Facilitating the WELL Building Standard through Wellness Programs in the Workplace

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ABSTRACT: This study explores establishing a theoretical connection between wellness programs and the built environment based on the WELL Building Standard, aiming to identify affordable building strategies which can support wellness program implementation. First, this study outlines the process of building a wellness program designed under both U.S. regulations and programs designed by wellness program providers. Second, existing wellness programs are broken down by respective categories in the outlined structure. Third, the categorical concepts and criteria of the WELL Building Standard are arranged according to the established categories and programs. Fourth, overlaps between the subdivided wellness programs and the WELL Building Standard are compared to identified elements of existing wellness programs. Finally, this paper suggests the incorporation of the WELL Building Standard into wellness programs by changing the paradigm of the built environment from an environmental context to an active contributor to a wellness program.

KEYWORDS: Workplace, WELL Building Standard, Wellness Program, Health, Built Environment

INTRODUCTION

As public interest in health and well-being has increased and researchers have found a correlation between health and productivity of employees, various governmental, corporate, and organizational services have been developed to support increasing employees' health outcomes in the U.S. The U.S. government established regulations to release wellness programs[1] with additional small business support programs. However, the wellness program, as part of the governmental and corporate services, does not meet expectations of employee or employer because of (1) the associated increase of healthcare service costs, (2) the limit to eligible participants and program options, and (3) the absence of an integrated program approach rather than independent programs. These obstacles hinder the expected outcomes of wellness programs for participants. To improve the efficiency of wellness programs using existing resources and effort, this research suggests that the built environment is a medium which can reduce the burden of healthcare cost, expand the range of program participants, and connect currently independent services. Americans spend 90% of their time in indoors[2] and it is not generally an option to eliminate the built environment from daily work life. In 2014, the International Well Building Institute launched the WELL Building Standard, which assesses each element of the built environment by exploring the impacts of built environment strategies to improve the human health and wellness. This research explores how the WELL Building Standard can be a medium for connecting the built environment securely with wellness programs.

1.0 LITERATURE REVIEW

1.1. Context in Health Economics

In a healthcare system model (Santerre R.E. and Neun S.P. 2010), the three major players are *Patients*, *Healthcare providers*, and *Insurers*. These three players interact through transactions with a minor player, the *Sponsor (Employers or Governments)*. Since 2005, the Consumer Price Index (U.S. Bureau of Labor Statistics) has been surpassed by health care inflation (except 2008[3]), while the average health insurance premium increase for singles and families has overwhelmed the real personal income inflation index[4] in the U.S. As a result, *Patients* have two options for insurance: either pay the increased premiums or accept lowered health insurance coverage. In this context, academic researchers and organizations have warned of potential risks which are (1) a Gross Domestic Product(GDP) decline when the health of working population fails and (2) a National competitiveness decline because the health care cost is a large part of GDP[5]. When *Patients* are continuously burdened or unprotected in terms of their health, a governmental or corporate intervention is thought to be needed to preserve the public health levels, especially in the working population.

1.2. Wellness Programs in the U.S.

Wellness programs appeared as a part of a governmental and corporate intervention to address this issue. Though the first wellness program appeared in the 1700s (Pheasant S. 1991), the current conceptualization of a wellness program, which covers not only health promotion plans but also health education, a supportive social and physical work environment, and the integration of the program into the administrative structures, related programs, and screening programs, was established in 2000 by the United States Department of Health and Human Services. To help control the increase of healthcare costs, the U.S. government also

established wellness program regulations, which include the Affordable Care Act (ACA) (U.S. Department of Labor 2014), Americans with Disabilities Act (ADA) (U.S. Equal Employment Opportunity Commission 2016), and Genetic Information Nondiscrimination Act (GINA) (U.S. Equal Employment Opportunity Commission 2016), to enhance wellness programs with the goal to improve employee health. As these regulations have been implemented, employers have offered wellness programs to their employees (Jame J. 2013) in collaboration with health insurance providers, structuring rewardable wellness programs at an organization level. Health insurance providers have also developed technology-based incentive programs for implementation at an individual level[6], often using wearable devices.

Many of these implementations received negative feedback. For example, 85% of large firms, which hire more than 200 employees, and 58% of small firms, with 3 to 199 employees, offer at least one specific wellness program to their employees, such as programs to stop smoking, weight loss, or behavioral coaching (Claxton C., Rae M., Long M., and Damico A. 2017, 195). While it appears that many people benefit from wellness programs, small businesses account for 99% of U. S. business. Because smaller firms are less likely to offer programs, this means that there are actually relatively few participants in wellness programs (U.S. Small Business Administration 2017). Even though the U.S. Centers for Medicare & Medicaid Services has offered grants to support wellness programs and promote the benefits of wellness programs to small firms since 2010, the small firms have still hesitated to offer wellness programs because of associated financial and administrative costs[7]. Moreover, programs offered in large firms see limited and low participation rates[8] (Mattke, S. et al 2015). Even further, only 44.1% of employees participating in wellness programs have wearable devices to monitor their health information, and documenting whether or not the requirements of their wellness program are achieved (Springbuk 2017, 4). Organizations hesitate to introduce wellness programs requiring wearable devices because of the invalid and unstable data gathered from these devices (Ledger D., McCaffrey, D. 2014, 4), despite being the primary method by which many of these programs are monitored.

1.3. The WELL Building Standard: a Building Certification for Health

Since 1993, the U.S. Green Building Council (USGBC) has been managing the Leadership in Energy and Environmental Design (LEED) certification for the built environment, which adopts a performance-based approach to achieve occupant comfort and system efficiency. In 2014, by collaborating with USGBC and adapting part of LEED, the International Well Building Institute (IWBI) launched the WELL Building Standard. The WELL Building Standard has 8 concepts: Air, Water, Nourishment, Light, Fitness, Comfort, Mind, and Innovation. It outlines 105 criteria related to wellness and 11 body systems: cardiovascular, digestive, endocrine, immune, integumentary, muscular, nervous, reproductive, respiratory, skeletal, and urinary. This certification focuses on developing healthier buildings, fundamentally prioritizing occupant health. Also, it allows people to measure health and wellness strategies in the built environment based on a systematic approach (IWBI 2017). Since all established criteria have target conditions and references, the purpose of each credit can be identified focusing on employee's health, absenteeism, and productivity. Furthermore, according to the WELL system, users can understand what criteria were achieved in a certified building; the building performance in continuously tracked after occupancy. However, a WELL-certified building owner is required to pay for continued monitoring. Even though there is research addressing the return on investment and importance of WELL-certified buildings (ALPIN LIMITED[9] 2017, Barth B. 2015, and Cortese A. 2016 Nov., 69), the financial and administrative costs of the system are seen as obstacles to obtaining the WELL certification for buildings.

To compensate for criticisms to the wellness programs and the financial issue of the WELL certification, the built environment can be explored as a medium, because everyone experiences it daily. If the built environment scale can be used to facilitate a wellness program, it is possible (1) to offer a wellness program regardless of the size of the company, which reduces the restriction on individual participation in the program, (2) to provide valid data regularly and continuously in comparison to wearable devices, (3) to achieve eventual administrative cost savings as employers are able to integrate wellness program costs into operation and maintenance costs for buildings, and (4) to judge the value of wellness programs and the WELL Building Standard by ROI not only from the developer's perspective but also from the healthcare and insurance systems. Finally, this approach at the built environment scale allows us to uniformly promote wellness programs and the WELL Building Standard for the employee's health.

2.0 CONCEPTUAL FRAMEWORK AND RESEARCH QUESTIONS

2.1. Theoretical Perspective

According to the Oxford dictionary, the definition of the built environment is *"Man-made structures, features, and facilities viewed collectively as an environment in which people live and work."* Since the built environment

is a tangible space for physical activity, it influences a person's behavior (Centers for Disease Control and Prevention 2011). Therefore, designing and zoning spaces can promote a healthier environment and lift the quality of life up for all (Roof K., Oleru N. 2008). The approach to the built environment has been shifted from of tangible spaces to also include intangible consequences from these spaces (Kuhn T. 1970).

By exploring an arrangement of wellness at the built environment scale, this research uses a paradigmatic innovation approach (Wang and David 2013, 387) to use the built environment as a medium between the wellness program and the WELL Building Standard, aiming to increase the health and productivity of employees. To function as the medium, the built environment is needed to engage not only the WELL Building Standard but also the wellness program system. The wellness program is a part of the health care system because the program was started to mitigate the cost of healthcare inflation. Under this framework, the built environment can be an integral part of a wellness program system when it addresses the WELL Building Standard and shares the goals of wellness programs. Once recognized as a part of the wellness program framework, the built environment can promote and provide a healthier workplace.

2.2. Conceptual Framework

Hillier and Hanson (1984) analyzed space by establishing a linear concept of space for understanding social relationships based on spatial structure. This model enables a transition between a physical space structure and a social network structure by creating hierarchical connections between occupants in each room. This linear structure can also illustrate the relationship between wellness programs, the built environment, and the WELL Building Standard. Though these three elements start separately, wellness programs and the WELL Building Standard move closer to built environment by sharing design strategies and activities found in the built environment. Then, the designed and programmed elements can support employee health and productivity which achieving cost saving and expanded opportunity to promote both wellness programs and WELL certification.

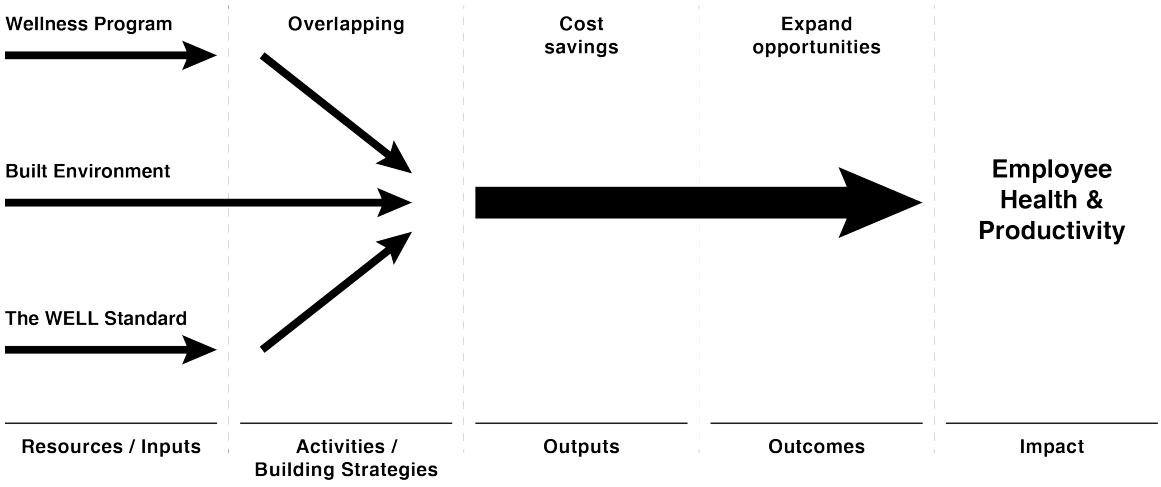

Figure 1: A Framework to Incorporate Wellness Programs, Built Environment, and the WELL Building Standard

A logic model is beneficial to systematically show a process of a program (W.K. Kellogg Foundation 2004). The model shows phases of Resources/Input, Activities, Outputs, Outcomes, and Impact. Each phase identifies a part of the considerations what reference should support each phase. In this research, the wellness program, built environment, and the WELL Building Standard are located in the resources/inputs phase of the program. To achieve the goal of reducing operation and maintenance costs while expanding opportunities to participate in wellness programs or promote the WELL certification, this paper concentrates on the Activities phase and investigates overlapped areas of wellness programs, the built environment, and the WELL Building Standard.

2.3. Research Objective

This exploration is to propose the WELL Building Standard as a part of a wellness program in the workplace by using the built environment as a medium. This paper theoretically explores a way to save on administrative costs and expand opportunities to participate in the wellness program for employee health and productivity by incorporating wellness programs and the WELL Building Standard in the built environment, aiming to identify

supportive roles of built environment elements for wellness programs. Therefore, this paper illustrates (1) the process of developing a wellness program; (2) exemplary sub-programs offered by industry leading companies; (3) the WELL Building Standard criteria matched with the identified exemplary sub-programs; and (4) overlapped, aligned, or overarching parts of wellness programs and the WELL Building Standard. Finally, this paper proposes a new approach to synergize building certification criteria and wellness programs based on the built environment.

2.4. Research Scope

This exploration is the first part of a larger research to develop an actual wellness program based on the built environment, as well as shifting the paradigm of the built environment from architectural material to healthcare system. This paper illustrates the built environment as a method for synthesizing the WELL Building Standard and wellness programs and supports a paradigm shift to set the foundation of wellness program development. To achieve the development of actual wellness program based on the built environment, the subsequent research will cover the program feasibility with corporate partners.

2.0 STUDY METHODOLOGY

3.1. Research Design

This research uses a linear structure analysis and logic model. First, this study outlines the process of building a wellness program by considering program categories from both regulations and program operators. Second, information on exemplary wellness programs is collected. Third, the collected exemplary wellness programs are broken down according to the previously determined categories and programs. Fourth, the categorical concepts and criteria of the WELL Building Standard are arranged to align with the elements outlined in wellness programs. Here, overlaps between the subdivided wellness programs and WELL Building Standard illustrate applicable criteria of the WELL Building Standard to support wellness programs, comparing each element in the outlined data.

3.2. Research Samples

3.2.1. The U.S. Health and Medical Insurance Industry

In health and medical insurance in the U.S., there are five major companies: UnitedHealthcare Inc., Anthem Inc., Aetna Inc., Humana Inc., and Cigna Corporation. The sum of market share by these companies is 56.7% of the industry (Curran J. 2017). This study assumes that these companies represent the industry and are appropriate samples of the insurers' population. Therefore, the five companies' wellness programs are used as the industry standardized samples.

3.2.2. The U.S. Corporate Wellness Services Industry

In the U.S. corporate wellness service industry, there are only four companies who have a market share of at least 1%: ComPsych, OptumHealth Inc., ValueOptions Inc., and Ceridian HCM Inc. The sum of market share by those companies is 14.1% of the industry (Turk S. 2016). Because of the low market share, this study does not use these major companies' products and services as samples. Instead, this study assumes that the products and services found in the market represent the industry. Therefore, the representative products and services seen in the industry are used as the industry standardized samples: Health Risk Assessments (HRAs), Nutrition and weight management, Smoking cessation, Fitness services, Alcohol and drug abuse services, Stress management, and Health education services.

3.3. Data Collection

To outline the process of building a wellness program, understanding how to implement a wellness program is needed. Establishing and designing a wellness program uses the guidance of the Centers for Disease Control and Prevention (CDC), the Equal Employment Opportunity Commission (EEOC), and the Health Insurance Portability and Accountability Act (HIPAA) by incorporating the regulations of ACA, ADA, and GINA which were previously discussed. These regulations were collected from each organization's web page. For exemplary wellness programs, the web pages of five sample companies in the insurance industry were used, as well as the corporate wellness service industry's seven representative products and services from IBISWorld industry report (Turk S. 2016). The WELL Building Standard information was gathered through the recent The WELL Building Standard reference guidebook (IWBI 2017).

3.4. Data Analysis

To achieve the goal of this research, first it is required to understand the process of establishing and designing a wellness program under the regulations and organizations' guidelines: CDC, EEOC, HIPAA, ACA, ADA, and GINA. Then the regulations are arranged into principle categories of wellness programs for regulated purposes. Under these categories, the exemplary industries' products and services are categorized. Next, the WELL

Building Standard's concepts and criteria are also categorized under the exemplary programs into the previously determined categories. Finally, the organized structure illustrates what elementary of wellness programs overlap. Based on these analyses, this research suggests how the wellness programs and the WELL Building Standard can be better incorporated through support of the built environment.

3.0 FINDINGS

4.1. Design Process of Wellness Programs

Each wellness program is designed by each employer by considering the specific context of their workplace, so there is no standard program structure. In this context, there are several guidelines[10,11,12] for how to design a wellness program, even though there is no comprehensive regulated process. The guidelines have common cores of process: research, planning, implementation, and evaluation. Applying the above elements to the logic model, research is aligned with resource/inputs, planning is aligned with activities, implementation is aligned with outputs, and evaluation is aligned with outcomes. As stated in Section 2.2, this paper investigates how the wellness program and the WELL Building Standard might work together in the built environment.

4.2. Categories of Wellness Program

The wellness program, under ACA regulation, is categorized into three categories: "Participatory", "Activity-only Health-contingent", and "Outcome-based Health-contingent". The "Participatory" wellness program is determined by the character of programs whether to participate in a program without activity such as a health assessment. The "Activity-only Health-contingent" wellness program is an activity-based program without required achievement such as running regularly. The "Outcome-based Health-contingent" is an activity-based program with a goal such as steps per day or BMI reduce rate. However, by using the WELL Building Standard, some programs could use both Activity-only or Outcome-based Health-contingent programs. Because the WELL Building Standard includes invisible condition measurements such as Air Quality, Toxic Management, or Right Lighting Design, the Activity-Only Health-Contingent program can be proved with quantifiable data through the WELL Building Standard. For example, a stress management program is categorized into the Activity-Only Health-Contingent Program, since the program is operated by education or counseling. However, the WELL Building Standard can provide measurable alternatives such as sound masking to reduce noise or thermal comfort based on "79 SOUND MASKING" (IWBI 2017, 127). In detail, the strategy prevents negative influence on Immune nervous, which is affected by excessive stress, through reducing acoustic disruptions and increasing speaking privacy. Furthermore, the strategy established a quantifiable metrics to determine a proper acoustics condition with reference (U.S. General Services Administration Center for Workplace Strategy Public Buildings Service 2012; Loewen LJ and Suedfeld P. 1992; Jensen KL et al 2005). Therefore, a new category of "Both of Activity-only or Outcome-based Health-contingent program" would be useful to expand opportunities to promote wellness programs.

4.3. Exemplary Wellness Programs

According to CDC, EEOC, and HIPAA, the standard of wellness programs is designated and occurred by industries. According to Employer Health Benefits: Survey 2017, the majority of large firms offers six wellness programs: health risk assessments, biometric screening, administration of health screening programs, wellness and health promotion programs, disease management, and penalties for tobacco use (Claxton C., Rae M., Long M., and Damico A. 2017, 182). This research selected two industries to investigate exemplary wellness programs. In the U.S. corporate wellness services industry, there are seven exemplary wellness programs: Health Risk Assessments (HRAs), Nutrition and weight management, Smoking cessation, Fitness services, Alcohol and drug abuse services, Stress management, and Health education services. In the U.S. health and medical insurance industry, there are thirteen exemplary wellness programs: Health assessment, Cholesterol, blood pressure, and body mass index (BMI), Medical history and health status monitoring, Financial management, Women's health care, Fitness center discount, Educating and suggesting the treatments for disease, Sleeping counseling, Safety and prevention, Tobacco-free, Exercise programs, Stress-management counseling, and Diet control. These programs are used as the focus of this analysis.

4.4. The WELL Building Standard Criteria Related to the Wellness Program

Among the eight concepts and 105 criteria of the WELL Building Standard, seven concepts and 69 criteria share goals or activities with the selected exemplary wellness programs. By WELL concepts, Air has 13 of 29 credits that share goals; Water has 6 of 8; Nourishment has 15 of 38; Light has 7 of 11; Fitness has 8 of 8; Comfort has 12 of 12; Mind has 8 of 17. These criteria which are shown in Figure 2. Because these 69 criteria also contain every Precondition for the WELL certification or credits that must be addressed, the wellness program can support a WELL certified built environment. Conversely, a WELL certified building can offer 69 activities to support wellness programs without any additional implementations. Furthermore, because the WELL certified building should be recertified every three years, the WELL certification can guarantee the

wellness programs. Moreover, with the guarantee of WELL certification, the wellness programs can save the evaluation and administrative cost.

Program Categories		Corporate Wellness Services Industry	Health and Medical Insurance Industry	The WELL Building Standard Concepts	The WELL Building Standard Criteria No.
Participatory		Health Risk Assessments (HRAs)	Health assessment	-	-
			Cholesterol, blood pressure, and body mass index (BMI)	-	-
			Medical history and health status monitoring	-	-
		-	Financial management	-	-
		-	Women's health care	-	-
		-	Fitness center discount	Fitness	64
Health-contingent	Activity -only	Alcohol and drug abuse services	Educating and suggesting the treatments for disease	Nourishment	39, 40, 42, 43
		Health education services		Fitness	66, 68
				Mind	84
		-	Sleeping counseling	Mind	90
		-	Safety and prevention	Air	1,4,5,6,8,10,13, 17, 18, 22, 23, 25
		-		Nourishment	41, 46, 49, 50, 51
		-			
		-		Light	53, 54, 55, 56, 57, 59, 61
		-		Comfort	72, 73
		-		Mind	85
		-		Water	30, 35, 36
		-	-	Fitness	67, 69, 70, 71
	Outcome -based	Smoking cessation	Tobacco-free	Air	2
	Both of activity or outcome -based	Fitness services	Exercise programs	Fitness	65
		Stress management	Stress-management counseling	Comfort	74, 75, 76, 77, 78, 79, 80, 81, 82, 83
				Mind	86, 87, 93, 95, 99
		Nutrition and weight management	Diet control (BMI or not)	Nourishment	38, 44, 45, 47, 48, 52
				Water	32, 33, 37

The WELL Criteria related to the wellness programs

01 Air quality standards, 02 Smoking ban, 04 VOC reduction, 05 Air filtration, 06 Microbe and mold control, 08 Healthy entrance, 10 Pesticide management, 13 Air flush, 17 Direct source ventilation, 18 Air quality monitoring and feedback, 22 Pest control, 23 Advanced air purification, 25 Toxic material reduction (Air), 30 Fundamental water quality, 32 Organic contaminants, 33 Agricultural contaminants, 35 Periodic water quality testing, 36 Water treatment, 37 Drinking water promotion (Water), 38 Fruits and vegetables, 39 Processed foods, 40 Food allergies, 41 Hand washing, 42 Food contamination, 43 Artificial ingredients, 44 Nutritional information, 45 Food advertising, 46 Safe food preparation materials, 47 Serving sizes, 48 Special diets, 49 Responsible food production, 50 Food storage, 51 Food production, 52 Mindful eating (Nourishment), 53 Visual lighting design, 54 Circadian lighting design, 55 Electric light glare control, 56 Solar glare control, 57 Low-glare workstation design, 59 Surface design, 61 Right to light (Light), 64 Interior fitness circulation, 65 Activity incentive programs, 66 Structured fitness opportunities, 67 Exterior active design, 68 Physical activity spaces, 69 Active transportation support, 70 Fitness equipment, 71 Active furnishings (Fitness), 72 Accessible design, 73 Ergonomics: visual and physical, 74 Exterior noise intrusion, 75 Internally generated noise, 76 Thermal comfort, 77 Olfactory comfort, 78 Reverberation time, 79 Sound masking, 80 Sound reducing surfaces, 81 Sound barriers, 82 Individual thermal control, 83 Radiant thermal comfort (Comfort), 84 Health and wellness awareness, 85 Integrative design, 86 Post-occupancy surveys, 87 Beauty and design I, 90 Healthy sleep policy, 93 Workplace family support, 95 Stress and addiction treatment, 99 Beauty and design II (Mind).

Figure 2: Comparison of Wellness Programs and the WELL Building Standard.

4.5. Degrees of Matching: Overlapped, Aligned, or Overarching

In analyzing overlaps between wellness programs and the WELL Building Standard, three different types of relationships become apparent: overlapped, aligned, and overarching. First, the overlapped relationship is when an implementation of both wellness programs and the WELL Building Standard are the same, such as the Fitness Center Discount program in wellness programs and Fitness Activity Support criteria in the WELL Building Standard. Second, an aligned relationship is when the two share aligned goals, but the implementation is different. For example, a tobacco-free program seen in wellness programs and the Smoking Ban requirement in the WELL Building Standard both aim to stop smoking at the individual level. But, the WELL requirement establishes a smoking ban area, prohibiting smoking while using peer motivation. Last, the overarching relationship is a case in which one implementation encompasses other implementations. For example, the nutrition management program in wellness programs and the Nourishment and Fitness concepts in the WELL Building Standard show an overarching relationship. These outcomes are typically judged by a change in BMI or the frequency of eating a salad. But the WELL Building Standard controls the menu of cafeteria, nutrition, water quality, availability of workout, and so on. Through the segmented investigation of

matching relationships, this study illustrates how wellness programs can become richer and more effective by utilizing the built environment.

CONCLUSION

This paper aims to support wellness programs through use of the WELL Building Standard by shifting the paradigm of the built environment as merely a physical setting to an active contributor in wellness programs. This research illustrated the design of wellness programs, exemplary wellness programs, the WELL Building Standard criteria overlapped with wellness programs, enlighting the possibilities of integrating wellness programs and the WELL Building Standard in the built environment. As a result, by applying the WELL Building Standard into wellness programs, (1) a new category "Both of Activity-only or Outcome-based Health-contingent program" should be created in the wellness program categories, (2) the seven concepts and 69 criteria of the WELL Building Standard are matched with exemplary wellness programs, (3) the overlapped goals or activities with the exemplary wellness programs are identified, and (4) various alternatives are provided to wellness programs in the built environment. Therefore, shifting the contribution of the built environment in the wellness conversation by incorporating the WELL Building Standard and wellness programs is feasible and worthwhile. In the future, this research can be expanded by including the other building certifications such as the Living Building Challenge and Fitwel, and exploring economic feasibility and actual implementational validity.

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ENDNOTES

[1] Wellness programs existed in the large company before the U.S. government established the ACA. In the case of small business, because of financial burdensome, it was hard to operate a wellness program.

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