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# The Ecosystem Of Women's Health Social Enterprises Based In The United States

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The Ecosystem of Women's Health Social Enterprises Based in the United States

A Thesis Submitted to the  
Yale University School of Medicine  
in Partial Fulfillment of the Requirements for the  
Degree of Doctor of Medicine

by

Marquita Kilgore-Nolan

2018

## ABSTRACT

The overall objective of this thesis research was to elucidate the ecosystem of women's health social enterprises (WHSEs) based in the United States (U.S.). Aim I was to conduct a secondary data analysis of a random national sample of nonprofit WHSEs based in the U.S. regarding their characteristics and areas of intervention. Aim II was to conduct a qualitative assessment of a sample of women's health social entrepreneurs based in the U.S. regarding their perspectives on the ecosystem of WHSEs. Aim I utilized the GuideStar database and assessed enterprise size, geographic location, financial distress, health intervention area, and health activity category using descriptive statistics, statistical tests, and multivariable regression analysis via SPSS. Aim II utilized in-depth interviewing and grounded theory analysis via MAXQDA 2018 to identify novel themes and core categories while using an established framework for mapping social enterprise ecosystems as a scaffold.

Aim I findings suggest that WHSE activity is more predominant in the south region of the U.S. but not geographically concentrated around cities previously identified as social enterprise hubs. WHSEs take a comprehensive approach to women's health, often simultaneously focusing on multiple areas of health interventions. Although most WHSEs demonstrate a risk for financial distress, very few exhibited severe risk. Risk for financial distress was not significantly associated with any of the measured enterprise characteristics. Aim II generated four core categories of findings that describe the ecosystem of WHSE: 1) comprehensive, community-based, and culturally adaptive care, 2) interdependent innovation in systems, finances, and communication, 3) interdisciplinary, cross-enterprise collaboration, and 4) women's health as the foundation

for family and population health. These findings are consistent with the three-failures theory for nonprofit organizations, particularly that WHSEs address government failure by focusing on the unmet women's health needs of the underserved populations (in contrast to the supply of services supported by the median voter) and address the market failure of overexclusion through strategies such as cross-subsidization and price discrimination. While WHSEs operate with levels of financial risk and are subject to the voluntary sector failure of philanthropic insufficiency, the data also show that they act to remediate other threats of voluntary failure.

Aim I findings highlight the importance of understanding financial performance of WHSEs. Also, lack of significant associations between our assessed enterprise characteristics and their financial risk suggests need for additional research to identify factors that influence financial performance of WHSE. Aim II findings show that WHSEs are currently engaged in complex care coordination and comprehensive biopsychosocial care for women and their families, suggesting that these enterprises may serve as a model for improving women's health and healthcare. The community-oriented and interdisciplinary nature of WHSE as highlighted by our study may also serve as a unique approach for research and education purposes. Additional research on the ecosystem of WHSE is needed in order to better inform generalizability of our findings and to elucidate how WHSE interventions may be integrated into policies and practices to improve women's health.

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## INTRODUCTION

### *Social enterprise and other key definitions*

It is imperative to first clarify several key definitions used throughout this study. We define **social enterprises** according to the Social Enterprise Alliance's basic working definition – “organizations that address a basic unmet need or solve a social problem through a market-driven approach” (1). For example, a common approach to social enterprise is to sell a product or service that either directly addresses the social problem or contributes a portion of profits toward an unmet need. This definition is most inclusive of the broad variation in organizational structure represented among social enterprises, including both for-profit and non-profit entities.

For the purpose of this study, **women's health** refers to not only female-specific health conditions, such as female reproductive health, but also as other health conditions or healthcare-related issues as they pertain to the female population (e.g., heart disease in women) including women and girls of all ages. **Health and healthcare-related issues** are defined broadly to include not only physical health status, but also mental health status and social determinants of health or factors affecting the access, cost, or quality of health care. The **areas of health intervention** within women's health are defined according to the health impact pyramid model proposed by Frieden (2). Such areas of health intervention (listed in order of hierarchy ascending from the base of the pyramid with lower tiers requiring less individual effort but having the greatest population impact) include: Socioeconomic Factors, Changing the Context to Make Individuals' Default Decisions Healthy, Long-lasting Protective Interventions, Clinical interventions, and Counseling and Education.

Lastly, we define the **ecosystem** of women's health social enterprise (WHSE) as the overall organization and collaboration of key stakeholders involved in social enterprise efforts targeting women's health. A previously published social enterprise ecosystem map was utilized as a framework for elucidating ecosystem components in our study (3). More specifically, this ecosystem map included the following components: resource providers, competitors, complementary organizations or allies, bystanders, beneficiaries or customers, opponents or problem makers, and environmental conditions. Furthermore, we frame social enterprise ecosystems within geographic bounds, whether national or regional.

### ***Social Enterprise Typology***

Alter's social enterprise typology suggests that social enterprise classifications are based on either the enterprise's mission or its level of integration between business activities and social programs (4). With regard to mission classification, social enterprises are classified as mission-centric, mission-related, or unrelated to mission. With regard to level of integration, social enterprises are classified as embedded, integration, or external.

According to Alter, mission-centric social enterprises are "created for the express purpose of advancing the mission using a self-financing model" (4). Mission-related social enterprises have "synergistic properties, creating social value for programs and generating economic value to subsidize the organization's social programs and/or operating expenses" (4). Two major types of mission-related social enterprise activity exists, each with a different purpose – one for the commercialization of social services and another for expansion of a pre-existing mission. Alter explains that with regard to



social enterprise activity unrelated to a mission, “business activities may have a social bent, add marketing or branding value, operate in an industry related to the nonprofit parent organization’s services or sector, however, profit potential is the motivation of creating a social enterprise unrelated to mission” (4). For embedded social enterprises, “social programs and business activities are one and the same” (4). With integrated social enterprises, “social programs overlap with business activities” (4). In external social enterprises, “social programs are distinct from business activities” (4).

### ***Social Enterprise in Health and Healthcare***

There is growing interest in the role of social enterprises in improving population health. A 2014 systematic review highlighted the limited number of studies formally evaluating the effect of social enterprise in enhancing subjects’ health and well-being (5). Based on five studies, authors of the systematic review formulated a model to systematically conceptualize social enterprise intervention in the realm of health and summarized key ways in which social enterprise activity can impact overall health and well-being: promoting mental health and self-reliance/esteem, improving health behaviors, reducing stigmatization, and building social capital (5). More recently, two studies conducted in Scotland suggest that social enterprise activity is not only important for improving health but should also be formally considered a public health intervention: one study used focus groups of social entrepreneurs to design a conceptual model as a scaffold for future research and the other study assessed the processes of social enterprises to document the mechanisms by which they serve as “public health actors” (6,7). Social entrepreneurship has also been found to be an effective way to generate

health services in non-traditional contexts for health, such as religious congregations. For example, a California qualitative study showed that religious organizations served as “incubators” for social entrepreneurship that addressed local health needs (8). Altogether, these studies demonstrate that social enterprises are actively meeting a demand for services related to public health.

In addition to providing services to meet general health needs, social enterprises may also help improve health care delivery and consequent health outcomes. Social enterprise has been shown to be a novel model for improving the delivery of sexual health services to at-risk populations (9). For example, multiple sexual health studies have demonstrated that a social entrepreneurship testing model that enabled participants to purchase self-testing kits online and receive follow-up counseling from community-based organizations can feasibly and successfully promote HIV/syphilis testing and longitudinal care among men who have sex with men (10,11). Along similar lines, an infectious disease case study detailed the use of a social entrepreneurship approach to generate innovative and sustainable malaria diagnosis interventions in Tanzania by targeting research relevant to local needs, employing multi-disciplinary teams that integrate local stakeholders, adapting strategies via an iterative process, and focusing on long-term sustainability (12). Furthermore, empirical studies and expert commentary reveal the potential of social enterprise in promoting mental health in multiple settings. For example, a UK study showed that a mental health social enterprise improved outcomes for 96% of the patients receiving psychotherapy through its services (13). Altogether, these studies reveal the promise of social enterprise for working in many intervention areas to generate health outcomes and its potential to provide innovative

approaches to health care delivery; however, in the literature to date, social enterprise is often an understudied or underutilized healthcare intervention.

### ***Social Enterprises and Women's Health***

Within the small but growing literature exploring how social enterprises impact health, there is a lack of research and data with regard to social enterprises explicitly targeting women's health. Although numerous studies have assessed the health and hygiene of women working within various types of enterprises, these studies often used the enterprises as the setting from which the study sample was drawn without assessing the actual impact of such enterprises on women's health (14-17). Furthermore, many studies discuss the roles played by social enterprises, especially small enterprises known as microenterprises, in the economic empowerment of women (18,19); although enhanced economic opportunity may impact social determinants of health for women, most of these studies do not explicitly evaluate the impact of social enterprises and entrepreneurship on women's health. For example, one case study showed that an entrepreneurial exchange program between Ghana and the US successfully utilized social work skills to promote economic empowerment for Ghanaian women, but it did not provide data on the health of these women (20). These studies highlight a gap in the literature on women's health social enterprises that fails to inform the extent to which social enterprise can be used to directly impact women's health and healthcare.

Among the limited number of studies that explicitly describe the impact of social enterprises on women's health outcomes, there is a general lack of quantitative research methodology and standardized measurement of social enterprise interventions. Most

studies have used qualitative methods. For example, a 2012 study used focus groups to qualitatively assess the use of microenterprises in promoting HIV prevention among American women living in poverty (21). The authors determined that such intervention could be successful in targeting poverty as a social determinant of health and recommended that it simultaneously address self-esteem, employability, and job sustainability. Another focus group study conducted in 2014 showed that entrepreneurship or even precarious employment within microenterprises may improve women's ability to elevate the socioeconomic status of their family and consequently improve their own health (22). Moreover, the authors found that "flexibility, freedom, and feeling purposeful" motivated women to stay engaged as employees or entrepreneurs within social enterprise. Despite the promising evidence from qualitative data on the benefit of women's health social enterprises, the rigor of such studies has not yet been systematically evaluated, and more quantitative assessments with larger sample sizes are needed.

### ***Study Rationale***

Despite a lack of academic literature formally assessing the impact of WHSE, there is an increasing existence of social enterprises that target women's reproductive health, social determinants for women's health (such as education and economic opportunity), and other issues relevant to women's health and healthcare (23-25). However, to our knowledge, there are no empirical studies specifically examining the collective characteristics or ecosystem of WHSE.

**Geographic Distribution of WHSE:** There is rich literature on the geographic determinants of entrepreneurial success, especially as it relates to the geographic distribution of social networks. Stuart and Sorenson discuss the geography of entrepreneurial activity, arguing that entrepreneurial activity is geographically concentrated, with an enterprise's geography impacting its "influence of social network structure on opportunity identification and resource mobilization" (26). These same authors also published empirical analyses of the geographic implications of the biotechnology industry, finding that industrial activity was geographically concentrated due to shared resource utilization, geographical proximity promoted success among new biotechnology ventures, and the geographic reach of this industry expanded considerably with time (27). Samila and Sorenson conducted an empirical analysis of metropolitan statistical areas, assessing how venture capital and ethnic integration in these areas relate to and predict employment levels, entrepreneurship, innovation, and regional income; they found that ethnic integration was inextricably related to geographic residential patterns, and more integrated places demonstrated more venture capital success according to measured outcomes (28). These studies collectively support the link between geographic location and entrepreneurial success.

Given the link between geography and entrepreneurial success, it follows that the geographic location of WHSE may significantly impact their success. More pointedly, a 2016 study surveyed self-identified social entrepreneurs in general (i.e., not specifically about WHSEs) in order to build a framework for measuring social enterprise ecosystems within the US (29). This study defined social enterprise activity, regardless of whether it was for-profit or non-profit, as "applying business principles to achieve intentional social

impact, measuring and transparently reporting outcomes towards this goal” (29). They established a framework with four pillars that were “necessary for a healthy ecosystem”: funding, human capital, quality of life, and regulation and receptivity (29). Furthermore, they identified ten top US cities for social enterprise, ranked according to these pillars. They concluded that “cities that only excel in one or two of these areas (pillars) will not be able to offer the complete resources necessary for social entrepreneurs to succeed” (29). These social enterprise ecosystem survey findings, coupled with other literature in support of geographically linked entrepreneurial success, suggest that women’s health social enterprises may concentrate around such city hubs and that social enterprises concentrating in these city hubs may acquire greater financial or other entrepreneurial success.

**Financial Sustainability of WHSE:** Given its blend of social relevance and commercial activity, the ecosystem of WHSE can be anticipated to demonstrate overall financial sustainability. Four social business hybrid models with varying degrees of financial health have been described in the literature: market hybrids, blending hybrids, bridging hybrids, and coupling hybrids (30). Market hybrids are enterprises that are “designed in such a way that beneficiaries are clients that pay for a product or service for which the value spillovers happen automatically without requiring additional interventions” (30). They are the closest to traditional commercial models and have the greatest financial sustainability. Market hybrids typically provide basic services, such as healthcare, to low-income or otherwise underserved clients at the base of the pyramid. In contrast, blending hybrids “serve paying clients who are also beneficiaries of their societal mission” but require additional interventions for social impact (30). They have

moderate financial sustainability and include enterprises such as microfinance or education organizations. Bridging hybrids “attend to clients and beneficiaries who are from different groups,” and thus, “must bridge the needs and resources of both constituencies” (30). They also have moderate financial sustainability, and they include enterprises such as job placement programs for people with disabilities. Like bridging hybrids, coupling hybrids “also have clients and the beneficiaries that are different but (unlike market hybrids) most value spillovers do not happen automatically, requiring distinct social interventions alongside the commercial operations” (30). They have the greatest difficulty achieving financial sustainability and include enterprises such as work integration social enterprises, which provide counseling, employment, and training as a social intervention for beneficiaries while simultaneously providing a commercial product or service to clients. Since WHSEs provide women’s health services (i.e., basic services) to clients and communities in need (i.e., base of pyramid), they most closely relate to the market hybrid model and could be anticipated to demonstrate similarly superior financial sustainability.

**Health Intervention Diversification of WHSE:** Strategic diversification may improve the financial health of social enterprises. Rumelt demonstrates that enterprises can improve profitability by developing portfolios of products and services in a way that allows less financially lucrative but socially relevant services to be cross-subsidized by the sales of more financially lucrative products or services (33). Gruber and Mohr produced a holistic model for non-profit management that balances the costs and benefits of both financial returns and social returns, ultimately underscoring the importance of portfolio management among leaders of multi-program nonprofit organizations (34).

Additionally, Cooney conducted a pilot study of a national survey instrument for social purpose businesses (SBPs) that revealed how non-profit organizations have successfully launched commercial strategies in the form of SBPs that utilizes cross-subsidization and diversification to simultaneously support their social mission and provide financial sustainability (35). Given that strategic diversification has been shown to improve the financial health of social enterprises, the diversification of health intervention strategy among WHSEs may similarly be positively correlated with their financial sustainability.

**Operating Environment of WHSE:** The three failures theory offers an important framework for conceptualizing the ecosystem of WHSE (36). It explains why nonprofits exist, and consequently where they may exist and what functions they may serve.

Traditionally, the three-failures theory encompasses “market failure,” “government failure,” and “voluntary failure” (36). In a detailed analysis of the three-failures theory, Steinberg summarizes the interaction of market, government, and non-profit (voluntary) sectors as follows: “Markets fail to provide adequate quantities of collective goods, governments provide these goods in accord with the wishes of the electorate, and those who want higher levels of service than government provides support nonprofit organizations” (36).

According to the three-failures theory, for every failure identified in one sector, another sector responds. Steinberg explains that markets fail in three ways: “some worthwhile goods are underprovided (i.e., ‘underprovision’), access to some goods is over restricted (i.e., ‘overexclusion’), and the quantity or quality of some delivered goods is different from what the consumer or client was promised (i.e., ‘contract failure’)” (36). Government responds to markets’ underprovision by direct provision or contracting out a



service but may fail to serve high-demanding consumers (e.g., in the case of collective goods where non-profit sector can step in). Likewise, government can respond to markets' overexclusion by establishing mandates and offering subsidies or vouchers but again may fail to adequately address high-demanding consumers. In this situation, non-profit sector can mitigate such failure via strategies such as price discrimination and cross-subsidization. Lastly, government can respond to markets' contract failure by enforcing regulation and providing informational resources but may fail to properly address unobservable events. Here too, the non-profit is well-positioned to address failures in government response by providing better incentives and structures of control to promote trust in absence of profit incentives. Therefore, where government responses fail, the non-profit sector is positioned to act.

Steinberg explains how nonprofit activity relates to the will of the median voter, "Governments meet majority demands, and nonprofits meet those demands that do not yet or will never obtain majority support. Sometimes, the service in question is innovative, and the majority is reluctant to support it due to its newness." This suggests that the nonprofit WHSE ecosystem may function in novel ways to serve primarily underserved populations that are not well-represented by the median voter. Additionally, in discussing the benefits of non-profits over markets due to non-profits' governance structure and lack of fiduciary responsibility to distribute profits to shareholders, Steinberg's argues, "Consumers might reveal their willingness-to-pay directly, enabling the nonprofit to establish more effective sliding-scale fee structures..." This suggests that nonprofit WHSE may demonstrate not only innovative, but also effective financial

systems, particularly as a consequence of information regarding consumer habits or preferences.

Nonetheless, Steinberg's analysis also highlights the risk of a failure among nonprofits, known as "voluntary failure" (36). More specifically, Steinberg describes four potential sources of voluntary failure: amateurism, philanthropic insufficiency, philanthropic particularism, and paternalism. Steinberg states, "Amateurism refers to the tendency to rely less on credentialed workers, perhaps appropriate if client needs stem from moral problems rather than societal and technical factors." He explained philanthropic insufficiency as a consequence of nonprofit dependence on donors, ultimately highlighting the concept as an answer to "why nonprofit organizations have difficulty addressing the underprovision of collective goods, particularly in recessions, when the need is greatest." He also defines, "Philanthropic particularism refers to the tendency of non-profit organizations to focus on particular ethnic, religious, geographic, or ideologic groups, leading to duplication in some cases and gaps in coverage in others." He further defines, "Paternalism refers to the tendency of those who choose to work or volunteer for nonprofit organizations to treat problems as they perceive them, rather than as the clients perceive them." It could be anticipated that non-profit WHSE ecosystems may demonstrate one or more of these sources of voluntary failure, but the market-driven approach inherent in social enterprise activity may show promise for solutions to such failures of traditional nonprofits.

Given this literature, we expect that social enterprise may play an important role in addressing health and healthcare delivery problems. As promotion of women's health requires efforts involving the intersections of individual, societal, community, public

health, and medical system factors, it provides an opportune context for examining how social enterprises operate and interact with their various stakeholders. A better understanding of the characteristics and ecosystem of WHSE may help to identify areas that need improvement and inform opportunities for better integrating social enterprise intervention into the broader scheme of efforts to optimize women's health and healthcare outcomes.

## STATEMENT OF PURPOSE, HYPOTHESES, & AIMS

The overall objective of this thesis research was to elucidate the ecosystem of WHSE based in the US. There were two independent aims for this research, each applying a different research methodology to meet the overall objective: Aim I as the quantitative analysis arm and Aim II as the qualitative analysis arm.

### *Aim I*

The specific objective of Aim I was to conduct a secondary data analysis of a random sample of nonprofit WHSEs based in the US from a national database regarding their characteristics and areas of intervention. More specifically, Aim I addresses the following research questions: What are the enterprise sizes, geographical locations, financial distress, health intervention areas, and health activity categories of nonprofit WHSEs based in the US; and what enterprise characteristics, if any, are associated with its financial status as indicated by financial distress? We hypothesized that WHSE activity is 1) geographically concentrated (i.e., within previously identified hub cities), 2) financially sustainable (i.e., not severely at risk of financial distress), and 3) comprehensive in their approach to women's health (i.e., focused on multiple areas of health intervention simultaneously). We also hypothesized that geographic location variables would be significantly associated with its risk for financial distress. More specifically, we hypothesized that WHSEs operating in previously identified hub cities are more likely to have financial sustainability and consequently less likely to be at risk for financial distress.

***Aim II***

The specific objective of Aim II was to conduct a qualitative assessment of a sample of women's health social entrepreneurs based in the US regarding their perspectives on the ecosystem of WHSE. More specifically, Aim II addresses the following research question: What are women's health social entrepreneurs' perspectives on the ecosystems specific to their affiliated enterprise as well as the strengths and limitations of general ecosystems for WHSE? Building upon the three-failures theory, we hypothesized that WHSEs 1) address government failure by focusing their operations on the unmet women's health needs of the underserved populations (in contrast to the median voter), 2) demonstrates their ability to address market failure of overexclusion through strategies such as cross-subsidization and price discrimination due to trustworthiness established in absence of profit incentives, and 3) does not illustrate the full spectrum of voluntary sector failures experienced by traditional non-profit organizations due to the deployment of innovative commercial strategies.

## METHODS

### **Aim I**

#### *Data Source*

GuideStar is a 501(c)(3) public charity which manages an online database that provides information on over 1.8 million tax-exempt organizations formally recognized by the United States Internal Revenue Service (IRS) (37). Such organizations include community foundations, faith-based organizations, and other nonprofits. The information presented in the database is derived from digitized Form 990 data, which nonprofit organizations are required to submit annually to the IRS. Therefore, GuideStar offers a longitudinal dataset containing information on organizational characteristics of all nonprofit organizations in the U.S., including but not limited to size, geographic location, organizational activity, and finances. As content in the GuideStar database is verified by the IRS, data accuracy is noted to be consistently above 99%. Although it does not include information on for-profit social enterprises, GuideStar provides an excellent opportunity for examining the nonprofit realm of social enterprises.

In general, there is a two-month lag between when Form 990 data is filed with the IRS and when it is received and uploaded into the GuideStar database (37). Moreover, not all organizations file Form 990 data in the same year. Therefore, the most recent fiscal year for which the majority or all identified enterprises have data was utilized for this study (i.e., 2015 or 2016 tax data, depending on the organization). The study protocol for Aim 2 was reviewed by Yale University Human Investigation Committee and deemed to be not human subjects research.

### ***Study Population***

The study population for Aim I included a random sample of nonprofit enterprises within the GuideStar database that passed both of the following two stages of screening for eligibility criteria:

**Stage 1** – Stage 1 screening identified a sample of health-related organizations that maintain an active filing status with the IRS. This screening was performed electronically through the GuideStar database system and selected organizations that had a cause area related to health or healthcare according to National Taxonomy of Exempt Entities (NTEE) categories, i.e., NTEE categories E-G (E – Health – General & Rehabilitative; F – Mental Health, Crisis Intervention; G – Diseases, Disorders, Medical Disciplines). However, organizations that are designated by GuideStar as 1) revoked organizations, which refer to organizations that have been revoked according to the IRS due to failure to submit a Form 990 for three consecutive years, or 2) defunct or merged organizations, which apply to organizations that have not been acknowledged in the IRS business master file for 6 consecutive months, were excluded. These exclusion criteria assured that organizational data would be no more than three years old at the time of data collection and that data were representative of active non-profit enterprises.

Stage 1 screening yielded a total of 87,033 health-related organizations that maintain an active filing status with the IRS. Among these, we obtained a random sample of 12,000 organizations from the GuideStar system as an Excel spreadsheet and proceeded with Stage 2 screening. The size of this random sample (i.e., 12,000) was determined based on availability of the primary researcher's (Marquita Kilgore-Nolan,

Author) time, as well as our pilot work evaluating 1,000 health-related organizations from the GuideStar dataset, suggesting that 0.9% of them met our criteria for WHSE.

**Stage 2** – Stage 2 screening determined whether organizations qualify as WHSE. We manually reviewed the random sample of 12,000 health-related organizations that were generated from Stage 1 screening and used the following two criteria to determine eligibility regarding WHSE via reading free text data in GuideStar database pertaining to each organization:

1. The organization’s mission statement emphasized a social mission as its primary purpose (i.e., applying the definition of social enterprise for this study);  
and
2. The organization offered a product and/or service that impacts women’s health (i.e., as it pertains to the definition of women’s health for this study).

### ***Measures***

For each non-profit WHSE identified, we ascertained information on its size, geographical location, financial status, and health intervention activity based on Form 990 data from the GuideStar database. “Enterprise size” was approximated using the value reported in GuideStar as “number of employees.” Geographical location was used to assess regional distribution of non-profit WHSEs across the United States. Based on information available on state and zip code, we categorized each social enterprise into U.S. Census regions (i.e., Northeast, Midwest, South, and West) (38). For the purposes of this study, we refer to this variable as “Geographical Base by Region.” Additionally,



previous research has identified 10 U.S. cities where social enterprise activity was most concentrated, including Boston, MA; San Francisco, CA; Washington, DC, New York, NY; Chicago, IL; Austin, TX; Denver, CO; Minneapolis, MN; Seattle, WA; and Los Angeles, CA (29). We constructed a binary indicator (yes/no) to reflect whether a given WHSE was located in these social enterprise concentrated areas. We refer to this variable as “Geographical Base in City Hub.”

Financial variables were used to assess the “Risk of Financial Distress” of the identified WHSEs. An established model for assessing financial distress in non-profit organizations has recommended the following metrics of financial distress: inadequate equity balance (where equity balance was calculated as total assets minus total liabilities) indicating high liabilities compared to assets, revenue concentration (i.e., a limited number of different sources of income or only a single source of based on income from the six available income sources), low administrative costs, and low or negative operating margin (where operating margin was calculated as total income minus total expenses divided by total income) (39). To operationalize these metrics in a way that controlled for differences in enterprise net worth or scale of operations, the following relative measures were utilized in analysis, respectively: ratio of equity to total income, revenue concentration index (i.e., a scale ranging from 0 to 1 (with 0 indicating income from all six income sources and 1 suggesting no income), ratio of administrative expense to total expenses, and operating margin. A WHSE was defined to be “At-Risk” for financial distress for a given metric if it ranked in the bottom quintile on the corresponding measure. To evaluate an enterprise’s overall financial status, we classified it as “Severely At-Risk” for financial distress (yes/no) if it ranked in the bottom quintile on all four

measures and classified it as “At-Risk” for financial distress if it ranked in the bottom quintile on any of the four measures.

The NTEE health-related categories were applied to enterprises, creating the variable referred to as health activity category. Each enterprise received a single designation to one of three such categories: E – Health – General & Rehabilitative, F – Mental Health, Crisis Intervention, and G – Diseases, Disorders, Medical Disciplines. Overall, enterprises within the E: Health – General & Rehabilitative category address general health issues with activities ranging from advocacy, public health, or professional organizations to ambulatory health centers, community health systems, or health maintenance organizations. The F: Mental Health category includes enterprises ranging from mental health advocacy organizations and counseling or support centers to community mental health centers or residential treatment facilities. The G: Diseases, Disorders, Medical Disciplines category includes enterprises that focus on issues related to specific diseases or conditions such as disease-specific awareness and treatment and fundraising for specific health concerns.

As an alternative classification system, “Health Intervention Area” was determined for each identified WHSE based on its “Statement of Mission” or “Most Significant Activities” listed on their Form 990. According to the health impact pyramid framework proposed by Frieden, we classified health intervention areas into one of five categories: “socioeconomic factors”, “changing the context to make individuals’ default decisions healthy”, “long-lasting protective interventions”, “clinical interventions”, and “counseling and education” (2). They are listed in order of hierarchy ascending from the base of the pyramid with lower tiers requiring less individual effort but having the

greatest population impact. Based on each enterprise's most active area of health intervention, we constructed five binary indicators (yes/no) to reflect whether an enterprise engaged in each of these areas, as well as an overall indicator for whether it engaged in all five areas of health intervention. The latter was referred to as the "Health Intervention" variable hereafter and reported as engagement in either "Single Health Intervention" or "All Health Interventions."

### *Data Analysis*

Form 990 data from the most recent year available in GuideStar were extracted into an Excel database for all organizations that met our inclusion/exclusion criteria. Based on these original data, we constructed all measures as described in the Measures section above. Descriptive statistics (frequency and percentage for categorical variables and median and interquartile range [IQR] for continuous variables) were used to characterize WHSEs. Bivariate association of enterprises' characteristics (enterprise size, geographic base by region, geographic base within city hub, NTEE health activity category, and health intervention area) with risk of financial distress were assessed using appropriate statistical tests (i.e., chi-square test for categorical variables and non-parametric Mann-Whitney U test for continuous variables). A multivariable logistic regression model was also estimated to examine the association between all other enterprise characteristics and the enterprise's likelihood of being "At-Risk" for financial distress. All analyses were conducted in SPSS version 24.0 (IBM Corp., Armonk, NY). The primary researcher conducted all data analysis with consultation from the StatLab at Yale University.

## **Aim II**

### ***Study Population***

Women's health social entrepreneurs who met all of the following inclusion criteria were eligible for participation in qualitative research in Aim II: 1) are employed by or affiliated with a social enterprise, whether for-profit or nonprofit, that impacts or relates to women's health and is based in the United States; 2) self-identify as social entrepreneur who is actively engaged in leading social enterprise activity, whether for-profit or nonprofit, that impacts or relates to women's health; 3) are at least 18 years of age; and 4) speak English language.

Eligible subjects were identified by contacting the WHSEs identified from the following three sources and recruiting their affiliated social entrepreneurs:

1. **GuideStar Database:** As detailed in the secondary data analysis protocol in Aim I, a national random sample of WHSEs were identified from the GuideStar database (refer to Aim I Methods – Stage 2 screening).
2. **Great Social Enterprise Census (GSEC):** The GSEC was a 2014 study led by Pacific Community Ventures that sought to gather data from social enterprises “to build more robust ecosystems of support.”(40) All census respondents self-identified as social enterprises.
3. **Social Enterprise Alliance (SEA):** The SEA defines itself as “the national membership organization and key catalyst for the rapidly growing social enterprise movement in the United States.”(1) SEA's membership program consists of chapters throughout the United States, and SEA has an online

directory that lists affiliated social enterprises. This directory was reviewed to identify WHSEs.

Each of these three data sources contained contact information for enterprises (phone numbers, website addresses, or e-mail addresses). Once initial contact had been established with identified enterprises and entrepreneurs, snowball sampling was also employed to allow identified women's health social entrepreneurs to suggest non-affiliated women's health social entrepreneurs who might meet the study's eligibility criteria.

### ***Recruitment***

Phone calls were used to establish initial contact with enterprises. More specifically, recruitment phone calls served to introduce the study purpose and invite each enterprise to select a single entrepreneur to participate on its behalf. Follow-up e-mails were sent to potential entrepreneurs to invite their participation and provide additional context as well as a preview of the informed consent document for reference or dissemination as needed. In the event that enterprise phone numbers were not available, e-mails were used to make initial contact. Additional follow-up calls and e-mails were routinely made as needed in order to ensure contact with identified enterprises and provide requested clarification. Recruitment phone calls were made to all WHSEs identified from the GuideStar, GSEC, and SEA databases.

Entrepreneurs who expressed interest in study participation were screened according to the study eligibility criteria. Eligible entrepreneurs were scheduled for an

interview, and a confirmation e-mail was sent containing information on date and time of the interview, interview instructions, and the informed consent document. Sending entrepreneurs the informed consent document prior to the interview helped to ensure sufficient time to review the document and clarify any questions or concerns they may have about the study in advance of their interview. Upon request, interview questions were also attached to the confirmation e-mail for advanced review. Verbal consent was acquired during the scheduled interview. A total of 12 entrepreneurs participated in Aim II of this project and completed the interviews.

### ***Data Collection***

Data was collected via one-hour, semi-structured in-depth interviews with each identified social entrepreneur. All interviews were conducted one-on-one with the primary researcher and were structured to include the following components: orientation and informed consent, brief survey, in-depth discussion, and closing. During the orientation, the researcher reviewed the interview plan and obtained consent verbally from all subjects. During the brief survey, several questions in multiple choice or short answer format were administered verbally to assess relevant characteristics of both the entrepreneur and their affiliated WHSE. The in-depth discussion focused on the subject's perspectives regarding the ecosystem of US-based WHSEs. In closing, the researcher expressed gratitude for the subject's participation, recorded the subject's preferences for any follow-up, and offered an opportunity to address any questions or concerns prior to ending interview.

An interview guide was used as a general guideline (see Appendix A for copy of interview guide). It was rigorously developed via multiple rounds of content revision. Information gathered throughout the interview period was used to refine the process and update the interview guide to help enhance further interviews. Discussion during the interview was occasionally slightly adjusted depending on entrepreneur expertise and interview content. Additionally, impromptu follow-up questions were asked during the interview for clarification as needed. All interviews were conducted, audio recorded, and manually transcribed by a single researcher. Study protocol for Aim 2 of this project was reviewed by Yale University Human Investigation Committee and deemed exempt from Institutional Review Board (IRB) review.

### *Measures*

The brief survey assessed both entrepreneur and enterprise characteristics. Entrepreneur characteristics of interest included basic demographics (i.e., age, gender, race/ethnicity, and education level) and professional details (e.g., years of experience, years at current enterprise, and job title). Enterprise characteristics of interest included mission or significant activities, geographic base, target population, years of operation, type of organization, size based on full-time equivalents, and area of health intervention).

The in-depth discussion gathered information on enterprise-specific ecosystem and general ecosystem. For the enterprise-specific ecosystem portion of the in-depth discussion, a previously published map of social enterprise ecosystem structure was used to identify anticipated ecosystem components, which included resource providers, competitors, complementary organizations or allies, bystanders, beneficiaries or

customers, opponents or problem makers, and environmental conditions (3). Subjects were inquired about those anticipated components as it specifically relates to their enterprise, and they were also given the opportunity to discuss additional components that they considered to be missing from the discussion but key to their enterprise's ecosystem. For the general ecosystem portion of the in-depth discussion, subjects were asked to provide perspectives on the significant limitations and gaps versus strengths and opportunities of the general WHSE ecosystem. As time allowed, subjects were also given the opportunity to rank these limitations/gaps and strengths/opportunities and discuss actions for addressing their stated limitations or acting on their stated strengths.

### ***Data Analysis***

Data on basic characteristics of entrepreneurs and their affiliated enterprises gathered during the brief survey section of the interviews was transcribed and recorded in an Excel file. Descriptive statistics (frequency and percentage for categorical variables and mean and standard deviation [SD] for continuous variables) were tabulated using Excel. Mean and SD were used to characterize continuous variables in Aim II analysis because they were normally distributed.

Qualitative data were imported and manually transcribed into a research database by the primary researcher using MAXQDA version 2018 (VERBI Software. Consult. Sozialforschung GmbH, Berlin, Germany). The primary researcher and a research assistant (Belinda Nhundu, MD Candidate) independently reviewed and coded each transcript. Following independent coding, the two coders routinely met to compare their individual codes, amend the coding system as needed, and agree on final coding for each



transcript. Coding amendments were made via iterative deductive reasoning and constant comparative method. Interviewing and coding continued until the point of theoretical saturation, at which no new concepts could be developed. In the case of unresolved discrepancy, a research advisor (Xiao Xu, PhD) contributed an additional coding decision or necessary guidance for resolution. All qualitative data coding and analysis were performed using MAXQDA.

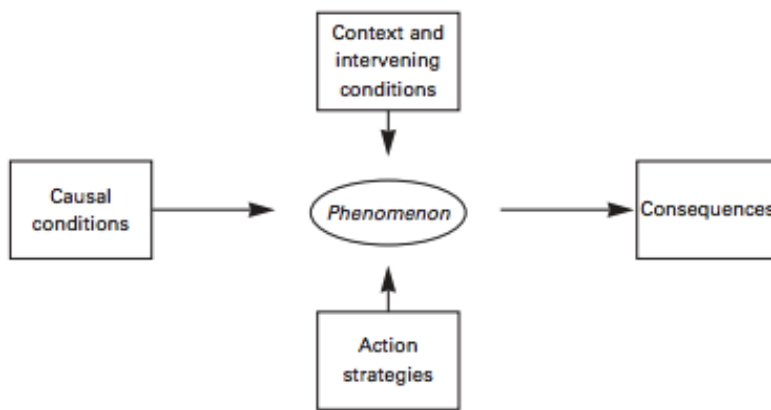
The grounded theory method was utilized for analysis of all qualitative interview data. Specifically, three stages of coding were employed in sequential order: open coding, axial coding, and selective coding (41). During **open coding**, in-vivo codes highlighting key findings were constructed using the entrepreneur subjects' verbatim terminology. Such in-vivo codes were grouped into one of ten categories. Seven of these categories were the anticipated ecosystem components that were built into our interview guide based on the previously published map of social enterprise ecosystem structure, i.e., resource providers, competitors, complementary organizations or allies, bystanders, beneficiaries or customers, opponents or problem makers, and environmental conditions (3). The other three categories were based on other open-ended questions included in our interview: additional ecosystem components, general ecosystem strengths, and general ecosystem weaknesses. Subcategories named according to a given in-vivo code were created in instances where that in-vivo code highlighted a theme under which other in-vivo codes could be embedded as examples, further description, or otherwise related dimensions.

Following open coding, axial and selective coding were utilized to better frame and elucidate theoretical concepts. The goal of **axial coding** was to provide further structure by grouping in-vivo codes within a given category in a way that demonstrated

their relation to one another. First, in-vivo groups were grouped according to conceptual themes. Then, such themes were designated as one of the following six classes as suggested by Strauss and Corbin as a foundational heuristic framework for axial coding: causal conditions, contextual conditions, intervening conditions, action strategies, phenomena, and consequences (42). Lastly, relationships between each of these classes and their respective codes were determined and diagrammed using a previously published coding paradigm for presenting such relationships (43).

Figure 1 presents an illustration of the axial coding paradigm model by Strauss and Corbin (42). Causal conditions include any factors that lead to the phenomenon being studied or central ideas being manifested. Contextual conditions refer to any factors related to the time and place under which the circumstances that lead to phenomena of interest arise. Intervening conditions include any non-causal or non-contextual factors that lead to the phenomena. Action strategies include processes that are employed or interactions that are dictated by the collective set of conditions. Ultimately, consequences highlight the outcomes of how phenomena are handled via action strategies.

*Figure 1 – Axial Coding Paradigm*



The goal of **selective coding** was to determine at least one core category to which all interview data relate. Each core category was derived from collectively re-evaluating and relating the conditions, phenomena, and consequences yielded from axial coding of all of the ten aforementioned Anticipated Ecosystem Component categories. This process was accomplished by examining patterns apparent in axial coding and drawing validated conclusions. MAXQDA was utilized for both axial and selective coding to create visuals for understanding dependencies and relationships. Altogether, axial and selective coding were used to develop a foundational framework for understanding the ecosystem of WHSE.

### **Student's Contribution to the Work**

Marquita Kilgore-Nolan (Author) served as primary researcher, leading all work for both quantitative and qualitative study components of this thesis research. She led the development and design of the study protocols with guidance from co-mentors, Xiao Xu, PhD and Kate Cooney, PhD, MSW, and coordinated the Institutional Review Board application process. In early stages, she received assistance with academic literature searches from Holly Grossetta Nardini, MLS at the Harvey Cushing / John Hay Whitney Medical Library at Yale University. For Aim I, Kilgore-Nolan procured the GuideStar database and independently conducted screening. She also completed all Aim I analyses with biostatistical consultation from the StatLab at Yale University. For Aim II, Kilgore-Nolan completed the recruitment and interviewing of all subjects as well as the transcription of their interviews. She underwent training in qualitative methodology with guidance from the Equity Research and Innovation Center at Yale University. With

technical assistance from Belinda Nhundu (M.D. Candidate, Class of 2019) in coding all transcripts, Kilgore-Nolan completed qualitative data analysis in accordance with grounded theory methodology. She wrote the initial draft of this thesis, and completed critical revisions based on comments from the thesis committee. With mentorship from Xu and Cooney as well as advices from Seth Guller, PhD, and Marcella Nunez-Smith, MD, MHS, Marquita Kilgore-Nolan has produced this original work.

## RESULTS

### *Aim I Results*

A total of 126 WHSEs met our eligibility criteria after stages I and II screening. Within this sample, 55 enterprises (43.7%) targeted only women, 30 enterprises (23.8%) focused on women and other groups, and 41 enterprises (32.5%) had a product or service that implied a focus on women's health despite women not explicitly being listed as the target audience or customer (e.g., breastfeeding products). The median enterprise size was 12 (IQR = 6 – 35) employees (see Table 1). All geographic regions were well-represented in the sample; however, the most highly represented region was the South (n = 43, 34.1%), and the least represented region was the Northeast (n = 22, 17.5%). Aside from geographic regions, U.S. territories (n = 2, 1.6%) were also represented. An overwhelming majority of enterprises (n = 116, 92.1%) were based outside of social enterprise hub cities.

*Table 1 - Non-Health & Non-Financial Characteristics of Enterprises (N=126)*

<b>Enterprise Characteristic</b>	<b>Median (IQR)</b>	<b>N (%)</b>
Enterprise Size <sup>a</sup>	12 (6 - 35)	
Geographical base by region		
<i>Northeast</i>		22 (17.5)
<i>Midwest</i>		26 (20.6)
<i>South</i>		43 (34.1)
<i>West</i>		33 (26.2)
<i>U.S. Territories</i>		2 (1.6)
Geographical base in hub city		
<i>Non-Hub City</i>		116 (92.1)
<i>Hub City</i>		10 (7.9)

<sup>a</sup> n=30 enterprises had missing data on number of employees.

In terms of the three NTEE health categories that were included in the sample, E: Health – General & Rehabilitative (n = 75, 57.1%) was significantly more prominent (see Table 2). However, the other two categories, F: Mental Health, Crisis Intervention (n = 35, 27.8%) and G: Diseases, Disorders, Medical Disciplines (n = 19, 15.1%), were also well-represented. Within the sample of WHSEs in this study, enterprises in the E: Health – General & Rehabilitative category engaged in functions (based on NTEE codes) such as general health alliance or advocacy organizations, ambulatory health centers or community clinics, community health systems, family planning centers, geriatric nursing or convalescent, group health practice (health maintenance organizations), health support services, public health programs, professional societies and associations, reproductive health care facilities and allied services, research institutes and/or public policy analysis, and other general and rehabilitative functions that were not elsewhere classified. Enterprises in the F: Mental Health category engaged in functions such as the mental health alliance or advocacy organizations, prevention and treatment of alcohol, drug, and substance abuse or dependency, community mental health center, counseling support groups, crisis intervention hot line, group home or residential treatment facility, mental health treatment, rape victim services, and other addictive disorders, mental health treatment, or crisis intervention not elsewhere classified. Finally, enterprises in the G: Diseases, Disorders, Medical Disciplines category focused on specific issues such as AIDS, birth defects, breast cancer, cancer in general, eye diseases, blindness, and vision impairment, fund raising or fund distribution, heart and circulatory system, and pediatrics.

Approximately half of the enterprises simultaneously engaged in all health intervention areas (50.8%) (see Table 2). For the enterprises focusing on single intervention areas, their distribution across the specific health intervention areas was as follows: socioeconomic factors (n = 3, 2.4%), changing the context to make individuals' decisions healthier (n = 14, 11.1%), long-lasting protective interventions (n = 3, 2.4%), clinical interventions (n = 10, 7.9%), and counseling and education (n = 32, 25.4%). Therefore, among the enterprises focusing on a single health intervention area, a focus on counseling and education was considerably more common.

Table 2 - Health-Related Characteristics of Enterprises (N=126)

Enterprise Characteristic	N (%)
NTEE Health Activity Category	
<i>E: Health – General &amp; Rehabilitative</i>	72 (57.1)
<i>F: Mental Health, Crisis Intervention</i>	35 (27.8)
<i>G: Diseases, Disorders, Medical Disciplines</i>	19 (15.1)
Health Intervention Area	
<i>Multiple Interventions</i>	64 (50.8)
<i>Single Intervention</i>	62 (49.2)
<i>Socioeconomic Factors</i>	3 (2.4)
<i>Changing the Context</i>	14 (11.1)
<i>Long-lasting Protective Interventions</i>	3 (2.4)
<i>Clinical Interventions</i>	10 (7.9)
<i>Counseling and Education</i>	32 (25.4)

Table 3 summarizes financial characteristics of enterprises in the overall sample, as well as in each of the three health activity categories. Only 2 enterprises (1.59%) were found to be severely at-risk for financial distress. The medians (IQR) for financial distress measures of interest were as follows: 0.7 (0.3 – 1.2) for equity to total income

ratio, 0.3 (0.3 – 0.6) for revenue concentration index, 0.1 (0.0 – 0.2) for administrative expense ratio, and 0.0 (-0.1 – 0.1) for operating margin. All NTEE health activity categories appeared to have similar financial status.

*Table 3 - Financial Characteristics of Enterprises*

	Overall Sample		E: Health- General & Rehabilitative		F: Mental Health, Crisis Intervention		G: Diseases, Disorders, Medical Disciplines	
	N	Median (IQR)	N	Median (IQR)	N	Median (IQR)	N	Median (IQR)
Financial Status								
Equity to Income Ratio, Median (IQR)	124	0.7 (0.3 – 1.2)	71	0.7 (0.3 – 1.4)	34	0.6 (0.4 – 1.1)	19	0.7 (0.2 – 2.1)
Revenue Conc. Index, Median (IQR)	126	0.3 (0.3 – 0.6)	72	0.50 (0.3 – 0.7)	35	0.3 (0.3 – 0.7)	19	0.3 (0.3 – 0.7)
Administrative Expense Ratio, Median (IQR)	125	0.1 (0.0 – 0.2)	72	0.1 (0.0 – 0.2)	34	0.1 (0.1 – 0.2)	19	0.1 (0.0 – 0.1)
Operating Margin, Median (IQR)	124	0.0 (-0.1 – 0.1)	71	0.0 (-0.1 – 0.1)	34	0.0 (0.0 – 0.2)	19	0.0 (-0.2 – 0.2)
Financial Distress, N (%)	126		72		35		19	
No Risk		51 (40.5)		27 (37.5)		18 (51.4)		6 (31.6)
At-Risk (including Severely At-Risk)		75 (59.5)		45 (62.5)		17 (48.6)		13 (68.4)

The bivariate analysis between all non-financial enterprise characteristics and risk for financial distress did not find any significant associations (see Table 4). The Mann-Whitney U test for the association between enterprise size and risk for financial distress yielded a p-value of 0.18. The chi-square tests assessing the relationship between the other non-financial enterprise characteristics and risk for financial distress yielded the following p-values: geographical base by region ( $p = 0.81$ ), geographical base within hub city ( $p = 0.97$ ), NTEE health activity category ( $p = 0.27$ ), and health intervention area ( $p = 0.14$ ).



Table 4 – Bivariate Association between Enterprise Characteristics and Risk for Financial Distress

Characteristic	At Risk for Financial Distress		
	Yes (N = 75)	No (N = 51)	P value
Enterprise Size, Median (IQR)	9 (3 - 25)	22 (7 - 46)	0.18
Geographical base by region <sup>a</sup> , N (%)			0.81
<i>Northeast</i>	13 (59.1)	9 (40.9)	
<i>Midwest</i>	14 (53.8)	12 (46.1)	
<i>South</i>	28 (65.1)	15 (34.9)	
<i>West</i>	19 (57.6)	14 (42.4)	
Geographical base within hub city, N (%)			0.97
<i>Yes</i>	6 (60.0)	4 (40.0)	
<i>No</i>	69 (59.5)	47 (40.5)	
NTEE health activity category, N (%)			0.27
<i>E: Health – General, Rehabilitative</i>	45 (62.5)	27 (37.5)	
<i>F: Mental Health, Crisis Intervention</i>	17 (48.6)	18 (51.4)	
<i>G: Disease, Disorders, Medical Disciplines</i>	13 (68.4)	6 (31.6)	
Health intervention area, N (%)			0.14
<i>Multiple Interventions</i>	34 (53.1)	30 (46.9)	
<i>Single Intervention</i>	41 (66.1)	21 (33.9)	

<sup>a</sup> n = 2 enterprises in U.S. Territories excluded from Geographical base by region analyses.

Table 5 presents results on unadjusted and adjusted odds ratio (OR) for the association between each of the enterprise characteristics and an enterprise's risk for financial distress. Unadjusted OR was obtained by only including one enterprise characteristic at a time in the regression model, whereas adjusted ORs were obtained from a multivariable regression model where all enterprise characteristics were simultaneously included in the model. Our multivariable regression analysis did not find

any characteristics that were significantly associated with an enterprise's risk for financial distress.

*Table 5 - Multivariable Regression Model for the Association of Enterprise Characteristics with Risk for Financial Distress*

Characteristic	Risk for Financial Distress					
	Unadjusted Analysis			Adjusted Analysis		
	Crude OR	95% CI	P value	Adjusted OR	95% CI	P value
Enterprise Size	1.00	0.99 – 1.00	0.18	1.00	0.99 – 1.00	0.16
Geographical base by region						
<i>Northeast</i>	<i>1.02</i>	<i>0.40 – 2.61</i>	<i>0.96</i>	<i>0.70</i>	<i>0.20 – 2.45</i>	<i>0.58</i>
<i>Midwest</i>	<i>1.34</i>	<i>0.56 – 3.20</i>	<i>0.51</i>	<i>1.07</i>	<i>0.35 – 3.31</i>	<i>0.90</i>
<i>South</i>	<i>Reference</i>			<i>Reference</i>		
<i>West</i>	<i>1.12</i>	<i>0.50 – 2.50</i>	<i>0.79</i>	<i>0.88</i>	<i>0.29 – 2.72</i>	<i>0.83</i>
Geographical base within hub city (yes vs. no)	0.98	0.27 – 3.66	0.97	0.88	0.20 – 3.78	0.86
NTEE health category						
<i>E: Health – General, Rehabilitative</i>	<i>Reference</i>			<i>Reference</i>		
<i>F: Mental Health, Crisis Intervention</i>	<i>1.86</i>	<i>0.85 – 4.10</i>	<i>0.12</i>	<i>2.26</i>	<i>0.87 – 5.92</i>	<i>0.10</i>
<i>G: Disease, Disorders, Medical Disciplines</i>	<i>0.64</i>	<i>0.23 – 1.80</i>	<i>0.39</i>	<i>1.25</i>	<i>0.29 – 5.36</i>	<i>0.77</i>
Health Intervention (all areas vs. single area)	0.58	0.28 – 1.19	0.14	0.73	0.21 – 1.74	0.48

*CI = confidence interval.*

## ***Aim II Results***

Basic characteristics of the entrepreneur subjects are summarized in Table 6.

Among the 12 entrepreneur subjects, their average age was 49.4 years (SD = 11.4), their average years of social enterprise experience was 19.3 (SD = 11.1), and their average years of affiliation with their current organization was 7.9 (SD = 7.0). Most entrepreneurs were women (91.7%) and Non-Hispanic White (75.0%). All entrepreneurs reported their highest level of education at or above the college level: 4 (33.3%) held Bachelor's

degrees and 8 (66.7%) held Master's or advanced degrees. C-suite level executive positions, such as Founder or Chief Executive Officer, were held by 5 (41.7%) entrepreneurs (see Table 6).

*Table 6 – Characteristics of Entrepreneur Interviewees (N = 12)*

<b>Entrepreneur Characteristic</b>	<b>Mean (SD)</b>	<b>N (%)</b>
Age (years)	49.4 (11.4)	
Social Enterprise Experience (years)	19.3 (11.1)	
Time with Current Organization (years)	7.9 (7.0)	
Gender		
<i>Male</i>		1 (8.3%)
<i>Female</i>		11 (91.7%)
Race/Ethnicity		
<i>Non-Hispanic Black</i>		3 (25.0%)
<i>Non-Hispanic White</i>		9 (75.0%)
Highest Level of Education		
<i>Bachelor's degree</i>		4 (33.3%)
<i>Master's or advanced degree</i>		8 (66.7%)
Current Position		
<i>C-level executive</i>		5 (41.7%)
<i>Other position</i>		7 (58.3%)

Characteristics of their affiliated enterprises are reported in Table 7. The 12 affiliated enterprises on an average had operated for 26.9 years (SD = 10.8) and had 18.0 full-time equivalents (SD = 13.6). The majority (75.0%, n = 9) of them were traditional non-profit, while the other ones were either for-profit (8.3%, n = 1) or practiced a hybrid model (16.7%, n = 2) that associated the original non-profit with a for-profit subsidiary. The geographic base of operations for the enterprises were as follows: 4 (33.3%) in the west, 2 (16.7%) in the midwest, 2 (16.7%) in the northeast, and 4 (33.3%) in the south.

These enterprises' geographic target areas were the same as their geographic base of operations, with the exception of an enterprise based in the west that targeted a multi-regional, international audience. Most (83.3%, n =10) enterprises simultaneously targeted all areas of health intervention, while only 2 (16.7%) enterprises reported a single area of health intervention.

Table 7 - Characteristics of Affiliated Enterprises (N = 12)

Enterprise Characteristic	Mean (SD)	N (%)
Length of Operation (years)	26.9 (10.8)	
Full-Time Equivalents	18.0 (13.6)	
Geographic Base		
<i>West</i>		4 (33.3%)
<i>Midwest</i>		2 (16.7%)
<i>Northeast</i>		2 (16.7%)
<i>South</i>		4 (33.3%)
Geographic Target		
<i>West</i>		3 (25.0%)
<i>Midwest</i>		2 (16.7%)
<i>Northeast</i>		2 (16.7%)
<i>South</i>		4 (33.3%)
<i>International</i>		1 (8.33%)
Enterprise Type		
<i>Non-profit</i>		9 (75.0%)
<i>For-profit</i>		1 (8.3%)
<i>Hybrid</i>		2 (16.7%)
Health Intervention Area		
<i>Socioeconomic Factors</i>		1 (8.3%)
<i>Changing the Context</i>		0 (0%)
<i>Long-lasting Protection</i>		1 (8.3%)
<i>Clinical Interventions</i>		0 (0%)
<i>Counseling and Education</i>		0 (0%)
<i>All the Above</i>		10 (83.3%)

**Open coding** of interviews with all 12 entrepreneur subjects yielded 771 in-vivo codes. The number of in-vivo codes constructed from a given interview transcript varied

widely from 25 to 116. The categorical split of such codes among the ten anticipated ecosystem component categories also differed greatly, ranging from 5 to 179 (see Table 8). The category with the most codes was general ecosystem strengths, whereas the category with the fewest codes was additional ecosystem components.

*Table 8 - Number of In-Vivo Codes Generated by Open Coding by Anticipated Ecosystem Component Categories*

<b>Ecosystem Coding Category</b>	<b>Code Counts</b>
General Ecosystem Strengths	179
General Ecosystem Weaknesses	65
Beneficiaries/Customers	94
Bystanders	19
Competitors	20
Complementary Organizations/Allies	132
Environmental Conditions	103
Opponents/Problem Makers	14
Resource Providers	140
Additional Ecosystem Components	5
<b>Total In-Vivo Codes</b>	<b>771</b>

**Axial coding** yielded the following number of themes under each respective anticipated ecosystem component category: 3 for additional ecosystem components, 14 for beneficiaries or customers, 5 for bystanders, 3 for competitors, 12 for complementary organizations or allies, 13 for environmental conditions, 4 for opponents or problem makers, 17 for resource providers, 19 for general ecosystem strengths, and 16 for general ecosystem weaknesses (see Table 9 for sample list of themes and classes for general ecosystem strengths and see Appendix B for complete list of themes and classes identified from all ten ecosystem component categories). Altogether, axial coding yielded 106 themes for 771 in-vivo codes (an average of 7.3 codes per theme). The categories of

additional ecosystem components and competitors yielded the least number of themes.

Similar to open coding results, general ecosystem strengths yielded the highest number of themes.

*Table 9 – General Ecosystem Strengths: Sample Ecosystem Themes and Classes Generated by Axial Coding*

<b>Ecosystem Category</b>	<b>Axial Coding Theme</b>	<b>Axial Coding Class</b>	<b>Code Counts</b>
<i>General Ecosystem Strengths</i>			
	Close follow-up with patients	ACTION	4
	Innovating for effective health systems	CONSEQUENCES	16
	Treating the whole patient	CONSEQUENCES	13
	Emphasis on family-centered care	ACTION	11
	Partnering with patients for empowerment	ACTION	8
	Innovative financial solutions	PHENOMENA	5
	Mission adherence and focused agenda-setting	ACTION	2
	Building trust in patient-provider relationships	INTERVENING	10
	Simultaneous access to and affordability of care	PHENOMENA	13
	Networking for credibility and effectiveness	ACTION	6
	Robust screening mechanisms	CAUSAL	4
	Patient advocacy at multiple levels	ACTION	9
	Women's health for population health	INTERVENING	6
	Measurable women's health outcomes	CAUSAL	4
	Relationship and relevance with local community	CONSEQUENCES	18
	Interventions for vulnerable communities	PHENOMENA	10
	Passionate, experienced teams	CAUSAL	13
	Patients part of decision-making bodies	PHENOMENA	9
	Interdisciplinary, cross-enterprise collaboration	PHENOMENA	18
<b>Total Counts</b>	<b>19 Themes</b>	<b>5 Classes</b>	<b>179 Codes</b>

Interview data relevant to each of the ten anticipated ecosystem component categories was coded into themes and classes and structured into an axial coding map using the Strauss and Corbin axial coding paradigm (42). A complete list of axial coding

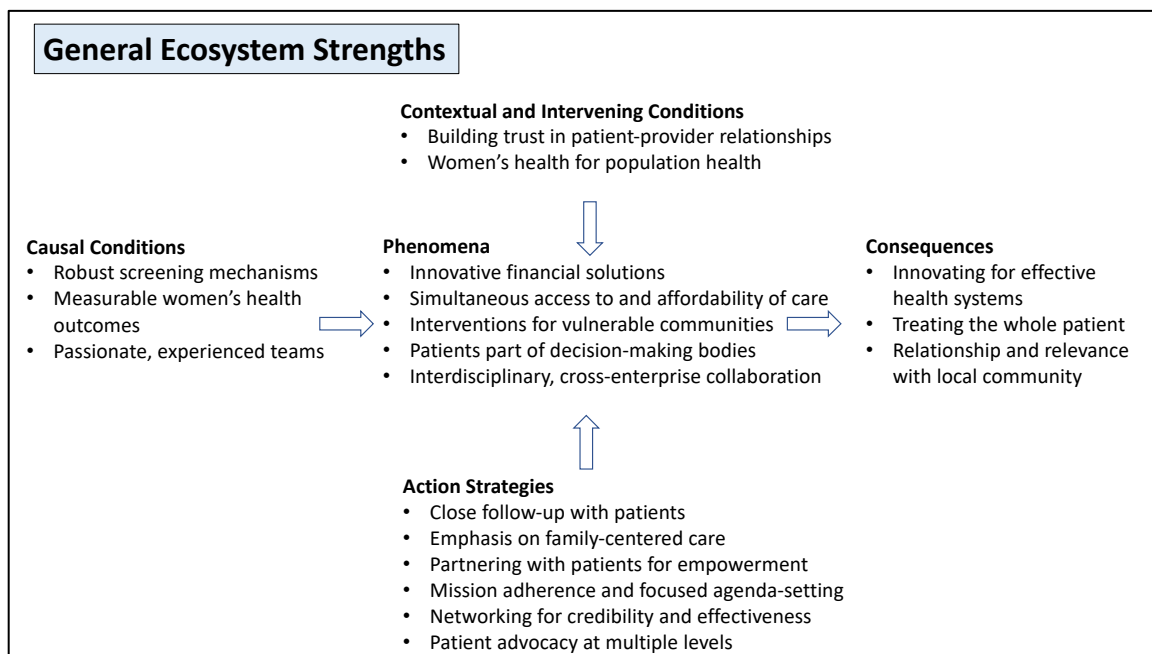
maps for each of the ten anticipated ecosystem component categories was presented in Appendix C. Figure 2 illustrates an example of an axial coding map that resulted from analysis of the interview data on the ecosystem category of General Ecosystem Strengths.

In this particular example, the main phenomena discussed as General Ecosystem Strengths were innovative financial solutions, simultaneous access to and affordability to care, interventions for vulnerable communities, patients as part of the decision-making bodies, and interdisciplinary, cross-enterprise collaboration (Figure 2). Robust screening mechanisms that existed to identify at-risk populations was a causal condition that led to the phenomenon of existing interventions for vulnerable communities. Measurable women's health outcomes served as a causal condition for innovative financial solutions and the phenomena of simultaneous access to and affordability of care, because adhering to evidence-based measures and outcomes increased credibility and consequently the availability of sustainable funding. The existence of passionate, experienced teams employed by WHSEs were a causal condition that led to the phenomena of interdisciplinary, cross-disciplinary collaboration and proactive integration of patients as part of decision-making bodies for WHSEs.

As intervening conditions for all phenomena, WHSEs worked within communities to build trust in patient-provider relationships, and they benefitted from society learning to view women's health as an important factor for population health (Figure 2). Many action strategies were employed by WHSE and considered to be General Ecosystem Strengths. Partnering with patients for empowerment facilitated patients being part of the WHSE decision-making bodies. Close follow-up with patients and emphasis on family-centered care led to simultaneous access to and affordability of

care, particularly because more attention was paid to vulnerable women and their families. Mission adherence and focused agenda-setting made it easier to create relevant and innovative financial solutions for patients. WHSEs focused on networking as a means of establishing credibility and improving effectiveness that supported interdisciplinary, cross-enterprise collaboration. Patient advocacy at multiple levels brought awareness that facilitated interventions for vulnerable communities. Ultimately, the outcomes of the aforementioned phenomena led to the following consequences for WHSEs: treating the whole patient, innovating for effective health systems, and relationship and relevance with the local community.

Figure 2 - General Ecosystem Strengths: Sample Axial Coding Map of Ecosystem Themes and Classes



**Selective coding** yielded four core categories that described the ecosystem of WHSE (each of which resulted due to its prominence in relating multiple classes or themes



within interview data): 1) comprehensive, community-based, and culturally adaptive health, 2) interdependent innovation in systems, finances, and communication, 3) interdisciplinary, cross-enterprise collaboration, and 4) women's health as the foundation for family and population health. A summary of each core category is provided below using its related phenomena and phenomena as well as underlying conditions or strategies from the axial coding paradigm.

### **Comprehensive, community-based, and culturally adaptive health care**

Because “comprehensive, community-based, and culturally adaptive health care” was the most frequently cited category, it has further been broken down into and described according to four subcategories: acknowledging health disparities, treating the whole patient, educating patients and professionals, and connecting with the community.

#### ***Acknowledging Health Disparities***

The most prominent theme leading to the development of comprehensive, community-based, and culturally adaptive health care was acknowledging health disparities. Entrepreneur interviewees expressed concerns about a variety of health disparities, mostly centered around “disenfranchised communities.” Such communities were based on race and ethnicity, immigrant status, homelessness, poverty, and geographical locations. Interviewees consistently reported the highest level of concern for pregnancy and birth outcomes in the context of impoverished families and racial/ethnic minorities. A striking example was noted by one interviewee and echoed in similar ways by other subjects, “African-American women in our area have four times the rate of

infant mortality, and Latina women have three times the rate of infant mortality as their white counterparts, even erasing all other demographic differences.”

There were several key causal conditions noted to perpetuate the cycle of health inequity for disenfranchised communities – lack of community amenities or resources, financial limitations as a barrier to care, and a lack of funding that limits the sustainability of interventions. Although they reported the existence of safety net services in many disenfranchised communities, interviewees expressed a high level of concern for environmental conditions determined by the nature of the local community that greatly impacted women’s and family’s health, such as “food deserts” and a “whole bunch of liquor shops that are still on every block.” From the patient’s side, financial barriers to care were reported to be further exacerbated by the often-limited number of primary women’s health care providers in areas with healthcare need. From the enterprise’s side, interviewees consistently stated that limited funding has led to high turnover among workforce and competition among enterprises with similar target populations, both of which diminish progress.

Interviewees expressed strong concerns for several phenomena that were considered to be inappropriately occurring in relation to health disparities – geographically disparate healthcare conditions, less preventative care in vulnerable populations, and lack of social support and care coordination. Regarding health disparities based solely on geography, interviewees made it clear that their success was often greatly linked to understanding their service area, particularly the association of different geographical areas with often very different women’s health care needs. With regard to preventative care, the highest level of concern for vulnerable populations was

matching health information to the patient's education level, especially figuring out how to communicate the importance of prenatal care and other preventative health care.

Lastly, the lack of social support and care coordination was reported to revolve around major economic concerns as social determinants of health – “low education, employment, housing availability, and housing affordability.” Interviewees took an action-oriented approach to such problems, sharing the sentiment that, “social supports that need to be in place aren't there unless we put them there.”

Health disparities were highly complicated by a myriad of intervening political or social conditions. Uncertainties amid rapid healthcare changes, such as transitions to value-based payments and proposed shifts in Medicaid funding, seemed to heighten the concerns for interviewees, given the consequently unpredictable future of women's health care. Interviewees consistently expressed frustration with politics for dictating terms for women's health, especially legislation that directly impacted patient care and women's health care agenda being dependent on the political affiliations of the latest state or local politicians. The most important social conditions related to abuse, mistrust, and stigma. In addition to citing the opioid epidemic, interviewees acknowledged that many of the women and families in their care have extensive trauma and mental health histories and expressed concerns about not only the lack of comprehensive care, but also the “normalization of violence in our community is a threat.” Interviewees also endorsed the idea that a pervasive mistrust of health institutions by disenfranchised communities, especially racial or ethnic minorities, continues to be a challenge. Lastly, they advocated for the need to address societal bias and stigma that continues to plague women's health. Several interviewees felt that the objectification of women has hindered progress in

women's and maternal health: "we have come to a point in maternal and child care where a woman is seen as a vessel and not seen as an important part of what's going on... then we wonder why maternal death is on the rise." Others emphasized the importance of women's health in addressing health disparities: "The key is reproductive health justice... that's really the foundation of a lot of inequity that we're trying to deal with, but a lot of anti-poverty work doesn't focus that way. [When] people think anti-poverty, they think job training, and all of that is great, but if you miss the gender lens and if you're not talking about affordable child care... you're going to not accomplish your goal."

### ***Treating the Whole Patient***

The most frequently mentioned approach to addressing health disparities and providing adequate health care was "treating the whole patient." In fact, it seemed to be the most important foundation of comprehensive, community-based, and culturally adaptive health care. Interviewees defined "treating the whole patient" in many ways – "looking at social determinants of health," "wrap around services... stuff that's just there for mommy to feel better," "looking at trends, attitudes, and beliefs." The most frequently cited approach to "treating the whole patient" was summarized well by one interviewee: "health education that's specifically targeted... talking about cultural attitudes and beliefs and how they contribute to the health discussion, reproductive health discussion, and health behaviors." An important part of "treating the whole patient" that was frequently cited as an additional ecosystem component was spiritual care: "figure out how to best meet the client's spirituality need while they're in the program, because we know it's important for their ongoing recovery." Overall, it was clear that "treating the whole patient" required passionate, experienced teams, which interviewees consistently

described as the most valuable part of their ecosystem. Such team members prioritized building trust in patient-provider relationships, close follow-up with patients, and patient advocacy at multiple levels. “Treating the whole patient” in this way was viewed as an effective response to the need to appropriately address health disparities and ultimately prioritize biopsychosocial care.

### ***Educating Patients and Professionals***

In order to establish a system of comprehensive, community-based, and culturally adaptive health care, targeted patient education and professional enrichment were both utilized. Partnerships were made with local colleges or vocational programs to provide women with educational opportunities with the ultimate goal of economic empowerment. Partnerships with other community-based stakeholders were also made in order to provide health education and outreach tailored to the needs of women and families within the local community being served. In terms of professional enrichment, social enterprise boasts a unique opportunity to not only train medical professionals but also healthcare leaders within a novel model for delivering comprehensive, community-based, and culturally adaptive health care. In some instances, WHSE even provided funding in that regard. Although doctors, medical trainees, and social entrepreneurs were valuable parts of the ecosystem, a major emphasis was placed on the critical role that mental health professionals, mid-level health providers, case managers, and community health educators played in maintaining the system of care. Furthermore, interviewees boasted a unique aspect of their system of care – integrating previous clients into the ecosystem as a support system for current or future clients.

### ***Connecting with the Community***

The interviewees unanimously agreed that one of the greatest strengths of the general WHSE ecosystem was their relationship and relevance with the local community that each enterprise served. Interviewees described this dedication to their local communities as consistently “reaching out for community input” via focus groups or other community-based participatory research and seeing local community partners as an invaluable asset. The goals of such community relationships were identifying “community touch points,” “trying to figure out how health information moves around that community,” and “really trying to figure out where the best value is for the community” to optimize their ability to provide comprehensive, community-based, and culturally adaptive health care. Despite consistently facing challenges such as environmental barriers to care (e.g., lack of transportation) and an inability to have workforce diversity perfectly reflect the diversity of their local patient population, interviewees reported fruitful progress from incorporating patients and community stakeholders into their decision-making process. Ultimately, this was reported to lead to better targeted health interventions and increased empowerment of the women and communities they serve.

### **Interdependent innovation in systems, finances, and communication**

Interdependent innovation in systems, finances, and communication has become the WHSE ecosystem’s response to persistent gaps in access to and quality of women’s health care. Interviewees report that such gaps have resulted from inflexible and ineffective healthcare systems coupled with a lack of budget for education or outreach. The lack of budget is due to not only a difficult funding climate but more importantly,

mismatched funding priorities. In fact, a prominent finding was that interviewees considered misalignment to be a key source of problems that they face in providing women's health care. Such misalignment was summarized as interference from political systems as well as societal judgments made against women, especially minority and otherwise underserved women. Interviewees reported that the healthcare industry can sometimes be part of the problem due to healthcare systems that perpetuate such bias and misalignment. WHSEs attempted to mitigate such risks by participating in evidence-based strategies and maintaining close communication with clients or other stakeholders.

Despite the continued need for improvement, innovation towards effective health systems was noted to be a major general ecosystem strength and was frequently mentioned by interviewees. An interviewee summarized this strength as an iterative process with the ultimate goal to “innovate strategies that will hopefully transform not only lives but transform policies and systemic systems of care.” Another interviewee characterized it as an “appetite for change and willingness to talk about out-of-the-box solutions.” Such innovation often presented itself in the form of financial solutions, such price discrimination afforded by sliding scale fees for the same service or cross-subsidization of high-technology, enhanced health services to cover campaigns for basic health education and community outreach services . Most interviewees commented on financial innovation, especially branching out from the traditional non-profit model and utilizing social enterprise activity to increase financial sustainability. Such efforts were often focused on decreasing reliance on external funding and instead seeking resource providers who were engaged as active partners with the enterprise.

Another major consequence of innovation was the simultaneous access to and affordability of care, which was noted to be a goal of all of the interviewees' affiliated enterprises. This goal was made possible through not only financial innovation, but also mission adherence and focused agenda-setting by the enterprise to better serve its local community. Moreover, the powerful combination of robust screening mechanisms and measurable women's health outcomes allowed appropriate identification of high-risk patient population and follow-up with target audiences. Target audiences varied by the enterprise and the needs of its local community, including examples such as older women, adolescent population, low income population, abuse victims, racial and ethnic minorities, women with complicated pregnancies, and reproductive-aged women. The type of innovative strategies employed by a given enterprise depended largely on its target audience. Interdisciplinary groups formed to establish and disseminate evidence-based best practices in this regard were an important part of effective communication with not only patients, but also providers and other professionals.

### **Interdisciplinary, cross-enterprise collaboration**

A prominent strength of ecosystem of WHSE was a culture of collaboration instead of competition. In fact, interviewees often refused to name competitors, because they viewed other enterprises that would traditionally be considered their competition rather as partners in actively engaging the same clientele to achieve their similar missions. Also, they reported a phenomenon of small enterprises coming together to overcome competition from large companies that existed outside of the social enterprise ecosystem. Some also viewed collaboration as a means of gaining influence, especially



for understanding and support around controversial topics such as abortion care, as well as building credibility and increasing overall effectiveness. An interviewee summarized a major goal of interdisciplinary, cross-enterprise collaboration as having “groups of discussions I think are very valuable for interfacing with our partners, finding our place in the ecosystem, and also being able to be a champion.”

In addition to collaborating to directly impact patients, interdisciplinary networks were formed as “think tanks.” Such networks have led to successful outreach in research and advocacy on local, state, and national levels. Advocacy was reported to be aided by strategic partnership with legal and social support champions, especially government agencies or use of government funding. Although difficulties were noted in terms of the time limitations that made collaboration with doctors difficult, clinical providers were consistently noted as key part of the interdisciplinary networks. More specifically, they were often noted as a necessary part of an enterprise’s interdisciplinary board of directors for appropriate guidance. Nevertheless, interviewees noted that their emphasis on interdisciplinary, cross-enterprise collaboration prevented the stagnation of progress with separate agendas and instead facilitated optimal cohesion. Such cohesion was actively used to establish a collective voice for women’s health advocacy, especially evidence-based policy.

### **Women’s health as the foundation for family and population health**

A frequently cited strength of the ecosystem of WHSE was the importance of women’s health for population health, including family and community health. An extension of this strength is the ecosystem’s emphasis on family-centered care and not

only “treating the whole patient” as previously discussed, but also “treating the whole family’s health.” The ecosystem incorporates not only the integration of children’s health into the care of their mother, but also engagement of partners and fathers. Interviewees noted several logistical challenges with the family-centered approach to women’s health, but consistently still highlighted its value. Although families and support systems of women were unanimously noted as key bystanders in the ecosystem, the concept of “everyone in society as a bystander” of women’s health was frequently discussed. This included not only local communities, but also healthcare industry, legal systems, and those affected by these entities, which is everyone. The majority of interviewees argued strongly for the consideration of gender inequity as an inextricable contributor to social determinants of health; an interviewee clarified, “If you erase the lens of gender in reproductive health, you really miss the boat on anti-poverty work. Women work harder to be poorer, and they are disproportionately doing much more of the child care, missing more hours of work for sick kids... all of the things that make society work.”

## DISCUSSION

### *Aim I Summary*

Aim I findings only partially aligned with our hypotheses. Since the overwhelming majority of women's health enterprises were based outside of hub cities, there was no geographical concentration by hub city. However, the south was considerably more well-represented in the sample than other regions. Although most enterprises were at-risk for financial distress, very few of the enterprises were found to be severely at-risk for financial distress. Also, as expected, a substantial proportion of enterprises engaged simultaneously in all health intervention areas. Financial distress was not significantly associated with geographic location or any other enterprise characteristic assessed in our analysis.

An important limitation of Aim I is that our sample only includes nonprofit WHSE, which could limit generalizability of our findings. Likewise, our findings that the majority of enterprises were at-risk for financial distress must be taken in the context of a predominately nonprofit sample. In order to most comprehensively characterize the entire population of WHSE, for-profit enterprise representation is also needed. However, despite the creation of social enterprise directories by some organizations, such as the Social Enterprise Alliance, there is currently no central database that encompasses a representative sample of both for-profit and nonprofit social enterprises based in the US. Therefore, our study chose to utilize a nationally representative and accurate database (i.e., the GuideStar database) to only characterize nonprofit WHSE. Future research developing and analyzing a rigorous data source of for-profit WHSE is needed in order provide a more comprehensive understanding of the characteristics of WHSEs in the U.S.

### *Aim II Summary*

Aim II findings strongly supported our hypotheses according to the three-failures theory (36). The WHSE ecosystem addressed government failure by focusing on serving the underserved or disenfranchised communities whose needs were not reflected among the median voter or majority level of demand. It also addressed the market failure of overexclusion through strategies such as cross-subsidization and price discrimination due to trustworthiness established in the presence of community empowerment and lack of profit incentives. While voluntary failures were apparent (unavoidable philanthropic insufficiency led to increased social enterprise activity), in the WHSE ecosystem, interestingly, other potential failures (amateurism, paternalism, philanthropic particularism) were explicitly viewed as threats and proactively guarded against. The innovative and effective financial systems of the WHSE ecosystem helped to minimize but did not completely overcome philanthropic insufficiency. The combination of women's health experts with community volunteers appropriately balanced the risk of philanthropic amateurism with importance of relatability for clients. The ecosystem's emphasis on evidence-based interventions addressed philanthropic particularism by ensuring that efforts were targeted to address health disparities and eliminate associated gaps between different health populations. The community-based approach of the WHSE ecosystem demonstrated how the ecosystem reduced the risk of philanthropic paternalism; such an approach was particularly crucial given the discordance between entrepreneur interviewee demographics and the minority populations that they serve.

The study's finding with regard to "social capital" as it relates to the three-failures theory is also notable. In describing the unique features of how the non-profit sector

functions in contrast to government and market sectors, Steinberg states, “nonprofits often serve as creators of the collective good ‘social capital,’ a network of relations that facilitates joint action” (36). The finding of interdisciplinary, cross-enterprise collaboration within the WHSE ecosystem, especially reliance on volunteers, third party partnerships, and joint networks, demonstrates this “social capital” concept of functioning discussed by Steinberg and also generally observed in the non-profit sector. Altogether, the three-failures theory was an applicable framework for understanding the ecosystem of WHSE, suggesting that prior theories or research assessing nonprofit in general may also apply to WHSE, especially in our study, which is mostly representative of non-profit WHSEs.

Each of the core categories identified from WHSE entrepreneur interviews informed a unique opportunity for innovative solutions to currently unresolved women’s healthcare issues. Comprehensive, community-based, and culturally adaptive health care showed that WHSE can employ a tailored approach to simultaneously engage women, communities, providers, and professionals to address health disparities. Interdependent innovation in systems, finances, and communication demonstrated how WHSEs are poised to tackle challenges in women’s healthcare from multiple angles – health systems, funding, and research or policy. Interdisciplinary, cross-enterprise collaboration highlights the culture of the WHSE ecosystem that promotes diversity of thought and consequently collective advocacy. Lastly, women’s health as the foundation for family and population health underscores the importance of women’s healthcare for the country as a whole, which can serve to decrease the marginalization of women’s health issues.

A potential limitation of Aim II is its sample composition. Previous literature suggests that a sample size of twelve among a homogenous group can be appropriate for definitively reaching the point of theoretical saturation (44). However, the homogeneity of the entrepreneur interviewees in this study may limit generalizability of our findings to the women's health social entrepreneur population and affiliated enterprise ecosystem at-large. For example, since the great majority of interviewees were white women working at non-profit social enterprises, the results may not accurately represent the thoughts of women's health social entrepreneurs who are racial or ethnic minorities or affiliated with for-profit enterprises. However, since women's health social entrepreneurs have not been previously characterized, it is difficult to determine the composition of a representative sample. Further research with particular attention to recruiting a more diverse sample will provide additional insights.

### ***Implications of Research Findings***

Our analysis of the 2015-2016 GuideStar data in Aim I classified WHSE's geographic location based on city hubs identified in previous 2016 social enterprise ecosystem survey data (29). More recently, the survey results have been updated to reflect the 2017 environment for social enterprises (45). The updated survey maintained the same four pillars for a healthy social enterprise ecosystem – funding, human capital, quality of life, and regulation and receptivity. However, the social enterprise hubs drastically increased from ten to twenty-one cities. Our Aim I findings disproving the hypothesized geographical concentration of women's health social enterprises by city hubs coupled with the 2017 ecosystem survey's drastic change in geographical findings suggests that geographical bounds may not be sufficient for framing WHSE ecosystems

or social enterprise ecosystems in general. Moreover, as similarly suggested by the finding of geographic expansion of the biotechnology industry in Stuart and Sorenson's analysis (27), the increasing popularity of social enterprise models may lead to a rapidly expanding geography for the ecosystem that cannot be accurately generalized until it reaches steady state.

Our findings from Aim II are consistent with the ecosystem pillars identified in both the 2016 and 2017 social enterprise ecosystem surveys (29,45). Specifically, the 2017 ecosystem survey identified concerns about limitations for funding (45). Similar concerns were expressed by women's health social entrepreneurs participating in our study, and they responded via interdependent innovation in systems, finances, and communication. With regard to human capital, the ecosystem survey entrepreneurs were "optimistic about their talent markets" and considered finding great people for their teams to be "the engine of the ecosystem"(45). Similar sentiments were found in our study regarding human capital, which ultimately afforded the consequence of interdisciplinary, cross-enterprise collaboration. Additionally, the 2017 ecosystem survey reported difficulty with race and gender relationships, especially highlighting gender inequality (45). In our study, similar gender inequality concerns were the driving force behind shaping women's health as the foundation for family and population health. Such similarity in findings suggests that some research findings about social enterprise ecosystems at-large may be applicable to specific types of social enterprise ecosystems, such as women's health.

Nevertheless, our Aim II study also identified unique features and challenges faced by WHSE. More specifically, the most prominent finding of WHSE affording

comprehensive, community-based, and culturally adaptive health care is crucially relevant to women's health needs as noted in previous literature. Entrepreneurs' acknowledgement of the pervasiveness of health disparities in women's health throughout our study is well-supported by data in the CDC health disparities and inequality report (46). Although some progress has been made through various healthcare interventions, novel interdisciplinary solutions may be needed to properly address the health disparities that remain. Similar to the comprehensive approach to women's health care taken by social enterprises in our study, previous research supports the effectiveness of such complex care coordination at reducing health disparities (47). A recent study identified psychosocial clusters (resulting in a two-cluster solution of Social versus Stress Clusters with relevant predictors) and their associations with women's health outcomes, suggesting the incorporation of such factors to customize women's health interventions and optimize women's health outcomes (48). Our study shows that WHSEs are currently engaged in such practices of complex care coordination and comprehensive biopsychosocial care for women and their families. These enterprises may serve as a model for further exploring best practices in this regard.

The community-oriented and interdisciplinary nature of WHSE as highlighted by our study may also serve as a unique model for research and education purposes. Community-based participatory research has proven to be an effective approach for reducing health disparities but may require more targeted engagement within marginalized communities (49). WHSE's intentional focus on and intimate connection with local communities suggests that they may serve as a means for bridging this community engagement gap to improve health outcomes. Additionally, multiple meta-



analyses have shown that interdisciplinary education and teamwork among healthcare professionals as well as the comprehensive assessment of patients that they afford can significantly improve health outcomes (50, 51). The educational milieu of women's health may be greatly improved by the interdisciplinary, cross-enterprise collaboration apparent among WHSEs as well as their emphasis on not only educating patients and healthcare professionals, but also engaging patients to become involved as professionals.

In summary, our findings show that WHSEs can help increase the supply of women's health related products and services. More specifically, WHSEs act regionally in networks to coordinate and fill gaps in complex, comprehensive care delivery systems. While WHSEs operate with levels of financial risk and are subject to the voluntary sector failure of philanthropic insufficiency, they successfully act to remediate other voluntary sector failures that threaten traditional non-profit organizations. Our findings suggest various strategies by which WHSEs may contribute to addressing existing women's health problems and carry important implications ranging from women's healthcare delivery to research and education. There is growing evidence demonstrating the effectiveness of social enterprises at impacting health delivery and health outcomes in general, and our study further provides considerable insights into how social enterprises may be instrumental in helping to improve women's health and healthcare in particular. The role of social enterprises is promising, and further research is needed to elucidate how WHSE interventions may be integrated into policies and practices to improve women's health.

## APPENDIX

### *Appendix A: Interview Guide*

#### **Orientation and Informed Consent (5 min)**

Hello, Mr./Mrs. (Last Name). We greatly appreciate your participation. In order to maximize our time together, I will do my best to move efficiently from one section of this meeting to the next. However, if you have questions or concerns at any time, please voice them.

As a reminder, we have an hour together today. This hour is expected to include 5 minutes of orientation and verbal consent, which we are currently doing, a 10-minute informational survey, a 42-minute dialogue on your perspectives, and a 3-minute closing. I will alert you as we progress from one section to the next.

You have been provided with a copy of the informed consent form for the research study in advance of this interview. The form explained the process of the study and the risks and benefits involved and provided contact information of the study's principal investigator for an opportunity to ask questions. At this point, do you have any questions or concerns that you would like to address?

By proceeding with the interview, you agree that you have read the consent document, understand the risks and benefits involved, and now verbally consent to participate in this study.

Please state "I agree" if you understand and agree to participate in this study.

Please state "I refuse" if you do not agree to participate in this study.

#### **Brief Survey (10 min)**

For this 10-minute survey, I will ask you a series of questions related to your individual characteristics as well as the characteristics of your enterprise.

#### **Individual Characteristics**

1. What is your age in years?
2. With which gender classification do you identify: female or male?
3. I will provide a list of racial/ethnic categories established by the NIH for research purposes. Please indicate the category with which you most closely identify. If a category is unclear, please let me know so that I can further define it.
  - a. American Indian or Alaska Native
    - i. ***If definition requested:*** *A person having origins in any of the original peoples of North and South America (including Central America), and who maintains tribal affiliation or community attachment.*
  - b. Asian
    - i. ***If definition requested:*** *A person having origins in any of the original peoples of the Far East, Southeast Asia, or the Indian subcontinent including, for example, Cambodia, China, India, Japan, Korea, Malaysia, Pakistan, the Philippine Islands, Thailand, and Vietnam.*
  - c. Non- Hispanic Black or African American
    - i. ***If definition requested:*** *A person having origins in any of the black racial groups of Africa. Terms such as "Haitian" or "Negro" can be used in addition to "Black or African American."*
  - d. Hispanic or Latino
    - i. ***If definition requested:*** *A person of Cuban, Mexican, Puerto Rican, Cuban, South or Central American, or other Spanish culture or origin, regardless of race. The term, "Spanish origin," can be used in addition to "Hispanic or Latino."*
  - e. Native Hawaiian or Other Pacific Islander
    - i. ***If definition requested:*** *A person having origins in any of the original peoples of Hawaii, Guam, Samoa, or other Pacific Islands.*

- f. Non-Hispanic White
  - i. **If definition requested:** *A person having origins in any of the original peoples of Europe, the Middle East, or North Africa.*
- 4. Please indicate which of the following options best describes the highest level of education that you have completed:
  - a. Did not complete high school
  - b. High school diploma or GED
  - c. Vocational or technical certification
  - d. Associate's degree
  - e. Bachelor's degree
  - f. Master's degree
  - g. Ph.D., M.D., J.D., or other doctoral or advanced graduate degree
- 5. How many years of total social enterprise experience do you have?
- 6. How many years have you been employed by or involved with your current social enterprise?
- 7. What position or title do you currently hold within your enterprise?
  - a. **If possible, match within the following categories:**
    - i. Founder, Co-Founder, Chair, or Co-Chair
    - ii. Chief Executive Officer or equivalent position
    - iii. Chief Operating Officer or equivalent position
    - iv. Chief Financial Officer or equivalent position
    - v. Chief Marketing Officer or equivalent position
    - vi. Chief Technical Officer or equivalent position
    - vii. Chief Human Resources Officer or equivalent position
    - viii. Director, Vice President, or equivalent position
    - ix. Manager, Supervisor, Team Lead, or equivalent position
    - x. Board Member or other advisory position
    - xi. Secretary or other administrative support position
    - xii. Associate or other entry-level position
    - xiii. Other
      - 1. **If Other:** *Please state and describe your title.*

### Enterprise Characteristics

1. Please state the mission and significant activities of your enterprise.
2. In what zip code is your enterprise based?
3. In what geographic areas (including city and country) do your enterprise's activities take place?
4. Please describe your enterprise's target population, audience, or customer.
5. In what year did operation of your enterprise begin?
6. Is your enterprise for-profit or non-profit?
7. How many full-time equivalents (FTE) does your enterprise employ in total versus at the branch/location that you work?
  - a. **If clarification of "FTE" requested:** *Sum total weekly hours worked by all employees and divide by total number of employees.*
  - b. **Based on answers to this question:** *Document if the subject reported their enterprise is single-site enterprise vs. multi-site.*
8. Which of the following areas of health intervention does your enterprise impact:
  - a. Socioeconomic Factors
  - b. Changing the Context to Make Individuals' Default Decisions Healthy
  - c. Long-lasting Protective Interventions
  - d. Clinical Interventions
  - e. Counseling and Education
    - i. **If examples requested:**
      1. *Socioeconomic Factors – reduced poverty or increased education*
      2. *Changing the Context – clean water or reduced smoke pollution*
      3. *Long-lasting Protective Interventions – immunizations or colonoscopy*
      4. *Clinical Interventions – HIV or Hypertension treatment*
      5. *Counseling and Education – Behavioral or Dietary counseling*

**In-depth discussion (42 min)**

Thank you for completing the survey. We will now begin the 42-minute dialogue regarding your perspectives on the ecosystem of women's health social enterprises.

1. **Enterprise-Specific Ecosystem (30 min)**: We define the ecosystem of women's health social enterprises as the overall organization and collaboration of key stakeholders involved in social enterprise efforts targeting women's health. I'll ask a series of questions to better understand the ecosystem in which your enterprise is situated.
  - a. Resource Providers
    - i. Who or what are your enterprise's resource providers, and how were they identified?
      1. ***If clarification requested:*** *Resource providers include financial sources (e.g., social investors, foundations, government grants), human capital (e.g., healthcare navigators or other skilled staff), knowledge or expertise (e.g., women's health experts), networking (e.g., other organizations in support of women's health or social enterprise in general), technology (e.g., communications, electronic medical records), and intermediaries (e.g., healthcare professionals, community leaders, childcare services, etc.).*
    - ii. Please describe the enterprises' relationship or interaction with them.
      1. ***If not already addressed:*** *Human Capital (team, mentors, employees, and advisors)*
        - a. *Describe your most valuable human capital resources.*
      2. ***If not already addressed:*** *Funding (private and public sources of capital: seed funding, grants, philanthropy, or venture capital)*
        - a. *How is your enterprise funded?*
  - b. Competitors
    - i. Who are your enterprises' competitors, and why?
    - ii. Please describe the enterprises' relationship or interaction with them.
  - c. Complementary Organizations/Allies
    - i. Who are your enterprises' allies, and why?
    - ii. With what complementary organizations, if any, do you work?
    - iii. Please describe the enterprises' relationship or interaction with them.
      1. ***If support organization specifics not addressed:*** *Have you joined any social enterprise support organizations?*
        - a. ***If yes:***
          - i. *Which organizations did it join, and why?*
          - ii. *What has been your experience with these organizations?*
        2. ***If providers not addressed:*** *To what extent do you collaborate with women's health providers?*
          - a. ***If collaborating with providers:***
            - i. *What kinds of providers, and in what settings?*
            - ii. *What has been your experience with forging or maintaining such relationships?*
    - d. Bystanders
      - i. Who do you consider to be bystanders of your enterprise, and why?
        1. ***If definition requested:*** *Bystanders are not directly impacted by enterprises' actions but who are affected by its efforts or who could influence its success.*
      - ii. Please describe the enterprises' relationship or interaction with them.
    - e. Beneficiaries/Customers
      - i. Who are your beneficiaries or customers?
      - ii. Please describe the enterprises' relationship or interaction with them.

- f. Opponents/Problem Makers
    - i. Who are the opponents or problem makers against your enterprise, if any?
      - 1. **If definition requested:** *Opponents or problem makers includes any persons, groups, or organizations that contribute to the problems addressed by the social enterprise, undermine the enterprises' impact, or politically oppose the enterprise.*
    - ii. Please describe the enterprises' relationship or interaction with them.
  - g. Environmental Conditions
    - i. What major environmental conditions, such as politics, markets, geography, or culture, affect your enterprise, and how so?
      - 1. **If definition requested:** *Environmental conditions may include political and administrative structures (e.g., healthcare legislation, especially women's health funding decisions), economics and markets (e.g., healthcare expenditure and insurance in US), geography and infrastructure (e.g., medically underserved or disadvantaged areas), or culture and social fabric (e.g., distrust of health institutions by racial/ethnic minorities).*
      - 2. **If not already addressed:** *What have been your enterprises' experiences with Regulation & Receptivity (i.e., enterprise operations: regulations, market receptivity, and even perception and attitudes toward social enterprise)?*
      - 3. **If not already addressed:** *Quality of Life (diversity, cost of living, transportation, etc.)*
        - a. *To what degree does quality of life impact your enterprises' ability to recruit and retain human capital as well as accomplish other key tasks?*
    - h. Is there anything else that you would like to discuss in regard to other important stakeholders or environmental factors related to the ecosystem of your enterprise that we haven't yet discussed? If so, please discuss.
2. **General Ecosystem (12 min):** Now that we've discussed your enterprise's specific ecosystem, let's discuss the more general ecosystem in which all women's health social enterprises exist. As the framework used in the previous set of questions about your enterprise's ecosystem, ecosystem components include but may not be limited to: resource providers, competitors, allies or complementary organizations, self-help, beneficiaries or customers, opponents or problem makers, and environmental conditions.
- a. What do you identify as the three most significant limitations or gaps in the current ecosystem of women's health social enterprises in general, and why?
    - i. **If not already ranked:** *How would you rank them from most important or impactful to least, and why?*
    - ii. **If solutions not already provided:** *What could be done to address these issue(s)?*
  - b. What do you identify as the three most valuable strengths or opportunities of the current ecosystem of women's health social enterprises in general, and why?
    - i. **If not already ranked:** *How would you rank them from most important or impactful to least, and why?*
    - ii. **If actionable ideas not expressed:** *What ideas do you have, if any, for translating these opportunities into action?*

### **Closing (3 min)**

This concludes the interview. Thank you for your time and significant contribution. We also encourage you to e-mail any additional perspectives you may have beyond what was discussed today. My email address is [marquita.kilgore@yale.edu](mailto:marquita.kilgore@yale.edu).

In addition, all participants have the option to be included on an e-mail list for future communication of updates, publications, or other opportunities associated with this research study. Would you like to be included on the future communication e-mail list?

- *If yes: Please confirm the e-mail address at which you would like to be contacted.*
  - *If no: Thank you for letting us know.*
- Do you have any remaining questions or concerns at this time?
- *Address any questions or concerns (as time allows)*

My research team and I are sincerely grateful for your participation. Again, thank you. Have a great (day/evening)!

**Appendix B: Complete List of Ecosystem Themes Generated by Axial Coding**

<b>Ecosystem Category</b>	<b>Axial Coding Theme</b>	<b>Axial Coding Class</b>	<b>Code Counts</b>
<i>General Ecosystem Strengths</i>			179
	Close follow-up with patients	ACTION	4
	Innovating for effective health systems	CONSEQUENCES	16
	Treating the whole patient	CONSEQUENCES	13
	Emphasis on family-centered care	ACTION	11
	Partnering with patients for empowerment	ACTION	8
	Innovative financial solutions	PHENOMENA	5
	Mission adherence and focused agenda-setting	ACTION	2
	Building trust in patient-provider relationships	INTERVENING	10
	Simultaneous access to and affordability of care	PHENOMENA	13
	Networking for credibility and effectiveness	ACTION	6
	Robust screening mechanisms	CAUSAL	4
	Patient advocacy at multiple levels	ACTION	9
	Women's health for population health	INTERVENING	6
	Measurable women's health outcomes	CAUSAL	4
	Relationship and relevance with local community	CONSEQUENCES	18
	Interventions for vulnerable communities	PHENOMENA	10
	Passionate, experienced teams	CAUSAL	13
	Patients part of decision-making bodies	PHENOMENA	9
	Interdisciplinary, cross-enterprise collaboration	PHENOMENA	18
<i>General Ecosystem Weaknesses</i>			65
	Environmental barriers to care	CAUSAL	2
	Required cultural understanding of local community	INTERVENING	2
	Need for collective voice in women's health policy	ACTION	4
	Challenges with family-centered care	INTERVENING	2
	Difficult funding climate	CAUSAL	6
	Persistent gaps in access to and quality of women's health care	CONSEQUENCES	4
	Need to prioritize biopsychosocial care	ACTION	5
	Lack of budget for awareness/outreach	PHENOMENA	2
	Lack of personal development among professionals	INTERVENING	3
	Separate agendas preventing optimal cohesion	PHENOMENA	5

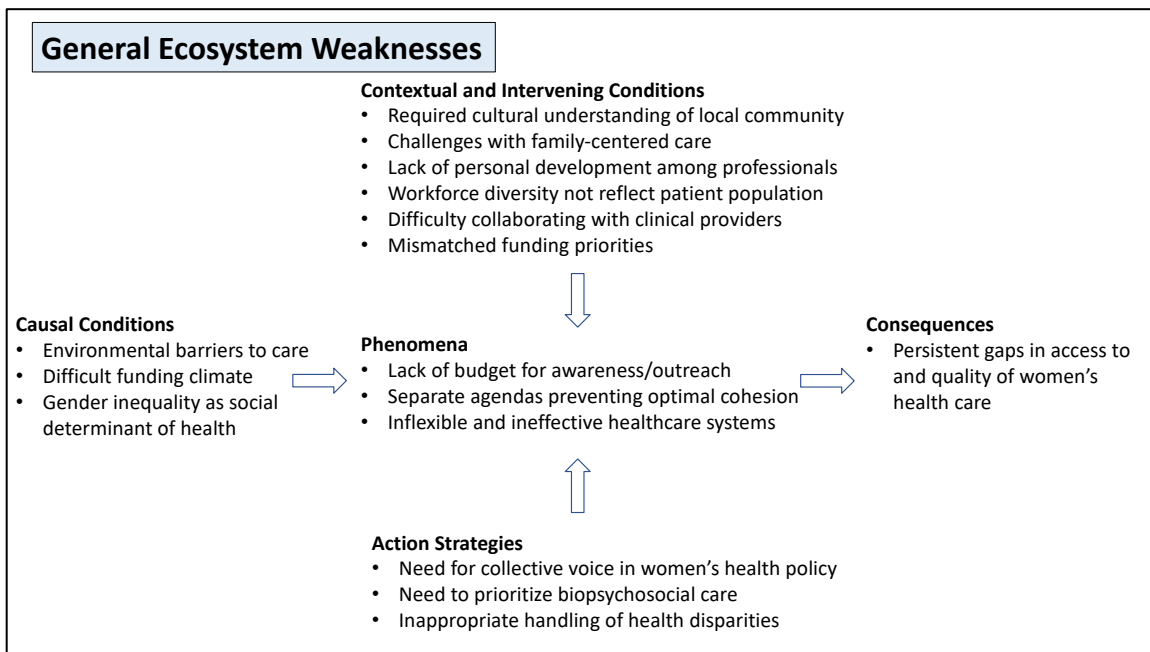
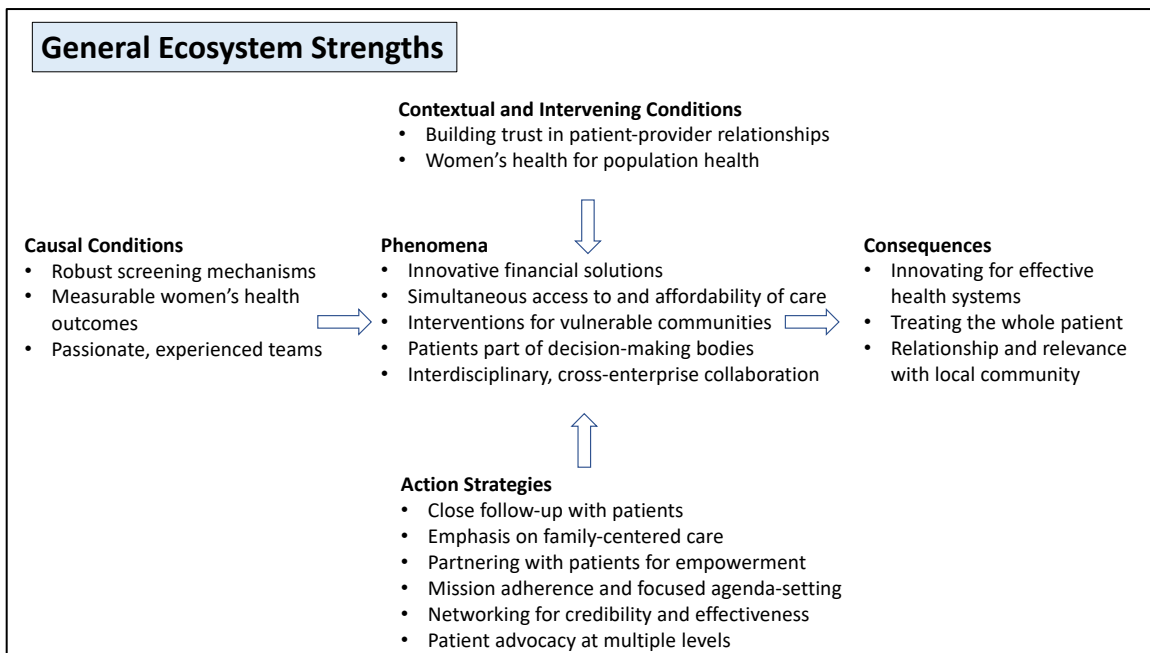
	Workforce diversity not reflect patient population	INTERVENING	4
	Inappropriate handling of health disparities	ACTION	8
	Inflexible and ineffective health care systems	PHENOMENA	4
	Gender inequality as a social determinant of health	CAUSAL	2
	Difficulty collaborating with clinical providers	INTERVENING	8
	Mismatched funding priorities	INTERVENING	4
<i>Beneficiaries or Customers</i>			94
	Medical and professional training and support	CONSEQUENCES	3
	Targeting older women (not necessarily elderly)	ACTION	3
	Targeting adolescent population	ACTION	2
	Targeting low income populations	ACTION	4
	Targeting abuse victims	ACTION	6
	Targeting racial and ethnic minority populations	ACTION	4
	Broad focus on women in general	CAUSAL	4
	Treating the whole family's health	CONSEQUENCES	8
	Focus on women with complicated pregnancies	ACTION	8
	Integration of children's health	INTERVENING	17
	Targeting reproductive age women	ACTION	12
	Engagement of partners or fathers	INTERVENING	3
	Unrestricted access to care	PHENOMENA	8
	Identification of high-risk patient populations	CAUSAL	12
<i>Bystanders</i>			19
	Legal system and agencies as bystanders	INTERVENING	3
	Families and support systems as bystanders	INTERVENING	3
	Local communities as bystanders	INTERVENING	5
	Healthcare system and community as bystanders	ACTION	6
	Everyone in society as bystanders	CONSEQUENCES	2
<i>Competitors</i>			20
	Competition with large companies	PHENOMENA	2
	Traditional competition for same clientele	PHENOMENA	14
	Culture of collaboration instead of competition	CONSEQUENCES	4
<i>Complementary Organizations or Allies</i>			132
	Education for economic empowerment	CONSEQUENCES	4
	Groups for evidence-based best practices	PHENOMENA	2

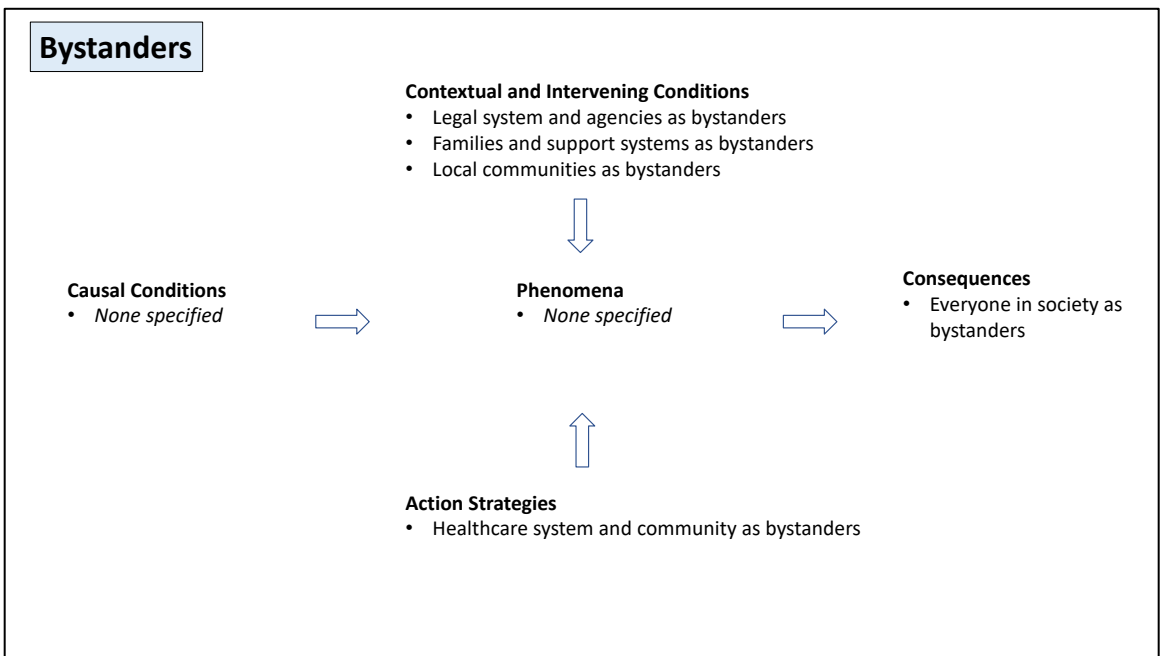
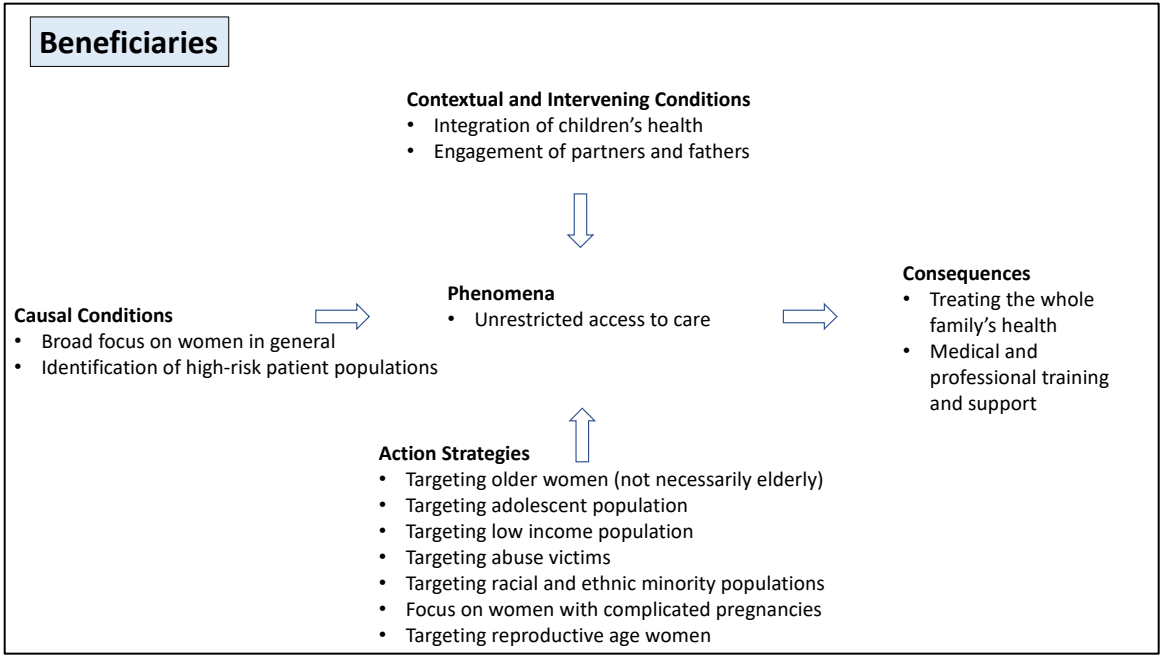


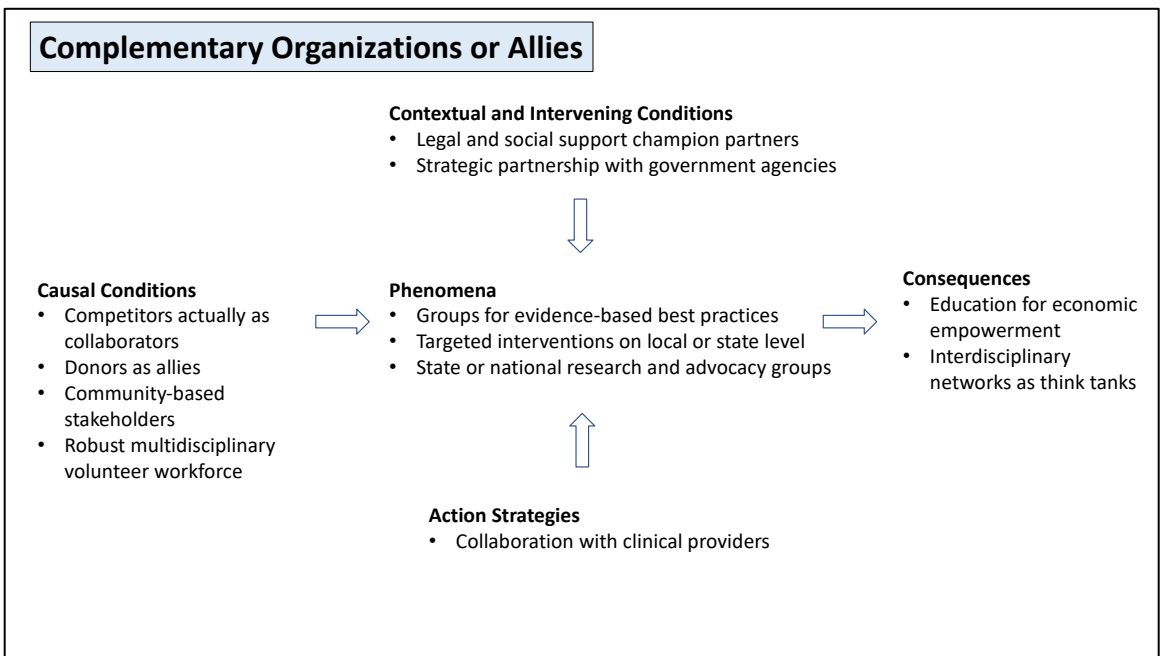
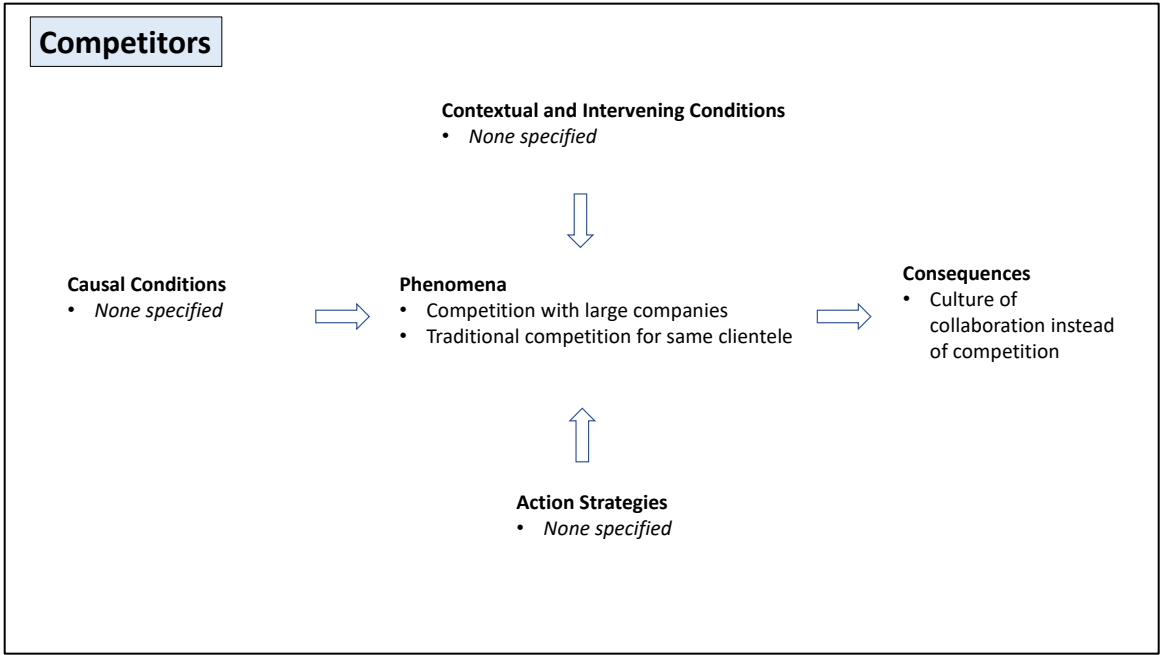
	Legal and social support champion partners	INTERVENING	6
	Strategic partnership with government agencies	INTERVENING	14
	Competitors actually as collaborators	CAUSAL	2
	Donors as allies	CAUSAL	2
	Robust multi-disciplinary volunteer workforce	CAUSAL	2
	Interdisciplinary networks as think tanks	CONSEQUENCES	5
	Targeted interventions on local or state level	PHENOMENA	18
	State or national research and advocacy groups	PHENOMENA	17
	Community-based stakeholders	CAUSAL	22
	Collaboration with clinical providers	ACTION	38
<i>Environmental Conditions</i>			<i>103</i>
	Lack of community amenities or resources	CAUSAL	4
	Funding limits sustainability of interventions	CAUSAL	5
	Lack of social support and care coordination	PHENOMENA	8
	Uncertainties with rapid healthcare changes	INTERVENING	3
	Impact of abuse on women's and family's health	INTERVENING	7
	Less preventative care in vulnerable populations	PHENOMENA	4
	Childcare and family health for women's health	ACTION	2
	Societal bias or stigma on women's health topics	INTERVENING	13
	The underserved mistrust of health institutions	INTERVENING	2
	Politics dictating terms for women's health	INTERVENING	13
	Financial limitations as barrier to care	CAUSAL	3
	Health disparities	CONSEQUENCES	20
	Geographically disparate healthcare conditions	PHENOMENA	19
<i>Opponents or Problem Makers</i>			<i>14</i>
	Interference from political systems	INTERVENING	4
	Healthcare community as part of the problem	ACTION	4
	Judgments made against women, especially minority & underserved	CAUSAL	2
	Misalignment as a key source of problems	CONSEQUENCES	4
<i>Resource Providers</i>			<i>140</i>
	Funding from local sources	CAUSAL	4
	Mental health providing biopsychosocial care	ACTION	10
	Sustainability via earned and passive income	CONSEQUENCES	6

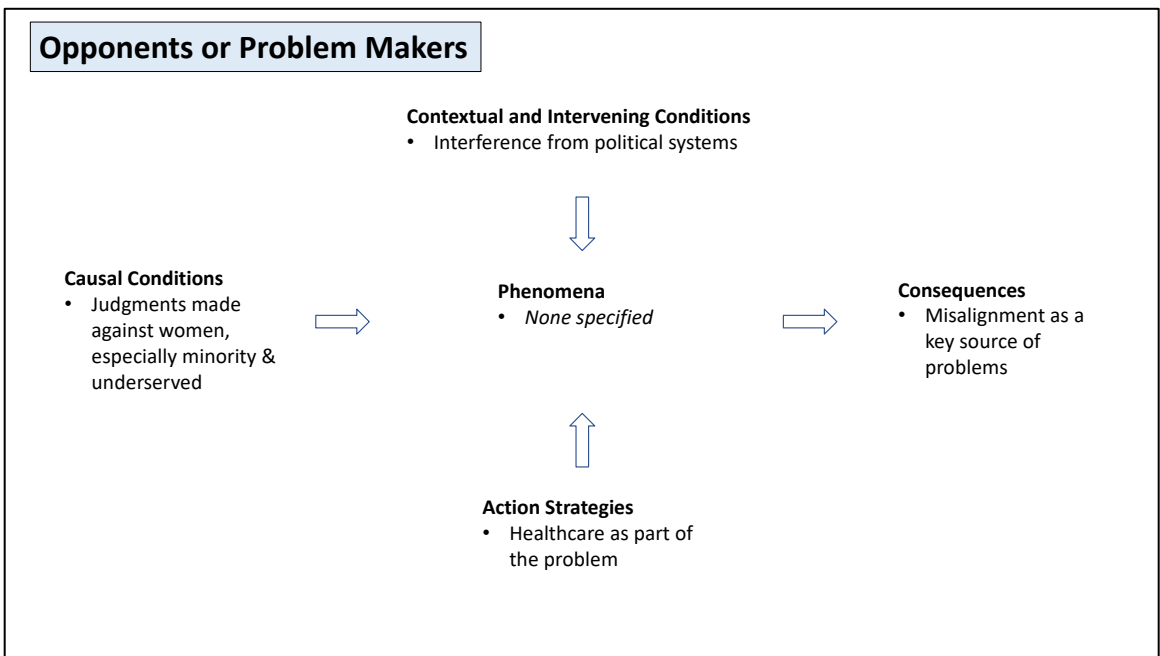
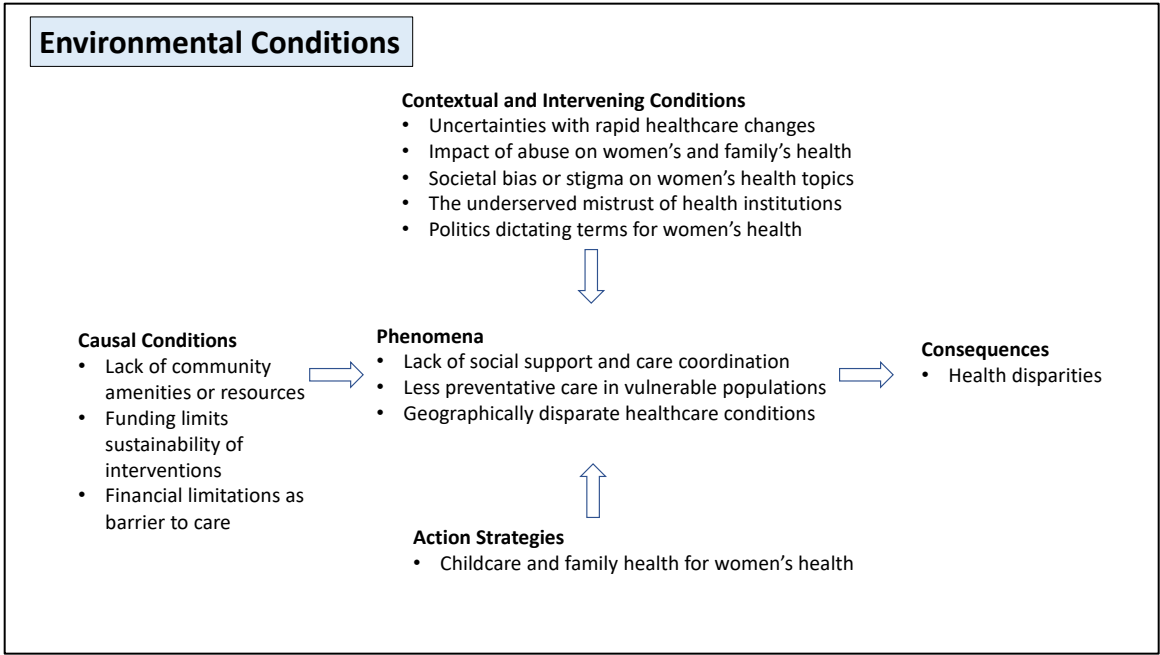
	Funders actively engaged as resource partners	CONSEQUENCES	3
	Robust volunteer workforce	PHENOMENA	6
	Interdisciplinary board of directors for guidance	PHENOMENA	4
	Compassionate, hard-working team of staff	CONSEQUENCES	12
	Doctors and trainees as valuable resources	ACTION	4
	Existing government programs or agencies	INTERVENING	11
	Private funding from individuals or organizations	CAUSAL	11
	Government funding for grant-based programs	INTERVENING	21
	Previous clients become support system	ACTION	2
	Complementary services by local partners	PHENOMENA	10
	Dedicated community health educators	ACTION	5
	Case managers for comprehensive support	ACTION	20
	Leaders with significant experience	CONSEQUENCES	3
	Mid-level clinical providers critical to mission	ACTION	8
<i>Additional Ecosystem Components</i>			5
	Comprehensive patient-centered focus	CONSEQUENCES	1
	Collaboration as a means of influence	ACTION	1
	Importance of spiritual support in health care	INTERVENING	3
<b>Total Counts</b>	<b>106 Themes</b>		<b>771 Codes</b>

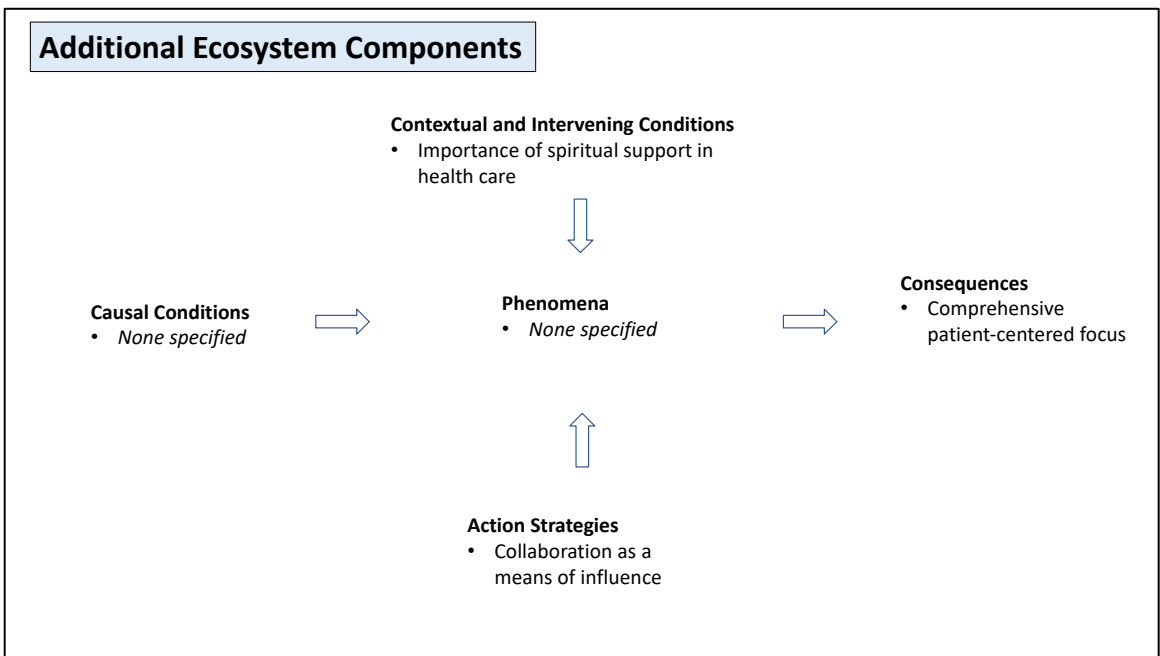
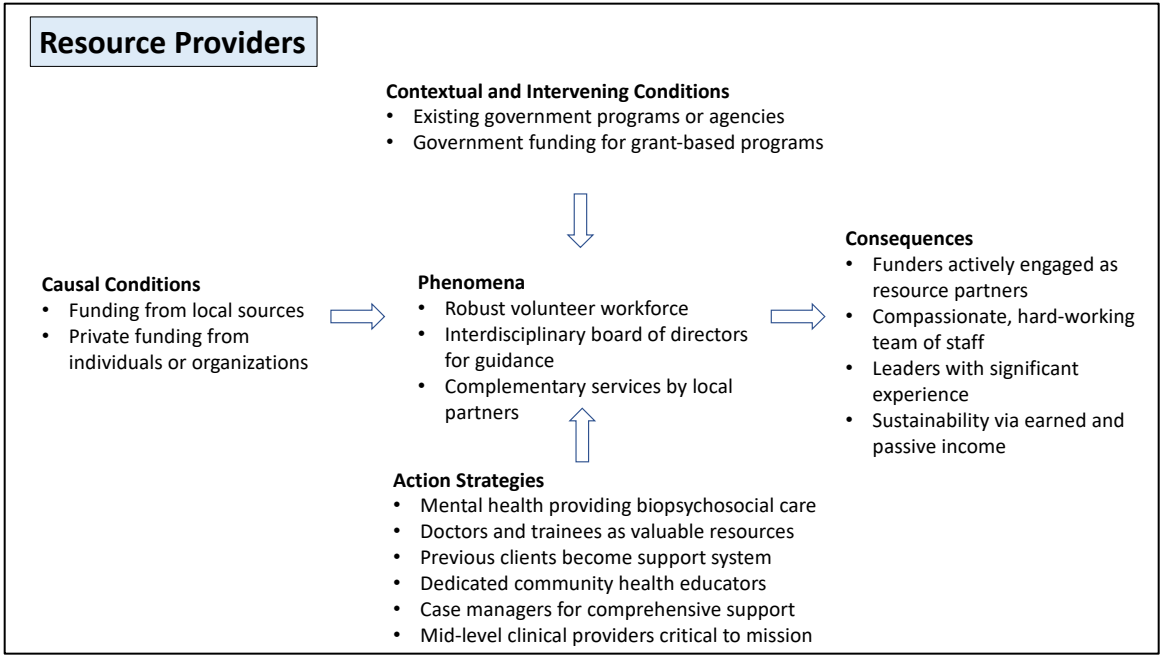
## Appendix C: Complete Collection of Axial Coding Ecosystem Maps











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