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Urban Green Space Satisfaction in an Extreme Industrial City: Evidence from Coastal Park, Asaluyeh, Iran

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INTRODUCTION & AIM

Background

Industrial cities in West Asia face a triple challenge: extreme heat, chronic green space deficits, and demographically fragmented populations driven by labour migration. Evidence-based park planning remains scarce in these contexts.

Case Study: Asaluyeh, Iran

Asaluyeh is a petrochemical hub on Iran's Persian Gulf coast (27°28'N, 52°37'E). Rapid industrialization since the late 1990s has left severe gaps in urban green space provision.

Summer temperatures routinely exceed 45°C

Per capita green space: only 0.44 m² (vs. 9 m² WHO recommendation)

Workforce: ~76% male, mostly transient workers separated from families

No empirical study has ranked park satisfaction determinants in an Iranian industrial city.

Research Objectives

Identify and rank factors associated with visitor satisfaction in Coastal Park

Quantify the relative weight of experiential vs. demographic determinants

Assess temporal, spatial, and modal accessibility barriers

Provide evidence-based, culturally sensitive planning recommendations

Study Site: Coastal Park

Coastal Park (6,176 m²) constitutes 91% of Asaluyeh's total public park provision. It is the city's only waterfront green space and is accessible to all demographics (unlike the gender-restricted Women's Park and age-restricted Mother Park).

(Left up) Location of Islamic Republic of Iran; (Left down) Location of Bushehr Province (yellow polygon) and (Right) Asaluyeh City (red triangle). Source: Satellite image © 2025 Google Earth.

Functional zoning and functional distribution of the Coastal Park; Coastal Park (Author, 2025).

METHOD

left and right; general view of Coastal Park; Photo credit: author, 15.4.2024.

Study Design

Mixed-methods in two phases:
(1) systematic field observation and behavioural mapping;
(2) structured questionnaire administration (April 2024).

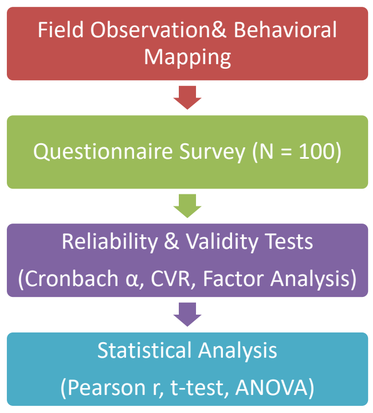
Sampling

- N = 100 respondents
- Stratified convenience sampling; 37% female (oversampled vs. 24% city average)
- Data collection hours: 10:00–12:00 and 18:00–22:00

Instrument

5-point Likert scale; 16 items in four sections:

- Demographic & personal context
- Park usage patterns (frequency, timing, transport, activities)
- Satisfaction assessment (overall, vegetation, alternative park use)
- Social interaction (interaction type, observed activities)



Psychometric Properties

Cronbach's α = 0.856 | CVR = 0.82

KMO = 0.76; Bartlett's p < 0.001 → 4 factors explaining 68% of variance

Analysis

Descriptive statistics, Pearson r, independent t-tests, one-way ANOVA (α = 0.05)

RESULTS & DISCUSSION

Key Finding 1: Vegetation Quality is the Dominant Predictor

Pearson r = 0.45, p < 0.001 — the strongest association with overall satisfaction, surpassing all demographic and socioeconomic variables.

Aligns with Kaplan's Restorative Environment Theory. Vegetation (particularly Ficus and Conocarpus) provides critical thermoregulatory microenvironments in Asaluyeh's extreme climate. This finding justifies prioritising shade-canopy planting over decorative hardscaping.

Key Finding 2: Gender Disparity in Satisfaction

Male M = 3.9 (SD 0.8) vs. Female M = 3.5 (SD 0.9) — t = 2.15, p = 0.045

The gap reflects design inadequacy, not absent demand. Women's Park (118 m²) shows 1–2 hour mean visit durations—evidence of intense latent demand when culturally appropriate conditions are met.

Key Finding 3: Extreme Temporal Concentration

76% of visits on weekend evenings | only 2% weekend daytime

The near-total absence of daytime visits reflects functional exclusion due to heat exposure. Shade is not an amenity—it is equity infrastructure. Users with daytime obligations (carers, elderly, shift workers) are systematically excluded.

Key Finding 4: Transport Dependency & Social Function

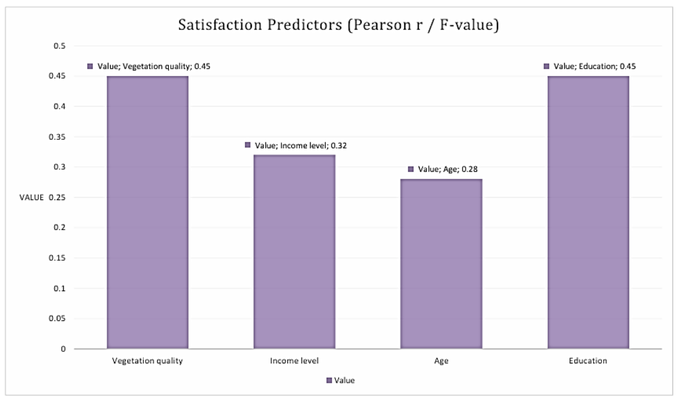
84% arrive by private car | 79% prefer public parks over private gardens

High car dependency signals an infrastructural deficit, not preference. The public-over-private paradox (79% prefer public parks despite 43% having private gardens) confirms parks' irreplaceable social integration function.

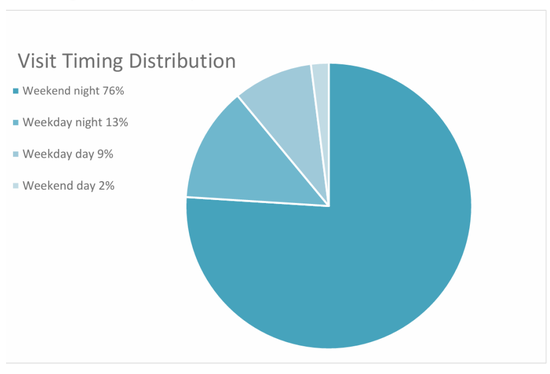
Social Interaction: 79% group visits; 52% family gatherings; only 11% with strangers

Satisfaction Ranking Summary

1st Perceived vegetation quality r = 0.45 p < 0.001
2nd Income level r = 0.32 p = 0.017
3rd Age r = 0.28 p = 0.031
4th Educational attainment (social interaction) F = 3.24 p = 0.022



Ranking of satisfaction predictors. Source: Behfar et al. (2026).



Temporal distribution of visits to Coastal Park, Asaluyeh. Source: Behfar et al. (2026).

CONCLUSION

- Vegetation quality is the primary satisfaction driver (r = 0.45), surpassing all demographic variables. Canopy investment must take priority over decorative hardscaping.
- Gender disparity in satisfaction is addressable through gender-sensitive design: clustered seating, semi-enclosed family zones, and improved lighting.
- Shade is equity infrastructure: urgent canopy expansion is needed in thermally exposed zones (1, 3, 4, 6) to eliminate daytime exclusion.
- Distributed neighborhood green spaces and public transport integration are essential for spatial justice and equitable park access.

FUTURE WORK / REFERENCES

Theoretical Contribution

Extends Restorative Environment Theory (Kaplan, 1995) to an underexamined industrial Islamic context, demonstrating that vegetation's restorative benefits operate even under extreme climatic and industrial stress. Operationalizes thermal comfort and transport connectivity as environmental justice dimensions.

Practical Contribution

Provides empirically grounded investment priorities for municipal authorities in Iran and comparable industrial Islamic cities. Limited budgets need not impede evidence-based planning: the strong vegetation–satisfaction correlation (r = 0.45) indicates that strategic arboreal investment yields substantial satisfaction returns.

Future Research Framework

- Longitudinal design across seasons to capture summer exclusion patterns
- Objective microclimatic monitoring (canopy cover index, wet-bulb globe temperature)
- Expand sampling to non-users and transient workers | GIS-based equity mapping
- Replication in comparable industrial Islamic cities (Jubail, Doha, Bandar Imam)

Key References

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