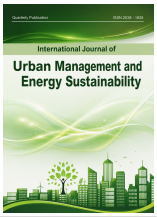
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Comparative Evaluation of Physical and Environmental Drivers Influencing Urban Quality of Life with Intervention Prioritization across Traditional and Planned Urban Fabrics

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ABSTRACT

Physical-infrastructural performance and environmental quality are measurable, policy-actionable determinants of urban quality of life, yet urban decision-making often overlooks their relative priority and interdependence. This study compared these two dimensions of quality of life between a traditional organic urban fabric and a planned urban fabric in Rasht, Iran, and prioritized intervention dimensions using a network-based multi-criteria approach. A descriptive-analytical, mixed-methods design was applied in two neighborhoods, Saghrisazan and Manzarieh. A stratified sample of 377 residents completed a 20-item, five-point Likert questionnaire covering the physical-infrastructural and environmental dimensions. Independent-samples and one-sample t-tests, Pearson correlation, and multivariate analysis of variance compared neighborhoods; the Analytic Hierarchy Process and the Analytic Network Process, implemented in Super Decisions, derived priority weights while accounting for interdependencies between dimensions. The planned neighborhood scored significantly higher than the organic neighborhood on physical and environmental indicators. Both dimensions were significantly correlated with overall quality of life, led by the physical-infrastructural dimension, followed by the environmental dimension; urban fabric type had a significant combined effect on the two. In the network-based prioritization, the environmental dimension was assigned a narrowly higher weight than the physical-infrastructural dimension under both models, indicating near parity between the two dimensions rather than a decisive expert preference. Given this narrow margin and the stronger survey-based association of the physical-infrastructural dimension with overall quality of life, urban quality of life in Rasht is best understood as shaped jointly, and comparably, by physical-infrastructural and environmental conditions. Municipal strategies should pursue physical and environmental upgrading as similarly high priorities, including infrastructural renewal, green-space expansion, noise mitigation, and drainage rehabilitation, particularly in historic fabrics, while safeguarding existing environmental assets in planned areas.

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INTRODUCTION

In contemporary urban planning, environmental quality and the functionality of physical infrastructure are no longer secondary concerns; they constitute a measurable foundation for residents' everyday health, safety, and satisfaction. Rapid urbanization and intensive physical interventions have altered the spatial structure of cities and amplified environmental challenges such as air pollution, waste management pressures, and unequal access to green space. Consequently, urban quality of life is highly sensitive to the material conditions of the city. Recent comprehensive reviews highlight that urban form, street networks, and environmental conditions act as fundamental pathways that directly shape residents' physical health, functional satisfaction, and overall subjective well-being (Mouratidis, 2021; Tsekeri et al., 2025; Yuen et al., 1999).

A key spatial duality in many Iranian cities is the contrast between historic organic fabrics and modern planned developments. This distinction is not merely morphological; it reflects uneven distributions of infrastructure and environmental services. Organic fabrics often the earliest urban cores are typically characterized by fine-grained parcels, irregular street patterns, limited accessibility, and aging infrastructure, which can reduce serviceability and environmental performance (Ahmadi and Naderi Karvandan, 2013). Planned developments, in contrast, commonly exhibit a more regular geometry, hierarchical street networks, and relatively modern utilities, but may also face environmental risks linked to car-oriented growth and land-use conversion pressures.

Rasht, the administrative center of Gilan Province in northern Iran, provides a useful setting for examining these dynamics. The city contains both long-established organic neighborhoods and newer grid-like expansions, offering a natural laboratory to assess how urban morphology translates into perceived infrastructure performance and environmental quality. However, urban decision-making often remains linear and sectoral, overlooking the interdependencies between physical interventions and environmental outcomes for example, how road widening may influence air quality and green space availability. To address this gap, the present study focuses on two foundational dimensions of quality of life physical-infrastructural and environmental and compares their status in an organic urban fabric and a planned urban fabric. Beyond conventional comparisons, the study applies the Analytic Hierarchy Process and the Analytic Network Process to prioritize intervention drivers while explicitly considering feedback and mutual influence between these dimensions. The research is guided by three questions: (1) Do the two neighborhoods differ significantly in perceived physical-infrastructural and environmental quality-of-life indicators? (2) How strongly does each dimension correlate with overall quality of life? and (3) When interdependencies are accounted for, which dimension should be prioritized in policy and budgeting? This study was conducted in Rasht, northern Iran, during 2025.

Theoretical and empirical background

In urban design literature, the concept of urban fabric is understood as the physical substrate of urban life. The contrast between organic (historic) and planned (modern) fabrics represents a common analytical axis for examining spatial inequality within cities. Organic fabrics, shaped incrementally over time, often provide cultural and heritage value but may struggle to meet modern standards of accessibility, emergency response, and utility provision. In such contexts, narrow and irregular streets, aging buildings, and limited public open space can translate into lower perceived safety and environmental comfort (Ahmadi and Naderi Karvandan, 2013). Recent network analyses of Iranian cities corroborate this argument, demonstrating that the complex geometric configuration and narrow passages of organic fabrics severely impair street network permeability and physical resilience during crises compared with regular, planned grids (Roosta et al., 2022). Planned fabrics typically follow more

standardized urban design principles, enabling more efficient provision of utilities, street lighting, and public facilities. From a human-needs perspective, environmental quality including access to clean air, green space, and reduced noise—functions as a precondition for meeting basic needs and ensuring urban well-being (Maslow, 1970). Spatial justice approaches further emphasize that unequal distribution of physical and environmental services across neighborhoods can generate persistent gaps in quality of life and compound vulnerability.

Empirical studies consistently indicate that the physical and environmental attributes of neighborhoods explain a substantial share of variation in urban quality of life. International evidence employing structural equation modeling confirms that neighborhood satisfaction acts as a primary predictor of subjective well-being and a fundamental indicator of urban livability (Mouratidis, 2020). Recent research highlights the role of neighborhood open spaces and urban landscape quality in supporting physical activity and public health (Zhang and Zhang, 2025). Broad-scale studies across European cities further confirm that urban greenness and access to green spaces are fundamental drivers of citizens' perceived quality of life and environmental satisfaction (Giannico et al., 2021). Other research underscores that uneven urban growth may lead to suboptimal densities, unhealthy housing conditions, and elevated environmental pollution, ultimately degrading quality of life (Gur and Koyun, 2025). Spatial analytical approaches, often combining geographic information systems and indicator frameworks, have also been applied to support resource allocation based on environmental conditions (Faka et al., 2021). Within the Iranian context, comparative studies frequently report better physical and environmental conditions in newer neighborhoods, attributed to compliance with contemporary planning standards (Bastanian Shahgoli et al., 2019; Ghazanfarpour et al., 2020). This pattern of spatial inequality is further supported by evidence from other Iranian cities, demonstrating that physical context and environmental attributes fundamentally drive variations in urban quality of life (Pazhuhan et al., 2020). Similar findings have been documented in northern coastal cities of Iran, where pronounced spatial differences in quality of life and infrastructure access have been observed across old, middle, and modern urban tissues (Bagherian et al., 2023). Prioritization studies suggest that interventions related to safety, mobility, and recreational facilities are often among the most urgent within urban upgrading programs (Zeinali Azim et al., 2023; Mousavi and Bagheri, 2012). Methodologically, multi-criteria decision-making tools such as the Analytic Hierarchy Process and the Analytic Network Process have gained prominence for weighting quality-of-life indicators, as they provide robust frameworks for handling the multidimensional and spatial complexity of urban evaluations (Vakilipour et al., 2021). Network-based approaches are particularly relevant when indicators interact and generate feedback effects within urban systems (Ghahramanpour et al., 2023).

MATERIALS AND METHODS

Study area

The empirical setting of the study is Rasht, Iran. Two neighborhoods were selected to represent distinct morphological types. Saghrisazan represents the organic (historic) urban fabric and is characterized by irregular street patterns, fine-grained parcels, and limited vehicular accessibility. Manzarieh represents the planned (modern) fabric and is characterized by a grid-like layout, more standardized parcels, and relatively modern infrastructure.

Population, sampling, and sample size

The statistical population consists of residents aged 18 years and above in the two selected neighborhoods. According to official statistics, the combined population is approximately 18,244. The sample size was estimated using Cochran's formula at a 95% confidence level,

yielding n = 377 respondents. A stratified random sampling approach proportional to neighborhood population size was applied (Saghrisazan: 68 respondents; Manzarieh: 309 respondents) to ensure adequate spatial representation across both neighborhoods.

Measurement instrument

Data were collected using a researcher-designed questionnaire based on a five-point Likert scale. Consistent with established quality-of-life frameworks emphasizing the tangible, policy-actionable core of urban livability, the questionnaire focused on two foundational dimensions (Wesz et al., 2023), comprising 20 items in total:

Physical-infrastructural dimension (12 items), including pavement quality, street lighting, structural safety of buildings, sewerage and stormwater performance, and access to public transport.

Environmental dimension (8 items), including noise pollution, air quality, waste management conditions, and access to green space.

Validity and reliability

Content validity was assessed through expert review. The Content Validity Ratio and Content Validity Index were applied to refine questionnaire items, and the average Content Validity Index of the instrument was 0.87, indicating satisfactory content coverage. Construct validity and internal structure were assessed through exploratory factor analysis: the Kaiser-Meyer-Olkin measure of sampling adequacy was 0.88, well above the acceptable threshold of 0.60, and Bartlett's test of sphericity was significant ($p < 0.001$), confirming that the correlation structure of the data was suitable for factor extraction. Using principal component extraction with varimax rotation, the two hypothesized dimensions were recovered as distinct factors, each with a dominant item loading well above the conventional 0.30 retention threshold, supporting the internal coherence of each dimension. (Tab. 1)

Table 1: Construct validity indicators by dimension (exploratory factor analysis)

Dimension	Items (n)	Variance explained	Dominant item loading
Physical-infrastructural	12	22%	0.595
Environmental	8	18%	0.303

Data analysis

Data analysis was conducted in four stages. First, independent-samples comparisons and one-sample t-tests were performed to examine differences between neighborhoods and deviations from a neutral benchmark. Second, Pearson correlation analysis and multivariate analysis of variance (MANOVA) were used to examine the association between each dimension and overall quality of life and to test the combined effect of urban fabric type (organic vs. planned) on the two quality-of-life dimensions. Third, the Analytic Hierarchy Process was applied to derive priority weights for the two dimensions based on standardized dimension scores, using pairwise comparison matrices whose consistency ratios were verified to fall below the 0.10 threshold for both matrices. Fourth, the Analytic Network Process was applied using Super Decisions software to derive priority weights while accounting for mutual influence between the two dimensions. The Analytic Network Process was used alongside the Analytic Hierarchy Process because infrastructure interventions and environmental outcomes are interdependent and may generate feedback effects within urban systems that a purely hierarchical model cannot capture. This methodological choice is supported by recent urban assessments in Iran demonstrating that network-based models effectively capture real-world interdependencies among environmental and physical criteria (Jamali et al., 2023). (Fig. 1)

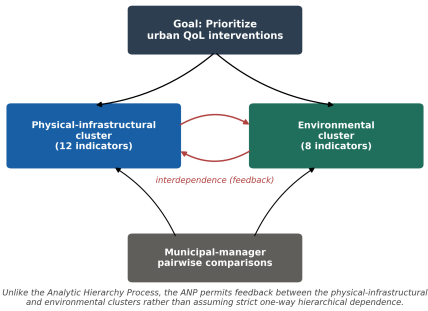


Figure 1: Analytic Network Process (ANP) model structure showing feedback between the physical-infrastructural and environmental clusters. Pairwise comparisons were elicited from a panel of municipal managers.

FINDINGS AND DISCUSSION

Sample profile

Table 2 presents the socio-demographic characteristics of respondents in the two neighborhoods. Saghrisazan exhibits a markedly older and more stable population: 45.6% of respondents are aged ≥ 50 years (compared with 12.3% in Manzarieh), and 66.2% have resided in the neighborhood for more than 20 years (compared with 23.3% in Manzarieh). These structural differences create distinct contextual conditions influencing how residents evaluate infrastructure performance and environmental comfort. The sample was allocated proportionally to each neighborhood's population, which produced a substantially larger sample in Manzarieh (n = 309) than in Saghrisazan (n = 68); this near four-to-one imbalance yields less precise estimates for Saghrisazan and is addressed further in the Limitations subsection. (Tab. 2)

Table 2: Respondent characteristics by neighborhood (n = 377)

Variable	Category	Saghrisazan (n, %)	Manzarieh (n, %)
Gender	Male	41 (60.3%)	139 (44.9%)
	Female	27 (39.7%)	170 (55.1%)
Marital status	Married	48 (70.6%)	118 (38.2%)
	Single	20 (29.4%)	191 (61.8%)
Age group (years)	< 30	9 (13.2%)	89 (28.8%)
	30–39	11 (16.2%)	111 (35.9%)
	40–49	17 (25.0%)	71 (23.0%)
	≥ 50	31 (45.6%)	38 (12.3%)
Education level	Below diploma	16 (23.5%)	29 (9.4%)
	Diploma	25 (36.8%)	61 (19.7%)
	Bachelor's	22 (32.4%)	115 (37.2%)
	Master's	4 (5.9%)	81 (26.2%)
	PhD	1 (1.5%)	23 (7.4%)
Employment status	Employee	8 (11.8%)	75 (24.3%)
	Self-employed	15 (22.1%)	93 (30.1%)
	Homemaker	11 (16.2%)	37 (12.0%)
	Student	11 (16.2%)	53 (17.2%)
	Retired	13 (19.1%)	22 (7.1%)
	Unemployed	10 (14.7%)	29 (9.4%)

Monthly household income (million Iranian toman)	< 10	17 (25.0%)	5 (1.6%)
	10–20	11 (16.2%)	32 (10.4%)
	20–30	33 (48.5%)	81 (26.2%)
	> 30	7 (10.3%)	191 (61.8%)
Housing tenure	Owner-occupied	50 (73.5%)	201 (65.0%)
	Renter	15 (22.1%)	92 (29.8%)
	Other	3 (4.4%)	16 (5.2%)
Length of residence	< 1 year	3 (4.4%)	39 (12.6%)
	1–5 years	5 (7.4%)	56 (18.1%)
	6–10 years	7 (10.3%)	61 (19.7%)
	11–20 years	8 (11.8%)	81 (26.2%)
	> 20 years	45 (66.2%)	72 (23.3%)

Comparative assessment of physical and environmental indicators

Results indicate a pronounced physical-infrastructural gap between the two neighborhoods. Manzarieh reports substantially higher mean scores across all physical indicators. For example, perceived street and sidewalk safety is 4.05 in Manzarieh compared with 2.35 in Saghrisazan; perceived availability of cycling/walking facilities is 3.91 versus 2.04, respectively. The overall physical dimension in Manzarieh is significantly above the benchmark ($t=11.02$, $p<0.001$), while Saghrisazan is significantly below it ($t=-6.60$). The magnitude of neighborhood differences is large (Hedges' $g\approx1.0$). In the environmental domain, the planned neighborhood also performs better. Residents in Manzarieh report higher perceived noise reduction (3.69 vs 2.38) and better access to green space (3.41 vs 1.89). Environmental differences are also large (Hedges' $g\approx0.8$), underscoring the strong imprint of morphological type on perceived environmental comfort. (Tab. 3 and Fig. 2)

Table 3: Physical-infrastructural indicators (mean ± SD; 5-point scale)

Indicator	Saghrisazan (Mean ± SD)	Manzarieh (Mean ± SD)
Street and sidewalk safety	2.35 ± 1.17	4.05 ± 0.89
Night-time lighting adequacy	2.35 ± 1.12	3.61 ± 1.27
Pavement/surfacing quality	2.56 ± 1.09	3.46 ± 1.29
Structural safety of buildings	2.29 ± 0.96	3.80 ± 0.99
Streetscape (urban facade) quality	2.40 ± 1.00	3.73 ± 1.10
Reliability of basic utilities	2.46 ± 1.09	3.32 ± 1.40
Sewerage and stormwater drainage performance	2.19 ± 0.83	3.30 ± 1.35
Public transport availability	1.98 ± 0.63	3.40 ± 1.30
Walking/cycling infrastructure availability	2.04 ± 0.66	3.91 ± 1.01
Access to educational facilities	2.28 ± 0.98	4.10 ± 0.85
Access to healthcare facilities	2.19 ± 0.87	3.33 ± 1.24
Access to cultural and recreational facilities	2.19 ± 0.90	3.77 ± 1.09

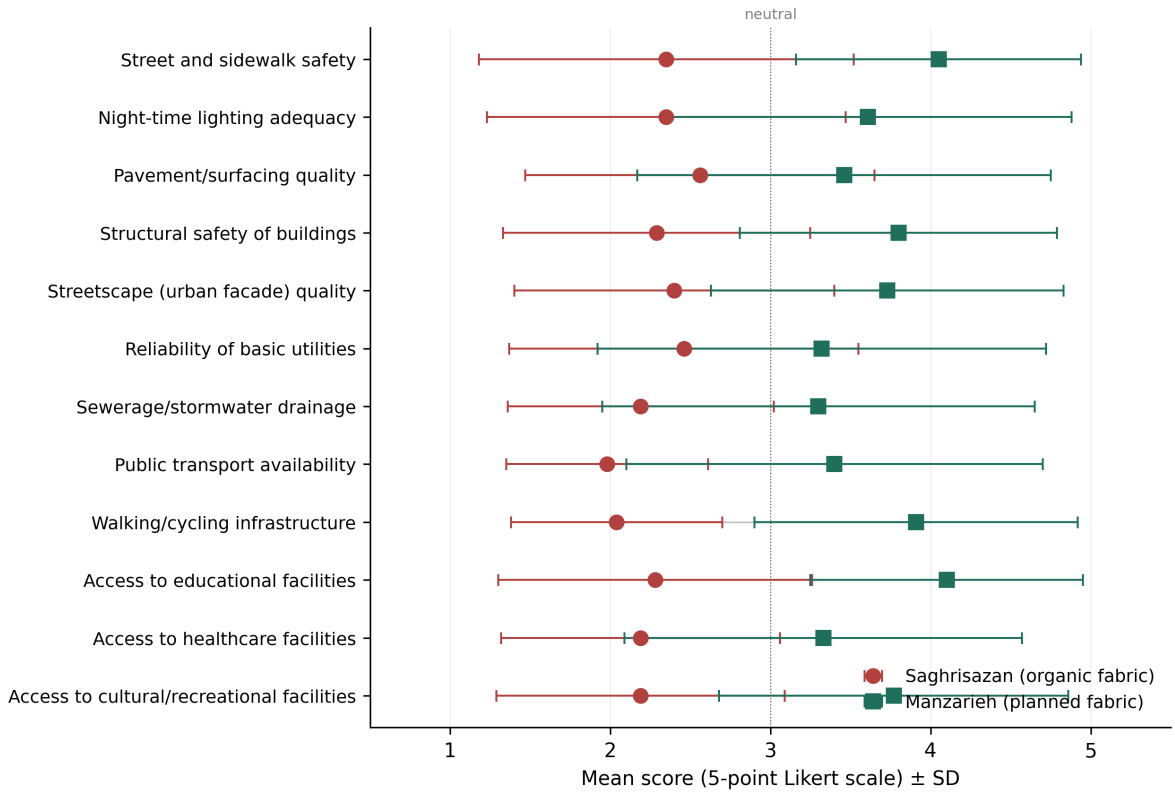


Figure 2: Physical-infrastructural indicator gaps between Saghrisazan and Manzarieh (mean ± SD, 5-point scale), based on the values reported in Table 3.

Correlation structure and multivariate comparison

Pearson correlation coefficients (95% confidence level, n = 377) were computed between each of the two dimensions and the overall quality-of-life index. Both dimensions were positively and significantly correlated with overall quality of life: physical-infrastructural (r = 0.80) and environmental (r = 0.76). The physical-infrastructural dimension therefore shows the strongest association with residents' overall evaluation of quality of life, while a strong inter-dimensional correlation between the two dimensions (r = 0.71) indicates that residents tend to evaluate infrastructure performance and environmental quality jointly. A multivariate analysis of variance (MANOVA) further confirmed that urban fabric type (organic vs. planned) has a significant combined effect on the two quality-of-life dimensions (Wilks' $\Lambda = 0.785$, $F(2,374) = 51.22$, $p < 0.001$, partial $\eta^2 = 0.215$, observed power > 0.999; Pillai's Trace = 0.215, $p < 0.001$), indicating that urban fabric type is associated with residents' perceptions of both dimensions simultaneously rather than through either dimension in isolation (see Limitations regarding compositional differences between neighborhoods).

Network-based prioritization (AHP and ANP)

Table 4 presents the priority weights derived from both the Analytic Hierarchy Process and the Analytic Network Process models across the two quality-of-life dimensions considered in this study. Because only two dimensions were compared, each pairwise comparison matrix contains a single independent judgment and is therefore perfectly consistent by construction; the consistency ratio, which is designed to di-

agnose inconsistency across three or more elements, is not a meaningful diagnostic in this two-element case and is reported as not applicable in Table 4. Weights are normalized to sum to 1.0 within each model. In the Analytic Hierarchy Process, the environmental dimension is assigned a marginally higher weight (0.522) than the physical-infrastructural dimension (0.478); the Analytic Network Process, which additionally accounts for mutual influence between the two dimensions, yields a very similar result (environmental = 0.520; physical-infrastructural = 0.480). The close agreement between the Analytic Hierarchy Process and the Analytic Network Process rankings indicates that, with only two criteria under comparison, explicitly modeling feedback between dimensions does not materially change the resulting priorities: the environmental dimension is favored by a narrow margin under both approaches. This pattern is expected, since interdependency effects have more scope to alter a ranking when three or more criteria compete for priority; with a two-element comparison, the Analytic Network Process necessarily converges closely on the Analytic Hierarchy Process solution. This result is best read as indicating near parity between the two dimensions from the expert-elicitation perspective, rather than a decisive prioritization of one dimension over the other, and it motivates the broader criteria set recommended in the Conclusion for future applications of the network-based approach.

This near parity between dimensions in the expert-based prioritization should be read alongside the resident-survey evidence reported above, which shows a modestly stronger association between the physical-infrastructural dimension and overall quality of life ($r = 0.80$) than between the environmental dimension and overall quality of life ($r = 0.76$), together with a larger standardized mean difference between neighborhoods for physical-infrastructural indicators (Hedges' $g \approx 1.0$) than for environmental indicators (Hedges' $g \approx 0.8$). Rather than treating the two lines of evidence as contradictory, they are best interpreted as addressing different questions: the correlational and effect-size results describe which dimension is more strongly tied to residents' current evaluations of quality of life, whereas the Analytic Hierarchy Process/Analytic Network Process results describe experts' comparative judgments about which dimension warrants relatively greater policy attention going forward. Given the narrow margin separating the two dimensions in the expert-based prioritization (approximately 52% vs. 48% of the combined weight in both models), this study does not find strong evidence that one dimension categorically outranks the other; instead, the pattern supports a balanced intervention strategy that treats physical-infrastructural and environmental improvements as similarly high priorities, pursued jointly where possible given their strong inter-dimensional correlation ($r = 0.71$). (Tab. 4)

Table 4: Priority weights and ranks of quality-of-life dimensions (AHP and ANP)

Dimension	AHP weight	AHP rank	AHP CR	ANP weight	ANP rank
Environmental	0.522	1	N/A[a]	0.520	1
Physical-infrastructural	0.478	2	N/A[a]	0.480	2

Interpretation and policy implications

The findings support the proposition that Rasht's urban quality of life is strongly influenced by structural or "hard" variables—particularly environmental conditions and physical infrastructure. The planned neighborhood (Manzarieh) consistently outperforms the organic neighborhood (Saghrisazan) in perceived safety, mobility facilities, access to services, and key environmental comfort indicators, including access to green spaces. This pattern is consistent with Iranian and international evidence indicating that

newer planned developments generally provide more standardized infrastructure and service provision (Ghazanfarpour et al., 2020; Gur and Koyun, 2025). Similarly, morphological evaluations in other major Iranian cities confirm that the physical configuration of planned neighborhoods exhibits significantly higher infrastructural resilience and adaptability compared with the dense and vulnerable configurations of traditional organic fabrics (Sharifi et al., 2021). With regard to environmental amenities, large-scale spatial analyses further demonstrate that residents in planned developments often experience greater exposure to green environments than those living in dense historic cores (Song et al., 2020).

Beyond descriptive contrasts, the combined correlational, MANOVA, and ANP findings provide two policy-relevant insights. First, environmental quality is not merely a parallel dimension of QoL; alongside the physical-infrastructural dimension, it is among the strongest correlates of overall QoL (r=0.76) and is weighted narrowly ahead of the physical-infrastructural dimension in the expert-based prioritization. This association aligns with recent large-scale structural equation models, which demonstrate that improving perceived urban-environment quality contributes more than 70% to citizens' life satisfaction in international contexts (Nicolás-Martínez et al., 2024). This implies that environmental improvements such as noise mitigation, green space provision, and waste and drainage management can unlock broader QoL benefits and amplify the returns of physical interventions. Second, the strong inter-dimensional correlation between physical-infrastructural and environmental conditions (r=0.71) suggests that residents perceive infrastructure performance through an environmental lens; for example, drainage failure, poor pavement, and limited greenery may jointly signal 'low-quality urban living'. Importantly, the organic fabric's disadvantages are not only aesthetic but functional: limited accessibility and aging utility networks can reduce the effectiveness of municipal services and intensify environmental discomfort. As a result, upgrading strategies for historic neighborhoods should prioritize environment-sensitive retrofitting rather than purely geometric modernization.

Limitations

Several limitations should be considered when interpreting these findings. First, the study is confined to two neighborhoods within a single city, so the results may not generalize to other organic-planned fabric pairs or to cities with different morphological, climatic, or institutional contexts. Second, the cross-sectional design captures perceptions at a single point in time and cannot establish causal or longitudinal relationships between urban form and quality of life. Third, all indicators were based on residents' self-reported perceptions rather than objective technical measurements, which may introduce common-method bias and social-desirability effects. Fourth, the stratified sample was proportional to neighborhood population size, but this produced a pronounced imbalance between Saghrisazan (68 respondents) and Manzarieh (309 respondents); estimates for Saghrisazan are therefore less precise and should be interpreted with greater caution. Fifth, and most importantly, the two neighborhoods differ compositionally as well as morphologically: Saghrisazan's population is markedly older, less formally educated, and lower-income than Manzarieh's (Tab. 2), and perceptions of infrastructure and environmental quality are known to vary with age, income, education, and length of residence. The between-neighborhood comparisons reported here (t-tests and MANOVA) do not adjust for these compositional differences, so the observed gap in perceived quality of life cannot be attributed to urban fabric type alone and should be read as an associational, not causal, difference until confirmed by covariate-adjusted analysis (e.g., MANCOVA or multiple regression controlling for age, income,

education, and tenure) using the underlying respondent-level data. Sixth, overall quality of life was operationalized as a composite of the physical-infrastructural and environmental items rather than as an independent global item; the dimension-to-overall correlations reported in the Results are therefore part-whole correlations, are likely inflated relative to what an independent criterion measure would show, and should be interpreted accordingly. Seventh, internal-consistency reliability (e.g., Cronbach's alpha or composite reliability) for each dimension was not computed for this dataset, and the exploratory factor analysis reported in Table 1 reflects dominant item loadings and variance explained rather than a full rotated loading matrix with communalities and eigenvalues; reporting both in full is recommended for future work, particularly given the comparatively modest total variance explained (40%) and the weak dominant loading obtained for the environmental factor (0.303). Eighth, the priority weights derived from the Analytic Hierarchy Process and the Analytic Network Process reflect the judgments of a panel of municipal managers whose number, selection criteria, and elicitation protocol are not fully documented here; reporting these details in full, together with the complete pairwise comparison matrices, is recommended for future applications. Finally, restricting the network-based prioritization to two dimensions limits the extent to which interdependency effects between criteria can be observed (see Results); extending the criteria set to include economic and socio-cultural dimensions, as recommended in the Conclusion, would allow a fuller test of the added value of network-based over simpler hierarchical weighting.

RESULTS AND CONCLUSION

This study examined perceived physical-infrastructural and environmental determinants of urban quality of life in two morphologically distinct neighborhoods of Rasht and prioritized intervention drivers using correlational and multivariate analysis alongside the Analytic Hierarchy Process and the Analytic Network Process. The findings demonstrate a substantial disparity between the planned and organic urban fabrics. The planned neighborhood consistently outperforms the organic fabric across physical and environmental indicators, with large effect sizes, indicating a pronounced infrastructural gap. Environmental and physical-infrastructural conditions both emerge as strongly associated with overall quality of life ($r = 0.76$ and $r = 0.80$, respectively), with physical-infrastructural conditions showing the somewhat stronger association. When the two dimensions are compared through the Analytic Network Process, which accounts for mutual influence between them, the environmental dimension is assigned a narrowly higher weight (0.520) than the physical-infrastructural dimension (0.480); the Analytic Hierarchy Process yields a closely comparable split (0.522 vs. 0.478). Together, these results indicate near parity between the two dimensions rather than a clear ordering, and support a balanced policy approach that treats physical-infrastructural and environmental upgrading as comparably high priorities.

From a policy perspective, municipal investment strategies in Rasht should prioritize environmentally oriented programs, including green-space expansion, noise mitigation, and rehabilitation of waste and stormwater systems. In the organic fabric, upgrading strategies should focus on environmentally sensitive retrofitting such as pedestrian-oriented green improvements and drainage rehabilitation while preserving historic urban structure. In the planned fabric, protection of existing green assets is essential to sustain current environmental advantages and prevent erosion of quality-of-life gains through density-driven land-use conversion. Overall, the study underscores that physical-infrastructural and environmental upgrading offer comparable leverage for improving urban quality of life in morphologically diverse cities. Methodologically, the study demonstrates the value of combining

correlational and multivariate statistical analysis with a network-based multi-criteria approach: while the correlation and MANOVA results identify which dimension most strongly tracks perceived quality of life, the ANP results show how the two dimensions interact with and reinforce one another, offering planners a more systemic basis for sequencing interventions than either technique alone. Because the analysis was limited to two neighborhoods in a single city, based on cross-sectional self-reported data, and focused specifically on physical-infrastructural and environmental conditions, future research should replicate this framework across a larger and more diverse set of organic and planned fabrics, incorporate objective environmental and infrastructural indicators alongside residents' perceptions, and extend the criteria set beyond two dimensions so that the network-based approach can more fully test for interdependency effects. Such extensions would help determine whether the near parity between physical-infrastructural and environmental priorities observed in Rasht holds across different urban and cultural settings, and would allow the priority-setting framework proposed here to inform a broader range of municipal investment decisions.'

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