elements that lead to positive cost, quality, and health outcomes. Indeed, there is a need for understanding how to translate knowledge of economic and social drivers of population outcomes into effective and equitable interventions to reduce population health inequities (Keyes & Galea, 2016).\textsuperscript{21} Gottlieb, Fichtenberg, & Adler (2017) declared that stronger evidence of intervention effectiveness is needed, with accompanying implementation and dissemination research, to guide decision-making and secure funding for social determinants of health interventions in clinical settings.\textsuperscript{22} To this end, the purpose of this doctoral thesis is to supplement this gap in the peer-reviewed and grey literature. This doctoral thesis was part of an 8-month organizational residency placement named the Doctoral Engagement for Public Health Leadership and Translation for Action (DELTA) project. The placement took place at a large, integrated healthcare delivery system in the Southern California region. This DELTA Project provides an in-depth, qualitative
case study on the implementation of a Clinic-to-Community (CCI) integration strategy to intervene on one specific socio-economic determinant: food insecurity.

For Part 1: Analytical Platform, I conduct a literature review to explore theoretical frameworks linking food insecurity to specific chronic disease outcomes (e.g. diabetes, hypertension, and obesity). The conceptual framework *The Cycle of Food Insecurity and Chronic Disease* makes this direct link through a cyclical process comprised of observable and latent variables (Seligman & Schillinger, 2010). However, there is also a need for understanding why interventions work and why, including the roles of organization and contextual factors, such as the role of leadership, that leads to successful interventions (IOM, 2007). Thus, a second literature review of U.S. government policies and healthcare system programs to address food insecurity was also conducted. Finally, I introduce the program design for the CalFresh Enabled Enrollment Pilot Program, which integrates the theoretical and implementation strategy from the literature review.

The methodology for Part 2: Results Statement is the descriptive case study. For the purpose of the DELTA Project, this approach is ideal given that the guiding questions driving the analytical platform is on answering “how” and “why” questions—and because the context matters to the phenomena studied. The unit of analysis is a division (Clinical Operations & Quality) within an integrated healthcare delivery system (Kaiser Permanente) under study during the 8-month study period (July 2016-March 2017). Within the division, the
analysis focused on all individuals and teams at the Region and Medical Centers known to the doctoral fellow whom directly worked on advancing the total health strategy and/or addressing food insecurity for KP members and communities at large. In order to understand the phenomena being studied (e.g. the clinic-to-community integration strategy to intervene on food insecurity) a range of quantitative and qualitative sources were utilized to gain a holistic understanding of the barriers and facilitators to implementation. The key findings include the importance of diagnosing the organization structure in the planning phases for a new innovation, how to lead change in an organization without a formal role, and differentiation of communication strategies for the innovation based on the level/function of the target audience. In addition, the key learnings describe the re-assessment of the original project theory and implementation strategy and how to navigate financial constraints. This section ends with a brief reflection on the future directions for innovation pilots integrating healthcare and social services to address the social determinants of health.
Part 1: Analytical Platform

I. U.S. Healthcare System Performance & Social Determinants of Health

Background

Today, the United States (U.S.) spends more per capita on healthcare than any other nation on the globe, and yet ranks last overall among 11 high-income countries on measures of health system quality, efficiency, access to care, equity, and healthy lives (Davis, Stremikis, Schoen, & Squires, 2014).25 When social services expenditures are taken into account, however, the U.S. is not a high spender. In fact, in their seminal study, Bradley et. al examined variations in the ratio of health services to social services (e.g. income supplements, housing, unemployment coverage and other social policies) expenditures and the association with 5 country-level population health measures (Bradley, Elkins, Herrin, & Elbel, 2011).26 Compared to Organisation for Economic Co-operation and Development (OECD) countries, the U.S., once again, is an outlier with the lowest ratio of social-to-health expenditures, .91, compared to an average of 2.00 (Bradley et al., 2011).27 Comparing state-level healthcare to social services spending and its association with state-level health outcomes, Bradley et al. determined that states with a higher ratio of social to health spending have statistically significant better outcomes on 7 measures: adult obesity, asthma, mentally unhealthy day, days with activity limitations; and mortality rates for lung cancer, acute myocardial infarction, and type 2 diabetes (Bradley et al., 2016).28
The World Health Organization (WHO) defines health as “a state of complete physical, mental, and social well-being and not merely the absence of disease and infirmity” (World Health Organization, 1946). Yet our health system performance is not meeting this definition of health for far too many Americans. As Kanter, Rosabeth, Koh, & Yatsko (2016) reason, “The United States will be hard pressed to improve health outcomes significantly if it does not focus more attention on health’s non-medical determinants and invest more social services critical for addressing them.”

The evidence demonstrates that the non-medical determinants of health contribute a larger percentage of risk to population health outcomes than genetics and healthcare system factors combined. McGinnis and colleagues’ (2002) oft-cited breakdown estimates that at a population level, the risk factors of premature mortality in the U.S. are: genetic- 30%, social circumstances- 15%, environmental exposures- 5%, behavioral patterns- 40%, and medical care- 10%. Targeted analysis and action is needed in identifying the intersections of the various risk factor domains (McGinnis et al., 2002). For instance, behavioral patterns can be caused by social circumstances and environmental exposures may turn on (or off) certain aspects of our genetic code. A challenge for the U.S. healthcare system is to shift from a “sick care” system to a healthcare system that actively prevents disease and promotes population health. Nationally, the health system prioritizes 75% of financing to treat chronic diseases such as cancer, diabetes, stroke, and heart disease, while only 4% is directed to prevention and public health efforts (Robert Wood Johnson Foundation, 2013). While the results are
mixed, increasing investments and partnerships between healthcare and social services have shown to improve health outcomes and reduce healthcare costs for disenfranchised populations, including housing support (Larimer, 2009; Burns, Sumner, & Lee, 2013)\textsuperscript{14,35}, nutritional assistance (Foster, Jiang, & Gibson-Davis, 2010; Thomas & Mor, 2013a; Thomas & Mor, 2013b)\textsuperscript{36,37,38}, case management and community outreach (Olds et al., 2010, 2007, 2014, 2004)\textsuperscript{39,40,41,42}, and integrated health care and housing services (Center for Outcomes Research and Education, 2014).\textsuperscript{43} Furthermore, there is a gap in the literature in understanding the sufficient program factors to that lead to positive cost, quality, and health outcomes. Indeed, there is a need for understanding how to translate knowledge of economic and social drivers of population outcomes into effective and equitable interventions to reduce population health inequities (Keyes & Galea, 2016).\textsuperscript{44} Gottlieb, Fichtenberg, & Adler (2017) declared that stronger evidence of intervention effectiveness is needed, with accompanying implementation and dissemination research, to guide decision-making and secure funding for social determinants of health interventions in clinical settings.\textsuperscript{45}
U.S. Federal Context

Across the nation, a range of institutions are invested in tackling population health in the U.S., including government, providers, think tanks, and foundations. For the U.S. federal government, provisions in the Patient Protection and Affordable Care Act (ACA) have incentivized providers to shift from fee-for-service billing to value-based health care, which focuses on quality outcomes rather than volume of care delivered (Health Catalyst, 2016). The ACA also created the Prevention and Public Health Fund (PPHF), the nation’s first mandatory funding dedicated to public health and prevention activities—$500 million per year starting in FY 2010 and increasing to $2 billion annually by FY 2015 (Centers for Disease Control and Prevention, 2016). However, the PPHF faced cuts by the Congress and President Obama of $6.25 billion over nine years (FYs 2013-21) to offset scheduled Medicare physician payments. In 2016, the Centers for Medicaid & Medicare Services (CMS) announced the first federal funding opportunity for providers to investigate screening beneficiaries for health-related social needs and referrals to community-based services at a local level (CMS, 2017). Moreover, think tanks, including the National Academy of Medicine (NAM) and National Bureau of Economic Research (NEBR) have focused research activities the intersection of social determinants and healthcare. The aims of the NAM initiative are centered around 3 areas: 1) better health and well-being, 2) high-value health care, and 3) strong science and technology. In 2016, NBER issued a call for proposals for projects that utilized the USDA’s new National Food Acquisition and Purchase Survey
(FoodAPS) dataset to investigate issues of food security, nutrition, and health (National Bureau of Economic Research, 2016).\textsuperscript{51} In 2014, the Robert Wood Johnson Foundation (RWJF)—the nation’s largest health foundation—announced their new strategy of focusing investments beyond individual healthcare delivery to creating a “culture of health” in households, workplaces, schools, and public spaces (RWJF, 2014).\textsuperscript{52} All of these activities are an indication of a nation primed to test new approaches at the intersection of healthcare and social determinants and learn from the results.

**Healthcare Systems Context**

More than the shift from fee-for-service to value-based healthcare, healthcare systems are beginning to assess their minimum federally-mandated community benefits obligations to re-orient their non-clinical practices and assets (Howard & Norris, 2015).\textsuperscript{53} The majority of hospitals (~78%) in the U.S. operate as nonprofit organizations; therefore, they qualify for federal tax exemptions and other benefits such as tax-exempt bond financing (Health Affairs, 2016).\textsuperscript{54} Since 1969, the so-called “community benefit” standard dictated that charity care and spending that promotes the community’s health count toward meeting the tax exemptions requirements (Health Affairs, 2016).\textsuperscript{55} Because the Internal Revenue Service (IRS) did not narrowly define a community benefit, there has historically been much variability in what was considered a community benefit activity (Health Affairs, 2016).\textsuperscript{56} However, more than 85% of community benefit dollars go towards direct patient care—25% for charity care,
45% for uncompensated costs for Medicare and Medicaid, and 15% for subsidized health services. With the passage of the ACA, new reporting and excise taxes were required of hospitals to maintain their IRS 501(c)(3) status (Health Affairs, 2016). One of the most notable policy changes is a requirement for community health needs assessments (CHNAs) and related implementation strategies every three years. The regulations direct hospitals to take a broad view of health needs to “not only the need to address financial and other barriers to care but also the need to prevent illness, to ensure adequate nutrition, or to address social, behavioral, and environmental factors that influence health in the community.” (Internal Revenue Service, 2014) These new rules have spurred many healthcare systems to re-assess their current practices and look for how they can do more to impact the social determinants of health for their patients and communities.

**Kaiser Permanente Context**

Kaiser Permanente (KP) has been a national leader in creating strategic and programmatic activities to better address the social needs of their members and communities. Founded in 1945, Kaiser Permanente is one of the nation’s largest not-for-profit health plans, serving 11.3 million members, with headquarters in Oakland, California. It is an integrated healthcare delivery system which comprises: 1) Kaiser Foundation Hospitals and their subsidiaries; 2) Kaiser Foundation Health Plan, Inc.; and 3) The Permanente Medical Groups (Kaiser Permanente, 2015). Nationally, Kaiser Permanente encompasses: 38
Hospitals & 661 Medical Offices, including inpatient services and multispecialty ambulatory care clinics; 199,320 Employees; serving 10.7 million patients; and $64.6 Billion Operating Revenue (Kaiser Permanente, 2016). In the Kaiser Permanente Southern California region (KPSC) where the author was placed for the DELTA doctoral residency, the organization includes: 222 medical offices; 68,000 employees, 7,272 physicians; serving 4.3 million patients (Kaiser Permanente, 2016).

For over a decade, Kaiser Permanente Health Plan and Permanente Medical Group leaders have been working on a Total Health Strategy. In a report published by the Care Management Institute (CMI) Total Health is defined as “healthy people in healthy communities.” (Tuso, 2014) The Total Health Strategy is intended to drive patient-centered care by explicitly addressing the interconnectedness between health, health care, individual behaviors, environments, and social determinants of health (Bellows, Young, & Chase, 2014). By building capacity for social and economic impact, KP aims to mobilize programs and policies promoting population health in schools, worksites, and communities. This creates “optimal defaults” at the societal level, reshaping food systems, transportation, and other services so that healthy choices are the easiest choices (Bellows et al., 2014). Ultimately, KP’s key objective is to achieve the Institute for Healthcare Improvement’s “Triple Aim” framework—healthier populations, reducing per capita cost of healthcare, and better patient experiences—to its patient population and creating an environment where its members actively participate (Berwick, Nolan, &
At a national level, the Total Health Strategy is a priority at the highest levels of the organization. As chairman and CEO, Bernard Tyson, states the vision of KP is “We are trusted partners in total health, collaborating with people to help them thrive and creating communities that are among the healthiest in the nation.” (Howard & Norris, 2015)

Within the Southern California Region, Dr. Nirav Shah joined the organization as its Senior Vice President and Chief Operating Officer in 2014 after serving as the New York State Commissioner of Health (Kaiser Permanente, 2014). During his short tenure, Dr. Shah has been a thought leader in driving innovation to achieve the Total Health vision for the 4.3 million members in the Southern California. Currently, three programs (Health Leads, Mobile Integrated Health, and Predicted High Utilizers) have been launched under the Total Health Strategy within Clinical Operations. The programs have had early successes and have been highlighted in the New England Journal of Medicine’s Catalyst blog in 2016. The Predicted High Utilizers program modeled the top 1% of predicted high-utilizers and identified nine sub-groups of patients (Shah, Davis, Gould, & Kanter, 2017). This granularity will then allow KP to test new care models that meet the diverse needs of this high-risk cohort of patients. To address the social needs of the high-utilizers, KP partnered with Health Leads, a social enterprise organization “that envisions a healthcare system that addresses all patients’ basic resource needs as a standard part of quality care.” (Health Leads, n.d.). Trained KP call-center workers cold-called high-utilizers to ask about their social needs. In the initial
pilot, among those patients screened, 78% had at least one unmet social need and referred to community-based resources that can help them address their specific needs (Shah, Rogers, & Kanter, 2016.). A review of the initial Health Leads Pilot results determined that food insecurity was the social determinant with the highest social need (see Figure 2) in the high-utilizers cohort. In discussion with my executive sponsor, Dr. Nirav Shah, it was agreed upon that I would work on a pilot program to intervene on food insecurity for the Southern California region. The 2nd portion of this DELTA Project will review the literature on food insecurity (definitions, burden, risk factors, and nutrition and health outcomes) and the latest evidence on addressing food insecurity in healthcare settings.

Figure 2: KP/Health Leads Pilot Results

**Food insecurity questions ranked highest among all social needs screened for high-utilizers**

- Within the past 12 months, "I couldn't afford to eat balanced or healthy meals." 35%
- Within the past 12 months, "the food I bought just didn't last, and I didn't have the money to get more." 32%
- Do you have difficulty arranging for transportation to or from your medical appointments? 26%
- Do you need help finding ways to pay your utility bills? 23%
- In the past month, have you had concerns about the condition or quality of your housing? 13%
- Do you worry having a safe place to live or being homeless? 13%

II. Food Insecurity & Health

Definitions & Measurement

In the U.S. government definitions of food security are established by the United Stated Department of Agriculture (USDA). In 1994, the National Conference on Food Security Measurement Research was convened by the Food and Nutrition Service (FNS) of the USDA and the National Center for Health Statistics of the U.S. Department of Health and Human Services (HHS) (United States Department of Agriculture, 2015). The result was a working group to develop a draft survey instrument, which was later finalized and pilot tested (USDA, 2015). Since 1995, the U.S. federal government has collected, analyzed and reported on food insecurity data in the U.S. Census Bureau’s annual Current Population Survey, which was later sponsored by the USDA’s Economic Research Service (ERS). In 2003, the Committee on National Statistics of the National Academies (CNSTAT) made a clear distinction between food insecurity and hunger—the former represents a household-level economic and social condition, while the latter represented an individual-level physiologic condition (USDA, 2015). In the same committee report, “Food insecurity without hunger” was renamed as “low food security” and “Food Insecurity with hunger” was renamed to “very low food security” to clarify this differentiation (USDA, 2015).

Today, the USDA website states that food security “means access by all people at all times to enough food for an active, healthy life” (USDA, 2017). This definition is measured by 18 survey items replicated in Figure 3 (USDA,
The Census Bureau’s Current Population Survey Food Security Supplement (CPS-FSS) fields the survey to approximately 53,000 households across the country in 2015, the most current year for which data is available (Coleman-Jensen, Gregory, Rabbitt, & Singh, 2015). It is crucial to note that the first survey item captures emotions related to experiencing food security (“We worried whether our food would run out before we got money to buy more.”) Was that often, sometimes, or never true for you in the last 12 months?) and the remaining survey items capture reduction in food intake due to financial constraints. Questions 11-18 are only applied to households with children aged 0-17. Based on the responses to the CPS-FSS, households are sorted into a range of classifications of food security: high food secure, marginal food secure, low food secure, and very low food secure (Coleman-Jensen et al., 2015). The definitions for food insecurity status by level of burden are:

- **High food security**: Households had no problems, or anxiety about, consistently accessing adequate food.
- **Marginal food security**: Households had problems at all times, or anxiety about, accessing adequate food, but the quality, variety, and quantity of their food intake were not substantially reduced.
- **Low food security**: Households reduced the quality, variety, and desirability of their diets, but the quantity of food intake and normal eating patterns were not substantially disrupted.
• Very low food security: At times during the year, eating patterns of one or more household members were disrupted and food intake reduced because the households lacked money and resources for food.
Figure 3: Assessing Household Food Security

Households are classified as:
- **Food secure** if they report zero, one, or two food-insecure conditions.
- **Food insecure** if they report three or more food-insecure conditions.
  - Food-insecure households without children are further classified as having very low food security if they report six or more food-insecure conditions.
  - Food-insecure households with children age 0-17 are classified as having very low food security if they report eight or more food-insecure conditions among adults and/or children.

Questions 13 and 11-13 (below) are coded as affirmative (i.e., possibly indicating food insecurity) if the response is “often” or “sometimes.” Questions 5, 6, 10, and 17 are coded as affirmative if the response is “almost every month” or “some months but not every month.” The remaining questions are coded as affirmative if the response is “yes.”

Questions Used To Assess Food Security

1. “We worried whether our food would run out before we got money to buy more.” Was that often, sometimes, or never true for you in the last 12 months?

2. “The food that we bought just didn’t last and we didn’t have money to get more.” Was that often, sometimes, or never true for you in the last 12 months?

3. “We couldn’t afford to eat balanced meals.” Was that often, sometimes, or never true for you in the last 12 months?

4. In the last 12 months, did you or other adults in the household ever cut the size of your meals or skip meals because there wasn’t enough money for food? (Yes/No)

5. (If yes to question 4) How often did this happen—almost every month, some months but not every month, or in only 1 or 2 months?

6. In the last 12 months, did you ever eat less than you felt you should because there wasn’t enough money for food? (Yes/No)

7. In the last 12 months, were you ever hungry, but didn’t eat, because there wasn’t enough money for food? (Yes/No)

8. In the last 12 months, did you lose weight because there wasn’t enough money for food? (Yes/No)

9. In the last 12 months did you or other adults in your household ever not eat for a whole day because there wasn’t enough money for food? (Yes/No)

10. (If yes to question 9) How often did this happen—almost every month, some months but not every month, or in only 1 or 2 months?

(Questions 11-18 were asked only if the household included children age 0-17)

11. “We relied on only a few kinds of low-cost food to feed our children because we were running out of money to buy food.” Was that often, sometimes, or never true for you in the last 12 months?

12. “We couldn’t feed our children a balanced meal, because we couldn’t afford that.” Was that often, sometimes, or never true for you in the last 12 months?

13. “The children were not eating enough because we just couldn’t afford enough food.” Was that often, sometimes, or never true for you in the last 12 months?

14. In the last 12 months, did you ever cut the size of any of the children’s meals because there wasn’t enough money for food? (Yes/No)

15. In the last 12 months, were the children ever hungry but you just couldn’t afford more food? (Yes/No)

16. In the last 12 months, did any of the children ever skip a meal because there wasn’t enough money for food? (Yes/No)

17. (If yes to question 16) How often did this happen—almost every month, some months but not every month, or in only 1 or 2 months?

18. In the last 12 months did any of the children ever not eat for a whole day because there wasn’t enough money for food? (Yes/No)

Food Insecurity Burden: Federal, State, & Local Perspectives

U.S. Federal. Nationally, 12.7% of US households (15.8 million households) are food insecure (USDA, 2016; Coleman-Jensen et al., 2015). In households with children under 18, the rate of food insecurity increases to 16.6% compared to households without children at 10.9% (USDA, 2016; Coleman-Jensen et al., 2015). Figure 4 illustrates the distribution of food insecurity rates by U.S. States. Between 2000 and 2010, food insecurity rates increased from 10.5% in 2000 to 14.6% in 2008 at the peak of The Great Recession (Figure 5). The rate hovered at around 14% remained through the year 2014, after which the national food insecurity situation improved to ~12%.

There are clear links between income and food security: 36.8% of U.S. households with incomes below 130% of the federal poverty level (FPL) are food insecure (Coleman-Jensen et al., 2015). This cutoff is significant because nationally households with monthly incomes at or below 130% of FPL are eligible to receive Supplemental Nutrition Assistance Program (SNAP) and children are eligible for the National School Lunch and School Breakfast Programs.
Figure 4: Prevalence of Food Insecurity, Average 2013-15


Figure 5: Trends in Prevalence Rates for Food Insecurity and Very Low Food Security in U.S Households, 1995-2015

Note: Prevalence rates for 1996 and 1997 were adjusted for the estimated effects of differences in data collection screening protocols used in those years.
**California State & Local.** According to the California Association of Food Banks, the food insecurity rate in the State is 13.9% or 5.4 million Californians (California Association of Food Banks, 2017; Center on Budget and Policy Priorities, 2017). The numbers are even starker for children—22.9% (totaling 2.1 million children) across the State experience food insecurity (California Association of Food Banks, 2017). And, among these children, 1.7 million children who depend on subsidized school lunch program face hunger during the summer months (California Association of Food Banks, 2017).

Moreover, 2 of the top 10 counties in the U.S. with the most food insecure people are within the KPSC medical service area. In 2014, Los Angeles County was the highest with 1,393,170 persons and San Diego County ranked 7th with 423,130 persons (Figure 6). These numbers are largely a consequence on the population sizes of the counties. Figure 7 illustrates that food insecurity rates for Los Angeles County is 14%, larger than the state average, and San Diego County is 13.3%, slightly lower than the state average. However, these averages mask inequities in food insecurity rates within the counties. For example, in 2015 the Los Angeles County Department of Public Health released a major report titled *Social Determinants of Health: Rising Food Insecurity in Los Angeles County*. The main finding from the report that received much attention was that between 2002 and 2011, there was a relative increase of 40% in the prevalence of overall food insecurity, and a relative increase of 66% in the prevalence of very low food insecurity (County of Los Angeles Department of Public Health, 2015). Figure 8 shows that in the last year that the Los Angeles
County Health Survey was conducted, food insecurity rates for households with incomes <300% of FPL ranged from a low of 19.2% in the West service area to 36.9% in the South Bay service area (County of Los Angeles Department of Public Health, 2015).92

Figure 6: Counties with the Highest Number of Food-Insecure Individuals, 2014

Los Angeles (1st) & San Diego (7th) among counties with highest numbers of food insecure in the U.S.

Adapted from “Map The Meal Gap 2016,” Feeding America, 2016, p. 20, Copyright 2016 by Feeding America.
Figure 7: Food Insecurity Estimated by County Level

Figure 8: Food Insecurity Rates by Los Angeles County Department of Public Health Service Planning Areas (SPAs)

Reprinted from “Social Determinants of Health: Rising Food Insecurity in Los Angeles County,” 2015, Los Angeles County Department of Public Health.

**Food Insecurity Risk Factors**

The risk factors for food insecurity operate at multiple and interacting levels from the individual, to household, and societal levels. Fundamentally, the cause of food insecurity is poverty, however, this is a multi-dimensional problem that is comprised of several causes contributing to the condition that need to be considered in the design of policy or program interventions.
• At an individual level, risk factors associated with a significant increase in the likelihood of food insecurity include, but are not limited to, unemployment and underemployment, low-income, low-education, single-parent households with children, and experiencing negative life events such as violence, separation, or health problems such as disabilities. Other individual level risk factors cited in the literature include high housing costs, medical or health costs, substance abuse, high utility costs, homelessness, high child-care costs, and reduced health benefits (Haering, & Syed, 2009).93

• At a household level, rates of food insecurity were higher for the following groups: households with children, households with children under age 6, households with children headed by a single woman or a single man, women and men living alone, households headed by Blacks and Hispanics, and low-income households with incomes below 185 percent of the poverty threshold (USDA, 2016; Coleman-Jensen et al., 2015).94,95 Rates of very low food insecurity were higher for the following groups: households with children headed by a single woman or a single man, households with children, women and men living alone, Black and Hispanic households, households with incomes below 185 percent of the poverty line, and households located in nonmetropolitan areas (6.1 percent) (USDA, 2016; Coleman-Jensen, 2015).96,97

• At a societal level, risk factors associated with high national rates of food insecurity include: national macro-economic conditions, such as
unemployment rate, inflation, and price of food relative to other goods (Nord, Coleman-Jensen, & Gregory, 2014).\textsuperscript{98}

**Food Insecurity & Associated Health Outcomes**

Food insecurity contributes to a complex web of developmental and health conditions. While it is not always possible to distinguish causes from effects in food insecurity research studies, the impacts of food insecurity on health are wide-ranging. Bartfeld, Gundersen, Smeeding, & Ziliak, (2015) found a range of health outcomes directly caused by exposure to food insecurity for children, adults, and seniors.\textsuperscript{99} The health outcomes in children associated with food insecurity are: increased risk of birth defects, anemia, lower nutrient intakes, cognitive problems, aggression and anxiety, asthma, higher risk of being hospitalized, behavioral problems, depression, suicide ideation, and worse oral health (Bartfeld et al., 2015).\textsuperscript{100} Other researchers have confirmed these findings among children, including that food insecurity negatively impacts children’s health and developmental status, increases iron-deficiency anemia, acute infections, chronic illness, hospitalizations, and mental health problems (Seligman, Laraia, & Kushel, 2010; Hager et al., 2010)\textsuperscript{101,102} While less research on nonsenior adults has been conducted, studies have shown decreased nutrient intakes, increased rates of mental health problems and depression, diabetes, hypertension, and hyperlipidemia, worse outcomes on health exams, being in poor or fair health, and poor sleep outcomes (Gundersen, & Ziliak, 2015).\textsuperscript{103} Finally, the health outcomes in the senior
population associated with food insecurity are: lower nutrient intakes, report poor or fair health and be depressed, and more likely to have limitations of daily living (ADLs) (Gundersen & Ziliak, 2015).¹⁰⁴

Beyond health outcomes, food insecurity impacts a host of healthcare utilization and medication adherence behaviors that ultimately have health consequences for individuals and organization consequences for healthcare systems. Food insecurity is independently associated with postponing needed medical care and medications, increased emergency department (ED) use, and hospitalizations (Seligman & Schillinger, 2010).¹⁰⁵ Diabetic adults with food insecurity are 40% more likely to have poor glycemic control compared to diabetic adults without food insecurity, have five more physician encounters per year compared to diabetic adults without food insecurity, reduced medication intake to increase money for food or going hungry altogether (Seligman, Jacobs, López, Tschann, & Fernandez, 2012; Seligman et al., 2014).¹⁰⁶,¹⁰⁷
III. Food Insecurity Interventions

Food Insecurity: U.S. Federal & California State Goals

Healthy People 2020. Nationally, the goals for disease prevention and health improvement are priorities are articulated in Healthy People 2020. With input from thousands of members of the public and organized public health and health groups, this national strategy culminated in more than 1,200 objectives. The overarching goals of Healthy People 2020 include promotion of “quality of life, healthy development, and healthy behaviors across life stages” and creation of “social and physical environments and that promote good health” (Koh, 2010). Two objectives focused on food insecurity are: “eliminate very low food security among children” and “reduce household food insecurity and in doing so reduce hunger.”

Let’s Get Healthy California. The State of California Let’s Get Healthy Task Force in 2012 created a 10-year plan to make California the healthiest state in the nation (Let’s Get Healthy California, 2016). In the final report, 6 goals were identified as priorities, with 39 health indicators to measure progress towards the goals (Let’s Get Healthy California, 2012). Food insecurity related goals include increasing the number of healthy food outlets within the “Creating Healthy Communities: Enabling Healthy Living.” This is measured by Indicator 32 which tracks the “Number of healthy food outlets as measured by Retail Food Environmental Index.” The Retail Food Environmental Index is a ratio that is composed of the relative presence of total retail healthy food outlets in a specific geographic area (e.g. census tract).
U.S Federal Government Policies

**National Nutrition Programs.** In 2014, the top eight nutrition-related programs by federal spending totaled $99 billion. The four largest are the Supplemental Nutrition Assistance Program (SNAP), Women, Infants & Children (WIC) program, the School Breakfast Program (SBP) and the National School Lunch Program (NSLP). The programs all have a shared goal of providing low-income Americans with an adequate level of nutritional intake (Hoynes & Schanzenbach, 2015). As displayed in Table 1, the programs differ on a variety of factors: 1) populations served, income limits for eligibility, the degree to which the benefit is delivered “in-kind”, and the timing of phasing out of benefits due to income changes (Hoynes & Schanzenbach, 2015).
<table>
<thead>
<tr>
<th>Program</th>
<th>Populations served</th>
<th>Number served (2014)</th>
<th>Benefit rules</th>
<th>Federal Expenditures (2014)</th>
</tr>
</thead>
<tbody>
<tr>
<td>SNAP</td>
<td>Income &amp; Asset Tests</td>
<td>46.5 million</td>
<td>Debit/EBT card accepted at grocery stores &amp; authorized retailers to purchase &quot;unrestricted&quot; food</td>
<td>$74.2 Billion</td>
</tr>
<tr>
<td>WIC</td>
<td>Infants, children under 5 years, pregnant and postpartum women</td>
<td>Under 2 million women &amp; 6.3 million children</td>
<td>WIC benefits used to purchase restricted infant formula and other specific food items (e.g. milk, cereal, juice) WIC delivers nutrition education &amp; referrals to health and social services</td>
<td>$6.3 Billion</td>
</tr>
<tr>
<td>SBP &amp; NSLP</td>
<td>Students from low-income families</td>
<td>21.7 million (NSLP) &amp; 11.6 million (SBP)</td>
<td>Free or low cost meals that meet federal nutrition standards</td>
<td>$9.6 Billion (NSLP) &amp; $3.6 Billion (SBP)</td>
</tr>
</tbody>
</table>

**National Food Stamp Program/SNAP.** The National Food Stamp/SNAP program is the largest federal program in the U.S. designed to reduce food insecurity by supplementing household incomes for food purchases. In 1964, President Johnson signed the National Food Stamp Program into law as a
voluntary county-level program. By 1975, amendments to the reauthorization of the Food Stamp Act expanded the program into all counties nationwide (Figure 9). SNAP is similar to other means-tested benefits that require persons to demonstrate their household income and assets are below an eligibility cutoff. SNAP eligibility rules and benefit levels are, for the most part, set at the federal level and uniform across the nation, though states have flexibility to tailor aspects of the program, such as the value of a vehicle a household may own and still qualify for benefits. Under federal rules, to qualify for SNAP benefits, a household must meet three criteria (although states have flexibility to adjust these limits): 1) gross monthly income less than 130% of FPL, 2) Net monthly income (after deduction for high housing costs and child care), and 3) Asset limits. The maximum benefit amount is determined based household size and is reduced as income increases based on the benefit reduction rate (BRR), based on a tax rate formula on earnings. However, unlike nearly all means tested programs, SNAP benefits are not limited to targeted groups of people such as women, children, elderly or disabled (Hoynes & Schanzenbach, 2015). The benefit is delivered via a voucher with a pre-assigned dollar amount that is used to purchase foods sold at grocery stores and authorized retailers. By 2004, all states had transitioned to Electronic Benefit Transfer (EBT) cards for delivery of benefits. The federal government pays the full cost of SNAP benefits and splits the cost of administering the program with the states, which operate the program. In California, the SNAP program is called CalFresh, is administered by the California Department of Social Services (CDSS), and the State’s 58 counties
have administrative authority. Generally, applicants below 200% of FPL qualify for CalFresh benefits.

**Figure 9: Food Stamp Program Dates, by County (1961-75)**

Note: Figure 9 demonstrates the variation in the introduction of the Food Stamp Program, with lighter-shaded counties adopting the program earlier than darker-shaded counties. Reprinted from “The Safety Net as an Investment,” by Hoynes H. W. & Schanzenbach D. W., 2016, *Institute for Policy Research Briefs*, Copyright 2016 Northwestern University.
In 2016, the Obama Administration announced several new federal actions to “ensure American children have the food they need to grow, learn, and succeed.” (The White House, 2016) These federal actions included allocation of $12 billion over ten years to the Summer Electronic Benefits Transfer for Children (Summer EBT) program, which provides supplemental food benefits for families with children eligible for free or reduced price school meals (USDA, 2016). Additionally, the Administration allowed States to use Medicaid data to automatically link low-income children to school meals. The USDA Food and Nutrition (FNS) invited States to participate in demonstration projects to evaluate direct certification using Medicaid data in the National School Lunch Program (NLP) and School Breakfast Program (SBP) (USDA, 2016). A more complete description of these innovation pilots is provided in Appendix 4. In a course reversal, the future of SNAP and other federal nutrition programs is in limbo with the Republican control of Congress and the Trump Administration. Last year, House Budget Committee Chairman Representative Paul Ryan issued a proposal to make SNAP a block grant program. This change would fundamentally alter this program by allotting a fixed annual appropriation to states (rather than increase with increasing need). In times of increasing unemployment, this change could leave millions of Americans in a precarious food insecure state.
SNAP Impacts on Food Insecurity & Health Outcomes. Overall, the empirical effects of the SNAP program’s impact on food insecurity and health outcomes are mixed. Researchers have noted the difficulty of designing studies that can evaluate the SNAP program’s impacts, including: 1) Little variation in the program between States, 2) Few reforms or expansions of the program, and 3) SNAP is a near-universal program (i.e. not based on categorically eligibility), so it is challenging to find suitable control groups (Hoynes & Schanzenbach, 2015). Bitler (2014) researched for evidence of selection bias in SNAP and found adverse selection in SNAP whereby recipients were significantly less likely to be in excellent or very good health, more likely to be disabled or have a family member with functional limitations, more likely to be diagnosed with multiple chronic conditions (attention deficit disorder, asthma, diabetes, back problems, heart attack, stroke, ulcer, and vision problems), and more likely to have had contact with the medical system, although less likely to be able to afford health care. Since SNAP participants have worse health compared to non-participants, any effects of the SNAP program on outcomes are confounded by negative selection bias.

Despite the limitations of studies, SNAP’s direct effects on a range of outcomes, such as food spending and consumption, poverty, food insecurity, and health, show several potential benefits of the program. First, multiple economic studies have shown that SNAP leads to increases in food expenditures (Schmidt, Shore-Sheppard, & Watson, 2016; Bruich, 2014; Beatty & Tuttle, 2014). Using County-level rollout of the food stamp program in the
1960s and early 1970s, Hoynes & Schanzenback (2009) demonstrated a rise in food expenditures and consumption. Beatty and Tuttle’s (2014) study of the recent SNAP increases from the Troubled Asset Relief Program (TARP) showed that there was a significant increase in household food spending by 6.0%. And, dispelling a myth that SNAP participants have poor eating behaviors, Bitler’s descriptive analyses of NHANES data showed that adults and children on SNAP do not consume statistically significantly more fat or cholesterol compared to non-participants. Secondly, SNAP benefits in 2014 lifted at least 4.7 million Americans out of poverty, including 2.1 million children (Sherman & Trisi, 2015). Of these children, 1.3 million were lifted out of so-called deep poverty (defined as income level less than 50% of the poverty line) (The White House, 2015; Sherman, & Trisi, 2015). Also, women on SNAP had increased economic self-sufficiency. Thirdly, among households who receive SNAP, food insecurity rates are up to 30% lower compared to those not receiving the benefits (The White House, 2015). Because of the temporary increase in SNAP benefits under the American Recovery and Reinvestment Act (ARRA), 530,000 households were moved out of food insecurity (The White House, 2015). Finally, SNAP have been shown to have positive health effects, including: lower incidence of low birth-weight, decreased likelihood of adult metabolic syndrome and obesity, and mixed evidence to support reductions in childhood BMI and obesity (Almond, Hoynes, & Schanzenbach, 2011; Currie & Moretti, 2008; the White House, 2015; Almada, McCarthy, & Tchernis, 2016).
Healthcare System Programs

**Food Insecurity Screening & SNAP Referral.** Using food to treat nutrition-related disease within healthcare settings is not a new phenomenon. The father of the nation’s community health center movement, Dr. Jack Geiger, began writing prescriptions for food at local grocery stores for patients diagnosed with malnutrition in the Mississippi Delta. When the Office of Economic Opportunity in Washington D.C., the main funder of the health center, were notified that the health center was reimbursing the grocery stores with the pharmacy budget, they dispatched a federal employee to educate Dr. Geiger of the intended medical use of the federal dollars. Dr. Geiger replied with “The last time I looked in my textbooks, the specific therapy for malnutrition was food” (Bornstein, 2011). Today, it would seem that not much has changed, for example, Medicaid still does not reimburse for health providers to address unmet social needs. Yet, major U.S. organizations have taken a stand on the importance of screening and treating for food insecurity within clinical settings.

In recent years, there has been increasing policy statements issued by a range of professional and advocacy groups to influence providers to implement universal food insecurity screening and referral to social services within healthcare settings. In October 2015, the American Academy of Pediatricians (AAP) released a policy statement titled “Promoting Food Security for all Children” which recommended for the first time that pediatricians screen all children for food insecurity (American Academy of Pediatrics, 2015).
Specifically, the policy statement outlined recommendations for pediatricians to mitigate food insecurity at a practice-level and advocate for the needs of children and families at a systems-level (Gitterman et al., 2015). One of these practice-level recommendations is the adoption of a 2-question validated screening tool developed by Hager et al. (2010), which was itself adapted from the USDA’s 18-item Household Food Security Scale (Table 2). And, with regards to referral to community-based services to address food security, the AAP recommends: “when children screen positively for food insecurity, referral mechanisms to WIC, SNAP, school nutrition programs, local food pantries, summer and child care feeding programs, and other relevant resources are accessible and expedient” (Gitterman et al., 2015).

Table 2: 2-item validated food insecurity screening tool

<table>
<thead>
<tr>
<th>Question 1. Within the past 12 months, we worried whether our food would run out before we got money to buy more. (Yes or No)*</th>
</tr>
</thead>
<tbody>
<tr>
<td>Question 2. Within the past 12 months, the food we bought just didn’t last and we didn’t have money to get more. (Yes or No)*</td>
</tr>
</tbody>
</table>

Note: * Alternate scale: Often true, sometimes true, or never true; A response of “often true” or “sometimes true” to either question = positive screen for food insecurity

Two years prior, the California Medical Association (CMA) delegated adopted Resolution 122-13, which directed CMA to encourage physicians to screen adults and children for food insecurity and to refer to programs and services (North Bay County Medical Societies, 2013). In January 2016, the American Diabetes Association (ADA) provided its first food insecurity
guidelines for diabetes providers. In its *Standards of Medical Care in Diabetes*, the newly proposed clinical guidelines on food insecurity both received an “A” rating, meaning that there is “clear evidence from well-conducted, generalizable randomized controlled trials that are adequately powered (American Diabetes Association, 2016)”¹⁴¹ The food insecurity guidelines are:

- Providers should evaluate hyperglycemia in the context of food insecurity and propose solutions accordingly.
- Providers should recognize that homelessness, poor literacy, and poor numeracy often occur with food insecurity, and appropriate resources should be made available for patients with diabetes.

Smith et al. (2017) suggest pediatric, family and internal medicine, and primary care clerkships and residencies as prime opportunities to educate future physicians on the importance of food insecurity screening and referral.¹⁴² For practicing physicians, the best available avenue for learning about food insecurity are Continuing Medical Education programs (Smith et al., 2017).¹⁴³ Exceedingly, these recommendations have catalyzed healthcare providers to test various approaches to implement innovations in partnership with the social services sector.
IV: CalFresh Enabled-Enrollment Pilot Program

Theoretical Framework

An initial literature review was conducted to explore theoretical frameworks linking food insecurity to specific chronic disease outcomes (e.g. diabetes, hypertension, and obesity). The conceptual framework displayed in Figure 10 *The Cycle of Food Insecurity and Chronic Disease* makes this direct link, with intervening observable and latent variables (Seligman & Schillinger, 2010). First, food insecurity status leads to a host of coping strategies for individuals who are constrained by their dietary options (e.g. increased proportion of total caloric intake from fats and refined carbohydrates, decreased dietary variety and intake of fruits and vegetables, increased salt load in highly processed foods, and increased glycemic load.) These coping strategies directly impact an interplay of physiological factors that include weight gain/loss, hyper/hypo-glycemia, and stress. Ultimately, the interplay results in a disease state of diabetes, hypertension, and/or obesity. The consequences of these chronic disease states are: 1) Impaired self-management capacity, which is comprised of ability to afford appropriate diet and depression, poor sleep quality, and fatigue, resulting in deceased physical activity, and, 2) Competing demands with medication reduction or nonadherence and/or postponement of needed healthcare services. The effects of impaired self-management and competing demands, moderated by stress effects, lead to weight gain and poor control of risk factors for individuals. The ultimate impact of all of this food insecurity cycle results in increased
healthcare expenditures for the healthcare system. This conceptual framework for food insecurity depicts the complex interplay variables that are operating for individuals with food insecurity and the healthcare system that interfaces with these individuals. Applying this framework to the CalFresh Enabled-Enrollment Pilot Program, connecting food insecurity patients with CalFresh benefits will improve food access to healthful foods and improve eating behaviors which will stabilize weight gain and glycemic levels for diabetic adults. By breaking this cycle, an improvement in chronic disease outcomes will result. However, there are limitations with this framework that pose a challenge for designing interventions. One important limitation is the time it takes for intervening on food insecurity to have a measurable impact on clinical outcomes for chronic disease including obesity, hypertension, and/or diabetes. This limitation can be partially overcome by measuring success of the CalFresh Enabled-Enrollment pilot on behaviors that are known to impact these ultimate health outcomes. For example, among adults with diabetes and food insecurity, prescription fill rates and unnecessary ER utilization rates can be tracked for improvements in the short-term (6-12 months) and changes in hemoglobin A1c levels can be tracked in the long-term (12+ months). Further exploration of this limitation is explicated in the Project Strategy section. Ultimately, there is no one right set of indicators, but this theoretical framework serves as a reminder of the difficulty of designing and evaluating interventions for social determinants of health which are inherently multidimensional and operate at multiple levels across the life course.
Figure 10: The Cycle of Food Insecurity and Chronic Disease

The Cycle of Food Insecurity and Chronic Disease.

Project Strategy

The theoretical framework described in the previous section is a necessary component, but not sufficient for the effective implementation of the CalFresh Enabled-Enrollment Pilot Program within a large, integrated healthcare delivery organization. An accompanying project strategy focusing on the organizational (i.e. leadership, managerial, political) factors accounts for the contextual factors that need to be analyzed in preparation for implementing this program and future innovations. Moreover, this project strategy was created as a result of an environmental scan of external organizations and internal KP regions that have piloted food insecurity screening programs.

External Scan

Best Practices. The design of a food insecurity screening program for healthcare organizations requires attention to multiple components, including electronic health record (EHR), financial management, workforce, and referral mechanisms. Due to the cyclical nature of food insecurity status (households churn into and out of screening positive/negative for the condition), universal screening as part of the regular intake procedure (e.g. at check-in or in the exam room) is recommended practice. The World Health Organization (WHO) 10th revision of the Internal Statistical Classification of Disease and Related Health Problems (ICD10) created fields that can be documented by providers in an electronic health record system to track the completion of the food insecurity screen (ICD10 code Z659) and diagnosis of positive for food
insecurity (ICD10 code Z59.4). These ICD10 codes are critical for financial management systems to track the cost savings and/or value to the healthcare organization. The type of healthcare provider that should conduct the screening and referral is also a point of consideration for organizations. Feeding America, the country’s largest network of food banks, recommends that addressing food insecurity in healthcare settings should involve allied healthcare professionals (e.g. medical assistants, case managers, social workers, and/or patient navigators) in connecting patients with food resources. After food insecurity screening has been completed and properly documented in the EHR, recommended practice is an active connection to social services. Generally, 211 call centers and local food banks provide immediate food support, SNAP and WIC programs through County agencies provide long-term food support (Feeding America, n.d.). According to program evaluations of pilot programs across the country, handouts and fliers are not effective in ensuring that food insecure individuals are successfully connected to social services.

Recognizing the critical role health systems can play in addressing food insecurity among older adults, the AARP Foundation published a toolkit, Implementing Food Security Screening and Referral for Older Patients in Primary Care in November 2016 (American Association of Retired Persons, 2016). The toolkit contains organizational strategies for planning a screening and referral process. The 5 steps outlined are: 1) champions and advocates, 2) organizational commitment, 3) community partners, 4) modifications to the EMR, and 5) HIPAA compliance (AARP, 2014). In an evaluation three
healthcare systems (Hennepin County Medical center, Minneapolis, MN; Providence Medical Group, Milwaukie, OR; Chase Brexton Health Care, Baltimore, MD) who implemented food insecurity screening programs, the evaluators identified characteristics of successful interventions that are replicable to other healthcare setting: clear communication, reducing burden on primary care physicians, long and short term solutions to alleviate food insecurity, and planning for sustained implementation (AARP, 2016). All of these best practices were considered and integrated into the design process of the CalFresh Enabled-Enrollment Pilot Program.

**Barriers to Implementation.** While evaluations of program pilots have illuminated the necessary components (e.g. EHR, financial, workforce, referrals, etc.) for a food insecurity screen program, a host of organizational barriers remain a real challenge to successful implementation. The California Food Policy Advocates (2016) released a white paper titled *Screening and Interventions for Food Insecurity in Health Care Settings: State Strategies to Increase an Underutilized Practice In California.* In an environmental scan of hospitals and clinics in California, the authors found that fewer than 10 health providers had integrated food insecurity screening system-wide practice (California Food Policy Advocates, 2016). Barriers to food insecurity among those providers included: 1) Difficulty integrating screening questions into the EHR; 2) Competing priorities for medical providers and a lack of time to address food insecurity during the medical visit; 3) Inadequate on-site support
for medical providers to address positive food insecurity screens; 4) A lack of knowledge of where and how to refer positively screened patients.

**Program Models.** The environmental scan of food insecurity screening programs, the barriers to implementation and best practices were common to a diverse type of program models. However, the analysis revealed that the type of program model ranging from passive to active referrals directly impacted the % of positive food insecure patients connected to SNAP resources. The Hunger Coalition launched *Rx for CalFresh* in 2014, a collaborative of healthcare practitioners interested in the solving food insecurity at a local level. In October 2016, the San Diego Hunger Coalition (2016) released the report *Launching Rx for CalFresh in San Diego: Integrating Food Security into Healthcare Settings.* The report focused on the results of several program models in five distinct healthcare settings (free clinic, federally qualified health center, County home visiting nurse program, public health clinic, and hospital out-patient program). Figure 11 details the program models described in the report. The program outcomes on the right-hand column were included for dissemination with stakeholders within KP. These outcomes are from evaluations of pilot programs that were implemented within a health maintenance organization (HMO) setting, including a KP region in Colorado which will be described in more detail in the next section. The intent behind displaying these results is to communicate the importance of the CalFresh Enabled-Enrollment Pilot Program to adopt a program model with higher levels of provider engagement and referral automation.
Figure 11: Program Model Options

Program models with higher levels of patient/provider engagement & referral automation results in more successful connection to SNAP/CalFresh

<table>
<thead>
<tr>
<th>Program Models</th>
<th>Level of health provider engagement &amp; referral automation</th>
<th>Food insecure patient receives resources</th>
</tr>
</thead>
<tbody>
<tr>
<td>On-demand onsite assistance</td>
<td></td>
<td>No Data Available</td>
</tr>
<tr>
<td>Intermittent onsite assistance</td>
<td></td>
<td>75-100%**</td>
</tr>
<tr>
<td>Partner-initiated, in-person referrals</td>
<td></td>
<td>No Data Available</td>
</tr>
<tr>
<td>Partner-initiated, phone-based referrals</td>
<td></td>
<td>78%*</td>
</tr>
<tr>
<td>Patient-initiated, phone-based referral</td>
<td></td>
<td>No Data Available</td>
</tr>
<tr>
<td>Referral to local community-based</td>
<td></td>
<td>5%*</td>
</tr>
<tr>
<td>organizations</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*Kaiser Permanente & Hunger Free Colorado Pilot
**Sharp Healthcare & 211 San Diego Pilot
Figure 11: Program Model Options (Continued)

Program Model Descriptions (San Diego Hunger Coalition, 2016 & AARP, 2016): \(^{152,153}\)

1. On-demand onsite assistance: Patients are referred to a full-time, onsite resource coordinator to assist with applying for CalFresh and accessing additional food resources. Little to no loss to follow-up.

2. Intermittent onsite assistance: Patients are referred to an onsite partner organization to assist with applying for CalFresh and accessing additional food resources. Availability of service may vary based upon capacity. Limited loss to follow-up, if assistance is provided regularly.

3. Partner-initiated, in-person referrals: Patients consent to external referral and receive a follow-up call from a partner organization to schedule an in-person visit. An outreach worker meets with the patient to help him or her access food resources and apply for food assistance.

4. Partner-initiated, phone-based referral: After providing consent, patient receives a follow-up call from a partner organization to provide phone-based application assistance and additional food resource referrals. Loss to follow-up is often high.

5. Patient-initiated, phone-based referral: Patients are provided with a phone number to call for assistance. Loss to follow-up is high.

6. Referral to local community-based organizations: Patients are provided with names, addresses and phone numbers of local community based organizations for assistance. Loss to follow-up can be extremely high, unless the community partner is located in close proximity.
Internal KP Scan

**Clinic-to-Community Integration.** The concept of connecting patient social and economic needs in partnership with community-based organizations is not new to KP. This linkage has been referred to as clinic-to-community integration (CCI). At its core, CCI is health care providers and community-based organizations (CBOs) working together to meet community health needs to improve the population health and well-being of communities. Loel Solomon, VP of Community Health for Kaiser Permanente describes the opportunities and challenges for CCI, “It’s also what we do as an organization to systematically connect our members to the very rich set of assets and organizations that exist in their communities. Doing this at scale is a real challenge given how varied our members’ needs are, and how diverse the local resource landscape is. But it’s a real imperative for us to figure out how to do that, and there’s a lot of great work under way in our organization that will help us move forward” (Kaiser Permanente, 2014).

Partnership makes strategic sense to KP when, on balance, it benefits the mission and vision of the organization. First, the net benefit to KP (value in terms of lower cost and increased quality) has to be larger than the fees paid for the service (Tabbush, 2012). Second, the value proposition of buying the social services from CBOs must be greater than “building” it in-house (Tabbush, 2012). Many CBOs possess the certification, experience, care-delivery models, the linkages to community, and the trained front-line staff for targeting disenfranchised groups. For the CalFresh Enabled-Enrollment Pilot Program, it
makes strategic sense to partner because the eligibility and enrollment for the intervention, CalFresh, has to be approved by a County Eligibility Workers who need to assess and approve the application for SNAP benefits. Ultimately, it is this interdisciplinary, multisector strategy that aligns with the Total Health Strategy and will accelerate KP to achieve its mission and vision.

In 2011, Kaiser Permanente Colorado region embarked on a CCI pilot by partnering with Hunger Free Colorado, a hunger advocacy and outreach organization, to implement a universal food insecurity screening program. The program was first piloted in two pediatrics clinics and was spread to over 10 departments and over 10 medical offices (Kaiser Permanente, 2015). According to the KP and CBO partners leading the work, successful CCI efforts can be comprised of three key elements: 1) Require and ability to assess patients’ social and economic needs that impact their health; 2) Appropriate scope of community services and agencies must be identified to address those needs; and 3) Creation of a reliable referral system to facilitate the exchange of patient information between clinical and community settings while adhering to HIPAA requirements (Stenmark, Solomon, Allen-Davis, & Brozena, 2015). A case study of the Kaiser Permanente and Hunger Free Colorado partnership was published in a Health Affairs blog (Stenmark et al., 2015). The lessons from the Colorado region pilot are directly applicable to the SCAL region and are replicated in Table 3 below (Stenmark et al., 2015). For example, in the original program design, patients who tested positive for food insecurity were given a card which instructed them to call Hunger Free Colorado Hotline,
however, an evaluation showed that fewer than 5% of patients were calling the CBO. A community partnership between a pediatric weight management in Minnesota and Second Harvest Heartland found a similar enrollment rate for paper-based referral (8% of FI patients enrolled in SNAP) (Fox, Cairns, Sunni, Turnberg, & Gross, 2016). In the beta phase, program staff created a referral form in the EHR for patients to sign authorizing the CBO to contact the patient directly—this change improved the connection to resources to 78%. These results, in addition to four follow-up evaluation reports that were distributed internally at Kaiser Permanente, strongly suggest that the CalFresh Enabled-Enrollment Pilot Program needs to consider, at minimum, partner-initiated, phone-based referrals (Figure 11). However, to the extent that medical center and community partner conditions allow it, on-site assistance will be aimed for to reach the best program outcomes.
Table 3: KP Colorado Clinic-to-Community (CCI) Strategy Key Lessons

<table>
<thead>
<tr>
<th>Securing Provider Buy-in &amp; Establishing a Workflow</th>
<th>Early hunger screening efforts had to overcome considerable skepticism about the appropriateness of taking up valuable and scarce clinical time. This is not surprising given that providers are not typically exposed to the social determinants of health in their clinical training or in continuing education. Intensive communication, including engagement by passionate physician champions, is often required to overcome these gaps in knowledge and enthusiasm.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Referral Process</td>
<td>For the referral process to work, the community partner must have sufficient capacity to process referrals and reach out to patients. Care providers and community partners need to invest time to adapt and improve the referral process, applying the same kind of rigor and process improvement that health systems typically use to improve quality and clinical operations.</td>
</tr>
<tr>
<td>Data collection, evaluation, and improvement</td>
<td>Integration of community partner data with patients’ electronic medical records is useful in the process to ensure appropriate follow-up of referrals. It can also facilitate efficient evaluation to assess the impact of those referrals on health and use of care. However, data integration can be challenging. Kaiser Permanente’s hunger-screening programs suggest that full data integration, while preferable, is not necessary to implement effective clinic-to-community integration.</td>
</tr>
<tr>
<td>Linking programs to Policy</td>
<td>There is no one-size-fits-all intervention that can be applied in the clinic-to-community integration model because each clinical setting has its own distinct population, care-delivery process, and workflow. Programs must tailor screening questions, processes, and referrals to the unique characteristics and available resources for each population.</td>
</tr>
</tbody>
</table>

Adapted from “Linking the clinical experience to community resources to address hunger in Colorado,” by Stenmark, S., Solomon, L., Allen-Davis, J., & Brozena, C., 2015, Health Affairs Blog, Copyright 2015 Massachusetts Medical Society.
Part 2: Results Statement

I. Introduction

From July 2016 to March 2017, I completed a DELTA residency in partial fulfillment of the requirements for the DrPH Degree Program at the Harvard T.H. Chan School of Public Health. The residency placement was at Kaiser Permanente—the largest non-profit, integrated healthcare delivery organization in the U.S.—within the Southern California region. Moreover, I was placed within the innovations team under my Executive Sponsor, Dr. Nirav Shah, Chief Operating Officer (COO) and Senior Vice President (SVP) for Clinical Operations and Quality. Initially, I was provided with a list of projects within clinical operations focused on advancing Kaiser Permanente’s Total Health agenda. After learning about initial results from other pilot programs, food insecurity emerged as a high social need. In discussions with the Executive Sponsor, we decided on implementing a CalFresh Enabled-Enrollment Pilot Program to connect patients screened positive for food insecurity to CalFresh, the State’s SNAP food stamp program. This results statement includes four main sections covering a description of methodology, discussion of the DELTA Project planning and implementation stages, key learnings including critical reflections of the original project theory and strategy, and future directions for public health research and practice.
II. Methodology

The methodology utilized for this results statement is the descriptive case study. A descriptive case study is “used to describe an intervention or phenomena and the real-life context in which it occurred.” (Baxter & Jack, 2008)\(^{162}\) This qualitative method allows researchers to explore individuals or organizations, communities, and/or simple to complex interventions, and the inter-relationships among all these levels of analysis (Yin, 2003).\(^{163}\) For the purpose of the DELTA Project, this approach is ideal given that the guiding questions driving the analytical platform is on answering how and why questions—and especially because the organizational context matters to this study. The unit of analysis is a division (Clinical Operations & Quality) within an integrated healthcare delivery system (Kaiser Permanente) under study during the 8-month period (July 2016-March 2017). Within the division, the analysis focused on all individuals and teams in the Southern California Region and Medical Centers known to myself, the Doctoral Fellow for Total Health Promotion, who directly worked on advancing the total health strategy and/or addressing food insecurity for KP members and communities. In order to understand the phenomena being studied (e.g. the clinic-to-community integration strategy to intervene on food insecurity) an array of quantitative and qualitative sources were utilized to gain a holistic understanding of the barriers and facilitators to implementation. Quantitative sources include: literature review of peer-reviewed and grey literature, including technical reports prepared by research and advocacy organizations, and federal and state
government websites. Qualitative sources include: literature review of qualitative sources in the peer-reviewed and grey literature, informal key informant interviews with researchers, policymakers and program managers internal and external to the organization under study, and first-person direct observations of internal and external stakeholder meetings.
III. Discussion

The On-Boarding Phase (July-September 2016)

The first three months of the DELTA residency can be categorized as the “on-boarding” phase. On July 11, 2016, I started my first day of the residency as a Doctoral Fellow for Total Health Promotion on the innovations team within Clinical Operations. In an unexpected turn of events, I was informed that the innovations team had not yet been formed. During these first three months, I reported in the interim to the VP of Quality and would check-in with her on a bi-weekly schedule. The following month, I would learn that a hiring process for the yet-to-be-formalized team’s Director was in-progress.

In the absence of a formal organizational structure to carry out my pilot project, I conducted a series of key informant meetings within Clinical Operations and Quality, Community Benefits, and Research and Evaluation departments. The structure of each meeting followed a similar pattern, including: a) overview of the key informant’s department, primary team, and portfolio of work; b) discussion of their understanding of total health promotion; c) feedback on my CalFresh Enabled-Enrollment Pilot Program; and d) request for additional contacts. This last question garnered a convenience sampling of contacts that increased my relationships at KP and broader organizational knowledge. By the end of this informal, self-directed on-boarding process, I had interacted with KP employees at all levels of the organization, including Senior VPs, VPs, Directors, Program Managers, Consultants, etc.
The Planning Phase (October-December 2016)

The focus of the second three months of the DELTA residency primarily consisted of the literature review for Part 1: Analytical Platform for this DELTA Project. By October, the what of my DELTA Project was increasingly clear but I continued to grapple with the how and why. Therefore, while I immersed myself in the literature review which would inform the theoretical and implementation strategy for the project, my day-to-day residency work was a search for elucidating the latter questions.

During my first month, I had been introduced to strategy within the Southern California region called CULTIVATE which had lot of the elements of Total Health and called for intervening on the upstream determinants of health by aligning and leveraging existing KP efforts for collective impact. This prompted me to ask why Clinical Operations was engaging in Total Health Promotions and how my pilot program fit in within the context of the Region and Nationally. On November 11, 2016, I conducted a key-informant interview with Tyler Norris, the then SVP of Total Health at National Community Benefit. Through this conversation, I was able to map the outcomes of my CalFresh Enrollment Pilot Program within the Regional CULTIVATE strategy and the National Total Health strategy. Figure 12 outlines this pathway my pilot (and the other pilots led by my team) are intended to support the National KP Total Health Clinic-to-Community integration strategy (Figure 12). Ultimately, the vision for KP is that the organization wants to have a greater impact on the social, economic, and environmental factors in the community and maximizing
shared value for the business, members, and communities it serves. By mid-November, the team’s Director, had been hired and the four core members of the team had been re-located to a shared office location. By December, the question of how to implement a pilot program at KP was still unclear.

**Figure 12: KP Total Health Strategy Framework**

**KP Total Health Framework**

- **National KP Total Health**
  - Whole Person Care
  - Clinic-to-Community Integration
  - Total Health Impact

- **SCAL Region Cultivate**
  - Common Purpose
  - Go upstream
  - Create shared value
  - Activate locally
  - Collective impact
  - Unleash potential
  - Story Telling

- **Clinical Operations Total Health Promotion Programs**
  - CalFresh Enabled-Enrollment
  - Health Leads
  - Mobile Integrated Health
  - Predictive High-Utilizers

**The Implementation Phase (January-March 2017)**

The final three months of the DELTA residency can be categorized as the “implementation” phase. By January 2017, I had completed the theoretical framework and project strategy to guide the activities of the CalFresh Enabled Enrollment Pilot Program. First, securing provider buy-in was established through informal mechanisms (i.e. virtual colleague introductions, in-person events at food insecurity coalition meetings in Los Angeles and San Diego
Counties, etc.). The providers that would serve as the physician champions include the head of Pediatrics for the Vandever Medical Office Building (MOB) in San Diego and an Internal Medicine Resident Physician at Los Angeles Medical Center (LAMC). Second, the feasibility of a referral process was assessed through in-person meetings with the Directors and other senior staff at San Diego and Los Angeles Counties responsible for operating the CalFresh Programs in their respective counties. These meetings revealed that in San Diego County, the best program model is a proactive call from 211 San Diego. In Los Angeles County, a previously established partnership between the Department of Public Social Services and the local hospital association allows for either on-demand or intermittent on-site assistance. Third, and in many respects the most difficult puzzle piece to find, was integrating the screening into KP’s EHR, HealthConnect. As described previously, paper-based screeners do not result in the best outcomes for patients in previous food insecurity screening pilot programs. In January, a KP colleague introduced me to a social needs screener (*My Current Life Situation* questionnaire) created by KP’s Care Management Institute. Currently, the sites identified for the CalFresh Enabled- Enrollment Pilot Program have been scheduled to receive a live-demo of the questionnaire to discuss its appropriateness for the food insecurity screening. CMI staff have offered evaluation support for the pilot sites and feasible evaluation indicators will be created through a collaborative process. Based on a review of indicators from previous pilots, recommended process indicators include: a) % of patients screened for food insecurity, b) % of positive screens
referred to social services agency (e.g. 211, County Eligibility Worker), c) % of referred patients enrolled in CalFresh (ineligible individuals will be referred to food banks resources). Due to complexity of food insecurity condition, appropriate outcomes indicators are more difficult to identify, however, example indicators include: a) for pediatric populations, % change in fruit and vegetable consumption, % change in physical activity, and % change in Body Mass Index (BMI), b) for adult populations, the previous indicators can be utilized in addition to prescription fill rates, hospital readmissions, and chronic disease management indicators such as A1c levels. A fourth and final challenge, linking policies to programs requires an adaptability to the unique context (i.e. population, workflows, staffing, etc.) of the local medical centers. Key-informant interviews with the physician champions showed that because pediatricians conduct routine screenings of their pediatric patients, integrating food insecurity and other social needs screening is not as challenging as with other departments. At the internal medicine clinic at LAMC, the physician champion had to do a significant amount of lobbying and establishing buy-in to add just three questions to the work-flow questions asked by the allied healthcare providers during the intake process. By the end of the implementation phase, I had made considerable progress on the work of establishing the CalFresh Enabled Enrollment Pilot Program, and had begun conversations with my Executive Sponsor’s Chief of Staff to institutionalize more elements of the work for sustainability of the program beyond the residency year, including a business case and communications plan.
IV. Conclusion

Key learnings

The substantive literature review of Part 1: Analytical Platform was informative in guiding the design of the CalFresh Enabled-Enrollment Pilot Program, including addressing barriers to successful implementation from previously evaluated programs. Notwithstanding this evidence, the residency practice and this case study reflection elucidated that there were key learnings from this experience that may be instructive for implementation of future CCI programs for food insecurity—and other social needs—in healthcare settings.

Diagnosing the Organizational Structure. During the second and third phases of the DELTA residency, I felt like I was not making significant progress on the project implementation activities. Having completed the Part 1: Analytical Platform and knowing what has been effective in other organizations, it was clear to me what needed to get done. But, what was much less clear was how to get this done within the KP organization. Ultimately, a failure to diagnose the structure and function of the organization earlier in the process became an impediment to progress. According to the seminal Harvard Business Review Note on Organizational Structure, organizations can be classified along four features that are directly controlled by managers: 1) The division of labor, 2) Coordination mechanisms, 3) The distribution of decision rights, and 4) Organizational boundaries (Bernstein & Nohria, 1991). The other three features are equally important to the organizational structure but less within direct control of managers: 5) Importance of informal structure, 6) Politics, 7)
Basis of Authority. I evaluated the various features and concluded that the Clinical Operations division at KPSC is closest aligned to the network structure. With a constantly changing organizational structure within Clinical Operations during the study period, the main basis of authority for this pilot program was obtaining increased knowledge and resources. Other quality leaders within KP Nationally have come to the same conclusion: “Kaiser Permanente’s large size, loosely coupled structure, and geographically dispersed locations present formidable barriers to creating a learning organization (Schilling, 2011).”

Recognizing this reality earlier on would have prompted an earlier focus on securing the resources (financial and human) and information to successfully implement the pilot program activities at a faster rate.

Figure 13: A Comparison of Different Organization Structures

<table>
<thead>
<tr>
<th></th>
<th>Functional</th>
<th>Divisional</th>
<th>Matrix</th>
<th>Network</th>
</tr>
</thead>
<tbody>
<tr>
<td>DIVISION OF LABOR</td>
<td>By inputs</td>
<td>By outputs</td>
<td>By inputs &amp; outputs</td>
<td>By knowledge</td>
</tr>
<tr>
<td>COORDINATION</td>
<td>Hierarchical supervision, plans &amp; procedures</td>
<td>Division general manager &amp; corporate staff</td>
<td>Dual reporting relationships</td>
<td>Cross-functional teams</td>
</tr>
<tr>
<td>MECHANISMS</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>DECISION RIGHTS</td>
<td>Highly centralized</td>
<td>Separation of strategy &amp; execution</td>
<td>Shared</td>
<td>Highly decentralized</td>
</tr>
<tr>
<td>BOUNDARIES</td>
<td>Core/periphery</td>
<td>Internal/external markets</td>
<td>Multiple interfaces</td>
<td>Porous &amp; changing</td>
</tr>
<tr>
<td>IMPORTANCE OF</td>
<td>Low</td>
<td>Modest</td>
<td>Considerable</td>
<td>High</td>
</tr>
<tr>
<td>INFORMAL STRUCTURE</td>
<td>Inter-functional</td>
<td>Corporate-division &amp; inter-divisional</td>
<td>Along matrix dimensions</td>
<td>Shifting coalitions</td>
</tr>
<tr>
<td>POLITICS</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>BASIS OF AUTHORITY</td>
<td>Positional &amp; functional expertise</td>
<td>General management responsibility &amp; resources</td>
<td>Negotiating skills &amp; resources</td>
<td>Knowledge &amp; resources</td>
</tr>
</tbody>
</table>


Leading Change without Formal Role. Another key learning was the importance of leading change within an organization without a formal role and
lack of organizational structure. I overcame this barrier through a range of strategies. As discussed previously, being proactive during the “on-boarding” months in scheduling key informant interviews proved to be critical in advancing the work. Specifically, asking open-ended questions and requesting additional contacts was important to increasing my knowledge. Secondly, I had to advocate for myself with the Executive Sponsor, VP, and newly hired Director to be invited to meetings, conferences, and other events that allowed me to gain ground on my pilot program planning and implementation. Third, I took the initiative to engage with multiple stakeholders at meetings, conferences, and other events external to the KP organization. For example, in December 2016, during a San Diego Hunger Coalition convening, I met a KP pediatrician who would become the physician champion in San Diego. During the month of March 2017, I was invited by the LA County Department of Public Health to become a steering committee member for the Los Angeles County Nutrition Action Partnership—a collaborative of food assistance programs, government funded agencies, and other organizations devoted to improve the health of LA County residents. The collaborative includes representatives from: WIC, DPSS, LA Regional Food Bank, 211, LA County Library, Catholic Charities, Dept. of Children and Family Services, Dept. of Child Health & Disability Prevention, Care1st, and Aging and Community Services. Collaborating with external stakeholders is also a necessary component of CCI programs and towards achieving multi-sector, system-level change.
Communicating Innovations. The nature of what I communicated and to whom was not abundantly clear throughout the residency. There is no formal flow of information between all the multiple levels of the organization as it related to social needs and other innovation pilots. Despite this reality, my communications role did need to be differentiated dependent on who I was speaking to. For instance, between the National and Regional levels, I served as a liaison between national functions and local physician-champions. For example, in my search for adopting a food insecurity screening in the KP’s HealthConnect, I was introduced to the My Current Life Situation questionnaire created by CMI. Furthermore, I organized a demo simulation for the physician champions in March 2017. Most of the information I received was out of my own initiative, so a recommendation for future innovations would be for KP National and Regionally to consider this gap when adopting this and future innovations. At the Medical Center level, I knew from previous interventions that I needed to secure physician and allied health professional buy-in. What I learned was that the best avenue for communicating interventions at the local Medical Center level was having it come from the providers themselves educating their fellow colleagues on the importance of food insecurity screening and referral for their patients.

Re-assessing Project Theory & Strategy. By the third phase of the organizational residency, I recognized that the implementation frameworks from the previously conducted literature review were not sufficiently detailed for effective implementation of innovations. A follow-up literature search was
conducted to explore implementation science frameworks for the project strategy implementation. To limit the scope of this search, frameworks were limited to those created for healthcare settings. Previous healthcare services researchers have noted the difficulty of testing, implementing, and scaling an evidence-based intervention (Health Affairs, 2015). Overcoming early tests of change and implementation will require re-thinking the “one-size-fits all” approach. Recognizing the variation across implementation sites in culture, readiness, and macro-environmental effects are key for policymakers and program managers. First, early testing and implementation requires a deep understanding of the core concepts (rather than a rigid protocol) and the theory underpinning the innovative intervention. Secondly, organizations should provide the method and tools to assess whether a model can be adapted to a specific setting locally. The expectation here is that policymakers and program managers will learn more about “what works and why” through this interactive process of implementing and learning.

Since the year 2000, three articles meeting the review criteria described previously were selected to situate the current CalFresh Enabled-Enrollment Pilot Program strategy. Greenhalgh, Robert, Macfarlane, Bate, & Kyriakidou (2004) pioneering meta-narrative review of empirical research studies of diffusion of service innovation in the healthcare sector resulted in a unifying conceptual model for determinants of diffusion, dissemination, and implementation of innovations. This model reviewed nearly 500 published sources across 13 fields of research (Appendix 6).
A follow-up to Greenhalgh et al.’s seminal work, Aarons, Hurlburt, & Horwitz’s (2010) conceptual model of evidence-based practice implementation in public service sectors recognize that different variables play more or less of a role at the different phases of implementation (Appendix 7). In other words, this implementation strategy framework articulated a time component to discern the importance of the multiple latent and observable factors that come into play at the various stages of implementation from exploration, adoption, active implementation, and sustainment. These more robust frameworks can be utilized by future program managers in the design of their social needs screening pilot innovations.

Financial Constraints. Late in the third phase of my DELTA Project, I began acquiring information regarding how to fund this pilot program. In a resource-constrained organization, it is significant to put resources into areas that will have the highest return of investment. What worked for me was approaching this problem by identifying the intervention sites with the highest need of food insecurity. Through the Total Health Assessment Tool (THAT), a proprietary mapping tool using interactive data analytics, data visualizations, and mapping techniques to identify community health improvement opportunities for KPSC. The purpose of the tool is to provide actionable data for use in KPSC’s clinical and business functions as levers for addressing upstream determinants of health to improve population health. During the month of March and April, I pilot tested the tool to study food insecurity needs by Medical Center service area to better target resources within the expansive
geographic boundaries of San Diego and Los Angeles counties. While still in-progress, this business case and accompanying results will be presented at the KP National Quality Conference in June 2017.

**Future Directions**

This DELTA Project fills a gap in the literature by providing an in-depth, qualitative case study on the implementation of a Clinic-to-Community (CCI) integration strategy to intervene on one specific socio-economic determinant: food insecurity. The key learnings include the importance of diagnosing the organization structure in the planning phases for a new innovation, how to lead change in an organization without a formal role, and differentiation of communication strategies for the innovation based on the level/function of the target audience. Future CCI innovation pilots can increase their likelihood of success by considering these and other elements (e.g. securing provider buy-in & establishing a workflow, referral process, data collection, linking programs to policy) that have been identified as enabling factors by previously evaluated programs. As lessons from innovation pilots integrating social needs and the healthcare sector continue to increase in number, the next area of investigation is better identification of the cost, quality, and health outcome indicators that should be tracked by healthcare systems. These insights will generate the evidence needed to make it a business priority for organizations and the scale-up these pilot programs across the U.S. healthcare delivery system. These minor changes in how the healthcare systems views its role in addressing social needs may accelerate positive progress towards closing the quality chasm.
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Appendix 1

Food insecurity: Global Definitions & Measurement

In 1974, the Food and Agriculture Organization of the United Nations (FAO) hosted the World Food Conference in Rome, Italy. The governments who attended were tasked with developing an action plan for the eradication of hunger and malnutrition. This resulted in the adoption of The Universal Declaration on the Eradication of Hunger and Malnutrition, which first and foremost reminded the international community that food is a human right, “Every man, woman and child has the inalienable right to be free from hunger and malnutrition in order to develop fully and maintain their physical and mental faculties.”¹ This right was first enshrined in Article 25 of the Universal Declaration of Human Rights adopted by the United National General Assembly on December 10, 1948 at the Palais de Chaillot, Paris.² Furthermore, the document defined food security as “(g) The well-being of the peoples of the world largely depends on the adequate production and distribution of food as well as the establishment of a world food security system which would ensure adequate availability of, and reasonable prices for, food at all times, irrespective of periodic fluctuations and vagaries of weather and free of political and economic pressures, and should thus facilitate, amongst other things, the development process of developing countries.”³ This definition defines “food security” from a supply side perspective; mainly assuring the availability and

¹ [Http://www.ohchr.org/EN/ProfessionalInterest/Pages/EradicationOfHungerAndMalnutrition.aspx](http://www.ohchr.org/EN/ProfessionalInterest/Pages/EradicationOfHungerAndMalnutrition.aspx)
³ [http://www.ohchr.org/EN/ProfessionalInterest/Pages/EradicationOfHungerAndMalnutrition.aspx](http://www.ohchr.org/EN/ProfessionalInterest/Pages/EradicationOfHungerAndMalnutrition.aspx)
“reasonable” prices of food for developing and developed nations. In 1986, a World Bank report “Poverty and Hunger: Issues and Options for Food Security in Developing Countries” expanded conceptualizations of food security. The report defines food security as “access by all people at all times to enough food for an active, healthy life.” The converse, therefore, is that food insecurity is the lack of access to sufficient food. Moreover, the report distinguished between 2 types of food insecurity: chronic and transitory.⁴

- Chronic food insecurity: is a continuously inadequate diet caused by the inability to acquire food
- Transitory food insecurity: is a temporary decline in a household’s access to enough food, resulting from instability in food prices, food production, or household incomes

Thus, this differentiation makes note of one of the difficulties of measurement of food security: how much time does an individual or household suffer from food insecurity?

In 1994, the United Nations Development Report introduced a new conceptualization of “human security”, of which food security is one of 7 main categories: economic security, food security health security, environmental security, personal security, community security, and political security.⁵ In this report, food security is defined as “all people at all times have both physical and

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economic access to basic food.” This definition clarifies that food security means that there is both a sufficient supply of food, but also that it is economically accessible (i.e. affordable) to people.

In 1996, the Food and Agriculture Organization of the United Nations (FAO) convened the World Food Summit to reaffirm food as a human right in the “Rome Declaration on World Food Security.” The declaration stated that food security “exists when all people, at all times, have physical and economic access to sufficient, safe and nutritious food to meet their dietary needs and food preferences for an active and healthy life.” Beyond this definition, the document outlines that food security operates at the individual, household, national, regional and global levels.

In 2001, the Food and Agriculture Organization of the United Nations (FAO) published the third edition of The State of Food Insecurity in the World titled “Food Insecurity: when people live with hunger and fear starvation.” In the glossary, food security is defined as “A situation that exists when all people, at all times, have physical, social and economic access to sufficient, safe and nutritious food that meets their dietary needs and food preferences for an active and healthy life.” The first edition published in 1999 had defined food insecurity as “low level of food intake, which can be transitory (when it occurs in times of crisis), seasonal, or chronic (when it occurs on a continuing basis). Of

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7 http://www.fao.org/docrep/003/w3613e/w3613e00.HTM
8 http://www.fao.org/docrep/003/y1500e/y1500e00.htm
note, the report defined undernourishment as “chronic food insecurity, in which food intake is insufficient to meet basic energy requirements on a continuing basis.”

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Appendix 2
Food Insecurity Burden: Global Perspective

The USDA’s ERS publishes the International Food Security Assessment—the only report that provides a 10-year projection of various food security indicators in 76 low- and middle-income countries.\textsuperscript{11} The report defines food insecurity occurring “when per capita food consumption for a country’s income decile falls short of the nutritional target of roughly 2,100 calories per person per day.”\textsuperscript{12} In the 2015-25 report, it is estimated that 475 million were food insecure, a drop of 9% from 521 million in 2014. These projections have their limitations, however, as the CRS researchers only use 2 determinants of food insecurity for each country analyses—food production and import capacity. The Asian and Sub-Saharan African regions depend largely on locally produced grain supplies. And, in Latin America, the Caribbean and North Africa where imports are a large share of domestic food supplies, the capacity to pay for imports is an indicator of food security. For the next iteration of the 2016-2026 report, the CRS researchers are adjusting the methodology. Specifically, the model will be replaced with one that also accounts for market-based food.\textsuperscript{13} The model predicts that problem of food insecurity among the 76 countries studies is expected to worsen, from 13.4% experiencing food insecurity in 2015 to 15.1% in 2025. Globally, food security is projected to rise from 28.4% in 2015 to 30.4% in 2025. And, this is largely driven by countries where local conflict

\textsuperscript{11} http://www.ers.usda.gov/topics/international-markets-trade/global-food-security/
disrupts agricultural activities (i.e. Democratic Republic of Congo, Central African Republic, and Somalia) or where population growth is approximately 3% per year (i.e. Burundi, Ethiopia, Uganda, Burkina Faso).
Appendix 3

Food Insecurity: Global Goals

Millennium Development Goals (2000). In the year 2000, 189 United Nations (UN) member states agreed to and signed the Millennium Declaration.\textsuperscript{14} This historic declaration set 8 clear goals to improve the lives of the poorest people in the globe by the year 2015.\textsuperscript{15} While none of the goals explicitly addressed food insecurity, Millennium Development Goal 1 focused on eradicating extreme poverty and hunger.\textsuperscript{16} One of the nutritional targets associated with this goal, Target 1C, sets to halve the proportion of people who suffer from hunger between 1990 and 2015. Data showed that this target was reached 5 years prior to the deadline. Globally, approximately 700 million fewer people lived in extreme poverty conditions in 2010 compared to 1990.\textsuperscript{17} Yet, 1.2 billion people were still living in extreme poverty in 2015.\textsuperscript{18}

Sustainable Development Goals (2015). As the MDGs came to a close, the UN adopted the post-2015 development agenda with 17 sustainable development goals and 169 targets.\textsuperscript{19} They were adopted in the 2030 Agenda for Sustainable Development adopted by 193 Heads of State.\textsuperscript{20} Ending extreme poverty and hunger still featured prominently in the SDGs. And, in this next iteration, food security was explicitly named in SDG 2: “End hunger, achieve

\textsuperscript{14} http://www.who.int/topics/millennium_development_goals/en/
\textsuperscript{15} http://www.who.int/topics/millennium_development_goals/en/
\textsuperscript{16} http://www.who.int/mediacentre/factsheets/fs290/en/
\textsuperscript{17} http://www.un.org/millenniumgoals/pdf/Goal_1_fs.pdf
\textsuperscript{18} http://www.un.org/millenniumgoals/pdf/Goal_1_fs.pdf
food security and improved nutrition and promote sustainable agriculture.”
Many of these targets also relate to food security—“By 2030, end hunger and
ensure access by all people, in particular the poor and people in vulnerable
situations, including infants, to safe, nutritious and sufficient food all year
round.” Of note, several other targets are addressing more distal factors
correlated with food insecurity, including environmental and economic
determinants. 21 This also includes a target related to the clinical/individual-level
manifestation of food insecurity: hunger and malnutrition: “By 2030, end all
forms of malnutrition, including achieving, by 2025, the internationally agreed
targets on stunting and wasting in children under 5 years of age, and address
the nutritional needs of adolescent girls, pregnant and lactating women and
older persons.”

21 http://www.un.org/sustainabledevelopment/hunger/
Appendix 4

U.S. Federal Government Nutrition Program Innovations

On December 13, 2010, The Healthy, Hunger-Free Kids Act (HHFKA) of 2010 was signed into law by President Barack Obama, which was a reauthorization of the Child Nutrition Act, originally signed into law by President Lyndon B. Johnson. The bill funds and sets policy for the USDA’s national child nutrition programs: The National School Lunch program, School Breakfast Program, the Special Supplemental Nutrition Program for Women, Infants and Children (WIC), the Summer Food Service Program, and the Child and Adult Care Food Program.\(^2^2\) As part of advocacy on the part of First Lady Michelle Obama’s Let’s Move! Initiative, the bill led to major revisions to the school meal nutrition standards.\(^2^3\)

Under Section 141 of HHFKA titled “Childhood Hunger Research and Demonstration Projects to End Childhood Hunger,” $40 million was allocated to the USDA to conduct and evaluate innovative strategies to end childhood hunger, including demonstration projects that “(5) improve the coordination of Federal, State, and community resources and services aimed at preventing food insecurity and hunger, including the establishment and expansion of State food policy councils.”\(^2^4,2^5\) The competitive grants were awarded to the programs listed in Table 4. In the program’s FY 2015 report to the U.S. Congress, only one of


the grantees had an explicit focus on reducing food insecurity. The Navajo Nation Division of Health (NDOJ)’s Food Access Navigation Project “will carry out a three-pronged strategy to reduce child food insecurity” which includes:

- Evaluate assets and gaps in the food access infrastructure (i.e. nutrition programs, local farms, and resources for food storage and transportation);
- Work with school boards and administrators, leaders of chapter houses, and community members to address existing barriers; and
- Increase the availability of and enrollment in nutrition assistance programs.

Table 4: USDA Demonstration Projects to End Childhood Hunger Grantees

<table>
<thead>
<tr>
<th>Demonstration Project Grantee</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Chickasaw Nation</strong></td>
<td>The Chickasaw Nation will implement the Chickasaw Nation Nutrition Services Demonstration Project to End Childhood Hunger, which will provide food through home delivery to households with children who qualify for free school meals. Grant amount: $9.7 million.</td>
</tr>
<tr>
<td><strong>Kentucky</strong></td>
<td>The Commonwealth of Kentucky will implement the Ticket to Healthy Food Supplemental Nutrition Assistance Program Demonstration, which will test the impact of providing households with children an additional transportation deduction that may increase their SNAP</td>
</tr>
</tbody>
</table>

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benefits. The project will serve the Kentucky Highlands area in the southeastern part of the state – a designated Promise Zone. Grant amount: $3.6 million.

Navajo Nation

The Navajo Nation Division of Health will implement the Food Access Navigation Project, which will employ Food Access Navigators to evaluate assets and gaps in food access in selected regions of the reservation and provide technical assistance for connecting eligible households to nutrition assistance programs. Grant amount: $2.4 million.

Nevada

The Nevada Division of Public and Behavioral Health will implement the Nevada SNAP Enhancement Demonstration Project to test the relative impacts on SNAP households with children of (1) an increase in SNAP benefits, and (2) a SNAP increase plus additional outreach, education, and case management. Grant amount: $3.1 million.

Virginia

The Virginia Department of Education will implement the Virginia Hunger-Free Kids Act Demonstration Project, which will test the impact of providing (1) three school meals a day to all children in select schools during the school year, (2) food for weekends and school breaks, and (3) more resources for low-income households to purchase food during the summer months. Grant amount: $8.8 million.

In 2010, The Agriculture, Rural Development, Food and Drug Administration, and related Agencies Appropriations Act, allocated funding for the USDA to “carry out demonstration projects to develop and test methods of
providing access to food for children in urban and rural areas during the summer months when schools are not in regular session...” The main goals of these interventions are outlined to “(A) reduce or eliminate the food insecurity and hunger of children; and (B) improve the nutritional status of children.” Finally, funds were made available to conduct rigorous programs evaluations.

The Summer Electronic Benefit Transfer for Children (SEBTC) was the largest demonstration project. The main aims of the pilot were to study the impact of increased SNAP or WIC electronic benefit transfer (EBT) systems on food insecurity, children’s nutrition, and other outcomes in order to close the summer hunger gap. The implementation grantees are listed in Table 5. In the first two summers of 2011 and 2012, the demonstration tested a $60 benefit amount. In the third summer of 2013, the demonstration tested the impacts of a $60 vs a $30 benefit amount. And, in the summer of 2014, the impact. In 2016, an evaluation of the demonstration project showed important program implementation, cost, and food security impacts. The results show statistically significant results for the program preventing very low food security among children by a third. In other words, one-third of children in the intervention group would have experienced this most severe form of food insecurity without the SNAP or WIC intervention. The pilot also improved healthy eating for families by increasing consumption of fruits and vegetables, and whole grains.
Table 5: Summer Electronic Benefit Transfer for Children Grantees

<table>
<thead>
<tr>
<th>Year</th>
<th>Model Type</th>
<th>State Grantees</th>
</tr>
</thead>
<tbody>
<tr>
<td>2011 Proof-of-Concept</td>
<td>WIC</td>
<td>Michigan, Texas</td>
</tr>
<tr>
<td></td>
<td>SNAP</td>
<td>Connecticut, Missouri, Oregon</td>
</tr>
<tr>
<td>2012 Expanded Operations</td>
<td>WIC</td>
<td>Michigan, Texas</td>
</tr>
<tr>
<td></td>
<td>SNAP</td>
<td>Cherokee Nation, Chickasaw Nation, Nevada</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Connecticut, Missouri, Oregon</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Delaware, Washington</td>
</tr>
</tbody>
</table>
Appendix 5


Framework
Appendix 6

Aarons et al. (2010) Practice Implementation in Public Service Sectors

Model