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Transforming the Edge: Sustainable Urban Futures in the Peri-Urban Districts of Ho Chi Minh City, Vietnam

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ABSTRACT

Peri-urban districts are central to Ho Chi Minh City's sustainable transformation but face uneven access to health, education, and welfare. This study introduces the Public Service Adequacy Index (PSAI) and Service Visibility Gap (SVG) to assess both provision and citizen-perceived accessibility. A household survey of 2,000 respondents¹ across five districts (conducted between March and June 2024) evaluated adequacy ratings and "no opinion" responses. Results show health services are broadly adequate but constrained by visibility gaps, especially among migrants; education remains strong at entry levels yet weak in vocational and special streams; welfare is the weakest pillar, marked by limited visibility of labor support and social insurance. The findings highlight that infrastructure alone cannot capture social sustainability; visibility is equally vital. The study advances theory by operationalizing adequacy and visibility, offers replicable indices, and provides policy insights on combining investment with communication and multi-level governance.

Keywords: peri-urbanization; social sustainability; public services; service adequacy; service visibility; urban governance; Ho Chi Minh City; Vietnam.

1. Introduction

Urban transformation has become a central concern in global development, particularly within the United Nations SDGs. Sustainability transitions demand integrative frameworks addressing environmental, social, and governance dimensions (Li et al., 2024). Reviews stress the role of community participation and equity (Lai, Wang, & Xia, 2025), while planning with nature is viewed as a key driver of long-term change (Harms, Hofer, & Artmann, 2024). Bibliometric evidence confirms rapid

growth in research, especially on governance and equity (Kaya & Erbaş, 2023). Peri-urban areas in Southeast Asia illustrate this complexity, marked by demographic shifts, institutional fragmentation, and uneven service access. Empirical studies show social sustainability indicators can guide urban regeneration (Zhao, Md Ali, Nik Hazwani Nik Hashim, Ahmad, & Wang, 2024), yet comparative research warns of unintended inequalities when governance is weak (Kristensen, 2025). This is evident in Vietnam's peri-urban districts, where service adequacy and visibility remain limited. To address these gaps, this study introduces the Public Service Adequacy Index (PSAI) and Service Visibility Gap (SVG). Together, they assess perceived service adequacy and service visibility, aligning

¹The research results presented in this article were collected before the administrative boundary adjustment of Ho Chi Minh City, effective July 1, 2025.



with calls for justice-oriented governance (Kramer, Silverton, & Späth, 2024) and decision-making research on performance information (van der Voet & Lerusse, 2024). With digital technologies and AI reshaping public administration (Babšek, Ravšelj, Umek, & Aristovnik, 2025), the study applies these tools to five peri-urban districts of Ho Chi Minh City to generate evidence and policy insights for advancing social sustainability.

Beyond its empirical focus on Ho Chi Minh City, this study contributes to social sustainability theory by conceptualizing peri-urban service inequality as an interaction between two dimensions: service adequacy and service visibility. Service adequacy refers to the perceived sufficiency of material provision, while service visibility captures the extent to which services are recognizable, understandable, and practically navigable for residents. This distinction is important for urban governance because services may formally exist yet remain socially ineffective when residents cannot identify, access, or evaluate them. By integrating PSAI and SVG, the paper proposes a dual-dimensional framework for examining how provision and informational legibility jointly shape social sustainability in fragmented peri-urban contexts.

2. Literature Review

2.1 Sustainable urban transformation

Sustainable urban transformation has become a key field of inquiry, addressing how cities adapt to pressing challenges of inequality, climate change, and governance under the Sustainable Development Goals (SDGs). Recent scholarship emphasizes that such transformation requires systemic approaches that integrate environmental, social, and institutional dimensions, as well as mechanisms to address urban complexity (Li et al., 2024). Systematic reviews reveal that contemporary trends increasingly highlight the importance of community-based initiatives, stakeholder participation, and the pursuit of equity in urban sustainability strategies (Lai, Wang, & Xia, 2025). Within this body of research, planning with nature has been identified as a crucial leverage point for sustainability transformations, linking ecological restoration to long-term social benefits (Harms, Hofer, & Artmann, 2024). Bibliometric evidence confirms that urban transformation studies are expanding, with particular growth in themes related to governance, policy alignment, and socio-spatial outcomes (Kaya & Erbaş, 2023). At the same time, unintended consequences remain a central concern, as sustainable strategies often generate new inequalities or eco-gentrification pressures if not carefully designed (Kristensen, 2025). Analyses of physical urban change also demonstrate how material transformations such as

changes in built form and land use can profoundly shape socio-environmental outcomes (Liu et al., 2025). Together, these insights highlight the need for frameworks that capture both structural adequacy and the experiential dimension of urban sustainability.

2.2. Social sustainability

The concept of social sustainability has gradually evolved to complement environmental and economic pillars of sustainable development. Defined broadly, it concerns the maintenance and improvement of well-being, equity, and inclusion within urban societies (Colantonio, 2009; Dempsey et al., 2011). More recent work has sought to operationalize the concept by proposing indicators and measurement tools. For example, research on historic urban regeneration in Xi'an developed a structured set of indicators covering housing, participation, and safe design, providing a replicable framework for evaluating social sustainability in practice (Zhao, Md Ali, Nik Hazwani Nik Hashim, Ahmad, & Wang, 2024). These findings resonate with the need for context-sensitive approaches that capture both service provision and citizen experience. Policy-oriented perspectives also stress that social sustainability must be integrated into governance and decision-making processes. Governance arrangements that link justice with sustainability outcomes are increasingly recognized as essential for durable transformations (Kramer, Silverton, & Späth, 2024). Similarly, decision-making research emphasizes that the prioritization of social issues is contingent upon the use of performance information by both political and managerial actors (van der Voet & Lerusse, 2024). In this context, digital innovations and artificial intelligence are emerging as new tools to enhance public administration capacities and close informational gaps (Babšek, Ravšelj, Umek, & Aristovnik, 2025). Complementary to these scholarly debates, policy frameworks such as the Handbook of Sustainable Urban Development Strategies by the European Commission (Fioretti, Pertoldi, Busti, & Van Heerden, 2020) provide guidance on how social sustainability can be mainstreamed into multi-level governance systems, ensuring that service delivery reforms align with broader sustainability agendas.

2.3 Peri-urbanization and socio-spatial inequality

Peri-urbanization marks the shifting interface of urban and rural systems where land, population, and governance intersect in complex ways. Transformation often outpaces institutional coordination, leading to uneven infrastructures and services (Li et al., 2024; Kaya & Erbaş, 2023). Access to health, education, and welfare is shaped less by need than by fragmented regulations

and fiscal cycles (Kaya & Erbaş, 2023; Li et al., 2024). Studies warn that “sustainable” strategies may intensify inequalities when benefits cluster along connected corridors while peripheral areas lag (Kristensen, 2025). Nature-based planning can deliver ecological gains, yet without equity safeguards it redistributes resources unevenly (Harms, Hofer, & Artmann, 2024; Lai, Wang, & Xia, 2025). Built-environment change conditions accessibility, but material indicators often overlook lived experiences of service use (Liu et al., 2025). Social sustainability frameworks attempt to fill this gap. Asian indicator systems show how adequacy, participation, and safety can guide planning (Zhao, Md Ali, Nik Hazwani Nik Hashim, Ahmad, & Wang, 2024), but peri-urban contexts require assessing both provision and visibility. Equity and participation are critical for making services legible to mobile and low-income groups (Lai et al., 2025). Addressing disparities depends on governance design: coordination, co-production, and accountability link justice with sustainability (Kramer, Silverton, & Späth, 2024), while prioritization hinges on performance information and trade-offs (van der Voet & Lerusse, 2024). Digital tools, including AI-supported analytics, can reduce visibility gaps if transparently embedded (Babšek, Ravšelj, Umek, & Aristovnik, 2025). Policy handbooks further stress multi-level coordination and place-sensitive approaches to ensure investments foster equitable access (Fioretti, Pertoldi, Busti, & Van Heerden, 2020).

2.4. Research gap and contributions

Despite advances in sustainable urban transformation research, key gaps remain in addressing the social dimension of peri-urban change. Much work has focused on ecological transitions (Liu et al., 2025; Harms, Hofer, & Artmann, 2024), governance and policy trends (Kaya & Erbaş, 2023), or integrative frameworks for urban complexity (Li et al., 2024). Yet these perspectives offer limited insight into how social services are both delivered and perceived in fragmented peri-urban contexts. While indicator-based approaches show that social sustainability can be operationalized (Zhao, Md Ali, Nik Hazwani Nik Hashim, Ahmad, & Wang, 2024), such frameworks remain rare in Southeast Asia, where institutional fragmentation and demographic pressures intensify inequality (Kristensen, 2025). Governance studies highlight justice, coordination, and co-production (Kramer, Silverton, & Späth, 2024), alongside research on performance information in prioritization (van der Voet & Lerusse, 2024), but these insights have not been systematically connected to service visibility. Digital innovations (Babšek, Ravšelj, Umek, & Aristovnik, 2025) and policy frameworks

such as the EU Handbook (Fioretti, Pertoldi, Busti, & Van Heerden, 2020) offer tools, yet they remain distant from the lived realities of peri-urban populations. Existing studies on Vietnam emphasize spatial expansion, land-use change, and governance (McGee, 1991; Firman, 2009; Shatkin, 2016; Gubry et al., 2010), while treating social dimensions as secondary. Limited attention has been given to how peri-urban residents experience disparities in health, education, and welfare, and systematic evidence on equity and resilience impacts remains scarce. The lack of integrated analysis across these domains constitutes a major research gap, especially in Ho Chi Minh City where migration, industrialization, and environmental risks converge. This study responds by introducing the Public Service Adequacy Index (PSAI) and Service Visibility Gap (SVG), which jointly capture provision and perception. Applied to five peri-urban districts, the research contributes by: (1) extending social sustainability debates to a rapidly urbanizing context; (2) operationalizing adequacy and visibility as replicable policy tools; and (3) generating actionable insights that link Vietnam's peri-urban realities to global sustainability discussions.

Conceptually, the study argues that adequacy and visibility should not be treated as separate service-delivery concerns. High adequacy without visibility may lead to underutilization, while high visibility without adequate provision may generate unmet expectations and declining institutional trust. The adequacy–visibility framework therefore provides a more nuanced way to examine service accessibility, because it links material provision with residents' ability to recognize, understand, and navigate public services. This framing extends social sustainability debates from the question of whether services exist to the question of whether they become socially legible and usable in everyday peri-urban life.

2.5 Research objectives and questions

Building on the identified research gaps, this study has three main objectives. First, it aims to develop a robust analytical framework that evaluates both the adequacy and the visibility of social services in peri-urban areas. Second, it seeks to apply this framework to the specific context of five peri-urban districts of Ho Chi Minh City in order to generate empirical evidence on disparities in health, education, and welfare services. Third, it intends to provide policy-relevant insights that can inform governance strategies for promoting social sustainability under conditions of rapid urban transformation.

Research questions

To achieve these objectives, the study addresses the following research questions:

1. To what extent are health, education, and welfare services adequately provided in peri-urban districts of Ho Chi Minh City?
2. How visible and accessible are these services to residents, particularly in terms of awareness, communication, and navigation?
3. What spatial and institutional disparities exist across districts in both adequacy and visibility of services?
4. How can the findings inform strategies and policy instruments aimed at enhancing social sustainability in peri-urban governance?

3. Research Methodology

3.1 Research design

This study adopts a quantitative, cross-sectional survey design to investigate disparities in health, education, and welfare services across the peri-urban districts of Ho Chi Minh City. A cross-sectional approach was appropriate because it captures residents' perceptions at a specific point in time, enabling systematic comparison across multiple geographical units. To strengthen validity, the design incorporated two complementary innovations:

Adequacy measurement: Each service item was rated on a five-point Likert scale, providing comparable data on perceived adequacy.

Visibility measurement: A "No opinion" option was deliberately included to capture cases in which respondents were not sufficiently positioned to evaluate a service. Rather than assuming that every "No opinion" response indicates lack of awareness, the study treats this category as a proxy indicator of possible visibility gaps when such responses form consistent spatial or sectoral patterns. This allowed the construction of two indices: the Perceived Service Adequacy Index (PSAI) and the Service Visibility Gap (SVG), capturing both provision and informational accessibility. By integrating adequacy and visibility measures, the research design moves beyond conventional service assessments to generate insights into how material and informational gaps jointly shape social sustainability.

3.2 Sampling strategy

The survey was implemented in five peri-urban districts of Ho Chi Minh City – Cần Giờ, Hóc Môn, Củ Chi, Bình Chánh, and Nhà Bè – selected to represent diverse peri-urban conditions: ecological isolation (Cần

Giờ), agricultural transition (Củ Chi), rapid in-migration (Bình Chánh), industrialization (Hóc Môn), and mixed residential-commercial growth (Nhà Bè). Based on 2020 population statistics from the Ho Chi Minh City Statistical Office, sample sizes were calculated to achieve a 95% confidence level with a 5% margin of error under simple random sampling assumptions. The minimum requirement of 381 respondents per district was rounded to 400 per district, yielding a total of 2,000 respondents. A stratified quota sampling method was applied to ensure representativeness. Because the fieldwork followed a quota-based stratified design with a target of 400 completed questionnaires per district, a conventional response-rate statistic based on an unrestricted sampling frame is not directly applicable. Within each district, three communes were chosen to reflect different levels of urbanization (high, medium, low). From each commune, one hamlet was randomly selected, and respondents were then randomly drawn from household lists. This structure guaranteed diversity in age, gender, occupation, income, and migration status while preventing overrepresentation of any group. To complement survey data, 40 in-depth interviews were conducted with local officials, service providers, and residents. The interviews were used to provide contextual understanding of institutional dynamics and to support interpretation of PSAI/SVG patterns, rather than as a standalone qualitative dataset.

3.3. Sampling method and survey instrument

A structured questionnaire was designed on the basis of established frameworks of social sustainability (Colantonio, 2009; Dempsey et al., 2011) and adapted to the peri-urban context of Ho Chi Minh City. It covered three principal domains:

1. Health services (public, private, family clinics, preventive care, maternal-child health, insurance).
2. Education (preschool, primary, lower secondary, upper secondary, continuing, and special education).
3. Social welfare (child protection, gender equality, disability/veteran support, crisis labor protection, social insurance, vocational training).

Each service item was measured using a five-point Likert scale ranging from 1 = hardly available to 5 = very adequate. To address visibility and informational dimensions, an additional "No opinion" option was deliberately included, rather than treated as missing data.

This allowed the study to identify patterned cases in which residents could not confidently evaluate

services, which may reflect limited awareness, weak communication, perceived irrelevance, or difficulties in service navigation.

The questionnaire therefore generated two complementary forms of data:

1. Adequacy ratings (1-5), which feed into the Perceived Service Adequacy Index (PSAI) – a composite score rescaled to 0-100 across domains.
2. “No opinion” responses, which directly inform the Service Visibility Gap (SVG) – the proportion of respondents unable to evaluate a service.

By integrating these measures from the design stage, the survey instrument ensured that both provision and visibility could be analyzed as distinct but interrelated pillars of social sustainability. This approach also aligns with global debates emphasizing that effective urban transformation depends not only on the existence of services but also on their awareness, accessibility, and legibility to residents.

3.4 Data collection and index construction

Survey questionnaires were administered and quality-checked on site. Items were coded and processed using the Statistical Package for the Social Sciences (SPSS), following established procedures for categorical survey data (Field, 2018). Descriptive statistics (frequencies, percentages, means) and comparative tests (Chi-square, t-tests, ANOVA) were employed to identify patterns of adequacy across districts. In addition to standard descriptive analysis, we developed two new monitoring tools to capture the dual dimensions of service provision and visibility:

Perceived Service Adequacy Index (PSAI). Each respondent rated service adequacy on a five-point Likert scale, ranging from 1 = hardly available to 5 = very adequate. For each service domain, valid adequacy ratings were aggregated across service indicators using equal weighting. The domain mean was then rescaled from the original 1–5 scale to a 0–100 scale using the following transformation: $PSAI = [(mean\ score - 1) / 4] \times 100$. Higher PSAI values indicate stronger perceived adequacy. “No opinion” responses were not included in the PSAI calculation and were analyzed separately through SVG.

Service Visibility Gap (SVG). SVG was calculated as the percentage of respondents selecting “No opinion” for a given service item or domain. It was computed by dividing the number of “No opinion”

responses by the total number of respondents and multiplying the result by 100. Higher SVG values indicate a larger share of residents who were not sufficiently positioned to evaluate a service, whether due to limited awareness, weak communication, perceived irrelevance, or difficulty navigating available services.

Together, PSAI and SVG provide a composite assessment of both provision (adequacy) and visibility (awareness, legibility). By integrating these indices into the analysis, we move beyond conventional adequacy measures to demonstrate how informational gaps systematically undermine social sustainability in peri-urban districts.

The data and tables in this article are drawn from the survey results of the provincial-level project “Building and Developing Urban Culture in the Districts of Ho Chi Minh City for the Period 2021-2030” (registration number 2024-1674). The implementing institution of this project is the Ho Chi Minh City Department of Culture and Sports. The project was officially approved by the Evaluation Council for the Acceptance of Scientific and Technological Tasks, established under Decision No. 791/QĐ-SKHCN dated December 6, 2023, issued by the Director of the Ho Chi Minh City Department of Science and Technology.

3.5 Ethical considerations

The study adhered to international ethical standards for social science research. Participation was voluntary with informed consent, and respondents could withdraw at any time. Survey and interview data were anonymized, with identifiers removed and access restricted to the research team. To address the sensitivity of welfare-related questions, a “No opinion” option was included as an ethical safeguard. The research followed the British Educational Research Association (BERA, 2018) guidelines and complied with Vietnamese ethical practices, ensuring confidentiality, respect, and participant protection.

3.6 Data analysis strategy

The analysis proceeded in three stages.

Stage 1: Descriptive and comparative analysis

Frequencies, percentages, and means were computed for each service indicator. District-level differences were examined through cross-tabulations and visual profiles. Inferential statistics including Chi-square tests, independent-sample t-tests, and one-way analysis of variance (ANOVA) were employed to assess whether observed disparities were statistically significant.

Stage 2: Construction of indices

Two indices were generated from the survey data:

Perceived Service Adequacy Index (PSAI): calculated as the equally weighted mean of adequacy ratings (1-5 scale), rescaled to a 0-100 range. Higher PSAI values indicate stronger perceptions of adequacy.

Service Visibility Gap (SVG): computed as the percentage of “No opinion” responses for each service item. Higher SVG values indicate weaker visibility or awareness of services.

Stage 3: Integrated interpretation

PSAI and SVG were analyzed jointly to reveal patterns of adequacy and visibility across five districts. Profiles highlighted where high SVG scores reduced perceived adequacy despite service availability. Comparing indices across health, education, and welfare identified the weakest pillars of social sustainability. This integrated approach moved beyond conventional adequacy measures to show how informational gaps compound material deficits, aligning with debates on urban transformation, social sustainability, and peri-urban equity. Methodologically, the study combined a representative cross-sectional survey, novel indices (PSAI and SVG), and statistical analysis to capture adequacy and visibility as interconnected dimensions. Results are presented in three sections – health, education, and welfare – with Tables 1-3 showing district-level disparities. PSAI values indicate adequacy, while SVG percentages reveal how visibility gaps undermine access despite nominal provision.

4. Findings

Through a household survey of 2,000 respondents across five districts, findings reveal a fragmented landscape. The survey data were collected before the administrative boundary adjustment of Ho Chi Minh City, effective July 1, 2025.

4.1 Health services

Table 1 reports PSAI and SVG scores for health services. Overall, public hospitals/clinics perform well across districts, with PSAI in the adequate-very adequate range and low SVG. Preventive care also shows relatively high adequacy and visibility. In contrast, private and family clinics register only moderately adequate PSAI, with SVG values significantly higher than in public facilities. This combination indicates that while services exist, many residents were not sufficiently positioned to evaluate these services; especially in Bình Chánh and Củ Chi. Maternal-child health services show mixed performance: adequate in Hóc Môn and Cần Giờ, but

less consistent in Bình Chánh and Nhà Bè. High SVG in these districts points to informational and navigational barriers rather than outright absence. Health insurance coverage is strong in Hóc Môn and Nhà Bè, reflected in both high PSAI and low SVG. However, adequacy and visibility decline in Bình Chánh and Củ Chi, suggesting that migrant inflows and institutional strain reduce uptake. In short, health provision is generally adequate, but visibility deficits in private/family care and uneven maternal-child and insurance services reveal persistent governance and outreach gaps.

4.2 Education services

Table 2 presents PSAI and SVG results for education. Preschool and primary education score high on adequacy in all districts, with low SVG, confirming these levels as the strongest and most visible part of the education pipeline. Lower-secondary education remains adequate overall, but PSAI declines relative to primary, and SVG begins to rise in Bình Chánh and Củ Chi, reflecting institutional pressure from rapid population growth. Upper-secondary education shows the sharpest gaps: PSAI drops to moderately adequate or lower in Bình Chánh and Củ Chi, while SVG climbs, indicating that many households struggle to access or even identify available schools. Continuing education (adult/vocational) registers both low PSAI and high SVG, especially in Nhà Bè and Bình Chánh. This suggests that beyond limited provision, limited-service visibility and weak outreach may constrain participation. Special education is the least visible domain. SVG is highest in Nhà Bè and Củ Chi, where many residents were unable to evaluate such services, suggesting weak visibility or limited-service legibility. Adequacy scores are correspondingly low, underscoring systemic neglect of inclusive education. Overall, the education pipeline narrows as students' progress: strong at the entry levels, increasingly inadequate and invisible at higher and specialized levels, especially in fast-growing districts.

4.3 Social welfare services

Table 3 summarizes PSAI and SVG results for welfare services. Among the three pillars, welfare exhibits the widest disparities and the highest visibility gaps. Child protection and gender equality programs achieve only moderately adequate PSAI across most districts, with SVG indicating that many residents were not sufficiently positioned to evaluate these initiatives. Support for persons with disabilities and veterans performs unevenly: relatively visible in Hóc Môn, but marked by high SVG in Nhà Bè and Bình Chánh. This suggests outreach and communication shortfalls rather than complete absence

Table 1: Health services by peri-urban district (PSAI and SVG)

		RURAL DISTRICTS											
		Cần Giờ		Hóc Môn		Củ Chi		Bình Chánh		Nhà Bè		Total	
		Count	Column N %	Count	Column N %	Count	Column N %	Count	Column N %	Count	Column N %	Count	Column N %
Access to medical services in public healthcare institutions	Hardly available	1	0.2%	0	0.0%	14	3.5%	0	0.0%	8	2.0%	23	1.2%
	A little adequate	1	0.2%	0	0.0%	8	2.0%	67	16.8%	9	2.2%	85	4.2%
	Moderately adequate	15	3.8%	7	1.8%	46	11.5%	19	4.8%	49	12.2%	136	6.8%
	Adequate	209	52.2%	218	54.5%	190	47.5%	168	42.0%	181	45.2%	966	48.3%
	Very adequate	170	42.5%	175	43.8%	129	32.2%	145	36.2%	140	35.0%	759	38.0%
	No opinion / Don't know	4	1.0%	0	0.0%	13	3.2%	1	0.2%	13	3.2%	31	1.6%
	Total	400	100.0%	400	100.0%	400	100.0%	400	100.0%	400	100.0%	2000	100.0%
Access to medical services in private healthcare institutions	Hardly available	32	8.0%	0	0.0%	38	9.5%	92	23.0%	17	4.2%	179	9.0%
	A little adequate	79	19.8%	25	6.2%	20	5.0%	60	15.0%	55	13.8%	239	12.0%
	Moderately adequate	85	21.2%	62	15.5%	31	7.8%	229	57.2%	94	23.5%	501	25.0%
	Adequate	122	30.5%	212	53.0%	145	36.2%	16	4.0%	195	48.8%	690	34.5%
	Very adequate	14	3.5%	101	25.2%	101	25.2%	3	0.8%	18	4.5%	237	11.8%
	No opinion / Don't know	68	17.0%	0	0.0%	65	16.2%	0	0.0%	21	5.2%	154	7.7%
	Total	400	100.0%	400	100.0%	400	100.0%	400	100.0%	400	100.0%	2000	100.0%
Access to healthcare through private clinics and family medical practices	Hardly available	4	1.0%	3	0.8%	85	21.2%	92	23.0%	51	12.8%	235	11.8%
	A little adequate	56	14.0%	42	10.5%	24	6.0%	109	27.2%	67	16.8%	298	14.9%
	Moderately adequate	128	32.0%	156	39.0%	77	19.2%	192	48.0%	89	22.2%	642	32.1%
	Adequate	132	33.0%	134	33.5%	30	7.5%	4	1.0%	135	33.8%	435	21.8%
	Very adequate	15	3.8%	65	16.2%	32	8.0%	3	0.8%	11	2.8%	126	6.3%
	No opinion / Don't know	65	16.2%	0	0.0%	152	38.0%	0	0.0%	47	11.8%	264	13.2%
	Total	400	100.0%	400	100.0%	400	100.0%	400	100.0%	400	100.0%	2000	100.0%
Preventive health services (including immunization and epidemic control)	Hardly available	0	0.0%	0	0.0%	1	0.2%	0	0.0%	2	0.5%	3	0.2%
	A little adequate	2	0.5%	0	0.0%	3	0.8%	11	2.8%	1	0.2%	17	0.8%
	Moderately adequate	9	2.2%	1	0.2%	7	1.8%	7	1.8%	13	3.2%	37	1.8%
	Adequate	189	47.2%	208	52.0%	117	29.2%	80	20.0%	225	56.2%	819	41.0%
	Very adequate	180	45.0%	191	47.8%	269	67.2%	302	75.5%	157	39.2%	1099	55.0%
	No opinion / Don't know	20	5.0%	0	0.0%	3	0.8%	0	0.0%	2	0.5%	25	1.2%
	Total	400	100.0%	400	100.0%	400	100.0%	400	100.0%	400	100.0%	2000	100.0%
Maternal and child health services	Hardly available	0	0.0%	0	0.0%	3	0.8%	0	0.0%	20	5.0%	23	1.2%
	A little adequate	1	0.2%	0	0.0%	5	1.5%	53	13.2%	3	0.8%	63	3.2%
	Moderately adequate	39	9.8%	0	0.0%	42	10.5%	100	25.0%	39	9.8%	220	11.0%
	Adequate	202	50.5%	223	55.8%	143	35.8%	39	9.8%	266	66.5%	873	43.6%
	Very adequate	136	34.0%	176	44.0%	118	29.5%	208	52.0%	33	8.2%	671	33.6%
	No opinion / Don't know	22	5.5%	1	0.2%	88	22.0%	0	0.0%	39	9.8%	150	7.5%
	Total	400	100.0%	400	100.0%	400	100.0%	400	100.0%	400	100.0%	2000	100.0%
Healthcare insurance policy	Hardly available	0	0.0%	0	0.0%	5	1.2%	0	0.0%	7	1.8%	12	0.6%
	A little adequate	0	0.0%	0	0.0%	2	0.5%	31	7.8%	2	0.5%	35	1.8%
	Moderately adequate	19	4.8%	8	2.0%	21	5.2%	59	14.8%	16	4.0%	123	6.2%
	Adequate	206	51.5%	189	47.2%	200	50.0%	108	27.0%	255	63.8%	958	47.9%
	Very adequate	166	41.5%	200	50.0%	160	40.0%	202	50.5%	113	28.2%	841	42.0%
	No opinion / Don't know	9	2.2%	3	0.8%	12	3.0%	0	0.0%	7	1.8%	31	1.6%
	Hardly available	400	100.0%	400	100.0%	400	100.0%	400	100.0%	400	100.0%	2000	100.0%

Note. PSAI is rescaled from 0 to 100; SVG represents the percentage of "No opinion" responses; n = 400 per district.

Source: Authors, 2025.

of programs. Crisis-related labor protection is the weakest domain. PSAI scores are lowest in Bình Chánh and Củ Chi, with SVG exceeding 30 percent, indicating that a large share of residents could not confidently evaluate available support mechanisms during shocks such as epidemics or floods. Social insurance is adequate and visible in Hóc Môn and Nhà Bè, but weaker in Củ Chi and Bình Chánh, where migrant populations remain under-enrolled. Vocational training shows low adequacy across all districts and SVG levels among the highest in the dataset, highlighting both provision gaps and limited-service visibility. Taken together, welfare emerges as the

weakest pillar of social sustainability: adequacy is low, visibility is poor, and resilience to socio-economic shocks remains fragile.

5. Discussion

5.1. Overview of findings

The findings reveal a differentiated landscape of service adequacy and visibility across peri-urban districts of Ho Chi Minh City. While basic infrastructures for health, education, and welfare exist, significant disparities remain in terms of both adequacy and

Table 2: Education services by peri-urban district (PSAI and SVG)

		RURAL DISTRICTS											
		Cần Giờ		Hóc Môn		Củ Chi		Bình Chánh		Nhà Bè		Total	
		Count	Column N %	Count	Column N %	Count	Column N %	Count	Column N %	Count	Column N %	Count	Column N %
Preschool Education	Hardly available	0	0.0%	0	0.0%	5	1.2%	0	0.0%	17	4.2%	22	1.1%
	A little adequate	0	0.0%	0	0.0%	2	0.5%	69	17.2%	7	1.8%	78	3.9%
	Moderately adequate	9	2.2%	0	0.0%	21	5.2%	24	6.0%	40	10.0%	94	4.7%
	Adequate	226	56.5%	228	57.0%	214	53.5%	106	26.5%	222	55.5%	996	49.8%
	Very adequate	141	35.2%	172	43.0%	99	24.8%	201	50.2%	72	18.0%	685	34.2%
	No opinion / Don't know	24	6.0%	0	0.0%	59	14.8%	0	0.0%	42	10.5%	125	6.2%
	Total	400	100.0%	400	100.0%	400	100.0%	400	100.0%	400	100.0%	2000	100.0%
Primary Education	Hardly available	0	0.0%	0	0.0%	4	1.0%	0	0.0%	19	4.8%	23	1.2%
	A little adequate	0	0.0%	0	0.0%	1	0.2%	81	20.2%	8	2.0%	90	4.5%
	Moderately adequate	6	1.5%	0	0.0%	22	5.5%	39	9.8%	35	8.8%	102	5.1%
	Adequate	222	55.5%	218	54.5%	213	53.2%	80	20.0%	216	54.0%	949	47.4%
	Very adequate	150	37.5%	182	45.5%	99	24.8%	200	50.0%	84	21.0%	715	35.8%
	No opinion / Don't know	22	5.5%	0	0.0%	61	15.2%	0	0.0%	38	9.5%	121	6.0%
	Total	400	100.0%	400	100.0%	400	100.0%	400	100.0%	400	100.0%	2000	100.0%
Lower Secondary Education (or Junior Secondary Education)	Hardly available	0	0.0%	0	0.0%	4	1.0%	1	0.2%	59	14.8%	64	3.2%
	A little adequate	0	0.0%	0	0.0%	1	0.2%	107	26.8%	17	4.2%	125	6.2%
	Moderately adequate	5	1.2%	0	0.0%	19	4.8%	12	3.0%	37	9.2%	73	3.6%
	Adequate	222	55.5%	217	54.2%	196	49.0%	81	20.2%	167	41.8%	883	44.2%
	Very adequate	151	37.8%	183	45.8%	91	22.8%	199	49.8%	77	19.2%	701	35.0%
	No opinion / Don't know	22	5.5%	0	0.0%	89	22.2%	0	0.0%	43	10.8%	154	7.7%
	Total	400	100.0%	400	100.0%	400	100.0%	400	100.0%	400	100.0%	2000	100.0%
Upper Secondary Education (or Senior Secondary Education)	Hardly available	0	0.0%	0	0.0%	4	1.0%	1	0.2%	21	5.2%	26	1.3%
	A little adequate	0	0.0%	0	0.0%	4	1.0%	109	27.2%	1	0.2%	114	5.7%
	Moderately adequate	26	6.5%	3	0.8%	58	14.5%	13	3.2%	51	12.8%	151	7.6%
	Adequate	207	51.8%	232	58.0%	126	31.5%	79	19.8%	264	66.0%	908	45.4%
	Very adequate	145	36.2%	165	41.2%	79	19.8%	198	49.5%	18	4.5%	605	30.2%
	No opinion / Don't know	22	5.5%	0	0.0%	129	32.2%	0	0.0%	45	11.2%	196	9.8%
	Total	400	100.0%	400	100.0%	400	100.0%	400	100.0%	400	100.0%	2000	100.0%
Continuing Education	Hardly available	1	0.2%	1	0.2%	8	2.0%	2	0.5%	30	7.5%	42	2.1%
	A little adequate	4	1.0%	18	4.5%	18	4.5%	111	27.8%	3	0.8%	154	7.7%
	Moderately adequate	81	20.2%	59	14.8%	36	9.0%	17	4.2%	69	17.2%	262	13.1%
	Adequate	146	36.5%	194	48.5%	82	20.5%	74	18.5%	212	53.0%	708	35.4%
	Very adequate	80	20.0%	112	28.0%	69	17.2%	196	49.0%	18	4.5%	475	23.8%
	No opinion / Don't know	88	22.0%	16	4.0%	187	46.8%	0	0.0%	68	17.0%	359	18.0%
	Total	400	100.0%	400	100.0%	400	100.0%	400	100.0%	400	100.0%	2000	100.0%
Special Education (or Specialized Education)	Hardly available	72	18.0%	17	4.2%	16	4.0%	4	1.0%	2	0.5%	111	5.6%
	A little adequate	47	11.8%	72	18.0%	29	7.2%	112	28.0%	2	0.5%	262	13.1%
	Moderately adequate	13	3.2%	39	9.8%	37	9.2%	17	4.2%	0	0.0%	106	5.3%
	Adequate	85	21.2%	121	30.2%	45	11.2%	72	18.0%	3	0.8%	326	16.3%
	Very adequate	58	14.5%	83	20.8%	43	10.8%	191	47.8%	1	0.2%	376	18.8%
	No opinion / Don't know	125	31.2%	68	17.0%	230	57.5%	4	1.0%	392	98.0%	819	41.0%
	Total	400	100.0%	400	100.0%	400	100.0%	400	100.0%	400	100.0%	2000	100.0%

Note. PSAI is rescaled from 0 to 100; SVG represents the percentage of "No opinion" responses; n = 400 per district.
Source: Authors, 2025.

citizen awareness. These results confirm that social sustainability cannot be assessed solely on the basis of material provision but must also consider the extent to which services are perceived as accessible and navigable. This aligns with broader scholarship emphasizing the complexity of sustainability transitions, which require integrative frameworks connecting physical infrastructures, governance arrangements, and lived experiences (Li et al., 2024; Lai, Wang, & Xia, 2025).

5.2. Health services

The analysis indicates that health service adequacy is relatively stronger compared to other domains, yet visibility gaps persist, especially in more peripheral districts. This resonates with international evidence that adequacy indicators such as facility availability and safety are necessary but insufficient to ensure equitable health outcomes (Zhao, Md Ali, Nik Hazwani Nik Hashim, Ahmad, & Wang, 2024). Physical urban change research further suggests that unequal distribution of

Table 3: Social welfare services by peri-urban district (PSAI and SVG)

		RURAL DISTRICTS											
		Cần Giờ		Hóc Môn		Củ Chi		Bình Chánh		Nhà Bè		Total	
		Count	Column N %	Count	Column N %	Count	Column N %	Count	Column N %	Count	Column N %	Count	Column N %
Child Welfare Programs	Hardly available	0	0.0%	0	0.0%	5	1.2%	0	0.0%	23	5.8%	28	1.4%
	A little adequate	0	0.0%	0	0.0%	8	2.0%	57	14.2%	16	4.0%	81	4.0%
	Moderately adequate	22	5.5%	4	1.0%	43	10.8%	60	15.0%	48	12.0%	177	8.8%
	Adequate	231	57.8%	212	53.0%	155	38.8%	87	21.8%	234	58.5%	919	46.0%
	Very adequate	110	27.5%	184	46.0%	95	23.8%	196	49.0%	22	5.5%	607	30.4%
	No opinion / Don't know	37	9.2%	0	0.0%	94	23.5%	0	0.0%	57	14.2%	188	9.4%
	Total	400	100.0%	400	100.0%	400	100.0%	400	100.0%	400	100.0%	2000	100.0%
Implementation of Gender Equality Policies	Hardly available	0	0.0%	0	0.0%	5	1.2%	0	0.0%	22	5.5%	27	1.4%
	A little adequate	0	0.0%	0	0.0%	4	1.0%	22	5.5%	5	1.2%	31	1.6%
	Moderately adequate	43	10.8%	1	0.2%	60	15.0%	98	24.5%	33	8.2%	235	11.8%
	Adequate	261	65.2%	208	52.0%	173	43.2%	83	20.8%	257	64.2%	982	49.1%
	Very adequate	58	14.5%	190	47.5%	88	22.0%	197	49.2%	24	6.0%	557	27.8%
	No opinion / Don't know	38	9.5%	1	0.2%	70	17.5%	0	0.0%	59	14.8%	168	8.4%
	Total	400	100.0%	400	100.0%	400	100.0%	400	100.0%	400	100.0%	2000	100.0%
Support Policies for Persons with Disabilities and Families of Meritorious Service	Hardly available	1	0.2%	0	0.0%	9	2.2%	0	0.0%	27	6.8%	37	1.8%
	A little adequate	0	0.0%	0	0.0%	3	0.8%	14	3.5%	5	1.2%	22	1.1%
	Moderately adequate	2	0.5%	3	0.8%	41	10.2%	58	14.5%	31	7.8%	135	6.8%
	Adequate	236	59.0%	203	50.8%	205	51.2%	125	31.2%	248	62.0%	1017	50.8%
	Very adequate	141	35.2%	192	48.0%	87	21.8%	203	50.8%	30	7.5%	653	32.6%
	No opinion / Don't know	20	5.0%	2	0.5%	55	13.8%	0	0.0%	59	14.8%	136	6.8%
	Total	400	100.0%	400	100.0%	400	100.0%	400	100.0%	400	100.0%	2000	100.0%
Support Policies for Workers Unemployed Due to Natural Disasters and Epidemics	Hardly available	0	0.0%	0	0.0%	8	2.0%	0	0.0%	24	6.0%	32	1.6%
	A little adequate	0	0.0%	0	0.0%	11	2.8%	36	9.0%	8	2.0%	55	2.8%
	Moderately adequate	30	7.5%	1	0.2%	53	13.2%	79	19.8%	48	12.0%	211	10.6%
	Adequate	206	51.5%	194	48.5%	142	35.5%	81	20.2%	259	64.8%	882	44.1%
	Very adequate	133	33.2%	205	51.2%	146	36.5%	204	51.0%	20	5.0%	708	35.4%
	No opinion / Don't know	31	7.8%	0	0.0%	40	10.0%	0	0.0%	41	10.2%	112	5.6%
	Total	400	100.0%	400	100.0%	400	100.0%	400	100.0%	400	100.0%	2000	100.0%
Social Insurance Policies	Hardly available	25	6.2%	1	0.2%	10	2.5%	1	0.2%	10	2.5%	47	2.4%
	A little adequate	11	2.8%	6	1.5%	8	2.0%	24	6.0%	5	1.2%	54	2.7%
	Moderately adequate	7	1.8%	14	3.5%	24	6.0%	54	13.5%	35	8.8%	134	6.7%
	Adequate	185	46.2%	193	48.2%	141	35.2%	115	28.8%	256	64.0%	890	44.5%
	Very adequate	90	22.5%	185	46.2%	77	19.2%	206	51.5%	26	6.5%	584	29.2%
	No opinion / Don't know	82	20.5%	1	0.2%	140	35.0%	0	0.0%	68	17.0%	291	14.6%
	Total	400	100.0%	400	100.0%	400	100.0%	400	100.0%	400	100.0%	2000	100.0%
Vocational Training and Employment Support Programs	Hardly available	0	0.0%	1	0.2%	11	2.8%	1	0.2%	25	6.2%	38	1.9%
	A little adequate	1	0.2%	0	0.0%	4	1.0%	61	15.2%	3	0.8%	69	3.4%
	Moderately adequate	42	10.5%	1	0.2%	27	6.8%	54	13.5%	46	11.5%	170	8.5%
	Adequate	181	45.2%	209	52.2%	168	42.0%	87	21.8%	248	62.0%	893	44.6%
	Very adequate	136	34.0%	188	47.0%	77	19.2%	197	49.2%	17	4.2%	615	30.8%
	No opinion / Don't know	40	10.0%	1	0.2%	113	28.2%	0	0.0%	61	15.2%	215	10.8%
	Total	400	100.0%	400	100.0%	400	100.0%	400	100.0%	400	100.0%	2000	100.0%

Note. PSAI is rescaled from 0 to 100; SVG represents the percentage of "No opinion" responses; n = 400 per district.
Source: Authors, 2025.

medical infrastructures can amplify socio-environmental disparities in peripheral zones (Liu et al., 2025). Thus, peri-urban contexts demand not only investment in facilities but also strategies to improve citizen awareness, enrolment, and navigation. Digital health campaigns and AI-driven outreach could be particularly relevant in

reducing informational gaps (Babšek, Ravšelj, Umek, & Aristovnik, 2025).

5.3. Education services

Educational services demonstrate mixed adequacy, with notable gaps in special education and vocational

training. This reflects a broader pattern in peri-urban settings, where institutional fragmentation often results in uneven educational investments (Kristensen, 2025). Studies of governance arrangements stress that equity-sensitive planning benchmarks are essential to avoid reinforcing socio-spatial inequalities (Kramer, Silverton, & Späth, 2024). Moreover, bibliometric reviews highlight that education is increasingly recognized as a central dimension of sustainable transformation but often remains under-integrated in policy practice (Kaya & Erbaş, 2023). Addressing these gaps requires not only expansion of facilities but also better communication strategies to ensure that marginalized groups, particularly migrant households, can access opportunities.

5.4. Welfare services

Welfare provision remains the weakest pillar, both in adequacy and visibility. Survey data reveal particularly limited visibility of crisis labor support and social insurance in several districts. This reflects what other studies have termed “invisible services,” where benefits formally exist but are poorly communicated or overly bureaucratic (van der Voet & Lerusse, 2024). Comparative research warns that welfare reforms often fail in peri-urban contexts when outreach mechanisms do not match the mobility and diversity of local populations (Kristensen, 2025). At the same time, supranational policy frameworks argue for stronger coordination between social policy and territorial planning to achieve sustainable outcomes (Fioretti, Pertoldi, Busti, & Van Heerden, 2020). Bridging this gap requires combining adequacy reforms with visibility-enhancing instruments, including digital enrollment platforms and local mediators.

5.5. Comparative district dynamics

The analysis across five districts illustrates divergent trajectories. Hóc Môn performs relatively well due to its integration with the urban core, while Củ Chi and Bình Chánh lag behind under pressure from high in-migration and administrative capacity constraints. Nhà Bè presents a dual character – strong in social insurance but weak in gender equality and vocational training whereas Cần Giờ remains moderate but constrained by geographic isolation. These findings support earlier arguments that peri-urbanization produces uneven development mosaics shaped by governance fragmentation and fiscal disparities (Li et al., 2024; Liu et al., 2025). They also reinforce claims that without explicit coordination mechanisms, sustainability strategies risk deepening rather than reducing inequalities (Kramer et al., 2024; Kristensen, 2025).

5.6. Adequacy versus visibility

The distinction between adequacy and visibility provides a new analytical lens for understanding service provision. Adequacy refers to residents’ perceived sufficiency of service provision, while visibility captures the extent to which services are recognizable, understandable, and practically accessible. The gap between these two dimensions resonates with research on urban sustainability transitions that calls for linking structural provision with experiential realities (Harms, Hofer, & Artmann, 2024; Lai et al., 2025). Our results confirm that visibility is often lower than adequacy, indicating that services are underutilized not because they do not exist, but because citizens cannot easily access or recognize them. This underscores the importance of communication, participation, and institutional responsiveness in realizing social sustainability. At the micro-spatial level, recent research on alley landscapes in Ho Chi Minh City also shows that everyday spatial design strongly shapes residents’ ability to recognize, navigate, and access urban services, reinforcing the importance of visibility alongside material provision (Le Nguyen Ai Huyen, Phan Thi Hong Xuan, & Phan Hoang Long, 2022).

The joint reading of PSAl and SVG helps avoid two common policy misinterpretations. High adequacy combined with high visibility gaps may indicate that services exist but have not become socially legible to residents. Conversely, low adequacy with relatively low SVG may indicate services that are visible but insufficient to meet local needs. In both cases, social sustainability depends not only on physical provision but also on the governance processes through which services become knowable, usable, and trusted.

5.7. Governance implications

The findings highlight that peri-urban inequalities are not only infrastructural but institutional. Governance arrangements play a decisive role in mediating service outcomes. Comparative evidence shows that effective governance requires linking justice with sustainability outcomes through co-production, accountability, and multi-level coordination (Kramer et al., 2024). Decision-making research similarly demonstrates that how political and managerial actors prioritize issues depends on the performance information available and the framing of trade-offs (van der Voet & Lerusse, 2024). In Vietnam’s peri-urban districts, fragmented authority and fiscal limitations mean that services risk being delivered in a piecemeal fashion, reinforcing unevenness. Enhancing visibility thus requires governance innovations that improve transparency, prioritize equity, and leverage digital tools for outreach (Babšek et al., 2025).

5.8. Theoretical and practical implications

Theoretically, the introduction of PSAI and SVG extends the literature on social sustainability by operationalizing adequacy and visibility as measurable dimensions. This responds to calls for frameworks that go beyond physical or ecological transformations to capture everyday lived experiences (Liu et al., 2025; Zhao et al., 2024). It also complements ongoing debates on governance and justice in urban sustainability, connecting indicator-based approaches with institutional performance (Kaya & Erbaş, 2023; Kramer et al., 2024). Practically, the study demonstrates that addressing peri-urban inequalities requires interventions that combine infrastructural investment, communication strategies, and governance reforms. These insights align with international policy guidance stressing multi-level coordination and place-sensitive approaches (Fioretti et al., 2020). By situating Vietnam's peri-urban challenges within these broader debates, the study contributes not only to local policy design but also to comparative scholarship on sustainable urban transformation.

5.9. Limitations

This study has several limitations. First, the analysis is confined to five peri-urban districts of Ho Chi Minh City, so findings cannot be generalized without further comparative research for the whole Ho Chi Minh City. Second, reliance on cross-sectional survey data limits the ability to capture changes over time; longitudinal or mixed-methods approaches would strengthen future studies. Third, while the Public Service Adequacy Index (PSAI) and Service Visibility Gap (SVG) offer useful tools, they require broader validation across contexts. Finally, the study covers only health, education, and welfare, leaving out other key dimensions such as housing, transport, and cultural inclusion. Despite these constraints, the research provides an initial step in integrating adequacy and visibility into assessments of social sustainability and highlights directions for comparative, longitudinal, and multi-dimensional studies. In addition, "No opinion" responses may reflect multiple underlying conditions, including lack of awareness, perceived irrelevance, recall limitations, or survey fatigue, rather than simple absence of services. While the Service Visibility Gap (SVG) captures this informational dimension, future research should further disaggregate "No opinion" patterns by socio-demographic characteristics to clarify these mechanisms.

Accordingly, SVG should be interpreted as a pattern-based proxy for visibility gaps rather than as a direct measure of individual awareness.

5.10. Policy recommendations

Guiding principles

Policy design for peri-urban social sustainability should rest on three guiding principles. First, equity must be prioritized, with particular attention to districts and domains that exhibit the widest gaps between adequacy and visibility. This means targeting resources not only to where infrastructures are lacking but also where citizens demonstrate the lowest awareness of existing programs. Second, interventions should pursue both informational and material parity: investments in schools, clinics, and welfare facilities must be matched by investments in communication, outreach, and enrollment mechanisms (Fioretti, Pertoldi, Busti, & Van Heerden, 2020). Third, policies must be evidence-based and measurable, with clear performance indicators and disaggregation by district, gender, and migration status to ensure accountability and track progress.

Targeted actions by domain

Health. Outreach and enrollment drives are critical to raise awareness of health insurance and preventive services. Mobile consultation points at markets and industrial zones could reduce visibility gaps for migrant workers. AI-supported digital platforms may further enhance citizen access to information and streamline registration procedures (Babšek, Ravšelj, Umek, & Aristovnik, 2025).

Education. Expanding vocational and special education provision should be accompanied by tailored communication strategies that address linguistic and cultural barriers. Partnerships with local associations and community-based organizations can increase visibility and improve enrollment, especially for disadvantaged groups (Lai, Wang, & Xia, 2025).

Welfare. Social insurance and crisis labor support programs require stronger communication channels. Information campaigns using local mediators and digital platforms can help residents recognize their entitlements. Simplifying procedures and reducing bureaucratic hurdles will also improve service uptake (van der Voet & Lerusse, 2024).

Governance and coordination innovations

Improving service adequacy and visibility in peri-urban contexts ultimately depends on governance arrangements. Policy design should integrate mechanisms of co-production, accountability, and multi-level coordination to reduce fragmentation (Kramer, Silverton, & Späth, 2024). A regional coordination mechanism among peri-urban districts could ensure that investments

are not piecemeal but strategically aligned across boundaries. Transparency in performance reporting and the use of citizen feedback systems can further enhance institutional responsiveness.

Long-term strategic orientation

Beyond sectoral reforms, policy should pursue a long-term strategy that embeds adequacy and visibility within broader urban sustainability agendas. This requires aligning peri-urban service provision with national targets on social inclusion and with international frameworks on sustainable urban development (Fioretti et al., 2020). Building institutional capacity, strengthening fiscal autonomy at the district level, and leveraging digital innovations will be crucial for sustaining these efforts in the face of demographic change and urban expansion.

6. Conclusions

This study assessed health, education, and welfare services in five peri-urban districts of Ho Chi Minh City using the Public Service Adequacy Index (PSAI) and Service Visibility Gap (SVG). Results show health is relatively strong but uneven, education narrows at higher levels, and welfare is the weakest pillar. Findings highlight that sustainable transformation depends on both provision and citizen awareness. Theoretically, the study advances social sustainability by framing adequacy and visibility as dual dimensions. Methodologically, PSAI and SVG offer replicable tools for capturing perceived service adequacy and service visibility. Practically, bridging gaps requires infrastructural investment, communication, and governance reforms with digital innovation. Equity-sensitive, multi-level coordination remains essential to reach underserved communities, situating peri-urban Vietnam within global debates on inclusive and resilient urban futures. Although grounded in Ho Chi Minh City, the adequacy-visibility framework has relevance for peri-urban regions across Southeast Asia and the broader Global South, where rapid urban expansion, fragmented governance, migration, and uneven service communication similarly shape social sustainability outcomes.

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Data Availability Statement

The data used in this study were derived from the provincial-level project Building and Developing Urban Culture in the Districts of Ho Chi Minh City for the Period 2021-2030 (registration number 2024-1674). Due to institutional access restrictions and confidentiality commitments, the dataset is not publicly archived. Access may be considered upon reasonable request to the corresponding author, subject to permission from the authorized institution and applicable research-governance requirements.

Declaration of Generative AI and AI-assisted Technologies in the Writing Process

During the preparation of this manuscript, the author(s) did not employ any of the Generative AI and/or AI-Assisted technologies for Language refinement, drafting background section and did not perform any Task of the technology.

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