

Article

Evaluating Place-Based Health: Coverage and Consistency of Indicators Across Assessment Tools

Jamal Al-Qawasmi ^{1,*}, Abubakar Idakwo Yaro ¹, Omar E. Al-Mahdy ¹, Yusuf A. Adenle ² and Ziad Ashour ¹

¹ Department of Architecture and City Design, King Fahd University of Petroleum and Minerals, Dhahran 31261, Saudi Arabia; g202391250@kfupm.edu.sa (A.I.Y.); oemahdy@kfupm.edu.sa (O.E.A.-M.); zashour@kfupm.edu.sa (Z.A.)

² Interdisciplinary Research Center for Construction and Building Materials, King Fahd University of Petroleum and Minerals, Dhahran 31261, Saudi Arabia; yusuf.adenle@kfupm.edu.sa

* Correspondence: jamalq@kfupm.edu.sa

Abstract

Place-based health (PBH) assessment tools are increasingly used to evaluate the extent to which urban environments support health and well-being. However, concerns remain regarding their consistency and ability to adequately represent the multidimensional nature of the PBH construct. Despite the growing use of such tools, few studies have systematically examined their indicator structure and coverage. This study evaluates 14 PBH assessment tools to examine their internal structure, indicator usage patterns, and coverage of PBH attributes. A total of 667 indicators were extracted from the examined tools, from which 503 unique indicators were identified and compiled into the Extensive List of Place-Health Indicators (ELPHI), comprising 16 categories and 58 subcategories. ELPHI was then used as a reference framework to conduct a multi-level coverage analysis of the examined tools. The results reveal substantial fragmentation in indicator selection, with 84% of unique indicators appearing in only one tool, indicating limited consensus regarding the attributes considered important for assessing PBH. While most tools demonstrated moderate to high comprehensiveness of coverage at the category level, performance was considerably weaker at the subcategory level. No tool achieved high representativeness of PBH subcategories, with coverage ranging from 10% to 66%. Environmental attributes generally received broader and more representative coverage than socio-economic attributes, which were frequently underrepresented or omitted. In addition, between 34% and 90% of PBH subcategories and between 6% and 75% of PBH categories were not covered by any indicator in individual tools. This study also demonstrates the utility of coverage analysis and ELPHI as a systematic framework for evaluating the content validity, consistency, and structural robustness of PBH assessment tools, and for supporting the development of more balanced and comprehensive assessment frameworks.



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1. Introduction

Place-health is an interdisciplinary research area that examines the impact of place on people's health and well-being. Research in this area has grown rapidly over the past 20 years [1–4]. Research in the place-health discipline evaluates health outcomes and determinants of places and urban areas, emphasizing the various contextual factors

that shape population health, including the environmental, social, and economic factors. Increasing empirical evidence indicates that the physical, social, and economic attributes of neighborhoods and urban regions significantly influence health outcomes and health disparities [5–9].

The growing interest in the field has resulted in the development of a range of place-based health (PBH) assessment tools, designed to evaluate the extent to which urban regions support or hinder public health and well-being [10,11]. Most, if not all, the developed PBH tools use a set of measurable variables, commonly called indicators, to measure and monitor urban health systematically, enabling comparisons across different geographic areas and time periods. PBH assessment tools usually group the indicators under a set of categories and subcategories in the form of a hierarchical measurement model. Categories (also known as first-level indicators) are at the top of the hierarchy and represent the overall themes being assessed, while subcategories (i.e., second-level indicators) are comprised of a set of indicators that assess or measure a range of related attributes [12].

In the context of PBH assessment tools, the indicators are statements that operationalize the most important place attributes that have been proven to contribute significantly to PBH. These indicators provide a kind of measure that evaluate a wide range of place-health attributes such as walkability, access to green space, water and air quality, housing quality and affordability, safety, health services, and social cohesion [13,14]. For instance, the WELL Community Standard incorporates indicators related to air quality, water management, mobility, and health services to evaluate neighborhood health. Similarly, the Fitwel Community Scorecard [15] includes indicators for green spaces, safety, housing, and social well-being, allowing comparisons across neighborhoods. The Healthy China 2030 framework [16] on the other hand, employs a more limited set of indicators focusing on environmental quality, health services, and housing, reflecting regional priorities.

PBH tools are increasingly used to assess neighborhood interventions, the health-promoting aspects of urban areas and settings, monitor progress toward place-health goals, and inform planning and policy decisions in this regard [17,18]. However, the effectiveness of these assessment tools depends on the use of pertinent, reliable, and valid indicators that capture the multifaceted nature of urban health [19]. A proper theoretical/conceptual framework is needed to link and relate these indicators to ensure that they capture the multidimensional aspects of PBH constructed using theoretically grounded models [20].

In the place-health field, as well as other fields such as urban sustainability and quality of place, the place is conceived as a complex, multidimensional phenomenon that encompasses the physical, social, and economic environments in which people conduct their everyday activities. These three domains are considered the core dimensions of the place. Within the healthy city and place-health fields, this model is simplified by combining the social and economic into one dimension; thus, the place is perceived as being composed of two core dimensions: the place-level (i.e., environmental) dimension that encompasses the physical context of the place, and the person-level (the social and economic) dimension that encompasses the composition factors of the place [5,7–9]. This study will adopt a two-core-dimension model by combining the social and economic attributes in one dimension, as it is more relevant to the place-health field. The place-level (i.e., environmental) dimension of place encompasses the physical and contextual resources and factors such as air, water, energy, transportation, parks and open spaces, pollution and other related physical attributes [21,22]. The person-level (the social and economic) dimension encompasses social issues such as equity, safety, and well-being, as well as essential services such as healthcare, education, and infrastructure [23–25], in addition to the economic issues that underpin urban growth by supporting job creation, innovation, and resource efficiency [26,27]. These core dimensions are deeply interconnected. Economic

stability enables social development [21,28], environmental quality supports economic activities [21,22], and social equity ensures fair distribution of environmental benefits. A holistic approach that incorporates all the dimensions is crucial for diagnosing urban health and ensuring long-term sustainability [29,30].

Despite the increased utilization of the PBH assessment tools, significant concerns and questions remain concerning their accuracy, reliability (consistency across the tools) and validity (ability to measure what they intend to measure) [11,31]. Careful examination of existing PBH tools shows that they differ substantially in the breadth and depth with which they cover key determinants of health. Insufficient or unbalanced coverage of key aspects in PBH can produce misleading assessments. When tools emphasize some domains while underrepresenting or omitting others, neighborhood and urban areas with similar underlying PBH conditions may receive divergent evaluations, and thus policy recommendations and urban interventions may become misaligned with actual conditions on the ground.

The selection of indicators in most of the existing PBH assessment tools seems to be determined mainly by regional needs and data accessibility, rather than by empirical evidence, rigorous criteria, or tested theoretical models of PBH. This raises concerns about the validity, credibility and capacity of these methods to effectively evaluate PBH across varied contexts [32,33]. A structured assessment of indicator coverage in existing PBH assessment tools provides a critical diagnostic step for understanding the strengths, limitations, and internal logic of these tools. By systematically examining which categories and subcategories of indicators are emphasized, underrepresented, or absent, coverage analysis helps reveal where tools converge conceptually and where they diverge in their assessment and representation of the PBH construct. These insights are essential for improving the comparability of PBH assessments across urban areas and regions and for refining existing tools or developing new ones to better reflect contemporary theoretical understanding of health determinants.

The literature indicates that there is a lack of systematic coverage analysis studies that examine the level to which the current PBH assessment tools adequately measure and capture the multidimensional aspects of PBH using theoretically and operationally sound methods [20]. This paper addresses this gap by evaluating the robustness of a sample of existing PBH assessment tools, focusing on their capacity to validly and reliably quantify the health-related aspects of urban areas and neighborhoods. Using a well-structured systematic approach, this paper aims to assess the internal structure, scope of coverage, and methodological coherence and consistency of these PBH assessment tools. The objective is to provide a systematic, evidence-based evaluation approach that facilitates and guides critical coverage review, development, and refinement of PBH tools. This study contributes to current efforts to assess PBH tools and their ability to accurately and consistently measure what they intended to measure.

This paper is organized as follows: this section reviews existing research on place-based health and the development of related assessment tools, providing the foundation and justification for the present study. Section 2 describes the research design and analytical procedures used to evaluate the selected tools. Section 3 presents the results of the coverage and indicator analyses, while Section 4 interprets these findings, highlighting their implications for the validity and reliability of current place-based health assessment practices. The paper concludes with a summary of key insights and suggestions for refining future tools and research directions.

2. Methodology

This study aims to evaluate the capabilities of a sample of existing place-health assessment tools in measuring and assessing the various dimensions of the PBH construct through examining their indicators, internal structure, level of coverage, and measurement consistency and validity. To attain this objective, this research adopted a structured approach comprising a systematic literature review, content analysis and thematic synthesis, as outlined in Figure 1. First, an extensive literature review was conducted using publications indexed up to March 2025 to identify existing PBH assessment tools. Using a comprehensive systematic literature review, a sample of 14 PBH assessment tools (5 real-life tools and 9 proposed tools from the academic literature) were identified for analysis, as shown in Table 1. Then, using a structured content analysis process, all indicators and their parent categories and subcategories were extracted from each one of the 14 examined tools. A total of 667 PBH indicators were extracted. After that, all unique indicators were identified through a long and iterative process of sorting and checking using the Excel program. The set of all unique indicators used in the examined tools is synthesized/consolidated in an Extensive List of Place-Health Indicators (ELPHI). The ELPHI included 503 unique indicators that are grouped under a set of categories and subcategories. Finally, the established ELPHI is used as a base-case to assess the robustness, or the level of coverage, of the examined assessment tools in measuring and assessing the PBH construct. Further details are provided below about the last two steps as they form the core of the research method.

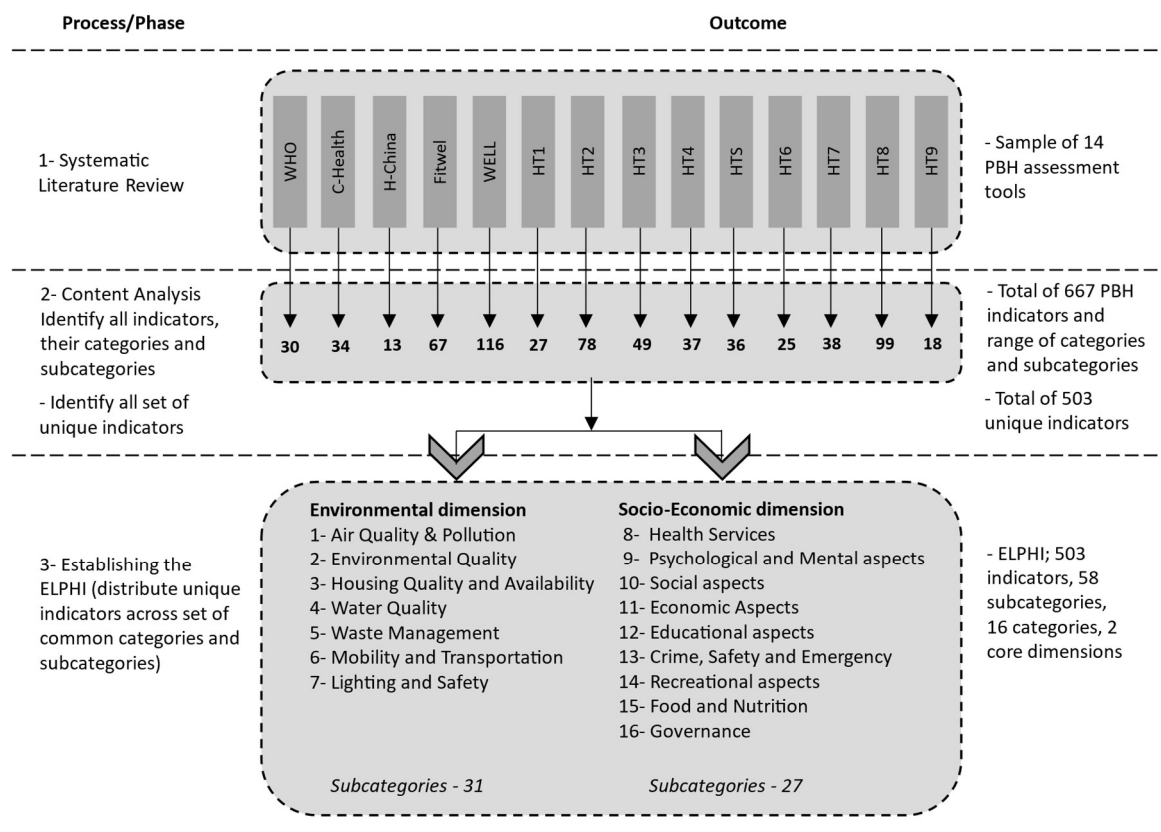


Figure 1. Outline of research method, including the development of the Extensive List of Place-Health Indicators (ELPHI).

2.1. Establishing the Extensive List of Place-Health Indicators (ELPHI)

The ELPHI is defined as a set of all the unique indicators used in the 14 examined tools. It provides a baseline or reference framework to enable systematic coverage analysis for each tool and across tools. Several coverage analysis studies have adopted a similar

approach in which a comprehensive set of all unique indicators are used as an analytical baseline or benchmark to examine the level of coverage of a set of assessment tools [33–38]. Similar approaches have been used in health assessment research to develop comprehensive indicator frameworks that organize measurable indicators across multiple domains of health and provide a structured basis for assessment and comparison [39].

The ELPHI includes only unique indicators that measure different and distinct PBH attributes. Indicators are often defined and measured differently across different tools. To ensure true uniqueness of an indicator and to avoid including duplicates of similar indicators in ELPHI, the uniqueness of each indicator is determined by examining it at several levels, such as the unit of analysis (i.e., measuring place- or person-level attributes), scale (urban area or city), type (objective vs. subjective), operational definition, measurement method, and unit of measurement. An indicator should exhibit distinctiveness at a range of these levels to be classified as a unique indicator.

In grouping the indicators of the ELPHI under categories and subcategories, the researchers tried as much as possible to follow the classifications common to the examined tools. For instance, to ensure consistency at the conceptual modeling of the PBH construct, the categories and subcategories used by most of the examined tools were utilized as closely as possible while constructing the ELPHI. To overcome the synergy effect observed in various indicators where an indicator impacts two or more categories or core dimensions of the place-based health construct, the researchers assigned the indicator to the category or dimension it affects most. As a result of this process, the identified ELPHI indicators were grouped under 16 categories and 58 subcategories. The categories and subcategories of the ELPHI were further classified under the two core dimensions of PBH as identified in the literature: the place-level (environmental) and person-level (social and economic) dimensions, as shown in Figure 1. Here it is worth mentioning that, although health outcome measures such as morbidity are important indicators of population health, the primary focus of most reviewed PBH assessment tools is on place-related determinants of health rather than health outcomes themselves. Consequently, morbidity-related measures were included in the ELPHI only when explicitly incorporated within the examined assessment tools.

Table 1. List of the analyzed PBH assessment tools: (a) real-life tools, (b) proposed, research-based tools.

(a) Real-Life PBH Assessment Tools							
Code	Tool Name	Version	Source	Country	Geographic Scope	No. of Categories	No. of Indicators
WHO	WHO European Healthy Cities Network	2	[40]	Europe	Several Cities	4	30
C-Health	The County Health Rankings	1	[41]	USA	Neighborhood	4	34
H-China	Healthy China 2030	1	[16]	China	Several Cities	5	13
Fitwel	Fitwel Community Scorecard	2.1	[15]	USA	Neighborhood	12	67
WELL	WELL Community Standard	1	[42]	USA	Neighborhood	11	116
(b) Proposed, Research-Based PBH Assessment Tools							
Code	Tool Name	Source	Country	Geographic Scope	No. of Categories	No. of Indicators	
HT1	Component-based city health examination framework	[43]	China	Several Cities	3	27	
HT2	Healthy City in Chongqing	[44]	China	Single city	21	78	
HT3	Healthy city evaluation framework	[45]	China	Several Cities	6	49	
HT4	Health-Spatial Indicator System	[14]	China	Several Cities	6	37	
HT5	Urban physical examination	[46]	China	Several Cities	3	36	
HT6	Healthy City construction	[47]	China	Several Cities	5	25	
HT7	Evaluation index system for the health of human settlements.	[48]	China	Several Cities	5	38	
HT8	99 indicators for a healthy city	[49]	UK	Several Cities	11	99	
HT9	Healthy city indicators	[50]	Malaysia	Several Cities	5	18	

2.2. Coverage Analysis of the Assessment Tools

The ELPHI encompasses a comprehensive set of all the distinct indicators used in the examined tools. A set of indicators prevalent in several PBH assessment tools reflects a kind of consensus regarding its use in existing research and practice, which suggests stronger content validity and higher inter-instrument reliability [39]. As such, the study will use the ELPHI as a base-case to evaluate the robustness of the examined assessment tools and their capability to validly and reliably measure the full range of PBH attributes of urban areas.

The coverage analysis examines and assesses the indicators of each tool against the criteria of the ELPHI (i.e., its categories, subcategories and indicators) to evaluate how well they cover and assess the full range of PBH attributes as established in the ELPHI. In other words, the goal of this analysis is to determine the extent to which each examined PBH tool includes ELPHI's categories, subcategories and indicators (either literally or using similar terms). The coverage analysis was conducted automatically using the Excel program, and as outlined in Tables 2 and 3, the process was implemented in the following sequence: the 16 categories and 58 subcategories of ELPHI were located in the far-left column of the frequency table. Next, each indicator in the 14 examined tools (depicted in the top row of the table) is compared with ELPHI's categories and subcategories to determine if it is included in the corresponding ELPHI category or subcategory. Finally, each individual tool is evaluated to determine the extent to which it complies with ELPHI criteria; in other words, how well the tool covers and assesses the full range of PBH attributes as established in the ELPHI categories and subcategories.

The indicators in all examined tools are grouped under categories and subcategories in the form of a hierarchical structure. To conduct a thorough evaluation of the extent to which the indicators cover all aspects of PBH, the coverage analysis should be performed at each level of the hierarchy: the categories, the subcategories and the indicators. Three main metrics were used in the coverage analysis: (a) breadth of coverage at the categories level (i.e., comprehensiveness of coverage), breadth of coverage at the subcategories level (i.e., the representativeness of coverage), and (b) depth of coverage at both the categories and subcategories levels. In a hierarchical measurement model, the breadth of coverage is defined as the range or diversity of categories or subcategories covered, or in other words, the number of distinct categories or subcategories used in the measurement model. On the other hand, the depth of coverage is defined as the level of detail, elaboration, completeness, or thoroughness of measurement within each category or subcategory of indicators that represent major attributes/components of the PBH construct.

As such the coverage analysis adopted in this paper engages with validity primarily through the lens of content-related evidence, focusing on the breadth and depth of coverage of PBH indicators and the extent to which each examined PBH tool includes ELPHI's categories, subcategories and indicators (either literally or using similar terms) based on the indicator operationalization within each assessment tool. By examining the breadth and depth of indicators and the convergence and divergence in indicator use, the analysis provides evidence relevant to content validity, construct validity, and inter-instrument consistency (i.e., reliability) [51–53]. However, the study does not test criterion-related or predictive validity, such as whether tools with more comprehensive or representative coverage correspond more closely to empirically observed health outcomes. Conducting such external validation would require harmonized application of multiple PBH tools to the same set of places, along with access to comparable health outcome data at appropriate spatial scales, an undertaking that lies beyond the scope of the present study. As a result, claims about validity in this paper should be interpreted as diagnostic and structural rather than empirical criteria testing performance.

Table 2. Results of coverage analysis of the 14 PBH tools relative to ELPHI: place-level (environmental) dimension.

Categories and Subcategories of ELPHI		WHO	C-Health	H-China	Fitwel	WELL	HT1	HT2	HT3	HT4	HT5	HT6	HT7	HT8	HT9	Breadth of coverage *	Depth of coverage *
1.	Air Quality & Pollution	1	1	1	3	11	3	2	1	1	6	1	3	2	0	18	36
1.1	Air Quality	0	0	1	1	6	1	1	1	1	0	1	1	0	0	9	14
1.2	Air pollution	1	1	0	2	5	2	1	0	0	6	0	2	2	0	9	22
2.	Environmental Quality	3	0	0	18	20	8	4	2	14	2	3	2	15	6	40	97
2.1	Environmental Pollution	0	0	0	0	1	2	0	0	0	0	0	0	0	0	2	3
2.2	Climate Impact	0	0	0	1	7	0	0	0	1	0	0	0	0	0	3	9
2.3	Clean energy consumption	0	0	0	0	0	1	0	0	0	1	0	0	0	0	2	2
2.4	Parks & Green Spaces	1	0	0	4	2	4	3	1	9	1	1	1	4	4	12	35
2.5	Noise Mitigation	0	0	0	1	6	1	1	1	1	0	0	0	0	0	6	11
2.6	Land Use & Urban Development	2	0	0	4	2	0	0	0	0	0	0	0	3	0	4	11
2.7	Heritage Preservation & Landmarks	0	0	0	0	1	0	0	0	1	0	1	0	4	0	4	7
2.8	Infrastructure & amenities	0	0	0	8	1	0	0	0	2	0	1	1	4	2	7	19
3.	Housing Quality and Availability	2	1	0	5	7	1	1	0	3	2	0	5	12	3	24	42
3.1	Housing & Urban Development	0	0	0	0	0	0	0	0	0	2	0	2	2	2	4	8
3.2	Housing certification & standards	0	0	0	4	5	0	0	0	1	0	0	0	1	0	4	11
3.3	Housing Quality & Equity	0	0	0	0	1	0	0	0	1	0	0	0	0	1	3	3
3.4	Housing Features & Design	1	1	0	0	1	1	0	0	1	0	0	2	3	0	7	10
3.5	Housing Availability & Accessibility	0	0	0	1	0	0	0	0	0	0	0	1	3	0	3	5
3.6	Homelessness & Displacement	1	0	0	0	0	0	1	0	0	0	0	0	3	0	3	5
4.	Water Quality	1	1	1	3	12	3	3	5	2	2	0	1	2	1	22	37
4.1	Water Consumption & Conservation	0	0	0	0	0	3	0	2	0	1	0	1	1	0	5	8
4.2	Water Management & Accessibility	1	1	1	3	7	0	2	2	0	1	0	0	1	0	9	19
4.3	Stormwater Management	0	0	0	0	2	0	0	0	1	0	0	0	0	0	2	3
4.4	Water Bodies	0	0	0	0	1	0	0	0	0	0	0	0	0	1	2	2
4.5	Sanitation	0	0	0	0	2	0	1	1	1	0	0	0	0	0	4	5
5.	Waste Management	2	0	0	0	2	2	2	2	0	3	3	4	4	0	15	24
5.1	Household Waste Treatment	1	0	0	0	0	0	1	1	0	1	1	1	0	0	6	6
5.2	Household waste Management	1	0	0	0	2	2	1	1	0	2	2	3	4	0	9	18
6.	Mobility and Transportation	4	2	0	10	12	2	3	1	3	1	1	2	15	7	33	63
6.1	Cycling Infrastructure	1	0	0	3	4	0	0	0	0	0	0	0	1	1	5	10
6.2	Pedestrian Infrastructure	1	0	0	2	3	0	0	0	1	0	0	0	3	1	6	11
6.3	Transit & Public Transport	2	2	0	1	2	1	1	1	2	0	1	1	1	3	12	18
6.4	Traffic & Safety	0	0	0	0	0	0	2	0	0	1	0	0	2	1	4	6
6.5	Community Destinations and Access	0	0	0	4	3	1	0	0	0	0	0	1	8	1	6	18
7.	Lighting and Safety	0	0	0	3	9	0	1	0	0	1	0	0	0	0	7	14
7.1	Street Lighting Planning & Control	0	0	0	2	3	0	1	0	0	0	0	0	0	0	3	6
7.2	Exterior Lighting & Visibility	0	0	0	1	4	0	0	0	0	0	0	0	0	0	2	5
7.3	Light Pollution Management	0	0	0	0	2	0	0	0	0	1	0	0	0	0	2	3
Grand Total		13	5	2	42	73	19	16	11	23	17	8	17	50	17	159	313

* Breadth of coverage: number of tools that include an indicator from a specific category or subcategory. Depth of coverage: frequency of using an indicator in all tools.

Table 3. Results of coverage analysis of the 14 PBH tools relative to ELPHI: person-level (socio-economic) dimension.

Categories and Subcategories of ELPHI		WHO	C-Health	H-China	Fitwel	WELL	HT1	HT2	HT3	HT4	HT5	HT6	HT7	HT8	HT9	Breadth of coverage *	Depth of coverage *
1. Health Services		13	19	9	2	7	3	50	13	7	1	4	10	18	1	42	157
1.1	Community Health Services and Support	1	0	0	0	0	0	0	0	3	0	0	0	1	0	3	5
1.2	Health Management and Services Quality	0	0	0	0	0	0	12	0	0	0	1	0	0	0	2	13
1.3	Access to Healthcare	3	2	0	2	2	0	0	0	3	0	0	1	5	0	7	18
1.4	Health Workforce	1	1	1	0	0	0	4	1	0	0	1	0	1	0	7	10
1.5	Health Indicators and Outcomes	2	2	0	0	0	0	12	3	1	1	0	2	6	0	8	29
1.6	Health and Well-being	5	14	7	0	5	3	20	8	0	0	2	7	5	1	11	77
1.7	Health Literacy and Education	1	0	1	0	0	0	2	1	0	0	0	0	0	0	4	5
2. Psychological and Mental Aspects		0	2	0	1	13	0	2	1	0	0	0	0	1	0	11	20
2.1	Access to Mental Health Services	0	1	0	0	1	0	1	1	0	0	0	0	0	0	4	4
2.2	Restorative Spaces/places	0	0	0	1	6	0	0	0	0	0	0	0	0	0	2	7
2.3	Mental Support Services	0	1	0	0	2	0	1	0	0	0	0	0	1	0	4	5
2.4	Alcohol Environment and Responsible Driving	0	0	0	0	0	4	0	0	0	0	0	0	0	0	1	4
3. Social Aspects																	
3.1	Social aspects	0	1	0	4	2	0	0	1	2	1	1	1	7	0	9	20
4. Economic Aspects		3	3	2	0	0	4	4	18	1	14	9	4	11	0	25	73
4.1	Economic Development and Growth	1	2	0	0	0	4	0	12	1	12	6	1	3	0	9	42
4.2	Employment and Labor Market	2	1	0	0	0	0	2	1	0	1	2	1	7	0	8	17
4.3	Social safety Nets and Public Expenditure	0	0	0	0	0	0	0	4	0	1	1	2	0	0	4	8
4.4	Health Expenditure and Investment	0	0	2	0	0	0	2	1	0	0	0	0	1	0	4	6
5. Educational Aspect		0	2	0	0	1	1	1	3	0	2	2	3	3	0	16	18
5.1	Education Funding and Resources	0	0	0	0	0	0	0	1	0	1	0	1	0	0	3	3
5.2	School Infrastructure and Access	0	0	0	0	0	0	1	1	0	0	0	0	2	0	3	4
5.3	Educational Attainment	0	2	0	0	1	1	0	0	0	0	1	1	1	0	6	7
5.4	Library and Educational Resources	0	0	0	0	0	0	0	1	0	1	1	1	0	0	4	4
6. Crime, Safety and Emergency		0	0	0	4	2	0	1	0	1	1	0	2	2	0	11	13
6.1	crime	0	0	0	0	1	0	0	0	0	1	0	1	1	0	4	4
6.2	safety	0	0	0	2	0	0	0	0	1	0	0	0	1	0	3	4
6.3	Emergency Preparedness and Response	0	0	0	2	1	0	1	0	0	0	0	1	0	0	4	5
7. Recreational Aspects		1	0	0	2	3	0	1	2	1	0	1	1	1	0	11	13
7.1	Recreational activities	1	0	0	1	1	0	1	2	1	0	1	1	1	0	9	10
7.2	cultural activities	0	0	0	1	2	0	0	0	0	0	0	0	0	0	2	3
8. Food and Nutrition																	
8.1	Food and Nutrition	0	2	0	4	10	0	3	0	0	0	0	0	3	0	5	22
9. Governance																	
9.1	Engagement and participation	0	0	0	8	5	0	0	0	2	0	0	0	3	0	4	18
Grand Total		17	29	11	25	43	8	62	38	14	19	17	21	49	1	134	354

* Breadth of coverage: number of tools that include an indicator from a specific category or subcategory. Depth of coverage: frequency of using an indicator in all tools.

To aid interpretation of the breadth and depth metrics, the results are grouped into three descriptive ranges. Coverage below 30% is classified as low, coverage between 30% and 74% as moderate, and coverage of 75% or more as high. These ranges are used as

practical interpretive benchmarks to differentiate between clearly limited coverage and levels that more meaningfully reflect the structure of the ELPHI framework. They are not intended as formal validation thresholds. Instead, they provide a consistent way to discuss the extent to which each tool addresses the categories and subcategories of the PBH construct and help highlight where coverage is notably weak or comparatively robust.

3. Results

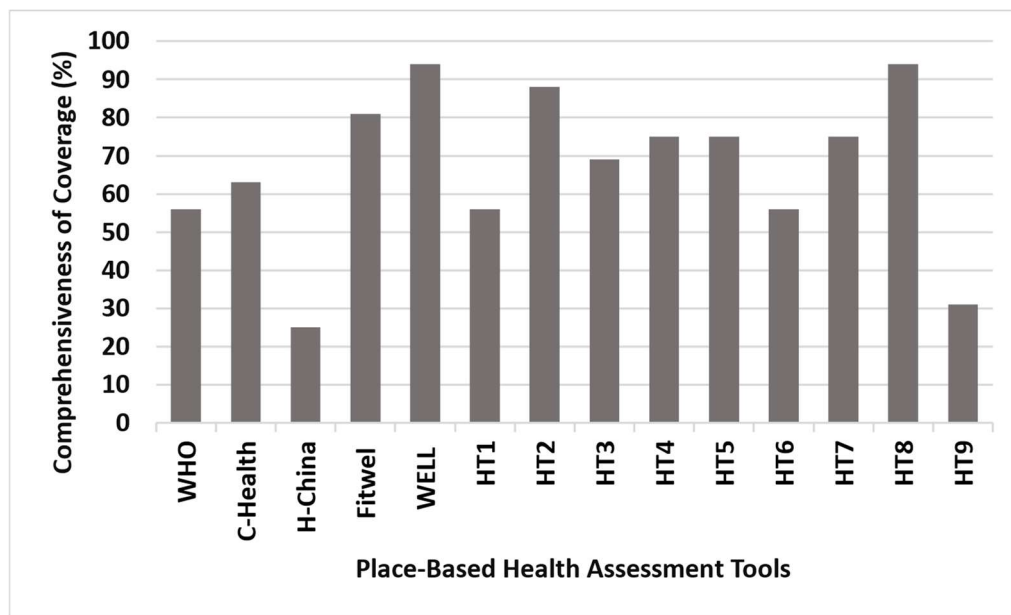
3.1. Description of Analyzed PBH Tools

Table 1 presents the sample of the examined PBH assessment tools along with some basic information. The sample consists of five real-life PBH assessment tools and nine proposed, research-based tools; all of them are indicator-based tools. Most of the real-life tools were developed from the late 1990s onward, with versions mainly from 2015 or later, except for the WHO European Healthy Cities Network. All the examined research-based tools are from 2018 onward. The examined tools vary considerably in their geographic scope, level of application, internal structure, and number of indicators. Some tools are designed for neighborhood-level assessment (e.g., Fitwel and WELL), whereas others are intended for evaluating multiple cities or broader urban systems. In general, the documentation of these tools indicates that they were designed using a pragmatic approach that emphasizes the regional culture, the direct needs of stakeholders, and data availability, rather than adhering to a robust conceptual framework or tested model of the PBH construct.

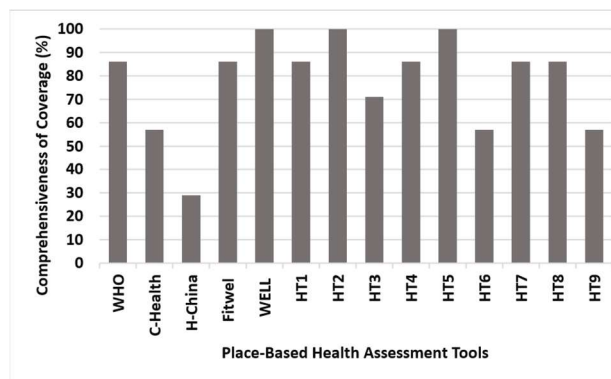
3.2. Results of the Coverage Analysis

The result of the performed coverage analysis is shown in Tables 2 and 3. The two tables illustrate the distribution of indicators in each tool across various categories and subcategories as specified in the ELPHI. Values in each cell in the tables report the number of indicators within a given category or subcategory that are included in a specific tool. For instance, a value of 6 in the cell at the intersection of the “air quality” subcategory and the “WELL” tool indicates that WELL includes six indicators related to the air quality subcategory. The last three columns of Tables 2 and 3 present the breadth of coverage, depth of coverage, and the average depth as counts or numeric values. The breadth of coverage of any specific category or subcategory represents the number of tools that include at least one indicator from that category or subcategory. The depth of coverage represents the number of indicators that are used to measure a specific category or subcategory. Average depth of coverage represents the average number of indicators used to measure or assess a specific category or subcategory across all the examined tools. Some of the interesting results of the breadth of coverage analysis are presented in Figures 2 and 3. In these figures the breadth of coverage is presented as a percentage relative to the ELPHI rather than as numbers.

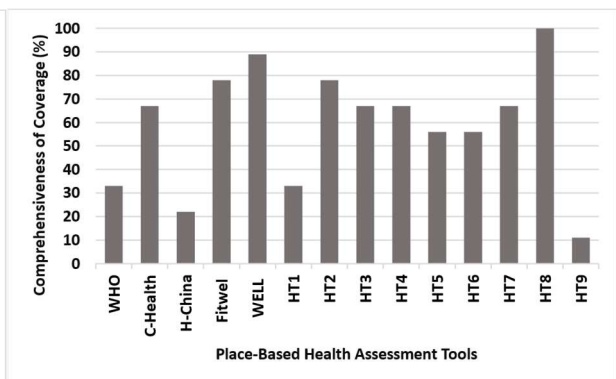
Figure 2a–c depict the results of breadth of coverage at the categories level. The breadth of coverage at the level of categories evaluates whether an assessment tool is a comprehensive instrument that captures all key multidimensional components of PBH; therefore it has been used as an indicator of the “comprehensiveness of coverage” of the assessment tool at that level. The Y-axis in Figure 2a–c represents the comprehensiveness of coverage; that is, the percentage of all categories covered in a tool relative to the number of all categories in the ELPHI. A value of 100% indicates full/comprehensive coverage of all ELPHI categories, while the height of the bars represents the percentage of categories included in a specific tool relative to all categories in the ELPHI.



(a)



(b)



(c)

Figure 2. Comprehensiveness of coverage of PBH assessment tools relative to ELPHI categories: (a) all categories in a tool; (b) environmental categories; (c) socio-economic categories.

Figure 3a–c, on the other hand, illustrate the outcomes of the breadth of coverage at the subcategories level. The breadth of coverage of a tool at the subcategory level is a metric that evaluates whether an assessment tool covers all the second-level, essential components (i.e., the subcategories) of the PBH construct, and thus it has been used as an indicator of the “representativeness of coverage” of the assessment tool at that level. In this paper, the representativeness of coverage of a tool at the subcategories levels is quantified as the percentage of all subcategories included in that tool relative to that in the ELPHI model. In Figure 2a–c, the Y-axis represents the representativeness of coverage, that is, the percentage of all subcategories covered in a tool relative to the number of all subcategories in the ELPHI. A value of 100% indicates full coverage of all ELPHI subcategories, while the height of the bars represents the percentage of subcategories included in a specific tool relative to all subcategories in ELPHI.

Depth of coverage is defined as the level of detail, elaboration, completeness or thoroughness of measurement within each category or subcategory of indicators which represent the major components of the PBH construct. Depth of coverage is quantified as the number of indicators used to assess/measure a specific category or subcategory to ensure accurate measurement of the PBH construct [54,55]. Table 4 presents the results

of the analysis of depth of coverage at the category and subcategory levels. It shows the number and percentage of ELPHI categories and subcategories covered by 0, 1, 2, 3 and more indicators in each tool.

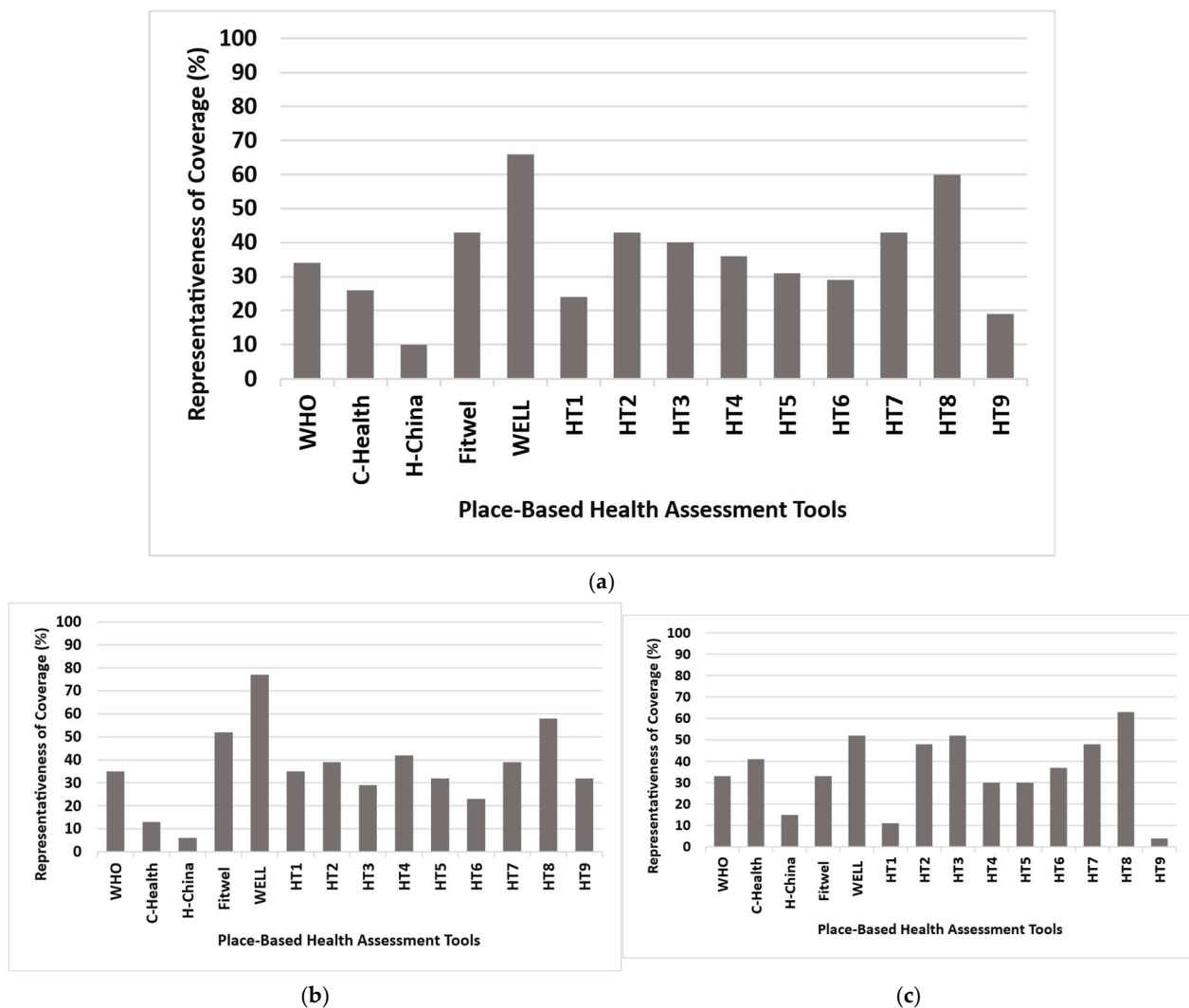


Figure 3. Representativeness of coverage of PBH assessment tools relative to ELPHI subcategories: (a) all subcategories in a tool; (b) environmental subcategories; (c) socio-economic subcategories.

Table 4. Depth of coverage at the category and subcategory levels: the number and percentage of ELPHI categories and subcategories covered by 0, 1, 2, 3 and more indicators in each tool.

Tools	Depth of Coverage at Categories Level				Average Depth of Coverage at Category Level	Depth of Coverage at Subcategories Level				Average Depth of Coverage at Subcategory Level
	0 Ind.	1 Ind.	2 Ind.	3+ Ind.		0 Ind.	1 Ind.	2 Ind.	3+ Ind.	
WHO	7(44%)	3(19%)	2(13%)	4(25%)	0.30	38(66%)	14(24%)	4(7%)	2(3%)	0.67
C-Health	6(38%)	4(25%)	4(25%)	2(13%)	0.29	43(74%)	8(14%)	6(10%)	1(2%)	0.44
H-China	12(75%)	2(13%)	1(6%)	1(6%)	0.31	52(90%)	4(7%)	1(2%)	1(2%)	0.46
Fitwel	3(19%)	1(6%)	2(13%)	10(63%)	0.19	33(57%)	9(16%)	6(10%)	6(10%)	0.37
WELL	1(6%)	1(6%)	3(19%)	11(69%)	0.13	20(34%)	11(19%)	11(19%)	16(28%)	0.33
HT1	7(44%)	2(13%)	2(13%)	5(31%)	0.33	44(76%)	4(7%)	3(5%)	4(7%)	0.52
HT2	2(13%)	5(31%)	3(19%)	6(38%)	0.18	33(57%)	14(24%)	5(9%)	6(10%)	0.32
HT3	5(31%)	4(25%)	3(19%)	4(25%)	0.22	35(60%)	16(28%)	3(5%)	4(7%)	0.47

Table 4. *Cont.*

Tools	Depth of Coverage at Categories Level				Average Depth of Coverage at Category Level	Depth of Coverage at Subcategories Level				Average Depth of Coverage at Subcategory Level
	0 Ind.	1 Ind.	2 Ind.	3+ Ind.		0 Ind.	1 Ind.	2 Ind.	3+ Ind.	
HT4	5(31%)	4(25%)	3(19%)	4(25%)	0.30	37(64%)	14(24%)	4(7%)	3(5%)	0.57
HT5	4(25%)	5(31%)	4(25%)	3(19%)	0.33	40(69%)	14(24%)	2(3%)	2(3%)	0.50
HT6	7(44%)	4(25%)	1(6%)	4(25%)	0.36	41(71%)	13(22%)	3(5%)	1(2%)	0.68
HT7	4(25%)	3(19%)	3(19%)	6(38%)	0.32	33(57%)	18(31%)	5(9%)	2(3%)	0.66
HT8	1(6%)	2(13%)	3(19%)	10(63%)	0.15	23(40%)	13(22%)	4(7%)	18(31%)	0.35
HT9	11(69%)	2(13%)	0	3(19%)	0.28	47(81%)	4(7%)	2(3%)	2(3%)	0.61

4. Discussion

This section presents and discusses the main results and findings regarding the structure of the examined PBH assessment tools in terms of their indicators and their categories and subcategories and the scope of coverage they provide.

4.1. Number of Indicators Adopted

The findings indicate significant differences among the reviewed PBH assessment tools in terms of the number of indicators utilized. As shown in Table 1, the number of indicators employed in the 14 examined tools range from 13 to 116 for the real-life tools and 18 to 99 for the proposed, research-based tools. While these 14 tools encompass a total of 503 unique indicators (out of 667 total number of indicators), only a small subset of these indicators, ranging from 13 to 116, is utilized in any specific tool. The wide variation in the number of utilized indicators (13 to 116) indicates that there is no clear convergence on the core attributes of the PBH or what is the optimal number of indicators sufficient to assess PBH adequately. However, as discussed below, it is clear the use of 13 indicators in Healthy China 2030 may limit the comprehensiveness of the evaluation of the various PBH attributes.

4.2. Lack of Convergence on a Common Set of Relevant Indicators

Results indicate limited convergence regarding the indicators used to assess PBH. The results, as detailed below, show that up to 84% (421 out of 503) of the unique indicators are used in only one assessment tool. The remaining 16% (82 out of 503) of the unique indicators are used in two or more tools as follows: 52 indicators are used in two tools, 13 in three tools, 7 in four tools, and 10 in five tools or more. Using an indicator in only one tool may suggest that it has not been widely adopted across existing tools. As such, the results demonstrate that most unique indicators (84%) are not recognized as being important to assess PBH in the sense that only one tool out of fourteen has used the indicators to assess or measure PBH. This result suggests limited consensus on a common set of indicators among these tools, which may have implications for the consistency and comparability of PBH assessment. Using an indicator in several tools indicates that there is kind of agreement on its importance for assessing PBH, reflects strength of use and stability among tools, and thus increases the validity and reliability of the assessment tool. Repeated use of a set of indicators across several tools suggests an increased construct and convergent validity of these tools. These findings suggest that the analyzed tools may emphasize different attributes of the PBH construct, which raises questions regarding the comparability and consistency of these tools.

4.3. Breadth of Coverage at the Categories Level (Comprehensiveness of Coverage)

4.3.1. Comprehensiveness of Coverage at the Tool-Level

Figure 2a illustrates that 6 out of the 14 examined tools exhibit high comprehensive coverage (covering 75% or more of the PBH categories specified in the ELPHI). Six out of the fourteen examined tools exhibit moderate comprehensive coverage (covering between 56% to 74% of the PBH categories). This suggests that most of the tools (12 out of 14) exhibit moderate to high comprehensive coverage. Figure 2a illustrates that WELL and HT8 boast the most comprehensive coverage of categories, including all but one ELPHI categories, while H-China demonstrates comparatively lower comprehensive coverage by covering only four categories. Closer inspection of H-China, which possess the least comprehensive coverage, reveals that it excludes 75% (12 out of 16) of all categories. This relatively limited coverage may affect the extent to which the tool captures the full range of PBH categories, as it fails to cover a wide range of key PBH categories. It may be argued that using 13 indicators could limit coverage of a multidimensional construct such as PBH. Another noteworthy finding is that HT8 covers 94% of PBH categories with 99 indicators, whereas WELL covers the same with 116 indicators. The analysis results indicate that the efficient utilization of indicators pertains not to augmenting their quantity, but to the appropriateness of their distribution to guarantee comprehensive coverage of all higher-level attributes of PBH (i.e., the categories and subcategories of the PBH measurement model).

4.3.2. Comprehensiveness of Coverage at the Place-Based Dimension

The results reveal that the comprehensiveness of coverage across the environmental, place-based categories shows that several tools possess the capability to provide comprehensive coverage of the key ELPHI categories. Figure 2b shows that eight of the analyzed tools (WHO, Fitwel, WELL, HT1, HT2, HT5, HT7, HT8) provide highly comprehensive coverage of the environmental, place-based categories, as each one of them covers 75% or more of all the environmental categories in the ELPHI. On the other hand, five tools (C-Health, HT3, HT4, HT6, HT9) demonstrate moderate comprehensive coverage covering 57% to 70% of the seven environmental categories. H-China revealed a lack of comprehensive coverage by including only 29% of the environmental categories of the ELPHI. Such tools provide relatively limited coverage of the PBH construct as they fail to consider major categories in the environmental, place-based categories of PBH, which may influence the completeness of the assessment. However, as discussed below, the comprehensiveness of coverage of environmental, place-based categories is relatively better compared to that of the socio-economic categories.

4.3.3. Comprehensiveness of Coverage at the Person-Based Dimension

The results demonstrate that categories related to the socio-economic dimension of PBH have the lowest coverage compared to categories in the environmental dimension of PBH. As shown in Figure 2c, the indicators of only 1 of the 14 examined tools (HT8) indicate highly comprehensive coverage of the categories, with 82% of all the 9 socio-economic categories specified in ELPHI. Three out of the fourteen examined tools (Fitwel, WELL and HT2) indicate moderate comprehensive coverage of the socio-economic categories specified in the ELPHI. Figure 2c shows that six of the analyzed tools (WHO, HT3, HT4, HT5, HT6, HT7) provide a low level of comprehensive coverage of the socio-economic categories, as each one of the tools covers between 45% and 55% of all the socio-economic categories in the ELPHI, while H-China, and HT9 represent a lack of comprehensive coverage, covering below 30% (18% and 9%) of the socio-economic categories of the ELPHI.

The analysis shows that the environmental dimension performs markedly better than the socio-economic dimension in terms of comprehensiveness of coverage. Eight

of the fourteen examined tools (WHO, Fitwel, WELL, HT1, HT2, HT5, HT7, and HT8) achieved high coverage of environmental categories ($\geq 75\%$), whereas only one tool (HT8) reached a comparable level in the socio-economic dimension, covering 82% of categories. While a few tools (Fitwel, WELL, HT2) demonstrated moderate socio-economic coverage, most revealed low or very low levels, with H-China and HT9 covering only 18% and 9% respectively. By contrast, only H-China fell short in the environmental dimension (29%). These results underscore that PBH tools generally emphasize environmental indicators more comprehensively, while systematically underrepresenting socio-economic aspects.

4.4. Coverage of PBH Subcategories Across Assessment Tools

4.4.1. Representativeness of Coverage at the Tool-Level

Figure 3a shows that none of the examined PBH assessment tools achieves high representativeness of coverage at the subcategory level. Coverage levels range from a low of 10% in H-China to a maximum of 66% in the WELL Community Standard. Based on the adopted classification scheme, tools fall into two categories only: low or moderate representativeness.

Four tools exhibit low representativeness of coverage, covering less than 30% of PBH subcategories. These include H-China (10%), HT1 (24%), HT6 (29%), and HT9 (19%). The remaining ten tools demonstrate moderate representativeness, with coverage ranging between 30% and 66%. Among these, WELL shows the highest level of representativeness at 66%, followed by HT8 at 60%. Fitwel, HT2, and HT7 each cover approximately 43% of subcategories, while WHO, HT3, HT4, and HT5 cluster between 31% and 40%.

4.4.2. Representativeness of Coverage at the Place-Level Dimension

Figure 3b presents the representativeness of coverage for environmental, place-based subcategories. Results reveal greater variation across tools compared to the overall subcategory coverage. One tool, WELL, achieves high representativeness by covering approximately 77% of environmental subcategories, exceeding the 75% threshold. HT8 demonstrates moderate representativeness at 58%, followed by Fitwel at 52%.

Several tools fall within the moderate range, including WHO (35%), HT1 (35%), HT2 (39%), HT4 (42%), HT5 (32%), HT7 (39%), and HT9 (32%). In contrast, three tools exhibit low representativeness of environmental subcategories: H-China (6%), C-Health (13%), and HT6 (23%).

4.4.3. Representativeness of Coverage at the Person-Level Dimension

Figure 3c illustrates representativeness of coverage for socio-economic subcategories. No tool reaches the high representativeness threshold of 75%. HT8 demonstrates the highest coverage at 63%, followed by WELL and HT3 at approximately 52%, and HT2 and HT7 at around 48%, all classified as moderate representativeness.

A number of tools fall at the lower end of the moderate range, including C-Health (41%), HT6 (37%), WHO (33%), and Fitwel (33%). Several tools exhibit low representativeness of socio-economic subcategories, covering less than 30% of ELPHI subcategories. These include H-China (15%), HT1 (11%), HT4 (30%, at the threshold but still moderate), HT5 (30%), and HT9 (4%), with HT9 showing very limited socio-economic coverage. These results indicate that socio-economic subcategories tend to receive lower representation across many PBH tools, with performance highly uneven and no tool achieving high representativeness.

The findings indicate that neither the environmental nor the socio-economic dimension achieves consistently high representativeness of coverage across the examined PBH assessment tools, although their performance differs in magnitude. As shown in Figure 3b, representativeness of coverage across environmental subcategories ranges from low lev-

els in tools such as H-China (6%) and C-Health (13%) to high representativeness in the WELL Community Standard, which covers approximately 77% of environmental subcategories and is the only tool to exceed the 75% threshold. Several other tools, including HT8 (58%) and Fitwel (52%), demonstrate moderate representativeness, while a number of tools remain at the lower end of the moderate or low range, indicating persistent gaps in environmental coverage.

Figure 3c shows that representativeness of coverage for socio-economic subcategories is generally weaker and more uneven. Coverage ranges from a very low 4% in HT9 to a maximum of 63% in HT8, with no tool achieving high representativeness ($\geq 75\%$). While a small number of tools, such as HT8, WELL, HT3, HT2, and HT7, demonstrate moderate coverage of socio-economic subcategories, several others fall below the 30% threshold, reflecting low representativeness and more limited coverage of person-level PBH attributes.

4.5. Depth of Coverage

4.5.1. Depth of Coverage at Subcategory Level

Results of depth of coverage, as presented in Tables 2–4, reveal that while some subcategories of PBH are evaluated using more than one indicator (i.e., deep coverage), other essential subcategories are not covered or assessed at all. For example, as shown in Table 3, although the WELL Community Standard uses six indicators to assess the “noise mitigation” subcategory, each of the Fitwel, HT1, HT2, HT3 and HT4 tools utilizes one indicator to assess the same subcategory. On the other hand, the other eight tools utilize no indicator to measure the same subcategory.

As indicated in Tables 2–4, the percentage of PBH subcategories that are assessed by one indicator ranges from 7% in H-China, HT1 and HT9 to 31% in HT7. The percentage of PBH subcategories that are assessed by two indicators ranges from 2% in H-China to 19% in WELL. The percentage of PBH subcategories that are assessed by three or more indicators ranges from 2% in C-Health, H-China and HT6 to 31% in HT8. In contrast, 34–90% of all subcategories are not covered by any indicator at all, which may indicate limitations in the measurement scope of such tools due to the fact that some PBH components are not explicitly assessed or measured. As shown in Tables 2 and 3, the average depth (i.e., the average frequency of the use of indicators) in each PBH subcategory across all the tools ranges between 0.14 and 5.5.

4.5.2. Depth of Coverage at Category Level

As indicated in Tables 2–4, the percentage of PBH categories that are assessed by one indicator ranges from 6% in Fitwel and WELL to 31% in HT2. The percentage of PBH categories that are assessed by two indicators ranges between 0% in HT9 and 25% in HT5. The percentage of PBH categories that are assessed by three or more indicators ranges between 6% in H-China and 69% in WELL. In contrast, 6–75% of all categories are not covered by any indicator at all, which may indicate limitations in the measurement scope of such tools due to the fact that some PBH components are not explicitly assessed or measured. As shown in Tables 2 and 3, the average depth (i.e., the average frequency of the use of indicators) in each PBH category across all the tools ranges between 0.93 and 11.21. While 1 or 2 indicators are necessary to ensure proper measurement of each category, the absence of any indicator in any category is problematic, while using 11 or more indicators for each category is high and may come at the cost of other important categories or attributes.

Depth of coverage is an important criterion to ensure the robustness of an indicator-based assessment tool. Deep coverage (using more than one indicator to measure an attribute) increases confidence in the accuracy of the measurement and decreases possible errors in the measurement of a multidimensional construct. The higher the number of

indicators used, the more accurate the measurement of the construct (of the category or subcategory). However, for practical reasons and to avoid measurement complications, a well-designed tool should attempt to use a minimal or optimal set of indicators. Thus, there is a need to strike a balance between practicality (using less depth of coverage and thus a smaller number of indicators) and accuracy (using more depth of coverage and thus more indicators). Using deep coverage (i.e., using several indicators to measure one attribute to increase accuracy) and the absence of coverage of some key attributes (i.e., categories and subcategories) are both problematic as they may result in underrepresenting important attributes of a construct. The accuracy in measuring some attributes should not occur at the cost of other important attributes. The absence of adequate coverage of any subcategory/category of indicators most probably occurs in tools that utilize a low number of indicators, such as Healthy China 2030 and HT9 tools, or in tools that use deep coverage, where more than one indicator is used to assess one attribute while leaving others without coverage.

4.6. Implications for Place-Based Health Assessment Tools

The findings of this study have important implications for the development, evaluation, and application of place-based health (PBH) assessment tools. The substantial variation observed in indicator selection and coverage patterns indicates that existing PBH tools lack a common conceptual and methodological foundation. As a result, different tools may produce substantially different assessments of the same urban area, raising concerns about the comparability, consistency, and reliability of assessment outcomes.

A major implication concerns the need for more balanced representation of the PBH construct. The analysis revealed that environmental attributes generally receive broader and more representative coverage than socio-economic attributes. Important socio-economic determinants of health, including governance, education, economic opportunity, social participation, and equity, were frequently underrepresented or omitted. Since place-based health is shaped by the interaction of environmental, social, and economic conditions, future assessment frameworks should ensure more balanced coverage across all major dimensions of the construct.

The findings also demonstrate that the robustness of PBH assessment tools depends not simply on the number of indicators employed but on how effectively those indicators are distributed across the measurement framework. Tools with large numbers of indicators do not necessarily provide better coverage, while tools relying on very few indicators often fail to capture important PBH attributes. Effective assessment requires balancing three complementary dimensions of measurement quality: comprehensiveness of coverage (categories), representativeness of coverage (subcategories), and depth of coverage (number of indicators used to assess each attribute). Excessive concentration of indicators within a limited number of categories may improve measurement depth but can leave other important aspects of PBH unassessed.

This study further suggests that coverage analysis can serve as a valuable diagnostic procedure during tool development and validation. By systematically identifying omissions, redundancies, and structural imbalances, coverage analysis provides an evidence-based method for improving the content validity and structural robustness of indicator frameworks. In this regard, the ELPHI framework offers a useful reference structure against which existing and newly developed PBH tools can be evaluated.

For practitioners and policymakers, the findings highlight the importance of carefully examining the conceptual scope and coverage characteristics of PBH assessment tools before applying them in planning, benchmarking, or policy evaluation. Assessment results should be interpreted in light of what a tool measures, as well as what it omits. Integrating

systematic coverage analysis into future PBH tool development could contribute to more comprehensive, transparent, and reliable assessments of urban health and well-being.

5. Conclusions and Further Work

This study evaluated fourteen place-based health (PBH) assessment tools using a systematic coverage-analysis approach designed to examine indicator usage patterns, measurement structure, and the extent to which existing tools capture the multidimensional nature of the PBH construct. To support this analysis, this study developed the Extensive List of Place-Health Indicators (ELPHI), which consolidated 503 unique indicators identified in 667 indicator instances and organized them into 16 categories and 58 subcategories.

The findings reveal substantial fragmentation in the conceptualization and measurement of place-based health. A total of 84% of the identified unique indicators appeared in only one assessment tool, indicating a very limited level of agreement regarding the indicators considered important for assessing PBH. This lack of consensus suggests that existing tools often measure different aspects of place-based health, and raises concerns about the comparability of assessment outcomes across tools and suggests potential weaknesses in their content validity, consistency and inter-instrument reliability.

The analysis further shows that while many tools demonstrated moderate to high comprehensiveness of coverage at the category level, their performance was considerably weaker at the subcategory level. No tool achieved high representativeness of PBH subcategories, and substantial portions of the PBH construct remained unassessed, with between 34% and 90% of subcategories and between 6% and 75% of categories omitted depending on the tool. The findings also revealed a persistent imbalance between environmental and socio-economic dimensions, with environmental attributes generally receiving broader and more representative coverage than socio-economic determinants of health.

This study demonstrates that the robustness of PBH assessment tools depends not only on the number of indicators employed but also on how effectively those indicators are distributed across the various dimensions, categories, and subcategories of the PBH construct. The results highlight the importance of evaluating comprehensiveness, representativeness, and depth of coverage simultaneously when assessing the quality and adequacy of indicator-based tools.

The study further demonstrates the utility of coverage analysis as a systematic and transparent approach for evaluating the structural robustness, consistency, and content validity of PBH assessment tools. Through the development of the ELPHI and the application of multi-level coverage analysis, this study provides a replicable framework for diagnosing strengths and weaknesses in indicator-based assessment systems and for advancing more rigorous evaluation of multidimensional constructs such as place-based health. By combining the ELPHI framework with measures of comprehensiveness, representativeness, and depth, this study provides a practical diagnostic approach for identifying omissions, redundancies, and structural imbalances within PBH assessment tools.

Future research should focus on refining and validating the coverage-analysis methodology, establishing a broadly accepted core set of PBH indicators, and testing the applicability of the ELPHI framework across different geographic, cultural, and socio-economic contexts. Such efforts would contribute to the development of more reliable and transferable PBH assessment tools and further strengthen the methodological foundations of place-based health research.

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