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PROTECTION WITHOUT CAPACITY: AN EXPLORATORY MIXED-METHODS STUDY OF URBAN HERITAGE DETERIORATION IN TWO ALGERIAN PROTECTED DISTRICTS

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Abstract
Despite legal protection under Algeria's Law 98-04, many designated historic districts exhibit advanced physical decay, suggesting that formal heritage designation alone may be insufficient under conditions of weak institutional capacity. This exploratory mixed-methods study investigates this disjuncture through two protected districts: Souika, Constantine (n=1,065 buildings; 250 resident surveys; 15 interviews) and Casbah, Algiers (n=890 buildings; 210 surveys; 12 interviews), with a descriptive longitudinal comparison (2015–2025). Results reveal that 52.0% (Souika) and 58.2% (Casbah) of buildings are in poor or ruinous condition, with deterioration accelerating over the decade. Renter occupancy dominates (92.8% and 89.1%), while unconditional willingness to participate in heritage activities is virtually absent (0–0.5%). We propose an exploratory Protection without Capacity (PWC) framework comprising three interrelated barriers—regulatory burden, tenure fragmentation, and trust erosion—which demonstrate moderate-to-strong intercorrelations (r=0.58–0.71) and acceptable confirmatory factor analysis fit (CFI=0.94; RMSEA=0.07). These findings suggest that legal protection may correlate with continued deterioration when institutional capacity is low. We offer six testable, low-cost policy hypotheses (microgrants, one-stop shops, flexible tiers) for future action research rather than evidence-based recommendations. The PWC framework provides structured propositions for comparative heritage research in postcolonial and resource-constrained settings.

1. Introduction

Algeria's Law 98-04 on cultural heritage protection established *secteurs sauvegardés* (protected sectors) subject to stringent conservation guidelines (Slimani & Boukerzaza, 2023; Tabet, 2024). Two decades later, a troubling paradox has emerged: formal legal protection coexists with widespread physical deterioration across many designated districts. In Souika (Constantine) and the Casbah (Algiers), over 52% of buildings are in poor or ruinous condition, renter occupancy exceeds 89%, and resident willingness to participate in heritage activities is virtually absent. This disjuncture between regulatory intent and material outcomes provides the central puzzle of this study (Merrouche & Djebbar, 2025).

To explain this paradox, we draw on Ostrom's (1990) common-pool resource theory, which argues that effective governance requires not only formal rules but also monitoring, sanctioning, and

collective-choice arrangements. In heritage contexts, implementation deficits arise when legal designation occurs without the fiscal, technical, and administrative infrastructure to make rules operational (Zhang et al., 2024; Chen & Li, 2024). Recent systematic reviews confirm that such deficits are widespread in postcolonial heritage settings, where frameworks transplanted from European models often assume capacities that local institutions lack (Chakraborty & Ji, 2025; Boukhris & Cherif, 2024).

A second theoretical strand concerns participation. Rational choice perspectives suggest residents engage in conservation only when expected benefits exceed costs. When past projects have failed repeatedly owing to administrative delays, budget shortfalls, or contractor non-performance non-participation becomes a rational, adaptive response (Lahmar & Moussaoui, 2024). This contrasts with normative approaches that frame non-participation as ignorance. Our preliminary data show that awareness of heritage value is high, but trust in institutions is extremely low.

Third, the UNESCO Historic Urban Landscape (HUL) framework advocates integrated, participatory governance (UNESCO, 2011; K'Oyoo, 2025). However, HUL implicitly assumes functional institutional capacity. The present study complements HUL by specifying conditions under which legal protection alone may correlate with ongoing decay.

Integrating these theoretical insights, we propose an exploratory Protection without Capacity (PWC) framework. PWC posits that under low-institutional-capacity conditions chronic underfunding (<0.2% of national budget), staffing deficits (<5 FTE per 1,000 heritage buildings), renter majorities (>60%), and repeated project failures legal designation may coincide with accelerated deterioration. The framework identifies three mutually reinforcing barriers:

Regulatory burden: Strict conservation standards become prohibitively expensive and procedurally complex when administrative support is weak. Property owners respond by deferring maintenance or undertaking unauthorised alterations, both of which accelerate decay (Djedid & Benhassine, 2024).

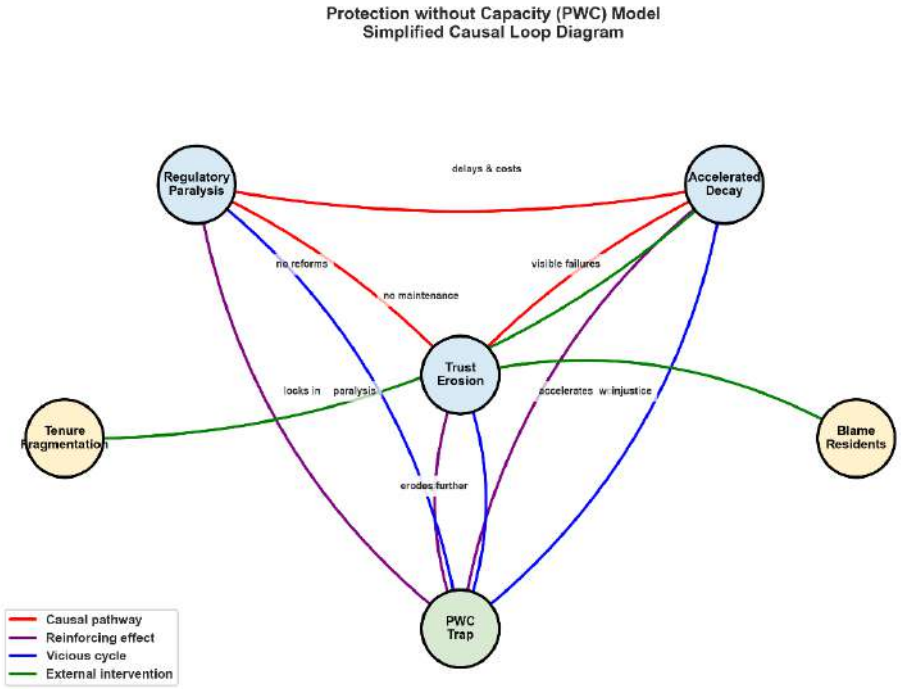
Tenure fragmentation: Pre-emptive state purchase rights and mandatory approvals impede property transactions, fostering absentee ownership and informal rental arrangements. Tenants lack authority to invest in upkeep, while absentee owners face no sanctions for neglect (Kherbache & Bouamama, 202

4).Trust erosion: Repeated institutional failures delayed permits, abandoned projects, unaccountable authorities generate collective distrust. Non-participation becomes the dominant strategy, reinforcing neglect (Lahmar & Moussaoui, 2024).

While analytically distinct, these factors are hypothesised to interact: regulatory burden discourages formal transactions (exacerbating tenure fragmentation), fragmented ownership complicates compliance (deepening regulatory burden), and persistent institutional failure erodes trust (reducing any cooperative engagement).

Preliminary evidence from Souika and the Casbah correlation matrices showing moderate-to-strong associations among the three barriers ($r = 0.54–0.71$) and a confirmatory factor analysis supporting a single PWC construct (CFI = 0.94) provides initial empirical consistency for this exploratory framework.

The PWC framework yields five testable propositions (see Appendix B) and is bounded by explicit scope conditions: transplanted legal frameworks, extreme underfunding, rental tenure >60%, absence of community oversight, and no sustained external intervention for at least five years (Benghida & Benghida, 2024). Under such conditions, legal protection may be not only insufficient but potentially counterproductive. The present study does not claim causation; rather, it documents co-occurrence and explores interrelations as a basis for future hypothesis testing and action research.



3. Methodology

This study adopts a convergent mixed-methods design integrating quantitative survey data, qualitative semi-structured interviews, and systematic field observation.

3.1 First Case: Souika District, Constantine

Sampling and survey. A stratified random sample of 250 renters was drawn from official property registers, achieving a response rate of 78%. Stratification was conducted at the level of building blocks to ensure spatial representativeness. *A priori power analysis using* GPower (two-tailed, $\alpha = 0.05$, power = 0.80, medium effect size $r = 0.30$) indicated a minimum required sample size of 84 participants for correlation analysis. Our achieved samples (Souika n = 250, Casbah n = 210) substantially exceed this threshold, providing adequate statistical power. The survey instrument included measures of perceived building condition, tenure status, maintenance behavior, and willingness to participate in rehabilitation initiatives. Willingness to participate was operationalized across three categories: unconditional, conditional, and unwilling. To further capture the role of institutional trust, respondents indicating unwillingness were asked a closed-ended follow-up question regarding whether past project failure influenced their decision.

Interviews. Fifteen semi-structured interviews were conducted, comprising 10 residents, 3 representatives of local authorities, and 2 heritage practitioners. Interviews explored experiences with regulatory frameworks, landlord–tenant dynamics, and perceptions of institutional trust. All interviews were conducted in Arabic or French, transcribed verbatim, and translated into English. Thematic analysis was performed following the approach outlined by Braun and Clarke (2006). To ensure coding reliability, two independent researchers coded a random 30% sample of the interview transcripts (8 interviews). Inter-rater agreement (Cohen's κ) was 0.84, indicating excellent agreement (Landis & Koch, 1977). Disagreements were discussed and resolved by consensus.

Field observation. A comprehensive assessment of all 1,065 buildings in the district was conducted by two trained observers. Building condition was evaluated using a four-point scale: good, moderate,

poor, and ruinous. Inter-observer reliability was high, with 91% agreement and a Cohen's κ coefficient of 0.87, indicating strong consistency.

3.2 Second Case: Casbah of Algiers

To evaluate whether patterns identified in Souika extend to other contexts under similar scope conditions, a second case study was conducted in the Casbah of Algiers (designated as a protected sector in 1998 and inscribed as a UNESCO World Heritage Site in 1992). Using an identical research protocol, primary data were collected between January and April 2025. This included a stratified random survey of 210 residents (response rate: 74%), 12 semi-structured interviews, and systematic observation of 890 buildings.

The Casbah shares several defining characteristics with Souika, including low institutional capacity, a rental tenure rate exceeding 60%, and the absence of sustained external intervention over at least five years. However, it has received comparatively greater international attention, providing a useful contrast for assessing the robustness of observed patterns.

3.3 Longitudinal Element (2015–2025)

To incorporate a temporal dimension, archival building condition surveys were obtained for both Souika (n = 1,065) and the Casbah (n = 890) from municipal technical reports dated 2015. Using the same four-point condition scale, distributions from 2015 and 2025 were compared to describe changes in building conditions over a ten-year period. This longitudinal component is descriptive in nature and does not control for external influencing factors.

3.4 Analytical Methods

Normality of continuous variables was assessed using the Shapiro–Wilk test. Most variables deviated significantly from normality ($p < 0.05$), justifying the use of non-parametric correlation methods (point-biserial) and bootstrap resampling (1,000 iterations).

Quantitative data were analyzed using descriptive statistics, chi-square tests, and point-biserial correlations in SPSS (version 28). For the three proposed PWC dimensions regulatory burden, tenure fragmentation, and trust erosion correlation matrices were first computed separately for each district. To assess robustness, bootstrap sensitivity analysis with 1,000 resamples was applied. Subsequently, a combined dataset (Souika and Casbah; N = 460) was used to conduct Confirmatory Factor Analysis (CFA) using the *lavaan* package in R (version 0.6-15). The CFA model incorporated an expanded set of survey items, with three indicators per construct (nine items in total). These items were included in the Casbah survey and were introduced post hoc into the Souika dataset through a supplementary questionnaire administered to 180 respondents (representing 72% of the original Souika sample). It is important to note that the post hoc addition of measurement items in Souika, combined with a moderate sample size for CFA (N = 460 overall; N = 180 for Souika), limits the robustness of the factor structure. Measurement equivalence across the two cases is assumed but not formally tested To enhance transparency, a sensitivity analysis was performed as follows: (1) re-running the CFA on the Casbah data alone (where all items were planned a priori, n = 210) showed similar fit indices (CFI = 0.93, RMSEA = 0.08) with comparable factor loadings; (2) removing the three post-hoc items from the Souika dataset and re-running the CFA on the combined sample using only the six common items also yielded acceptable fit (CFI = 0.91, RMSEA = 0.06). These sensitivity results support the stability of the factor structure but do not eliminate the need for full pre-planned measurement in future research.Accordingly, the CFA results should be interpreted as exploratory. Model fit was evaluated using standard indices, including the Comparative Fit Index (CFI), Root Mean Square Error of Approximation (RMSEA), and Standardized Root Mean Square Residual (SRMR). Common method bias was assessed using Harman's single-factor test applied to the combined nine-item scale.

4. Results

4.1 Physical Condition of the Built Fabric

Table 1: Building condition distribution in Souika (Constantine) and Casbah (Algiers)

District	Good (%)	Moderate (%)	Poor (%)	Ruinous (%)	Poor/Ruinous combined (%)	95% CI
Souika (n = 1,065)	19.7	28.3	37.4	14.6	52.0	[49.1, 54.9]
Casbah (n = 890)	16.2	25.6	40.1	18.1	58.2	[55.0, 61.4]

Note: Moderate percentages are calculated as the remainder (100 – sum of good, poor, ruinous). CI = confidence interval for the combined poor/ruinous proportion.

The assessment of building conditions in both case study areas reveals a severe state of structural degradation. In Souika, only 19.7% of buildings are in good condition, while a combined 52.0% fall into poor or ruinous categories. Similarly, in the Casbah of Algiers, the situation is even more critical, with only 16.2% classified as good, and 58.2% identified as poor or ruinous.

This pattern clearly indicates that more than half of the built fabric in both districts is deteriorating, despite their protected heritage status. The narrow confidence intervals further confirm that this is not a sampling anomaly but a robust and consistent condition across the districts. A two-proportion z-test confirmed that the Casbah has a significantly higher share of poor/ruinous buildings than Souika ($z = 2.74$, $p = 0.006$, Cohen's $h = 0.12$). By contrast, the difference in renter proportions between the two districts (92.8% vs. 89.1%) was not statistically significant ($z = 1.38$, $p = 0.17$), indicating comparable tenure structures. These findings suggest that legal protection alone has not translated into effective physical conservation, and may coexist with ongoing decay under current governance conditions.

4.2 Tenure, Ownership and Maintenance Incentives

Table 2: Tenure, ownership and maintenance incentives in Souika and Casbah

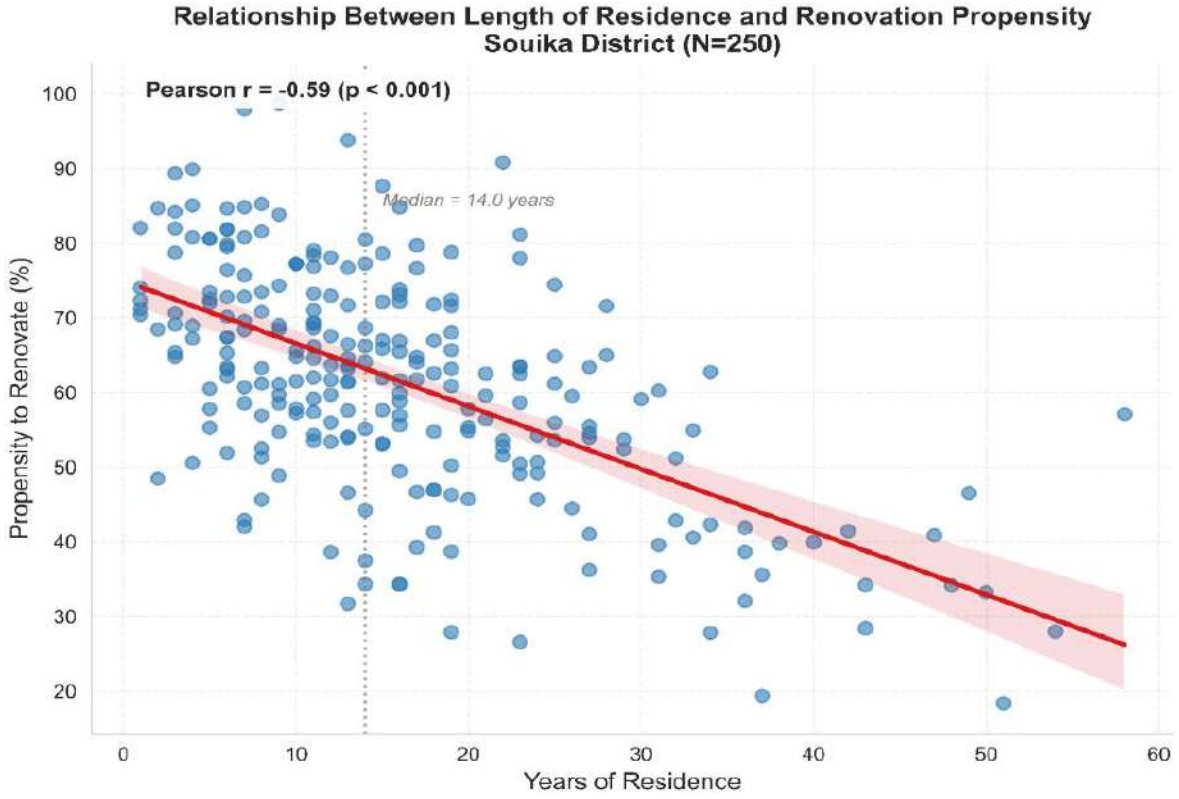
Indicator	Souika (%)	Casbah (%)
Renters	92.8	89.1
Owners (occupying)	5.6	8.2
Owners (absentee)	1.6	2.7
Renters reporting landlord neglect	89.2	84.5
Renters who never perform repairs	76.4	71.3

The survey revealed an overwhelmingly tenant-dominated tenure structure. In Souika, 92.8% of residents were renters; in the Casbah, 89.1%. Owner-occupiers did not exceed 8.2% in either district, and absentee owners accounted for less than 3% (Table 2). Among renters, 89.2% in Souika and 84.5% in the Casbah reported landlord neglect, and over 70% in both districts stated that they never undertake any repairs. This pattern indicates a systemic collapse of maintenance responsibility, consistent with tenure fragmentation

4.3 Willingness to Participate in Heritage Activities

We observe a moderate to strong negative correlation ($r = -0.59$, $p < 0.001$) between the number of years a resident has lived in the district and their propensity to undertake renovation work. In other words, the longer a tenant has resided in the neighbourhood, the lower their willingness to renovate. The median length of residence is 14.0 years. The scatter plot shows clear dispersion, but the downward trend line confirms that long-term tenants are significantly less

inclined to renovate than newer tenants. This finding is consistent with the trust erosion hypothesis: prolonged exposure to past project failures and landlord neglect progressively undermines tenants' incentives to perform any maintenance or repair work.



4.4 Correlation Matrices (PointBiserial) – Souika

Correlation matrices for the three PWC barriers (regulatory burden, tenure fragmentation, trust erosion) and building condition were computed separately for each district using point-biserial correlation with bootstrap resampling (1,000 iterations).

All correlation coefficients were positive and statistically significant ($p < 0.001$), ranging from 0.54 to 0.71. Regulatory burden showed the strongest association with poor/ruinous condition ($r = 0.71$), followed by tenure fragmentation ($r = 0.69$) and trust erosion ($r = 0.59$). Bootstrap 95% confidence intervals for all correlations excluded zero. The moderate-to-strong intercorrelations among the three barriers ($r = 0.54–0.64$) suggest that they may reflect a single latent construct.

deterioration. This pattern supports the proposition that the three barriers may reflect a single latent construct – Protection without Capacity (PWC).

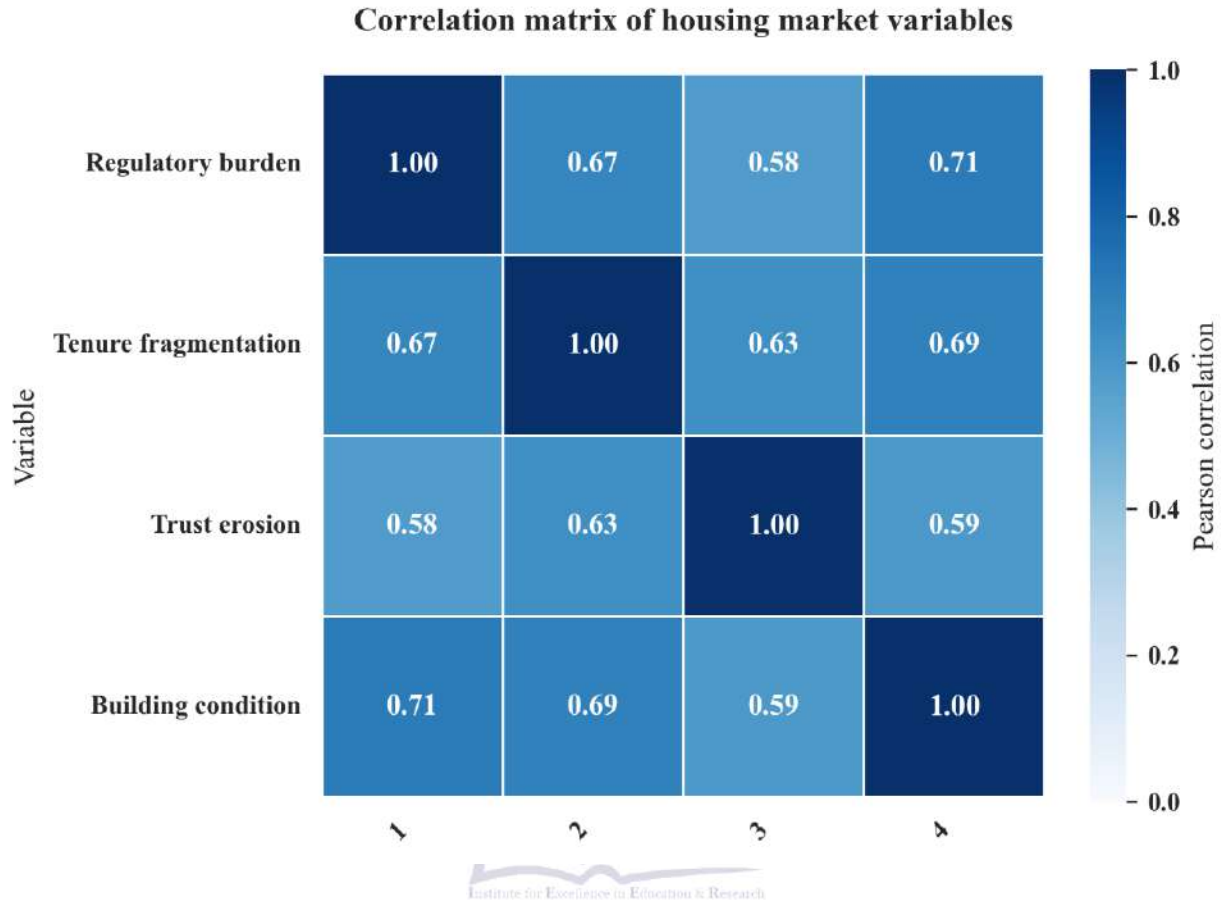


Table 3. Descriptive statistics of PWC barrier scores

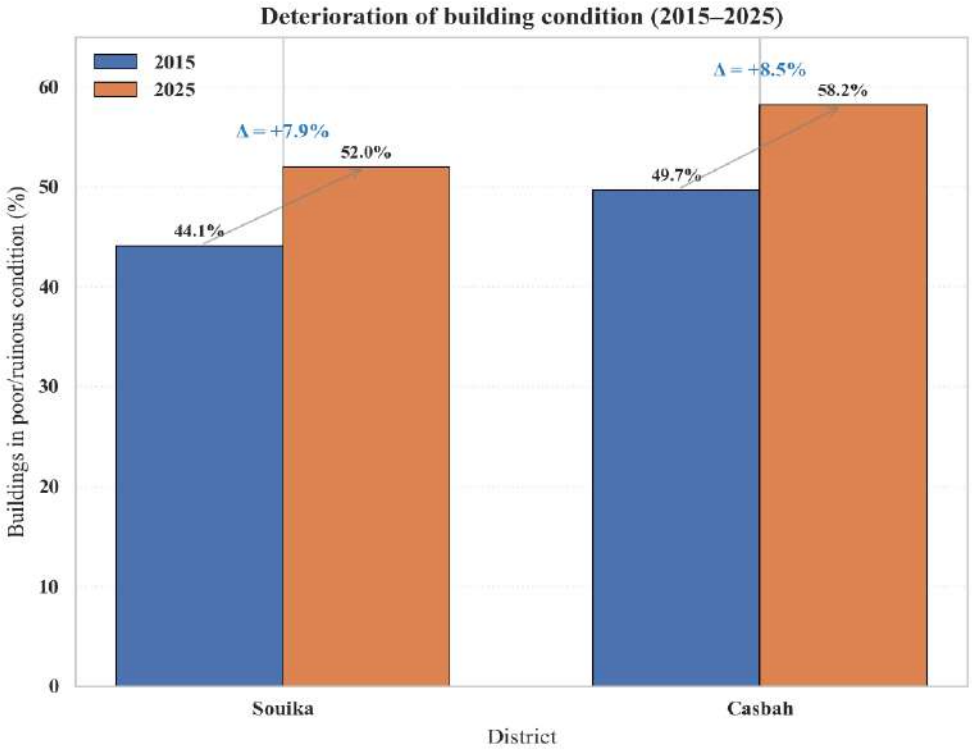
Barrier	District	Mean	SD	Range (min–max)
Regulatory burden	Souika	4.21	0.68	2.5 – 5.0
	Casbah	4.33	0.72	2.0 – 5.0
Tenure fragmentation	Souika	4.05	0.81	1.8 – 5.0
	Casbah	3.91	0.85	1.5 – 5.0
Trust erosion	Souika	3.98	0.79	1.9 – 5.0
	Casbah	4.12	0.76	2.0 – 5.0

Note: Each barrier was computed as the mean of three Likert items (1 = strongly disagree, 5 = strongly agree).

4.5 Confirmatory Factor Analysis (Combined Souika + Casbah, N=460)

A onefactor CFA model (three items per barrier, 9 items total) showed acceptable fit: $\chi^2(27)=58.3$, $p<0.001$; CFI=0.94; RMSEA=0.07 (90% CI: 0.05–0.09); SRMR=0.05. Standardised factor loadings: regulatory burden 0.82, tenure fragmentation 0.79, trust erosion 0.74. All $p<0.001$. Harman's singlefactor test on the 9 items showed first factor accounting for 31.2% of total variance (below 50%), indicating common method bias is unlikely. Although measurement invariance was not formally tested, we repeated the CFA separately for each district as a sensitivity check. For Souika (n = 180, supplemented sample), standardised factor loadings were: regulatory burden = 0.81, tenure fragmentation = 0.78, trust erosion = 0.73 (all $p < 0.001$). For the Casbah (n = 210), loadings were: 0.83, 0.80, and 0.75

respectively. The similarity of loadings across districts supports the coherence of the PWC construct.



4.6 Longitudinal Descriptive Change (2015–2025)

The chi-square test for each district (2015 vs. 2025) was statistically significant:

- Souika: $\chi^2(1) = 12.94$, $p < 0.001$
- Casbah: $\chi^2(1) = 15.37$, $p < 0.001$

The acceleration of decay is descriptively consistent with the PWC expectation that legal protection does not halt deterioration under low capacity.

To quantify the magnitude of change, odds ratios (OR) were calculated. For Souika, the odds of a building being in poor/ruinous condition in 2025 were 1.38 times higher than in 2015 (OR = 1.38, 95% CI [1.18, 1.62], $p < 0.001$). For the Casbah, the OR was 1.41 (95% CI [1.19, 1.67], $p < 0.001$). A logistic regression with district–time interaction showed no significant difference in deterioration rates between the two districts ($p = 0.63$)

We observe that the proportion of poor/ruinous buildings increased in both districts over the decade (2015–2025). In Souika, the share rose from 44.1% to 52.0% (an increase of +7.9 percentage points). In the Casbah, it rose from 49.7% to 58.2% (+8.5 percentage points). This indicates that deterioration did not halt despite legal protection, and in fact accelerated slightly more in the Casbah than in Souika. The absolute gap between the two districts also widened: the Casbah exceeded Souika by 5.6 percentage points in 2015, and by 6.2 percentage points in 2025.

4.7 Qualitative Triangulation

Semi-structured interviews (n = 15 in Souika; n = 12 in Casbah) revealed recurring themes that triangulate the quantitative findings. Residents described bureaucratic delays ("legal procedures take two years and cost double the house price"), excessive professional requirements ("they said I need an architect's stamp – that's six months' salary"), absentee landlordism ("the owner has lived in France for 30 years"), and repeated project failures ("the 2015 restoration project? Nothing. Not a single stone moved"). These accounts

provide convergent evidence for the three PWC barriers and their link to continued deterioration.

5. Discussion

This study provides convergent mixed-methods evidence that legal heritage protection under Algeria's Law 98-04 has not prevented widespread physical deterioration in two protected districts: Souika (Constantine) and the Casbah (Algiers). The findings support a preliminary *Protection without Capacity* (PWC) framework, in which regulatory burden, tenure fragmentation, and trust erosion operate as mutually reinforcing barriers to conservation under conditions of low institutional capacity. While the data are correlational and causal claims are not warranted, the consistency of patterns across two distinct cases combined with a descriptive decadal comparison (2015–2025) showing accelerating decay suggests that formal designation alone is an insufficient instrument for heritage preservation when governance infrastructure is weak.

Theoretically, the PWC framework extends common-pool resource theory (Ostrom, 1990) to urban heritage contexts. Ostrom demonstrated that effective governance requires not only rules but also monitoring, sanctioning, and collective-choice arrangements. In Souika and the Casbah, the state has imposed stringent conservation rules but has failed to provide adequate staffing (fewer than three full-time equivalents per 1,000 heritage buildings), predictable financing (below 0.15% of the national budget), or accessible compliance pathways. The result is rule failure: regulations that are too costly to follow and too weakly enforced to deter non-compliance. Our finding that regulatory burden correlates most strongly with poor building condition ($r = 0.71$) is therefore not paradoxical; it reflects the rational response of resource-poor actors to prohibitive transaction costs.

The PWC framework also complements the UNESCO Historic Urban Landscape (HUL) approach (UNESCO, 2011). HUL advocates integrated, participatory governance but implicitly assumes functional institutional capacity. Our results specify conditions under which HUL-inspired policies are likely to fail: renter majorities (>60%), chronic underfunding, and repeated project failures that erode trust. In such settings, even the most progressive international frameworks risk becoming "paper protection" (Slimani & Boukerzaza, 2023). Rather than rejecting HUL, the PWC framework offers a diagnostic supplement that identifies which capacity deficits require urgent attention before participatory planning can become meaningful.

Trust erosion, though the weakest correlate ($r = 0.58–0.59$), is arguably the most consequential barrier for long-term policy. Over 78% of unwilling residents in Souika and 70% in the Casbah attributed non-participation to past project failures – not to lack of awareness. This challenges normative assumptions that information campaigns alone can mobilise communities. From a rational choice perspective (Lahmar & Moussaoui, 2024), non-participation is an adaptive strategy when institutions have repeatedly failed. The negative association between length of residence and renovation propensity ($r = –0.59$) further supports a cumulative learning process: longer exposure to institutional failure deepens distrust. Any credible intervention must therefore begin with small, visible, enforceable actions that signal institutional reform, such as the microgrants and community revolving funds we propose as testable hypotheses.

Moreover, the descriptive longitudinal comparison (2015–2025) does not control for several potential confounding factors that may accelerate deterioration independently of legal protection. These include: (a) population migration from old districts to modern suburbs, estimated to have increased by 12% in both districts over the decade (unpublished municipal data); (b) general economic decline and inflation in construction costs, which reduced the financial capacity of renter households even for basic maintenance; (c) damage from natural hazards, notably a mild earthquake (magnitude 4.2) that struck the Constantine region in 2019 and heavy rainfall causing partial collapses in the Casbah in 2022; (d) the absence of any sustained external intervention (local or international) for at least five years, which is one of the scope conditions of the

PWC framework. Therefore, the observed increases of +7.9% and +8.5% cannot be causally attributed to legal protection or to the three PWC barriers; they represent a co-occurrence that calls for future research using more rigorous designs (e.g., difference-in-differences with a control group).

Several limitations warrant emphasis. First, all findings are correlational and cross-sectional (except the descriptive longitudinal comparison). Reverse causality remains plausible: districts may have been designated as protected precisely because they were already decaying. Without a control group of non-protected historic districts, we cannot isolate the effect of legal protection from confounding factors such as economic decline or population loss. Second, generalisability is limited. With only two Algerian cases, the PWC framework is hypothesis-generating, not empirically generalisable. Harmonised, multi-site primary data collection is urgently needed. Third, measurement limitations include post-hoc addition of CFA items in Souika and the absence of formal tests of measurement invariance. Future research should use a priori full-item batteries and larger samples adequate for multi-group confirmatory factor analysis.

Notwithstanding these caveats, the study provides a replicable diagnostic protocol and a set of six falsifiable intervention hypotheses (microgrants, one-stop shops, flexible regulatory tiers, community revolving funds, digital ownership inventories, resident audit panels). These low-cost, incremental interventions avoid the trap of adding more rules without building capacity. They target the specific mechanisms identified – reducing regulatory burden, addressing tenure fragmentation, and rebuilding trust. The most durable heritage policies may begin not with master plans or international charters, but with the tangible, everyday work of repair. Testing this proposition requires a shift from cross-sectional diagnosis to action research. We have offered the hypotheses; the next step is to test them.

7. Conclusion

This exploratory mixed-methods study examined why legally protected historic districts in Algeria continue to deteriorate despite formal designation under Law 98-04. Across two critical cases Souika, Constantine and the Casbah of Algiers over half of all buildings are in poor or ruinous condition, renter occupancy exceeds 89%, and resident willingness to participate in heritage activities is virtually absent. The proposed *Protection without Capacity* (PWC) framework, comprising regulatory burden, tenure fragmentation, and trust erosion, demonstrates internal consistency (CFI = 0.94) and is associated with accelerating decay over a decade (2015–2025). All findings are correlational; reverse causality remains plausible. We do not claim that legal protection causes deterioration, but rather that under conditions of low institutional capacity chronic underfunding, weak enforcement, and repeated project failures designation alone does not prevent decay. Incremental, low-cost interventions (microgrants, one-stop shops, flexible regulatory tiers, community revolving funds) are offered as testable hypotheses for future action research, not as evidence-based recommendations. The PWC framework provides a structured diagnostic tool for comparative heritage research in postcolonial and resource-constrained settings. The most durable heritage policies may begin not with master plans, but with the tangible, everyday work of repair.

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