

ABSTRACT

VAN BAKERGEM, MARGARET ANNE. Exploring Health and Well-Being Considerations in Multifamily Real Estate Development (Under the direction of Dr. James Aaron Hipp).

The real estate industry has largely been left out of discussions among built environment and public health stakeholders about how to create healthy communities. Considering the rising rates of urbanization and the increased demand for multifamily housing, multifamily real estate developers are well-positioned to integrate healthy community and building principles into their decision-making. Multifamily developers' decisions around health and well-being (HWB) strategies may holistically contribute to curbing rising rates of chronic disease and enhance feelings of well-being. While most multifamily developers do not adopt a health lens in their approach to development, several early adopters are intentionally targeting health promotion in their projects. It is an emerging consideration and little is known about how these multifamily developers think and talk about health. Moreover, due to its nascence, limited literature is available within the real estate discipline, potentially delaying awareness of the benefits a health and well-being perspective can bring to how built environments are formed. This dissertation aimed to explore the emergence of HWB constructs in real estate literature and practice.

The three-article dissertation was guided by grounded theory principles. The first article explored the emergence of HWB in real estate literature using a descriptive keyword approach. The second article used multiple case studies of three multifamily developers deemed early adopters for pursuing health to gain insights into how HWB is conceptualized. Finally, the third article proposes a framework outlining the overarching principles of a HWB vision for real estate development. Together, the articles provide a foundation for how HWB is an emerging and worthwhile consideration in the multifamily development arena. Findings from this exploration highlight how multifamily developers can become integral participants among multidisciplinary

groups that actively attempt to plan, modify, develop, and program built environments to promote healthy behaviors and outcomes for communities at large.

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Exploring health and well-being considerations in multifamily real estate development

by
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DEDICATION

To my parents, Kathy and Dave.

BIOGRAPHY

Margaret earned a bachelor's degree in Psychology with an emphasis in neuroscience from the College of Charleston in South Carolina in 2007, and a master's degree in Public Health with an emphasis in chronic disease prevention and the built environment from Washington University in St. Louis in 2011. Whether studying human behavior via the brain or the built environment, Margaret has dedicated her academic and professional careers to researching health and well-being. Her nearly ten-year tenure as a Washington University School of Medicine employee shaped her affinity to high quality clinical research. Specifically, her time spent working on the Contraceptive Choice Project as a data analyst in the Division of Clinical Research in the Department of Obstetrics and Gynecology served as a turning point as she was introduced to the realm of public health and geographic information systems (GIS).

Growing up in the City of St. Louis, surrounded by architects and urban designers, she merged her appreciation for city form with health. After completing her master's degree, she spent a year working for the Prevention Research Center on various public health and built environment research projects. In 2012, she moved to Nashville, TN to work as a data and GIS analyst for the Growing Right Onto Wellness (GROW) project – a longitudinal randomized control trial aimed to test the efficacy of family-centered, community based intervention to prevent childhood obesity. She worked closely with built environment project stakeholders, including Nashville Metro Parks and Recreation.

Since 2009, Margaret has been a founder and board member of the Yantaló International Volunteer Organization, a non-profit organization based in Yantaló, Peru. With a mission to design and build a volunteer house in close proximity to a newly constructed medical clinic, her role on the board introduced her to sustainable property development. Her experiences on the

board of this international housing project guided her to better understand local development in Nashville. It was during this time that she realized that real estate developers play a tremendous role in making decisions about the built environment. This piqued her curiosity and eventually landed her in Raleigh, NC to pursue a Doctor of Philosophy degree in the Department of Parks, Recreation, and Tourism Management (PRTM) at North Carolina State University. After spending the entirety of her career in the realm of quantitative and spatial research, she entered the world of qualitative research as she explored how real estate developers think and talk about health. Her research was funded by the Robert Wood Johnson Foundation.

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I want to give a heartfelt and grateful nod to my family and crew.

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CHAPTER 1: INTRODUCTION

Overview

This study aims to explore how health and well-being is conceptualized by multifamily real estate developers. The rationales supporting this research include: 1) the opportunity to curb chronic disease and enhance well-being, and 2) the current and future demands of urban housing for multifamily developers. Together, these two relatively divergent arenas provides a mostly unconsidered opportunity to reposition multifamily real estate developers as health promoting entities. The overarching goal of this research is to use a multiple case study methodology as a way to gain deeper insights into how multifamily real estate developers think and talk about health and well-being in the context of their projects and decision-making. A grounded theory approach will guide the research process as well as theoretical input from diffusion of innovation and change management theories.

Health Concepts

The World Health Organization (WHO) defines health as a state of complete physical, mental, and social well-being and not merely the absence of disease (WHO, 2013). This definition represents health in its fullest sense. The following research focuses on two major facets of health: chronic disease and well-being. The former applies a health deficits approach, focusing on risk factors that lead to adverse health outcomes. The latter focuses efforts to achieve health through self-actualization, happiness and personal growth. Addressing chronic disease and well-being are critical for understanding the holistic connections between the health-promoting factors of the built environments that comprise broader communities.

Chronic Disease and Well-Being

In the United States, the rise of chronic disease (CD) as the leading cause of death and

disability (Centers for Disease Control and Prevention, 2017) has a complex, multidimensional history that continues to evolve today. Caused by a combination of genetic, behavioral, and environmental factors, chronic disease prevalence continues to increase and affect people of all ages, incomes, and regions nationwide. Heart disease, cancer, respiratory diseases, and type 2 diabetes are the most common of all health problems (CDC, n.d.). Examples of risk factors include physical inactivity (Fine, Philogene, Gramling, Coups and Sinha, 2004; Katzmarzyk, 2010), sedentary behavior (Katzmarzyk, Powell, Jakicic, Troiano, Piercy, and Tennant, 2019; Jones, Wen, Herring, and Evenson, 2016), poor nutrition (Dietz, Douglas, and Brownson, 2016) and smoking (Gordon and Flanagan, 2016).

Chronic diseases have financial implications in addition to adverse health outcomes. The total costs in the U.S in 2016 for direct health care treatment for chronic health conditions totaled \$1.1 trillion dollars – equivalent to almost 6 percent of U.S gross domestic product (GDP) (Waters and Graf, 2018). Of this, cost burdens associated with physical inactivity are estimated to have surpassed 11 percent of health care expenditures in the United States (Carlson, Fulton, Pratt, Yang, and Adams, 2015). Considering that overall national health expenditure is projected to grow, on average, 5.7 percent 2020 to 2027 – nearly approaching 20 percent of GDP (Sisko et al., 2019), it is likely that the cost of chronic disease will parallel these increased cost burdens.

More recently, chronic disease burdens have evolved to encapsulate loneliness and social isolation. Identified as biopsychological stressors, loneliness and social isolation are significant risk factors for chronic disease (Elovainio et al., 2017; Valtorta, Kanaan, Gilbody, Ronzi, and Hanratty, 2015). For example, loneliness and social isolation are closely associated with depressive moods, increased smoking, and physical inactivity. Prevalence data suggests

these stressors are approaching epidemic standings (Holt-Lunstad, 2017; Alum and Murphy, 2019). The presence of mental health aspects in chronic disease classifications suggests an overlap with well-being concepts. While there is no consensus around a single definition of well-being, the CDC describes well-being as the presence of positive emotions and moods (e.g., contentment, happiness), the absence of negative emotions (e.g., depression and anxiety), satisfaction with life, fulfillment, and positive functioning (CDC, n.d.; Diener, 2000; Ryff and Keyes, 1995). As such, loneliness and social isolation are important components of well-being. Provided the connection between chronic disease and well-being, the term *health and well-being* (HWB) will henceforth be used to encompass the holistic scope of health.

Health Promotion in the Built Environment

Many HWB promotion strategies focus on activities that encourage healthy lifestyles through environmental modifications. Public health, urban planning, and the design fields represent a strong interdisciplinary force that make decisions about how built environments – places built or designed by humans, including buildings, grounds around buildings, layout of communities, transportation infrastructure, and parks and trails – are designed and programmed. In the context of health, these collaborative forces are likely to advocate for built environments that shape opportunities to integrate healthy behaviors into daily lives.

Numerous studies have shown associations between built environment features and chronic disease prevention behaviors. Physical activity is believed to be a critical mechanism by which built environments can affect chronic disease (Sallis, Floyd, Rodriguez, & Saelens, 2012). For example, topics related to: active transportation policies, community- and street-scaled urban design and land-use policies, access to places for physical activity, and transportation infrastructure are known to facilitate physical activity behaviors. Research about

these built environment characteristics span physical activity behaviors across multiple domains: leisure, recreation, exercise, occupation, transportation, and household (Pratt, Macera, Sallis, O'Donnell, and Frank, 2004). Many research reviews are available (e.g., see: McCormack and Shiell, 2011; Cunningham and Michael, 2004; Brownson, Hoehner, Day, Forsyth, and Sallis, 2009; Smith et al., 2017; and Stappers, Van Kann, Ettema, De Vries, and Kremers, 2018).

Built environments can also have salutary effects on mental health and well-being. For example: 1) indoor environmental quality (Arif, Katafygiotou, Mazroei, Kaushik, and Elsarrag, 2016; Esfandiari, Zaid, Ismail, and Aflaki, 2017), 2) biophilia (Grinde and Patil, 2009; Heerwagen, 2009; Gillis and Gatersleben, 2015; Abdelaal and Soebarto, 2019), 3) restorative properties of nature (Pasanen, Ojala, Tyrvaainen and Korpela, 2018; Hines, 2019; Bunds, Casper, Hipp and Koenigstorfer, 2019), 4) access to parks and green spaces for nature (Tsai, McHale, Jennings, Marquet, Hipp, Leung, and Floyd, 2018), and 5) places that enhance social capital (Walsh and LaJoi, 2018; Mouratidis, 2018; Moore et al., 2018) are elements of well-being of that are influenced by built environment characteristics.

The connections between health and well-being and the built environment are significant, longstanding and multifaceted. Because of these important connections, researchers consider that ZIP code is a better predictor of health than genetic code (RWJF, 2013). Many built environment decision-makers responsible for collaboratively shaping communities - such as architects, urban designers and planners, public health officials, parks and recreation leaders, and policymakers - understand the health and place connection. However, real estate developers are notably absent from these HWB collaborations.

Real Estate Concepts

Role of Real Estate Developers in Built Environment Decision-Making

Real estate development is a complex process which entails the orchestration of finance, materials, labor and expertise by many actors within a wider, social, economic, and political environment. (Guy and Hanneberry, 2008). Real estate developers must navigate these processes and environments as they reconfigure built environments; they act as the project sponsor, planner, and manager (Niu, Lechler and Jian, 2010). Typically, developers create, imagine, fund, and control development projects from beginning to end; therefore, their decisions and practices heavily influence the formation of our urban fabric. The implementation of future healthy built environments may be increasingly reliant on the practices and choices of the real estate developers who participate in creating these spaces. Currently, however, the considerations surrounding HWB principles as they relate to the built environment remain largely unconsidered, unmeasured, and unknown.

Multifamily Real Estate

Health and well-being environments are often conceptualized as near-home places. These spaces include homes, neighborhoods, and frequently traveled routes (Sallis, 2009). Therefore, to expand built environment collaborations to include the real estate sector, multifamily developers are well positioned to integrate modifications within their project processes to better support healthy developments. Based strictly on design, multifamily housing refers to a building that contains more than one dwelling unit. The U.S. Census Bureau considers multifamily housing to be a structure with five or more dwelling units. Based on forms of ownership, multifamily units can be rented to residents, such as in apartment buildings. Units can also be owner-occupied, such as in condominiums. A condominium is an

arrangement where the household has individual ownership of its unit (the space enclosed by the unit's interior walls) plus an undivided ownership interest in the property's common elements (Schmitz, 2000).

Multifamily Growth and Urbanization

The multifamily sector is well-positioned to engage in health and well-being strategies in forthcoming projects. Inevitably the multifamily sector must respond to rapid urbanization and the growing demand for housing. The United Nations notes that a fundamental shift in the world's population from predominantly rural to predominantly urban has officially crossed the halfway mark, with signs of continuing urban influx. The global percentage has been surpassed in the United States - the degree of urbanization in 2018 was about 82 percent (Plecher, 2020). As a response to a strong urban population influx, multifamily developers will continue to build to meet demand; 2020 projections conclude that multifamily completions will total 280,000 units. Comparably, 2018 completions were around 240,000. Further, the U.S. Department of Housing and Urban Development estimates that by 2030, another 4.6 million new multifamily units will be needed to meet housing needs (U.S. Department of Housing and Urban Development, n.d.). Additionally, the National Apartment Association suggests that by 2030, almost 12 million older existing apartments could need renovation. Meeting these projections affords multifamily developers an opportunity to integrate novel strategies, such as HWB considerations, into their decision-making, renovations, and built environment modification strategies.

Health and Real Estate Concepts

Emergence of Health and Well-Being Considerations in Real Estate Sectors

While the majority of multifamily developers are late to discussions about health and well-being strategies, a precedent exists within other real estate sectors. For example, a small sample of commercial real estate (CRE) developers are engaging in HWB principles. Commercial real estate properties are exclusively used for business purposes. They provide workspace rather than living space and are typically leased to tenants to conduct business. Several CRE entities have adopted newly developed healthy building certification systems that emphasize the health and well-being of occupants. The most notable certification systems include the WELL Building Standard (WELL) and the Facility Innovations Towards Wellness Environment Leadership (Fitwel). While these certifications will be explored in subsequent sections, their recent emergence is notable; WELL was released in 2014 and Fitwel in 2016. The considerations of HWB represent a burgeoning field but remain the exception in real estate markets. In other words, health and well-being, in a certified format, is far from a normalized practice. However, signs indicate that targeting HWB to improve health of building users is growing. For example, the certification systems have recently been adapted to include multifamily real estate typologies.

The expansion of healthy building certifications is a promising step towards legitimizing the value of health from a real estate perspective. The existence of multiple certification systems specifically centered on health promotes health as a novel differentiator for real estate markets – an important criterion for developers who try to set their projects apart from local competition. Moreover, due to the release of the rating systems, discussions of health are gaining more exposure with real estate professionals. The Urban Land Institute

(ULI) represents the oldest and largest network of cross-disciplinary real estate and land use experts in the world (2020). In 2015, they released the Building Healthy Places Toolkit. As a health initiative, the toolkit targets developers, owners, property managers, designers, and investors by outlining recommendations to enhance health through changes in approaches to buildings and projects.

Challenges of Considering Health and Well-Being in Multifamily Projects

Despite the emerging guidelines and rating systems, there are several challenges preventing HWB from becoming mainstream. Probable challenges to considering HWB may be its novelty. In general, common barriers for implementation of new strategies include lack of: awareness, knowledge, reinforcement, control, social norms, leadership, and facilities (Grol and Wensing, 2004). At an individual level – for example, from a multifamily developer perspective - salient factors in preventing a health agenda include lack of awareness, lack of familiarity, lack of agreement, lack of self-efficacy, low expectancy of favorable outcomes, lack of motivation, and perceived external barriers beyond the control of the individual (2004).

In the context of this research, lack of awareness, lack of familiarity, and lack of leadership will be explored. Causes of lack of awareness of the benefits of adopting a health lens in real estate may mostly be determined by its recent market presence. Unpacking lack of familiarity may be more complex. First, the term “health” encompasses a broad vocabulary and many contexts. Even narrowing the concept to “physical health” presents challenges of what is actually being defined. Health and well-being can acquire different meanings depending on the discipline (e.g., public health, architecture, real estate), context (e.g., individual level health, community health, interpersonal, etc.) and temporal nature (e.g., cross-sectional, longitudinal, lifespan). Second, lack of familiarity limits incentives for innovation within the

real estate industry by making it more difficult for developers that *successfully* target HWB strategies to differentiate themselves competitively (Trowbridge, Pickell, Pyke and Jutte, 2014).

The ‘lack of leadership’ barrier to considering health and well-being in multifamily projects could be better understood using research and practice settings. Investigating HWB insights within emerging literature, as well as among early adopters in practice, may provide a foundational understanding of its current state of science and provide next steps for how to move the development of healthy communities forward.

Dissertation Focus

The purpose of this dissertation is three-fold. First, this research aims to explore and describe how health and well-being is emerging within real estate literature. Since HWB is on the frontier, it is presumed the subject of health and well-being remains understudied in real estate literature. At the same time, burgeoning connections to HWB may be notably interspersed, indicating a noteworthy and forthcoming topic of research. Second, this research aims to gain a deeper insight, from developers’ perspectives, about how health and well-being is conceptualized in multifamily real estate. There are early adopters within the multifamily development sector who deliberately target HWB, and for this study, three were approached to understand how they think and talk about health. Specific tactics and strategies were also explored. Third, this dissertation proposes a framework outlining key principles needed to establish a health agenda in real estate development projects. This will be accomplished using an article-style dissertation; three papers independently and collectively contribute to the overall aim to generate a foundational understanding of how health and well-being is becoming an established and purposeful approach in multifamily development.

Research Objectives and Questions

Article 1 Objective: to describe the emergence of health and well-being topics using keyword data from academic literature from 2000 to 2019.

- RQ 1.1: How did real estate literature respond to the green building movement?
- RQ 1.2: Is there an emerging real estate literature response to health and well-being?

Article 2 Objective: to gain an in-depth understanding of how health and well-being is conceptualized and implemented by multifamily developers using a multiple case study approach

- RQ 2.1: How do early adopter multifamily real estate developers from three different price points talk about health?
- RQ 2.2: What health and well-being strategies are implemented in the developers' projects?

Article 3 Objective: to propose a framework that encompasses the principles for repositioning real estate development as health promotion process.

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CHAPTER 2: THEORETICAL APPROACHES TO THE RESEARCH PROCESS

Theoretical Overview

To understand health and well-being conceptualizations holistically and in the context of multifamily real estate, this study will cater the theoretical approach by utilizing both ‘top-down’ and ‘bottom-up’ techniques. Organizational change and market transformation theory (top-down) will be used to explore real estate precedents and a grounded theory (bottom-up) approach will be adopted to guide research processes, methods, and analyses.

As a larger worldview, and in line with qualitative inquiry, this research is ontologically viewed from an interpretivist position. The purpose of exploring conceptualizations of health and well-being – both how their understandings converge and diverge – from developers’ viewpoints implies a worldview of multiple subjective realities. Gephart (1999) states that interpretivists assume knowledge and meaning are acts of interpretation and so there is no objective knowledge; the understanding of phenomena is rooted in the meaning people assign to them. Lincoln and Guba (1985) state that realities depend on other systems for meanings, essentially negating the ability to focus on a fixed reality. Thus, interpretivists believe that no amount of inquiry will converge on one single reality because multiple realities exist and are able to change. This makes it important for researchers to know the context of behavior or event before assigning meaning (Hudson & Ozanne, 1985). Illuminating the importance of context, such as the various perceptions of health and well-being strategies, is crucial and perhaps more important than the explanatory results of the research inquiry (Charmaz, 2006). Adopting the ontological assumption of interpretivism for this research has useful implications for practice. The primary benefit – and the primary reason for why interpretivism is suitable – is that it will use the voices of participants (i.e., multifamily developers) to demonstrate their

realities surrounding health and well-being. It gives their conceptualizations an identity that will ultimately form the groundwork for a health and well-being consensus.

Grounded Theory

Grounded theory, originally developed by Glaser and Strauss (1967) is widely viewed as a reliable method by which to investigate social and organizational structure. The goal of grounded theory (GT) is to generate theory while simultaneously collecting and analyzing data. In this sense, grounded theory refers to both the research product and the analytic method of producing it (Charmaz, 2008). As an inductive strategy, GT provides guidelines on how to identify categories, how to make links between categories, and how to establish the relationships between them. As a theory, GT is the end-product of this process – it results in an explanatory framework with which to understand the phenomenon under investigation. There is a certain degree of flexibility with using a GT approach. For example, the process encourages researchers to continuously review earlier stages of research and if necessary, change direction. Further, Corbin and Strauss (1990) state that the procedures used in GT are neither automatic nor algorithmic; the researcher is not compelled to adhere to a linear structure. The recursivity of qualitative research allows researchers to continuously revise and iterate the research process to gain the most comprehensive and in-depth understanding of the phenomenon under study.

Grounded theory has undergone various epistemological discussions that have resulted in different models of the method. One divergent path has been a social constructivist approach. This application of GT encourages innovation; researchers can develop new understandings and novel theoretical interpretations of studied life (Charmaz, 2008). Charmaz (2000, 2006, 2008) and Clarke (2005, 2008) outline a constructivist viewpoint of GT. First,

reality is multiple, processual, and constructed – but constructed under particular conditions. Second, the research process emerges from interaction. Three, it takes into account the researcher’s positionality, as well as that of the participants. Finally, the researcher and the researched (i.e., multifamily developers) co-construct the data – the data are a product of the research process, not solely observed objects. It is important to note Charmaz’s use of the terms constructivism and social constructivism are often used interchangeably and exist under the generic term constructivism (Andrews, 2012). Other grounded theorists (Young & Colin, 2004; as cited by Andrews 2012) separate the terms: constructivism proposes that each individual mentally constructs worldviews through cognitive processes while social constructivism has a social rather than individual focus. In the context of this dissertation, developers can be viewed as both individuals and as constituents working under defined organization principles. The current research could adopt a constructivist view (individual) and focus on individuals within the multifamily development organization. However, developers within the organization are inherently influenced from external sources, alluding toward a stronger social influencer. Their social constructs are formed by outside market forces, through both developer competition and the end-users. Because of the nuanced interplay within and between the development organizations, Charmaz’s social constructivist approach to GT is most suitable for this dissertation.

The role of contextual reference is also important. Using a social constructivist grounded theory strategy assumes that the researchers are not aiming to achieve parsimonious explanations and generalizations devoid of context; rather, applying a constructivist view aims for an interpretive understanding of the studied phenomena that accounts for context. For this project, the developers’ voices will be as integral to the analysis as the researcher’s views. It is

expected the multifamily developers will have different ideas and criteria about health and well-being in their projects and these will be illuminated through rich descriptions and context. Moreover, an additional differentiator is added through the selection of varying the multifamily price points. This segmentation of multifamily models will add an important layer into uncovering an in-depth understanding of how health and well-being is conceptualized across different social, economic, and environmental settings.

Sensitizing Concepts

Whereas traditional deductive methodologies derive research questions and hypotheses from theoretical models and test them against empirical evidence, inductive strategies often begin the process of inquiry using sensitizing concepts. Blumer (1954, 1962) suggests this is a good starting point for grounded theory and describes them as concepts that give the researcher a general sense of references and guidance in approaching empirical instances. They are aimed to provide directions along which to look – to give orientation to researchers (Bowen, 2006; Bowen, 2013). Similarly, Charmaz (2003) notes that sensitizing concepts are the background ideas that inform the overall research problem. One background idea for this dissertation was the green building movement and its establishment of environmental sustainability as a normative part of built environment practice, policymaking, and investment (Trowbridge, Worden, Pyke, 2016). This movement represents an example of the real estate sector repositioning its traditional way of thinking in response to a large societal concern – climate change. In a similar manner, this research was also oriented by the concurrent societal concerns of chronic disease and rapid urbanization; exploring if there is potential for multifamily real estate development to undergo a similar repositioning to become promoters of health

Theory of Organizational Change

While this project proposes using grounded theory to undergird the research process, there are additional deductive theoretical frameworks that can be jointly adopted to guide the exploration of health and well-being considerations within multifamily real estate. One such realm is organizational change theory. Real estate development constitutes a large and global business enterprise. For example, the U.S. housing sector contributes, on average, 15 to 18 percent to the gross domestic product (National Association of Home Builders, n.d.). As such, it is necessary to understand the theoretical foundations of the business process. In this context, the mechanisms through which health and well-being become integrated into decision-making represents both an innovation and a trigger for organizational renewal (Hailey, 2001), or change.

Viewing health and well-being as a change agent within an organization represents a *paradigm innovation* - or, a change in the underlying mental model that frames what the organization does (Tidd and Bessant, 2018). A paradigm innovation is driven by the ability to see connections or opportunities, take advantage of them, and mobilize the *knowledge* to deliver a novelty (2018). The current research aims to discover if, from a multifamily developer perspective, the ability to connect HWB ideas into projects can generate new knowledge that could essentially change how the organization goes through the real estate process. This type of knowledge-based change can be leveraged as a market differentiator (Erichsen, Pedersen, Steinert, and Welo, 2016; Stenmark, 2000) and would be considered a successful organizational change outcome.

There are several ways paradigm innovations can operate to create a new way of thinking for developers. For example, individuals in organizations work within a created

culture from which they derive a paradigm, or mindset, that enables them to make sense of their daily organizational operations (Johnson, 1990; Van de Ven and Rogers, 1988). With a paradigm innovation, the passage from one competence to a new one poses the problem of acquiring new information, which will ultimately be filtered by mental models which reflect the old competence (Muffato, 1998). In other words, a paradigm innovation creates a new social reality, prompting a contradiction between the “old and the new.” To fix this contradiction, projects must be implemented that are at odds with the old competencies (Hailey, 2001). This becomes relevant with multifamily developers and their financial competencies. Their traditional approach is to account for as much uncertainty as possible to lower risk and increase financial viability. However, this “old” model may be jeopardized when implementing innovative strategies, like HWB, where valuation is not yet recognized. One way to overcome the uncertainty is to learn about the innovation and mobilize the knowledge (Calantone, Cavusgil, and Zhao, 2002; Hailey, 2001; Tidd and Bessant, 2018) in a way that can be implemented and tested in the market. Thus, gaining the explicit and tacit knowledge needed to reduce uncertainty surrounding HWB will require a type of multifamily developer willing to take a chance on innovation. These types of multifamily developers are called early adopters and represent important actors within the diffusion of innovation pathway.

Theory of Diffusion of Innovation

The diffusion of innovation (DOI), originally developed by Rogers (1962), aims to understand how new ideas, processes and products diffuse and spread over time among members of a social system (Rogers, 1995). When innovation is the driver to change, there are overlapping elements with organizational change theories and DOI. For example, in the same

way that an organizational innovation can be classified as a new: product, process, position, or paradigm (Tidd and Bessant, 2018), Rogers (2003) defines an innovation as an idea, practice, or object perceived as new by and individual or other unit of adoption. The paradigm classification aligns with the idea category in DOI. Accordingly, the innovation considered for this dissertation is the idea of integrating HWB considerations into multifamily development projects. The unit of adoption is the developer enacting the considerations.

The evaluation of innovations is a constant process, dependent on the amount of time the innovation has been in the diffusion pathway. For example, the innovation decision process is when the decision-making unit passes from: 1) first knowledge of an innovation (i.e., knowledge stage), to 2) forming an attitude toward the innovation (i.e., persuasion stage), to 3) a decision to adopt or reject (i.e., decision), to 4) implementation of the new idea (i.e., implementation), and to 5) conformation of this decision (i.e., confirmation) (Rogers, 2010). Currently, HWB as a multifamily developer innovation fluctuates between the knowledge and persuasion stages. Developers may first learn of HWB through, for example, unintentional exposure to the WELL Building Standard by a client or investor. They were not actively pursuing HWB but became knowledgeable about it as a potential concept worthy of exploration. Developers who intentionally seek HWB resources are more likely in the persuasion stage. As they learn and develop knowledge about HWB concepts, they are actively forming attitudes about if or how they will continue the process. The fluctuation depends on adopter categories: innovators, early adopters, early majority, late majority, or laggards. Multifamily developers who are willingly able continue beyond the persuasion stage - to transition from “old to new” - as they target HWB as early adopters. Examples of early adopter characteristics include having a more favorable attitude toward change and a greater ability to

cope with uncertainty and risk (Rogers, 2010). In this way, they are more likely to mobilize knowledge about what it means to pursue health and well-being in a multifamily context. Early adopters are in the midst of implementing a paradigm innovation; they are driven by some connection to health and well-being and this dissertation aims to unpack these conceptualizations.

Overview of Research Methodologies

- Objective 1: to describe the emergence of health and well-being topics using keyword data from academic literature from 2000 to 2019.

The first study used keywords to explore the patterns of emergent research topics. Using the green building movement as an analogous example of how innovative concepts can diffuse within literature, keywords related to health and well-being were longitudinally mapped across almost twenty years of real estate literature to highlight if and how health was emerging as a topic of interest from a real estate research perspective.

- Objective 2: to gain an in-depth understanding of how health and well-being is conceptualized and implemented by multifamily developers using a multiple case study approach.

The second study used a multiple case study of three private multifamily developers deemed early adopters for including health and well-being strategies in projects. A multiple case study approach, described by Creswell (2017), is a method in which a researcher explores multiple real-life, contemporary bounded systems over time, through detailed, in-depth data gathering involving multiple sources of information. Similarly, Yin (2017) describes comparative case studies as a distinctive means of empirical inquiry particularly suitable for exploring the how and why of phenomena within a real-world context. The multiple approach adds an additional

layer by providing a means to examine a multiplicity of perspectives to illustrate patterns and compare ideas and processes (2017). In this sense, contextual conditions and rich complexity can be captured and compared with the goal of more fully understanding health and well-being through various types of multifamily development – luxury, market-rate, and mixed-income. Each case illuminated different essences of how health and well-being is considered.

- Objective 3: to propose a framework that encompasses the principles for repositioning real estate development as a health promotion process

The third study used the themes that arose from the multiple case study to develop a conceptual framework. The framework establishes an overarching view of critical elements needed to shift traditional real estate processes to one that maintains health and well-being at the forefront of development decision-making.

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CHAPTER 3: FROM GREEN TO HEALTH: KEYWORD INDICATORS IN THE ADOPTION OF INNOVATIVE CONCEPTS IN REAL ESTATE LITERATURE

Introduction

This paper explores the emergence of health as a topic of interest within the real estate industry. The notion of merging health considerations into real estate practices stems from the green building movement and the respective shift the real estate industry underwent as a response to climate change. Connecting climate change to real estate is critical; in the built environment, buildings are significant emitters of carbon dioxide – a greenhouse gas and major contributor to climate change. In the same way the real estate industry was influenced to rethink their built environment decisions around climate change, improving population health at the built environment level will require a similar comprehensive change of practice (Trowbridge, Worden, and Pyke, 2015). To explore this potential parallel, this paper will draw on a vast literature base using keywords across built environment, public health, and real estate literature domains to discover if and how public health topics are evolving within real estate literature. Using a vast literature base serves as a mechanism of surveillance to capture areas of interest and evolution in practice settings.

Background

Targeting Public Health in the Built Environment

Chronic diseases, such as cancer, diabetes, cardiovascular disease and mental health conditions remain the leading cause of death and disability in the United States (CDC, n.d.). Mitigation strategies focus on public health interventions and policies aimed to reduce risk factor prevalence, decrease acute and chronic disease burden, and promote health behaviors (Goodman, Bunnell, & Posner, 2014). Focusing such public health interventions at broader

socio-ecological (Bronfenbrenner, 1986) levels is critical; it is increasingly evident that efforts focused solely on individual behaviors have little overall effect if the broader built, societal and policy environments do not change in parallel (Allen & Feigl, 2017). Further, the ongoing emphasis on individual healthy choices may deter a shift towards more effective population-level policies aimed at promoting healthy community development (2017). Physical inactivity, while an individual behavior, is largely influenced by the built environment (Handy et al., 2002; Sallis et al., 2016). The World Health Organization (2018) lists physical inactivity as a major contributor to chronic disease and ranks it the fourth leading risk factor for overall morbidity and mortality worldwide. Thus, to promote *active living* – a way of life that integrates physical activity into daily routines - access to built environment features such as green spaces (i.e., parks, reserves, sporting fields, riparian areas, greenways and trails, community gardens, and conservation areas) and transportation systems (i.e., infrastructure and policies that support bicycling and walking for utilitarian, recreational, and leisure purposes) are critical for reducing levels of physical inactivity (see reviews: McCormack and Shiell, 2011; Brownson, Hoehner, Day, Forsyth, and Sallis, 2009; Stappers, Van Kann, Ettema, De Vries, and Kremers, 2018; and Smith et al., 2017). Provided that ZIP code may be a better predictor of health behavior than genetic code (RWJF, 2013), the diverse field of stakeholders involved in the design, construction, and operation of the communities in which people live and interact have an opportunity to contribute to the development of healthy communities. For example, many disciplinary actors from urban planning, landscape architecture, and public health are already actively involved in these efforts. Yet some built environment stakeholders remain more distal in actively promoting health.

Role of Real Estate Stakeholders in Built Environment Decision-Making

The intentional integration of health promotion strategies into decision-making remains challenging and largely unconsidered for stakeholders within the real estate arena (Trowbridge et al., 2014). In general, the territory of real estate is confronted by a diverse set of processes: lending, investing, financing, governing, developing, marketing, appraising, and more (Diaz, 1993). Together, these systems are shaped by political, social, economic, and physical environments. Further, these interrelated processes ultimately shape, in significant ways, the form of built environments in which people live, work, play, and learn. Few stakeholders involved in these processes consider the connections between how the built environment they create can influence positive health behaviors and outcomes in a meaningful way. Obstacles stem from a lack of awareness of how adopting a health lens can provide added value throughout the development process (Rider, van Bakergem, Park, Wang and Hipp, 2018). This lack of awareness means that the in-house expertise needed to support a successful shift toward health is nonexistent.

Real Estate Developers Becoming More Engaged in Health

However, the level of interest regarding the potential value of health may be increasing; real estate *developers* are increasingly interested in connecting with health care and public health sectors in developing healthy environments (Trowbridge, Pyke, Worden, 2015). Developers play an active role throughout the process of delivering real estate projects: idea conception through operations or sale. These entities are responsible for planning, designing, financing, and creating a team to execute the project. As such, beyond their fiscal responsibility, developers ultimately contribute to citizens' well-being as they build and reconfigure the fabric of communities. The cross-disciplinary connections between health

promotion, disease prevention, and real estate development are emerging, but ultimately remain the exception; these connections have yet to be normalized into development practices (Trowbridge et al., 2014). Successful real estate practices require understanding not only how to develop financially viable projects but also how to determine their impacts on communities.

Real Estate Developers Adapting to Change and Innovation

Development is dynamic; the conditions that enabled developers to be successful in the 20th century are different than those to be seen in the 21st. As societal conditions and market demands change, developers accordingly adjust their practices to remain relevant, competitive, and successful (Runde & Thoyre, 2010). Given this ability to modify how they approach real estate projects, developers are positioned to advance novel techniques and transform building practices. For example, the now-ubiquitous link between building design, construction, and operations to greenhouse gas emissions demonstrates a successful transformation toward green building practices. Awareness of global warming and the extent of greenhouse gas emissions have focused more attention upon energy efficiency in buildings (Kok, McGraw, Quigley, 2012). Developers who initially participated in the market shift around more efficient buildings adjusted their skill sets and their measures of financial success as a response to the larger global concern of climate change. Now, most stakeholders in the development arena are aware of the green building phenomenon and its associated benefits and challenges, whether they choose to adopt environmentally-friendly practices or not. Moreover, the decision to adopt green building practices is now largely based on accessible and reliable processes that factor in financial performance; sustainability features can be capitalized into project budgets. This research aims to conceptualize a similar path with health from an *active living* perspective. While the benefits and challenges of health are mostly unknown in the real estate industry,

emerging trends may indicate a forthcoming shift in development practices – indicating a similar path to the once unfamiliar idea of green building. Specifically, the analogous green building movement will be used as a parallel to understand the current relationship between real estate and health.

Green Building Precedent

Tracking the Transformation of an Industry

While buildings are a necessary part of the environmental, economic, and social systems of communities, they drastically degrade environmental resources (Chavan, 2005). The detrimental impacts reached a tipping point in the mid-1990s, spurring a slow but widespread adoption of energy efficiency standards with goals to reduce greenhouse gas (GHG) emissions and increase sustainable development. Collectively, building construction, operation, and maintenance account for over 40 percent of carbon dioxide emissions in the United States – more than any other sector (EESI, n.d.; EIA, 2019). Efforts focused on transforming the built environment to be more energy-efficient and climate friendly can increase the capacity of building construction practices. In the real estate sector, the opportunity exists to combat the negative effects of climate change while maintaining a differentiating advantage - a critical criterion for the real estate industry.

The U.S. Green Building Council (USGBC), a private non-profit organization, developed the Leadership in Energy and Environmental Design (LEED) green building certification system. It is the most widely used green building rating system in the world (USGBC, 2019; Stanley, 2019). It provides a framework to create highly efficient and cost-saving green buildings, with certification being regarded globally as a symbol of sustainability achievement (2019). Buildings certified for energy efficiency or sustainability incorporate strategies that reduce resource usage and operating costs. From a real estate perspective, these

benefits contribute to increases in rents, occupancy rates, and asset valuations. Among certified buildings, incremental energy savings can now be roughly capitalized into asset values (Kok et al., 2011) and economic returns (Deng and Wu, 2014). These demonstrable advantages act as important incentives for integrating green building in to real estate. The value of pursuing sustainable strategies is clear through the increased rate of green building adoption across all real estate typologies (e.g., commercial, residential, etc.). For example, a 2017 index that measures the growth and uptake of energy efficiency and sustainability in buildings shows a 38 percent uptake across 30 office markets in the United States. It was less than 5 percent in 2005 (Gunby, 2017; CBRE, 2017).

LEED began piloting their rating system in 2000. By 2002, 22 buildings were certified and 465 registered to undergo certification, indicating that green building practices were a niche concept and seemingly for the committed few, mainly in commercial settings. By 2009, however, cumulatively, there was a total of 22,000 certified and registered buildings. Out of a total inventory of 5 million commercial office buildings, this 2009 statistic represented a penetration rate of only 0.004% in the U.S. Despite these low absolute numbers, the market has seen a rapid rate of growth in certified or registered LEED properties; the rate of growth of LEED certified buildings has been over 11,000 percent since 2002 (Goering, 2009). In 2018, the number of cumulative LEED registrations in the United States surpassed 67,000. In addition to the office sectors, diverse building typologies are adopting green strategies. The USGBC reports that in late 2017 nearly 1.6 million residential units were LEED registered or certified. Additionally, more than 3,050 healthcare projects are participating in the LEED system. In education settings, more than 2,000 K-12 projects and more than 4,200 higher education projects were LEED certified (USGBC, 2017).

The creation, implementation, and widespread adoption of green building tools and practices have largely been based on principles of market transformation. In the context of green building, market transformation is defined as a strategic process of market intervention that aims to remove barriers and create incentives for built environment decision makers' prioritizing energy efficiency on a broad scale (Trowbridge, Worden, Pyke, 2016). This closely mirrors the diffusion of innovation (DOI) theory (Rogers, 1962) which seeks to explain how and why new ideas are spread. Changes in design, engineering, construction and facility management criteria, once only new ideas, have been so strongly driven by green building considerations that the diffusion of these practices are now widespread. Trowbridge et al. (2016) also discusses market disruption at local, state, and national levels as policies were established to promote sustainable building standards. Policymakers' attention to green building practices led to the introduction of certification requirements into building codes, master planning, and publicly funded projects such as schools and government buildings.

Moreover, the real estate industry seeks to leverage market demand, improve building performance and overall cost savings to differentiate their projects and maintain a competitive return on investment. CoreNet Global, a nonprofit corporate real estate association, released survey results in 2009 as green building was becoming more prominent, indicating that 70 percent of commercial real estate executives cited sustainability as a critical business issue and 89 percent considered these topics in their real estate decisions (Runde and Thoyre, 2009). Additional research shows that business incentives include possible rental premiums, reduced holding costs (due to lower vacancy rates and higher tenant retention), reduced operational costs (due to energy and utility savings), reduced depreciation (linked to use of latest

technologies), and reduced regulatory risks (Fuerst & McAllister, 2011; Zhang, Wu, & Liu, 2018; Simons, Robinson, & Lee, 2019).

In addition to addressing green building practices through a business lens, the real estate industry also pursued sustainability from a tenant/occupant perspective to understand how tenants benefit from choosing sustainable properties. Benefits for tenants are framed with reduced operating costs of the building (mainly associated with energy and utility savings), improved productivity of the occupying business (associated with reduced staff turnover and absenteeism), possible tax incentives, and other competitive advantages linked to marketing and image benefits (Fuerst and McAllister, 2011; Nappi-Choulet and Decamps, 2013). In a separate study, construction professionals, including developers and architects, were surveyed to understand the barriers and incentives for implementing LEED certification. Citizens' interest, public outreach, and social responsibility were seen as most important incentives, indicating the nuanced nature of meeting financial and social objectives (Marker, Mason, & Morrow, 2014). Currently, there are signs that green building practices may no longer be a distinguishing differentiator. Evidence suggests maturation in most markets; green building has been normalized and is no longer considered a transformational approach that would boost marketing efforts (Global GBC, 2018). In other words, green building practices eventually transitioned from noteworthy to standard practice.

Exploring Early Stages of Health and Well-Being in Real Estate Development

Reviewing the transformation of the real estate industry regarding green building provides a parallel path for researching the uptake of health and well-being concepts. For the first time in 2018, the Global Green Building Council reported 'health' as a newly added trigger in pursuing green building practices (Global GBC, 2018). While vague terminology, this represents a promising indicator that considerations about *occupant* health rather than

building health have the potential to once again shift the real estate sector. However, this concept remains understudied and unknown as a valuation attribute in decision-making. Similar to green building benefits, forward thinking real estate developers are becoming more interested in adopting health strategies to differentiate their projects for end-users and investors (Trowbridge, Worden, and Pyke, 2016) while tapping into the nearly \$1 trillion physical activity economy (Global Wellness Institute, 2019). Currently, the limited literature available about real estate and health involves interior settings and end-user comfort or satisfaction. The World Building Council (2013), pulling from the sustainability movement, notes that green attributes of buildings can enhance indoor environmental quality, therefore resulting in healthier and more productive occupants. Additionally, end-user satisfaction with interior temperature, humidity, airflow speed, visual conditions, and air quality were higher in green buildings compared to conventional, non-green buildings (Zhang & Altan, 2011); these factors notably impact health. A Harvard study found that occupants in green certified buildings could score 26% higher in cognitive function tests, report 30% fewer symptoms of sick building syndrome, and enjoy 6% higher sleep quality than non-certified buildings (MacNaughton et. al, 2017; Zhang, Wu, & Liu, 2018). This focus on interior spaces, however, may not be appropriate for assessing broader health connections to the built environment.

More importantly, the scope of the interior building environment is selectively niche in the arena of developers' decision-making. Focusing on building interiors ultimately limits influence on holistic health, especially considering real estate projects attend to various scales: unit, building, site, and the wider community. There is opportunity for real estate developers to incorporate a holistic approach to health considerations that spans the broader scales. For example, targeting chronic disease could focus more attention on active living and other health

promotion efforts at the site and community levels. However, to date, literature exploring this more encompassing facet of health is lacking.

Nontraditional Techniques Needed to Explore Links between Real Estate and Health

As researchers begin to explore the relationships between public health and real estate disciplines, traditional approaches to understanding literature may not suffice. Traditional academic literature reviews are fundamental in highlighting research gaps within well-studied fields, yet are unlikely to capture emerging or understudied concepts that have a limited literature supply (Radhakrishnan et al. 2017; Zhang et al, 2012). Novel methods are therefore necessary to capture emerging literature trends.

One method, aided by advances in information technologies, includes observing keyword appearances across disciplines to track a rising collaborative research domain (Takeda, Mae, Kajikawa, & Matsushima, 2009) - here, real estate and health. Article metadata contains 'knowledge entities' and are comprised of keywords, topics, and subject categories. Metadata can be generated via author or automatically by the journal or database as a method of indexing for online article retrieval (Uddin, Khan, and Baur, 2015). Viewed as "evolution footprints" of intellectual turning points, tracking keyword trends and patterns can be indicative of new research fronts or innovations in practice (Chen & Guan, 2011; Latour, 1999). For example, in a study tracking digital innovation, keywords such as "big data", "social media", "mhealth", and "digital earth" were used to show the pivotal turning point into the digital era. These keywords highlighted the transformations in management modes and business models, which need to align with new digital technologies (Zhang, Meng, Chen, Yu, Sun, de Pablos, and Wei, 2017). Using keywords is a good fit for thematic knowledge discovery and pattern amplification. Thus, if adopting a keyword methodology could

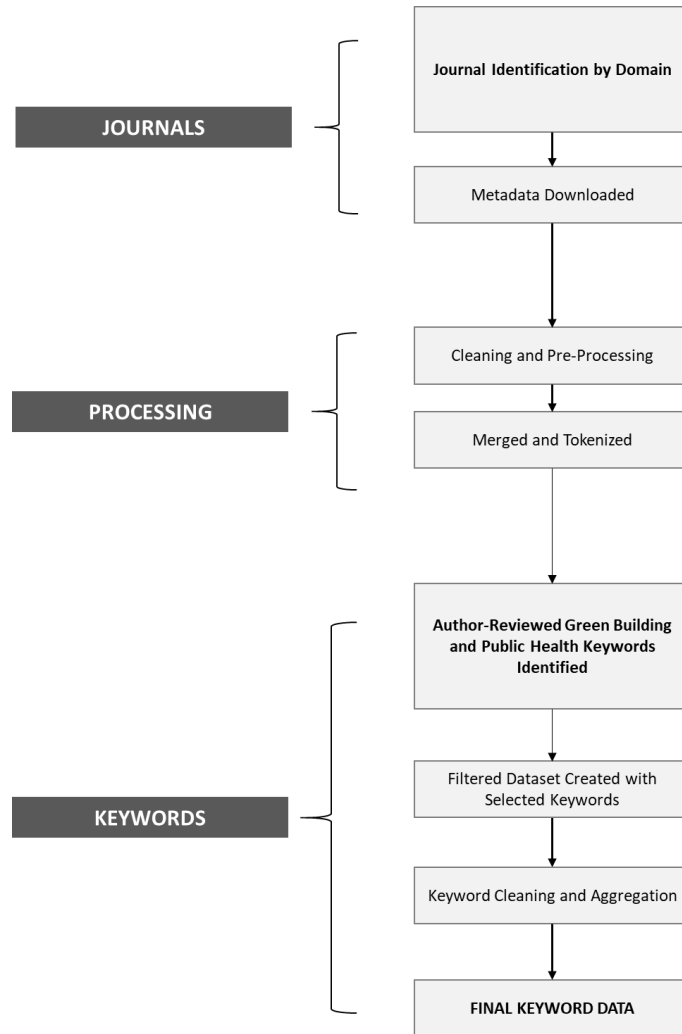
successfully capture an already established trend in the real estate industry, such as green building, then keywords may serve as a reliable source to amplify a similar, yet burgeoning, trajectory with health and well-being.

As such, the purpose of this article is twofold. First, descriptive keyword analyses will track the evolution of the green building movement by observing the integration of green building terms in real estate academic literature. Second, a similar descriptive keyword analysis will explore emerging and thematic developments surrounding health and well-being at the nexus between public health and real estate literature.

Methods

This research is descriptive and exploratory. Three primary literature domains guided the journal selection process: 1) Built Environment, 2) Public Health, and 3) Real Estate. From the selected journals, all metadata, including keywords, were downloaded into a database. Boolean syntax was then applied to the database to extract two sets of keywords – one related to green building and the other related to health. To gauge the temporal components of green building and health topics, journal downloads spanned the years 2000 through 2019. This section describes the journal selection process, the gathering of keywords, and the processing steps to obtain the final two sets of keyword data (green building and health) for the descriptive analyses. Figure 3.1 outlines the data process beginning from journal selection, spanning the data processing, and ending with the final two set of keywords.

Figure 3.1. Process flowchart for final collection of keyword data



Data Gathering, Management and Processing

Journal Selection by Literature Domain

The first step in generating the two sets of keywords required selecting relevant journals from the Built Environment, Public Health and Real Estate literature domains. Using substantive expert discussion, qualitative theming, and library access criteria, a selection of journals were sampled. Due to the overwhelming number of journals in each literature domain, the initial list was delimited by co-author discussions about the relevancy of journal to the research topic (i.e., the “must-have” journals). For example, *The Journal of Green Building* was a relevant journal to include in the Built Environment domain. Respectively, *The Journal of Sustainable Real Estate* was also applicable for the current research and therefore included in the Real Estate literature domain.

Qualitative theming included reviewing the aims and scope of each journal. Built environment journals were selected if aims and scope referenced urban form, decision-making, built environment, city planning, housing, or sustainability from an energy efficiency lens. Real estate journals were deemed relevant if focused on property valuation, capital markets, econometrics, portfolio-level investment, property management or decision-making across all property markets. Public health journals were included if their aims and scopes mentioned chronic disease prevention, health behaviors, and community health. Journals were excluded if the aim and scope were too broad. Library access criteria included articles accessible through the authors’ academic institution online library databases. Further, journal providers (i.e., EBSCO, ProQuest, etc) had to provide the ability to download metadata in mass format. Keywords and subject terms provided by the journal or database provider had to be accessible (i.e., downloadable in an open data file format such as text, CSV, or Excel file). Exclusion

criteria included journals without keywords as well as journals containing keywords in an inaccessible formats (i.e., full-text PDF files). The list of selected journals is shared in the results section.

Metadata Retrieval

Metadata of all articles from the selected journals published between 2000 and 2019 were downloaded. The downloaded metadata files were cleaned and merged into one file containing five variables: 1) literature domain, 2) all keywords (whether or not related to green building or active living), 3) article title, 4) journal name, and 5) article publication year. The merged file was tokenized; each keyword and its corresponding article attributes were separated into individual rows. This step allowed keywords to become the unit of analysis rather than the journal articles themselves. If an article had 5 keywords, the article would be duplicated in five rows to isolate the individual keywords.

Keyword Management Phase One: Green Building and Active Living Keyword Selection

To create two descriptive outputs, two sets of keywords were extracted from the journal metadata: one keyword set related to green building to highlight the real estate precedent for adopting novel concepts and a second keyword set related to health to explore its potential emergence within real estate literature. The green building keywords were pulled from the Built Environment and Real Estate literature domains while the active living keywords were pulled from the Public Health and Real Estate literature domains. The keyword gathering process required a two-phase approach. The first phase of keyword management included selecting general terms related to green building and health for the Boolean syntax. The keywords used in the syntax served as a filter for all of the keywords downloaded from the journals. The second phase of keyword management included aggregating and fine-tuning the

nuanced results of the filter. For example, in phase one, the syntax included “*^green build*\$*” to capture any keyword combination that contained “green building.” Keyword management in the second phase codified these results into a final set of clean and simplified keyword lists to use for the analyses.

Due to the exploratory nature of this research, keyword selection for health had to be bounded. Health as a discipline is complex and broad and an attempt to derive meaningful conclusions may fall short if all respective keywords are interpreted for this study. To simplify, one facet of health was selected as a window, or indicator, to approach the larger health concept. Thus, health keywords focused on health behaviors through an active living and well-being lens, henceforth referred to as *active living keywords*. Selection of the initial keywords used in the Boolean syntax originated within literature surrounding the ecological model of the four domains of active living: 1) active recreation, 2) active transport, 3) household activities, and 4) occupational activities (Sallis, Cervero, Ascher, Henderson, Kraft, and Kerr, 2006). However, since the study focused on the emergence of health topics in real estate literature, only the active living domains accessible to broader real estate typologies were used: active recreation and active transport. Excluding active living keywords related to specific real estate typologies, such as residential and workplace, increased the likelihood that the totality of health across all real estate typologies would be captured. Further, the active recreation and active transportation domains encompass elements of well-being at the broader built environment level, such as neighborhood aesthetics and the restorative properties of nature. Thus, examples of general active living topics used in the syntax included: pedestrian and bicycle facilities, neighborhood aesthetics (e.g., views of nature, tree canopy), walkability, pedestrian and bicycle infrastructure (e.g., sidewalks and greenways), and active transportation (2006).

Since the topic of “sustainability” is similarly broad in scope, selection of the initial *green building* keywords used in the Boolean syntax originated using expert review and were simplified by focusing on energy efficiency, emissions, and environmental sustainability at the building and city levels. Both Boolean lists of keywords were validated via author discussion. The keyword selection process combined author-supplied and subject terms (henceforth referred to as keywords). The two sets of finalized keywords (e.g., after aggregation) are listed in Table 3.2.

Keyword Management Phase Two: Revision and Standardization

Once all keywords from all journals were collected into one file, the validated syntax for each keyword set was applied as a keyword filter. Since the database of all the journal downloads contained all keywords from articles, regardless if related to active living or green building, this step substantially reduced the number of keywords. The two filtered keyword data sets ensured that the terms included were relevant to the study. Each dataset was inspected, revised, and standardized to simplify data analysis. For example, entries were reviewed for formatting inconsistencies (e.g., plurals, misspellings) and ambiguous entries (e.g., financial or program sustainability). Records were removed if keywords were missing.

Primary keyword processing involved aggregating keywords for standardization, jargon reduction, and visualization clarity purposes. This initial process balanced maintaining keyword differentiation while also simplifying the vast variations in synonymous keywords. For example, keywords such as “carbon emission”, “carbon emissions”, “carbon dioxide emissions”, “co2 emissions”, “greenhouse gas emissions”, and “air emissions” that resulted from the syntax filter were aggregated into one keyword - “greenhouse gas emissions.” Similarly, to reduce jargon, emissions-related keywords focused on reducing or mitigating

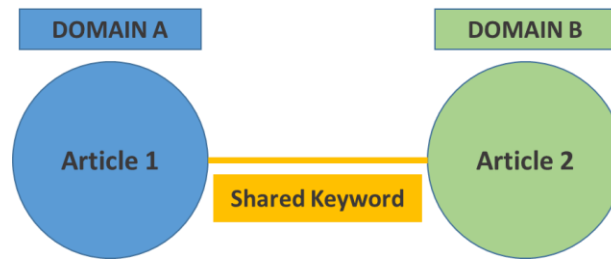
greenhouse gases, such as: “carbon dioxide reduction”, “carbon minimization”, “emissions controls”, “carbon offsetting”, “greenhouse gases prevention” were aggregated into one keyword to represent general mitigation strategies: “greenhouse gas mitigation.” On the other hand, to maintain disciplinary vernacular preferences and highlight potential word-choice patterns by discipline, some keywords were not aggregated. Active living keywords, “exercise”, “physical activity”, “recreation”, and “fitness”, while mostly synonymous, remained separate terms. This process was validated within the research team.

Tracking Cross-Disciplinary Keyword Trends

With the finalized lists of green building and active living keywords, the evolution of keywords across disciplines could be explored. In other words, if the same green building keyword appeared in both the Built Environment literature domain and the Real Estate literature domain, the keyword is considered a cross-disciplinary trend occurrence. Similarly, and of particular interest, if the same active living keyword was found in both the Public Health and Real Estate domains, a cross-disciplinary connection was made.

Gaining an understanding of the relational evolution of keywords and how they surface as multidisciplinary components across literature domains was the primary objective. The basis of this exploratory method was influenced by a social network analysis methodology that generates a Research Focus Parallelship (RFP) network. The assumption is that keywords represent the condensed core concept area of a journal article and sharing the same keyword across two different disciplinary domains implies the research topics partially overlap in an area that is represented by the keyword. The keywords linking different domains (e.g., Real Estate + Built Environment or Real Estate and Public Health) are thus defined as parallel actors (Su & Lee, 2009; Su, 2011).

Figure 3.2. Conceptual model of a Research Focus Parallelship (RFP) keyword network



Keyword relationships between the Built Environment + Public Health literature domains will not be explored because these connections are not within the scope of the current research. It is important to recognize, though, these relationships are well-established (see meta-reviews: Barnett et al., 2017; Den Braver et al., 2018; Bosch & Sang, 2017; Duncan, Spence & Mummery, 2005; and Heath, Brownson, Kruger, et al., 2006; among others).

Keyword analyses

Two primary analyses were conducted. First, descriptive statistics were applied to the total article selection results to assess the magnitude of article dispersion by journal and literature domain. The second analysis assessed keyword growth over time to find the relative expansion of the green building and active living topics in the Real Estate literature domain denoted by individual keywords (Uddin et. al., 2015). This method can detect bursts or declines of keyword occurrence; these occurrences often give an indication of major discovery or failure of a research topic. Growth analysis works by finding the relative increment or decrement of frequency of keywords over a certain period of time, and expresses how much the consideration has changed compared to its previous value (2015). Results of keyword growth dispersions are represented in line graphs and visualized in Gantt charts. The growth equation is as follows:

$$\text{Growth} = \sum_{i=1}^{n-1} \frac{(f_{i+1} - f_i)}{f_i} \times 100\%$$

Results

Tables 3.1 and 3.2 below show the results of journal selection with the corresponding article count by literature domain (Table 3.1) and list of green building and active living keywords (Table 3.2).

Table 3.1. Journal selection and article count by literature domain, Jan. 2000 – Apr. 2019 (n=29)

Literature Domain	Journal Title*	Total Count of Articles
PUBLIC HEALTH	American Journal of Public Health	10,009
	Journal of Epidemiology and Community Health	4,962
	Preventive Medicine	4,655
	Health Affairs	6,524
	American Journal of Health Promotion	1,764
	American Journal of Preventive Medicine	364
	Public Health Literature Domain Article Total	28,278
BUILT ENVIRONMENT	Landscape and Urban Planning	2,710
	Cities	1,653
	Sustainable Cities and Society*	1,629
	Building Research & Information	1,170
	Housing Studies	1,168
	Environment Systems & Decisions	862
	Journal of Environmental Psychology	834
	Journal of Green Building*	484
	Architectural Engineering & Design Management*	268
	Smart and Sustainable Built Environment*	117
Built Environment Literature Domain Article Total	10,895	
REAL ESTATE	Journal of Property Management	3,870
	Regional Science and Urban Economics	1,062
	Journal of Real Estate Finance and Economics	856
	Journal of Housing and the Built Environment	684
	Journal of Property Investment & Finance	664
	Journal of Urban Planning and Development	605
	Real Estate Economics	537
	Journal of Real Estate Research	451
	Journal of Real Estate Portfolio Management	409
	International Journal of Housing Market & Analysis*	337
	Journal of Corporate Real Estate	333
	Journal of Housing Research	184
Journal of Sustainable Real Estate*	108	
Real Estate Literature Domain Article Total	10,100	
GRAND TOTAL		49,273

*Indicates journals started after 2000

Table 3.2. List of finalized green building and active living keywords

Green Building (n=33)	Active Living (n=23)
air quality	active transportation
alternative energy	bicycle equipment
carbon footprint	bicycle infrastructure
climate change	bicycle sharing programs
climate change mitigation	bicycles
corporate sustainability	fitness
ecological sustainability	green infrastructure
energy consumption	green space
energy efficiency	greenway
green building	open space
greenhouse gas emissions	parks and recreation areas
greenhouse gas mitigation	physical activity
greenhouse gases	quality of life
indoor air quality	recreation
low carbon	recreation facilities
net-zero	restorative environments
outdoor air quality	sedentary behavior
renewable energy	sidewalks
sustainability assessment	social capital
sustainability assessment - LEED	trails
sustainability assessment - valuation	walkability
sustainability goals	walking
sustainable architecture	well-being
sustainable buildings	
sustainable cities	
sustainable construction	
sustainable design	
sustainable design and construction	
sustainable development	
sustainable energy	
sustainable housing	
sustainable products	
sustainable real estate	

Descriptive Results

Journal selection resulted in 29 total journals: 6 from the Public Health domain, 10 from Built Environment, and 13 from Real Estate. The article breakdown included 28,278 articles from the Public Health domain, 10,895 from Built Environment, and 10,100 in Real Estate for a total of 49,272 articles spanning the years 2000-2019. At the keyword level, the 29 journals contained 439,616 total keywords. The predefined, aggregated green building (GB) keywords resulted in 4,109 filtered keywords across all three literature domains, or about 1.0% of the total sample of keywords. Similarly the active living (AL) keywords resulted in 5,057 filtered keywords from all three literature domains, around 1.2% of the total sample of keywords. These first sets of descriptive analyses used the established keyword samples to explore both the green building precedent and active living emergence.

Typically, keyword analyses are constructed covering the entire period of interest, from nascent stage until the time of analysis. Alternatively, it is possible to divide the lifetime of a field into time windows, build a separate network for each period, and then comparatively analyze the chronologically ordered networks (Radhakrishnan et. al., 2017). As such, to analyze the temporal nature of keyword relationships, the dataset was divided into four clusters spanning five-year increments based on publication year of articles. These include: Cluster 1 (2000-2004), Cluster 2 (2005-2009), Cluster 3 (2010-2014), and Cluster 4 (2015-2019). Figure 3.3 shows the total number of GB keywords by cluster as well as the article representation. The 4,109 GB keywords were represented by 2,658 articles across all three domains. There is a consistent increase in GB keyword frequency across the four time slices. A similar increase was seen with AL keywords (Figure 3.4).

Green Building and Active Living Keyword Growth in Real Estate Literature Domain

Within the Real Estate domain, comprised of just over 10,000 journal articles from 13 journals, there were 66,420 total keywords. The predefined list of green building keywords yielded 1,005 within the real estate literature, almost 2% of all real estate keywords. There was a 186% growth in green building keywords from Cluster 1 (2000-2004) to Cluster 2 (2005-2009); 96% growth from Cluster 2 to Cluster 3 (2010-2014), and a 30% growth from Cluster 3 to Cluster 4 (2015-2019). The dip in Cluster 4 may be due to the incomplete 2019 calendar year. Splitting the time frames into two clusters, 2000-2009 and 2010-2019, there was a 234% increase from the first cluster to the second. Figure 3.5 shows the green building keyword usage within the real estate literature domain.

Active living keywords, while less frequent, also yielded growth in occurrences between the four time slices. The list of active living keywords only yielded 194 within real estate literature, about 0.3% of the total keywords. There was a 50%, 71%, and 20% increase in active living keywords in real estate literature between Clusters 1 and 2, 2 and 3, and 3 and 4 respectively. Additionally, if broken into two clusters, 2000-2009 and 2010-2019, there was a 125% increase between the first and the second. Figure 3.6 shows the active living keyword usage within the real estate literature domain.

Figure 3.3. Count of total green building (GB) keywords in three literature domains by 5-year clusters

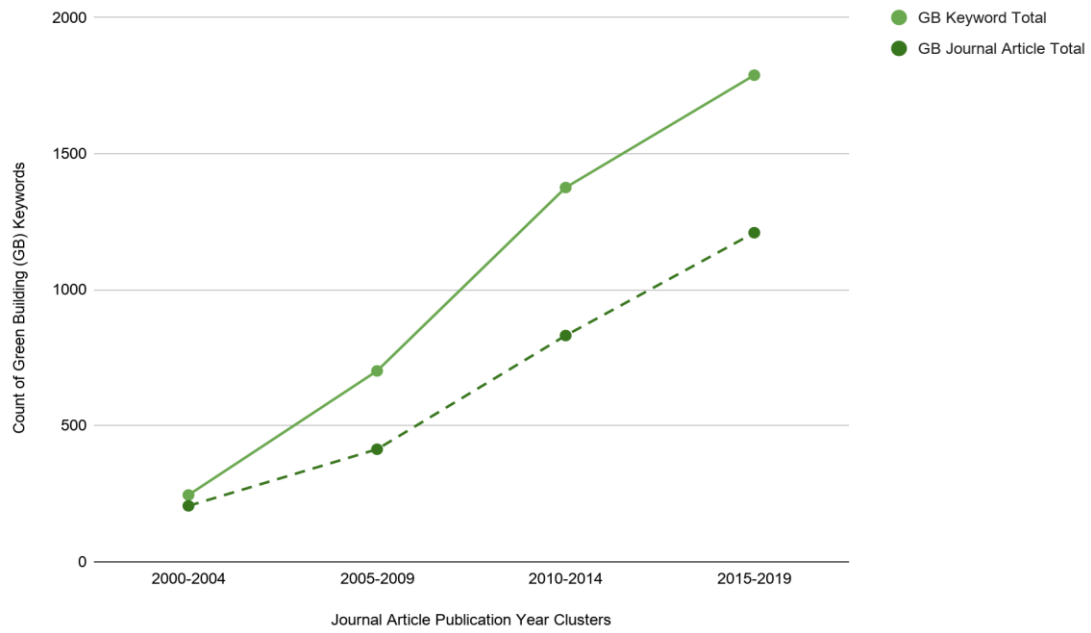


Figure 3.4. Count of total active living (AL) keywords in three literature domains by 5-year clusters

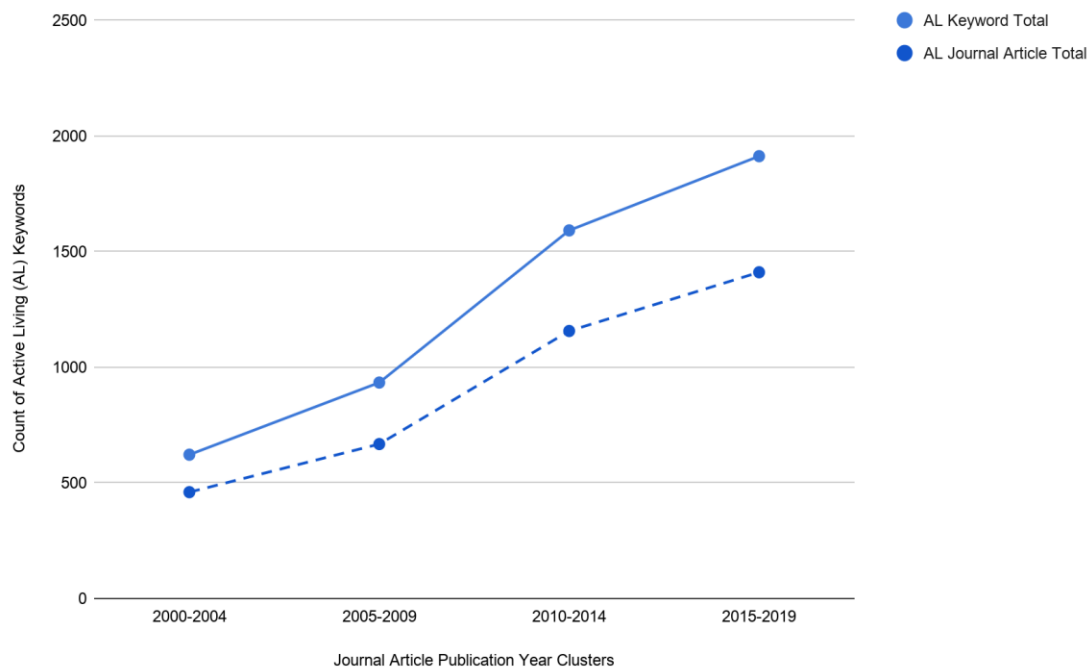


Figure 3.5. Count of green building (GB) keywords in real estate literature domain by 5-year clusters

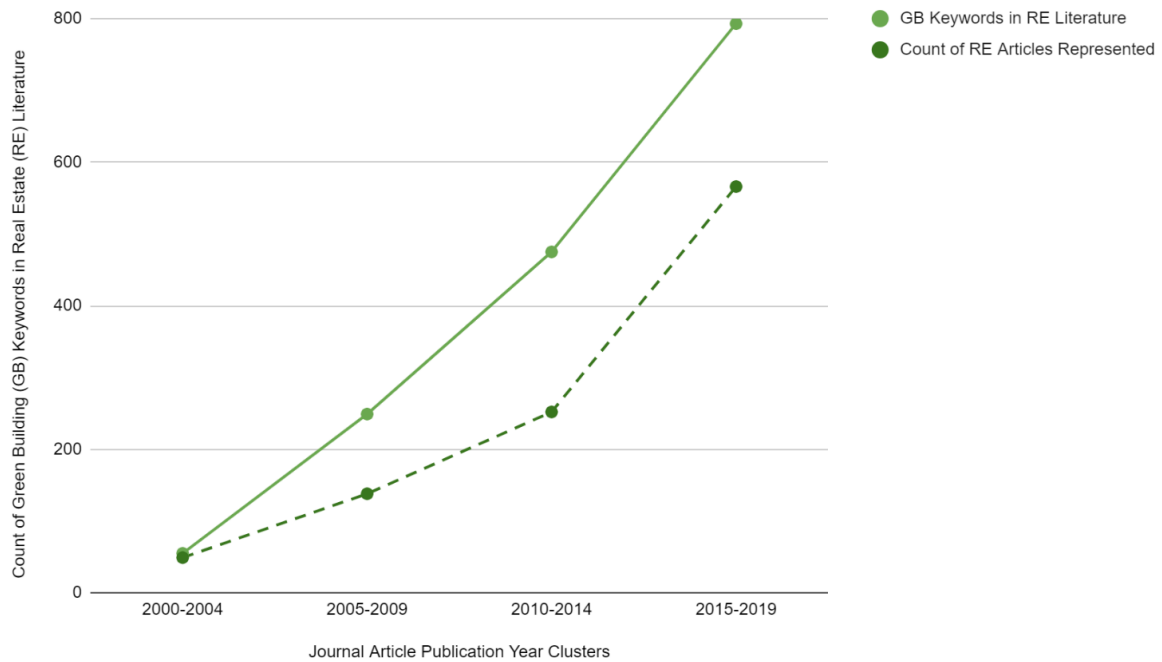
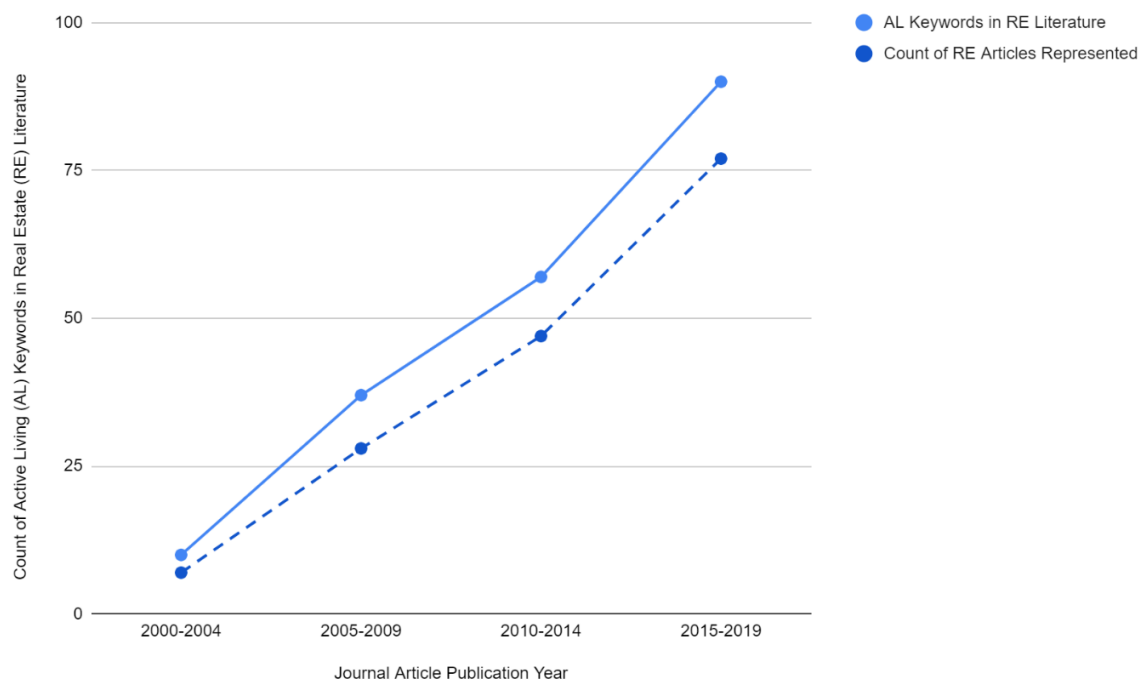
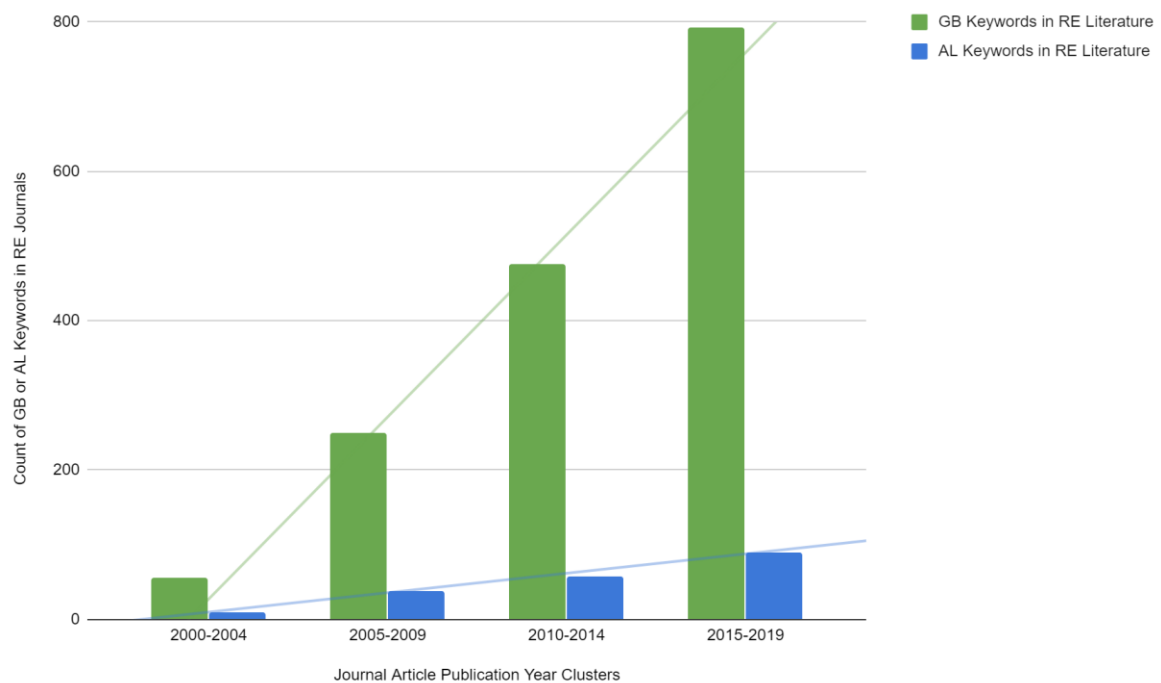


Figure 3.6. Count of active living (AL) keywords in real estate literature domain by 5-year clusters



Viewed together, the green building and active living keywords illustrate the respective trajectories within real estate literature. Figure 3.7 shows the sharp increase in green building keywords and a mild, burgeoning uptake of active living keywords within the Real Estate domain.

Figure 3.7. Green building and active living keywords in real estate literature domain by 5-year clusters

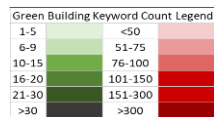
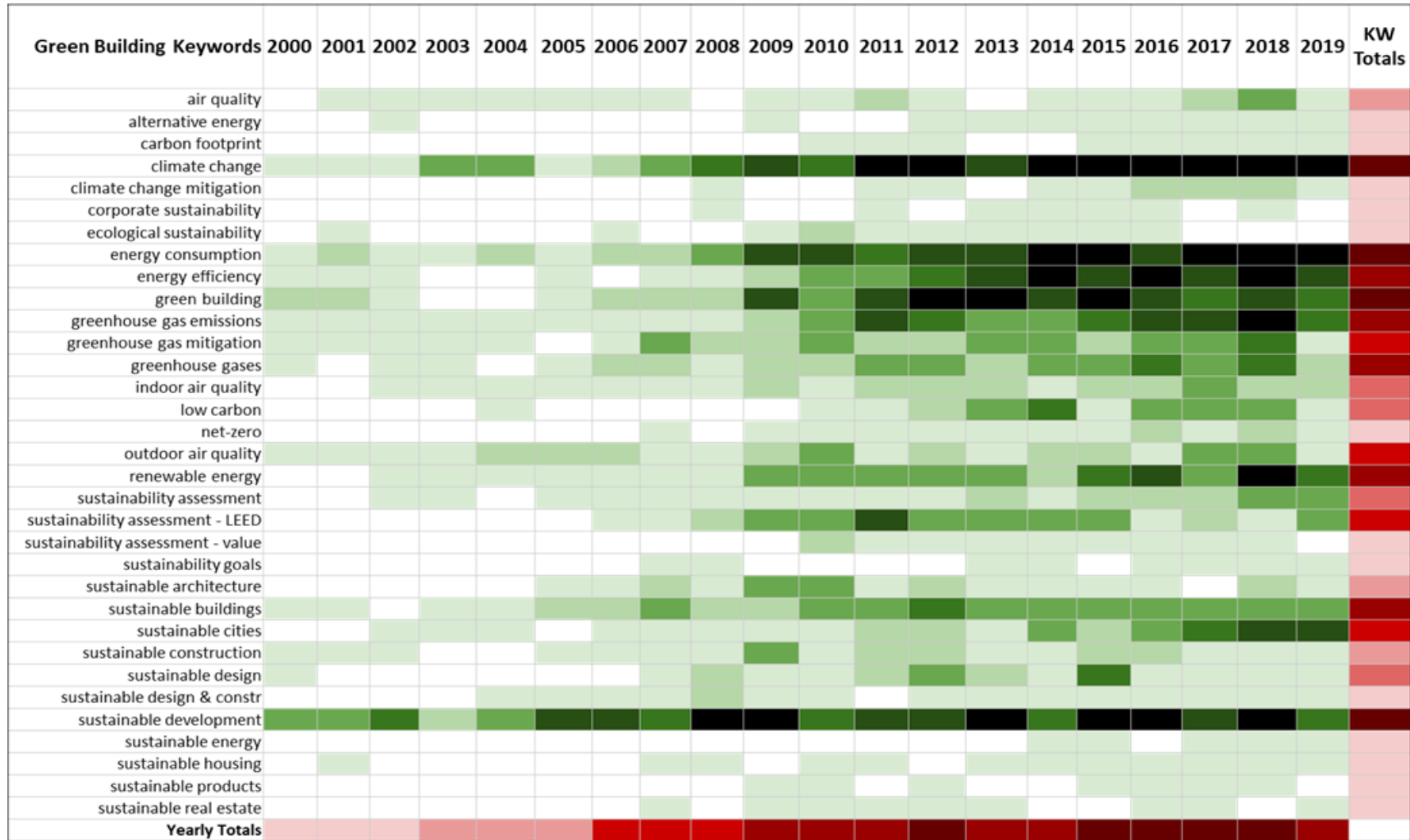


Green Building and Active Living Keyword Occurrences by Year

Viewing the keyword occurrences over time within the real estate literature, for both green building and active living, highlights the magnitude and temporal components at an individual keyword level. Figure 3.8 displays all of the aggregated green building keywords and their frequencies spanning 2000-2019. The darker cells represents a higher occurrence. For example, beginning in 2009, “energy consumption”, “energy efficiency”, and “green building” became more widely used keywords. Whereas, “sustainable development” was consistently

used as a keyword for the 20-year duration. By 2008, as green building became more ubiquitous in real estate literature, keywords related to sustainable housing, products, and general real estate become more prevalent. These types of keywords illustrate how the real estate literature may be targeting strategies within real estate development practice settings. In other words, by 2008, the lag between real-world practice and rigorous research evaluating the practice setting decreased. The yearly totals at the bottom of the image also show a steady increase in green building keywords over time

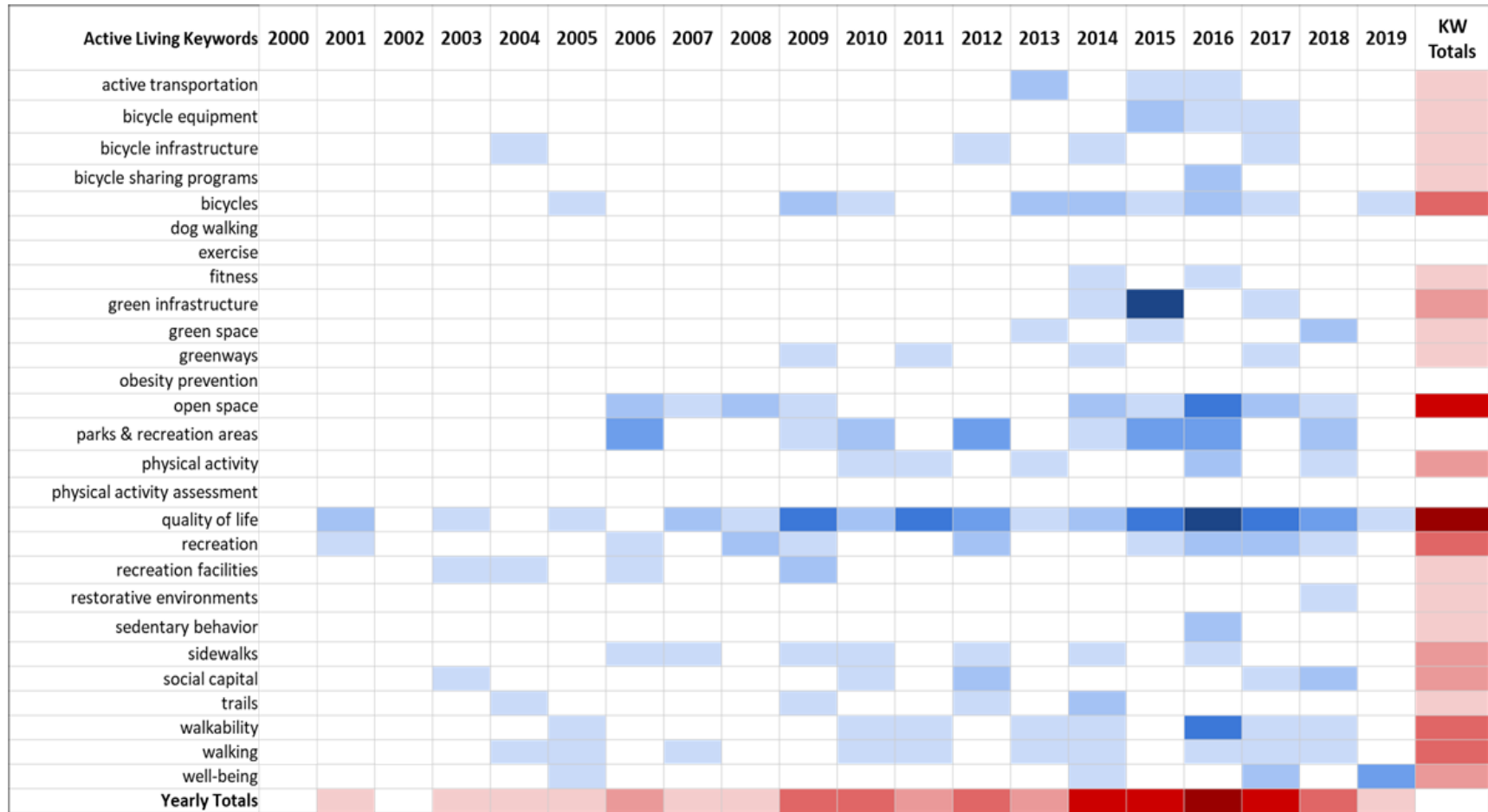
Figure 3.8. Green building keyword occurrences by year in the real estate literature domain



In 2000, the Real Estate literature metadata did not contain any of the green building keywords; however, in 2002, “energy consumption”, “energy efficiency”, and “sustainable development” appeared in both Built Environment and Real Estate domains. Throughout the 2016-2019 cluster, the green building keywords in real estate literature related to greenhouse gas mitigation strategies as well as sustainability assessments, including keywords about valuation and LEED certification. The keyword types shifted in the early 2000s from identifying green building in connection to “air quality”, “greenhouse gases”, and “energy efficiency” to keywords about mitigation strategies, net-zero goals, and renewable energy in the late 2010s. The evolution from identification to mitigation depicts green building as a movement specifically from a real estate perspective.

The magnitude of active living keywords within the real estate literature, while scarce compared to green building, also shows an increase in occurrences across 2000-2019. There is a notable increase in active living keywords at the yearly level beginning in 2014. Further, some active living keywords, while occurring infrequently, are beginning to emerge as real estate topics in the research settings. For example, “active transportation”, “fitness”, “green infrastructure”, and “green space” all emerged after 2013. Alternatively, “quality of life” was a steady presence in keyword occurrences with a notable increase around 2011. There were sporadic appearances of the “well-being” keyword, occurring first in 2005 but not reoccurring until 2014, 2017 and 2019. Figure 3.9 is shown below.

Figure 3.9. Active living keyword occurrences by year in the real estate literature domain



1	0-5
2	6-9
3	10-15
4	16-20
>5	>20

Beginning in 2003, active living keywords such as “recreation facilities”, “social capital”, and “quality of life” occurred in both Active Living and Real Estate literature domains. By 2006, “open space”, “parks & recreation areas”, “sidewalks”, and “recreation” were common across domains. “Greenways”, “bicycle infrastructure”, “bicycle equipment”, “active transportation”, “fitness” and “green infrastructure”, all appeared as real estate keywords in 2013 or later. The following active keywords appeared in 2016 or later: “bicycle sharing programs” and “sedentary behavior.”

Discussion

Understanding trends and emerging topics of a research domain is crucial for knowledge discovery. This research used a novel technique to retrospectively track the dispersion of green building keywords and explore the emergence of active living keywords across Public Health, Built Environment, and Real Estate literature domains. The journal publications spanned 2000-2019, providing metadata to synthesize temporal relationships. Using keywords as the units of analysis and the literature domains as the connecting scales marks this research as a broad exploration that abstracted, organized, and represented keyword data in a way that is suitable to general audiences (Uddin, Khan, & Bauer, 2015). The descriptive graphs and charts were used to determine keyword linkages between seemingly disparate fields (i.e., active living and real estate) and ultimately provide a more holistic perspective of their emerging interrelationships.

Scientific knowledge is dynamic, in constant evolution, often resulting from extensive recombination of existing concepts (Su and Lee, 2009). Changes in keyword patterns and trends can be indicative of new research fronts. Tracking scientific literature and visualizing changes in keywords is thus a way to map the dynamics of science (Latour, 1999). The results as shown successfully support the use of keywords to track the green building phenomenon

within real estate literature. Therefore, there is some degree of confidence that the keywords related to health genuinely reflect an emerging topic of interest within in real estate development literature. Moreover, the changes in active living keyword patterns, revealed how health content evolved within real estate literature between 2000 and 2019. For instance, the active living keywords that appeared in real estate literature during the first time cluster (2000-2004): “recreation facilities”, “parks”, “open space” – while health related – may be featured because they represent physical structures or real estate assets, common topics for real estate research. The notable change that may indicate an evolutionary turning point occurred in the most recent time cluster (2016-2019). In this cluster, active living keywords evolved into health behaviors: “fitness”, “active transportation”, “sedentary behavior”, and “bicycle sharing programs.” This represents an explicit shift from real estate literature content related to physical structures to content related to physical activity.

More broadly, between 2000 and 2019, a steady increase was seen in active living keywords within real estate literature, indicating the potential emergence of a meaningful relationship between the two fields. The 125% growth between the first and second decades could represent a turning point. There was an almost 60% increase of active living keywords in the real estate literature domain from 2015 to 2016; however, from 2016 to 2017 the growth rate was -44%. Viewing the growth rates of these specific keywords from a year-over-year perspective shows a more volatile trajectory. The aggregated growth rates in time-clusters presents a steadier percent increase in active living keywords within the real estate literature. Despite the relatively low overall count of active living keywords shared between Public Health and Real Estate literature domains (n=194), the overall positive growth may be indicative of a much larger emphasis on health beyond active living. Further research can build

upon other indicators of an overall health lens, perhaps including health outcome keywords such as “obesity”, “diabetes.” Further, health also encompasses social and mental health. Keywords related to these facets of health will be important to consider as well.

The year-over-year volatility of active living keywords may also be indicative of ongoing innovation and not actual adoption. In models of diffusion of innovation (Rogers, 1995), the innovation phase pushes out the frontier and creates the novelty that will eventually be adopted. Pushing the frontier essentially stretches the distribution time period. On the other hand, adoption helps compress the distribution by keeping the laggards from falling too far behind (Benhabib, Perla, & Tonetti, 2017). Innovation activity, possibly shown by real estate using active living keywords in literature, affects adoption incentives, and adoption can affect innovation incentives. This interaction determines the productivity distribution of an innovation and the initial growth rates (2017). In other words, it is likely that the emergence of active living keywords in real estate literature is at the very forefront of the innovation stage. In this case, there will likely be substantial lag time between innovation and adoption, especially from the research-to-practice, practice-to-research pipeline perspective. Developers will respond to societal and market demands as they strive to differentiate their projects; if the strategies are successful, real estate researchers may systematically explore the phenomenon (i.e, practice-to-research pipeline), but the process inherently consists of lag time.

An example of the time lag between practice-to-research might be represented in the green building keyword results. Green building strategies were initially developed and implemented in the early 2000s, yet, within the real estate literature sample, a substantial increase in green building keywords did not occur until almost a decade later in 2009. The implementation of green building innovations were occurring for many years before LEED

related research showed up in force around 2009. While uptick in green building keywords around 2009 is likely due to the release of new journals specifically targeting green building, it ultimately highlights: 1) the significant lag time in moving practice to a research setting, and 2) the successful transition from green building innovation to green building adoption.

From the health perspective, an example of the practice-to-research path highlighting the delay in innovation adoption is the development of health and wellness building certifications. In the practice setting, two primary certification systems have been developed: the WELL Building Standard (2016) and the Facilities Innovations Toward Wellness Environment Leadership (Fitwel, 2017). Both of these rating systems, at the time of this publication, were developed fewer than five years ago but were still not visible as keywords in the literature selected for this study. It is possible that as more developers use these certification systems, research on their efficacy and value will increase, thus increasing the strength of the relationship in future keyword overlaps.

Active living keywords, as a representation of a larger health construct, are essentially serving as an ‘innovation trigger.’ As part of the mechanisms of market disruption, an innovation trigger is a technological or conceptual breakthrough that enters public consciousness, creating interest and expectations of its potential (Linden & Fenn, 2003). It is possible that active living, or another subset of health-related keywords, will undergo a significant increase in keyword relationships across literature domains as awareness increases and actually triggers a shift from innovation towards adoption.

The use of keywords to explore relationships between retrospective and prospective trends is a novel way to reveal common vocabularies and terminologies across disciplines, an important facet when doing cross-disciplinary research. Keywords record, investigate, and

present meaning for culture and society (Williams, 2014). Certain uses of keywords can bind together forms of thought, define a field in detail, provide a common vocabulary, and serve as a tool with which the evolution of research can be studied (Barki, Rivard, and Talbot, 1993). In particular, generating a common vocabulary is important when researching cross-disciplinary concepts. For example, during the aggregation process, the authors decidedly kept “exercise”, “fitness”, “physical activity” and “recreation” as separate keywords instead of aggregating into one. This was meant to leave the potential of discipline-specific vernacular open for interpretation. If researchers in the real estate industry use “recreation” rather than “exercise”, there may be a disconnect between both terminology and collaborative opportunities. For example, of these four keywords related to physical activity, “recreation” was the most frequently used keyword in the Real Estate literature, representing 62% of the four keywords; the same term only represented 3% in the Public Health literature domain. Conversely, “physical activity” was the most frequently used (57%) of these four terms related to physical movement within the Public Health literature. Increased awareness of terms across the Public Health and Real Estate disciplines could expand collaborative research efforts. This research highlights and supports this gap.

This study is not without limitations. Whittaker (1989) has pointed out that the results of keyword analyses are dependent on how the indexers select the keywords. This is known as the “indexer effect.” In this study, the researchers chose to use *active living* to conceptualize the broader topic of public health. While this delineation was necessary to bound the research, it is possible the authors overlooked an important active living keyword, or that a different health lens other than *active living* would produce differing results. However, provided the

extensive research on active living as a health promoter in the built environment, it is a good fit for the current exploratory study.

Additionally, not all relevant journals were included in the selected literature domains; it was important for data to be delimited at both the journal and keyword selection phase. Too many journals, articles, and keywords may have made it difficult to find meaningful relationships or would overemphasize relationships not related to the topic explored. Twenty-nine journals spanning almost two decades of research resulted in almost 50,000 and 450,000 individual keywords. Future research should compile a different set of journals, especially in the Public Health and Built Environment domains, to assess if similar trends are recognized.

The units of analysis were keywords; article titles were largely not included. It is possible that some keywords may remain out of context since they were not cross-referenced with the title of the journal. Related, the publication process often suggests that authors use keywords that are not replicated in the article title. Relevant article titles about active living, within the real estate literature sample, may have been overlooked if the keywords did not align with the active living filter.

Finally, the selection of predefined, aggregated keywords were bounded and inherently incomplete. Adding or removing one keyword could drastically change the dataset. It is possible that keyword lists used to filter green building and active living keywords were not comprehensive; however, these keywords focused on the purpose of this exploratory study. The purposeful sample of keywords used represents a snapshot of a comprehensive overview.

Conclusions

Despite the limitations, this research is one of the first to assess connections and showcase relationships between public health and real estate literature. Building an effective

knowledge foundation can serve as a valuable tool for both public health and real estate stakeholders. This broader perspective can provide a competitive advantage in decision-making in real estate, whether through showcasing how health may be a suitable real estate investment, illuminating promising topics for researchers, or guiding policy makers in developing built environment policies that prioritize environmental sustainability and public health (Uddin, Khan & Baur, 2015).

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CHAPTER 4: EXPLORING HEALTH AND WELL-BEING CONCEPTS THROUGH A MULTI-CASE STUDY APPROACH: MULTIFAMILY REAL ESTATE DEVELOPERS AND HEALTH PROMOTION

Introduction

Health is broadly defined by the WHO (1948) as a “state of complete physical, mental and social well-being and not merely the absence of disease or infirmity.” Collectively, health and well-being (HWB) can be defined as the actualization of inherent and acquired human potential through goal directed behavior, competent self-care, and satisfying relationships with others, while adjustments are made to maintain structural integrity and harmony within relevant environments (Pender, Murdaugh, and Parsons, 2002). Relevant environments, such as built environments, are critical determinants for HWB. While evidence suggests that modifications to neighborhood and residential built environments can improve HWB, the strategic actions of modifying the built environment is challenging to implement.

Multifamily residential stakeholders may help configure new ways to approach built environment interventions. For example, provided the home’s influence on health behaviors and outcomes (Kurka et al., 2015; Chaudhury, Campo, Michael, and Mahmood, 2016), such interventions are relevant in multifamily residential environments where demand for rental units remains strong and forecasts for additional multifamily construction are robust. From a public health perspective, the importance of residential environments is highlighted by the Robert Wood Johnson Foundation’s statement that, as it relates to a person’s health, ZIP code may be a more important determinant than genetic code (2013). From a real estate perspective, more than 320,000 new multifamily units were rented in 2019, marking the sixth straight year with at least 250,000 newly absorbed units (Salmonsens, 2020). Further, a 2017 report indicated

that more U.S. households are renting than at any point since 1965 (Cilluffo, Geiger, and Fry, 2017). Renters comprise over one-third of households and rental rates have increased across all age groups. For example, rental rates for young adults under age 35 increased from 57 percent in 2006 to 65 percent in 2016. Similarly, rental rates increased among those aged 35 to 44, rising from 31 percent to 41 percent in the same time span (2017). The growth of rental rates coupled with the estimation that by 2020 new renter households will outnumber new owner households (Goodman, Pendall, & Zhu, 2015), built environment strategies and decisions that go into creating multifamily environments can be an important segment to promote health and well-being.

This research suggests that certain actors within the multifamily real estate industry can act as unconventional health promoters using this built environment lens. Real estate developers are critical in determining how built environments are formed and operated; thus, developers carry significant potential to improve the overall societal quality of life and well-being. They imagine, create, finance, and orchestrate the process of development from beginning to end. In doing so, real estate developers simultaneously spark creativity and manage risk in response to both dynamic populations and market preferences. Their involvement with shaping environments where people live, work, play, and learn is ubiquitous, providing a unique opportunity to consider the health impacts of their development decisions.

Despite a heavy involvement in shaping built environments, it is rare for real estate developers to prioritize HWB in their decision-making processes. The absence of these considerations is most likely because a compelling value proposition has not yet been established for these types of strategies. As with all business ventures, successful residential developments function as economic enterprises that prioritize financial returns. Human health,

as a holistic concept, is currently an unconsidered criteria and is not incorporated into project financing. However, developers are being increasingly guided by personal, organizational, and social values in addition to financial criteria. This type of blended value proposition is one way to classify the consideration of more than financial returns (Emerson, 2003). Effective execution of this multilayered approach depends on a developers' ability to balance sound management, in terms of financial profits, with societal considerations such as innovation and change. The intentional consideration of health and well-being represents an innovative change that can be included in the blended value proposition for multifamily real estate developers.

Targeting health is a promising innovation within the multifamily residential real estate industry. Because the concept of health is multifaceted in nature, as a real estate innovation, it remains an abstract phenomenon and an idiosyncratic attribute. These qualities align within the Diffusion of Innovation theory (Rogers, 1962). In this theory, an *innovation* is defined as an idea, practice, or object that is perceived as new by an individual or organization. The novelty of the innovation represents a degree of uncertainty but is perceived as advantageous - or in the case of this research, a differentiator. Through this lens, if health is considered an innovation, then real estate developers who acknowledge and implement these strategies are early adopters. As early adopters, these developers function as opinion leaders and embrace change opportunities (Rogers, 1995). Early adopters are more likely to undertake innovative investments despite higher degrees of uncertainty and risk. In this way, the actions of early adopters essentially lay the groundwork for mainstream agendas, establishing a diffusion pathway. As health strategies and concepts increasingly spread into residential markets, real estate practices may shift to embody a more blended value proposition. However, since HWB

is currently a nascent construct with limited awareness and knowledge, the blended value remains one-sided. In other words, the positive societal impacts of health are inherently understood but less is known about the financial returns of specific health strategies. This unknown, and subsequent incomplete value proposition, makes health an unlikely target for conventional real estate developers who typically prioritize financial components. More information is needed about how health is understood in real estate to optimize and better structure its blended value proposition. Developing knowledge structures around HWB is essential to activating the potential of HWB as both a real estate differentiator and tactic to promote public health. Defining health in real estate is necessary to establish best practices for the field. Before best practices can be outlined and disseminated, understanding and defining health is critical.

Therefore, the purpose of this research is to explore how the emerging considerations of health and well-being are conceptualized from a multifamily real estate perspective. Using a case study approach guided by a grounded theory perspective, this research explored how three multifamily real estate developers think and talk about health. Each participating developer represented a different price point to accommodate the diverse ways health is constructed in multifamily real estate.

Theoretical Framework

Due to the exploratory nature of this study, a grounded theory approach will guide the research process. Grounded theory, originally developed by Glaser and Strauss (1967), is an inductive and recursive strategy with a goal to identify concepts and build theory from qualitative data (Corbin and Strauss, 2008). The underpinnings of grounded theory evolve incrementally, in an organic manner, guided by the principles of emergent fit, theoretical

sampling, and theoretical saturation (Taber, 2000; Charmaz, 2008). As a generative method, grounded theory encourages innovation and discovery. Researchers can develop new understandings and novel theoretical interpretations of an understudied phenomenon (Charmaz, 2008). In this sense, adopting a grounded theory framework is a good fit to explore the emergence of health considerations in multifamily real estate. Since the current study was inductive, an *a priori* framework was not suitable. This aligns with one of the grounded theory tenets of setting aside preconceived hypotheses or theoretical ideas before the research process begins. However, grounded theory is also capable of hybrid approaches to data collection, requiring deliberate methodological decisions regarding the theoretical tenets framing the research (Glaser, 2002; Fernandez, 2004; Halaweh, Fidler, and McRobb, 2008).

For example, when combining case studies and grounded theory, care must be exercised to ensure that the procedures of case study research do not distort the true emergence for theory generation (Glaser, 1998). At the same time, theory development prior to the collection of any case study data is an essential step under a case study methodology (Yin, 2017; Creswell and Clark, 2017). This deductive approach contradicts the grounded theory tenet. Therefore, when combining case study and grounded theory, the researcher must clearly specify which methodology is driving the discovery. The current study used grounded theory as the overarching theoretical framework to explore data from multiple case studies. A primary strength of generating theory from cases is the likelihood of generating novel theory (Eisenhardt, 1989). Creative insight surrounding an emergent concept, such as adopting a health lens in multifamily real estate, often arises from the juxtaposition of seemingly contradictory methods. Reconciling inductive versus deductive contradictions can reframe existing perceptions into a new gestalt (1989) – which is precisely how the grounded theory via

case study combination operates. In other words, using grounded theory across multiple cases may better illuminate how HWB is conceptualized in a bounded network of multifamily developers.

Methods

Multiple Case Study Approach

Three private multifamily developers were used as case studies to understand how health and well-being was considered and implemented into a respective project. Using multiple cases allows a researcher to explore multiple real-life, contemporary bounded systems, through detailed, in-depth data gathering involving multiple sources of information (Creswell, 2017). Similarly, Yin (2017) describes comparative case studies as a distinctive means of empirical inquiry particularly suitable for exploring the *how* and *why* of phenomena within a real-world context. The comparative approach adds an additional layer to more deeply understand HWB by providing a means to examine a multiplicity of perspectives to illustrate patterns and compare ideas and processes (Creswell, 2017). As such, contextual conditions and rich complexity can be captured and compared with the goal of more fully understanding HWB in the context of the cases. The unit of analysis for these cases were the multifamily developers and their decision-making processes as described by the development team leadership. The research is interested in how the multiple case studies established a sweeping concept of health through common themes rather than the comparative contrasts.

Study Context

To explore how health is holistically conceptualized by real estate developers, it is important to consider various multifamily pricing structures: mixed-income, market-rate, and luxury. These terms do not carry a formal definition in the real estate field. Yet, there are overarching characteristics that remain consistent across real estate markets.

Mixed-Income Housing

Mixed-income housing is comprised of units with differing levels of affordability, typically with both market-rate housing and housing that is available to low-income occupants below market rate (U.S. Department of Housing and Urban Development, 2003). The intent of mixed-income development is to reduce social isolation in high-poverty neighborhoods by generating and sustaining an income mix to deconcentrate poverty (Tach, 2009). Most mixed-income housing developments include a development partnership entity that oversees the financing, design, construction, management, resident services, and financial sustainability for the housing complex (Brophy and Smith, 1997; as cited by Joseph and Yoon, 2016). The mixed-income model sets aside a number of units that are below market rate and provides access to rental assistance, such as subsidies, to increase the number of available affordable housing units. While there is no standard formula or definition for how the mix is determined, there are restrictions. For example, calculating an Area Median Income (AMI) and pricing the dedicated units at certain percentages of AMI often determines the income mix. Developers are incentivized to incorporate these units by recouping income through tax credits, grants, and vouchers, for example, from the U.S. Department of Housing and Urban Development (Schwartz and Tajbakhsh, 1997).

Market-Rate Housing

Market-rate housing is not subsidized nor restricted by affordable housing regulations. Developers are free to attempt to rent units at whatever price the local market may command. Market-rate developers usually have high cash flow and access to both private and public financial lenders (e.g. capital markets). Being more fiscally solvent in a free market without income restrictions enables property owners of market-rate residential developments to make fluid decisions about capital improvements. Market-rate developers also have more flexibility in determining rental or purchase prices. As such, market-rate multifamily projects are designed and built to be competitive in the market and uphold contemporary standards (Nordby, Vaisman, and Rybczynski, 2017). The factors that contribute to market rates, such as economic appraisals and comparable rental prices, are beyond the scope of this research.

Luxury Housing

Luxury housing are residential units priced at the high-end of the market-rate scale. These properties are defined by finishes, amenities, and upgraded interior/exterior design features, with exceptional aesthetics (Nordby, Vaisman, and Rybczynski, 2017). A developer's ability to take more risk is dependent on the location of the project. For example, two market-rate projects can be comparatively very different if one is located in a high-demand area versus a different market area with lower demand. Both properties are defined as market-rate yet the development located in the high-demand area may be more likely to classify as luxury due to the higher rental pricing.

Case Study Sampling

Purposive

With grounded theory framing the research process, the researchers were not aware of the full extent of inclusion criteria, themes, and directions of the study at its onset. This research began with an orienting perspective (Vollstedt and Rezat, 2019), or sensitizing concept, about the opportunity to better integrate public health and real estate development practices. Thus, a purposive sampling strategy (Patton, 1990; Patton, 2002) initiated the case selection process. Through professional connections, the research team approached a known multifamily real estate developer marketing sustainability and health. Purposive sampling supports the inclusion of information-rich cases that are well informed about the phenomenon as well as cases that are easy to access. This sampling technique started with the market-rate developer.

Chain Referral

The chain referral method, or snowball sampling, yields a case sample through referrals made among people who share or know of others who possess some characteristics related to the topic of interest (Biernacki and Waldorf, 1981). The research team learned of both the mixed-income and luxury developers through such referral mechanisms. Finding additional information rich cases aligns with grounded theory underpinnings; emergent and changing themes evolved throughout the course of study requiring additional cases. Thus, it was through this process that the research explored different multifamily price points. Although the chain referral sampling opened the research to income-dependent price points, it is important to emphasize that the primary objective of the study stayed focused on the collective

conceptualizations of HWB. Comparing finance structures and tenant income levels across the three development types were beyond the scope of this research.

Case Selection Criteria

Formal prescriptions for case study selections are rare and depend on research context (Seawright and Gerring, 2008). It became clear through initial sampling conversations that four case study selection criteria emerged. First, selected cases required evidence that the multifamily developers considered health and well-being in a meaningful way. Developers were deemed early adopters if their websites had a dedicated page or section about the health and well-being of occupants or an excerpt in their mission statement related to healthy communities. Considering web content as a legitimate source (Hasim, Hashim, Ariff, Sapeciay and Abdullah, 2018) for determining inclusive cases stems from literature indicating that organizational websites commonly communicate: organizational responsibilities (Nejati et al., 2011), relevant information such as corporate reporting (Adams and Frost, 2008), and brand positioning (Stuart and Jones, 2004). Therefore, multifamily developers who are considering health and well-being will likely be disseminating these considerations on their websites.

Second, it was important to have access to high-level executives within the development organization. As the primary decision-makers, they would have the most knowledge about the ‘how’ and ‘why’ HWB was integrated into their projects. Organizational identity is formed by top leaders’ establishment of the core values and beliefs that guide and drive decisions and behaviors of the organization (Voss, Cable, and Voss, 2006). Those in leadership roles most deeply understand the values that drive decisions as an organization because it affects how they interpret issues and craft strategy (Foreman and Whetten, 2002). Top leaders within the case

studies would be well-positioned to expound on their organization's health and well-being identity.

Third, development organizations needed to be in the private sector. Public and private participants within the real estate industry have different development goals. The public sector is represented by government agencies, citizen groups, and other non-government stakeholders who express their interests through the political process. Public sector goals are to ensure public safety, manage the impacts of real estate development on the community and environment, and balance the market's need for constructed space against the public sector's responsibility to provide services (Miles, Netherton and Schmitz, 2015). It is worth noting that since public sector models of development are also profit-oriented, innovative tactics like HWB may be more likely to be eliminated if positive returns are not confidently forecasted. Additionally, financial models for public sector projects such as public housing are drastically different and undergo strict regulatory criteria. This is the reason why low-income housing was not included in this research.

The goals within the private sector, on the other hand, aim to minimize risk¹ while maximizing personal or institutional objectives – typically profit. While regulatory policies are still in place, the private sector offers more flexibility in decision-making compared to the public sector. The flexibility in the private sector, therefore, has three benefits related to their goals of profitability. First, it allows private developers to be more responsive to consumer preferences and market demand (citation needed). Second, it encourages the uptake of

¹Financial risk for private developers arise in two ways. First, during the predevelopment stage, developers spend time and money before gaining assurance that a project will be built. Expenditures may include due diligence, feasibility, and community relation efforts to formalize the development concept. Second, in addition to their own equity (contributed capital and debt they are liable for), private developers may be required to guarantee investors and lenders protection against cost overruns or initial vacancy losses (Miles et al., 2015)

innovative strategies to achieve market differentiation (citation needed); and third, it allows greater likelihood of creating a competitive landscape to drive other developers to adopt strategies like HWB (citation needed).

Finally, selected cases had to be under construction. Design and programmatic decisions are more likely to come to fruition if planned from the early development stages, before construction begins. Additionally, capital structure and financing mechanisms have also been secured before construction, likely indicating that HWB costs have been applied. Including existing buildings in the case study selection process may have risked including projects that only considered HWB after construction of the multifamily project was completed. In such cases, HWB strategies could be deemed an afterthought and the essence of HWB concepts may not be fully captured. For example, little insight would be gained if, post-construction, a developer added a bicycle rack to the outside of the property and claimed to be “bicycle-friendly.”

Selected Cases and Interviews

Case A: Mixed-Income

The research team was referred to a mixed-income development in the Southeast. Initial contact was with the nonprofit organization that spearheaded the development decision-making. The nonprofit was comprised of local business leaders who partner with residents to accelerate community transformation. Founded in 2012, the partnership vision is “to break the cycle of poverty through neighborhood revitalization” through four pillars: 1) mixed-income housing; 2) cradle-to-career education; 3) community health and wellness; and 4) long-term economic viability. Guided by the Purpose Built Community model

(www.purposebuiltcommunities.org), the nonprofit was the driving force behind a \$62 million dollar mixed-income housing development. Phase 1 consisted of 200 mixed-income multifamily units and was fully leased in October 2018. Some units are rented based on tenant's income, as little as 30 percent of household income. Other units are priced at \$593 per month while market-rate starts at \$850 per month. Phase 2 consists of an additional 120 units of affordable senior housing and will be completed by early 2020.

The non-profit referred the research team to their multifamily developer based in the southeast. The development organization has specialized in quality affordable housing for nearly thirty years and is an integrated real estate development and management company. This means the development organization includes: master planning, development, project management, construction management, and property management fields. For the mixed-income case study, the research team explored how both the non-profit and multifamily developer considered HWB elements in the project.

Case B: Market-Rate

The research team approached the market-rate developer in a central city of the Southeast region. With 276 units, the multifamily project “empowers an engaged, healthy, and mindful way of life.” Further, marketing materials suggest the multifamily environment creates an ideal place to live in balance because of the: 1) neighborhood's proximity to and integration of nature and open space, 2) residents' interest in self-discovery and shared experiences, and 3) community's sustainable ethos. The property offers studio apartments with rent ranging between \$1,448-\$1,670; one bedrooms are priced from \$1,570 to \$2,321; and two bedroom pricing ranging between \$2,707 and \$3,860. The property developer lists “Mindful healthy living, made easy” as their slogan. The project team's focus on developing places where

healthy choices come naturally is a continuous theme throughout their online presence. The developer and primary equity provider - a different organization that financed the project - promote six health areas: physical activity, healthy eating, social connectivity, engaging community, living purposefully, and recreational leisure.

Case C: Luxury

The luxury case study is located in the West and was referred to the research team. The property is a multifamily development comprised of 196 for-sale high-end condominiums. The developer's mission includes an overarching theme of sustainability and wellness. Specifically, Case C offers: "wellness infrastructure best practices, healthy operation, resident wellness guidelines, occupant wellness baselines, and personalized program creation, guidance and reporting."

The luxury developer referred the research team to a non-profit partner. The non-profit was formed in 2016 to offer comprehensive resources and research for property owners and occupants who wish to create their own healthy community. The non-profit organization is comprised of a multidisciplinary team of experts – "a network of real estate and wellness professionals to help qualify opportunities – infrastructure, best practices, ongoing operations, supportive resources – that will provide building occupants with a comfortable environment that can also enhance their health over time."

Case Study Participants

Table 4.1. Role of case study participants

Case Study	Roles
1. <u>Mixed-Income</u> <i>Multifamily Developer</i> <i>Non-profit Partner</i>	a. President/Chief Operating Officer b. Executive Director c. Director of Finance
2. <u>Market Rate</u> <i>Multifamily Developer</i>	a. Vice President of Development
3. <u>Luxury</u> <i>Multifamily Developer</i> <i>Non-Profit Partner</i>	a. President of Development b. Director

Interviews

In-depth interviews were conducted in person during site visits in for all three case studies with high-level executive leadership. Each interview occurred over two days to ensure an opportunity for follow-up questions. The interview durations were allotted four and two hours respectively over the two days. The partnerships referred to the research team by the developers (i.e., the associated non-profits) were subsequently interviewed over the phone. A semi-structured interview protocol was used as a guide to facilitate the discussions, yet remained flexible for probing and free conversations. The interview began with general organizational questions about company missions and history. To gain an understanding of how health and well-being was conceptualized, questions such as: 1) How do you define health as it relates to your development decision-making? and 2) Can you talk about the primary drivers and barriers for considering health in your development projects? From analysis of each of the case websites, a series of questions were also identified that specifically related to the

health topics advertised by the participant developer. Questioning continued until the discussions around suggested emergent health concepts were saturated.

Qualitative Data Analysis

The in-person and phone interviews were transcribed by a third party, verified by the research team, and coded in NVivo v10 (QSR International, 2016). Coding underwent a multi-phased approach, including open, axial, and selective coding (Corbin and Strauss, 1990). The first phase of open coding identified general classifications and concepts surrounding health and well-being. Specific and general health strategies were broadly themed. Next, the axial coding phase refined the open codes by clarifying the context around health. The goal of axial coding is to reveal more latent connections to health and well-being that may have been overlooked by the initial open coding process. Finally, selective coding moved towards more abstract themes. These higher-level themes pulled further away from verbatim text to formulate integrated health concepts (Charmaz, 2006). Member checks were utilized to verify that the intended meaning was maintained through the theming process. Additionally, documentation about the participants' multifamily development projects, such as website content and marketing pamphlets were reviewed. Using different source material enhances credibility and trustworthiness (Denzin, 1978; Patton, 1999; Jonsen and Jehn, 2009). Moreover, the use of triangulation can reveal different aspects of how health and well-being are considered across various sources (Irwin, 2008). Together, the coding process and data triangulation provided a more holistic lens to interpret the qualitative data - an in-depth exploration of how health is conceptualized in private, multifamily development projects (Su, Linderman, Schroeder, and Van de Ven, 2014). A

Themes & Discussion

The initial theming process included open coding to identify specific health amenities and strategies. These “low-hanging fruit” health features were explicitly identified by the case study participants as physical amenities or strategies. During the interviews, the participants connected these elements to physical health behaviors (e.g., fitness center, walking paths, bicycling, active stairwells) or feelings of well-being (e.g., onsite multifamily programming to enhance social connectivity, access to nature and greenspace, or place-making). Further iterations of these physical amenity themes occurred during axial coding. This phase revealed that the three multifamily case study participants focused on varying scales across their projects. Specifically, amenities were discussed by the participants at the unit, building, site, and community levels. These physical health and well-being amenities are further discussed in subsequent findings.

Next, a second round of open coding was conducted to identify elements that enabled multifamily developers to target health. This process was completed one case study transcript at a time using a line-by-line method. It represented a more in-depth attempt to understand how the developers conceptualize health beyond the “low hanging fruit.” This phase of coding initially revealed fifteen conceptualizations of health and well-being. For example, one of the themes across the three case studies was a connection to medicine and health care sectors. Axial coding further categorized the medical connections into seven themes as the participants discussed how the connections contributed to their understanding and approach to health and well-being in their projects. Table 4.2 shows an example of this axial coding process for this particular example

Table 4.2. Example of axial coding for the *Connections to Medicine and Health Care* open code

Axial Codes	Mixed-Income Quotes	Market-Rate Quotes	Luxury Quotes
1. <i>Influence via Knowledge</i>	<p>There's a place based philanthropic group in [city] that really was, that was a Family Foundation and the guy that was the patriarch of it was, he ran the pediatrics program at [medical university]. But he had come into a lot of family wealth and so they really focused on a neighborhood in [city]. And the initial focus was health and wellness of particularly children and early childhood education, and then investment in the schools all along that had a substantial investment into community wellness. But then, you know, of course, it didn't take them long to figure out that a lot of problem was the dysfunctional housing in the neighborhood.</p>		<p>Yeah, I mean, we have a bunch of different people advising us. So we have, you know for exercise equipment, we've tapped into the [medical center]. They have like an exercise group - they're trainers. ...And they have nutritionists over [at the medical center] who do Bod Pod assessments. We'll want to make connections like that.</p>
2. <i>Health Experience</i>		<p>For thirty years [development organization] has been in the business of medical office development so...thirty years of experience in healing environments is what we say. Facilities that treat and heal disease....and now we're into [development organization] 2.0 which is communities that promote health, of which [case study project] is the first one.</p> <p>This is a thing for me because I actually started as a hospital administrator. I have a masters in healthcare administration and later a masters in real estate</p>	
3. <i>Health Care as Disruptor</i>		<p>I just believe our healthcare industry...it needs to get turned upside down, so that's why we're doing that business ecosystem part of trying to bring in companies that are changing the.....I mean, some of it is wellness driven, but I mean, some of it is just better technologies in hospitals to reduce in-patient needs.</p>	
4. <i>Raising Awareness Across Sectors</i>		<p>I've had a few conversations with life insurance real estate departments, like trying to get them to connect the dots....you got this bucket of money and, you know, you're investing in real estate at 3 or 4 percent because you just need a steady return for life insurance coverages, but like you could also be trying to improve health.</p>	
5. <i>Access to Data</i>	<p>There is the health impact studies that the hospitals do for the area. We recently got a copy of that, the most recent one... which is specific just to our focus area.</p>		
6. <i>Health Programming Ideas</i>	<p>When I got the CEO of Florida Hospital at our board retreat saying, "You know what we do, let's get our high school students shadowing our nurses and doctors at the health and wellness center, get them inspired to work in healthcare." Today, we are talking about doing something called "Walk with the Doc" or something like that, where you just take a walk with the doctor.</p>		<p>Yeah, I mean, we have a bunch of different people advising us. So we have, you know for exercise equipment, we've tapped into the [medical center]. They have like an exercise group - they're trainers. ...And they have nutritionists over [at the medical center] who do Bod Pod assessments. We'll want to make connections like that.</p>
7. <i>"Lifestyle" Market Segment</i>			<p>I think, even a few docs have bought the building...they're interested in it. Some of it is lifestyle, but health can be part of lifestyle.</p>

The fifteen themes that resulted from the first round of open and axial coding served as an introduction to how the sample of multifamily developers thought and talked about health and well-being within their projects and decision-making. While the fifteen codes changed by the final coding iteration, the process, as a method and analysis tool, was integral in understanding the broad scope of HWB considerations. Table 4.3 displays the fifteen themes.

Table 4.3. First iteration of open and axial coding about health and well-being concepts

1. Connections to Medicine and Health Care

- a. Influence via knowledge
- b. Health experience
- c. Health care as a disruptor
- d. Raising awareness across sectors
- e. Access to data
- f. Health programming ideas
- g. "Lifestyle" market segment

2. Capture Green Building Benefits

- a. Hard work and time
- b. Momentum from existing standards
- c. Impact by scale: building/community
- d. Continuing education

3. Community Engagement

- a. Intersection of needs and roles
- b. Inclusion
- c. Amenities that spark wellness discussions
- d. Long-term commitment
- e. Making real estate approachable

4. Concentrated Investment

- a. Cohesive and overlapping health agendas
- b. More impact with small geography
- c. Real estate acquisition and control
- d. Privacy

5. Master Developer

- a. Commitment and control
- b. Unity through policy

6. Flourishing and Positive Momentum

- a. Incremental improvement/compounding strength
- b. Resident dedication and social dynamics
- c. Emerging research

7. Health Measurement

- a. Compromise
- b. Certification systems
- c. Survey development
- d. Technology
- e. Credibility
- f. Outcomes

8. Holding Properties

- a. Property control and decision making
- b. Fruits of labor
- c. Sustaining community relations
- d. Long-term value appreciation
- e. High quality infrastructure
- f. Social return on investment

9. Leadership and Human Capital

- a. Developer-initiated leadership
- b. High capacity stakeholders
- c. Trade-offs
- d. Buy-in and trust
- e. Connection to local government

10. Mixed-Income Benefits

- a. Adaptive environments and intangible benefits
- b. Precedent through social dynamic research

11. Market Drivers

- a. Flexibility
- b. Concessions
- c. Public relations
- d. Market differentiation
- e. Diffusion of innovation

12. Motivation to be Holistic and Transformative

- a. Intentional through organizational mission
- b. Transforming real estate purpose and practice
- c. Disseminating culture of health
- d. Place-based and asset-based development

13. Partnerships and Shared Values

- a. Philanthropic organizations
- b. "The greater good"
- c. The health care industry
- d. The design industry
- e. Multidisciplinary

14. Property Management

- a. Commitment to tenants
- b. Economic and financial success
- c. Gatekeepers
- d. Unrealized opportunity

15. Resources

- a. Private resources
- b. Public resources
- c. Tenant/resident resources
- d. Developer resources

When the first round of open and axial coding was completed and the entirety of all interview transcripts were analyzed, a second round was performed. The breadth of health and well-being concepts became increasingly focused as the entirety of the transcript contents were analyzed. As such, original codes were reoriented into themes that were a better fit for how health and well-being was holistically conceptualized across all participant interviews. For instance, the original open code *Connections to Medicine and Health Care* was re-categorized under a revised code: *Partnerships*. Additionally, despite having an *Access to Data* axial code under the *Connections to Medicine and Health Care* open code (see number 5 in Table 4.2), upon further analysis, this aspect of the interviews became more prominent. Discussions related to data and metrics became an integral component for how the developers conceptualized and talked about health and well-being in their projects. Thus, during the first iteration of coding, a new theme was created to capture this focus: *Health Measurement* (see theme 7 in Table 4.3). The element of health metrics changed again during the final coding phase; across all three multifamily developers, health was inherently *Unmeasured*. This theme will be discussed subsequently.

Final rounds of iterative and selective coding revealed six overarching themes for how HWB was conceptualized by these multifamily developers. While the six themes overlap and are interrelated, several sub-themes within each of the six themes are described to organize the concepts. The six primary themes conceptualize health as: 1) Concentrated Investment; 2) Incremental Change; 3) Knowledge Partnerships; 4) Ambiguous; 5) Unmeasured; and 6) More than Amenities. These themes and the respective sub-themes are discussed below.

1. Health is....Concentrated Investment

Three types of *concentrated investment* emerged as core development principles: geographic scale and capital expenditure, long-term commitment through property ownership, and investing in a master plan vision. These approaches, while not health related on the surface, became important ways to distinguish developers' concept of HWB development practices. The word "concentrated" includes various characteristics that all speak to investment in health. For example, "concentrated" in terms of geographic scale refers to a high proportion of development projects within a small geographical boundary. "Concentrated" in terms of capital expenditure refers to an intense focus on and funding for health related strategies. Similarly, non-financial connotations of "investment" can focus on relationships or ideas. These characteristics are described below.

1A. Smaller Geography; Greater Impact

The first angle of *Concentrated Investment* refers to the investment into the project in terms of geographic scale. Each of the developers focused on their own version of small-scaled projects to achieve their respective health agendas. The scope of "small-scaled" spanned individual buildings - such as with the luxury developer; the site level - primarily noted with the market-rate developer; and the wider community - demonstrated by the mixed-income developer. Despite the varying sizes of development projects, each developer claimed their approach as deliberately concentrated at a local level. Further, both the mixed-income and market-rate case studies viewed concentrated investment as a place-based strategy to support health within the community. In placed-based approaches, community and stakeholder agencies collaborate to address both health and the contextual factors influencing the social well-being of a population within a defined geographic region (Dankwa-Mullan and Perez-Stable, 2016). This approach considers various

health and non-health contexts outside the purview of a development's property lines, yet is still bound within a defined geographic region. The mixed-income case illustrated this place-based concept of health by stating,

“Part of our motto is we look at the city as like an ecosystem. The neighborhood is being able to both simultaneously do concentrated investments in a small geography, like less than a square mile, but also look at the city as a whole. That's rare because once people start macroing it out, they start looking at broad-based problems and policy...and then they don't have the impact.”

Similarly, the market rate developer mentioned how concentrating projects at the *district* (central city corridor) scale would increase the likelihood of generating demonstrable health impacts for that district versus transferring the company's development concepts into other markets nationwide. Building in local markets, such as within a single district, also fosters connections to multiple anchor institutions, demonstrating that this developer conceptualizes health as a collective, place-based agenda on a district scale. The market-rate developer states:

“I mean, [...] I'd rather have five [projects in this city] than twenty across the country because I think you start to have a little more cohesiveness or overlap. Like, [anchor university] is doing a ton of healthy building principles in their new master plan. So if that was part of [this project] doing stuff and [anchor health care facility] doing stuff and [anchor sports arena] doing stuff, then all of a sudden the whole place [the central city district] is healthier and maybe you start being able to get more measurable stuff.”

Alternatively, the extension of health strategies at the district or community scale was not considered for the luxury developer. Rather, the theme of concentrated investment in a smaller geography emerged with the luxury developer during discussions about 1) the infrastructure within the multifamily structure - the physical elements of building design that are constructed into the property - and 2) capital investment specifically targeting occupants' engagement with health. The luxury developer stated:

“I’m building out to the property line and I don’t have the ability to build off site, if you will. The way that I meet the community is by providing architecture all the way around. [...] We also felt there was an opportunity to not only go further with infrastructure, but felt the great need, once you build this building, to provide some sort of supportive network and structure where we can then connect people with the infrastructure...”

In other words, the luxury developer budgeted additional capital over industry standards for high-end features to ensure the building was designed and constructed in a way that best promotes health. This additional capital was allocated to the building interior, representing his concentration of capital at the building scale. Some of the built-in features (mentioned in subsequent sections), are uncommon in traditional multifamily buildings and required strategies to help residents connect to and properly use the HWB features. Health considerations and the corresponding capital budget planning were never intended to extend beyond property boundaries.

The theme of concentrating on smaller geographic scales for a greater health impact was challenged by the mixed-income and market rate equity investors. For example, while the mixed-income developer intentionally concentrated on an area less than a square mile, the investors -

comprised of local business leaders - expected to invest city-wide. This contradiction was mentioned when the mixed-income developer stated that while his team has:

“[...] been the best example of having a robust set of leaders willing to concentrate at a small piece of real estate [within a large city market], which is a big part of this [...] that was a hard sell. We were trying to make that sell for four, five years. It just wasn't....there were no takers, really.”

Similarly, the market rate developer described a contradiction between his vision of health at a small scale versus the investors' visions. The small-scale perspective for the market rate developer included using his larger site to inspire and connect to other developments within the central district. This district-oriented approach did not align with the desired scope of the market rate investors who wanted to contain the scale to the single site. This was illustrated when the market-rate developer said that:

“The [investors] ...don't love that that's [community health] one of the goals. They think our competitive advantage is keeping the health district to our 19 acres and making that a differentiator, versus, like, all boats rising with the tide...and us being the instigator that does that [make health a priority across the district].”

In other words, pursuing health, a novel real estate strategy, in smaller geographic areas may contradict traditional development and investor practices - where high-performing markets are typically targeted no matter the distance between development projects. Thus, the “all boats rising with the tide” represents how focusing on a smaller geographic area allows the diffusion of healthy development practices to catalyze a larger health initiative in one market. The internal challenges for investors unfamiliar with this type of real estate approach illustrates how the case

study developers are innovative thinkers, or “instigators,” in how they adjust conventional real estate practices in favor of greater health impacts.

1B. Holding on to Properties; Holding on to Relationships

The second meaning of *concentrated investment* involves a long-term commitment to health through property ownership. Developers have the ability to take on different degrees of continued ownership while continuing their relationship with the project. This process is known as the exit strategy and each development has a different exit approach. A simplified example of the different exit strategies include: 1) build and sell immediately, such as condominium developments, 2) build and hold the property eight years for tax reasons (beyond the scope of this research), or 3) build to hold indefinitely - common in multifamily rentals. Developers who continue with property management have control over the decisions that directly influence the operation of the project. These organizations typically contribute to project financing, accept all of the risk and liability for the project, but also receive financial benefits over the long term (ULI, 2012). More importantly, from a health lens, holding a property allows the developer to: 1) maintain relationships with the space-users, residents and community, and 2) sustain the health strategies that were originally intended for the project. These attributes are more likely to dissipate if the developer sells the property after construction, especially if the buyer does not value health considerations; control over maintaining operations to support the health decisions made during design and construction is lost.

Maintaining relationships with the residential community was critical for the mixed-income case study in terms of community engagement, trust, and gathering health data. The mixed-income developer explains:

“And we’re long term holders and owners of the real estate and we manage the communities. And so, we end up being part of a lot of interesting outcomes and community wellness is part of the mix. [...] There’s a lot of work on measurement and there’s a lot of interviewing residents and tracking their health and wellness.”

While this level of investment into the community enhances engagement, learning, and impact, it is lost if the developer does not hold the property.

Maintaining on-going relationships with occupants was also critical for the luxury developer’s health agenda. While the nature of condominiums is build-to-sell, a different model than the mixed-income structure, staying engaged with the condominium community post-sale ensures the building and its health infrastructure is being used and maintained properly throughout the occupants’ ownership.

“[...] you can design a building to perform [...] but once you walk away and wipe your hands of it, it doesn’t mean anything. So by providing those additional layers of operation performance, programming, infrastructure, is really trying to move the ball forward to say not only are we designing it properly, but we’re also helping residents engage the building properly.”

In this example, the luxury developer used his non-profit partner to hold onto, or invest, in resident relationships so the healthy building components are properly realized. It is through this connection that relationships to residents are maintained over time, allowing important health data to be tracked.

On the other hand, the build to hold indefinitely exit strategy may make it more likely for a developer to try novel strategies at a higher capital cost, for example, a high-performing HVAC

system. While the financial valuation and risk components that go into this type of decision-making are beyond the scope of this research, the market rate developer concisely addressed his views on building to hold:

“I think, if we weren’t [in it to hold], certain things shouldn’t have been done in this building. Like the [air filtration unit]... that is a really expensive mechanical system to add onto a building just for some air quality that we’re not measuring. [...] And like, we’ve taken a leap of faith that if we have ten foot sidewalks instead of six foot wide sidewalks, it’s a lot of incremental concrete, but hopefully that means that people are safer and walking more.”

For the market rate developer, building to hold affords a willingness to try unconventional features. While more expensive to include, the ability to try may spur innovation for health features that otherwise would not be implemented if the goal was to sell. If the exit strategy was to build to sell immediately, the market rate developer may run the risk of not recovering the upfront capital cost of, for example, the HVAC system, because the buyer may not want to pay the upgraded costs.

1C. Planning Beyond the Building

The third meaning of *concentrated investment* involves the deliberate pursuit of improving health through long-term, master planned developments. Despite not being a relevant theme for the luxury developer, whose project is singular in a neighborhood, the theme of the master-planning scale emerged for both the mixed-income and market-rate developers. Both mentioned the need to acquire more land to ensure their health objectives are feasible and supported beyond

the boundary of a single parcel. The mixed-income case study developer reflected on advice he was given about protecting community well-being values and maintaining control to do so.

“[The advisers] said, ‘Look, if you have the stomach for it, buy as much land as possible, even if it’s just so that you can have a say in how the neighborhood changes, because nobody else is going to risk that much capital for the good of the neighborhood. Everyone else is only going to do it for a return.’”

In other words, having control of adjacent land or properties would allow the developer to converge a broader health objective across a “small geography” without being interrupted by another buyer’s potentially competing agenda. It is likely that the competing agenda would not adopt a health lens; thus, the new buyer’s willingness to allocate capital towards health features would substantially decrease in favor of “business-as-usual” - a higher return on investment.

Further, the mixed-income developer recognizes that the intention to be committed to community health and well-being is not standard practice in real estate. For example, the developer discusses how with every successful development within the concentrated area, it can be leveraged against the value of the adjacent properties. Essentially, the mixed-income developer talks about health as an investment in the community, not necessarily an investment solely for profit:

“That, for us, is the idea of [...] a long-term time approach to continue developing in the neighborhood, as opposed to just doing- [...] The typical real estate approach is like, if there’s something there I can make money on, I’ll do it. If there’s something more profitable somewhere else, I’ll go over there. This is sort of a combination of both, when you’re saying, ‘We’re sticking here, this is our community.’ But we see ourselves as the long-term developer of this community.”

This long-term mindset is one way health is abstractly conceptualized in real estate decision-making. The deliberate commitment to a specific bounded community is atypical in real estate principles and highlights how the pursuit of health is a novel approach. Moreover, adopting a health lens may further diverge from traditional real estate practices regarding financial objectives. For example, the mixed-income developer continued:

“Let’s say you’ve got to buy [...] a piece of property and somebody’s gouging us. We can negotiate them down to something that’s reasonable for us to make a deal....be in the black, be a little profitable - but maybe another real estate developer will look at it and say, ‘No, I don’t do things for less than X return.’ We might look at it as a yes. If we could [...] transform that whole block by buying that property - the idea is that this [...] gives us flexibility to do that.”

Combining a long-term development mindset with increased control beyond a single building facilitates an agenda coming to fruition. In this context, the mixed-income developer forgoes a higher return on investment for greater control over decisions about how the community is developed in a way that promotes HWB.

However, directly adjacent land is not always available to purchase. An alternative way to think about health as a concentrated investment is through the lens of a community’s master plan. For example, if a city’s master plan mandates health related strategies, adjacent property owners would be required to follow these regulations, thereby collectively increasing the health impact of the community. The market-rate developer discusses how a community master plan developed by the municipality could collectively increase park space:

“The irony in all of this, [...] is that while I’m a private developer, I wish that more parts of town had master plans, whether they’re individual projects or not. I guess the point I’m getting to....like, that project across the street [points to small parcel], ten percent of the land is supposed to be open space [...] right? But like, what is ten percent of that space? It’s like nothing. It’s not even a pocket park. Whereas if that and the neighbor and the neighbor were all contributing to a park, you could truly create a park.”

Whether the developer is capable of buying adjacent real estate to continue targeting health or if a master plan mandates that all developers do so, staying focused on health in a concentrated manner at varying geographic scales was a common way to describe healthy development principles.

2. Health is....Incremental Change

The second overarching theme that emerged about how HWB is conceptualized by early adopter multifamily developers involves incremental changes towards positive health outcomes. This temporal theme spanned all three development case studies. The scope, however, of *what* is changing varied; across cases, incremental change referred to transforming real estate development practices, as well as resident mindsets.

2A. Patience, Transformational Appetites and Ripple Effects

Both the mixed-income and market rate developers emphasized how purchasing proximate real estate can lead to incremental changes that improve health and transform developer practices and mindsets. This is closely connected to the previous *concentrated investment* theme but

emphasizes a temporal component. For example, while gaining control over land and properties within a concentrated geographic area increases the chances to pursue a like-minded development agenda, such as health, a temporal consideration can initiate the transformation of an agenda. In this context, “transformation” refers to developer responses that produce non-linear changes in real estate development processes. These changes may appear as radical shifts, directional turns or *incremental changes* in normative real estate formats (Pelling, O’Brien, and Matyas, 2014). For example, forgoing increased returns on investment in favor of healthier community development is transformational in real estate practices. The mixed-income developer shared insight about how to avoid “*just becoming a collection of nonprofit programs in a poor neighborhood.*” The insight included five things that developers needed to focus on to holistically transform real estate and community development:

“If you're serious about transformation, you need to focus on real estate, real estate, real estate, real estate, and real estate.’ [...] until you control the real estate and you can level set what the real estate is like in the neighborhood, you have no chance of really transforming the social outcomes in this neighborhood. [...] if you can, build a case that people would catch on to, because there's no other aspect of this. The education is grey, the healthcare is grey, none of it changes things like real estate.”

“Building a case” for the purpose of transforming social outcomes takes time. Successes in real estate practices that promote health and positive social outcomes can incrementally “catch on” and shift community stakeholder mindsets to value real estate practices that establish a holistic health agenda. These collective stakeholders for the mixed-income developer include residents, community members, local business leaders, and the development team.

Similarly, the market rate developer commented on how he believes in his healthy development principles, stating that incremental change can promote health not only for the residents of the development, but for the wider community within the central business district:

“I believe in the development principles we’re doing here. I think we can do it in other places in [location omitted]. And then we start to incrementally improve the community because it becomes more than just 5,000 people that live and work here and come and go to all the other vices around them that aren’t this lovely place. [...] From an outcomes perspective, I think we can prove that our development principles are making incremental change if we do more of it in the same market.”

In other words, the market rate developer believes that his healthy development principles can have health impacts beyond the property lines - “all boats rise with the tide.” While it may take longer, the incremental adoption of HWB considerations within the nearby market may produce more noticeable changes in health outcomes compared to a more scattered approach in multiple disconnected markets. This broader, community-oriented thinking could be considered a transformational approach for a market rate real estate developer.

Moreover, transformation of real estate practices also includes acknowledging the structural racial inequities of practices like red-lining and denial of mortgages. The mixed-income developer notes that decades of those practices created the reality they are trying to address today in disadvantaged neighborhoods. He discussed how his group has spent time thinking about becoming a social real estate venture where they can maintain long-term real estate investments with the community to actively support health and wellness. The mixed-income developer believes that overcoming the systemic processes that deterred economic and social growth will ultimately be incremental:

“Not [every developer] can do that, because the typical momentum or inertia is to just focus on getting the deal done....’get it done, because there’s three more waiting to go after.’ [Our approach] takes a willingness to have patience and appetite for the bigger picture.”

Further, actively promoting a health agenda can shift the decision-making of peer developers and stakeholders. One successful project that prioritizes health can have a ripple effect, both energizing the residents around health and illustrating success for other developers in this area, and ultimately lead to a community-wide adoption of health practices. While this process is incremental, there is potential for a larger geographic impact. For example, parent real estate organizations that deliberately target health can broaden the impact by passing the same agenda to their local subsidiaries (e.g., hub and spoke model). The market-rate developer illustrates this when discussing the real estate process in the health care sector.

“If we can get those for-profit companies to start thinking about their impact on the local level at the hospitals they own, which then stretches across like thirty states, and if they’re all thinking about their health impact...you know what I mean? It just continues to ripple. [...] There’s a ton of these healthy development principles that could be branded answers to change the perspective from disease to truly being a health system, not a care system.”

This example also highlights the potential for customization of health needs at the local level (e.g., concentrated investment). Moreover, according to the market rate developer, the “ripple effect” has the potential to incrementally change (i.e., transform) the perspective of an entire real estate segment (health care facility development). Conceptualizing health as incremental change

suggests a much larger effort to transform traditional real estate practices - where primary goals are financially based - to a style of real estate that makes HWB and social agendas a meaningful goal.

2B. Education

The second type of *incremental change*, resident mindset, was noted across all case studies and involves the incremental reinforcement of HWB principles through education. The mixed-income developer reflected that one goal for their project is to catalyze the residents within the community to take ownership of how they pursue healthy lifestyles and collectively organize to achieve health goals. When talking about residents taking a lead role in sustaining the health mission of the development, the mixed-income developer discusses how their roles could include having:

“... a mainstream program, where they [residents] were doing some community organizing [...] and should be able to make decisions themselves. Anything that represents the voice of residents [...] where we would help fuel and strategize.....Eventually, the sustainable idea is that this eventually becomes a community who will take care of themselves, and there’s a leadership and they’re organized and they have a real strong culture that can be perpetuated there and we were an engine for change. Real estate could and should see itself that way...”

The mixed-income developer targets communities of need through the integration of low-income and median income residents. With so many competing economic priorities, community residents may not feel empowered to self-organize around a culture of health. Successfully transitioning into this type of community will require time and education - both of which can be

fueled by the mixed-income developer - an “engine for change” where HWB behaviors and outcomes continually improve. The mixed-income developer elaborated:

“And these places have a tendency to keep getting better. I think that's the case in [another project in a different city]. It's eight years in with operations, but it's getting stronger. People thought it would revert back to what it was after the initial beautiful place and people moving in but a lot of it is how you run it and then your residents are what really makes the place.”

Demand for health-promotive real estate may increase as residents across populations become more informed about how their environments can directly influence their health and well-being. Aside from a willingness-to-pay perspective, which speaks to the developer’s ability to command higher rents for amenities that residents are willing to pay for, the luxury developer was also interested in how resident health goals, over time: 1) become feasible, 2) are self-actualized, and 3) are intentionally pursued. This process is incremental and is greatly supported by an educational component. For example, the luxury developer created a wellness package that includes a book to educate residents on how their unit and building can facilitate healthy behaviors. By distributing this wellness manual, the developer is raising awareness of the health benefits of the building to *“help them understand how to use it, help them develop their individual health goals, and then hopefully help people actualize it in that space.”*

3. Health is....Knowledge Partnerships

Real estate development is a multifaceted process which often requires a multidisciplinary approach. As developers seek to both differentiate and transform their development practices by including health and well-being principles, they will need partners who can provide expertise in

health topics. A developer's growing understanding of health will depend on access to and availability of appropriate and insightful information and resources (Pemberton and Stonehouse, 2000). As such, to increase a real estate organization's learning capacity, partnering with organizations that understand the associations between the built environment and health is recommended. Such partnerships allow the sharing of knowledge as well as the building of new knowledge germane to the developer's project area of interest (2000). Thus, rather than just improving the financial capacity as an investing partner would do, the current study found that partnering with credible organizations to improve the understanding of health from a holistic perspective was a common theme for the three case studies.

Interestingly, increasing the organization's capacity for knowledge around health did not explicitly include partnerships with financial objectives. Rather, meaningful and useful partnerships often revolved around creating a cooperative environment primed for information sharing to support the creation of social and innovative value; this represents a knowledge partner's value proposition. Typically, there are no expectations for financial gain (Emerson, 2003). Whether knowledge was generated through joint grants, community engagement, impact assessors, joint-ventures, or organizational input, health-focused partnerships were critical in shaping how the developers pursued and thought about health in their projects. For example, in an effort to comprehensively "move the needle" to accomplish the Purpose Built Community pillars, the mixed-income participant stated,

"In order for us to accomplish this, we have joint-venture partnerships with real estate developers to get the apartments done. You have to have real good experience doing this kind of thing, with folks developing early childhood education, and health and wellness centers, and boys and girls clubs. [...] We have

round tables of everybody from the school districts, to nonprofits, to individuals, to residents who have an intrinsic concern in [the four pillars'] category of work. Eventually they are to mature as a true collective. In fact, the initiative was the sharing of information, data evaluation, independent assessment about how everybody's doing, and intentional alignment of all those partners."

This level of attention towards non-real estate sectors is uncommon but its presence in this specific case study connects to the idea of creating a different style of multifamily real estate. Partnerships were formed across non-health and health sectors in an effort to approach healthy development in a holistic manner. Moreover, adopting development frameworks like the Purpose Built Communities model can provide assistance in fully committing to healthy development practices by forming a “*true collective*.” In adopting this model, the mixed-income developer represented the most demonstrative example of an active knowledge partnership.

The market rate developer also established meaningful collaborations. For example, he mentioned: the Metropolitan Planning Organization, the Urban Land Institute, a local University, Hospital Corporation of America (HCA), the Department of Transportation, the Mayor's Transit Committee, the [City] Civic Design Center, multi-modal engineers that specialize in greenways and sidewalks, sustainability experts, the local farmer's market, medical professionals from nearby hospital systems, the State Health Department, national health insurance companies, community groups, and others. This developer recognized that a network of collaborating organizations allows each partner to provide specialized knowledge and competencies that can be shared, resulting in synergies between the various knowledge bases (Pemberton and Stonehouse, 2000). Through these types of knowledge partnerships, a pool of network knowledge is created that is greater than the sum of knowledge of the individual organizations in the network (2000).

To gain insight into creating healthy corridors within the city, the market rate participant described a grant he was awarded by the Urban Land Institute (ULI), a network of cross-disciplinary real estate and land experts (www.uli.org). The developer discussed how working with ULI underscored how developing for health cannot solely be the responsibility of a real estate developer. Rather, truly understanding and championing health requires developing knowledge partnerships with other neighborhood groups and their respective assets.

“There’s been a ton of work around here about trying to make [main urban thoroughfare] a healthy corridor. ULI gave us a grant to study that from a planning perspective [....]. I might be skeptical. I think most developers are thinking about buildings, not neighborhoods. Like, they’re finding sites in neighborhoods that are attractive for whatever the reasons are. Like, we were in an industrial land that we’re turning into a healthy neighborhood, right? And there are other assets that aren’t just ours that I think add to that healthy neighborhood. But most developers want to know where their curb cuts are and where their connect is to city utilitiesand not worry about this space between buildings.

The “other assets” are nearby organizations, businesses, or public service entities that could potentially provide useful insight into different types of knowledge about how to better serve the HWB of the local community. Their resources would remain untapped with a traditional approach to development - where the space between buildings, the fabric of communities, is largely unconsidered.

From the luxury developer perspective, the theme of *knowledge partnerships* mostly revolved around partnering with organizations to either develop metrics to assess the health impacts of the building or to ensure the highest quality amenities were included in the project.

For example, the luxury case study partnered with their local medical center to cater fitness training and nutrition counseling to their building occupants. Additionally, the developer connected with the Institute for the Built Environment (IBE) based out of a local university to create pre-, post-, and follow-up occupant surveys. A knowledge partnership also included the International Well Building Institute, or IWBI. This institute delivers the WELL Building Standard, the leading global rating system and the first to be focused exclusively on the ways that buildings can improve comfort, drive better choices, and enhance health and wellness (IWBI, 2018). According to the luxury developer, their partnership aims to be “*the go-to survey for multifamily residential with the WELL Building Standard*” as well as “*prove that we’re making an impact [...] in terms of health.*” This developer also commented that diverse partnerships are needed; he is aware that pursuing health and proving its impact is a multidisciplinary endeavor:

“We have an advisory committee that we’ve formed. [...] We pull from the surrounding professional network. We have farmers we bring in, architects we bring in, wellness consultants, we bring in dieticians, we bring in nutritionists. We have somebody from IWBI, we have IBE. So it’s this larger network of professionals because we understand that we don’t know everything. We are very cognizant of that fact. So bringing in these professionals and being able to talk across siloed industries, we’re able to get that kind of larger network of intelligence.”

This luxury developer also has a close partnership with a non-profit dedicated to conducting research on the case study property. The developer co-founded the organization and maintains a seat on the board. He discussed how this particular knowledge partnership provides flexibility to test certain health features:

“That’s what [the non-profit] allows us to do....is to focus on [testing new ideas]. We had a couple meetings a bit ago where we asked a whole room of about 30 people from all different disciplines, ‘Hey, here’s a pen. We want to make everyone live longer in this building. Help us realize this.’ So we studied this building and came up with ideas that helped us. [The non-profit organization] gives us that format [...] to engage the people and pull in this research. Otherwise we’re just [...] the development company and they’re like, ‘Yeah, that’s great, Asshole.’”

Establishing multidisciplinary knowledge partnerships can collectively co-generate more insightful conceptualizations for how to target health. Knowledge partnerships also legitimized the luxury developer’s role as an early adopter with a true health lens as opposed to a real estate developer that fulfills the negative, profiteering stereotype. Moreover, partnering with teams specializing in research creates an environment driven by evidence-based approaches - a critical consideration when defining and implementing emerging, complex strategies such as health.

4. Health is....Ambiguous

The three case study participants were cognizant of the difficulty of talking about health in a real estate context. This challenge largely stems from the novelty of health as a real estate consideration, the inherent ambiguity of the term and concepts, and the ubiquitous scale. Additionally, the term ‘health’ is multiplicitous given the varying contexts from an array of involved stakeholders. This fuzziness could fatally weaken the diffusion of health as a real estate concept and undermine its consideration in practice (Ramsey, 2015), simply because stakeholders are not certain about what strategies, outcomes, and concepts they are actually talking about. The lack of clarity and multiple meanings makes health intangible as a worthwhile, investable strategy.

All case study participants highlighted the sense of confusion encountered when health was described across different scopes, contexts, and intents.

4A. Interchanging Scopes

The mixed-income developer illustrated the challenge of conceptualizing health when many unrelated partners and scopes are involved. When asked what is talked about when considering health and wellness strategies, the mixed-income developer responded:

“Sometimes, we don’t even know fully what our partners are talking about. And they’re trying to figure that out, because it’s a very broad topic, right? What frame is it? Is it that you’re going to the doctor and you have access to healthcare? Is it that you’re seeing outcomes? Is it that you now live in a place that has stability and safety versus a place that is dysfunctional and there’s crime and fear and inability to have the kids play outside because of the environment they’re in? All things come into play.”

Alternatively, when the real estate scale is limited to a building, describing health is simplified and more explicit. The luxury developer concentrated health investments within the confines of the building and property. Therefore, the complexity that accompanies health at a broader community scale is reduced. The limited scope of the project enabled the luxury developer to focus solely on occupant health and well-being, as opposed to the health and well-being of the neighborhood.. In this case, the concern of organizing a diverse set of perspectives and values from various stakeholders became irrelevant. The only context relevant for the luxury developer was how to positively impact the health of the residents in his property.

Despite this simpler scope of concern, discussions surrounding which facets of health should be *measured* revealed uncertainty. After being asked what exactly they were measuring in terms of resident health, the luxury developer commented:

“That’s a great question. [...] Part of that is still in development and [colleague] and I have this conversation almost on a daily basis. Are we trying to impact health? Or medicine? And so, when we look at it from that perspective, with HIPAA [...], we’re not going to necessarily be able to go in and pull blood or things along those lines. So it’s trying to figure out what are the appropriate HPIs [health performance indicators] that we need to measure to validate the impact we’re having on the residents.”

While elements of health metrics will be discussed in later sections, this perspective highlights how despite research agreement on the importance of health, the term risks being used inconsistently so that no two researchers or stakeholders are talking about the same phenomenon. For example, is “it” health or medicine? The ambiguity of what “it” means in the context of multifamily real estate gives rise to an unfixed referential system (Stern, Zinkhan, and Jaju, 2001). Further, the absence of a commonly accepted definition hampers the construction of a systematically related set of statements and the derivation of generally accepted measurement techniques (Hunt, 1991; as cited by Stern et al., 2001).

4B. Where to Place Health in the Priority Hierarchy?

When multiple stakeholders are involved in community development strategies, the interests of each specialization (i.e., transportation networks, land use, capital improvements, sustainability principles, etc) can overshadow the collective goal of improving community quality

of life, well-being, and health. As such, the market rate developer noted that the broader goal of community health is oftentimes lost within each stakeholders' specializations. Thus, the ambiguity of health is perpetuated.

“I mean, I talk about it with [City] all the time, like with ULI [Urban Land Institute] and all the committees I’ve been involved with...the mayor’s transit committee. And you know, we should be talking about community health and quality of life, not whether or not the trains should go here or not. It should be about impact. It’s just hard to talk about it. Sometimes “health” is the wrong word.”

The market rate developer believes that all the multilayered components that go into real estate decision-making can and should connect back to HWB. Yet, he makes the point that health has different meanings and priorities for different disciplines. Therefore, some disciplines may not recognize that HWB can be a top priority. For this reason, the market rate developer posits that perhaps health is not the right word for something that has an overarching impact in every aspect of built environment and real estate decision-making.

“That’s the biggest irony of all of this. Whether it’s ULI or here locally....health becomes this different thing, right? It’s almost talked about as its own development principle, when really, in my mind, in my opinion, it’s the one on top of everything else. And that’s why it isn’t always the right word...”

On the other hand, the mixed-income participant commented how despite having a diverse board of directors with differing focus areas and expertise, there is *consensus* that health and wellness connects their collective efforts. When asked if the partners and board members share a dedication to health, the mixed-income participant responded:

“I think what happens when you have a mission this holistic or multifaceted [...] the reality is that particularly wellness overall is this overarching overlapping thing that connects it all together. There hasn’t been disagreement about how to prioritize health because everybody has bought in. That’s a part of what we’re aiming for from the get-go.”

With the mixed-income developer and partners, there is a unified perspective that health, above all else, should be a top priority. While there are four pillars that comprise the Purpose Built model, health is an integral priority across them all.

However, the mixed-income participant associated with the non-profit - a non-developer - also suggested that the cohesive effort in prioritizing health can remain elusive for the conventional real estate developer. The mixed-income participant illustrated the point when he commented:

“One of the challenges here is that developers [...] think about so many things at the same time, right? They think about the financing stack, the architecture, the market, the relationships, deals with partners and funders. They can do multi-dimensional thinking. But now you’re asking them to zoom out even from that, and start to think more about the context of the local school, and the community, and some of the other things that are less quantitative and more qualitative or intangible.”

When developers are required to add to their already multi-dimensional thinking, keeping health at the forefront of decision-making can be challenging. This contributes to the ambiguity when trying to conceptualize health and shows that health is not always on the radar for all stakeholders.

4C. Intersecting Intent

The differences in intents behind pursuing a health-focused real estate project also contribute to the ambiguity of the concept. For example, is a building less healthy if the amenities are solely profit-oriented? The market rate developer noted that as a private developer, finding the intersection between financial and social profitability is challenging:

“I’m cognizant of the fact that there’s having health amenities to market spaces by private developers to get the rent you need to make the deals work. And then, there’s health amenities that are there for, like, the social good part too and hopefully we can figure out how to do both. But right now [...] we haven’t figured that out yet.”

This example indicates that part of the ambiguity may stem from an inability to link financial and social real estate objectives. The market rate developer’s comments also alludes to Environmental, Social and Governance (ESG) investing, which involves integrating “*social good*” factors into fundamental investment analysis to the extent that they are materialized into investment performance. Alleviating the ambiguity surrounding the conceptualization of health can help strengthen the link between financial and social elements of health promotion in real estate.

5. Health isUnmeasured

The conversations with the three participants consistently referenced ambiguity of what “health” means in a real estate context. Part of this difficulty stems from a lack of metrics. One hurdle that must be overcome to accelerate the adoption of HWB within the real estate industry is the limited availability of data and metrics to define and measure the health performance of real

estate development projects (Trowbridge, Pickell, Pyke and Jutte, 2014). The lack of metrics makes it difficult to effectively demonstrate the value of HWB choices. Thus, fully conceptualizing it as a value-adding asset becomes hazy, lacking confidence behind the meaning. The market rate developer illustrates this when he stated:

“We’re not paying extra money out of pocket to try to prove to people we’re doing it [integrating healthy development principles] to try to create better places. We should. I mean, [...] that is the shortfall in a lot of the work....is not that we’re not thinking about it on the front end, we just don’t have confidence... [...] There’s not some measurement tool that anybody in the market is going to care about [...].”

Establishing empirical value is how features of real estate projects are traditionally capitalized into financial proformas and underwritten for lending purposes. If a real estate developer does not know how or what to measure regarding “health”, then it remains an economic externality - unconsidered, unregulated, and unmeasured (2014). Regardless of the social benefits from adopting HWB ideas into real estate processes, if the financial value remains an externality, the likelihood of health diffusing into conventional real estate developer principles drastically decreases.

Related, the mixed-income developer acknowledges that defining and measuring health is beyond his area of expertise. Despite having access to knowledge partners, the ability to confidently define how and what to measure regarding health remains elusive. The mixed-income developer recognized that lack of health metrics is a current limitation to leading with health in his projects:

“We haven’t done anything where we actually measure the health of residents before in some way. And it’s outside my expertise to know what should be measured. We know that our job is to build good housing and a beautiful place to live and maintain it and manage it really well. We’re probably blowing by some things we should be thinking about.”

Similarly, in the public health realm, determining best-practice indicators of health often have temporal criteria, assessing health outcomes across time. Measuring in a retrospective, cross-sectional, or longitudinal manner are decisions that would have to be made very early in the multifamily development process. Again, the market rate developer acknowledged the temporal challenge:

“I think we would love to be able to start tracking metrics, start collecting data somehow, but what’s the duration that really makes it meaningful data from a public health perspective? That’s a challenge.”

The challenge of defining and measuring health is cyclical - health is ambiguous because it’s not measured; health is unmeasured because it is ambiguous. Determining a credible temporal dimension to HWB evaluation cannot move forward until there is better terminology and metrics.

Related, both the market rate and luxury developers mentioned how health remaining unmeasured prevents it from being included in project financing. For example, the market rate developer said:

“To me, the holy grail is to have a health impact assessment that actually has some physical outcome that we can then go and underwrite. Or at least use it as an example if it’s already done to go get financing from more places to be built that are healthier. That’s such an easy word, right... “Healthier?”

The market rate developer’s comment about how “healthier” is such an easy word conveys its complexity, ambiguity and perhaps frivolity. In his words, the ideal scenario - to highlight health as a sensible real estate investment - is to develop compelling methods and metrics. He believes this is critical for healthy development principles to be diffused into conventional real estate practices:

“I mean, some of this is altruistic and some of it we just haven’t figured out yet. [...] That’s really why I want to figure out how to measure it. Because then if we can prove that doing these things are going to have a better financial return then we and other developers can do more, right? Like, we can do it independent of asking people for money. [Currently,] in this building, there’s nothing we told the lender to get us better interest rates or a higher loan-to-cost ratio because we’re building healthier.”

Further, the market rate developer describes how the ability to prove financial value by adding HWB principles could lead to lenders incentivizing healthy development. The diffusion of healthy development practices into conventional markets may be reliant on incentives. Yet, to initiate incentives, valid and reliable metrics must be established as a way to assess if a project meets incentive criteria. Proving the business case is also mentioned by the luxury developer:

“I think [proving the business case] is the sticking factor. [...] Many times it just comes down to the simple math to prove the value of the proposition to then know what you can spend on it to know if it’s salient. I think that’s the issue. So if we can prove the positive benefit of any of these [health] measures then that’s a win and we can get the information out there.”

In other words, the ability to make HWB a measured construct in real estate financial decision-making will ultimately determine whether HWB principles are an emerging differentiator worthy of intentionally targeting or a fleeting market trend.

Another consequence of health remaining unmeasured is that it prevents the adoption of standardized techniques that can be collectively and confidently used by every multifamily developer. The market rate developer elaborates when he described how *“more and more developers are going to [pursue health....]”*

“...but every one of us is going to do it differently until there’s some way to measure it together. I mean, for the project specifically, there are definitely financial goals, but until we get to a point of figuring out what we want to survey, like actually going through the research in the work you guys [interview team] are doing and finding some measurable things that are meaningful, the ultimate project’s success is going to be measured by ‘did we execute the project in a way we wanted to without sacrificing those health goals, like economically.’”

The standardized factor is critical for establishing consistent value across the wider multifamily market. The market rate developer mentions that without a standardized approach, health concepts will remain project-specific. If this is the case, multifamily projects that integrate

HWB principles will have different ideas and priorities surrounding HWB. This variation could delay the urgency to create collective and credible standard constructs - and more importantly, perpetuate the existing ambiguity.

The luxury developer also commented on how industry-wide metrics will help establish a better idea of how health can be both credible and profitable. He mentioned the unfamiliarity of health as a hypothetical barrier to its adoption and commented that when other developers are presented with the concept of health, it may result in reactions such as, “*‘What is this...I don’t get this shit!?’*”

“I think we need to come up with some real industry-wide metrics in terms of how we’re actually quantifying the impacts we’re having on [...] residents or occupants or tenants. And the business case. What is the actual value? I think those are two nuts we need to crack.”

Establishing transferrable metrics can help increase awareness and credibility, as well as help establish economic value. Moreover, this once again highlights the cycle of health being ambiguous and unmeasured.

6. Health is....More Than Amenities

The health themes that emerged from the interviews with early adopter developers have so far been relatively abstract or intangible. Yet, common among all participant discussions were amenities - physical strategies enacted via infrastructure, building design, or programmed experiences that make a property more valuable to prospective buyers or tenants.. Under the broader umbrella of amenities, two sub-themes summarize the complexities of this more overt facet of ‘health in real estate’.

6A. Profitable Amenities

Amenities can include built or natural features and are often tied to financial decision-making - e.g., determining if the upfront capital expenditure yield an acceptable financial return in an acceptable amount of time. Therefore, amenities are central in pricing real estate units and projects. Research dedicated to hedonic pricing (i.e., willingness to pay) and amenity capitalization indicates that developers typically select amenities that add value to their real estate asset, allowing a higher command in rent or sale price (Sharp and Dawes, 2001) Amenity selection and the associated profitability is closely connected to market differentiation for the project and developer. Differentiation makes products: 1) more desirable, allowing higher volume of sales and more profit, and 2) more unique, therefore price comparisons are difficult and developers can get away with charging a higher price (2001).

In real estate, differentiating amenities is a method to position a project so that it is recognizably different from its competition (Sharp and Dawes, 2001). Since health is emerging as a novel and notable feature, incorporating amenities that target health can be considered a competitive advantage. Indeed, amenities implemented in the three case studies had to be financially viable; the initial amenity investments had to produce favorable gains, or high returns on investments. The market rate developer alluded to the competitive advantage that health amenities can bring to the real estate landscape. He explains:

“The challenge is the competitive landscapes. There’s a bunch of market rate apartments in town [...] but we’re starting from the beginning talking about health and lifestyle change and behaviors and social determinant issues, versus, they’re all trying to hang on to this supply-demand curve right now since there’s so much competition. So they’re doing this....I don’t want to sound negative, but I feel like

some of it is lipstick on the pig. To my knowledge there are no residential developers that are talking about health the way we are in town.”

In other words, the market rate participant believes that other multifamily developers who wish to remain competitive may look to the latest market trend and minimally implement tactics to stay relevant in the current market. For these developers, healthy development principles are not driving early decisions; their differentiation strategy is an afterthought or quick-fix. The market rate developer’s early consideration of amenities that promote health makes him an early adopter in the health and real estate landscape.

Examples of known and profitable health amenities include: fitness centers, pools, air filtration systems to enhance indoor air quality, trails to promote walking, open space, onsite pet services (e.g., spa, dog park), bicycle sharing programs, and resident programming (e.g., yoga, fitness classes, etc). These amenities tend to be either physical or programmed elements, both of which have undergone extensive hedonic modeling to assess their respective valuations (for examples, see: cite; cite; cite; cite). Essentially, prospective tenants and buyers are willing to pay more for these health-related features. Yet, undertaking a more transformational approach to HWB principles is more challenging.

“I hope we’re not just putting a different spin on it [lipstick on the pig], but I feel like the amenities we’re thinking about in our residential project truly create an opportunity for people to be healthier and not just checking the boxes that every apartment needs a fitness center and a clubhouse.”

The market rate developer hints at the difference between the more easily assessed HWB amenities versus the more nuanced ones that may result in both increased value as well as contribute to a great health impact.

6B. Unbounded Features

‘Unbounded features’ addresses the dynamic design scales, boundaries, or reach, of the health amenities. At a micro scale, identified health amenities focused on unit-scaled strategies, such as circadian lighting to promote better sleep. The meso health amenities identified focused on design features at the building and site levels - e.g., active stairwells and onsite green space. The macro scale consisted of health features that were available to the neighborhood, such as connections to or programmatic incentives for public transit, parks, or recreation centers. Health, therefore, was not conceptualized by the three participants in a confined or spatially explicit manner. As such, major differences in amenity selections were revealed between the three case studies. The mixed-income developer, for example, focused the health amenities at the broader, neighborhood scale, while the luxury developer prioritized resident privacy and limited health features to the building. While the market rate developer discussed health features at all dimensions, his emphasis was on those at the site level. Table 4.4 breaks down the number of respective health amenities the case study participants mentioned during the interviews at each design scale.

Table 4.4. Number of amenities at each geographic scale described by case study participants

Case Study	Unit	Building	Site	Neighborhood	Totals
<i>Mixed-Income</i>	0	4	17	41	62
<i>Market Rate</i>	3	18	29	17	67
<i>Luxury</i>	5	30	17	3	55
Totals	8	52	63	61	184

As shown, the comparison of total number HWB amenities mentioned by the three case study participants are relatively similar (range=55-67) compared to the stratification by geographic scale (range=0-41). Specifically, the table highlights the *concentrated investment* in the building by the luxury developer (n=30 amenities mentioned), the site by the market rate (n=29), and the neighborhood by the mixed-income participants (n=41). The market rate developer had amenity representation across all scales while the other two predominantly favored either the building - the luxury developer, or the neighborhood - the mixed-income developer.

Further, Table 4.5 lists health amenities mentioned during the case study interviews. These amenities have not been cross-referenced with those actually implemented since the properties were under construction during the time of the interviews. Rather, the table was generated using the entire interview - not from responses to a single question about the implemented health amenities. While an explanation of these amenities are beyond the scope of this paper, they highlight the variety of HWB amenities by geographic scale - unit, building, site, and neighborhood. To indicate the amenities that overlapped between development projects (i.e., fitness center), the columns are organized by overlap combinations: 1) One Developer - an amenity was mentioned by either just the mixed-income, market rate, or luxury developer; there was no overlap across developers; 2) Two Developers - an amenity was mentioned by a combination of two developers, but not all three; and 3) All developers - the health amenity was mentioned by the mixed-income, market rate, and luxury developers.

Table 4.5. Categorized health amenities mentioned by multifamily case study participants by geographic scale

Developer Combinations	Unit	Building	Site	Neighborhood
One Developer				
<i>Mixed Income</i>		Low VOC Materials	Public Safety Responsive Property Managers Landscape Beautification Programs: Job Training Programs: Financial Literacy Programs: Health Literacy Programs: Health Screening Programs: Community Gardens Programs: Education Initiatives Relocation Services Residents w/ Disabilities	Early Childhood Education Cntrs Primary Healthcare Facilities High-Quality Schools Dental Facility Boys and Girls Club Recreation Opportunities YMCA: Fitness Center YMCA: Yoga YMCA: Pilates Additional School Bus Routes Football Stadium Soccer Stadium Basketball Stadium Performing Arts Center Sports Complex Street Lighting Streetscape Design Health & Wellness Center Fitness-Focused Parks Beautiful Park Paths Park Gardens ADA Accessible Playgrounds Splash Pads Outdoor Event Spaces Caring/Connected Neighbors Good Neighborhood Values Nutrition Counselor Performance Clinics Play-60 Field Reflection Room Walk with the Doc Proximity to Healthy Grocers
<i>Market Rate</i>	10-foot Ceilings	Active Stairwells Strategic Views of Nature Large Windows CSA Pick-Up Cooking Classes Active Adult Concierge Services Fitness Center with Medical Clinic Telemedicine	Programs: Wellness Week Trees/Tree Canopy Onsite Complete Streets Connected to Nature Outdoor Retention Pond Cultural Event Space Outdoor Arts/Live Music Outdoor Yoga Classes 10-foot Wide Sidewalks Co-Working Space Bicycles: Lounge Bicycles: Outdoor Bike Wash Bicycles: Bike Share Pets: Onsite Dog Park Pets: Programming (Yappy Hour) Pets: Spa Onsite Trails Outdoor Kitchen Outdoor CrossFit Sand Volleyball Courts Streetscape Design	Traffic Calming Offsite Complete Streets Proximity to Universities Proximity to Technology Companies Air Quality Greenways: Proximity to Greenways: Direct Connect from Site Proximity to Parks Connecting Linear Parks Street Art/Artistic Placemaking Retail: Bike Shop

Table 4.5. (continued).

Developer Combinations	Unit	Building	Site	Neighborhood
<i>Luxury</i>	Large Balconies Blackout Shades Wellness Manuals	Personal Dietician Consults Healthy Goal Setting Consults Wellness Consultants Window Glazing Visual Light Transmittance Comfort: Tactile Comfort: Thermal Comfort: Acoustic Cold Food Storage Farm Harvest Room Oversized Sauna Oversized Hot Tub Wellness Center Yoga Studio Indoor-Outdoor Community Kitchen Art Studio with Equipment Check-Out Painting Instructors Automatic Window Shades Personalized Immersion Room BodPod Assessments	Bike Stations Farming Consultants Onsite Farm with Irrigation Raised Garden Beds Sidewalks that Meet the Block Privacy 18,000sf Outdoor Amenity Deck Biophilia Japanese Courtyard Garden Herb Garden Group Programs: Fly Fishing Group Programs: Paddle Boards Group Programs: Kayaking	
<u>Two Developers</u>				
<i>Mixed-Income & Market Rate</i>		Sociable Common Areas	Walkable Areas Community Gardening Green/Open Space Onsite Park Space Active Clubhouse	Proximity to Hospitals Park Programming (e.g., Little League, Walking Club)
<i>Mixed-Income & Luxury</i>			Beautiful Lighting	Neighborhood Lakes
<i>Market Rate & Luxury</i>	Circadian Lighting Views of Nature	Daylighting Upgraded Fitness Center Personal Trainers Fitness Classes Onsite Nutritionist Fresh Juicing/Juice Bar High-End Design and Architecture	Placemaking Chemical-Free, Premium Pool	
<u>All Developers</u>				
		LEED Certified Buildings High-Performing HVAC	Beautiful Architecture	Proximity to Healthy Restaurants

Table 4.5 also visualizes the *concentrated investment* theme. Just as Table 4.4 showed, the majority of the mixed-income health amenities mentioned were in the neighborhood. For example, the developer mentioned the anchoring sports stadiums as health promoting amenities. The proximity to multiple sports complexes facilitated the redevelopment of a historic neighborhood football stadium. It is now programmed to host the homecoming football game for two local high schools and is also an NFL Play-60 Field, a product of a school nutrition and physical activity program launched by the National Dairy Council and NFL to help encourage healthy lifestyles for youth (www.nfl.com/play60). The mixed-income developer used the *knowledge partnerships* to bring the sports amenity to fruition for the community where the multifamily project is located.

Summary of Health Concepts

The conceptualization of HWB from the perspective of three early adopter multifamily developers revealed a multilayered approach where HWB remained at the forefront of project decision-making. The six themes that emerged through coding and analysis were not so much about the individual developer's actions but an interaction between people and the structures of society - human resources and the conditions of each project's social context (Lindstrom and Eriksson, 2005). Table 4.6 lists the primary themes and sub-themes.

Table 4.6. Themes and sub-themes for how the case study participants talked about health

Primary Themes: Health is...	Sub-Themes
1. <i>Concentrated Investment</i>	A. Smaller Geography; Greater Impact B. Holding on to Properties and Relationship C. Planning Beyond the Building
2. Incremental Change	A. Patience, Transformation, & Ripple Effect B. Education
3. Knowledge Partnerships	N/A
4. Ambiguous	A. Interchanging Scopes B. Where to Place Health in the Priority Hierarchy? C. Intersecting Intent
5. Unmeasured	N/A
6. More than Amenities	A. Profitable Amenities B. Unbounded Features

Across the six themes, there was a strong emphasis on health promotion - the process which enables people to gain control over their health determinants in order to improve their health and thereby be able to live an active and productive life (WHO, 1986). Further, the case study participants' focus on the promotion of health alluded to a different way to approach the real estate process. Their sense of transforming current multifamily practices creates an opportunity to introduce a restructured system of real estate where creating a culture of health is a leading priority. Using the overarching HWB conceptualizations that emerged from this study, a novel system that promotes health in multifamily real estate can be explored.

Salutogenic Approach to Multifamily Real Estate

After the three case study interviews were completed, a more insightful understanding of the connections between multifamily development and HWB emerged. The healthy development principles extended far beyond a collection of individual physical amenities and instead emphasized human flourishing through “salutogenic attributes” - interdependent features dedicated to promoting health.

Salutogenesis is a multifaceted health model originating from Antonovsky (1979). The salutogenic model focuses on supporting health and well-being rather than combating or treating disease. Literature surrounding salutogenesis stems from settings in primary care, such as hospitals (Armstrong, 2007; Kligler, 2003; Rakel, 2008), healthcare (Alivia, Guadagni, and Sarsina, 2011; Bringsen, Andersson, Ejlertsson, and Troein, 2012; Jonas, Chez, Smith, and Sakallaris, 2014) and public health (Lindstrom and Eriksson, 2006; Lindstrom and Eriksson, 2009; Morandi, Tosto, Sarsina, and Libera, 2011). Salutogenesis prioritizes how health is created and promoted, essentially answering Antonovsky’s question: “*what makes people healthy?*” In this context, salutogenesis unifies all dimensions of health and human flourishing (Jonas, Chez, Smith, and Sakallaris, 2014). Stemming from positive psychology, people who flourish live in a range of positive emotions that simultaneously connotes goodness, growth, resilience, and physical movement (Fredrickson and Losada, 2005; Jonas, Chez, Smith and Sakallaris, 2014). There are several dimensions of human flourishing, such as: positive affect, avowed quality of life, personal growth, purpose in life, positive relations with others, and social integration (Keyes, 2007). There is overlap between the intents beneath the developers’ choice of HWB tactics and these flourishing dimensions. For instance, social integration, quality of life, personal growth were characteristics woven into the purpose of pursuing HWB. The case study participants do not necessarily qualify

as early adopters because they are adding health amenities. Rather, they are early adopters for undertaking a different real estate perspective to produce environments that intentionally promote health and flourishing. There were latent discussions about wanting to undertake a more transformational approach multifamily development in a way that can address the simple and nuanced constructs of health.

The mixed-income participant talked about sharing their “*missional perspective*” of real estate - described as “*intentional transformative community development initiatives*” - with traditional real estate developers. The mixed-income participant referenced a conversation with a mentor about the opportunity to harness real estate potential to improve community health:

“He [the mentor] believes that the missionaries of the future will be real estate developers. Those are the people that actually felt less connected to social matters or motivations for the common good, and yet were the people who had the skills that mattered most for the current problems we’re facing. But, [...] it’s such a money-oriented profession, everything is about squeezing the profit out of every angle. [...] Yet, the skills that real estate developers acquire and fine-tune, we think there’s something there. If you can harness that and just focus it on projects that have the proper motivation and a measurable positive outcome, you can move a lot faster on these social problems. [...] If a model could be created that is appealing, it could inspire folks that are genuine real estate developers to talk about quality of life and health and lifestyle. But very, very few really grasp the greatness of their [real estate developers’] opportunity.”

The “we think there’s something there” comment alludes to the meaningful contributions real estate developers can have on building a culture of health through their development process.

While the salutogenic terminology is not explicit, the idea persists due to the acknowledgement of the potential multifamily real estate developers have to address quality of life and promote healthy lifestyles.

Similarly, citing his past experiences developing health care delivery systems, the market rate developer spoke about his shift in perspective towards developing healthy communities, not treatment communities:

“For thirty years [our equity provider] has been in the business of medical office development so...thirty years of experience in healing environments - the facilities that treat and heal disease. Now we’re onto version 2.0 which is communities that promote health. [...] [This project] is the first one.”

Again, while the salutogenic terminology is not used, the concept exists as he mused about development practices that emphasize the promotion of health rather than the treatment of disease.

The luxury developer’s salutogenic approach to development is notably different than the mixed-income and market rate case studies. As mentioned earlier, the health promotive features of the luxury project were confined primarily to the building level. Due to minimal financial barriers constructing the multifamily property, the developer’s desire to “*push the envelope*” in amenities resulted in leveraging capital to install, program, or actively promote salutogenic attributes (see Table 4). When asked about his reasons for developing healthy buildings, he responded:

“It’s new. It’s a differentiator [...]. - [...] if you can really prove that you’re going to make people healthier in your buildings, you stole the fountain of youth and your buildings will be worth mega and people will go crazy to be in them. So, I think my interest is to create best practices that can change peoples’ lives and then prove it. And if it goes out and other people are doing it, great, but it’s not going to change what we’re doing. We’re still going to make great buildings.”

Despite the goal of generating a significant financial return on investment, the luxury developer’s combination of: financial flexibility (e.g., access to capital), access to a non-profit partner specializing in evaluation, being an early adopter willing to try novel approaches, and the motivation to create best practices where residents can develop and actualize individual health goals within the building aligns with a salutogenic mindset.

This research reveals that the conceptualization of health could evolve into a salutogenic system of real estate development. For example, when the market rate developer noted that “health” may be the incorrect word to categorize his approach to development, he may have been referencing how the term limits its relevance across disciplines and downplays its position as the overarching motivator to transform real estate practices. The six primary themes from this research support the adoption of a much larger, systemic approach to healthy development. Collectively, the themes could be viewed as an anchoring set of principles that unifies all dimensions of health and human flourishing, regardless of the development typologies or price points (Jonas, Chez, Smith, and Sakallaris, 2014). While the six HWB themes have not yet been connected to a salutogenic systems paradigm, they provide a promising start for transforming multifamily development processes into a health promotion system.

Conclusions

This research explored how health and well-being is understood by three early adopter multifamily real estate developers across varying price points: mixed-income, market rate and luxury. The developers were unique in that they each held an awareness and belief that health could diffuse into the real estate industry - a powerful motivator that prompted them to undertake uncertainty in their decision-making. This health-focused mentality keeps them at the forefront of innovation and secures them as leaders in both multifamily and wider real estate arenas.

This research establishes health as an innovation within the multifamily real estate industry though, it remains a fuzzy topic. As established, for health and well-being to materialize into an investable attribute, industry leaders must believe it is a worthwhile pursuit. From the perspectives of the case study participants, this belief is based on their expectations that the high risks they are presently taking as early adopters, such as investing in an innovation that is not yet fully defined with an unknown return on investment, will generate larger rewards in the future like increased profit, credibility, reputation, and a healthier population. In navigating these uncertainties, the case study participants understand that a formal recognition HWB in real estate will take time. Time is inherent in the diffusion of any innovation; in this case, the expectation is that, as a differentiator, health will eventually be adopted by ‘laggards’ as a best-practice standard. Case study participants address this when they referred to the potential successes of integrating “health” as: “*transformative*” (mixed-income), “*the holy grail*” (market rate), and “*worth mega*” (luxury).

Theoretical implications of new knowledge creation in real estate were also highlighted in this research. Engaging outside organizations to improve health and well-being in the case study projects speaks to elements of social constructivism. Simply, this paradigm is the belief that knowledge is sustained by social processes where knowledge is a mutual creation between the

individuals and communities (Solomon, 1987; O'Loughlin, 1992; Lomborg and Kirkevold, 2003). This theory of knowledge is applicable in how the case study participants constructed and applied knowledge in socially mediated contexts. Knowledge about the emergence of health in real estate is partially defined through each respective social environment. Similarly, the health-based knowledge is largely influenced by social and contextual factors.

The health themes that evolved from this research and their on-the-ground outcomes have yet to be fully realized at the time of this analysis. There are still many variables, constructs, and methodologies to be figured out to validly determine health outcomes, particularly in a longitudinal context. As “health” becomes an increasingly normative term for developers, delineating the scope, context and application of health nomenclature through themes like those that have emerged here can help guide the creation of a salutatory systems framework. This health promoting framework and the multidimensional contexts that it comprises will eventually be critical for business and policy decisions, academic inquiry, and strategies to promote better health behaviors and outcomes at a broader, societal level (Toman, 2006).

Limitations and Future Research

Limitations

This research is not without limitations. Due to the nature of case study methodology and the limited sample size (n=3 multifamily developers), the authors recognize that discussions and themes generated are not necessarily transferable to all multifamily developers, even those that actively target health behaviors and outcomes. Additionally, one of the most prominent limitations was not incorporating the regulatory considerations that could facilitate or inhibit the integration of HWB principles. Developers must adhere to various regulations that cover issues related to, for

example: land use, tax incentives and financial lending, or public health. Including these regulatory considerations was beyond the scope of the research questions yet it is critical that future studies focus on policies at local, city, state, and federal levels.

This research must also acknowledge the potential for social desirability bias. People have a need to appear more altruistic and society-oriented than they actually are, and social desirability is the tendency of individuals to deny socially undesirable actions and behaviors and to admit to socially desirable ones (Chung and Monroe, 2003). In this research, the case study participants may have underemphasized their primary goals to achieve a high return on investment and overestimated their dedication to improving the health and well-being of their tenants and broader community in which their projects are constructed. Ultimately, the multifamily developers are acting on behalf of a business; their decisions are based around actions that will yield higher profits. Thus, their conceptualizations of HWB may always be guided under a financial lens. However, this is a reasonable pursuit of business. They can still be classified as early adopters for making the connection to health in first place and using it as primary business strategy - to be deliberate in their promotion of healthy multifamily development.

Future Research

In order for a salutogenic development system to actualize into a transformative approach to real estate, future research must pursue industry-wide health and wellness metrics. These metrics must be actionable, contextually relevant, easy to understand, and valuable. There is opportunity for the health-related partners to contribute to the metric discussion. For example, future research can underscore the health sector's role in the real estate processes. Health researchers should seek to apply an explicit economic perspective in terms of financial and social benefit, to assist the real

estate industry decision-makers in weighing options and substantiating recommendations to prioritize HWB as a project goal (Bleich & Sturm, 2009; Trowbridge et al., 2014).

Concurrently, real estate researchers can seek additional measures of financial success to account for the longitudinal nature of assessing HWB outcomes. Traditional ROI snapshots may not be suitable in this temporal model. There might be potential in using internal rate of return (IRR) as it accounts for the lifespan of a development project; IRR is a measure of future success but is unclear if it is suitable for measuring health performance models. As a well-suited financial valuation model is explored, future research can also compare existing building certification systems that specifically assess health and well-being. The most popular systems include: The WELL Building Standard, Fitwel, new components of LEED, and Enterprise Community Partners.

This research used grounded theory principles and a case study methodology to illuminate how multifamily real estate developers think and talk about the emerging concept of health and well-being. The six generated themes posed an opportunity to rethink traditional multifamily development processes into a salutogenic system that actively promotes and creates healthy environments. To reiterate comments from the mixed-income developer,

“If a model could be created that is appealing, it could inspire folks that are genuine real estate developers to talk about quality of life and health and lifestyle. But very, very few really grasp the greatness of their opportunity.”

As such, to help real estate developers grasp their potential greatness, future research should also explore the development of a conceptual framework that connects real estate processes, salutogenic principles, and culture of health drivers.

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CHAPTER 5: A PROPOSED SALUTOGENIC FRAMEWORK TO PROMOTE HEALTH IN MULTIFAMILY REAL ESTATE

Introduction

This article proposes a framework that establishes four overarching principles – or action areas - that place health and well-being at the forefront of multifamily development decision-making. Each principle is supported by three mechanisms – or drivers – to facilitate progress through the framework. Achieving the four action areas can help guide built environment stakeholders towards creating a vision of health that is implemented into the places where people live, work, play, and learn. Specifically, the framework may illuminate important connections between health and place for decision makers within the multifamily real estate industry. This sector has largely been left out of conversations and interventions aimed to create healthier communities. Provided the influence home environments have on health and well-being, this framework raises awareness for unconventional health advocates such as real estate developers, possibly leading to a shift towards an increasingly health promotive strategy of development.

According to the World Health Organization (2012), a person’s health encompasses the state of complete physical, mental, and social well-being, and not merely the lack of disease. Considering these three health components can heighten: 1) awareness of wider context of health, 2) an appreciation for interactions among the three different components, and 3) the importance of transdisciplinary thinking (Leischow and Milstein, 2006). The synergies between the built environment and public health represent a meaningful example of the concept of health operating across many disciplines. For example, chronic diseases such as depression, obesity, and diabetes have significant links to both social and physical aspects of the built environment. Factors such as neighborhood housing quality, transportation systems, social isolation, and the urban design of

streets, parks, and green spaces can be linked to health behaviors, both positive (e.g., increased physical activity, social capital) and negative (e.g., sedentary behavior, poor eating habits, loneliness). Like tobacco cessation, which employed diverse and multilevel strategies and disciplines to enable meaningful change (Abrams et al., 2003, 2010), creating healthier environments will require a paradigm shift rooted in an interdisciplinary knowledge base that integrates concepts and practices from both built environment and public health stakeholders (Best et al., 2003).

A notable absence in the conceptual structure connecting public health and built environment systems is the real estate industry, a major contributor to built environment decision-making. Physical, social, and mental health considerations are largely unconsidered by mainstream real estate developers. The absence of real estate insights can result in a limited ability to effectively advocate for real estate investments that best promote the health and well-being of communities (Trowbridge, Pickell, Pyke and Jutte, 2014). Limited real estate involvement also restricts market incentives for industry innovation; developers deliberately targeting health strategies find it difficult to differentiate themselves competitively (2014). This disconnect between health and real estate may exist partly because, in the same sense that health is more than the absence of a disease, real estate is more than a building. Real estate has its own complex, multilayered system in which players may not understand the connections between health and place. From a traditional real estate perspective, the health impacts of building design, construction, and operation function mostly as economic externalities; there are no line items in their budgets addressing health. Health impacts affect people and the economy, yet they have no identifiable weight in real estate decision-making (Pyke, 2012).

While there are many real estate typologies (e.g., commercial, multifamily, industrial), health and place research emphasizes near-home environments – homes, neighborhoods, and frequently traveled routes (Sallis, 2009). Therefore, the multifamily typology is a logical project type in which to prioritize health and well-being. As with most real estate development teams, multifamily real estate requires the engagement of many key players. Table 5.1 lists the seven standard stages of multifamily development and several of the corresponding stakeholders involved in decision-making (Peiser and Hamilton, 2012).

Table 5.1. Key players involved in the stages multifamily real estate development

Development Stage	Examples of Stakeholders
1. Idea Conception	Individuals or organizations with land, capital, knowledge, or tenants
2. Feasibility and Acquisition	Brokers, title companies, market and economic consultants, surveyors, mortgage brokers
3. Design	Architects, land planners, general contractors, engineers, environmental consultants
4. Financing	Mortgage brokers, banks, construction/permanent lenders, title companies, appraisers
5. Construction	Architects, general contractors, engineers, authorized inspectors
6. Marketing and Leasing	Public relations firms, advertising agencies, graphic designers
7. Operations & Management	Property managers, specialty and amenity maintenance teams

Integrating a multifamily real estate development perspective into the health and built environment framework may identify novel leverage points across all stages of development for each respective stakeholder. As such, this article supports the idea that integrating a health agenda into the multifamily system is possible. For many multifamily developers, health – in its holistic entirety - is an innovation. In traditional health systems, innovations refer to new medicines, and

health technologies, as well as new ideas, practices, or institutional arrangements that are perceived as novel by an individual or unit of adoption (Atun, 2012). In the traditional real estate system, innovations can be a source of market differentiation, a valued achievement in a highly competitive real estate landscape.

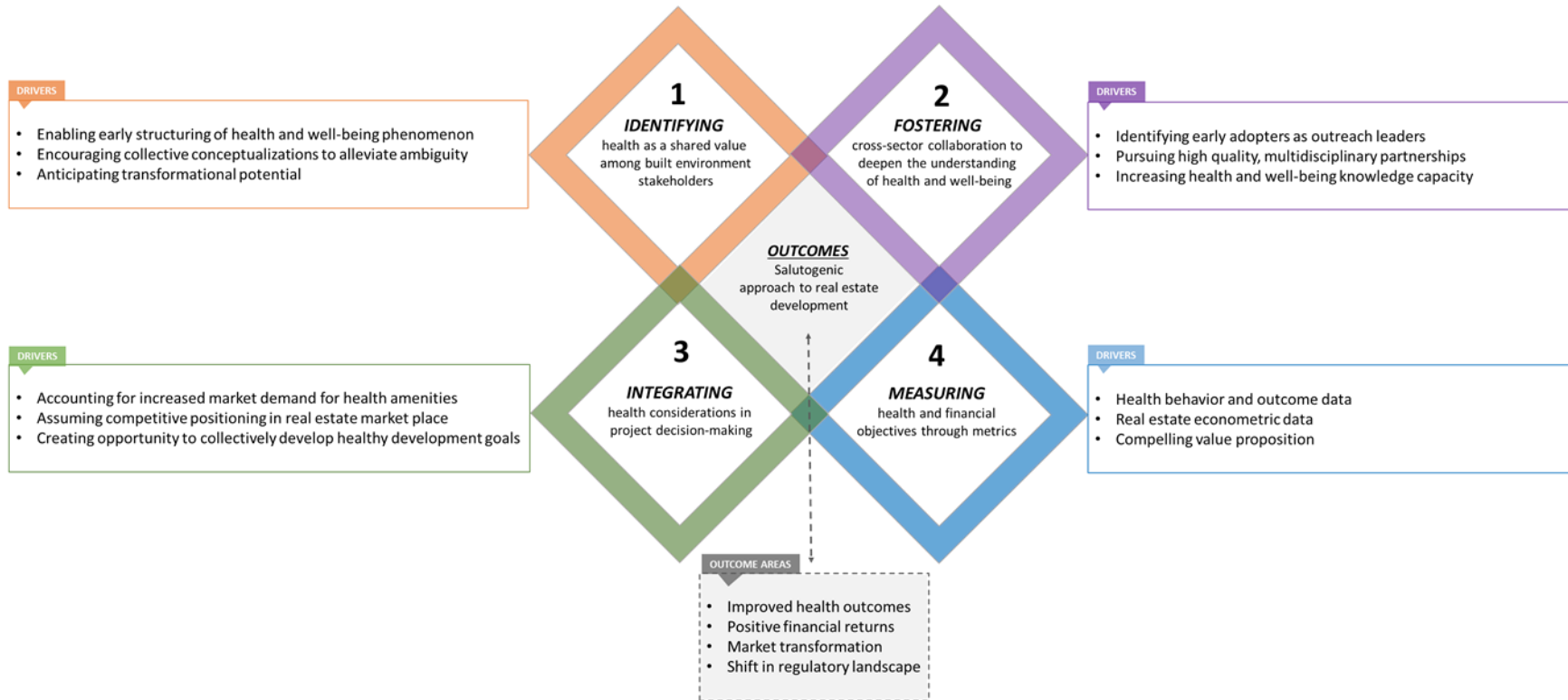
As such, this research relies heavily on the Diffusion of Innovation Theory (Rogers, 1962). This theory identifies the existence of radical innovations (in this case health systems in real estate) which produce fundamental changes in organizations or industries and represent a clear departure from existing practice. While radical innovations increase uncertainty, they can result in the transformation of an organization (Mazzarol and Reboud, 2017). The theory has precedence in the real estate industry with the emergence of the green building phenomenon in the early 2000s (e.g., LEED certification and policies). Many green building principles implemented in an effort to be more sustainable and energy efficient are now normalized, standard practice. In the context of this research, the Diffusion of Innovation Theory applies to the role of the early-adopter developer, which will be detailed later.

The development of the framework builds on the Robert Wood Johnson Foundation (RWJF) Culture of Health Action Framework (RWJF, 2013; Trujillo and Plough, 2016). According to RWJF, a growing number of communities and regions are working to redefine what it means to get and stay healthy by addressing multiple determinants of health; coordinated efforts to promote well-being and prevent diseases are proliferating among diverse sets of stakeholders (Trujillo and Plough, 2016). These shifts in redefining what it means to be healthy helped catalyze a national movement supporting RWJF's widely shared vision for a "Culture of Health" (Chandra et al., 2017). The framework is designed around four Action Areas and aims to convey a holistic, integrated perspective on what is required to achieve population-level health and well-being.

Maintaining this overarching goal, this research adapts the RWJF framework using a cross-sector mindset focusing specifically on multifamily real estate development. The revised framework is similarly comprised of four Action Areas and provides a structure to reconsider real estate as a system of health promotion. Moreover, each Action Area and its respective drivers were informed by the themes six themes generated in Chapter 4, where health was thematically defined as: 1) *Concentrated Investment*, 2) *Incremental Change*, 3) *Knowledge Partnerships*, 4) *Ambiguous*, 5) *Unmeasured*, and 6) *More than Amenities*.

To guide the real estate system towards a culture of health, the framework adopts a salutogenic approach. Salutogenesis is the process of health creation and is an anchoring principle that unifies all dimensions of health promotion and human flourishing (Jonas, Chez, and Sakallaris, 2014). Developed by Antonovsky (1979), salutogenesis is the *reverse* process to pathogenesis, which is the process of disease, illness generation, and breakdown of function. Specifically, the purpose of salutogenesis is to focus on the capacity to create and promote health rather than to focus on treatment, ill health, and disease. As Ellery (2007) notes, public health approaches can work well from a salutogenic perspective. Instead of attempting to decrease health-related risks, methods are prioritized that promote health behaviors that increase people's sense of well-being. The following framework highlights an opportunity to connect a salutogenesis to multifamily real estate.

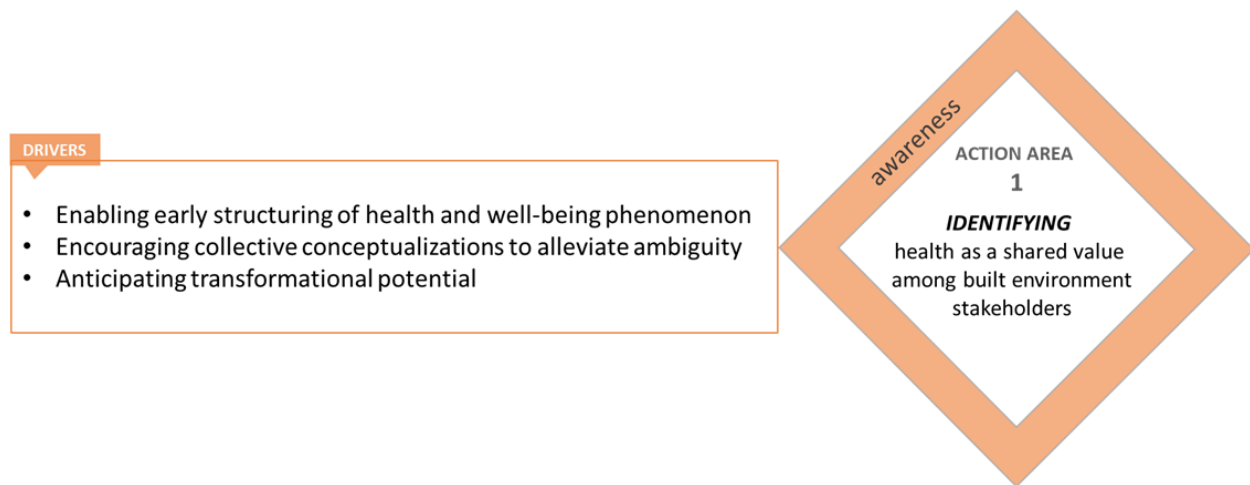
Figure 5.1. The salutogenic framework for healthy real estate development, adapted from RWJF Culture of Health Action Framework



FRAMEWORK ACTION AREAS

ACTION AREA 1: Awareness

Figure 5.2. Identifying health as a shared value among built environment stakeholders



Action Area 1 focuses on making health and well-being a shared value for built environment decision-makers. For this research, *shared value* means that stakeholders involved in forming built environments actively adopt a health lens. Building on the Diffusion of Innovation Theory (Roger, 1995) as reviewed earlier, the first two stages of the innovation adoption process include: 1) *Knowledge or Awareness* in which the innovation is identified but stakeholders lack complete information, and 2) *Persuasion or Interest* where the identified innovation garners interest and additional information is actively sought. Action Area 1, the first framework phase, is closely tied to strategic awareness – the interrelationship between individual and organizational capabilities that describe the processes for identifying, understanding, interpreting, and acting on phenomena and influences (Atherton & Hannon, 1997). Strategic awareness contributes to the process of innovation. Making health and well-being a shared value is an innovative phenomena,

as identified in the Diffusion of Innovation Theory, necessitating awareness and interest before it evolves into a collective vision within multifamily agendas.

Actively considering health in the multifamily real estate development process is a novel concept. Before it can become a shared value, real estate stakeholders must understand how adopting a health lens is a valuable and worthwhile action. In other words, becoming aware of health as a phenomena and its relative advantage is an antecedent to achieving Action Area 1. Yet, as Chapter 4 discovered, due to its novelty, “health” is a challenging concept to talk about; the term, and thus its understanding and application, is ambiguous. The fourth theme in Chapter 4 – *Health is Ambiguous* - details this fuzziness as all case study participants discussed the confusion encountered when health is conceptualized across different scopes, contexts, and intents. Similarly in Chapter 4, the sixth theme – *Health is More than Amenities* – alludes to how considering health as an innovative approach to development extends beyond physical amenities (e.g., pool or fitness center). Instead, embracing health as a shared value prompts a shift in organizational mindsets. The case study participants mentioned a transformational potential, or paradigm shift, that would coincide with the adoption of a health agenda. Therefore, Action Area 1 and its respective drivers focus on the processes that turn: a) an ambiguous idea into a shared and defined reality, and b) a shared reality into a paradigm shift where a health lens is prioritized for multifamily development decision-making.

As part of the paradigm shift, Action Area 1 would be successful when health informs and drives the services that are implemented across built environment teams. (Chandra et al., 2016). Identifying health as a shared value is influenced by teams spanning individuals, organizations, and communities. Therefore, making health a priority must transcend individual utility, or disciplinary siloes. For example, an individual deciding whether or not something is valuable using

only his or her perspective might overlook the substantial meaning that results from diverse viewpoints (Kenter et al., 2016). On the other hand, valuation resulting from an interdependent process can lead to a shared vision that increases levels of awareness and enhances legitimacy. Traditional public health approaches used in isolation will not be enough to make the consideration of HWB normative practice among the diverse set of decision makers who determine the form and function of communities (Trowbridge, 2017). The decision makers cut across sectors and industries and if they collectively place health at the forefront of decision-making, then it becomes a shared value. Successfully achieving Action Area 1 depends on three critical drivers: 1) enabling early structuring of health and well-being phenomena; 2) encouraging collective conceptualizations to alleviate ambiguity; and 3) anticipating its transformational potential.

Action Area 1 Drivers

The three drivers for identifying health as a shared value in Action Area 1 focus on centering mindsets around health, starting with a small-scaled approach (Driver 1), transitioning to a more widespread agenda (Driver 2), and prospectively culminating as a future-oriented vision (Driver 3). *Driver 1: Enabling early structuring of health and well-being phenomena*, represents the early stages of ideation, a small-scaled approach. In the early stages of ideation, an individual person or organization conceptually connects the multifamily development process to health promotion. This idea becomes an emerging phenomenon after someone (1) thinks it into existence, and (2) successfully establishes that the idea is worthy of further scrutiny (Yadav, 2018). This transition of idea to action is a critical phase of knowledge development. When early structuring does not happen at the early stages of idea generation, it can miss key initial conditions that may hold important clues about its underlying mechanisms (2018). Typically, emerging ideas lack clarity about relevance, are able to bypass rational analysis, and are rooted in intuitive evaluations

(Alves, Marques, Saur & Marques, 2007). In other words, emerging ideas can be messy and hazy and not have clear trajectories. However, enabling early structuring, as outlined in Driver 1, allows emerging ideas to have space to germinate and establish substantive legitimacy.

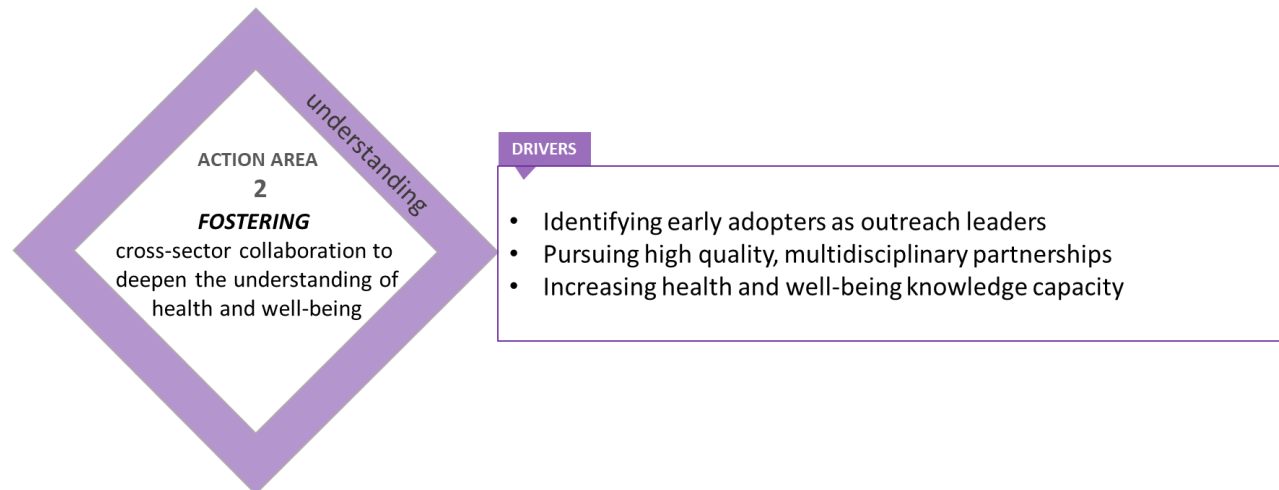
Transitioning from an emerging idea to a materialized concept is the focus of *Driver 2: Encouraging collective conceptualizations to alleviate ambiguity*. Conceptualizing health and well-being can be difficult due to the many stakeholders involved in multifamily decision-making. Ambiguity is a distinct type of uncertainty found with simultaneous, multiple ways of framing a concept (Brugnach & Ingram, 2012). This remains true for health; framing the concept of health can occur in various ways. To minimize ambiguity, pinpoint what is being defined, and subsequently increase the value of health as an intentional strategy, stakeholders will need to start a collaborative discourse around key terminology to develop a common language that takes into account the different contexts of aligned disciplines. In Driver 2, the early structuring outlined in Driver 1 can be reshaped to account for stakeholders' backgrounds, experiences, and values, and be refined to collectively fit into a project. This collaborative discourse can alleviate ambiguity about how health and well-being is conceptualized by accounting for varying contextual considerations, often found by discipline and stakeholder group. Through Driver 2, Action Area 1 becomes more widespread and a collective health agenda begins to emerge.

The final driver for Action Area 1 anticipates that health and well-being is a worthwhile and forward-thinking approach to decision-making within the multifamily real estate system. *Driver 3: Anticipating transformational potential* – assumes the future practices of the real estate sector will value a health agenda. In this sense, the focus on health as an innovation represents elements of intellectual capital (IC), or a knowledge asset, for real estate organizations. Twenty-first century organizations are recognizing that most of their capacity to create value do not reside

in the traditional tangible and financial assets, but rather on the ownership and development of organizational intellectual capital (Schiuma Lerro, and Iacobone, 2012). The concept of IC has risen as a primary way to denote the overall intangible and knowledge resources at the basis of an organization's competency (2012). In doing so, a real estate organization gains the ability to drive their paradigm shift towards transformation – where the organization is able to leverage the intellectual capital (i.e., the intentional consideration of health in real estate decision-making) to achieve business objectives and envision new development paths. The results of acknowledging and pursuing transformational potential are new competitive factors for creating value. While this may eventually create financial value, the initial stages of considering health as a strategic knowledge asset is preceded by creativity, imagination, energy and passion within organizations (Schiuma et al., 2012). Thus, the likelihood of identifying health as a shared value is closely connected to the ability to envision a future where health, which once was only an idea, becomes a new way to plan, design, and develop healthy communities.

ACTION AREA 2: Understanding

Figure 5.3. Fostering cross-collaboration to deepen the understanding of health and well-being



Action Area 2 in the adapted framework focuses on creating multidisciplinary collaborations to gain a holistic understanding of how health and well-being can fit into the multifamily real estate system. Characteristics these types of cooperative environments include three dimensions (Alves et al., 2007). First, collaborations must be diverse in both actors and competencies. Second, there must be respect for integrating the different capabilities represented. Third, collaborative environments must have a sense of interactivity – strong relationships. These three characteristics taken together maximize the benefits of cooperation, guaranteeing that learning and inventiveness are enhanced through the collaboration. Since health is a complex and multifaceted construct, fostering cross-sectorship can optimize different contributions in an effort to reformulate health as a relevant and applicable strategy. Therefore, efforts to link traditionally health-focused sectors (e.g., public health, health care, social services) with unconventional sectors (e.g., transportation, business, real estate development) is crucial. These uncommon coalitions hold unmet potential for aligning new knowledge and practices so that health can be intentionally targeted (Chandra et al., 2016). The intention is underscored by awareness and understanding that

health can be a shared value for any industry (Action Area 1). However, generating cross-sector collaboration requires a facilitator to not only bridge the sectors – but also bridge the connection between health and real estate. Chapter 4 highlighted this notion under the third thematic definition of health – *Knowledge Partnerships*. A developer’s growing understanding of health will depend on access to and availability of appropriate and insightful information and resources – or knowledge partnerships. As mentioned by the case study participants, there was an inherent understanding that pursuing a health agenda could not be completed alone within their existing capacities. The three drivers for Action Area 2 expand on this acknowledgement. Developing a deeper understanding of these health concepts depends on three drivers: 1) supporting early adopters as outreach leaders; 2) pursuing high quality, multidisciplinary partnerships; and 3) increasing skills capacity.

Action Area 2 Drivers

The three drivers for Action Area 2 focus on the channels through which knowledge is disseminated. The channels are sequential in that knowledge begins with an individual person or organization before reaching a wider audience. *Driver 1 – identifying early adopters as outreach leaders* – initiates the process. Characteristically, as defined by Rogers’ Diffusion of Innovation (1995), early adopters are willing to experience new ideas and undergo the critical early structuring processes. They are more likely to hold leadership roles, are well-integrated into social groups, and can deploy resources to carry an innovation forward (Baumgarten, 1975). In this framework, resources equates to knowledge surrounding the connections between health and real estate development, and carrying it forward refers to the relational capital (Capello & Faggian, 2005) that facilitates cross-sector collaboration. The next step in the knowledge channel is *Driver 2 – pursuing high quality, multidisciplinary partnerships*. This driver focuses on the number and

extent of collaborative partnerships between health and non-health sectors (Chandra et al., 2016). Ideally, successful collaborations would result in sectors knowing that their role and contribution is relevant and can provide context that otherwise would not be considered. More importantly, cross-sectorship provides an environment of learning and enlightenment that can help piece together the many knowledge components necessary to fully understand the benefits how health can be utilized across all scales and industries. The knowledge channel concludes with *Driver 3 – increasing knowledge capacity*. By this point in Action Area 2, there should be an interactive exchange of ideas, content, and knowledge across sectors. In other words, actors in non-health sectors (e.g., real estate developers) may develop a vocabulary and skillset increasingly aligned with the health sectors. The same can occur in the other direction. The ability to learn from the collaborations can deepen into a common mentality and understanding about the systematic ways health can be integrated into multifamily real estate development practices.

ACTION AREA 3: Implementation

Figure 5.4. Integrating health tactics into real estate project decision-making



Action Area 3 focuses on integrating health tactics into real estate development decision-making. The relational components that contributed to forming the foundations of awareness (Action Area 1) and understanding (Action Area 2) have prepared stakeholders for this task; they now possess sufficient knowledge and skills implement specific health elements into their projects. The multifamily real estate process is approachable in that there are many entry points where health tactics can be considered. As previously mentioned, the multifamily development process typically starts with an idea about a development project. This is the ideal position for health tactics to enter the real estate system. Considerations that are included in early programmatic stages of development are more likely to come to fruition. In these early stages, health tactics can also be programmed at different geographic scales. For example, in the unit of the multifamily project, health tactics may include: circadian lighting, large windows with views of nature, and increased indoor air quality. At the building scale, considering health in early development stages may refer to the inclusion of active stairwells, common areas that promote social connections, high quality fitness centers or community kitchens. Site level health promotion tactics include green space,

trails, outdoor community recreation areas. Finally, at the community level, site selection that occurs with a health agenda may seek community attributes such as proximity to parks, walkability, transportation system connections, or community art and place-making features. In other words, to achieve a healthy multifamily development, the deliberate consideration of health promoting tactics should occur pre-construction. Entry points where health is integrated towards the end of the real estate process may lack substantive outcomes. One of the Chapter 4 case study participant emphasized this point by referring to “snap-on wellness” or “health washing.” These tactics are often oversimplified ways to approach a much more comprehensive system of health promotion. Examples of “snap-on wellness” features can include adding a bicycle rack in an effort to denote a property as bike-friendly. Implementing an emerging strategy in the early stages of the development process can seem like a leap of faith – there is both an element of excitement of its transformational potential as well an element of risk-taking that precedes the certainty of success. The three drivers for Action Area 3 aim to alleviate stakeholder hesitancy that comes with risk taking: 1) accounting for increased market demand for health and well-being amenities; 2) assuming competitive positioning in the marketplace; and 3) participating in an emerging trend of delivering Healthy Development Goals.

Action Area 3 Drivers

The three drivers for Action Area 3 focus on the interactions between the bottom-up and top-down market considerations that influence real estate development. For example, *Driver 1 – accounting for increased market demand for health and well-being amenities* – is a bottom-up driver that relies on the wider consumer population and its associated trends. Currently, the pursuit of healthy lifestyles, sustainability, and self-care may be viewed as an early indicator that end-users will actively seek environments that support and promote these trends. The global wellness

market is now a \$4.2 trillion dollar industry and it is continuing to grow (GWI, 2019). This market encompasses several economies, for example: 1) fitness and mind-body - \$595 billion; 2) healthy eating, nutrition, and weight loss - \$702 billion; 3) preventive and personalized medicine and public health - \$575 billion; and the most recent market - 4) wellness real estate – \$134 billion. Thus, there is a notable segment of the population that could comprise the bottom-up demand for health. This ultimately will act as a driver to implement health tactics at a systems level (e.g., any access point in the real estate process).

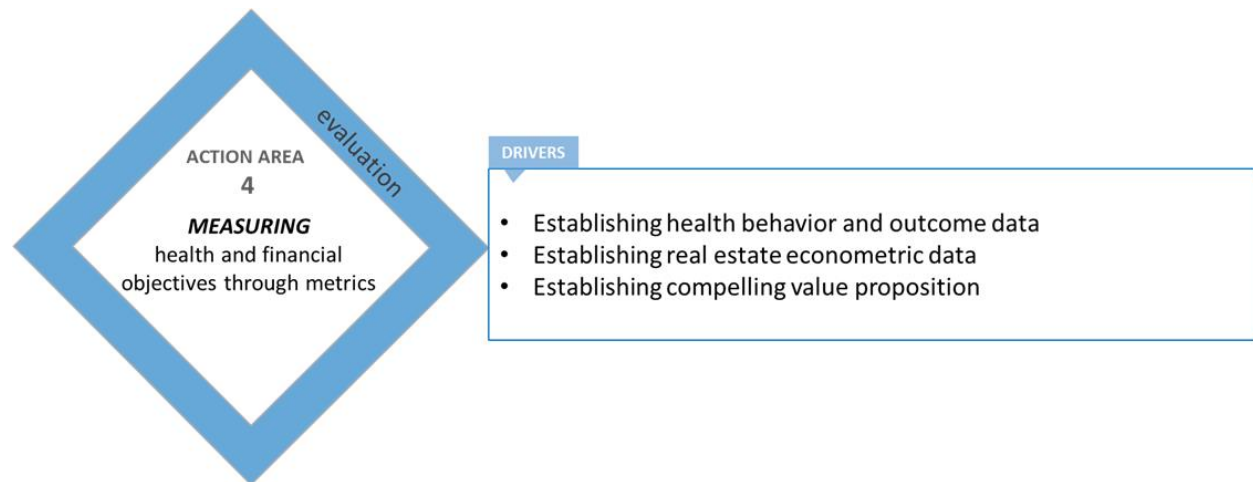
Driver 2 – asserting competitive positioning in the marketplace – represents the top-down market considerations. For this framework, top-down considerations refer to real estate development decisions that originate at management levels; the external market forces are largely set aside. Innovation creates new knowledge and knowledge has emerged as one of the most strategically significant resources of an organization (Lee, Chang, Liu, and Yang, 2007). From an organizational perspective, deliberately adopting a health lens could be an innovative and systemic way to change industry structure. In doing so, this process may alter the rules of competition. For example, as top-down decisions to implement health tactics are put in motion and actualized, a competitive advantage may result and provide stakeholders with new ways to outperform traditional paths of multifamily development (Heiko, Vennemann, & Darkow, 2010). Driver 2 is driven by real estate management teams taking the “leap of faith” to lead with health. It is worth nothing that in reality, the bottom-up and top-down market considerations are interdependent; both must be considered concurrently.

The final driver for Action Area 3 involves the desire to be on the cutting-edge of something new. Early adopters characteristically push boundaries with creative thinking and innovativeness. Their actions and attitudes about considering health a radical innovation provides

an opportunity for the concept to mature into widespread practices. *Driver 3 – creating opportunity to collectively form healthy development goals* – promotes the attempt to actualize a multifamily real estate project that intentionally targets health. The previous Action Areas intently focus on the theoretical components – awareness, shared values, understanding, and relationships. Yet, until the theoretical ideas transition into practice – a physical product, the phenomenon is moot. In other words, there must be execution. Once a multifamily attempt has been successfully completed, the meanings and contexts of health can evolve for future project iterations. The initial attempts will serve as learning experiences and critical case studies that can set the precedent for transforming real estate practices. A similar path occurred with the green building phenomenon. Once its own emerging innovation, developers took a “leap of faith” to move sustainable theory into practice. Now, green building is a global priority and is mandated in many municipal, state, and federal landscapes. Driver 3 emphasizes the action of actually putting health to the test in an effort to revisit and revise the salutogenic systems approach to multifamily real estate development.

ACTION AREA 4: Measurement

Figure 5.5. Measuring health and financial objectives through metrics



Action Area 4 focuses on developing metrics and methods of evaluation to assess both health and financial objectives. The evaluation process is critical for making evidence-based judgments about the effectiveness of implemented projects. Acting as a feedback loop, early stages of evaluation are especially important for innovative phenomena. As health works its way through the diffusion process within the real estate industry, it will undergo continual evaluation so that it can evolve into a more successful product or idea. Evaluating success from a real estate perspective means determining if projects can be deemed financially viable so that developers gain the necessary confidence to move forward profitably. As such, for an innovation to be accepted, financial value must be established. This point was heavily emphasized throughout the Chapter 4 case study interviews. From a health perspective, evaluation techniques must be conducted to assess health behaviors and outcomes for the space-users. In this context, data would need to show that people living in healthy developments have significantly improved health. Within real estate and public health systems, valid and reliable evaluation methodologies exist. However, in combination, achieving the vision of developing healthy community environments will require

new tools, capacities, and incentives to accelerate a marketwide shift in the consideration of and accountability for health and wellness outcomes within the real estate industry (Trowbridge, Pickell, Pyke, & Jutte, 2014). The three drivers for Action Area 4 concentrate on: 1) establishing health behavior and outcome data; 2) establishing real estate econometric data; and 3) establishing a compelling value proposition.

Action Area 4 Drivers

The three drivers for Action Area 4 focus on establishing empirical evidence. *Driver 1 – establishing health and behavior outcome data* – is one of the most important, yet challenging drivers required to successfully evaluate health in a real estate context. The challenge derives from the limited availability of data and metrics to define and measure the health “performance” of real estate development projects (Trowbridge et al., 2014). In the most basic terms: what health behaviors and outcomes should be measured? How should they be measured? And by whom? The difficulty stems from the inability to concretely define health and well-being which makes the concept remain an unmeasured and unregulated consideration in economic decision-making. Thus, the current lack of industry-specific health and well-being metrics makes it difficult for the early adopters that intentionally target improved health outcomes to effectively demonstrate the value of their innovative choices. Related, *Driver 2 – establishing real estate econometric data* – is the underlying mechanism for real estate decision-making. Innovation aside, data - both quantitative and qualitative – influence decisions in real estate development projects. The real estate sector is encumbered with many risks and uncertainties, especially concerning innovative approaches. Yet, using evaluation models and systems can provide real estate developers with comprehensive data and sensitivity to minimize development and investment risks (Dabara, Anthony, Gbenga, and Adeyanju, 2014; Robin, 2018). Typically, evaluating real estate development projects relies on

financial modeling. This process is based on the application of real estate econometrics— a method that attempts to describe, explain, and predict patterns of prices, supply, demand, and market behavior. This area draws on theory from urban economics, spatial economics, and finance (Wang, 2003).

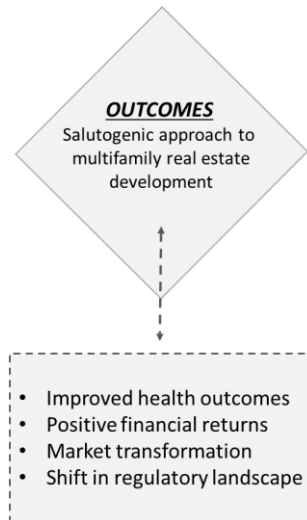
Drivers 1 and 2 for Action Area 4 present an interrelated challenge. Real estate decision-making relies heavily on financial data but financial data assessing health features remain unaccounted for in models. Moreover, valuation of real estate projects will increase if data can be linked to improved health outcomes, but this type of correlation remains an evaluation challenge. For example, there is a growing demand to address the frequent mismatch between research-oriented health metrics and the practical needs of real estate professionals. Part of the mismatch is due to real estate developers requiring relatively short-term, or proximal, performance measures (e.g., financial return on investment; lease-up rates). Yet, the scope of health surveillance systems is typically beyond an individual building. Health data focuses mostly on longer-term, or distal, health outcomes at the wider population scale (Trowbridge et al., 2014). In order to make informed decisions and develop an evidence-base around this nuanced topic, both financial and health data are necessary; it is difficult to make the case for health in isolation. Health and financial data are codependent and their current lack of validity and practicality makes successful evaluation difficult.

Driver 3 – establishing a compelling value proposition – is the final driver in Action Area 4. It takes into consideration the interdependence of Drivers 1 and 2 and aims to empirically illustrate that health and well-being has potential to be a value-adding attribute in the real estate industry. As previously mentioned, this type of value creation was noted with the green building and sustainability phenomenon. Early stages of this real estate approach involved influencing the

flows of capital within real estate markets by establishing a well-defined value proposition for investing in green buildings. This was accomplished in two ways: promoting awareness of the benefits of sustainability among real estate development stakeholders and creating mechanisms that allowed savings from reduced operational costs and other benefits of green buildings to be more easily quantified and reaped by investors (Trowbridge, Worden, & Pyke, 2016). Similarly demonstrating data-driven value that appeals to both the real estate development sectors as well as health and well-being sectors will be crucial for evaluation. Achieving Action Area 4 remains the most challenging component of the framework. Yet, highlighting the challenges of this final framework phase emphasizes the novelty and nuance of framework goal. In other words, genuine transformation towards a culture of health from a real estate organizational perspective has not yet been achieved; a clear path does not exist, only conceptual. Future research should dedicate time and resources from multiple sectors to drive the development and market adoption of valid metrics and enable a more systematic consideration of health and wellness for the multifamily industry

Framework Outcomes

Figure 5.6. Framework outcome – a salutogenic approach to real estate development



Viewing the multifamily real estate development process as a mechanism for health promotion begins with awareness, strengthens with understanding, is actualized with implementation, and is improved with evaluation. Taken together, the four Actions Areas of the Salutogenic Framework for Healthy Development outlines the steps for how to adopt health in the broad realm of multifamily real estate. Action Area 1 identifies health as a shared value among real estate development stakeholders. Action Area 2 fosters cross-sector collaboration to deepen the understanding of health and well-being and its multifaceted context. Action Area 3 shifts the awareness and knowledge phases to practice by integrating health tactics into the real estate decision-making systems. Finally, the process is evaluated to make critical judgments for how to advance the healthy development phenomenon. Each of the Action Areas were supported by three drivers, many of which were informed by the thematic definitions of health in Chapter 4.

Health Outcomes and Financial Returns

When successfully executed, the framework could result in four outcome areas. The first and second areas focus on analyzing health and financial outcomes. From a health perspective, successful implementation of investing in health may result in end-users being afforded increased opportunities to integrate healthy behaviors into their daily lives. Longitudinally, health results could show demonstrably improved health outcomes across all health domains: physical (e.g., decreased BMI), social (e.g., improved feelings of connectedness), and mental (e.g., self-actualization and happiness). Financially, results may be realized in increased lease-up rates, longer tenure, and increased rent commands. Eventually, financial outcomes may be realized in increased property valuations and high-performing portfolios for larger collections of real estate assets

Market Transformation

While the third driver for Action Area 1 (i.e., identifying health as a shared value) alluded to the potential transformation of real estate practices, the third outcome area represents transformation of market actors. York and Paulos (1999) note that market transformation seeks to change markets and requires transformation of the behaviors and preferences of people and organizations on a broad scale. Using the green building movement as an example, market transformation is defined as the process of strategic intervention in the market to bring about widespread, permanent change - creating conditions for higher investment in energy-efficient buildings (Trowbridge, Worden, Pyke, 2015; Institute for Market Transformation, 2015). The current framework aims to shift focus from energy efficiency to holistic health. It guides multifamily stakeholders and the systems involved into viewing the multifamily sector as a

strategic system that supports both increased profitability as well improved health in multifamily residential environments.

Regulatory Landscape

The fourth outcome area focuses on the potential to create policies that incentivize or mandate health-related real estate actions. Policy makers at the local, state, and national levels influence how and where neighborhoods and communities are designed, built, and maintained through zoning, code regulations, and tax incentive programs. As opportunities to highlight the financial, societal, and health-related benefits of pursuing a salutogenic approach to real estate development matures, it may become likely for some of the health criteria to be included in the regulatory landscape. In other words, as health diffuses into the marketplace and its various benefits become widely understood, health promotion, as an integrated policy consideration, could become standard in real estate development practice. Policy interventions to support healthy communities, particularly in sectors such as land use and transportation planning, are reasonably well established and constitute an active area of ongoing innovation and research (Trowbridge, Worden, Pyke, 2016). Therefore, real estate development regulations have a precedent evolving in favor of innovation. Given the global imperative to reduce chronic disease burdens and associated comorbidities, expectations for city governments to innovate and develop effective policies to promote health in multifamily real estate systems are promising.

Conclusion

Transforming the existing multifamily development system into an approach that advances a health agenda, on the surface, appears insurmountable. Yet, there is evidence that these ideas are gaining traction. The actions of early adopters are indicators that a salutogenic framework to

healthy development has the potential to be put into practice and extend beyond theoretical considerations. One of the greatest challenges is the uncertainty of how conventional real estate industry practices can financially capitalize health into their models for future projects. To overcome this challenge, this paper calls for a shift in perspective from traditional practices. Moreover, as valid and reliable metrics to determine space-user health behaviors and outcomes, the societal response to put metrics to practice may help boost multifamily developers to keep health on their decision-making radars. The prospect of developing health metrics highlights the imperative of clearly defining what health and well-being means for the various housing production system stakeholders.

This framework can serve as a call to action for built environment stakeholders. Whether their roles are explicitly related to real estate development, similar to those found in Table 5.1, or other actors within non-development disciplines, a primary goal of the framework is to provide a starting point for how to strategically and collaboratively undertake an all-encompassing perspective when considering the connections between health and the housing production system. Digesting the framework conceptually as well as implementing it practically may take time. It will call for new norms and expectations, knowledge and capacities, and practices and behaviors (RWJF, n.d.). Since this is an early and iterative framework that has not yet been put to practice, research into the applicability of a salutogenic approach to multifamily real estate awaits.

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CHAPTER 6: CONCLUSIONS

Spanning three connected but independent articles, this dissertation established that health and well-being (HWB) concepts and strategies are emerging within the multifamily real estate development sector. The first article used a novel method to explore if real estate literature included keywords related to health. While exploratory, results indicated that active living, a proxy for the larger concept of HWB, is a growing topic of interest within the general real estate literature landscape. The second article used a multiple case study approach to gain a deeper understanding of how the term “health” was conceptualized from the perspective of early adopters in the multifamily development sector. Their concepts of health emerged as they described their projects, missions, values, and intentions. Collectively, articles one and two represent important connections to research and practice settings

Research Setting: Article One

Article one highlighted two noteworthy patterns from an academic research perspective. First, the evolution of the green building phenomenon was successfully illustrated using the novel keyword approach, providing confidence that the methodology is valid in tracking a known real estate trend. The second pattern highlighted the likelihood of a time lag between practice and research. Specifically, in the practice setting, it is well documented that the implementation of green building strategies began in the early 2000s; yet, article one showed an almost a ten-year delay in green building keyword appearances in the “research setting” (i.e., real estate literature). If HWB follows a similar research trajectory as green building, a time lag in HWB research may be forthcoming; current real estate efforts that target health in practice settings may not yet appear in real estate research settings. In this case, the ability to conduct evidence-based research would be challenging and could delay the dissemination of important

research findings that could accelerate the diffusion of HWB strategies into real-world examples. To gather evidence about HWB considerations in practice settings, it may therefore be necessary to rely on practice-based evidence.

Practice Settings: Article Two

The case studies in article two provide real-world examples of successful connections between real estate practice and HWB concepts. Thus, there is opportunity to disseminate important evidence-based outcomes using practice-based evidence (PBE). Practice-based evidence requires formative work in real-world settings where the research strategy is informed by the combined wisdom and experience of the researchers and practitioners (Ammerman, Smith, and Calancie, 2014). The multifamily case study participants acknowledged this type of strategy by operating under various collaborative frameworks. The mixed-income developer used the Purpose Built Communities framework, the market rate developer's strategy was guided by the Urban Land Institute's Health Places Toolkit, and the luxury developer adopted the WELL Building Standard certification system. In this sense, PBE may be the most reliable way to gain a deeper understanding of the connections between real estate and health. Analyzing the adoption and results of the newly developed healthy building certification systems would be one way to start gathering an evidence base.

Healthy Building Certifications: Validating the Emergence of HWB in Real Estate Sector

There are two primary certification systems that combine rigorous evidence-based research from public health settings with practical and useful guidelines for real estate developers and other built environment stakeholders: 1) The WELL Building Standard and 2) Fitwel. These healthy building rating systems were both released in the last five years and focus on the building's influence on both occupant and community health. Health concepts include

elements related to: physical activity, air quality, well-being, nutrition, daylighting, among others. Details of these certification systems are beyond the scope of this research, but it is important to note that while primarily focused on commercial real estate typologies, both have pilot rating systems for multifamily development. Practice-based evidence will increase as these certification systems mature and become more widely used by built environment practitioners.

These examples of healthy building rating systems ultimately legitimize health as an investable attribute in the real estate industry. In other words, pursuing these types of standards can give multifamily real estate developers confidence that targeting HWB considerations would be a worthwhile strategy in a competitive real estate market. An example of developer confidence would be successfully connecting the rating systems to financial value through, for example; lending incentives (e.g., higher loan-to-cost ratios), faster lease-up rates, and longer tenant tenure. The rating systems may also legitimize health by initiating the standardization of healthy development principles. Developing standardized healthy development principles that are accessible and understandable across various project types could potentially alleviate the aforementioned ambiguity in defining health constructs. Standardization may provide legitimacy for conventional developers who may not yet see the value in adopting a health lens. They may view the release of healthy building rating systems as an incentive to keep up with a constantly changing market. Establishing value through standardization may also prompt an academic literature response – a step towards closing the research gap found in article one.

Research and Practice in an Action Framework

Article three combined research concepts from article one and health applications from article two into an action framework that encompasses the principles underlying the integration of health and well-being into multifamily real estate development. The framework is comprised

of four action areas that culminate in a salutogenic approach to real estate development. The action areas can be simplified into the following successive concepts: awareness, understanding, implementation, and evaluation. The fourth action area, related to evaluation and measurement, is the greatest barrier preventing multifamily developers and other built environment stakeholders from seriously investing in HWB strategies. This dissertation features examples of successful progressions through action areas 1, 2, and 3 – but stops short of action area 4. The issue of developing valid and reliable health metrics that can simultaneously prompt evidence-based research and practice-based evidence serves as the primary area of future research on the topic of health and real estate development.

The Challenges of Developing Metrics

Taking the entirety of this dissertation into consideration, a primary challenge requiring careful consideration to overcome is the development of industry-specific health metrics. While achieving certifications through the healthy building certification systems is promising, there is limited known data that validly determines the health performance of a building. The limitation exists for several reasons. First, unlike green building, where performance metrics are objective and measurable, objective performance metrics related occupant health are challenging to collect. Individuals are the units of the analysis, yet human behavior is characteristically unpredictable. Every individual is unique and may respond differently to healthy building principles. Developing successful healthy building metrics will require careful balance and calibration to achieve both validity and practicality.

Moreover, while it is known that many of the most important benefits derived from built environment improvements are most effectively demonstrated at a community level – this scale makes it difficult to determine how the developer’s single structure or project mediates health

behaviors and outcomes. Additionally, recruiting individuals to participate in health studies to attempt to correlate their interactions with the developments to their health is challenging, expensive, and labor intensive. Assuming these barriers were removed, the time it takes to track health performance measures objectively, for example change in BMI or cholesterol, may outpace real estate stakeholders' short-term requirements for performance measures, such as financial return on investment. These mismatches between research-oriented health metrics and the practical needs of real estate professionals may also contribute to the delay in repositioning multifamily developers into health promoters.

This dissertation began with sensitizing concepts – orienting ideas - and merged them into an exploration through the research setting via literature keywords and the practice setting via case studies. The result was the emergence of health topics in real estate research and a convergence among three divergent multifamily developers around the belief that as stakeholders of the built environment, they can both promote health and become active participants to the health and place conversations. These conversations are gaining momentum and constantly evolving within the real estate and built environment landscapes. The near future represents formative years in research and practice about how health and non-health sectors can leverage this ideal moment to partner to create, build, and measure a culture of health.

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