

Abstract

The built environment of neighborhoods influences the health and well-being of residents. One approach to understanding the impact of such an influence is studying the memorability of architectural features (AFs) in streetscapes. This will allow us to propose neighborhood designs that would promote people's health and well-being throughout AFs. However, AFs in streetscapes are not universal and they need to be studied in specific historical, cultural, and geographical contexts. To analyze the memorability of AFs in streetscapes in South Texas, we aimed to create a collection of architectural places representative of South Texas and analyzed the memorability of the place's AFs.

Methods

We photographed three cities of the Rio Grande Valley – located in the south of Texas – and collected 146 pictures of different buildings and landscapes around Harlingen, Brownsville, and Rancho Viejo cities. A trained architect obtained those photographs and rated six main AFs of each photograph, which included (i) contrast colors, (ii) ornaments, (iii) vernacular material, (iv) awnings, (v) rhythm, patterns, and symmetry, and (vi) organic shapes (**Figure 1**). In addition, we calculated a memorability score by using the ResMem free software created by Bainbridge in 2022. This software generates metadata for each image in the database, creating a comprehensive and searchable catalog of architectural elements. The proportion of the six AFs and the memorability scores were reported and compared among the three cities. We used chi-square and analysis of variance for comparisons among the three cities.

Results

Of the 146 collected photographs, 53 (36.3%) were from Brownsville, 47 (32.2%) from Rancho Viejo, and 46 (31.5%) from Harlingen (**Table 1**). Among the six AFs we analyzed, we observed that contrast colors, ornaments, and rhythm were distributed significantly different among the three cities ($P \leq 0.027$). Harlingen had the highest proportion of contrast colors (39.1% vs. 22.6% and 12.8%) and ornaments (13.0% vs. 6.4% and 0%). Rhythm and symmetry were more common in Brownsville (54.7%) compared to Harlingen (26.1%) and Rancho Viejo (6.4%). Regarding the memorability score (**Figure 3**), the mean distribution among the three cities was significantly different ($P = 0.010$), with Harlingen city having the highest mean score (0.68 points) compared to Brownsville and Rancho Viejo cities (0.64 points).

Conclusions

AFs among three cities of South Texas showed differences, especially with elements of contrasts color, unique features, and patterns. The memorability of buildings also differed among the cities.

Future Studies

- Due to the inconvenience of photographing places across the United States, we are validating whether using screenshots from Google Street View will suffice the analysis of AFs and memorability. We will report intra and inter reproducibility of both metrics.
- Collection of AFs will constitute a robust resource for studying the impact of AFs on health.
- Understanding AFs will not only serve as a valuable tool for academic research but also to provide a solid foundation for policy-makers, urban planners, and community leaders.

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Results

Figure 1. Architectural features and memorability.

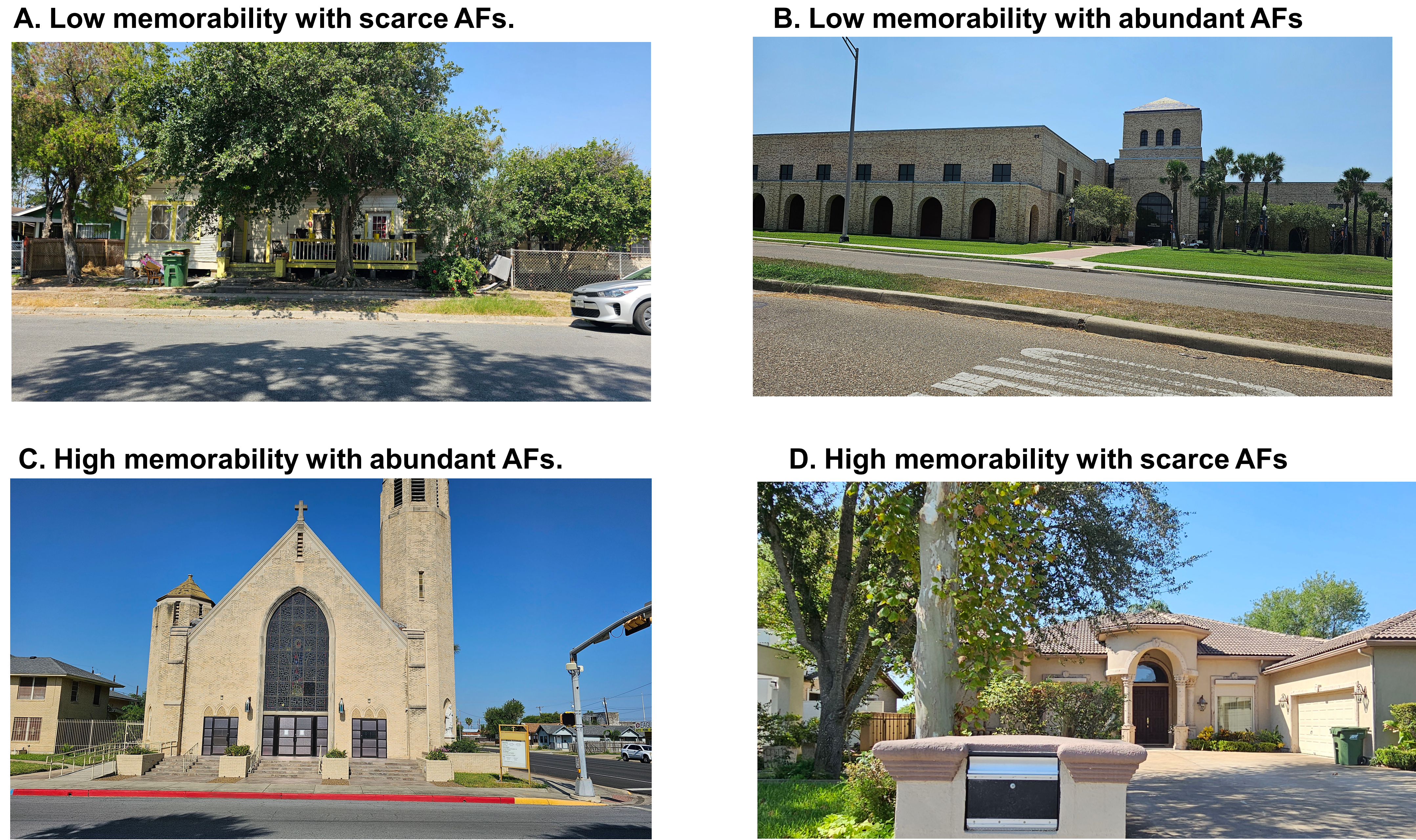


Table 1. Distribution and Comparison of Architectural Features in the Rio Grande Valley.

Architectural Features	All Photographs (n = 146)	Brownsville (n = 53)	Ranch Viejo (n = 47)	Harlingen (n = 46)	P Value*
Contrast Colors	36 (24.7)	12 (22.6)	6 (12.8)	18 (39.1)	0.012
Ornaments	9 (6.2)	0 (0)	3 (6.4)	6 (13.0)	0.027
Vernacular Material	80 (54.8)	24 (45.3)	29 (61.7)	27 (58.7)	0.210
Awnings	1 (0.7)	0 (0)	1 (2.1)	0 (0)	0.346
Rhythm, Symmetry	44 (30.1)	29 (54.7)	3 (6.4)	12 (26.1)	<0.001
Organic Shapes	53 (36.3)	14 (26.4)	23 (48.9)	16 (34.8)	0.063

Data is tabulated as frequency and proportions (%)

*P value of the comparison of proportions among the three cities.

Figure 3. Memorability Scores Among the Three Cities of the Rio Grande Valley.

