

Civic Perceptions as Drivers of Systemic Innovation: Mapping Quietness in Bucharest

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Abstract

Noise pollution has become one of the most pervasive environmental challenges in contemporary cities, directly affecting health, social well-being, and the cultural quality of urban life. While European legislation requires large cities to monitor and reduce noise exposure, the implementation of these frameworks at the local level often remains incomplete. In Bucharest, one of the most densely populated capitals in Eastern Europe, traffic, construction, and uncontrolled development have made noise a significant component of everyday urban stress. The scientific literature highlights two important trends in this field. On the one hand, regulatory approaches have traditionally focused on measuring exposure levels through standardized indicators. On the other hand, more recent studies emphasize the importance of soundscapes and the subjective experience of quietness, stressing that urban planning should integrate both the objective and perceptual dimensions of noise. Research from Western Europe has demonstrated that participatory approaches, such as mapping quiet areas based on citizen feedback, can provide valuable insights that complement official data. However, such approaches remain largely absent in the Romanian context. This paper presents the results of a civic research initiative exploring perceptions of quietness in Bucharest. An exploratory survey was conducted with 224 respondents, combining quantitative questions about access to urban calm places, attitudes toward regulation, and perceived health impacts, with open-ended questions that invited personal reflections. The data were analyzed through descriptive statistics, cross-tabulations, and thematic coding of qualitative responses. The findings show that a significant share of residents cannot identify any quiet places in the city, and that accessibility to such spaces is uneven. Nevertheless, there is overwhelming support for protecting quiet zones and a strong willingness to engage civically in this cause. Respondents consistently linked noise to stress, sleep disruption, and decreased quality of life, while also pointing to the lack of institutional action. This research contributes to the field by providing one of the first civic-driven mappings of quietness in Bucharest, highlighting the importance of integrating subjective experiences into noise governance and urban sustainability planning.

Keywords

Civic Engagement; Environmental Noise; Participatory Mapping; Public Health; Quiet Areas; Soundscapes; Urban Sustainability.

Introduction

Noise pollution has emerged as one of the most pressing yet underexplored challenges of contemporary urban environments. Unlike other forms of environmental degradation, such as air or water pollution, noise is both intangible and unevenly distributed, shaping the everyday experience of urban life in subtle but pervasive ways. Its effects extend beyond auditory damage, influencing stress, sleep quality, concentration, and social cohesion, thereby making it a determinant of public health and quality of life. As European cities continue to grow in size and density, the governance of sound exposure has become a critical dimension of sustainable urban development.

The European Union has recognized the significance of this issue through the Environmental Noise Directive, which requires systematic monitoring, reporting, and the designation of quiet areas. However, the implementation of these measures varies across member states and cities. In Bucharest, official action plans have been developed, but gaps persist between the legal framework and residents' lived experiences. Citizens frequently report being disturbed by traffic, construction, and modified vehicles, while official documents often treat noise as secondary to air quality or mobility. This

disconnect reveals the limits of a purely technical approach to noise management and underscores the importance of integrating subjective perceptions and cultural understandings of quietness into urban planning.

The present research builds on this perspective by exploring how residents of Bucharest perceive and experience quietness in their city. By combining quantitative and qualitative questions, the study investigates accessibility to urban calm spaces, attitudes toward regulation, and the perceived impact of noise on health and well-being. The research further examines citizens' willingness to engage civically in protecting quiet areas, thereby linking environmental concerns with questions of participation and governance.

This approach is relevant not only because it addresses a significant gap in Romanian urban policy, but also because it contributes to a growing body of international literature that emphasizes the co-creation of sustainable urban soundscapes. By treating quietness as both an environmental resource and a civic right, the study aims to provide insights that can inform multi-stakeholder collaboration and innovation ecosystems for sustainable value creation.

Literature review

Environmental noise is recognized internationally as one of the major urban challenges, and the European Union considers it a key determinant of environmental health. The Environmental Noise Directive 2002/49/EC set a harmonized methodology for noise mapping and indicators, emphasizing exposure during both daytime (L_{dsn}) and nighttime (L_n) and requiring action plans in cities with more than 100,000 inhabitants. The directive highlights that reliable, comparable data across member states is essential to reducing the adverse health and social impacts of noise pollution.

At the national level, Romania has transposed these requirements through a series of ministerial orders and legal frameworks. The Order of the Ministry of Health No. 119/2014 established national norms on environmental hygiene, including provisions for acceptable environmental noise levels, but implementation remains partial. Furthermore, the Noise Action Plan for Bucharest identifies traffic, modified vehicles, and urban development as major contributors to noise pollution, yet acknowledges persistent gaps in monitoring and enforcement (Municipality of Bucharest, 2018).

The recently developed Green City Action Plan – Bucharest (PAOV) expands this perspective, embedding noise reduction within broader goals of sustainable mobility, land use, and green infrastructure. However, the plan largely subsumes noise under air quality and transport measures, without systematically addressing quiet zones as civic resources (Trinomics et al., 2025). This reveals a mismatch between European requirements for designated quiet areas and the way local policies in Bucharest frame environmental priorities.

International research consistently shows that access to quiet urban spaces improves mental health, fosters civic attachment, and reduces perceived stress levels (Aletta & Kang, 2019; Shephard et al., 2013). More recent studies confirm that noise-related health effects are underestimated and call for integrated governance across health and planning sectors. Soundscape-based approaches are increasingly necessary to complement traditional noise mapping. The World Health Organization's 2022 update on environmental noise further strengthens the evidence base by linking chronic exposure not only to cardiovascular disease but also to metabolic disorders and cognitive decline.

While Bucharest has yet to institutionalize participatory soundscape mapping, recent European initiatives demonstrate its feasibility. Citizen science methods, ranging from mobile applications to community soundwalks, have been successfully applied in several cities to complement official noise maps (Jennings et al., 2023). Similarly, comparative research across European contexts has shown how citizen-driven mapping redefines quiet areas as resources for public health and environmental justice. However, the participatory integration of citizens' perceptions into the definition of quiet zones remains limited in Romania. Prior inquiries into Bucharest's environmental governance emphasize a persistent gap between legal commitments and enforcement, with NGOs frequently invoking Law No.

544/2001 on Access to Public Information to obtain transparency in environmental data (Avocatul Poporului, 2021).

Despite the existence of a solid European framework and Romania's transposition of its requirements, several critical gaps remain in the governance of environmental noise in Bucharest.

First, data and methodological gaps persist. While Directive 2002/49/EC requires regular strategic noise mapping, Bucharest's latest action plans continue to rely heavily on traffic modeling rather than integrated monitoring systems or participatory soundscape assessments (Municipality of Bucharest, 2018; Trinomics et al., 2025). In contrast, Amsterdam has pioneered real-time acoustic monitoring and open data platforms, enabling citizens and planners to visualize noise patterns in real time (Guski, Schreckenberger, & Schuemer, 2017).

Second, there are evident gaps in policy integration. In Bucharest, noise is addressed mainly through traffic management and air quality measures, often overshadowed by energy or mobility priorities. The PAOV frames noise as a secondary issue, without concrete mechanisms for protecting quiet areas. By comparison, Barcelona's Noise Reduction Plan (Pla de Reducció de Soroll) explicitly designates urban quiet zones as spaces of civic importance, integrating them into broader sustainability and public health strategies (Ajuntament de Barcelona, 2019).

Third, enforcement gaps weaken the effectiveness of existing regulations. In Bucharest, the Romanian Auto Registry (RAR) acknowledges that vehicles are not systematically tested for acoustic emissions, leaving significant regulatory loopholes. Berlin, by contrast, has implemented strict enforcement policies, including night-time bans for motorcycles in residential areas, which combine technical inspection with police enforcement (Senate Department for the Environment, Transport and Climate Protection, 2020).

Fourth, social and cultural gaps remain underexplored. While European cities increasingly recognize access to quietness as an issue of environmental justice (Payne et al., 2020), Romanian research has yet to examine how gender, socio-economic status, or cultural expectations shape perceptions of urban quietness. The absence of participatory mapping initiatives such as Hush City in Italy or Stille Orte projects in Germany (Radicchi, 2019) further demonstrates the need for bottom-up research in Bucharest.

In summary, Bucharest reflects a fragmented approach to noise governance: legally compliant but underdeveloped in practice, with little attention to subjective and cultural dimensions. By situating our empirical study within these frameworks, this research aims to bridge institutional, perceptual, and methodological gaps through a civic-driven mapping of quiet areas in Bucharest.

Methodology

The research aimed to examine the availability of quiet spaces in Bucharest, assess residents' attitudes toward protecting such areas, and evaluate residents' perceptions of the impact of urban noise. These aims were operationalized through three main objectives: (1) to examine accessibility and availability of quiet spaces; (2) to assess residents' attitudes toward protection of quiet zones; and (3) to evaluate the perceived impact of urban noise. Six hypotheses guided the study, ranging from the assumption that many residents cannot identify quiet places in the city, to the expectation that noise pollution is perceived as a serious quality-of-life issue and that authorities are regarded as inactive.

Objectives and hypotheses

Objective 1: To examine accessibility and availability of quiet spaces.

Hypothesis H1: A significant proportion of residents cannot identify any quiet places in Bucharest.

Hypothesis H2: Quiet places are not equally accessible for all residents.

Objective 2: To assess residents' attitudes toward the protection of quiet zones.

Hypothesis H3: Most residents support the official protection of quiet zones.

Hypothesis H4: Residents are willing to engage civically for this cause.

Objective 3: To evaluate the perceived impact of urban noise.

Hypothesis H5: Noise pollution is perceived as a significant issue affecting quality of life.

Hypothesis H6: Authorities are perceived as inactive in addressing urban noise.

Design of the questionnaire

An exploratory questionnaire was used to understand perceptions of quietness in Bucharest better. Survey items addressed demographics, perception of quiet spaces (existence and accessibility), sources of noise, attitudes toward official protection of quiet areas and civic action, and subjective effects of noise on health and well-being. Quantitative data were analyzed using descriptive statistics and cross-tabulations, while qualitative responses were coded thematically into categories such as traffic reduction, expansion of green spaces, and civic responsibility. Results were interpreted in relation to the stated objectives and hypotheses.

The questionnaire was pre-tested on a small sample (10 respondents with different professional backgrounds) to identify any confusion in the elaboration of the questions and to ensure the comprehensibility of the terms used. The survey was administered online between June and August 2025. It included both closed questions (multiple-choice and Likert scales) and open questions that allowed respondents to describe their personal experiences and preferences.

Descriptive data of the quantitative research

The demographic structure of the sample is notable for the predominance of women, who represented 80% of participants compared to 19.6% men and 0.4% identifying as non-binary. This gender imbalance is consistent with patterns observed in other civic and health-related surveys, where women tend to participate more actively in community-oriented. One explanation is that women, particularly in urban contexts, are often primary caregivers and therefore more directly engaged with issues that affect everyday well-being, such as environmental quality, noise, and access to restorative spaces. Prior studies in environmental psychology also indicate that women are generally more sensitive to environmental stressors, including noise, and more willing to express concern about their social and physical environment (Guski et al., 2017).

In the Romanian context, this tendency may be amplified by the role women play in family health management and in navigating urban services for children or elderly relatives. For example, several respondents mentioned noise as a factor that disrupts children's sleep or hinders concentration, situating noise pollution within broader concerns of family care. From a sociological perspective, the overrepresentation of women can also be linked to broader patterns of civic engagement, where women are more likely to participate in surveys, petitions, or community groups addressing local quality-of-life issues.

Taken together, the gender distribution of the sample does not merely reflect a bias in recruitment but also signals that women may be among the most vocal constituencies demanding the recognition of quietness as a civic and health resource in Bucharest. This has important implications for both the interpretation of results and the design of future participatory initiatives, suggesting that policies aimed at protecting quiet areas may resonate particularly strongly among female residents.

Results and discussion

The descriptive statistics highlight several important patterns regarding the perception of quietness in Bucharest. The sample (N=224) is skewed toward adults over 35 years (59.4%), with younger respondents under 25 representing only 3.6%. A large majority (85.3%) live in apartments, reflecting the city's dense housing structure, while only 14.7% live in houses. Despite this urban density, 60.7%

report having at least one place in the city they consider quiet, though a significant 39.3% feel such spaces do not exist for them. The demographic structure of the sample also provides interpretive depth. While the study offers valuable exploratory insights (N=224), the pronounced gender imbalance, 80% women, 19.6% men, and 0.4% non-binary respondents, warrants further discussion. Similar gendered participation patterns have been documented in environmental perception and civic engagement studies, where women tend to demonstrate greater environmental concern and a higher likelihood of community involvement. This pattern has been linked to socially constructed caregiving roles and daily responsibilities that heighten awareness of domestic and neighborhood environments.

Regarding the availability of quiet spaces, 60.7% of respondents reported having at least one quiet place in Bucharest, while 39.3% reported none (Table 1). This finding validates Hypothesis H1, as a substantial proportion of residents indeed cannot identify quiet places in the city.

Table 1. Do you have any place in Bucharest that you would consider a quiet place?

	<i>Frequency</i>	<i>Percent</i>
Yes	136	60.7%
No	88	39.3%

The open-ended answers provide additional context: while parks (Cișmigiul, IOR, Herăstrău) and certain small streets were mentioned, many respondents stressed that these spaces are quiet only under specific conditions (early morning, outside peak hours, or weather-dependent). The results echo European findings that quietness is a fragile and conditional experience (Payne & Davies, 2023) and that quiet areas in urban settings often coexist with intrusive background noise.

The distribution illustrates both the scarcity and fragility of quietness in the urban fabric: even when available, quiet areas were often described in the open responses as conditional, temporary, or vulnerable to intrusions from traffic or social activities. When asked about types of quiet spaces, the most common answers were parks and public green areas (42%), followed by residential neighborhoods (15.2%). A smaller number mentioned religious sites (1.8%), courtyards (0.9%), or urban gardens (0.4%). This pattern mirrors findings from Barcelona and Berlin, where urban green areas are central to perceptions of quietness but rarely fully insulated from surrounding noise. It also confirms Aletta and Kang's (2019) observation that quietness in cities is typically "relative" rather than absolute, shaped by context and expectation.

Accessibility emerged as another crucial dimension. While 43.3% of respondents indicated that they can reach their quiet place in less than 30 minutes, 17% reported needing more than 30 minutes. This disparity supports Hypothesis H2 that quiet spaces are not equally accessible to all residents. The results suggest that quietness in Bucharest may be stratified socio-spatially, with some neighborhoods offering easy access to restorative environments and others requiring significant effort or mobility. Similar inequalities have been identified in Milan and London, where residents in dense, traffic-congested areas report longer travel times to reach parks or designated quiet zones. The unequal geography of quietness, therefore, raises questions of environmental justice: who can benefit from urban silence, under what conditions, and at what cost in time and resources. For Bucharest, these findings highlight the urgency of embedding quiet areas in everyday urban infrastructure rather than treating them as exceptions or distant refuges.

Table 2. How much are you affected by the city noise?

	<i>Frequency</i>	<i>Percent</i>
Not at all	2	0.9%
Hardly at all	11	4.9%
Moderately	65	29%
A lot	71	31.7%
Very much	75	33.5%

The perceived impact of noise was reported as significant (Table 2). A total of 94% of respondents stated they were affected by urban noise to some extent, with one-third indicating they were affected "very much." These numbers underline that noise pollution is not viewed as a marginal inconvenience

but as a pervasive feature of urban life in Bucharest. Open-ended responses confirmed concrete effects such as sleep disruption, stress, irritability, and reduced concentration, validating Hypothesis H5 that noise pollution is regarded as a quality-of-life issue. This perception is consistent with epidemiological evidence linking chronic noise exposure to cardiovascular disease, metabolic disorders, and cognitive decline (WHO, 2022).

The finding that nearly one in three respondents report being “very much” affected suggests not only sensitivity to noise but also a sense of lack of control over the sound environment. Such experiences align with Aletta and Kang’s (2019) observation that subjective annoyance is often a stronger predictor of well-being than objective decibel levels. In Bucharest, the prominence of traffic, construction activity, and social noise sources mentioned by respondents reinforces the picture of a city where exposure is both constant and multidimensional.

The broader implication is that noise in Bucharest functions as a systemic stressor with psychological, physiological, and social consequences. Comparable surveys in Berlin, Milan, and Barcelona have shown similar levels of perceived impact. However, these cities have coupled resident feedback with targeted interventions, from noise barriers and traffic calming to designated “quiet zones.” The lack of such measures in Bucharest amplifies residents’ sense of vulnerability. In this context, the results point to an urgent need to reframe noise not only as an environmental parameter but as a determinant of urban health and equity.

At the same time, 81.7% believed that authorities are not taking sufficient action, often citing uncontrolled construction and weak enforcement. This finding validates Hypothesis H6, highlighting the perception of institutional inaction.

Attitudes toward official protection of quiet zones were overwhelmingly positive (Table 3). A total of 96.4% of respondents supported the formal designation of quiet zones, which strongly validates Hypothesis H3. This near-unanimity reflects a broad civic consensus that quietness should be treated as a public good rather than a private luxury. Such levels of support suggest that quiet zones could serve as a focal point for participatory urban governance, linking environmental quality with health and well-being. Nevertheless, despite this consensus, 81.7% of respondents believed that authorities are not acting adequately, with many citing the proliferation of uncontrolled construction and insufficient regulation of traffic or nightlife as evidence of inaction.

This tension highlights the gap between legal frameworks and practical enforcement. While Law No. 121/2019 and the Ministry of Health Order No. 119/2014 set normative thresholds for environmental noise, residents perceive them as symbolic rather than operational instruments. Enforcement is seen as minimal, selective, or absent altogether. Such perceptions are not unique to Bucharest. Studies from across Europe indicate that when citizens perceive regulatory frameworks as ineffective, their trust in institutions declines, reducing compliance and participation (Payne et al., 2013). By contrast, cities like Amsterdam and Milan have implemented transparent noise mapping systems and participatory monitoring platforms that involve citizens directly in documenting and visualizing noise exposure (Aletta & Kang, 2019). These initiatives not only provide richer data but also increase citizen trust by demonstrating that individual complaints are aggregated into actionable policy. The absence of similar mechanisms in Bucharest explains why, despite strong support for protection, residents remain skeptical about the capacity or willingness of local authorities to act.

Table 3. Do you think Bucharest should have more quiet zones officially declared and protected?

	<i>Frequency</i>	<i>Percent</i>
Yes	216	96.4%
No	3	1.3%
I don’t know	5	2.2%

Finally, the fact that 94% of respondents report being affected by noise at least moderately, and one-third “very much,” underscores that this is not a marginal concern but a pressing civic and health issue. Quietness emerges here not simply as an aesthetic preference but as a demand for equity in urban well-

being. Without institutional recognition and enforcement, the strong public mandate identified in this study risks being squandered, leaving Bucharest in a paradoxical situation: a city where quietness is deeply valued by residents but insufficiently protected by governance.

Furthermore, 89.3% declared willingness to sign a petition for such measures, confirming Hypothesis H4 that residents are open to civic engagement on this issue. The finding suggests that civic potential exists and could be mobilized by NGOs or local administrations. Similar civic mobilizations have proven effective in Berlin, where residents' petitions contributed to stricter enforcement of motorcycle noise bans (Senate Department, 2020).

Conclusions

This study examined how residents of Bucharest perceive and experience quietness in their city, seeking to bridge the gap between environmental noise regulation and the lived experience of urban soundscapes. By combining quantitative and qualitative data, the research validated all six proposed hypotheses and revealed how noise and quietness shape both civic engagement and well-being in the urban environment.

Three main findings stand out. First, quietness in Bucharest is scarce and unequally accessible: nearly 40% of residents could not identify any quiet places, and those who did described them, mostly parks, as fragile and easily disrupted. Second, civic attitudes toward quiet zones were overwhelmingly positive. Most participants supported official protection and expressed willingness to engage, revealing a reservoir of social energy that could be mobilized by NGOs and local administrations. Third, noise pollution was perceived as a serious public health concern, linked to stress, sleep disruption, and reduced concentration. Respondents also viewed public authorities as largely inactive, confirming the persistence of governance gaps.

The findings position quietness not as the absence of sound, but as a cultural and civic resource essential to urban resilience. Compared to cities such as Amsterdam or Barcelona, where participatory noise mapping and transparent monitoring are institutionalized, Bucharest remains at an early stage, with compliance-oriented rather than participatory policies.

This study contributes to the growing literature on soundscape governance by showing that quietness in Bucharest represents both a scarce environmental asset and an underused field of civic collaboration. It recommends, first, the institutionalization of participatory noise mapping and the integration of citizen feedback into official action plans, and second, the recognition of “quiet zones” as protected spaces within urban planning frameworks. Future research could build on this approach through longitudinal monitoring and comparative European analyses, consolidating participatory sound mapping as a tool for sustainable urban living.

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