THE INTERSECTION OF COMMUNITY RESEARCH AND MULTISECTOR DATA ALIGNMENT: A MIXED METHODS EXPLORATORY STUDY OF THE ATHENS WELLBEING PROJECT

by

ANYESS ROSS TRAVERS

Under the Direction of Grace Bagwell Adams

ABSTRACT

Fragmented and siloed systems impede equitable public health outcomes by inhibiting a community's access to needs such as housing, education, income, healthy food, and safe places for social and physical activity. Known as social determinants of health these factors are defined by the World Health Organization (WHO) as conditions in the environment in which people are born, live, learn, work, play, worship, and age that affect a wide range of health, functioning, and quality-of-life outcomes and risks and have an outsized impact on the wellbeing of a community. A suggested solution for addressing poor health outcomes due to health determinants is to ensure information and data sharing across domains (*e.g.*, health, housing, and education). Comprehensive data sets can create a picture of the healthcare landscape and are foundational to informing evidence-based service delivery, intervention implementation, and policymaking. The Athens Wellbeing Project (AWP) is an ongoing initiative focused on aligning health, government, and social service systems by collecting and sharing primary, representative data with greater hyper-local geographic specificity than previously available in Athens-Clarke

County. This data provides a voice to the community bringing visibility to the disparate needs of vulnerable communities. Through a mixed-methods research design the following dissertation uses the AWP as a tool to operationalize a Culture of Health ensuring that good health and wellbeing flourish. This study is grounded in the first two action areas of the Robert Wood Johnson Foundation's Culture of Health Action Framework and principles of community-based participatory research (CBPR) known as the gold standard for empowering non-academic community participants to become part of the research process. The intersection of a Culture of Health Action Framework and CBPR highlights the integrated nature of social determinants needed to prioritize collective community concern. As an archetype embodying this intersectionality the exploration of AWP provides an example of sustainable wellbeing as a community-driven initiative. The key findings from these quantitative and qualitative studies form a foundational basis to better understand the AWP data's ability to catalyze community stakeholders to make health a shared value and foster cross-sector collaboration.

INDEX WORDS: Athens Wellbeing Project, Social determinants of health index, Multisectoral data alignment, Multisectoral research, Culture of health action framework, Culture of health, Collaboration, Health as a shared value, Fostering cross-sector collaboration, Social determinants of health, Wellbeing, Health equity, Health inequity, Health disparity

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CHAPTER 1: INTRODUCTION

Problem Statement

Medical care accounts for, at most, 20 percent of the modifiable factors driving health outcomes; the remaining 80 to 90 percent of variables affecting a population's morbidity and mortality, save for genetics, are behavior, environmental and physical influences, and socioeconomic factors (Hood et al., 2016). Though these determinants have an overwhelming impact on health, healthcare resource allocation continues to focus on an individual's outcomes rather than reflect the complex and integrated nature of Population Health. This lack of integration perpetuates the parallel operating structures of social service programs. Contributing to misaligned data systems, inadequate funding, duplication of interventions, and competition for resources, these increasingly siloed systems impede equitable public health outcomes (Adams et al., 2016; Martin et al., 2018). By addressing drivers of health equity holistically at their source, a community can reach its potential for sustained maximum health and wellbeing. A goal contingent on addressing factors contributing to the continuous cycle of fragmentation and siloing in health and healthcare.

Contributing Factors

Exacerbated by a lack of communication and collaboration, diverging priorities among public health and social services partners inhibit a community's access to basic needs such as housing, education, income, healthy food, and safe places for social and physical activity (Towe et al., 2016). These factors contribute to achieving equitable health outcomes by not addressing the complexity and multifactorial upstream social determinants of health, i.e., the sources of

health and wellbeing. The World Health Organization (WHO) defines social determinants of health as conditions in the environments in which people are born, live, learn, work, play, worship, and age that affect a wide range of health, functioning, and quality-of-life outcomes and risks (Marmot et al., 2008). While many factors influence individual health, social determinants vastly impact the wellbeing of a community (Marmot et al., 2008; Lavizzo-Mourey, 2014).

Drivers Of Change

To address these contributing factors policymakers must learn to work across multi-sector boundaries and prioritize health as a shared value, leading to systemic changes driving sustainable outcomes (Siegel et al., 2018; Alper, n.d.). As a solitary entity, the public health sector alone cannot improve equity, wellbeing, or the health status of the nation (Riley et al., 2021; Colen et al., 2018). By integrating broader perspectives into health solutions, health equity naturally comes to the forefront of resolving health disparities (Martin et al., 2018). A suggested solution for addressing health determinants is to ensure information and data sharing across domains (*e.g*., health, housing, and education). Comprehensive data sets can create a picture of the healthcare landscape and are foundational to informing evidence-based service delivery, intervention implementation, and policymaking.

Addressing these approaches through community-based participatory research (CBPR) is paramount to changing the health narrative in vulnerable and resource-scarce communities, creating a path toward building a culture of health. CBPR promotes collaboration and equitable involvement of all partners as the gold standard for optimizing the public health impact of research findings in a community. The empowerment of non-academic participants to become part of the research process recognizes the community's unique strengths (Vanderpool et al., 2013; Krishnaswami et al., 2012). CBPR has a standard set of principles used as a "how to"

guide to inform the research process (Muhammad et al., 2015). These principles, ranging from 8 to 23 items depending on the researcher and organization, underscore the notion of community input and collaboration, ensuring that trust is built between the community and the incoming research team, formalizing equity (Smith et al., 2015; Wallerstein & Duran, 2017).

Creating a culture of health requires a comprehensive approach of institutions and individuals working toward common goals to target upstream issues. In 2014, the Robert Wood Johnson Foundation began promoting a culture of health, which emphasizes the roles of individuals, families, and communities in acknowledging health as a shared value that transcends basic healthcare to encompass other sectors not consistently recognized as impacting individual health and wellbeing. The culture of health action framework operationalizes the nation's effort toward enabling all of society to lead healthier lives for generations. Its design encompasses four action areas and one outcome area that focus on an overall goal of creating collective change in the United States (Lavizzo-Mourey, 2014). Each action area contains a set of drivers indicating where the United States needs to accelerate change and a collection of measures illustrating places for progress (Chandra et al., 2017, no. 2). The four action areas, their drivers, and the outcome area, which serve as the primary result for each action area, are detailed below.

Action Area 1: Making health a shared value

a. Mindset and Expectations

b. Sense of Community

c. Civic Engagement

Action Area 2: Fostering cross-sector collaboration to improve wellbeing

a. Quality of Partnerships

b. Investment in Collaboration

c. Policies that Support Collaboration

Action Area 3: Creating healthier, more equitable communities

a. Built Environment

b. Social and Economic Environment

c. Policy and Governance

Action Area 4: Strengthening integration of health services and systems

a. Access

b. Balance and Integration

c. Consumer Experience

Outcome: Improved Population Health and Wellbeing

a. Wellbeing

b. Chronic Disease Management and Adverse Experiences

c. Cost

Figure 1: Robert Wood Johnson Foundation Culture of Health Action Framework

Case Study: Athens Wellbeing Project

The Athens Wellbeing Project (AWP) is an archetype embodying the intersectionality of the culture of health action framework and community-based participatory research (CBPR) perspective, making it an example of a sustainable wellbeing community-driven initiative. This unprecedented collaboration among several Athens-Clarke County area institutional partners and community stakeholders provides meaningful, comprehensive data to assist decision-makers in addressing Athens-Clarke County's unique needs and assets. The AWP's mission is to identify the community health landscape to improve the lives and wellbeing of the citizens of Athens-Clarke County, GA. The innate, integrated, and multisectoral nature of the AWP provides the perfect structure by which to examine the components of sustainable wellbeing.

The intent for the AWP was to build a longitudinal dataset across time, inclusive of Athens-Clarke County's most vulnerable populations and their wellbeing across the five domains measured by the Athens Wellbeing Project survey: civic vitality, community safety, health, housing, and lifelong learning. In addition to these domains, essential demographic and household characteristic questions were included, referred to as the AWP Core.

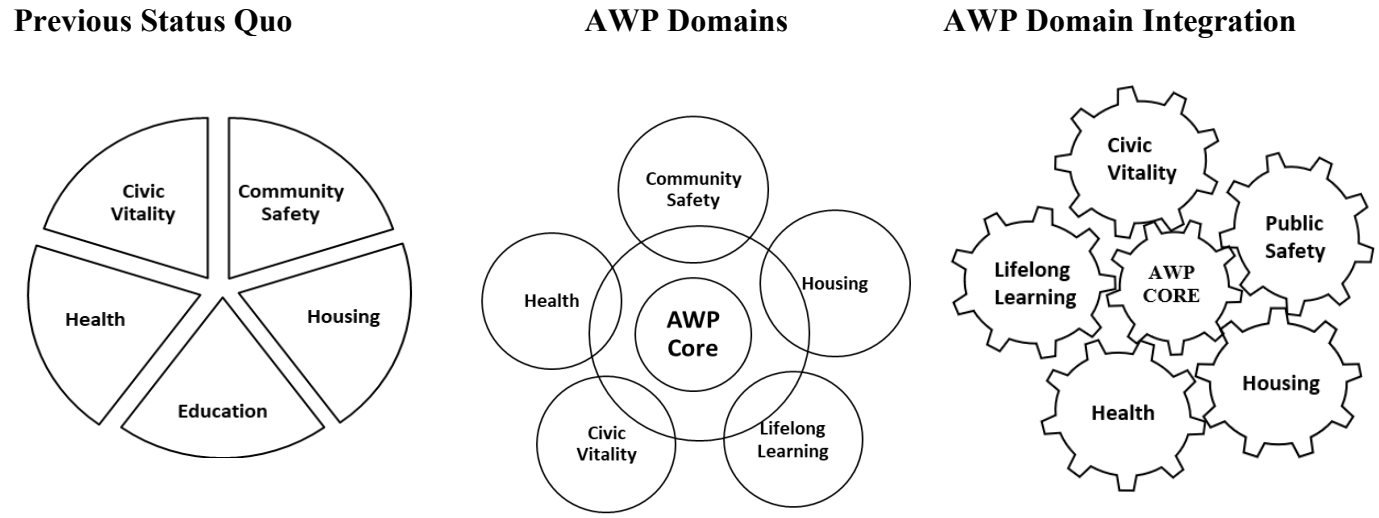

Figure 2: Domain Integration

According to the Economic Policy Institute, in 2015, Athens-Clarke County's national ranking for income inequality was 314th of 3,061, putting it in the top 10% of counties with the most significant income gaps in the country. Targeting preventable differences for equity at a hyper-local capacity, such as income gaps, means addressing underlying issues specific to a smaller geographic area. The appropriate interventions can be identified only after determining the community's diversity, variability in income, education, health access and outcomes, housing, and civic participation. Seven years ago, a collective of organizations across multiple sectors in Athens-Clarke County committed to reducing health inequity and began collecting this type of targeted longitudinal health surveillance data through the AWP survey. Championed by the Athens Area Community Foundation, the mission of the Athens Wellbeing Project remains

constant. Designed for participating institutions to meet their accreditation criteria, the AWP provides a source of hyper-local data informing their reporting and legal requirements. Additionally, the AWP acts as a framework for making health a shared value and fostering cross-sector collaborations.

Individuals and families with the highest levels of need often rely on nonprofit organizations to provide housing, healthcare, food, and other essentials. Because of the direct link between service organizations and the welfare of a community, program interventions must leverage best practices for sustained cross-sector stakeholder engagement and collaboration. The Athens Wellbeing Project promotes such practices by examining social determinants of health in a community setting to understand the factors that define and influence household wellbeing. By embracing the community-based participatory research principles, the AWP adds to its evidence-based data that informs the community's needs. Via the Athens Wellbeing Project, planning efforts can be integrated to improve outcomes achieved by local institutions, organizations, and community stakeholders through the collection and sharing of open-access, neighborhood-level data representative of Athens-Clarke County's population. Currently, in its third iteration of data collection, the AWP project is creating a data set of household-level longitudinal data with 2,532 responses collected in the 2016 and 2018 surveys.

Research Purpose

The following dissertation presents a mixed methods study exploring the Athens Wellbeing Project through the culture of health action framework as a cadre for a sustainable wellbeing initiative. This longitudinal data set was formed from a multi-sector collaboration aligning data through an integrative community-based survey tool. The following mixed-methods research will explore the operationalizing of a culture of health by using community

data to make health a shared value and foster cross-sector collaboration. This depiction will illuminate best practices in research design and public policy specific to the intersectionality of community-based research and cross-sector data alignment, which other communities can learn from and replicate. The format consists of two essays assessing The Athens Wellbeing Project as an ongoing initiative focused on aligning health, government, and social service systems by collecting and sharing primary, representative data with greater geographic specificity than previously available in the Athens area community.

Chapter 3- Manuscript 1

Research Questions

The overarching goal of this research is to answer the following manuscript:

1. How can multisectoral survey data be used to create a social determinant of health multidomain index to predict self-reported life satisfaction?

Hypothesis

1. Creating a SDOH Multidomain Index using integrated social determinants of health yields better odds of predicting an individual's life satisfaction than individual sector factors.

Making Health a Shared Value

Multi-sector data sharing through AWP underscores the multifaceted effort of making health a shared value. Recognizing the interconnected nature of health factors through social determinants ensures this value congruence within the Athens-Clarke County community. The first manuscript summarizes the Athens Wellbeing Project survey methodology and demonstrates how to build a Social Determinant of Health (SDOH) Domain Index using hyper-local multisectoral data.

The SDOH Multidomain Index was developed based on Maslow's Hierarchy of Needs and matched with an AWP indicator, using two iterations of cross-sector multivariate AWP data, and predicting an individual's overall self-reported life satisfaction. In addition to providing the AWP stakeholders with information regarding the status of their community's wellbeing, the following research is an initial step toward demonstrating the utility of this community-based multisectoral dataset. A composite measure for wellbeing was created by aligning AWP domains with Maslow's needs through specific variables.

Chapter 4- Manuscript 2

Research Questions

1. Did the Athens Wellbeing Project successfully align multiple sectors by creating a community-based multisector wellbeing survey based on organizational stakeholder feedback?

Fostering cross-sector collaboration to improve wellbeing

The second manuscript identifies best practices of data alignment from the perspective of organizational representatives participating in AWP through a qualitative study design. Using the multi-sector alignment research framework by Riley et al. (2021), this analysis examines AWP as a model for cross-sector collaboration and building systems alignment through data-sharing by assessing stakeholder perspectives regarding AWP's impact on their organization and the community.

Significance of the Study

The concept of public health partnerships is not new. The health community has promoted collaborations since the Institute of Medicine report *The Future of Public Health* in 1988 (Institute of Medicine, 1988). However, the Athens Wellbeing Project advances this

concept by creating a multisectoral survey tool that illuminates a community's needs down to the neighborhood level. This mixed methods study provides additional evidence that a multifaceted problem needs a multi-sector response to achieve wellbeing in a community. The Athens Wellbeing Project provides an example of conceptualizing the Culture of Health Action framework as it intersects with CBPR successfully and sustainably. It presents a replicable mechanism that allows a community to move beyond assuming the status-quo by providing data that represent the community's actual status and situation. The AWP data demonstrate how making health a shared value and fostering cross-sector collaborations create healthier, more equitable communities through the culture of health action framework. This dissertation research aims to better understand the groundwork and the AWP's parameters as a successful example of a sustainable wellbeing initiative.

Chapter Summary

Social determinants of health indicate that disease alone is an insufficient, simplistic measure of health. In order to fully understand health and wellbeing, non-clinical measures (e.g., where we work, live, play, race, and gender) must all be evaluated to identify preventable differences in health outcomes. Through the Athens Wellbeing Project (AWP), the collaborative can access a community-wide data platform established to provide information and guide operational and financial decision-making specific to the community's wellbeing priorities. By documenting the community's most significant needs, the collaborative can initiate systematic change affecting the community's quality of service and accountability.

The innovation of AWP is not only in the data collection mechanism but also in creating shared indicators. Through this coordinated effort, the data analyzed allows the organizations within the collaborative to begin discussions with public, private, and nonprofit sectors and align

their efforts to target specific indicators important to Athens community residents in addressing their wellbeing. The AWP serves as an experiential model demonstrating how public health is greater than the sum of its parts, ensuring a culture of health throughout all policies.

CHAPTER 2: LITERATURE REVIEW

Introduction

The following chapter aims to assess existing literature related to local upstream initiatives addressing health equity at the intersection of a Culture of Health action framework and community-based participatory research. Keywords derived from this statement and synonyms were searched through a non-systematic literature review using Google Scholar published research articles, dissertation manuscripts, and organizational reports. This literature review will focus on the transformative cultural shift away from healthcare to address equity through upstream initiatives, social determinants of health, and the intersection of community-based participatory research and a culture of health action framework.

Overview of Published Research: Beyond Clinical Care

The World Health Organization (WHO) was officially established in 1948 as part of the United Nations in the aftermath of the atrocities of World War II. The WHO has since worked to improve health worldwide (McCarthy, 2002). Nearly 30 years later, nations convened at the Declaration of Alma-Ata to discuss a new approach to health as a holistic, ethical, social, and distributive justice obligation (Marmot, 2007; Braveman & Gruskin, 2003). The resolve that health is a fundamental human right and not merely a privilege shifted the perspective away from individual primary healthcare to population health (World Health Organization, 2008). The goal of recognizing health as a right was to prevent geographical, economic, sociocultural, organizational, and gender barriers from impeding an individual's access to health (Dans les Amériques, n.d.). Unfortunately, this objective remains unmet.

Unfortunately, in the United States, healthcare is perceived as a commodity rather than a fundamental human right. It is the only high-income country to not guarantee basic medical care to every citizen (Interlandi, 2019). The current fee-for-service payment model capitalizes on charging a fee for individual services rendered. Creating a reimbursement structure specifically promoting volume and quantity of care incentivizes providers to forgo consideration of patient outcomes (Garg et al., 2019, no. 4). Since 2008, policies such as the Medicare Improvements for Patients and Providers Act, the Patient Protection and Affordable Care Act, and the Medical Access and CHIP Reauthorization Act of 2015 have emphasized value and quality-based care over fee-for-service. However, these initiatives still fall short of prioritizing the holistic treatment of patients and continue to prioritize profits over health and equity (Garg et al., 2019, no. 4) (McClure et al., 2017). The consequences of this inequitable system are runaway costs and low-quality care (McClure et al., 2017). According to the Commonwealth Fund's longitudinal assessment of 11 healthcare systems from high-income countries the United States was number one in healthcare spending between 1980 and 2017, despite ranking at the bottom for health outcomes such as life expectancy since 1989 (Schneider et al., 2021).

In his editorial piece, "The Problem of Fragmentation and the Need for Integrative Solutions" Dr. Kurt Stange purports that commodity healthcare perpetuated the siloing of specializations in medicine, thereby fracturing health care by "focusing and acting on the parts without adequately appreciating their relation to the evolving whole" (Stange, 2009, p.100). By ignoring the underlying causes of our flawed system, policies will continue to treat the system's symptoms and neglect the diagnosis (McLure et al., 2017). Per Dr. Stange, fragmentation "is at the root of the more obvious healthcare crises of unsustainable cost increases, poor quality, and inequality" (Stange, 2009, p. 100). Understanding fragmentation and assessing its broader scope

refocuses the concept of health from individualistic specialized clinical treatments to a more comprehensive understanding of population health needs (Thornton et al., 2016).

Considering this more holistic paradigm, some medical facilities began providing their high-risk patients access to food, temporary housing, and transportation (Castrucci & Auerbach, 2019). Though these interventions are beneficial in meeting an individual's social and economic needs, they do not target the root causes of negative population health outcomes, maintaining the United States' disparate ranking between health spending and outcomes over the past 30 years (Collyer & Smith, 2020). Per Castrucci and Auerbach, these efforts are not "about improving the underlying social and economic conditions in communities to foster improved health for all — they're about mediating patients' individual social needs" (2019, p. 2). Unfortunately, meeting social needs and targeting social determinants of health are not interchangeable.

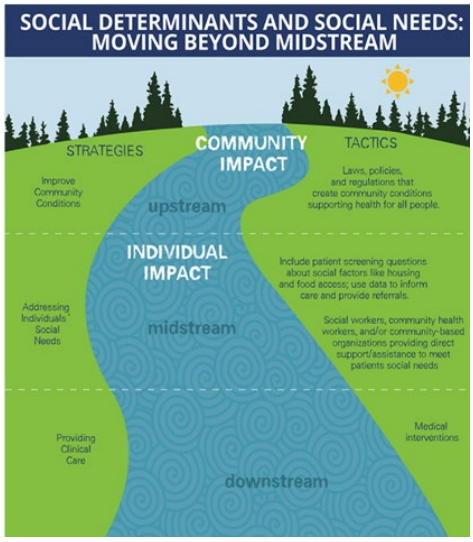

Figure 3: Moving Beyond Midstream; Source: Castrucci and Auerbach

Social determinants of health are broadly defined as "social (including economic) factors with important direct or indirect effects on health" (Braverman et al., 2011). Overutilization and misuse of the term social determinants can affect a community's understanding and expectation of proposed intervention approaches. Not differentiating between these concepts provides a false

sense of achievement toward upstream initiatives. Stakeholders must understand that individual social needs will continue to plague a community “until the true root causes are addressed” (Castrucci & Auerbach, 2019, pg. 8).

Over a decade prior to Castrucci and Auerbach’s appeal for semantic consistency, Dr. Thomas Frieden published a framework similar to their upstream concept. Frieden’s model, however, illustrated socioeconomic factors, which he also refers to as social determinants of health in the text, as the base of a 5-tiered pyramid. When targeting programs at the base, less individual effort is required while achieving the most significant population impact. This change likely requires a fundamental societal transformation that needs the support of the government and the community. Similarly, as interventions are progressively scaled toward the upper tiers of the health impact pyramid, interventions and treatments become more individualized. Frieden concluded that these interventions were higher on the pyramid; therefore, they were more limited in their public health impact and required the least political commitment (Frieden, 2010).

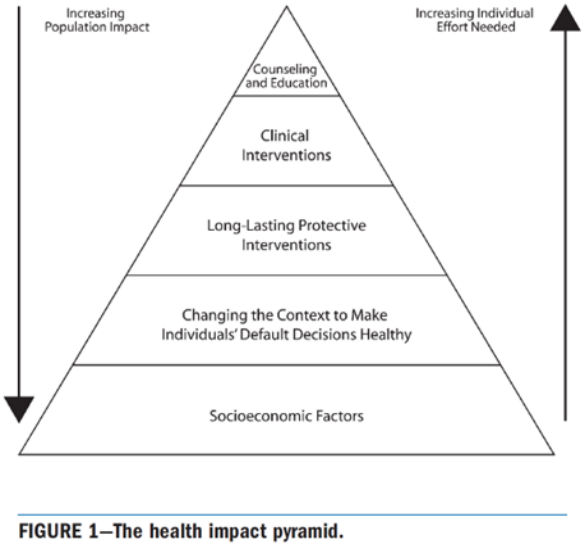

Figure 4: Health Impact Pyramid; Source: Thomas Frieden

Addressing Social Determinants of Health

Seminal health equity and social determinant of health researcher Dr. Paula Braverman's formative 25-plus years in the field have contributed to the multitude of evidence associating social factors with crucial health equity and outcomes. In her 2011 article with Susan Egerter and David Williams, "The Social Determinants of Health: Coming of Age," they not only present a substantial breadth of literature reviewing the pathways whereby social factors shape health and health effects; they also reference several articles considering the adverse health effects of these factors across lifetimes and generations (Braveman et al., 2011). In 2017, Lucyk and McLaren expanded on this research through their scoping review of SDOH literature. The principal theme emerging from the 108 articles included for synthesis was "health equity as an overarching and binding concept to the SDOH" (Lucyk & McLaren, 2017, p.1). This conclusion reinforces the upstream influence social determinants can have on long-term effects such as redistributing power, wealth, opportunities, and societal decision-making (Lucyk & McLaren, 2017).

Addressing social determinants of health is a cornerstone of reducing health inequities in vulnerable and resource-scarce communities, creating a path towards building a culture of health. In 2005, the World Health Organization (WHO) established the Commission on the Social Determinants of Health (CSDH), uniting the previously fragmented efforts to bring "together at a global scale actors, experiences, and evidence concerned with social determinants of health and health equity." (Marmot & Health, 2007, p. 1161). The final 2008 WHO CSDH report was fundamental in framing future health equity and SDOH research bringing significant public attention to SDOH (Lucyk & McLaren, 2017).

Prioritizing comprehensive community health means moving beyond the myopic lens of capitalized healthcare and embracing upstream solutions. These value-based quality-focused health concepts target social determinants of health as drivers of equitable health outcomes. They address the social factors that can prevent vulnerable populations from achieving their maximum potential for positive health outcomes. According to Dawes, "equity has become a key component of the transforming culture of health that our policymakers and health leaders are increasingly supporting" (2019).

The Intersection of Culture of Health Action Framework and CBPR

Drivers of healthier communities work to address the built environment, improve social conditions and economic opportunities, and develop policies that promote collaboration and improve health (Lavizzo-Mourey, 2014). Unfortunately, addressing upstream social determinants is challenging due, in part, to the multiple confounders along the causal pathways that play out over long periods (Bharmal et al., 2015). Due to the array of social and contextual experiences driving social determinants of health, "one framework cannot be all things to all to all people" (Givens et al., 2020, p 461), introducing the need to intersect the Robert Wood

Johnson Foundation (RWJF) Culture of Health with hyper-local data through community-based participatory research.

Based on a scoping review by Petiwala and colleagues, there is a gap in the research recommending strategies for effective health-oriented cross-sector collaboration and community voice (Petiwala et al., 2021). Among the 661 articles retrieved focusing on health-oriented cross-sector collaborations, only 5%, 36 articles, also discussed community voice (the expression used by the authors to encompass all terminology describing the inclusion of community). The intersection between culture of health and CBPR highlights the integrated nature of social determinants needed to prioritize collective community concern.

A culture of health is broadly defined as "one in which good health and wellbeing flourish across geographic, demographic, and social sectors; fostering healthy equitable communities guides public and private decision making; and everyone has the opportunity to make choices that lead to healthy lifestyles" (Robert Wood Johnson Foundation, 2022). The Robert Wood Johnson Foundation (RWJF) created the Culture of Health Action Framework to achieve its vision of a Culture of Health through measurable action (Robert Wood Johnson Foundation, 2022). The framework is designed around four action areas, each with specific drivers indicative of the need for accelerated change, and one outcome area. Action areas are the core areas in which investment and activity are needed to achieve: (1) making health a shared value; (2) fostering cross-sector collaboration to improve wellbeing; (3) creating healthier, more equitable communities; and (4) strengthening integration of health services and systems (Chandra et al., 2016).

RWJF promotes the idea that making health a shared value emphasizes social connectedness and recognizes the critical roles individuals, families, and communities play in

improving health. Prioritizing and promoting health and wellbeing, nurturing civic engagement, and cultivating a sense of community are all factors that drive shared value (Robert Wood Johnson Foundation, 2022; Marmot & Allen, 2014). Fostering a culture of health requires cross-sector collaborations of non-traditional entities and sectors – such as education, transportation, law enforcement, or business – to understand their interconnectedness to health and wellbeing.

Integrated care approaches health and wellbeing holistically and comprehensively in which healthcare professionals work together with individuals, families, and communities to build a culture of compassionate care. Taken in concert, these efforts across the four action areas and three health domains will foster a culture of health for individuals and communities across the nation (Robert Wood Johnson Foundation, 2022; WHO 2008). Most importantly, though community voice is not often integrated into cultivating a culture of health, community engagement as the primary driver of change is paramount for beginning the conversation that changes the health narrative.

Action Area 1: Making Health a Shared Value

Making health a shared value emphasizes recognizing health as a collective responsibility. Healthy communities can be achieved once health is prioritized as a common goal. Health in All Policies (HiAP) is an approach that allows governments and organizations to embed health in policies and institutionalize health in the decision-making process, creating a paradigm shift for addressing the health of communities (Rudolph et al., 2013).

Using HiAP as a complementary policy-related strategy, there is a high potential for contributing to population health rather than focusing only on individual-level medical needs (Hendricks et al., 2013). At its core, Health in All Policies promotes health, equity, and sustainability by supporting intersectoral collaboration between partners who are not typically

considered health agencies and engaging stakeholders who are not typically brought into the decision-making process. By bringing together partners from different sectors, organizations can work to create policies that positively impact the community's health and integrate interventions related to the built environment, economy, or education (Rudolph et al., 2013). HiAP also encourages and insists that community members be engaged in decision-making (Rudolph et al., 2013). Organizations across the United States have begun to implement task forces and coalitions to begin connecting and engaging different sectors to improve their community's Health through HiAP (Wernharm & Teutsch, 2015; Rudolph et al., 2013).

One way to help the community understand the integral nature of SDOH is to approach them collectively. As evidenced in this literature, there is ample research that all facets of health are highly-related and interdependent. A newly published 2022 study by Dr. Candace Nelson demonstrates how a composite summary measure of Behavioral Risk Factor Surveillance System data (2017-2019) can be used to create such an integrated model. By combining the SDOH into one indicator, she asserts that "it is not simply one risk experience vs another that matters for health, but rather the overall burden of experience." (Nelson, 2022, p. 303). This research is significant in further demonstrating the combined effect the integrated nature of social factors has on health outcomes. Presenting health as a collective action problem allows the population to see how health is a shared value.

Action Area 2: Fostering Cross-Sector Collaboration

Cross-sector collaboration is the idea that individual and community health is promoted through shared investments, mutually beneficial policies, and innovative partnerships that recognize the importance of wellbeing for all. Specifically, creating healthier, more equitable health outcomes depends on individuals, government, businesses, civic organizations, and other

entities joining forces and implementing sustainable policies that promote health and wellbeing for everyone (Robert Wood Johnson Foundation, 2022).

Collaborations, broadly defined, involve working with others by sharing information and resources to achieve similar outcomes. They range in formality from loosely formed partnerships with a narrow focus to more structured and longer-lasting arrangements (Sullivan & Skelcher, 2017). The specific goal of these partnerships is to fill gaps by utilizing the necessary capacity and resources to deliver public policy goals (Sullivan & Skelcher, 2017). They are developed to achieve a shared vision of the future, meaning that organizations are prepared to share information, coordinate activities, and shared decision-making to address problems together (Page et al., 2015). By bringing together several partners from different disciplines, strengths and experiences are utilized to manage complex public health problems and address population health goals (Varda et al., 2012). Each partner brings unique skills and expertise and diverse work cultures to the collaboration to improve the capacity of those countries in which they are established (Atkins et al., 2016). A committed and dedicated funding source is needed to ensure sustainable outcomes through collaborative efforts. Even if there is no current threat of an outbreak, supporting the collaboration is imperative as it will take many years for it to become "rooted" (Yozwiak et al., 2016).

According to a systematic review, Collaboration and Network Research in the Public Affairs Literature: Implications for Public Health Practice and Research, "good collaborative outcomes stem from effective communication, strong leaders and managers, concrete and focused goals, and trust" these outcomes can include health and process outcomes (Varda et al., 2012). Though the benefits of collaborations continue to be thoroughly researched among various facets of public health, as evidenced through search results in Pubmed and Google

Scholar using the key words “effective collaboration” and “collaboration as an intervention,” there is a consensus among researchers including Lydia I. Marek, Donna-Jean P. Brock, and Jyoti Savla, authors of the article “Evaluating Collaboration for Effectiveness,” that “despite efforts by the research and evaluation community to examine collaboration effectiveness, little is known concerning practices that lead to successful outcomes” (Marek et al., 2015).

Hyper-Local Examples

Integrating the social determinants through a health in all policies initiative has been successfully implemented in transportation expansion efforts, sports stadium development, and housing authority projects (Wernharm & Teutsch, 2015). In Seattle/ King County, Washington, a 2014 ordinance established a multiagency task force that worked to increase the budget of the Natural Resources and Parks to build trails through low-income neighborhoods, fund adult and criminal justice early intervention programs to reduce incarceration, and increase employment, and include health-based metrics and objectives in the county land use and transportation plans (Wernharm & Teutsch, 2015).

In Minneapolis, funding for the county’s Department of Housing, Community Works, and Transit went toward conducting health and health equity-related community engagement activities around the station area planning before development began. This community sensitization allowed the transit committee to work with community members in underrepresented areas. They discovered through open communication how new transit could best serve their neighborhoods (Wernharm & Teutsch, 2015). HiAP was also applied in the development plan for Farmers Baseball Field in Los Angeles, California. In this example, the initiative ensured the creation of affordable housing and improvements in air quality. The city’s living wage was also required minimum for all on-site jobs (Wernharm & Teutsch, 2015).

Community-Based Participatory Research

Community participation and voice are critical for helping collaboratives address the appropriate community health needs. However, research on health collaboratives offers mixed guidance on how community voice should be understood, and which community voice strategies are most effective. CBPR is a collaborative and equitable process involving all partners to achieve a culture of health. This process emphasizes integrating evidence-based knowledge with a community's unique perspectives and experiences. The community's research focuses on their specific wants and needs, emphasizing integrating evidence-based knowledge with a community's unique perspectives and experiences (Devia et al., 2017). Traditionally, research has been clinical and individualized, using randomized trials as the "gold standard" for identifying risk factors. These studies, however, do not take into account the "social and environmental conditions to health and disease, most visible in the growing gap between the health status of rich and poor, white and non-white" (Israel et al., 1998, p.174). In traditional research, there is a clear distinction between the researcher as public health "expert" and the public it is looking to help (Wallerstein & Duran, 2017).

To bridge the gap between practice and research, Kurt Lewin, a social scientist in the 1940s, began using the term "action research" to denote social action programs to solve social action problems (Wallerstein & Duran, 2017). Involving the community in the research process is a good start; however, integrating the community into every part of the research is preferable and leads to better, more sustainable outcomes (Wallerstein & Duran, 2006). This process means changing the research focus to working with the community, rather than working on or about the community, at all research levels: application, implementation, and evaluation. Once achieved, research becomes a true partnership between academics, community-based organizations, and

community members (Devia et al., 2017). CBPR de-emphasizes the need for research team members to become experts in culture and uses the community team members (with their intimate knowledge of the culture) as the experts to guide them through the research process of working with the community (Holkup et al., 2004).

Through its principles, CBPR researchers can work with communities to address problems in society, such as disparities based on race, class, gender, and sexual orientation, and produce knowledge that clarifies and seeks to change unequal distributions of power and resources (Muhammad et al., 2015). This engagement strengthens community members as political and social agents and influences change in community health systems, programs, and policies (Minkler et al., 2012). CBPR is not free of the differences in beliefs and bias that limit all research styles and cannot on its own resolve broader social issues, such as racism and economic inequalities (Israel et al., 1998). However, the CBPR process attempts to recognize and address social justice issues and confronts them through the lens of a culture of health (Devia et al., 2017).

Hyper-Local Example

Community-based participatory research has been used in much the same way for addressing policy changes to improve community health outcomes. In Oakland, California, community leaders and members, using CBPR as the tool, came together to work on the West Oakland Environmental Indicators Project. This project's focus was to address asthma caused by diesel smoke in the area, and the research led to a policy that prevented trucks from traveling through West Oakland (Minkler et al., 2012).

Athens Wellbeing Project

CBPR can bridge research and policy by driving civic engagement in the community, allowing researchers and policymakers to go beyond data and evidence, and make policies more sustainable (Minkler et al., 2012). Ultimately, the partnerships guided by a culture of health and CPBR will allow research, community organizing, and advocacy efforts to drive policy change (Minkler et al., 2012). Although there are many examples of how organizations successfully built a culture of health through HiAP or CBPR, these practices are still not universally a prioritized value in the United States.

The Athens Wellbeing Project (AWP) is a community-based initiative seeking to achieve health equity for the Athens-Clarke County population. The study presented in the following chapters focuses on the fundamental need for a holistic, multidisciplinary data-driven interventions. Though health equity is the ultimate goal of the Athens Wellbeing Project, this particular research is limited to laying the groundwork for a more inclusive comprehension of the integrated nature of multidimensional collaborations engaging community voices through data alignment. It also demonstrates an effective and sustained crosscutting initiative incorporating principles from community-based participatory research and a Culture of Health Action Framework. As an upstream health initiative, the AWP reflects health as a shared value and fosters a cross-sector collaboration for wellbeing. These concepts are reflected in the Culture of Health Action Framework as Action Area 1 and Action Area 2, respectively. While working simultaneously on these two action areas, Action Area 3 (creating healthier, more equitable communities) is inherently engaged. Action Area 4 (strengthening integration of health services and systems) does not pertain to this study and will not be examined.

CHAPTER 3: COMPOSITE COMMUNITY FACTORS OF A SOCIAL DETERMINANT OF HEALTH (SDOH) MULTIDOMAIN INDEX: A QUANTITATIVE STUDY OF THE INTEGRATED NATURE OF THE ATHENS WELLBEING PROJECT[1]

[1] Travers, A., Adams, G.B., Chen, Z., and Li, R. To be submitted to TBD.

Abstract

In 2015, Athens-Clarke County, GA was ranked in the top 10% of counties with the most significant income gaps in the country. Aiming to better understand this disparity, the Athens Wellbeing Project (AWP) research team and advisory committee began collaborating with community service providers and institution leaders to create the Athens Wellbeing Project survey. The survey questionnaire was built using validated measures collected from other national and community surveys and included specific questions informing reporting and legal requirements for some of the organizations. Through a cross-sectional survey design, the AWP gathered household-level data in 2016, 2018, and 2021 providing a snapshot of societal determinants through the AWP domains Health, Housing, Community Safety, Life-Long Learning, and Civic Vitality. The nature of the AWP allows communities to be empowered by data, giving them a voice to communicate their needs. This study explores how hyper-local community data can be used to build a multidomain index based on Maslow's Hierarchy of Needs to predict an individual's overall self-reported satisfaction of life, demonstrating an association between social determinants of health and wellbeing. Because data drives policy and decision-making, providing a single indicator of the SDOH as a visual depiction of the integrated nature of the factors affecting the community is imperative to demonstrate how health influences every aspect of the community, prioritizing it as a shared value.

This first essay summarizes the Athens Wellbeing Project (AWP) survey methodology and creates a SDOH Multidomain Index using cross-sector multivariate AWP data to predict an individual's overall self-reported life satisfaction. According to Kim et al., "life satisfaction is a valuable target for policies aiming to enhance several indicators of psychosocial wellbeing, health behaviors, and physical health outcomes." (Kim et al., 2021, p. 209). In addition to providing the AWP stakeholders with information regarding the status of their community's wellbeing, the following research demonstrates the utility of a hyper-local, multisectoral dataset in creating a Culture of Health by making health a shared value among the Athens community.

Introduction

Wellbeing, derived from interconnected factors, ensures our potential to achieve personal fulfillment and thrive (Diener et al., 2018). These factors are not insular; therefore, the resources available for promoting and attaining overall mental and physical health and social fulfillment within a community should also be multifaceted (Elston et al., 2018). Championing an innovative approach to improve integration through collaboration in data collection, sharing, and utilization, to drive strategic planning of community interventions, the Athens Area Community Foundation (AACF) launched the Athens Wellbeing Project (AWP), a multisectoral quantitative community wellbeing survey. The survey aims to obtain a representative sample of Athens-Clarke County neighborhood conditions over time. Through a cross-sectional survey design, the AWP gathered household-level data in 2016 and 2018, providing a snapshot into societal determinants through the AWP domains health, housing, community safety, life-long learning, and civic vitality.

Research Aims

The 2022 publication “Using a Social Determinants of Health Summary Measure to Predict General Health Status in the BRFSS” by Candace C. Nelson (2022) provided additional evidence that social determinants of health are inter-dependent factors working collectively to affect health outcomes. Using nationally representative data, Dr. Nelson demonstrated “that the overall burden of risk due to SDoH is an important predictor of health” (Nelson, 2022, p. 303). The following study aims to demonstrate how constructing a comprehensive measure using a hyper-local dataset can provide a congruent yet unique perspective for a community to recognize the multifactorial nature of health. Using the AWP data to build a composite index predicting life satisfaction will allow the Athens-Clarke County community to explore health as a broader concept, also referred to as wellbeing.

Understanding the overall relationship between these wellbeing indicators' integrated and aggregate nature will provide an avenue for Athens-Clarke County to begin making health a shared value. As the first Action Area of the Robert Wood Johnson Foundation’s Culture of Health Framework, Making Health a Shared Value is considered foundational to moving forward with the other action areas and essential to achieving a culture of health. (Tan et al., 2019). Though this research is grounded in the evidence-based approach of Dr. Nelson’s study, it remains a distinct dataset; therefore, the exact methodology cannot be replicated. The results of this study will allow the AACF to ensure that they are maximizing investments by targeting the most effective responses to the community’s needs.

Research Question

The overarching goal of this research is to answer the following question:

1. How can multisectoral survey data be used to create a social determinant of health multidomain index to predict self-reported life satisfaction?

Hypothesis

1. Creating a SDOH Multidomain index using integrated social determinants of health yields better odds of predicting an individual's life satisfaction than individual sector factors.

Methods

Athens Wellbeing Project Survey: Design

In 2015, the Athens Wellbeing Project research team and advisory committee collaborated with community service providers and institution leaders to create the Athens Wellbeing Project survey. Over nine months, community leaders provided input to their organizations' missions and suggested improvements needed to ameliorate their service delivery. This information was collected by the AWP advisory committee members and submitted to the research team, becoming the framework for constructing the survey questionnaire. Data collection efforts for the first survey, survey 1.0 took place in 2016, data collection for the second survey, survey 2.0, began in 2018, and the third round of data collection wrapped up in early 2022. The following research uses responses from the first two surveys since the third iteration of data collection was only recently completed.

The Athens Wellbeing Project survey frame, design, and implementation were similar throughout both iterations of data collection. However, slight variations exist between surveys. These differences occur in the data collection and sampling design methodology. Contrary to survey 1.0, survey 2.0 relied on web-based participation over door-to-door data collection. However, the in-person collection method was used as a follow-up approach to nonresponses.

As for the design methodology, both surveys used a stratified random sample of all Athens-Clarke County residents. A stratified random sample is a sample design where the population of interest (in this case, Athens-Clarke County residents for the AWP study) is divided into smaller groups known as *strata*. The strata are typically formed based on analytic goals or similarities of the population members. Hereabouts is where the survey designs diverge.

In survey 1.0, school attendance zones for the 16 Clarke County School District elementary zones were used, which limited the study geographically. The same random sampling methodology was used in the vulnerable population strata. In survey 2.0, strata encompassed different dwellings, including single-family homes and apartments. A census sampling strategy, which includes sampling all residents, was done in the remaining strata to ensure representation of the more vulnerable groups. Both study designs represent the Athens-Clarke County community, even with these minor changes.

Athens Wellbeing Project Survey: Sample

The sample size was similar between versions 1.0 and 2.0, with household responses n=1,354 and n= 1,178 (respectively). At the time of these surveys, the AWP was project based therefore was not considered human subjects research by the University of Georgia. Since that time, the project has shifted orientation and UGA granted IRB for the third iteration of the survey as well as for the using the data for this research.

Athens Wellbeing Project Survey: Measures

The AWP survey was ultimately organized into several areas, referred to as “domains.” The process focused on achieving an instrument that met the needs of community stakeholders operating across survey domains. The survey was built using validated measures collected from other national and community surveys. Domains included in the study had broad applicability

across stakeholders and community institutions: public safety, health, lifelong learning (education across the lifespan), housing, and civic vitality. In addition to these domains, researchers captured core demographic and household characteristics such as age, family size, race, ethnicity, social service program participation, education level, and veteran status. Similar to the social determinants of health they represent, the AWP domains are intertwined, and one cannot be changed without affecting another domain. This concept is illustrated in Figure 2 of this research.

SDOH Multidomain Index: Design

An index is a composite measure that includes multiple single variables aggregated to create one data item reflecting the shared empirical relationship of the combined variables (Taormina & Gao, 2013). This metric is used when single sector measures do not represent the interplay between all aspects of interest, as is the case when assessing the AWP data holistically. Abraham Maslow's Hierarchy of Needs is a well-known standardized theory strongly correlated with happiness. It reliably represents wellbeing's intrinsic multifactorial nature and encompasses basic physiological and psychological needs. Therefore, it was selected as the framework to build an index depicting the intricacies between the AWP domains. Both iterations of the AWP survey data (2016 and 2018) were combined to create this index. Specific AWP domain indicators also found in both iterations of the AWP survey were chosen to represent each of the five needs: physiological, safety, love/ belonging, self-esteem, and self-actualization.

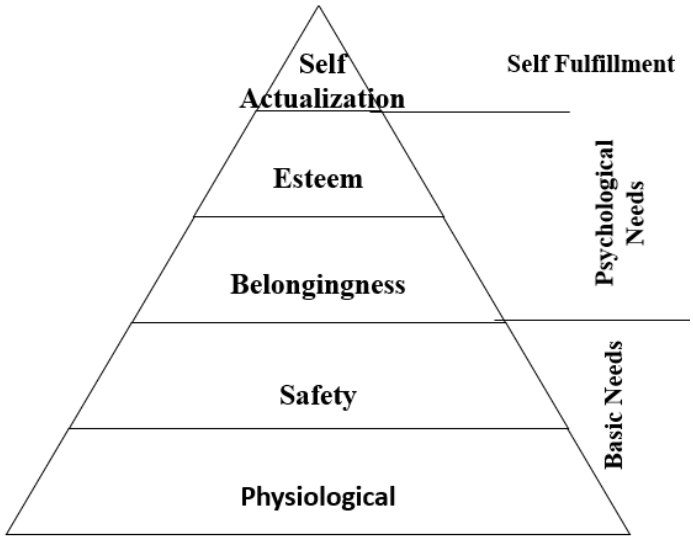

Figure 5: Maslow's Hierarchy of Needs

SDOH Multidomain Index: Sample

Only those responses that provided a valid response to the outcome measure, Life Satisfaction, were eligible for inclusion. Of the possible 2532 responses, 214 responses were excluded, leaving 2318 or 92% eligible for inclusion.

SDOH Multidomain Index: Measures

Each of Maslow's five needs, physiological, safety, love/ belonging, self-esteem, and self-actualization, was interpreted using an AWP proxy domain and further delineated using a specific AWP indicator. The construct of these indicators, as they appear in the Athens Wellbeing Survey, can be seen in Table 1. Physiological and safety needs include several components and are considered basic needs (Maslow, 1987). The measure used as a proxy for Maslow's physiological need is health. As described by the United Nations High Commissioner for Human Rights, health is a fundamental human right comprising access to safe drinking water and sanitation, nutritious foods, adequate housing, education, and safe working conditions, encompassing the most basic needs required for survival (OHCHR, 2008). Safety, the other basic

need, is described by Maslow as the freedom of fear and includes physical security and the absence of illness and is represented in this research as the AWP domain public safety.

The following two needs are considered psychological and require a more nuanced and subjective interpretation (Maslow, 1987). These needs are differentiated by external and internal validation. Love/Belongingness demonstrates the need to be accepted by others and find one's place in society. This need is expressed through the AWP civic vitality domain. In contrast, self-esteem connotes individual confidence, achievement, and respect; it relates to "feelings about a person's worthiness, merit, or value as a person" (Taormina & Gao, 2013). The lifelong learning domain fits seemingly into the concept of individual pride that goes along with personal achievement.

Once all other needs are met, the desire to fulfill self-actualization pushes an individual to make the world better. Once personal needs are satisfied, people can start looking "outside their own skin, in something outside of themselves" (Maslow, 1987). For this reason, the civic vitality domain is once again used to characterize a particular need. However, in this context, rather than measuring an individual's place in society, their impact on society is depicted by the amount of time given through volunteering (Taormina & Gao, 2013).

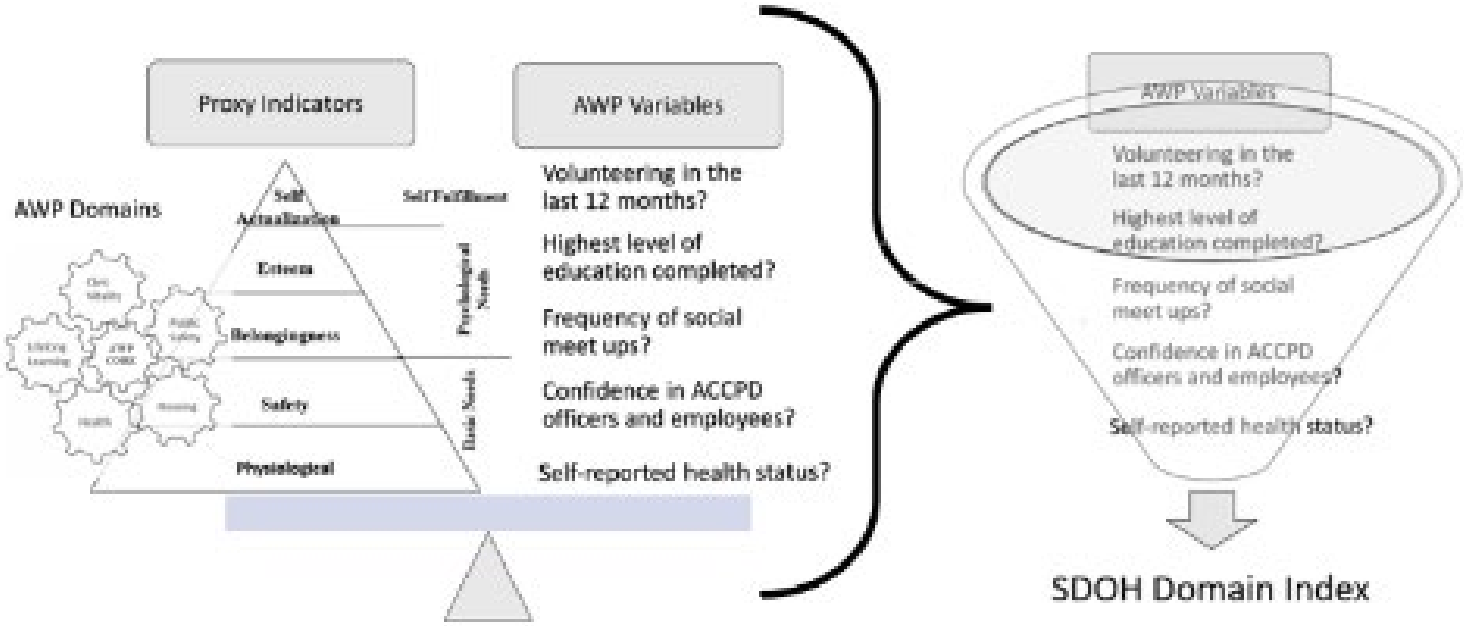

Figure 6: AWP Indicators Matching AWP Domains and Maslow's Needs

The initial step in creating the SDOH Multidomain Index was to dichotomize the ordinal variables chosen to represent social determinants of health in Athens-Clarke County. The cutoffs for these ordinal variables were standardized with responses below the mid-range considered negative response and coded with 0 and those at or above the mid-range as positive and coded with a 1. The breakdown of these values can be found in Table 1. Though Maslow's hierarchy of needs is predicated on the assumption that one need should be met before moving on to the next, this concept is not the same for wellbeing. When integrating these indicators into the index, there implicit relationship to each other is unordered. Due to equal value being given to each measure, no weighting was used on the index components.

Table 1: Descriptive Analysis of Variables from the AWP Survey

	Measures				Observations N= 2318		
					Frequency		
Maslow's Needs	Domain Area	Variable Question	Variable Type	Dichotomized Responses	= 0	= 1	Total
Physiological: These are biological requirements for human survival	Health	Would you say that in general your health is…	Ordinal	0=Poor & Fair 1=Good & Very Good & Excellent	444	1851	2295
Safety: These needs can be fulfilled by the family and society. These can include emotional stability and freedom from fear of health	Public Safety	I have a great deal of confidence in the ACCPD and its officers and employees…	Ordinal	0=Strongly Disagree & Disagree & Neither Agree or Disagree 1=Agree & Strongly Agree	798	1384	2182
Love/ Belonging: These needs are social and involve feelings of belongingness	Civic Vitality	How often do you meet socially with friends, relatives or work colleagues?	Ordinal	0=Rarely/Never & Monthly & Few times a month 1=Weekly & Few times a week & Daily	960	1343	2303
Self-Esteem: These needs include self-worth, accomplishments, and respect.	Lifelong Learning	What is the highest level of education you have completed?	Ordinal	0=Less than HS & HS Degree/GED & Some college, no degree 1=Associates Degree: Occ, Tech or Voc & Associates Degree:	1005	1250	2255

			Academic & Bachelors Degree & Master's Degree			
Self-Actualization: These needs refer to the realization of a person's potential, self-fulfillment, seeking personal growth and peak experiences	Civic Vitality	During the past 12 months, did you devote any time to volunteer work?	Dichotomous	816	1012	1828

Notes: HS= High School. Occ.=Occupational. Tech=Technical. Voc=Vocational. All ordinal responses were dichotomized and coded as 0 and 1, with 0 being inherently negative and 1 inherently positive.

SDOH Multidomain Index: Results

Once the variables were dichotomized, STATA/BE 17.0 for Windows was used to create the composite measure (Stata Corp, College Station, TX). By using the egen anycount command, indicators that would generally be excluded due to missing values, were included if they had a 1, indicating at least one positive response to any of the dichotomized variable responses. The output of the index was a scaled response with 0 meaning that an individual had no positive responses to any of the indicators. The "1" is the count of the number of respondents who answered positively to one indicator. The "2" reflect those that responded positively to two indicators, the "3" to three indicators and so forth.

Table 2: Newly Created SDOH Multidomain Index – Descriptive Statistics

Independent Variable**:** SDOH Multidomain Index	Absolute Frequency (n)	Relative Frequency (%)
0 no unique positive responses	70	3.02
1 unique positive response	252	10.9
2 unique positive responses	485	20.9
3 unique positive responses	611	26.4
4 unique positive responses	561	24.1
5 all positive responses	340	14.7

Notes: N=2319. SDHO= Social Determinants of Health. Each index measure represents the unique count of indicators with the same number of positive responses.

Life Satisfaction: Outcome Measure

In this research, happiness is synonymous with life satisfaction. The complexities and multidimensional aspects of life satisfaction have been well researched, with findings revealing life satisfaction judgments to be good summaries of how individuals are doing in different domains of their lives. A 2015 study by Boehm et al. reported an 18% decrease in the risk of mortality when life satisfaction in their participants increased (Boehm et al., 2015, pp. 1063–1070).

In the AWP survey, the life satisfaction variable is a nominal variable generating a score of 1 to 4, with 1 corresponding to “not satisfied at all” and 4 corresponding to “extremely satisfied.” By dichotomizing these responses to represent those who self-reported life satisfaction with the variable happy life. The delineation of the responses included self-reporting life satisfaction at 3 or 4 as “happy life: yes,” and self-reporting of life satisfaction of 1 or 2 categorized as “happy life: no”. The new happy life variable is the dependent variable.

Table 3: Descriptive Statistics with Dichotomized Dependent Variables

Dependent Variable: Life Satisfaction	Absolute Frequency (n)	Relative Frequency (%)
Happy Life No 0= Not satisfied at all & Not very satisfied	423	18.3
Happy Life Yes 1= Satisfied & Very Satisfied	1895	81.7

Notes: 'Happy Life No' represents the negative responses coded as 0. 'Happy Life Yes' represents the positive responses coded as 1.

Table 4: Bivariate Analysis- Dependent and Independent Variables

SDOH Multidomain Index	Happy Life: Column		Happy Life: Row		
	Yes N (%)	No N (%)	Yes N (%)	No N (%)	Total (N %)
0 no unique positive responses	44 (63.8)	25 (5.91)	44 (63.8)	25 (36.2)	69 (100)
1 unique positive response	151(7.97)	101 (23.9)	151 (59.9)	101 (40.1)	252 (100)
2 unique positive responses	360 (19)	125 (30.0)	360 (74.2)	125 (25.8)	485 (100)
3 unique positive responses	502 (26.5)	109 (25.8)	502 (82. 2)	109 (17.8)	611 (100)
4 unique positive responses	509 (26.9)	52 (12. 3)	509 (90.7)	52 (9.27)	561 (100)
5 all positive responses	329 (17.4)	11 (2.60)	329 (96.8)	11 (3.25)	340 (100)
Total	423 (100)	1895 (100)			2318 (100)

Notes: SDHO= Social Determinants of Health. () indicates percentage respondents.

Table 5: Bivariate Analysis - Confounding Variables

Control Variables	Happy Life: Column		Happy Life: Row		
	Yes N (%)	No N (%)	Yes N (%)	No N (%)	Total N (%)
Sex					
Male	563 (29.8)	132 (31.5)	563 (81.0)	132 (19.0)	695 (100)
Female	1326 (70.2)	287 (68.5)	1326 (82.2)	287 (17.8)	1613 (100)
Total	1889 (100)	419 (100)			2308 (100)
Race/ Ethnicity					
White	1239 (65.5)	217 (51.4)	1239 (85.1)	217 (14.9)	1456 (100)
Black	409 (21.6)	138 (32.7)	409 (74.8)	138 (25.2)	547 (100)
Asian	24 (1.27)	6 (1.42)	24 (80.0)	6 (20.0)	30 (100)
Two or More Races	40 (2.11)	12 (2.84)	40 (77.0)	12 (23.0)	52 (100)
Hispanic Latino	54 (2.75)	13 (3.08)	54 (80.0)	13 (20.0)	65 (100)
Other race	129 (6.82)	36 (8.53)	129 (78.4)	36 (21.6)	148 (100)
Total	422 (100)	1893 (100)			2315 (100)
Yearly Income					
≤$25k	547 (31.0)	201 (51.2)	547 (73.1)	201 (26.9)	748 (100)
$25k-34,999	78 (4.41)	22 (5.60)	78 (78.0)	22 (22.0)	100 (!00)
$35k-49,999	378 (21.4)	80 (20.4)	378 (82.5)	80 (17.5)	458 (100)
$50k- 74,999	283 (16.0)	34 (8.65)	283 (89.2)	34 (10.7)	317 (100)
$75k +	482 (27.3)	56 (14.3)	482 (89.6)	56 (10.4)	538 (100)

Total	1768 (100)	393 (100)			2160 (100)
Age					
18- 24	164 (9.67)	33 (8.64)	164 (83.2)	33 (16.8)	197 (100)
25-34	328 (19.3)	94 (24.6)	328 (77.7)	94 (22.3)	422 (100)
35-44	378 (22.3)	93 (24.4)	378 (80.3)	93 (19.7)	471 (100)
45-54	265 (15.6)	61 (15.8)	265 (81.3)	61 (18.7)	326 (100)
55-64	218 (12.9)	66 (17.3)	218 (76.7)	66 (23.3)	284 (100)
65-74	239 (14.1)	28 (7.33)	239 (89.5)	28 (10.5)	267 (100)
75 +	104 (6.13)	7 (1.83)	104 (93.7)	7 (6.31)	111 (100)
Total	1696 (100)	382 (100)			2078 (100)
Survey Year					
2016	1101 (58.1)	207 (15.8)	1101 (84.2)	207 (15.8)	1308 (100)
2018	794 (41.9)	216 (51.1)	794 (78.6)	216 (21.4)	1010 (100)
Total	1895 (100)	423 (100)			2318 (100)

Note: () indicates percentage respondents.

Analysis

A bivariate analysis was used to determine how the Index's responses correspond to the dichotomized happy life variable, representing self-reported life satisfaction. The cross-tabulation results for both the column and row variables were displayed in Tables 4 and 5. The index's power in predicting life satisfaction was determined by logistic regression and controls for demographic variables, including sex, race, income, and age, similar to the factors in Dr.

Nelson's paper. The model did not include education as it was part of the SDOH Multidomain Index. However, the model accounted for the year as a control variable since the survey occurred during two different periods. Additionally, race/ethnicity responses, totaling fewer than 30, were added to the other race category.

Table 6: Odds of Predicting Life Satisfaction

Variable	Unadjusted OR	Adjusted OR	P>|z|
Wellbeing vs. 0			
1	0.85 (0.49-1.47)	.987 (0.54-1.81)	0.966
2	1.64 (0.96-2.78)	1.98 (1.11-3.55)	0.021
3	2.62 (1.54-4.46)	3.12 (1.73-5.64)	0.000
4	5.56 (3.15-9.81)	6.39 (3.37-12.11)	0.000
5	16.9 (7.82- 36.9)	17.56 (7.50- 41.10)	0.000

Notes: Adjusted OR accounts for demographic confounding variables- age, sex, race, yearly income and survey year. p-value is less than (0.05) and represents adjusted OR.

Results

Tables 4 and 5 present a visual interpretation of the variables representing a bivariate analysis by stratifying the study population by dependent variable—the composite SDOH Multidomain Index and outcome/ independent variable—the happy life variable and confounding variables category. The binary analysis shows that a higher proportion (~90%) of survey respondents who said they were happy had a SDOH Multidomain Index of 3 or more domains and was higher than those with the same number of representative domains who said they were not happy (~70%).

The general trend observed is that regardless of how respondents identify in categorical variables, overall, more respondents (above 80%) feel they have a “happy life” compared to those who feel they don’t have a happy life. There is no difference in the proportion of respondents of different sex to report having a happy life. Of the respondents included in the study, 695 were male. Of those males, 19% said they were unhappy with life, and 81% said they were happy, similar to the percentages of female respondents. There were 1613 female respondents; about 18% responded positively to being satisfied with life, and 82% responded that they were not. Of the sexes who responded negatively to being satisfied with life, 31.5% were male and 68.5% were female, which was very similar to the percentage of males and females who responded positively with happy life yes.

A higher proportion (85%) of non-Hispanic White respondents reported having a happy life than all other races. Additionally, compared with other races, it would appear that Asians have the lowest percentage of respondents satisfied with life (1.27%); however, it is likely due to the much lower number of Asian respondents. When comparing happiness within the same race, the results across races are very similar, with about 15-25% self-reporting a negative outcome that they are not satisfied with life and 75-85% self-reporting being satisfied with life. When analyzed across rows, the race with the most negative response to self-reported life satisfaction were blacks, with 25.2% and 74.8% reporting a happy life. There was a 10% difference among whites, who had the highest percentage of positive self-reported responses.

With current literature diverging on the effects of money on happiness, it is interesting to note that this data shows that of those who were not happy with life, those who made under 25 thousand were 51% of the respondents. Again, this 30% difference with the next closest income category, $35K-49,999, could be due to the higher number of respondents that make under 25K.

When compared to others with the same income, of those making under $25 thousand, 26.3% responded they were not happy with life, while 73% responded that they were. As income increases, those responding positively to life satisfaction also increases, with 89.6% of those making $75,000+ stating they were happy with life.

The results of this logistic regression, in general, show that the higher the SDOH Multidomain Index, the more likely an individual reported having a happy life. When accounting for confounding variables and controlling for demographics, the odds of reporting a happy life for an individual with a wellbeing score having three needs met is 3.12 times (statistically significant, $p < .000$) of an individual with a wellbeing score of 0 (having no needs met). The odds of reporting a happy life for an individual with a wellbeing score of four needs met is 6.39 times (statistically significant, $p < .0000$) of an individual with a wellbeing score of 0 (having no needs met). The odds of reporting a happy life for an individual with a wellbeing score of having the needs in all five domains met is 17.56 times (statistically significant, $p < .000$) of an individual with a wellbeing score of 0 (having no needs met). The odds ratio for a SDOH Multidomain Index of having all needs met is over 15 times the odds ratio for a SDOH Multidomain Index when only two needs are met. A respondent with only one or two needs met was still likely to report a happy life compared to having no needs met. However, the odds ratio for only one need met was not statistically significant.

Discussion

In the fiscal year 2018, the Athens Area Community Foundation (AACF) marked its tenth anniversary by setting a new record in grantmaking, reaching almost 1.5 million dollars in giving. Included in these grants was the Athens Wellbeing Project, a repeated cross-sectional survey focused on identifying the needs of the community's most vulnerable populations and

providing evidence-based reports to a collaboration of investors. One of the biggest hurdles to sustainable change is getting community members and stakeholders to see themselves as empowered change agents who can use resources to make more informed decisions. Because data drives policy and decision-making, providing a single indicator of the SDOH as a visual depiction of the integrated nature of the factors affecting the community is imperative to demonstrate how health influences every aspect of the community, prioritizing it as a shared value.

The nature of the AWP allows communities to be empowered by data, giving them a voice to communicate their needs. By creating an indicator to predict life satisfaction, the AWP provides an avenue for more efficient and effective public funds to target interventions. Through this analysis, policymakers can understand the increased odds someone has of reporting they are satisfied with life when they have a wellbeing score of 5 rather than a wellbeing score of 0. The higher the SDOH Multidomain Index composite score, the more likely an individual is to report having a happy life. The positive association is especially higher when having a wellbeing score of 1 compared with a wellbeing score of 0. When all the five needs of an individual across different sectors are met, the odds of having a happy life are 17.56 times higher than when none of the individual's needs are met.

By understanding that individuals are 17.56 times more likely to report a happy life at a SDOH Multidomain Index score of 5, the goal moving forward would be to achieve policy interventions that could raise an individual's overall wellbeing score. The implications of the analysis will give policymakers tangible evidence to target interventions that will improve multiple sectors to increase overall subjective happiness and ensure they understand that this can only be done by conceptualizing wellbeing as a prioritized integrated value.

Limitations

Using the AWP dataset inherently has its limitations, including well-known limitations associated with conducting cross-sectional surveys, including response bias and lack of generalizability. Using proxy variables allows for variance in the index. Though variables were chosen systematically, several assumptions were made during the construct of the index, including the relationship between the survey domains and index indicators. Additionally, not all inputs creating the independent variable are objective but include self-reported measures. Subsequently, the dependent variable is self-reported, leading to biases in the actual perception of life satisfaction.

CHAPTER 4: A STAKEHOLDER'S PERSPECTIVE OF MULTI-SECTOR ALIGNMENT RESEARCH: A QUALITATIVE EVALUATION OF THE ATHENS WELLBEING PROJECT[2]

[2] Travers, A., Adams, G.B., Chen, Z., and Li, R. To be submitted to TBD.

Abstract

Data sharing is an essential factor in building a culture of health and should be discussed when partnership and collaboration efforts are being created. Though there is ample evidence demonstrating how data sharing can lead to more equitable and sustainable interventions, it is still not common practice. As stewards of philanthropic contributions, the Athens Area Community Foundation (AACF) continuously mobilizes resources targeting the Athens-Clarke County, GA community's greatest needs. Through the Athens Wellbeing Project (AWP), an innovative approach to improving integrative and collaborative data collection, sharing, and utilization, to drive the strategic planning of community interventions, the AACF can make decisions and allocate resources based on evidence rather than assumption. This cross-sector collaboration among the unified Athens city-county local government, police department, hospital systems, public school system, community foundation, local United Way organization, housing authority, and the University of Georgia, the AWP addresses rigor, scope, and representation in data used for decision making. The following study uses a qualitative research design to assess these stakeholders' motivations, expectations, and conclusions of the last seven years of cross-sector data alignment. The purpose of this study is to improve the understanding of best practices for conceiving and sustaining an interoperable, collaboratively aligned data set, reiterating how aligning data and incorporating social determinants of health are integral for holistic upstream interventions. Using the Multi-sector Alignment Research Framework by Riley et al. (2021), a systematic thematic analysis was used to examine the AWP as a model for fostering cross-sector collaborations and building systems alignment through data-sharing by

assessing stakeholder perspectives regarding AWP's impact on their organization and the community.

This second essay presents the Athens Wellbeing Project through a qualitative study exemplifying multi-sector collaborations as a necessary component of sustainable systems alignment. Of the estimated 300 local service providers vying for a portion of the local funding in 2015, all struggled with a lack of data and information to guide decision-making and budget justifications. There was a lack of clarity and understanding of how social and economic determinants of health could be used as a metric to manage funding and service delivery. Therefore, a collaboration among the unified city-county local government, police department, hospital systems, public school system, community foundation, local United Way organization, housing authority, and the University of Georgia created the Athens Wellbeing Project survey as a tool to capture the wellbeing needs in Athens-Clarke County holistically.

Introduction

Multisector data, representing the needs of a community, is necessary for efficient and effective evidence-based decision-making (Keller et al., 2018). Without it, developing policy and allocating resources is done through assumption. Based on prior experience, assumptions allow individuals to sort through information and make crucial decisions quickly. Sometimes, a policymaker’s experiences do not reflect those of their constituents. As a result, this subjective perspective perpetuates health inequity by not addressing the community’s actual needs.

The Athens Wellbeing Project (AWP) in Athens, Georgia, successfully aligns multi-sector data with increasing fact-based initiatives. Through a cross-sector collaboration among the unified city-county local government, police department, hospital systems, public school system, community foundation, local United Way organization, housing authority, and the University of

Georgia, the AWP addresses rigor, scope, and representation in data used for decision making. This coalition of collaborating organizations created a household wellbeing survey by aligning data indicators from their separate sectors into one multisector survey tool.

The AWP's mission is to provide timely and relevant data to institutions in the community that make and implement policy and social services with a broader vision to address social determinants of health within the community's most vulnerable populations. The stakeholders address system-level barriers that prevent the community from thriving through this collaborative mechanism. The scope of this survey is broad and covers areas of applicability across stakeholders and community institutions, including domains such as health, housing, community safety, life-long learning, and civic vitality. By providing the community with a representational data platform, stakeholders can align the current landscape of these needs and resources.

Data retrieved from AWP provides a snapshot of the community's wellbeing over time. AWP data can determine "how much the community's interventions are moving the needle on issues related to education, civic engagement, and economic development in the coming years" (ACF website). To date, the survey data collection is in its third iteration. The first data collection began in the Fall of 2016 (version 1.0), the second in the Fall of 2018 (version 2.0), and the third in the Fall of 2021 (version 3.0).

Research Aims

The Athens Wellbeing Project provides collaborating organizational partners access to Athens-Clarke County neighborhood-specific data providing evidence-based information to guide operational and financial decision-making. Using the AWP as a practical example, this

research aims to explore the success of a multisector alignment initiative from the perspective of the organizational stakeholders.

Hypothesis

By documenting a community's most significant needs through the development and implementation of a quantitative wellbeing survey, with a robust stratified random sampling methodology, participating multisectoral stakeholders are empowered to initiate systemic change, eventually increasing health equity in the community. This in-depth analysis will inform best practices determined by collaborating organization stakeholders so that measures of success and challenges are captured, allowing similar communities to maximize investments and target the most effective responses to the community's needs.

Research Question

1. Did the Athens Wellbeing Project successfully align multiple sectors by creating a community-based multisector wellbeing survey based on organizational stakeholder feedback?

Methodology

AWP Survey

Developed through a collaborative process, the Athens Wellbeing Survey includes input from the AWP research team, the AWP advisory committee, and community stakeholders into the kinds of information desired to assess wellbeing in Athens-Clarke County. In 2016, a nine-month process requested social service providers and leaders of community institutions to contribute information necessary to improve service delivery for their clients and achieve their organizations' mission. This feedback was collected by AWP advisory committee members and submitted to the research team, who compiled it into a list of variables/constructs to include in

the survey. The process focused on achieving an instrument that met the needs of community stakeholders operating across survey domains. Validated measures collected from other national and community surveys were used in communities across the United States for questions in each domain.

The survey was ultimately organized into several areas, referred to as "domains." Domains included in the survey had broad applicability across stakeholders and community institutions and included: community safety, health, lifelong learning (education across the lifespan), housing, and civic vitality. In addition to these domains, a core of demographic and household characteristic questions about age, family size, race, ethnicity, income, program participation, education level, veteran status, and other indicators are essential to quantitative analysis. With every iteration of the study design, the sampling frames utilized random sampling, census, and convenience sampling as necessary to ensure an over-sampling of more to ensure representation from the more vulnerable groups. The survey instructions were to have one-person, minimum age of 18, per household take the survey. To date, the survey data collection is in its third iteration. The first data collection took place in the Fall of 2016 (version 1.0), the second in the Fall of 2018 (version 2.0), and the third began in the Fall of 2021and is currently ongoing (version 3.0).

Framework for Multisectoral Alignment Research

The Framework for Multisectoral Alignment Research (FMAR) was identified as the structure to evaluate the Athens Wellbeing Project. Arizona State University (ASU) researchers working on a four-year collaborative conceptualized the framework. Their research aligned systems among 50 organizations from seven sectors working together to address the fragmentation of care for people with behavioral health disorders in Maricopa County, Arizona.

During the research process, it became evident that there was a lack of understanding regarding the interplay between the multiple sectors and a lack of existing frameworks to examine successful systems alignments. Building on other cross-sector theory of change models, the Framework for Multisectoral Alignment Research provides a cadre to operationalize "key components of multisector implementation research and describing their relationships to make actionable progress" (Riley et al., 2021, p. E206). For this reason, it was used to better understand the organizational partner's motivation, involvement, and expectations of the Athens Wellbeing Project. After a thorough review of the literature, it is concluded that this essay is the first documented operational use of the framework outside of the Arizona State University study.

The four dimensions of the framework address specific phases of alignment in multisector collaborations. The framework's components are graphically displayed in Figure 7. The definitions and examples for each alignment phase per Riley's research publication "Framework for Multisector Alignment Research" are depicted in Table 1 (Riley et al., 2021). Within the Framework for Multisectoral Alignment Research parameters, AWP stakeholder perspectives provided material evidence for identifying and aligning system-level strategies in an existent and ongoing collaboration.

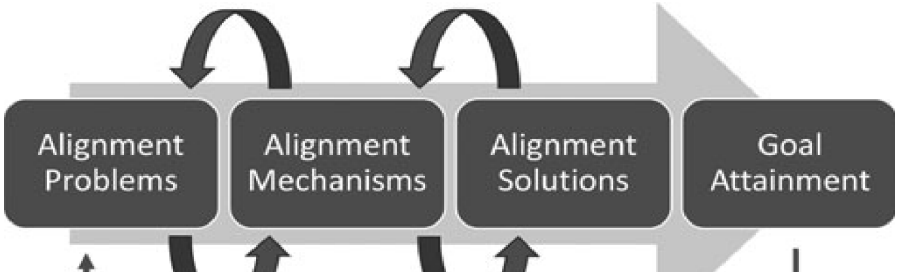

Figure 7: Framework for Multi-Sector Alignment Research (Riley et al., 2021)

Table 7: Four Dimensions of the Framework for Multisectoral Alignment Research

Multisectoral Alignment Research Framework				
	Alignment Problem	*Alignment Mechanism*	*Alignment Solution*	*Goal Attainment*
Definition	An issue caused by fragmented, uncoordinated, or conflicting approaches between multiple sectors.	The methods and techniques to engage stakeholders in the identification and analysis of the alignment problem as well as developing consensus on an alignment solution.	A multisector consensus regarding an intervention and implementation of the intervention	A resolution of the alignment problem resulting in systems alignment and improved population health status.
Example/ Aims	Include but are not limited to: - persistent gaps in services between sectors - conflicting funding mechanisms - siloed reporting requirements	Facilitate stakeholder interaction, perspective taking, and relationship building.	A change in policy or practice implemented by a sector, or multiple sectors	Results from permanent connections between sectors with lasting impact upon equity and population - matched to the specific alignment problem

- disconnected

information systems

Data Collection

Design

The following evaluation employs a semi-structured interview design reflective of the methodology in the 4th edition of the *Handbook of Practical Program Evaluation*, Chapter 19, "Conducting a Semi-Structured interview" by William Adams (Newcommer, Hartry, Wholey). Due to the smaller sample size of coalition interviewees and the need for specific information and flexibility in follow-up, it was decided that semi-structured interviews were most appropriate to garner information over more and less structured techniques such as questionnaires and focus groups. Additionally, a semi-structured interview design provides the best format to achieve this study's objective, acquiring insight from collaboration partners to understand their organization's motivation and perceived outcomes of their work with AWP.

Sampling

Purposive sampling was used to identify a representative from each partnering organization taking part in the Athens Wellbeing Project. Organizations recruited to participate in the interview process were stakeholders who worked directly with the AWP collaborative and have participated in at least the first or second iteration of the AWP survey. The University of Georgia's perspective was excluded from the sample because of the researcher's association with the university.

The number of organizations meeting these characteristics totals ten. Before conducting the interviews, an email introduction was sent to liaisons from the AWP collaborating

organizations reintroducing the interviewer and requesting their participation. Additionally noted was the purpose of the research and the significance of their involvement in evaluating the project. Once communication was established and the desire to participate confirmed, interviews were scheduled over a month to accommodate the participants' schedules.

Table 8: Athens Wellbeing Project Included Collaborative Organizations

Institutional Partners	**Community Stakeholders**
● Athens Housing Authority ● Athens-Clarke County Police Depart ● Clarke County School District ● Athens-Clarke County Unified Government ● ACC Department of Housing and Community Development ● Piedmont Athens Regional Medical Center, St. Mary's Health Care System ● Athens Area Community Foundation ● University of Georgia	● Envision Athens ● Family Connection-Communities in Schools ● United Way of Northeast Georgia

Measures

Criteria for developing interview questions involved dissecting the Framework for Multisectoral Alignment Research for each alignment phase definition, including the alignment problem, alignment mechanism, alignment solution, and goal attainment (Riley et al., 2021).

This deductive approach to constructing the semi-structured interview questions created overall parameters to manage the responses. The interview questions were developed to gain insight from each of the interviewed organizations' perspectives, which were then analyzed together to gain a deeper understanding of the AWP as a multisectoral alignment initiative.

Within the context of this study, the *alignment problem* refers to the issues precipitating the organizations' decision to collaborate. The *alignment mechanism*, identified by the researcher as the AWP survey, was the tool to align data capturing the multisectoral community data. *Alignment solutions* elicited interventions that the partners felt came from the collaboration and whether their goal of aligning data and joining the collective was met. The final *goal attainment* phase investigates the outcomes and novelty of the AWP.

A script was prepared to ensure reliability in the responses collected. However, additional questions were asked, as needed, for clarification, because of the interview design. The interviews were conducted through Zoom teleconferencing software for the convenience of time and space. The recording and transcription features were utilized with prior approval from the interviewee. As the responses are meant to be anonymous: all records of the interview and transcription were deleted once sufficiently analyzed.

Table 9: Interview Questions Derived from Alignment Indicators

Alignment Phase	Alignment Aim	Interview Question
Problem	Identify the need for the alignment.	1. What were your organization's objectives in joining AWP?
Mechanism	Understand stakeholder consensus in developing the mechanism to solve the	2. What type of role did your organization play in developing the AWP survey?

	alignment issue- The Athens Wellbeing Project Survey Tool.	3. How did your organization overcome any hesitancy there may have been about joining and staying engaged in the AWP collaboration?
Solution	Determine the organizational feasibility and implementation of the intervention.	4. What changes in your organization's decision-making are attributable to the AWP program? 5. Do you feel that the AWP has built or is building data-alignment capacity with the appropriate stakeholders?
Goal Attainment	Examine the overall sentiments of the stakeholders toward AWP as an intervention.	6. What are the markers of success and/or failure of AWP for your organization? 7. What do you believe is novel regarding the AWP collaboration?

Analysis

Adapted from Virginia Braun and Victoria Clarke's thematic analysis process, interview responses were systematically examined for common themes (Braun & Clarke, 2019). The interviewer thoroughly reviewed the data, and all relevant information was extracted from the recording and transcription. A theoretical method was used to determine categorical variations of semantic themes, i.e., information coded was derived directly from content said during the interview and found in the transcripts.

Table 10: Thematic Analysis: Six-Phase Framework by Braun and Clarke

Become Familiar with the Data	Read and re-read the interview transcripts.
Generate Initial Codes	Organize the data in a meaningful and systematic way
Search for Themes	Organize the codes into broader themes that are specific to the question
Review Themes	Modify and develop the preliminary themes that were previously identified
Define Themes	Identify the 'essence' of what each theme is about
Write Up	Provide report of findings

Become Familiar with the Data

As the initial phase in the thematic analysis, comprehension of the data is considered foundational to the remaining analytic components. The video's transcript was immediately downloaded and reviewed directly following an interview for content correctness. If any points on the transcript were unclear, the video was reviewed to confirm the statement. Once all interviews were completed, responses were cut and pasted into their corresponding "alignment phase" document. These induvial word documents, representing one of the four alignment phases, included the corresponding interview questions as headers. Under each question were pasted the interviewees' responses. After categorizing the replies, all identifying information was deleted.

Generate Initial Codes

Rather than using predetermined codes, the theoretical coding method determined which words in the responses were relevant to the research question. This coding was accomplished through two systematic processes, each based on the frequency of word usage. One method utilized a manual approach, whereby a reviewer extracted frequently used words. Those words were then compared with words retrieved from an automated process, in which an online word counting software called "Wordcounter" quantified the number of times each word was used in the text. The most frequently used words from both approaches that were relevant to the interpretation of the responses became codewords.

Search for Themes

These codewords were then transposed to a pre-prepared Excel document. Each tab in the document was ascribed to one of the alignment phases. Under each code word, phrases from the corresponding alignment phase responses containing the repeated words were cut and pasted into the corresponding phase tab and under the matching word. Matching the codeword to the statement was achieved using the "find" function in Microsoft Word documents. If a phrase had two or three codewords, it was pasted under each matching word. Phrases remaining without any of these words were placed in their corresponding alignment phase tab under a codeword determined by the reviewer. On a couple of occasions, a new code word was made for the phrase. Once all phrases were in an excel sheet grouped by codeword, the clustered segmented responses were reviewed, and broader themes developed.

Review Themes

Each theme was reviewed in the context of the alignment phase and for significance in answering the more extensive research questions regarding the overall success of the AWP from

a collaborating organization's perspective. The comprehensive dataset supports the prevalence of specific themes and variability within and across themes. Themes with overlap or a lack of discussion were included under a new theme name.

Define Themes

All similar points were grouped into overarching themes. These related points were then defined and described in the context of the alignment phase. A thematic map tracing concepts for each particular alignment phase is available in Appendix B.

Write Up

The following report describes the methodology and thematic analysis of a successful multisectoral data alignment programs.

Results

Participants

The response rate for stakeholder organization participation was 100%. Of the ten organizations approached for interviewees, all organizational representatives were available to answer interview questions.

Table 11: Response Count for Interview Participants

Stakeholder Organizations	Count	Interviewed
Institutional Partners	7	7
Community Stakeholders	3	3
Total	10	10

Code Words

Throughout the systematic process of determining code words, it became evident that the most repetitive words for all phases of alignment were associated with concepts of data, community, and collaboration. These three terms were determined to be the code words for all four of the alignment phases. Emerging from these concepts were varying themes based on the aims of the specific alignment phase questions. The following responses represent the themes yielded for each alignment research phase.

Thematic Responses

Alignment Problem

Alignment Aim: Identify the need for the alignment.

Interview Question: What were your organization's objectives in joining AWP?

Response Synthesize: Rigor, scope, representation

The overall objective for stakeholder organizations joining the AWP was access to multisector partners. Moreover, siloed and fragmented data were the unifying themes cementing participation for AWP organizations. According to participating stakeholders, one or more factors contributed to an organization's need for alignment: scope, rigor, and representation.

Scope: the need for interoperability among various sectoral datasets

Rigor: the need for replicable statistical rigor in research and program data

Representation: sampling for vulnerable populations/ geographical precession

Alignment Mechanism

Alignment Aim: Understand stakeholder consensus in developing the mechanism to solve the alignment issue: the Athens Wellbeing Project Survey Tool.

Interview Questions:

1. What type of role did your organization play in developing the AWP survey?

2. How did your organization overcome any hesitancy there may have been about joining and staying engaged in the AWP collaboration?

Response Synthesize: Consensus, Contribution, Hesitancy

The mechanism identified to overcome the data fragmentation issues and mobilize evidence-based interventions for the collaborating organizations was the Athens Wellbeing Project Survey tool. This mechanism solved the data alignment issue by allowing for consensus through contributions of data indicators, financial support, and volunteers, giving specific attention to building the questionnaire with input from every partner. Some themes surrounding initial buy-in by stakeholders included concern for mission drift, alignment capacity, financial autonomy, and survey fatigue. With tempered expectations, those reluctant organizations agreed to participate and currently continue to support AWP financially and programmatically.

Alignment Solution

Alignment Aim: Determine the organizational feasibility and implementation of the intervention.

Interview Questions:

1. What changes in your organization's decision-making are attributable to the AWP program?

2. Do you feel that the AWP has built or is building data-alignment capacity with the appropriate stakeholders?

Response Synthesize: Engagement, Structure, Consensus

The emergent theme for the alignment solution phase was collaborative engagement. Just as the alignment mechanism unified the data needs of partnering organizations, the alignment solution addresses the need for multisectoral engagement within the collaboration. For the last seven years, stakeholders have made consensus recommendations to implement survey data

collection on three separate occasions. With each survey iteration, community engagement and collaborative partnerships generated momentum, leading to new AWP partnerships.

Through the innate integrated structure of the AWP, stakeholders have embraced the multisectoral nature of the AWP dataset. Interviewees unanimously acknowledge that the AWP data is not their primary source of information but rather a supplement to enhance the scope of their own organization/sector's data. Moreover, though no stakeholders mentioned that AWP was responsible for structural or political change in organizational decision making to implement programs, every stakeholder claimed to use the AWP data in some decision-making capacity.

Goal Attainment

Alignment Aim: Examine the overall sentiments of the stakeholders toward AWP as an intervention.

Interview Questions:

1. What are the markers of success and/or failure of AWP for your organization?
2. What do you believe is novel regarding the AWP collaboration?

Response Synthesize: Sustainability, Community Empowerment, Geospatial Capacity

Riley et al. describe goal attainment as a "resolution of the alignment problem resulting in systems alignment and improved population health status." (Riley et al., 2021, p. 4). Using this definition restricts the assessment of AWP's impact on the alignment problem, fragmentation, and siloing. When asked to discuss the success of the AWP, the sentiment shared by several stakeholders was that it delivered on providing the needed cross-sector data alignment. However, some partners mentioned that they did not think it would be possible to succeed without a sustainability plan and funding for multiple years.

The central theme of stakeholder interview responses targeting the alignment problem was the novelty of community empowerment through community data. Not only were stakeholders excited to align their data with other community organizations, but the data points representing the entire population were also mentioned as a success with frequency. Interviewees also discussed their desire to make AWP data accessible to the community through the Athens Social Mapping Atlas or similar geographic information systems. Some stakeholders feel AWP cannot be sustainable without a sustainability plan and additional financial commitments when discussing how AWP has addressed aligning cross-sector data.

Regarding the need for rigorous research, the University of Georgia spearheaded this interoperable effort by providing stakeholders with data collection and management expertise. Several stakeholders explicitly expressed their dedication to and appreciation for the UGA team.

Programmatic Synthesis

The following is a list of multisectoral examples in which the AWP benefitted Athens-Clarke County residents, as included in Scott Michaux's UGA Research Newsletter article "Data for the people: Athens Wellbeing Project helps pinpoint areas of civic concern" (Michaux et al., 2022). Most of these initiatives were also discussed during the stakeholder interviews. In addition to AWP data leading to direct program initiatives, the data is additionally being used to leverage evidence-based decision-making when allocating donor funds. When considering their stewardship to their donors, some organizations benefiting from these data are the United Way of North East Georgia, Athens Area Community Foundation, and the Creature Comforts Get Comfortable campaign.

- St. Mary's Hospital developed and deployed a mobile food pantry after the data showed there were more food-insecure people than were being served.

- For the first time ever, the Cancer Foundation of Northeast Georgia increased its financial support of families and individuals living with cancer after data showed that the financial burden of cancer was higher than previously understood.
- The data helped inform behavioral health interventions and support, particularly through telemedicine and telehealth during the pandemic when there were fewer in-person services for people with mental health and substance abuse issues.
- Athens-Clarke County was able to estimate how many residents might be facing eviction during the pandemic by using the data to determine how much families were paying for housing and how that compared to their income.
- In partnership with the Athens Neighborhood Health Clinic, a community health center was established on site at Hilsman Middle School to service students and teachers, decreasing the time students missed school to see a doctor.
- During the pandemic, the wellbeing data was used to identify which families and neighborhoods might not have Wi-Fi access or consistent access to wireless internet. The Clarke County school district used those reports to figure out how to deploy our hotspots and Wi-Fi buses.

Discussion

Data sharing is an essential factor in building a culture of health and should be discussed when partnership and collaboration efforts are being created (Martin et al., 2018; NIMH Study Team, 2013). However, collaborations are only as effective as the strength and weaknesses of the collaborator's efforts (Marek et al., 2015). Suppose partnership agreements excluded data sharing; datasets would then remain limited to one specific perspective and not representative of the complex nature of social determinants of health, as previously mentioned (NIMH Study

Team et al., 2013). Though evidence demonstrates that data sharing can lead to more equitable and sustainable interventions, it is still not common practice, even locally.

Several barriers make it an intimidating endeavor to initiate, including "technical, motivational, economic, political, legal, and ethical barriers" (Van Panhuis et al., 2014, p.6).

Even with these obstacles, commitment and motivation to collaborate through data sharing are well worth the investment and add "transparency and cooperation, reproducibility of research, cost-efficiency and preventing redundancies, acceleration of discovery and innovation, and saving lives through more efficient and effective public health programs" (Van Panhuis et al., 2014, p. 1). According to Wiehe and colleagues, their study "found that long-term and sustainable partnerships are what yield the most rewarding and impactful data-sharing research" (Wiehe et al., 2018).

Recommendations

The next step in evaluating the AWP would be to assess the impact of the collaborations by systematically auditing each program that engaged cross-sector partnerships and was created with input from the AWP. Additionally, as noted by some interviewees, additional engagement with the community to better understand the underlying factors they believe impact their community is needed. Follow-ups in the form of focus groups or informal interviews could achieve this objective.

Limitations

Limitations associated with this research and qualitative research, in general, include the potential for bias when interpreting interview responses. Mitigating the subjective nature of this interpretation was done through a systematic analysis process. Though this approach alleviated

most biases, it could not eliminate them. Such was the case when a reviewer sorted phrases that did not contain the determined codewords.

CHAPTER 5: DISCUSSION AND CONCLUSION

Introduction

This research aimed to introduce the Athens Wellbeing Project (AWP) as a tool to operationalize a Culture of Health. The AWP data provides a voice to the community bringing visibility to the disparate needs of vulnerable communities in Athens-Clarke County. Using the Robert Wood Johnson Foundation Culture of Health Action Framework, the AWP data demonstrated its ability to catalyze community stakeholders to make health a shared value and foster cross-sector collaboration.

Summary of Background and Study

As chronic comorbid conditions become increasingly prevalent in the United States, patients are left to find specialized care across multiple settings (Enthoven, 2009; Rayner et al., 2018). Like many complex problems, breaking down health and wellbeing makes them more manageable. Such splits, however, when not appropriately handled, create programs in mutual isolation, perpetuating fractures in public health and social service systems. Without proper consideration for the integrated structure of these factors and their relationship to societal determinants, they continue to function in silos. As these silos continue to create programs without input from other sectors, the cost of interventions continues to rise. This cost contributes to the competition for resources and duplication of services by community programs meant to address integrated health and wellbeing (Wiley, Lindsay, 2016). Due to the cyclical nature of splitting and isolating, the terms fragmentation and siloing are synonymous with this lack of efficiency.

Health and wellbeing are functions of more than medical care. As the U.S. continues to lack efficiency in the overall care of its population, the need for a seismic shift in prioritizing holistic health interventions has become evident. Continuously treating symptoms, also referred to as downstream factors, does not address the root cause driving unequal opportunities to access resources to make healthy choices. Upstream interventions focusing on these root causes are far more integrated than previously recognized. Unfortunately, decision-makers do not fully comprehend how these components interact and continue to focus their policies on individual interventions. Stange et al. suggest this is because "When we see only parts, disconnected from the whole, we lose our ability to find incremental actions connected to larger evolutionary improvement" (Stange et al., 2009). Until communities can look toward holistic interventions, the healthcare and social service sectors will continue to hemorrhage money without seeing a proper return on investment.

Creating a healthier community for vulnerable people in deprived neighborhoods requires allocating resources in ways that will improve community conditions that shape health, as these are upstream contributors to health outcomes. Therefore, it is essential to understand the inequitable policies driving the health disparities. The underlying social and economic conditions promoting inequity determine "who lives and who dies" and must be addressed through sustainable interventions (Colen et al., 2018, p.167). One way to target health disparities is to focus on the social determinants of health (Frieden, 2010).

Several scientific articles discussed in Chapter Two referred to societal determinants affecting health outcomes. The review included an article by Castrucci and Auerbach published in Health Affairs titled *Meeting Individual Social Needs Falls Short of Addressing Social Determinants of Health.* The article states that addressing upstream factors begins with focusing

on a community's social determinants of health rather than individualistic social needs. Several studies have connected social and economic status, defined by education and income, to an individual's built-environment, which is the human-made surroundings where they reside, which effects: access to healthy food, social cohesion, walkability, and neighborhood safety. The built environment impacts an individual's physical activity, diet, and sleep, leading to a greater risk of illness (den Braver et al., 2018). In addition to an individual's built-environment, race and ethnicity are other social determinants of health that significantly impact health outcomes (Walker et al., 2016). Unfortunately, years of inequitable policies perpetuated the discrimination that crafted these determinants, leading to differences among excluded and marginalized groups. (Walker et al., 2016). By focusing on measures outside of economic output and allowing the study perspective to be community-led, researchers can begin to investigate activities targeting these disparities that may have been previously unrecognized or undervalued.

Building a culture of health aims to improve health and wellbeing across all populations and increase equity by reducing health disparities. It places wellbeing at the center of every aspect of life, enabling individuals and communities to live healthier lives free from social constructs that impede health equity (Lavizzo-Mourey, 2014). A prerequisite to achieving a culture of health is making it a shared value and setting the "context for widespread dialogue about and understanding of a culture of health" (Plough, 2015, pg. 3). Making health a shared value means unifying a community through a mutual understanding of health's integrated and interdependent nature. By recognizing the influence of health and its effects on the entire population, local decision-making can prioritize policies supporting their environment, health systems, and social service focused on ameliorating their wellbeing. This action is the first to be promoted in the Culture of Health Action Framework (Plough, 2017).

The second action area in a Culture of Health Action Framework is to foster cross-sector collaborations (Chandra et al., 2017). Collaborations between organizations and across sectors are a known solution to "integrating programs and services to get better results" (Lockwood & Peterson, 2018). By engaging local principles, values, and characteristics, collaborations can become more responsive to the country's priorities creating sustainable development (Wiehe et al., 2018; Adams et al., 2016). Local capacity must be united to address community problems. Utilizing local researchers to engage the community ensures the correct services target citizen needs (Davies & Mullan, 2016). Including the local community in all aspects of research is a strategy known as community-based participatory research.

Study Overview

Though policy research suggests that innovation occurs at the local level, there is a lack of published research focused on the types and implementation of policies needed in these smaller jurisdictions. With limited evidence-based research focused on local upstream integrated solutions, it is challenging to highlight to a community the necessary actions needed to make health a shared value and foster cross-sector collaborations. Using the Athens Wellbeing Project as the subject of a mixed methods study, the project provided an in-depth examination of a novel and exemplary initiative advocating a culture of health in small cities throughout the United States. Using the culture of health action framework, AWP data demonstrated how intersecting health as a shared value through community voice and fostering cross-sector alignment research could build more equitable communities.

Athens Wellbeing Project

Previous attempts to support collaborations in Athens-Clarke County did not result in sustained agency engagement. Though well-intended, these efforts were not structured to

manage ongoing community input or leverage it into community action. In response to a community-wide recognition of insufficiently aligned systems for optimal health outcomes, Athens-Clarke County community institutions committed concurrently to achieving a culture of health by creating the Athens Wellbeing Project. Since 2015, this cross-sectional community survey data collection and sharing initiative has provided collaborating organizational partners access to Athens-Clarke County neighborhood-specific data.

Purpose

The specific purpose of the study was twofold:

1. to examine social determinants of health in a community setting and understand the factors that influence household wellbeing, and
2. to examine best practices for sustained cross-sector stakeholder engagement and collaboration.

The following questions guided the overall direction of the research:

1. How can multisectoral survey data be used to predict wellbeing through self-reported life satisfaction?
2. Based on organizational stakeholder feedback, did the Athens Wellbeing Project successfully align multiple sectors by creating a community-based multisector wellbeing survey?

Applying a mixed methods approach to the research ensured capturing ample evidence focused on the study's purpose. The first manuscript presented in this dissertation was a quantitative study, addressing the composite nature of social determinants of health. This essay, entitled "Composite Community Factors of a Social Determinant of Health Multidomain Index: A Quantitative Study of the Integrated Nature of the Athens Wellbeing Project," detailed the

Athens Wellbeing Project's survey and sampling methodology and provided credence to the validated structure of the survey's questionnaire. Next, based on Maslow's Hierarchy of Needs, a SDOH Multidomain Index was used to create a proxy indicator for predicting an individual's overall self-reported life satisfaction.

Though a recently published article by Candance Nelson depicted a similar intention, it differed from this study in the framework used to construct and score its composite indicator and the resulting outcome measure (Nelson, 2021). However, both studies used multivariate logistic regression to evaluate the odds of their composite indicators in predicting their predetermined outcome measure. In this dissertation's Chapter 3, the index assembled AWP indicators representing each of Maslow's needs to predict the odds of self-reported life satisfaction at different levels of integrated wellbeing. In Dr. Nelson's study, the composite measure used a social determinant of health framework to measure health as the outcome. Additionally, the AWP survey used local community-based data to provide results specific to Athens-Clarke County, unlike the nationally representative data used in Dr. Nelson's study. Regardless of differences, both studies are essential to building the evidence base needed to demonstrate an association between social determinants of health and health and wellbeing, resulting in interventions that are as integral, complex, and interdependent.

The second manuscript presented in this dissertation provides a qualitative assessment of the stakeholders' motivations, expectations, and conclusions of the last seven years of cross-sector data alignment. This essay, entitled "A Stakeholder's Perspective of Multi-Sector Alignment Research: A Qualitative Evaluation of The Athens Wellbeing Project," applied the Framework for Cross-sector Alignment Research to develop semi-structured interview questions. The interview focused on stakeholder organizations that have been part of the AWP since its

inception. A systematic thematic analysis used to examine the interview responses provided consideration for data alignment through the AWP.

Table 12: Synthesized Thematic Responses from Chapter 2

Multisectoral Alignment Research Framework				
Alignment Phase	Alignment Problem	Alignment Mechanism	Alignment Solution	Goal Attainment
Response	Rigor Scope Representation	Consensus Contribution Hesitancy	Engagement Structure Consensus	Sustainability Community Empowerment Geospatial Capacity

Key Findings

This mixed method study assessed the Athens Wellbeing Project as an ongoing initiative focused on aligning health, government, and social service systems by collecting and sharing primary, representative data with greater hyper-local geographic specificity than previously available in the Athens-Clarke County community. Each manuscript in this research indicated support for their purported hypotheses. The quantitative study of the AWP data demonstrated the integrative structure of social determinants of health by linking multisector needs with overall wellbeing to predict self-reported life satisfaction. The qualitative research improved the understanding of best practices for conceiving and sustaining an interoperable, collaboratively aligned data set. The overall results also reiterated how aligning data and incorporating social determinants of health are integral for holistic upstream interventions. Though additional research is needed to evaluate the AWP survey process and the impact of longer-term objectives,

the key findings provided in this study form a foundational basis to better understand the AWP's parameters as a successful example of a sustainable wellbeing initiative.

Limitations

Case studies are used to examine specific real-world occurrences in detail, similar to the research presented in this dissertation. Unfortunately, with every study comes limitations beyond the researcher's control. These are due to the inclusion of assumptions and biases, either known or unknown. The ultimate objective of the research was to explore and illustrate the Athens Wellbeing Project and its data capacity. Generalizability was not emphasized because the study is not replicable in all populations. However, emulating the AWP structure and process is recommended in situations where hyper-local initiatives focus on building a culture of health using data representative of their community and have similar characteristics to Athens-Clarke County.

Additional limitations include weaknesses intrinsic to creating and using a survey. The AWP questionnaire mitigated some of the issues relevant to the consistency and accuracy of measures by incorporating previously validated questions from established wellbeing surveys. Nevertheless, because the AWP research team did not directly validate these questions, a modicum of assumption of the survey questions' validity and reliability remains. Likewise, limitations exist when collecting survey data, such as timing, clarity, and approach. Though most of these constraints were mitigated by ameliorating the survey process, the efficiency of data collection should continue to be evaluated, ensuring a process that best serves the community.

Recommendations and Future Research

This dissertation research laid the groundwork for building a culture of health by providing evidence for making health a shared value and fostering cross-sector collaboration.

Building on these results, future research can investigate the impact of value congruence as addressed through the Robert Wood Johnson Foundation's framework's first two action areas. As stewards of the funds, evaluating the data collection process can provide the Athens Area Community Foundation with feedback on the most efficient way to achieve maximum survey participation. Because a slightly different process was used to collect data during each survey different aspects of the survey process could be investigated. Moreover, evaluating the circumstances surrounding meeting the AWP's objectives and how those objectives impacted organizational and community change would provide a deeper understanding of the overall added value of the AWP on minimizing health disparities and increasing health equity.

Meeting Long-term Objectives: Long Term Objectives of the Athens Wellbeing Project

- Increasing transparency and cross-sector communication among stakeholders, reducing fragmentation and siloing of social and health services.
- Addressing upstream factors through social determinants of health to target health disparities and inequity.
- Providing evidence-based information to guide operational and financial decision-making.
- Allocating resources in ways that will improve community cohesion, which can also be measured through the number of integrated interventions and a decrease in health disparities and inequity.

Table 13: Recommendations for Future Research

Project/ Program Evaluation	
Process	Increase the number of households participating in the survey.

	Determine which data collection strategy is best.
Impact	Systematically count the number of programs implemented by participating stakeholders - include stakeholder programs that used AWP data outside of their proposed questions to conceive a project on Athens-Clarke County would be to build measures around the long-term objectives discussed throughout this study

Public Health Implications

In public health, formal and informal cooperation propels organizational and personal capacities to create, implement, and resolve particular projects. Creating this efficiency means "knowing what tools to wield to elicit the needed cooperation is a critical managerial skill" (Christensen, 2017). Per the findings of this dissertation, focusing on upstream determinants is the ultimate tool for reunifying systems and programs focused on community health outcomes. Promoting data collection and sharing interoperable information can enhance a community's ability to respond to local challenges, especially when the data represents the intended community. By collecting data over time, a longitudinal set of data can be created demonstrating achievements in various health and wellbeing outcomes, including reductions in health disparities and inequity.

In order to address this inequity, leadership within health systems must learn to work across boundaries and work for the greater good rather than personal interest, which is part of the systemic changes that drive collective impact, leading to sustainable outcomes (Siegel et al., 2018). The mixed method study presented in the previous chapters of this dissertation provided

examples illustrating how community-driven value congruent data can become a tool to advocate for building a culture of health. The knowledge gained through this research, specific to Athens-Clarke County, will allow cities with similar attributes to replicate a comparable integrated, intersectoral and interoperable community-based survey, which can be used to leverage data into community action. Through these results, other communities can feel empowered to increase their cross-sector data alignment and initiate systemic change through a culture of health.

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APPENDIX A: SCRIPT FOR STAKEHOLDER INTERVIEWS

Script for Stakeholders Interviews:

Thank you (name) for agreeing to meet with me. My name is Anyess Travers, and I am a Doctor of Public Health candidate at UGA. Over the course of my studies, I have been working as a Graduate Research Assistant with Dr. Grace Bagwell Adams on the Athens Wellbeing Project.

The purpose of today's conversation is to better understand your organization's experience with AWP, especially the motivation for taking part in the collaboration and your experience with aligning and using multisector data.

I want to acknowledge that you have agreed to allow me to record our meeting. The transcripts and recording will be deleted once I have reviewed all. The information and all information that is included in my report will be anonymous.

APPENDIX B: CULTURE OF HEALTH ACTION FRAMEWORK

APPENDIX

CULTURE OF HEALTH ACTION FRAMEWORK

ACTION AREAS	DRIVERS	MEASURES
1 MAKING HEALTH A SHARED VALUE	MINDSET AND EXPECTATIONS	Value on health interdependence
		Value on well-being
		Public discussion on health promotion and well-being
	SENSE OF COMMUNITY	Sense of community
		Social support
	CIVIC ENGAGEMENT	Voter turnout
		Volunteer engagement
2 FOSTERING CROSS-SECTOR COLLABORATION TO IMPROVE WELL-BEING	ENUMERATION AND QUALITY OF PARTNERSHIPS	Local health department collaboration
		Opportunities to improve health for youth at schools
		Business support for workplace health promotion and Culture of Health
	INVESTMENT IN CROSS-SECTOR COLLABORATION	U.S. corporate giving
		Federal allocations for health investments related to nutrition and indoor and outdoor physical activity
	POLICIES THAT SUPPORT COLLABORATION	Community relations and policing
		Youth exposure to advertising for healthy and unhealthy food and beverage products
		Climate resilience
		Health in all policies
3 CREATING HEALTHIER, MORE EQUITABLE COMMUNITIES	BUILT ENVIRONMENT/PHYSICAL CONDITIONS	Housing affordability
		Access to healthy foods
		Youth safety
	SOCIAL AND ECONOMIC ENVIRONMENT	Residential segregation
		Early childhood education
		Public libraries
	POLICY AND GOVERNANCE	Complete Streets policies
		Air quality
4 STRENGTHENING INTEGRATION OF HEALTH SERVICES AND SYSTEMS	ACCESS	Access to public health
		Access to stable health insurance
		Access to mental health services
		Dental visit in past year
	CONSUMER EXPERIENCE AND QUALITY	Consumer experience
		Population covered by an Accountable Care Organization
	BALANCE AND INTEGRATION	Electronic medical record linkages
		Hospital partnerships
		Practice laws for nurse practitioners
		Social spending relative to health expenditure

OUTCOME	OUTCOME AREAS	MEASURES
IMPROVED POPULATION HEALTH, WELL-BEING, AND EQUITY	ENHANCED INDIVIDUAL AND COMMUNITY WELL-BEING	Well-being rating
		Caregiving burden
	MANAGED CHRONIC DISEASE AND REDUCED TOXIC STRESS	Adverse child experiences
		Disability associated with chronic conditions
	REDUCED HEALTH CARE COSTS	Family health care cost
		Potentially preventable hospitalization rates
		Annual end-of-life care expenditures

FOR DISCUSSION