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Design, development, and public health: Conceptualizing health and wellness strategies for multifamily projects through a private development lens

Traci Rose Rider, Margaret van Bakergem, Jinoh Park, Xi Wang, and J. Aaron Hipp

Abstract

As awareness of the built environment's impact on individual and community health spreads through design and construction, different stakeholders are engaging in conversations of strategies and metrics. This paper explores the structure, methodology, and findings of research supported by the Robert Wood Johnson Foundation addressing how multifamily developers conceptualize, discuss and implement health strategies in their projects.

Framed in a Critical Theory perspective, this research first explores the traditional multifamily development decision-making process, specifically targeting how early adopters in multifamily development are discussing health and wellness in their projects. By unpacking the discussions around health and wellbeing in design, real estate development, and public health, aligned concepts are identified to operationalize these concepts for further exploration.

Using a comparative case study strategy addressing how and why (Yin 2017), five developers positioned as early adopters were engaged to better understand how they each conceptualize, implement and measure health strategies in their multifamily projects. Two-day in-depth interviews were held in two initial developers' home offices, addressing their standard design and decision-making processes and evolving into specific consideration of various health strategies. Four additional developers were engaged either over the phone or in person. Interview protocol ensured that discussion topics were standardized at the outset, with the following topics addressed with each partner: (1) company mission, (2) organizational structure, (3) differentiation in the market, (4) company evaluation metrics, (5) assessment scales, (6) decision-making processes, (7) market trends, (8) use of evidence-based data, (9) internal health discussions, and (10) investor relationships. Cyclical data collection, transcription, and analysis allowed the interview protocol to be modified for emergent topics. Site visits, website analysis, and clicks through national online real estate databases also contributed to a holistic perspective of this complex problem.

Findings indicate that multifamily developers are focusing on upfront, marketable strategies that are likely to foster mental and social health, but with little regard of applying any form of evaluative metrics. Rating systems addressing health are of little help. When asked directly about choices to influence the health of residents, participants heavily cited (1) location, emphasizing access to community amenities; (2) place making, for community building and social and mental wellbeing; and (3) physical fitness opportunities through fitness spaces. Even those developers viewed as early adopters are uncomfortable discussing health strategies using a public health lens. This research intends to highlight interdisciplinary conversations surrounding health in multifamily real estate, contributing to more rigorous adoption of health strategies in this challenging building type. These findings can be valuable to stakeholders in design, development, private investment, property management, public health, community design, and policy.

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Corresponding Author: traci_rider@ncsu.edu

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INTRODUCTION

This article investigates how multifamily developers conceptualize health and wellness strategies in their projects by exploring language and semantic indicators used in conversations, marketing, and the larger culture of multifamily development. As attention to individual and community health grows in design and construction, discussions around both health strategies and health outcomes vary widely. While relationships between health outcomes and the built environment are easier to define when addressing objective measures in population-specific building types such as healthcare, K-12 schools, and office environments, such as in reduced sick days, relationships are more difficult to identify in residential buildings with diverse populations and uses. As such, understanding how health and wellness is being conceptualized and understood by developers in their established processes, and subsequently how these health and wellness themes are being implemented, is imperative in increasing health outcomes across communities.

The majority of multifamily housing projects around the country are controlled by real estate developers who focus on rent command and lease absorption rates to determine success. Because of this close tie to financial returns, multifamily developers are often at the end of the adoption curve when it comes to large market shifts, as seen in the green building movement over the past few decades (Abbaszadeh et al. 2006). Though increased interest has been seen in related topics such as property management (Hopkins, Read, and Goss 2017) and green roofs on multifamily projects (Anderson 2015), peer-reviewed literature on multifamily and sustainability has been scarce. The lag in the adoption of strategies for multifamily development, both in green building and in health, can be attributed to the traditional development model of completing construction and quickly selling the asset, making it difficult to see financial returns on any increase in initial investment. By exploring multifamily developers' conceptualizations of health, this research seeks to enable multifamily developers and their design teams to better address and frame private investments to intentionally work toward improving occupant health through their projects. While frameworks are available to address health in the built environment, such as WELL and Fitwel, multifamily project types remain slow to engage. This research aims to reduce

the gap between conceptualization and implementation of health strategies in multifamily projects. Findings will also help to support municipal policies in actively engaging community health strategies and increasing positive health outcomes as multifamily projects continue to be built.

Part of a larger grant funded by the Robert Wood Johnson Foundation, this article seeks to outline how private multifamily developers that are viewed as early adopters in health and wellness conceptualize these issues at three levels: conversational, marketing, and within the larger development culture. The interdisciplinary research team with members from design, public health, planning and real estate explored the developer's ideology and thought processes through a health promotion lens, identifying opportunities to better include health and wellness strategies in multifamily projects. Specifically, through the analysis of in-depth conversations, the aim of this research is to investigate the multifamily developers' decision-making processes when assessing health and wellness strategies for their projects to better understand both opportunities and challenges.

BACKGROUND

This study is framed in a Critical Theory perspective. Coining the term in 1937 in his essay "Traditional and Critical Theory," Max Horkheimer believed that "critical theory" works to contest "ideological mystification" with the goal of changing society for the better (Horkheimer and O'Connell 1975). Similarly, Foucault sought to examine historical conflicts with the overarching goal of illustrating how disparate discourses "exist in a discontinuous relation to each other," resulting in disjointed ways of knowing the world (Felluga 2015). Most notably in the frame of this paper, developers, designers and public health advocates all see the world differently, and to different ends. The evolution of critical theory has seen the movement modernized into a "general term for the theoretical analysis of a culture at large" (Felluga 2015). In this study, the "culture at large" to be explored is the traditional multifamily development decision making process. The critical approach seeks to demystify the process of how early adopters in multifamily development are addressing health and wellness with the goal to support the

increase of health outcomes across communities, changing society for the better.

The current state of discussions around health and wellbeing in the realm of multifamily development should be reviewed to establish patterns, baselines, and trends. The intent of this paper is not to criticize or debate the established indicators, but to understand the baseline of expectations for developers in terms of health and wellness. As such, perspectives on health strategies and conversations from the fields of design, real estate and public health will be reviewed to establish a baseline.

Perspectives from Design

The discussion of health in the built environment is steadily broadening to include more than just buildings programmed specifically for health support, such as hospitals and medical office buildings. Awareness and association of the built environment's impact on health outcomes has increased, as witnessed in both academic and popular press articles (Srinivasan, O'Fallon, and Deary 2011, McCormick 2013, Rider 2017). This increase in awareness provides all building types a foundation to engage in discussions of health. Schools are interested in healthier children and better grades (Baker and Bernstein 2012, Chan 2017); corporate offices are interested in employee satisfaction, increased productivity and fewer sick days (JustStand 2017); affordable housing is looking toward better health outcomes for at-risk populations (Maqbool, Viveiros, and Ault 2015, Kottke, Abariotes, and Spoonheim 2018). Overall, these conversations focus on individual health outcomes rather than those at the larger community scale, where public health literature tends to focus. This establishes a fundamental misalignment in health impact conversations between studies in the built environment and public health literature.

While health is increasingly mentioned in building design conversations between clients and owners, other factors such as cost savings, aesthetics, and energy performance still outrank health topics (DDA 2016). In a market report focusing on the move toward healthier buildings, corporate real estate owners surveyed listed their goals for healthy buildings as (1) improved employee satisfaction; (2) happier and healthier occupants; (3) greater

productivity; and (4) organizational duty (2016). None of these speak directly toward health outcomes as addressed in public health literature, illustrated in the coming sections. Specifically, looking at building features for the support of health, design teams prioritized enhanced ventilation and connection to community just above opportunities for physical activity, which all can begin to relate to measurable health outcomes. Farther down the ranking was the inclusion of healthy products addressing issues like toxicity (DDA 2016) which also begins to speak directly to health outcomes.

The U.S. Green Building Council's (USGBC) Leadership in Energy and Environmental Design (LEED) rating system was the first in the early 2000's to begin to address health and occupant satisfaction in the built environment. This interest was based primarily on work from the U.S. Environmental Protection Agency (EPA) outlining the impact of the indoor environment on the health and wellbeing of occupants, positing that Americans spend an average of 90% of their time indoors (EPA 2001). Most of the health considerations addressed in LEED can be found in the sections of the rating system addressing Location and Indoor Environmental Quality (IEQ). While Location addresses elements of walkability and alternative transportation, IEQ speaks to "environmental concerns relating to indoor environmental quality; occupants' health, safety, and comfort; energy consumption; air change effectiveness; and air containment management" (USGBC 2013). The strategies outlined in the LEED system have historically started the discussions of health during the design and construction process: occupant control, daylight, views, indoor air quality, and material toxicity. While there are other topics included in the LEED Rating System that relate to health, such as Bicycle Storage and Community Connectivity, these issues have largely been framed in terms of mitigating resource consumption in terms of fuel.

The Living Building Challenge (LBC), released in the mid-2000's, focuses on more stringent achievements for holistic sustainability in their certified projects, including issues of health (ILFI 2016). The LBC Health + Happiness category includes topics such as *Biophilic Design* and *Healthy Interior Environments*, while other considerations across the system include *Universal Access to Nature + Place, Beauty + Spirit*, and *Human Powered Living*. The LBC, though not widely adopted, uses similar terms and concepts

addressing health in the built environment such as operable windows, air quality, daylight, views, and connection to nature (ILFI 2016). Like LEED, LBC also addresses material toxicity for its impact on air quality, as well as issues of walkability. Unlike LEED, LBC moves toward broader issues in health such as *Equity*, and *Beauty + Spirit*. However, these issues and credits are not evidence-based in terms of health impact and are still not commonly structured discussions in projects outside of the LBC system.

A series of rating systems have recently come to market focusing specifically on health and wellbeing in the built environment. These new systems both broaden the health topics for conversation while allowing for deeper discussions on specific issues and strategies. The WELL Building Standard and Fitwel are completely focused on the health of the occupant, in contrast to the environmental sustainability issues that are the foundations for LEED and LBC. WELL categories include the user-centered concepts of: *Air, Water, Nourishment, Light, Fitness, Comfort, and Mind* (IWBI 2018). Fitwel emphasizes facility management, but aligns with WELL focus areas with categories such as: *Location, Building Access, Outdoor Spaces, Entrances and Ground Floor, Stairwells, Indoor Environment, Workspaces, Shared Spaces, Water Supply, Cafeterias and Prepared Food, Vending Machines, and Emergency Procedures* (CfAD 2018). With the launch of WELL and Fitwel, the discussion about health in the built environment can strategically focus on the users of the space, grounding the system thresholds in science-based, health-outcome standards, as opposed to environmental and resource metrics with health as a side benefit.

Rating systems are often the tool that design teams use to structure conversations about outcomes because they are clear, outlined with defined thresholds and baselines. Over time, as familiarity with the different rating systems increased, these terms become default for design teams and owners interested in engaging sustainability and health in their projects. Because LEED is the market leader in rating systems, and is the system familiar to the built environment industry, discussions around health in the built environment for project teams most often involve discussions of daylight, views to the outdoors, and air quality – those LEED credits that are seen to best address health.

Perspectives from Real Estate

There is little peer-reviewed literature addressing public health outcomes or related strategies in market-rate multifamily real estate. Current research addressing health in multifamily projects most frequently explores low-income housing topics such as energy efficient retrofits (Underhill et al. 2018), particle emissions (Chan et al. 2018), and respiratory health outcomes across housing types (Gan et al. 2017). While corporate real estate developers specializing in office buildings can cite returns on investments in the form of fewer employee sick days and higher employee retention rates (Klimek 2016), it is more difficult to translate these types of returns into the residential real estate market. While market-rate real estate developers do frequently refer to green building rating systems such as LEED, they are often unfamiliar with how their projects can specifically work toward healthier residents because health has not been a focus on their conversations, strategies, or metrics.

Despite the popularity of LEED in commercial markets, another green building rating system that multifamily real estate developers favor is the National Green Building Standard (NGBS). A product of the National Association of Home Builders (NAHB), the system addresses many of the same issues and concerns found in the LEED rating system, but from a home-builder perspective. The Home Innovation Research Labs, an independent subsidiary of the NAHB, offers a specific Multifamily NGBS Certification, which is the only residential-specific green building rating system to receive approval from the American National Standards Institute (ANSI). Also, while both LEED and NGBS are point-based, NGBS requires points to be achieved in every category while LEED does not. This NAHB certification is not only aligned directly with the building type but is also seen to be more affordable and balanced for large-scale projects.

The Global Real Estate Sustainability Benchmark's (GRESB) Real Estate Health & Well-being Module is one of the only real estate documents published to specifically address the inclusion of health and wellbeing considerations in real estate decision making and portfolio development (GRESB 2018). As the Module notes, investors are "recognize[ing] that they lack practical tools for systematic assessment, objective scoring, and peer benchmarking for health

	GRESB	LEED BD+C v4	WELL v1
Design and Operations Strategies	Acoustic comfort	Acoustic Performance	Reverberation Time, Sound Barriers, Internally Generated Noise, Sound Masking, Sound Reducing Surfaces, Exterior Noise Intrusion
	Indoor air quality	Enhanced Commissioning	Air Infiltration Management
		Minimum Indoor Air Quality Performance	Ventilation Effectiveness
		EA Fundamental Commissioning and Verification	Ventilation Effectiveness
		Enhanced Indoor Air Quality Strategies	Air Filtration, Healthy Entrance, Direct Source Ventilation, Increased Ventilation, Air Filtration Part 2, Advanced Air Purification, Combustion Minimization
		Air Quality Strategies	Increased Ventilation
		Construction Indoor Air Quality Management Plan	Construction Pollution Management
		Indoor Air Quality Assessment	Air Flush, Air Quality Standards, Microbe and Mold Control, Moisture Management, Air Quality Monitoring and Feedback, Operable Windows, Outdoor Air Systems, Displacement Ventilation, Cleanable Environment
	Outdoor air quality		
	Lighting control/ daylight	Interior Lighting	Surface Design, Electric Light Glare Control, Visual Lighting Design, Color Quality, Low-glare Workstation Design, Automated Shading and Dimming Controls
		Daylight	Solar Glare Control, Daylight Modeling, Daylight Fenestration
	Thermal comfort	Thermal Comfort	Thermal Comfort, Individual Thermal Control, Radiant Thermal Control, Humidity Control
	Toxic exposures	PBT Source Reduction - Mercury	Fundamental Material Safety
		Building Product Disclosure and Optimization - Material Ingredients	Enhanced Material Safety, Material Transparency, Toxic Material Reduction
		Low Emitting Materials	VOC Reduction
			Pesticide Management
			Antimicrobial Activity for Surfaces
	Water quality		WELL Water Category (7 elements): Inorganic Contaminants, Organic Contaminants, Agricultural Contaminants, Public Water Additives, Periodic Water Quality Testing, Water Treatment, Drinking Water Promotion
	Social interaction		
	Ergonomic design		Ergonomics: Visual and Physical
Biophilic design	Open Space	Biophilia I (Qualitative), Biophilia II (Quantitative)	
	Quality Views	Right to Light, Circadian Lighting Design	
Inclusive design		Accessible Design, Adaptable Spaces	

Table 1: Aligned concepts between GRESB, LEED v4 BD+C, and WELL for GRESB’s Design and Operations Strategies, adapted from IWBI and GBCI’s *People + Planet: Applying LEED and the WELL Building Standard™* (2017)

& well-being.” (GRESB 2018) An assessment to complement other real estate metric development tools, the Real Estate Health and Well-being module aims “to understand how the entity is promoting the

health and well-being of entire populations, such as employees, tenants, and community members.” (GRESB 2018) As such, it seeks to operationalize strategies and decision-making points about health in

real estate projects by outlining possible strategies for implementation.

The strategies identified in the Module are broken down into three categories: Design and Operations Strategies, Access to Opportunity Strategies, and Programmatic Strategies. The Design and Operations Strategies include: acoustic comfort, indoor air quality, outdoor air quality, lighting controls and access to daylight, thermal comfort, toxic exposures, water quality, social interaction, ergonomic design, biophilic design, and inclusive design (Table 1). The Access and Opportunity Strategies include access to medical care, access to mental health care, access to recreational opportunities, access to opportunities for physical activity, and access to healthy foods (Table 2). Programmatic Strategies include smoking cessation/prevention, physical activity programming, and telework/flexible work programs (Table 2). Tables 1 and 2 are adapted from *People + Planet: Applying LEED and the WELL Building Standard™* (Whitaker et al. 2017), showing the parallels across systems.

These figures cross-reference GRESB considerations with those of LEED and WELL, the two systems that have been (1) validated by evidence-based research and the professions; and (2) are most recognized and used by the multifamily development industry. As shown in Table 1 and Table 2, LEED addresses some of GRESB's Design and Operation Strategies and Programmatic Strategies, while WELL addresses all three of GRESB's categories. The most robust categories found uniformly across the three systems are in the Design and Operations Strategies section: Indoor Air Quality, Toxicity, and Lighting. The

consistency of these categories and considerations across systems shows both their familiarity and importance. Notable health and wellness credits that appear in GRESB and WELL but are missing from the LEED rating system include water quality, ergonomics, adaptability, and physical activity.

It can be argued that some of the addressed strategies, such as programmed physical activity and access to health foods are outside of the designers' purview. However, while some listed strategies do go beyond the typical boundaries of the role of architect and contractor, they align with the common terminology regarding health and wellness that must be discussed during the design processes, and therefore, should justify awareness by the design team.

Perspectives from Public Health

Public health, as defined by the American Public Health Association (APHA), is "promot(ing) and protect(ing) the health of people and the communities where they live, learn, work and play. ...those...working in public health try to prevent people from getting sick or injured in the first place. We also promote wellness by encouraging healthy behaviors." (APHA 2018) Additionally, the field of public health includes professionals with diverse expertise areas aligned to the common goal of protecting the health of a population (Evans 2011). Health and wellness issues from a public health lens typically focus on programming, evaluation, and dissemination, with the programming or intervention

	GRESB	LEED BD+C v4	WELL v1
Access to Opportunity Strategies	Access to medical care	Surrounding Density and Diverse Uses	Exterior Active Design
	Access to mental health care		Stress and Addiction Care
	Access to recreational opportunities		Exterior Active Design, Physical Activity Spaces, Fitness Equipment
	Access to opportunities for physical activity	Open Space	WELL Fitness Category (8 elements)
	Access to healthy foods		WELL Nourishment Category (15 elements)
Programmatic Strategies	Smoking cessation/ prevention	Environmental Tobacco Smoke Control	Smoking Ban
	Physical activity programming		Activity Incentive Program, Structured Fitness Opportunities
	Telework/ flexible work program		Healthy Sleep Policy, Business Travel, Workplace Family Support

Table 2: Aligned concepts between GRESB, LEED v4 BD+C, and WELL for GRESB's Access to Opportunity Strategies and Programmatic Strategies, adapted from IWBI and GBCI's *People + Planet: Applying LEED and the WELL Building Standard*

rooted in scientific evidence (Brownson, Fielding, and Maylahn 2009).

Terms often used in public health include *morbidity*, *mortality*, *prevalence*, and *incidence*, addressing primarily public health events, risk levels, and causes of disease (Evans 2011). The focus of the public health field is on prevention, not treatment. As such, discussions of health behaviors are important to influence a reduction in health risks. Often public health literature will discuss how individuals can achieve better health outcomes through behaviors, or modified behaviors, such as physical activity, healthy eating, access to nature, access to relationships/social capital (McNeill, Kreuter, and Subramanian 2006). When relating to the built environment, public health literature traditionally addresses issues such as access to healthy food (Mahendra et al. 2017), physical activity (Saunders et al. 2018), walkability (Carroll et al. 2017, Jun and Hur 2015, Su et al. 2017), and obesity (Kowaleski-Jones et al. 2017, Zhao, Kwan, and Zhou 2018). Of these focus areas, not many traditionally overlap concerns in the development process, though they are addressed in the rating systems such as GRESB and WELL. Unfortunately, most multifamily developers do not frequent either of these systems, sticking to familiar ones such as LEED and NGBS.

Public health studies are also often at the community scale rather than that of an individual building, which is one point of disconnect between it and the other noted fields mentioned earlier. While architects and building owners often focus on the building scale, one building at a time, the translation of operationalized and measurable public health concepts are difficult to identify and measure at this smaller scale.

Operationalizing health and wellness

As reviewed, the literature in the three fields of design, real estate, and public health address health and wellbeing in the built environment in different ways, sometimes at different scales, but seem to reach toward common goals. The fields often use similar terms across the different scales of building, site and community. While each field conceptually looks toward prevention, public health focuses on evidence-based interventions, concentrating on performance over the prescriptive strategies often seen in green building and health guidelines. To move toward impacting health outcomes, building

guidelines addressing health and wellbeing in the design fields are becoming increasingly evidence-based, as seen with WELL and Fitwel. Real estate discussions pull heavily from terms and strategies defined by the design fields, which are largely established by adopted guidelines such as LEED.

Health and wellness indicators are defined in this study by using the strategies identified in GRESB's Health and Wellbeing Module, shown in Table 1 and Table 2. The GRESB Module uses terms and concepts that are validated by both evidence-based research and the professions, and supported by two of the most implemented and accepted building rating systems on the market, LEED and WELL.

METHODOLOGY

A case study methodology was used for the study to ask *How* and *Why* early adopters in multifamily development are integrating health and wellness strategies. Yin suggests that a case study methodology is "an empirical inquiry that investigates a contemporary phenomenon within its real-life context" focusing on questions framed in *How* and *Why* (Yin 2017). Though both qualitative and quantitative data collection strategies were employed in the larger funded study, this article focuses on emergent themes gathered from participant interviews. This qualitative analysis looked specifically for indicators in the discourse to suggest attitudes and ideologies about health and wellness, and if or how the discourse around health reflects validated concepts within the field. Specifically, conversations with participant developers addressed their considered and selected strategies for health in their multifamily projects, as well as the trends of discourse around health and wellness in the larger multifamily development culture.

Two participant multifamily developers were engaged as a purposeful sample based on their reputation for early adoption of health and wellness strategies, with a focus on the Southeast region of the United States. The sample is not meant to be generalizable, but to gather deep insight about a condition, allowing two participants to be sufficient. IRB approval was received before gathering data or conducting interviews. Participant consent forms were provided before the interviews, and written

consent was collected in-person before the start of each interview from all individuals participating in the interview sessions.

Data collection: In-depth, in-person, six-hour interviews were held over two days with two participant developers in their office spaces. Follow-up interviews were held after the bulk of the data was analyzed. Each initial interview started with the same interview protocol, ensuring that the research team consistently addressed the following topics: (1) company mission and history, (2) organizational structure, (3) perception of differentiation in the market, (4) company evaluation metrics, (5) scales for assessment, (6) decision-making processes, (7) trends in the market, (8) reliance on evidence-based data, (9) internal discussions around health, and (10) investor relationships. Cyclical data collection and interviews allowed the interview protocol to be modified between interview sessions for more specific probing of emergent or unclear topics from the previous dialogues. The first discussion with each developer lasted three hours on the first day, allowing the research team to discuss and cross-reference discussion points during the evening, to inform the second round of discussions on the following day. This reflection process also enabled the team to better focus discussion points in the conversation without guiding the participants in their answers during the discussions.

Audio recordings were collected on three different devices during each of the sessions and securely stored in a common location. Notes were also taken by each of the five research team members, reflecting their disciplinary positions, to supplement the audio recordings and formal discussions. This memoing process allowed the research team to record reflections during the discussion for further internal contemplation and team conversation, supplemented by additional memoing during both the evening team sessions and later during analysis. This memoing process allows the researcher to transform the collected data into an emergent theory (Lempert 2007).

DATA ANALYSIS

Audio recordings were transcribed by a third-party and reviewed through a theoretical coding process (Hernandez 2009), using each partner developer as a

single case boundary. The interdisciplinary research team met as a group to review the coding process before assigning individual transcripts to team members for emergent coding. Architecture, public health, planning, and real estate disciplines were represented on the research team. Each transcript was initially coded for emergent themes by one team member, then reviewed by another team member in a random assignment of transcripts, ensuring that the perspectives of the different disciplines were considered. All transcripts were reviewed by the team member with real estate expertise. After three rounds of initial coding, emergent codes were assessed by the team to establish primary and secondary codes. Codes were then analyzed in a cross-case analysis, to identify consistencies and differences between participants, ultimately resulting in common themes and concepts indicative of how early adopters in multifamily development are conceptualizing health and wellness in their projects.

These codes, and specifically the terms used during interviews with developer participants, were crossed referenced with the health and wellness indicators identified from GRESB' Health and Wellbeing Module, established in a previous section as valid concepts for the integration of health and wellbeing in the built environment.

FINDINGS

The terms and phrases used by participant developers focused on amenities and resident experiences rather than specific strategies as outlined by a rating system or as seen in evidence-based health outcomes found in public health literature. This was seen through participant statements such as "We are in the business of place making," and "I think one of the main things we try to do is have a really big fitness center." There were limited direct connections between the health strategies as outlined by the developers and the evidence-based strategies found in public health literature, known to influence health behaviors and outcomes. Terms, phrases, and strategies for developers, instead, were rooted in anecdotal processes and organizational precedents. However, some of the themes translated at the conceptual level and will be reviewed.

The discussions with the market-rate developers were fundamentally centered around the

marketability and identity development, or branding, of their properties rather than a larger concern for population health, ethics or social justice. Terms and phrases were coded and analyzed at three different levels: emergent codes in conversations, emergent themes cross-referenced with established health and wellbeing indicators, and alignment with public health conversations.

Emergent codes in conversations (Level 1)

The first step in the analysis was to review the conversations for emergent themes. An in-depth review of the interviews resulted in 86 health strategies, which were termed by participants as amenities. Identified by codes, these targeted amenities included items such as acoustics, art, bikes, green areas, connectivity, concierge, dog walk, fitness center, etc. These initial codes were then collapsed into twenty "Amenity Buckets" that address health and wellbeing (Table 3). As shown, the most noted health strategy for including health and wellbeing in the multifamily projects explored was Place Making, by a large margin with 60 instances. Place making was identified in terms of being "in the business of lifestyle creating." One participant shared, "The live, work, play idea... we truly try to achieve that in all of our projects." Often, this place making idea was about fostering social relationships: "...we're trying to create that kind of space where people want to get out of their units and hang out with each other." This discussion of place making emphasized the ability for projects to provide residents with opportunities for social capital, which aligns with access to relationships/social capital as seen in the public health literature (McNeill, Kreuter, and Subramanian 2006).

The next most frequent strategies were Healthy Food, General, and Convenience, with 26, 20, and 20 respectively, which also relate back to public health conversations around access to healthy foods. Strategies and amenities that were least frequent on the list include Yoga, Fitness Programming, Outdoor Play, and Greenway. Additional strategies that have been linked to better health outcomes in public health literature, such as access to fitness, greenway walkability, and nutrition were further down the list in frequency.

These emergent themes were then grouped under different headings to understand the primary areas of

emphasis for health and wellbeing strategies. The emergent headings were: Mental, Nutrition, Physical, Safety, Social, and Wellbeing. Some strategies, such as Place Making, were viewed as a strategy that could address multiple health and wellbeing areas, such as Mental, Physical, Safety, and Social. Overall, Physical Activity considerations showed up overwhelmingly as potential strategies for the participant developers, being mentioned over twice as many times as the second category, Social Considerations. This arrangement flips the emphasis from social place making, as shown as a leading theme when coded by term, to physical activity when grouped with similar strategies.

While the emphasis on physical health and wellbeing does reflect the developers' interest in supporting resident health, it could highlight a hesitancy to address other health and wellbeing categories that are more vague or difficult to manage, such as mental health and nutrition. Strategies addressing physical wellbeing, such as providing a gym, access to a greenway, and a pool are easy amenities to market, as potential residents can readily understand these opportunities and how they might contribute to a healthier lifestyle. By simply including these standard strategies in their program, or in their amenities list, the developers can easily claim that they have designed an environment that supports resident health.

Place making is an important issue that the developers promote and was, during interviews, often interchangeable with the project's brand and identity. Though health and wellbeing issues were not driving factors for branding their projects, the developers often suggested that successful place making could readily contribute to increased mental and social health, but more importantly for them, to community building. This would help establish their brand. One partner noted, "There's enough to do to keep you interested here, to keep you working here, there are enough places, extensions of your home, outside of your specific apartment." Another says, "you're creating like this purposefully public space - you have more personal interactions." These statements illustrate their emphasis on social connection in their concept design, brand development, and marketing strategies.

<i>Collapsed Amenity Buckets</i>	All	Mental	Nutrition	Physical	Safety	Social	WB	Grand Total
								4
Art						1	11	12
Bikeable				13		1		14
Biophilia		1		1			14	16
Connectivity				6	1			7
Convenience				2	1	1	16	20
Dogs				2		4	6	12
Fitness Center				30			1	31
Fitness Programming	1			3		1		5
General	15	1			1		3	20
Greenway				6				6
Healthy Food			17			4	5	26
Indoor Comfort				2			10	12
Outdoor Play or Fitness				6				6
Place Making	3	1		1	2	25	28	60
Pool						3	4	7
Public Transit				6		1	3	10
Security					7		1	8
Walkable				15	1		1	17
WELL Building Certification	12						5	17
Yoga	2			1			2	5
Grand Total	33	3	17	94	13	41	110	315

Table 3: Emergent themes from interview transcripts

Overall, developers identified health and wellbeing strategies as they relate to three areas: community connection, place making, and physical fitness. Mental health was the least addressed, followed closely by nutrition. Safety was not mentioned frequently as a health strategy, though it was noted repeatedly during the conversations that the residents’ safety was important; however, it was a given in the design considerations and not readily addressed as a health strategy.

Emergent themes referenced to health and wellness indicators (Level 2)

As noted in the review of literature, there is little published on how multifamily developers can engage, or even discuss, health and wellness in their projects. However, participant developers did discuss health and wellness strategies during the interviews in line with those strategies established previously from the public health literature and, more specifically, with the metrics identified in the GRESB health and wellness indicators. The conversations notably emphasized health and wellness at the community level rather than the building level. One such example referenced policies and the developments of

greenways: “If there are efforts that we can support or advocate for improvements [with the municipality], like our greenway system, to work alongside to enhance plans that are already underway.” Another partner emphasized walkable communities and site selection stating, “We’re choosing these locations in these neighborhoods to create [community], so they are the main amenity for our residents [with] walkability.” The observed emphasis on community-level strategies is synergistic with the developers’ dedication to place based projects and branding. A project within walking distance of recreational opportunities, healthy food, and healthcare is seen to be more marketable than a development that requires a car; this accessibility can also be categorized as a health strategy. These community connectivity efforts all relate to the health and wellness indicators associated with Access Strategies as outlined in the identified metrics.

Strategies at the building level focused on gym facilities and community spaces. Physical activity spaces in the projects emphasized the size and condition of the workout spaces. “...one of the main things we try to do is have a really big fitness center. We try to have ones that approach 2,400 sf and that’s really big. It’s nice to offer the resident a gym so they

don't have to join Gold's Gym." Equipment is also stressed. "Having gyms that you don't go down and get frustrated because the two treadmills are always taken. We put in six or eight treadmills or five or six ellipticals. We have Pelaton bikes, we have Crossfit equipment. We find we can justify the investment there and that it appeals to who we think our demographic is." The focus on these fitness centers aligns with the health and wellness indicator Access to Physical Activity.

Across the interviews, strategies impacting resident health at the individual unit level, such as indoor air quality or water quality, were brushed over if mentioned at all. When directly questioned by the research team, these considerations were waved away because they are covered in the green building guidelines that the developers already adhere to, and have followed for years, making them a "given" and not worth discussion. Indicators at the building design and operations level that are not included in adopted rating systems, such as biophilic design and social interaction, were more worthy of conversation. Hence, not many of the strategies discussed aligned with indicators identified under Design and Operations Strategies.

Many themes that participants identified as addressing health and wellbeing did not align with any established indicators. These include strategies such as art installations and pet amenities. Participant developers were very cognizant and vocal about the impact of pet amenities and celebrated artwork in their projects, stating repeatedly that dogs and companionship are good for mental health; therefore, dog amenities were a health strategy. One partner notes, "One of the bigger trends has got to be pets.... We're upgrading to have a dog park and a pet spa." Another notes,

"Dog parks. We invest in them heavily, not only just because we know 60% or more of our residents have pets and it's a convenient thing but it's one of those social spaces where we know that a dog park is hands down, by leaps and bounds, the spot where people make connections and feel comfortable talking to other residents because it's so much easier to go up to somebody and get introduced [...] they're forcing interaction and so we really embrace creating these dog parks and making them social spaces."

Art installations were also emphasized, relating to place making for the project, which are seen to

develop social cohesion and health, and build community to combat mental health issues. One partner shares, "in between two parking decks in sort of no man's land and it now has original art... going back to that whole body, whole mind, happiness." While pets and art are not seen in the established health and wellness indicators, metrics for these types of strategies in multifamily housing could be explored based on the value developers believe these strategies hold.

These findings indicate that health and wellbeing strategies at the unit scale often remain outside of the developer's focus because of their inclusion in green building rating systems, where their projects are already achieving certification. These include strategies such as indoor air quality and thermal comfort, which are addressed through adherence to another rating system, not because they are health and wellness strategies. Similarly, multifamily developers that are early adopters in health and wellness tend to focus on place-based and community development strategies in their developments. These site selection strategies align with health and wellness indicators addressing access

	GRESB Module/ H&W Indicators	Emergent themes
Design and Operations Strategies	Acoustic comfort	
	Indoor air quality	
	Outdoor air quality	
	Lighting control/ daylight	
	Thermal comfort	x
	Toxic exposures	
	Water quality	
	Social interaction	x
	Ergonomic design	
	Biophilic design	x
	Inclusive design	
Access Strategies	Access to medical care	x
	Access to mental health care	x
	Access to recreational opportunities	x
	Access to opportunities for physical activity	x
	Access to healthy foods	x
Program Strategies	Smoking cessation/ prevention	
	Physical activity programming	x
	Telework/ flexible work program	

Table 4: Alignment of health and wellness indicators with emergent themes.

to services and products, such as physical activity and healthy foods. While the focus is not on health and wellness as they develop these strategies, the two are synergistic and they can be claimed as health and wellness strategies. These themes and alignments with the health and wellness indicators are illustrated in Table 4. As shown, themes that emerged from the interviews aligned with established indicators addressing access much more than design and operation elements at the building scale.

Alignment with public health conversations (Level 3)

Participant developers did occasionally discuss health and wellness strategies in ways that align with public health perspectives, notably emphasizing strategies at the community level rather than the building level. However, there were no discussions of health outcomes. Participants did not understand metrics or measurable attributes that could be collected from their projects to speak toward public health outcomes. Participants felt that measurement was likely possible, based on their previous experiences with other rating systems, but did not believe they had the tools, time, or knowledge to measure health outcomes. While specific public health terms were not used, the concepts of walkability, physical activity and connectivity were aligned with the public health literature. Instead, developers discussed health strategies in terms of amenities.

Opportunities for expanded metrics were identified when developers would build-to-hold; in other words, the developers would not only finance and oversee design of the project, but would then manage the project upon completion of construction. This allowed the developer, or their property manager, to continue to oversee strategies, operation, and programming, providing the opportunity to see a return on investments in health strategies. However, even still, the participant was unsure of how to measure meaningful health outcomes in the multifamily project and the adjacent buildings.

As such, the population of the “General” category indicated in Table 3, which serves as a catch-all, likely reflects the developers’ inability to define or pinpoint explicit health terms or concepts. While these terms and concepts remains ambiguous to the owners, formalizing metrics that can be understood by the stakeholders is nearly impossible. This ambiguity

highlights the importance of addressing disconnects in discourse between disciplines.

The data clearly illustrates that multifamily developers do not currently understand the core values of public health as reviewed in the literature in terms of health outcomes, nor do they have the vocabulary to articulate public health issues. If progress is to be made in health and wellness strategies for market-rate multifamily housing, common concepts and terms need to be addressed and the knowledge needs to be shared and fostered with developer stakeholders.

Multifamily developers rarely engage with public health experts and are unaware of how to define or measure implemented strategies, or how to perceive any returns on investment in strategies such as access to health care or biophilic design. This lack of clarity indicates that health metrics specific to multifamily housing need to be developed and shared with multifamily developers. Implementation suggestions and strategies would make the execution of these strategies easier.

Limitations

The primary limitation of this research is the abundance of data gathered from each participating developer, which is being used to craft a holistic perspective of the developers’ conceptualization of health and wellness strategies in market-rate multifamily housing. This study only focuses on one small portion of the data collected, and some crossover insights may have been missed. Additionally, because the research team engaged the developers individually to focus on their specific perspectives and intentions, other project team members such as designers or consultants were not engaged. Other perspectives may provide additional insight into process and should be researched further.

CONCLUSIONS

Health and wellness is an uncomfortable topic for many multifamily developers, even those that may be considered early adopters. Because these developers often focus on branding and place making, and invest heavily in physical activity spaces, they may default into advocates of health and wellbeing without

thoughtfully and deliberately considering health strategies or outcomes. When asked about health and wellbeing strategies, participants leaned heavily on (1) place-based location choice emphasizing access to community amenities; (2) place making, in terms of community building and social and mental wellbeing; and (3) opportunities for physical fitness through designed and programmed spaces.

As the popular rating systems currently stand, there are gaps in how health strategies are being addressed and how they are being conceptualized and understood by developers. The rating systems reviewed address strategies as prescriptive elements working toward a healthier population, but do not address a truly integrated approach to placemaking and identity/branding, which is a key target for the development companies, and could translate into health strategies and outcomes if executed thoughtfully.

When asked, some participants were not certain what health and wellness strategies might be included in their multifamily project type, despite the emergence of recent applicable rating systems. Their questions back to the research team revolved around definitions, designated strategies, and evidence-based opportunities. This further illustrates the need for stakeholder education and outreach specific to this project type.

Recommendations for future research

Future research should explore the specific ways in which health issues are addressed in interdisciplinary meetings around multifamily housing, as well as in other buildings types. A project team could be engaged early on to monitor and analyze the design conception and development process through construction and occupancy. This would allow for tracking terms and ideas from the start of the project when it resides solely with the developer in idea, through design and construction when the ideas become operationalized. Metrics should be developed to outline health and wellness opportunities specific to multifamily housing, ideally in partnership with developers. Further case studies can be designed to assess the actual use of different health and wellness strategies in multifamily projects, providing developers more evidence for informed investment and decision-making.

Implications for practice

This study outlines valuable similarities and differences in the way issues of health and wellness are discussed across the different disciplines of architecture, public health, and real estate development. As such, this study hopes to shed light on interdisciplinary conversations surrounding health in multifamily real estate, contributing to paving a smoother road for adopting health strategies in this challenging building type. These findings can be valuable to stakeholders in design, development, private investment, property management, public health, community design, and policy.

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