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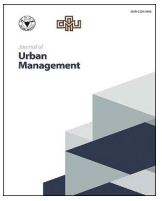

Public perceptions of Montréal's streets: Implications for inclusive public space making and management

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A B S T R A C T

How urban residents perceive and value the quality of public space remains crucial to inclusive urban planning and design. Yet, understanding these perceptions is often complicated by the diverse social and cultural backgrounds of city dwellers. This article examines how citizens in Montréal assess their streetscapes across multiple criteria, such as accessibility, comfort, and aesthetics, and reports on rating and ranking experiments that reveal notable discrepancies in individual perceptions, particularly on inclusivity-related dimensions. More convergent assessments emerged during group discussions. Building on these findings, this study offers a framework for integrating individual and collective assessments, providing insights for municipal planners. The results underscore the importance of localized, context-sensitive evaluations and illustrate how stakeholder engagement, especially in smaller focus groups, can reconcile differing views on what constitutes a welcoming and inclusive urban environment. We conclude that responsive public space management, grounded in iterative, localized participatory processes, can enhance accessibility and foster inclusivity by incorporating regular small-group dialogues that identify the diverse cultural and social needs of residents. Such an approach promotes a dynamic sense of publicness, supports adaptive management practices, and contributes to the welfare of diverse urban communities.

1. Introduction

The design, maintenance, and day-to-day management of public spaces influence the well-being, social life, and sense of belonging among urban residents (Li et al., 2022; Low, 2020; Mehta, 2014). Although these spaces are often conceptualized as universally beneficial, studies show that marginalized groups, such as women, seniors, children, people living with disabilities, and various minorities, frequently experience inequalities in terms of access and comfort (Bambó Naya et al., 2023; Chitrakar et al., 2022; Johnson & Miles, 2014).

Our participant interviews revealed that aspects like lighting, seating, clear signage, and step-free access matter disproportionately for older adults, individuals with mobility impairments, and parents with strollers. Additionally, participants from lower-income and minority backgrounds reported a perceived lack of cultural representation and persistent feelings of being unwelcome in certain neighborhoods. These findings align with research indicating that socio-spatial inequalities can marginalize certain populations through subtle design choices and maintenance practices (Bambó Naya et al., 2023; Chitrakar et al., 2022; Fan et al., 2023).

Consequently, linking these observations to socioeconomic and demographic variations is essential for informing how public space management might address the distinct needs of diverse user groups. These disparities raise fundamental questions about how "publicness" is shaped (Latour & Weibel, 2005; Li et al., 2022) and negotiated through the manifold ways in which people use and perceive the public realm.

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Recent research has foregrounded how public spaces embody social and political power relations (Beebeejaun, 2017; Harvey, 2005; Kim & Min, 2019; King, 2012; Pettas, 2019). As demographic diversity in cities grows, so too does the challenge for urban planning: policy-makers and practitioners must grapple with a spectrum of viewpoints on what the public interest entails (Fan et al., 2023; Harvey, 1989; Low & Iveson, 2016). Moreover, the concept of "management" itself, broadly understood as a set of interventions that shape how spaces function, is central to facilitating or hindering activities vital to social cohesion (Fonseca et al., 2019; Fors et al., 2021; Mushkani & Ono, 2021). This has become even more pronounced in an era of heightened entrepreneurial governance, with an emphasis on performance metrics and data-driven evaluations (Kitchin, 2023; Engin et al., 2020). Yet, conventional methods of assessing urban public space, such as standard surveys or professional audits, often risk overlooking the experiential complexity and nuance that arise from the intersecting needs of different groups (Zamanifard et al., 2019; Creswell & Creswell, 2022; Mehta, 2014).

Against this backdrop, this article examines how citizens from diverse backgrounds within Montréal perceive the quality of street-level public spaces. Montréal, Québec, Canada was selected as the study area because its socio-cultural diversity and bilingual governance context provide a relevant setting for examining varied perceptions of urban streetscapes. We focus on people's subjective assessments and measure the extent to which collective or convergent views emerge. Our aim is to clarify how such evaluations might better inform public space management in ways that embody "the public"—not as a monolithic entity, but as a plural, context-dependent assemblage of residents (Latour & Weibel, 2005). The findings speak directly to questions of how best to manage urban space for social good, especially in contexts where the public is continuously negotiated, contested, and redefined (Harvey, 1989; Watson, 2006).

By analyzing both individual and group-based assessments, we identify significant discrepancies, particularly in less clearly defined criteria such as inclusivity. Conversely, the study uncovers areas of higher consensus, such as aesthetics and regeneration, both in individual evaluations and during group discussions. Furthermore, group assessments demonstrate reduced divergence on complex concepts like inclusivity compared to individual evaluations. We argue that these patterns of convergence and divergence have important managerial implications for municipal agencies, local planners, and community organizations, especially for those aiming to cultivate equitable and adaptive public spaces that accommodate diverse modes of use.

Accordingly, the key objectives of this study are twofold: first, to explore how individual versus collective evaluations of Montréal streetscapes diverge or converge across diverse demographic groups; and second, to identify how these different perceptions can inform more inclusive public space management. In doing so, we address a conceptual and practical limitation in the literature: while numerous evaluation frameworks exist, there remains a paucity of studies that compare individual and group-based perceptions in a localized context and systematically measure agreement levels. By addressing this limitation, we provide insights into how the dynamics of stakeholder engagement, particularly in smaller, more focused groups, can be leveraged to reconcile competing views on what constitutes a welcoming and equitable urban environment.

In what follows, we first situate our study within the broader scholarship on public space management and user-centered evaluations. We then describe our methodological approach, rating and ranking experiments of images of streetscapes with Montréal residents, and present the results of these inquiries, focusing on the interplay between individual and group evaluations. The subsequent discussion interprets these findings in light of the concept of "publicness" and addresses how they might translate to more inclusive public space policies and management strategies. We conclude by reflecting on the challenges of implementing highly localized participatory methods and outlining prospective avenues for future research on managing public spaces in urban environments.

2. Background

2.1. Public space and publicness

Public spaces, by definition, are intended for collective use and social interaction (Li et al., 2022; Low & Iveson, 2016). However, the "public" itself cannot be taken as a uniform category—urbanites are diverse, and perceptions of a single space can differ markedly based on age, gender, mobility status, or cultural background (Beebeejaun, 2017; McAndrews et al., 2023). Key scholars have highlighted that publicness unfolds through both material conditions (e.g., design quality, maintenance level, safety features) and social interactions (Mitrašinović & Mehta, 2021; Latour & Weibel, 2005; Whyte, 2021). Managerial practices, ranging from routine upkeep to security measures, can either amplify or constrain a space's inclusivity (Magalhães & Carmona, 2006; Mandeli, 2019; Mushkani & Ono, 2021; Zamanifard et al., 2018).

Developing sound policies that respond to diverse populations requires more than generic design guidelines; it necessitates a nuanced understanding of how different users define comfort, belonging, and safety (Mandeli, 2019; Mehta, 2014). Yet, many planning systems still rely on standardized assessments that do not capture the breadth of everyday experiences (Lawton Smith, 2023; Zamanifard et al., 2019). Whether carried out by municipal authorities or through private–public arrangements, the long-term management of public space often overlooks localized perceptions in favor of more easily quantifiable indicators (Carmona, 2021; Zamanifard et al., 2018). As a result, certain groups—especially marginalized communities—may find their voices excluded from decisions about design, maintenance, and improvements (Carmona et al., 2019; Fors et al., 2021).

2.2. Approaches to evaluation

Methods for investigating public space quality often occupy two broad categories: ethnographic/qualitative and standardized quantitative approaches (Creswell, 2013; Mehta, 2014). Ethnographic methods yield in-depth insights into users' experiences,

revealing how particular social or cultural groups interact with space (Gehl, 2011; Whyte, 2021). However, these approaches can be time-consuming, are dependent on fieldworkers' interpretations, and may not easily generalize across multiple sites (Creswell & Creswell, 2022; Denzin & Lincoln, 2011; Mandeli, 2019).

On the other hand, conventional quantitative instruments, such as user surveys, checklists, or composite scoring indices, provide structured evaluation criteria that facilitate the comparison of multiple locations. Mehta's (2014) Public Space Index (PSI), for example, captures dimensions such as inclusiveness, meaningfulness, comfort, and pleasurability. Yet, standardized metrics can oversimplify the subjective, emotional, and context-specific nature of public space perceptions (Carmona et al., 2019; Mitrašinović & Mehta, 2021). The tension between these two methodological strands underscores the importance of hybrid or flexible tools that incorporate community input while maintaining some degree of comparability (Carmona, 2021; Lawton Smith, 2023; Li et al., 2022).

2.3. Localized assessments

In pursuit of sound and inclusive evaluations, some scholars point to the need for localized, participatory methods that capture on-the-ground realities and the varied meanings residents attach to public space (Fors et al., 2021; Gehl & Svarre, 2013; Helbing et al., 2023; Mehta, 2014). A central assumption is that knowledge is non-fungible (Hidalgo, 2022)—deeply embedded in specific contexts and experiences—so that broad generalizations about "what works best" in public space design and management may only hold limited validity (Gibbons et al., 1994, pp. 1–192; Harvey, 1989).

Efforts to engage communities in defining criteria for "good" or "welcoming" public space encounter a challenge: the diversity of perspectives can lead to disagreement, or "noise," that complicates attempts to produce widely applicable measures (Herzog et al., 2024; Lofland, 1998; Madanipour, 2010; Murphy, O'Driscoll & 1st edition, 2021). Nonetheless, such diversity also signals a more accurate representation of real-world needs, thereby fostering design and management practices that account for competing values (Asaro, 2000; Fischer, 2000; Murphy, O'Driscoll & 1st edition, 2021).

From a managerial standpoint, acknowledging divergent views can clarify which aspects of urban space are consistently valued and which trigger conflict (Franck & Huang, 2023; Zamanifard et al., 2018). Such insights are vital, as they guide decisions on resource allocation, design modifications, and policy formulations that aim to serve the public good (Carmona, 2021; Franck & Huang, 2023; Harvey, 1989; Murphy, O'Driscoll & 1st edition, 2021).

In summary, while the scholarship on public space highlights the importance of inclusivity, contextual sensitivity, and participatory design, it lacks sufficient emphasis on how collective assessments of streetscapes might emerge. Existing studies often rely on either qualitative ethnographies or quantitative indicators, leaving a gap in understanding the ways that individual and group perceptions can converge, diverge, and inform each other. Moreover, the dynamic interplay between physical design attributes (e.g., comfort, aesthetics) and social constructs (e.g., representation, oppression) remains underexplored. This study addresses these gaps by combining rating and ranking experiments with focus-group discussions to capture both individual and collective perceptions of Montréal streetscapes, offering insights into how conflicting or convergent viewpoints can guide inclusive public space management.

3. Methodology

This research employed a multi-stage, community-centered design that unfolded between summer 2023 and autumn 2024. The overarching goal was to understand how Montréal residents, drawn from diverse demographic and socioeconomic backgrounds, perceive and evaluate various street environments. The methodology comprised individual interviews, group-based discussions, and two sets of evaluative exercises—rating and ranking images of local streetscapes. Each phase built upon the previous one, ensuring that early insights shaped subsequent data collection activities. Analysis involved a thematic examination of interview transcripts, along with descriptive statistics and correlation-based measures (Intraclass Correlation Coefficient, Pearson's correlation, and Kendall's Tau) applied to the rating and ranking experiments to assess convergence and divergence in participant perspectives.

3.1. Participant recruitment and profiles

Over one hundred community organizations in Montréal were contacted to ensure diverse representation, including RÉZO, Société québécoise de la déficience intellectuelle, Alpar, Agir Montréal, Aide aux Trans du Québec, RLQ – QLN, ALAC, Association musulmane de Montréal-Nord, Maison d'Haiti, and Afrique au Féminin. These organizations helped identify and refer potential participants by disseminating our call for volunteers through their networks. As a result, the 28 individuals who ultimately participated in interviews (and the subsets who participated in rating and ranking exercises) had existing ties to at least one of these organizations, whether as service users, volunteers, or community members. This collaboration ensured that we included people who face varied socioeconomic conditions and social barriers. As illustrated in Fig. 1, the final participant pool included women, elderly people, individuals with disabilities, members of ethnic or religious minorities, and LGBTQIA + community members. This cross-section was sought to capture a wide range of viewpoints on how public spaces are accessed, maintained, and experienced in daily life.

3.2. Research design

The study followed a three-stage process, allowing for iterative refinement of both evaluation criteria and data collection methods. During summer 2023, four researchers conducted individual interviews with Montréal residents to explore how they perceive and

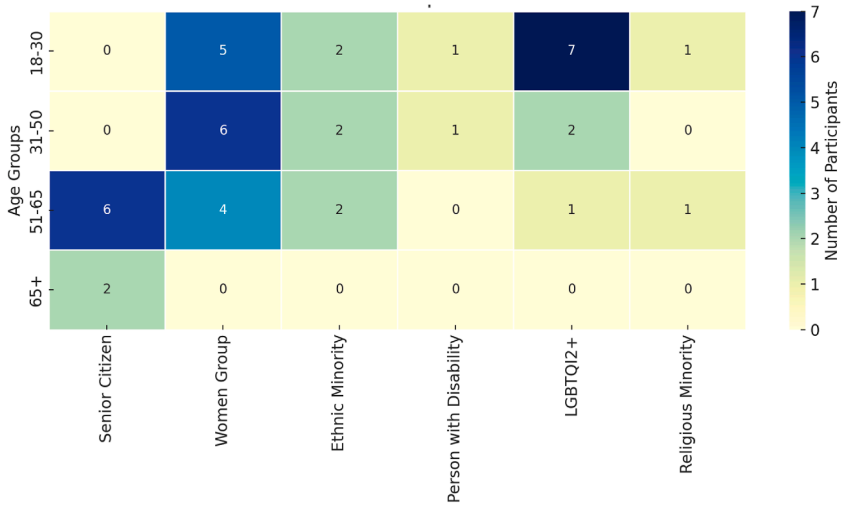

Fig. 1. Self-declared participant identities.

assess public space quality. These discussions led to the identification of twelve perceptual criteria, forming the foundation for subsequent evaluation phases.

In autumn 2023, a smaller subset of participants took part in two focus-group-style discussions, each followed by distinct evaluation tasks—first, a rating experiment (individual and then group-based evaluations of street images in three groups of 3–5 members), followed by a ranking experiment, which was exclusively individual-based (Al-Kodmany, 1999). Data analysis took place in spring 2024, integrating all quantitative and qualitative findings to reveal patterns of agreement, divergence, and emerging consensus.

Insights from the interviews guided the selection of four overarching dimensions—practicality, aesthetics, accessibility, and inclusivity—used in the rating experiment. Additionally, the focus-group discussions were structured to ensure that a diverse range of perspectives on public space quality was captured, reinforcing the study's commitment to an inclusive and multidimensional approach.

3.3. Data collection

3.3.1. Individual interviews

Semi-structured interviews were conducted with 28 Montréal residents, recruited through community organizations. Each interview lasted between 30 and 90 min. Although the resulting transcripts revealed a wide spectrum of personal impressions, twelve key criteria were repeatedly referenced when participants described or qualified public space: accessibility, invitingness, comfort, regeneration, aesthetics, practicality, maintenance, inclusivity, dynamism, representation, oppression, and security.

While all twelve criteria were mentioned by participants, most referred to positive or neutral attributes (e.g., inclusivity, invitingness). However, the term ‘oppression’ emerged in descriptions of environments perceived as hostile or stigmatizing—whether due to heavy surveillance, targeted policing, or overtly exclusionary design features (For example, the green wall on Boulevard de l'Acadie separates the affluent Town of Mount Royal from the impoverished Parc-Extension).

In this study, “inclusivity” is defined as the degree to which a space allows equitable participation and comfort for people across varying social and physical identities. This definition emerged from participants' references to feeling welcome or unwelcome based on their gender identity, ethnicity, cultural background, or disability status, underscoring social openness as a critical aspect of street quality. From the interviews, we coded twelve descriptors of street quality: accessibility, inviting, comfortable, regenerative, beautiful, practical, maintained, inclusive, dynamic, representative, oppressive, and secure. These twelve criteria were derived inductively from recurring themes in participants’ descriptions of public spaces. For the rating experiment, we selected four criteria that were most consistently referenced and represented the main dimensions of participant perceptions. The broader set of twelve was retained for the ranking experiment to capture the full range of evaluative qualities identified in the interviews.

3.3.2. Focus groups and rating experiment

Twelve individuals participated in this experiment, forming three focus groups (each comprising 3–5 members). Group composition was heterogeneous, mixing participants across gender, age, and ethnic backgrounds. The procedure began with an individual rating task, in which each participant, in a separate panel, evaluated 20 images based on four criteria. They had approximately 60 min to complete this activity without seeing anyone else's scores, ensuring the independence of judgments. Next, participants engaged in a 30-min moderated discussion, during which they compared their initial impressions. Moderators guided the conversation around each image, encouraging participants to articulate the reasons behind their scores. Although they did not see the exact numeric ratings from other members, participants shared verbal reflections, sometimes revealing their approximate assessments (e.g., “I considered it quite accessible”). Following the discussion, over the course of 90 min, the group collectively re-evaluated the same 20 images, aiming to

Table 1
Street image selection matrix.

Characteristic	Type I	Type II	Type III
Land-use	Predominantly residential	Mixed use	Predominantly commercial
History	Historic neighborhoods (1920s)	Modern neighborhoods (1970s)	Post-modern neighborhoods (2010s)
Urbanization Spectrum	Suburban	Urban	City center
Socio-economic Status (Income)	Low	Medium	High
Density	Low	Medium	High
Space-to-user Relationship	Not occupied	Occupied	Well known place
Greenery	Minimal	Moderate	Abundant
Affordance (Activities & Amenities)	Limited	Basic	Diverse

clarify points of disagreement. This two-step approach allowed us to capture both private, individual viewpoints and shifts in perception prompted by peer dialogue.

A matrix (see Table 1) guided our selection of street images by stratifying urban settings according to multiple factors, including land use, historical period, density, and the presence of greenery. Although we use labels like "Type I" or "Type II" to ensure coverage of distinct contexts (e.g., predominantly residential versus commercial), these categories are not meant to imply fixed correlations (e.g., "suburban" does not necessarily equate to low socioeconomic status). Instead, the matrix served as a heuristic tool to sample diverse street typologies across Montréal, aiming to capture variation in neighborhood history, design, and demography. We then chose 20 images—several in each category—to reflect this diversity (see Fig 2).

Each photograph was rated on a four-point scale (1 = poor to 4 = excellent) against the four key criteria. After this individual assessment, participants in each focus group reconvened to compare observations and discuss points of disagreement. Moderators encouraged direct dialogue about the specific features leading to higher or lower ratings. Group-level assessments were then refined or re-stated to capture any evolving consensus. This two-step procedure—individual first, then collective—captured both the personal dimensions of space valuation and the influence of social negotiation on perceived quality.

3.3.3. Ranking experiment

On a separate day, 17 participants engaged in a ranking exercise using all twelve criteria identified in the interviews. Because ranking was more time-intensive, only seven photographs were used, each selected for maximum distinctiveness in appearance and contextual factors. Participants individually ordered these seven images from most to least preferable for each criterion, applying their personal interpretations of terms such as "security," "representation," and "oppression." No standardized definitions were provided,

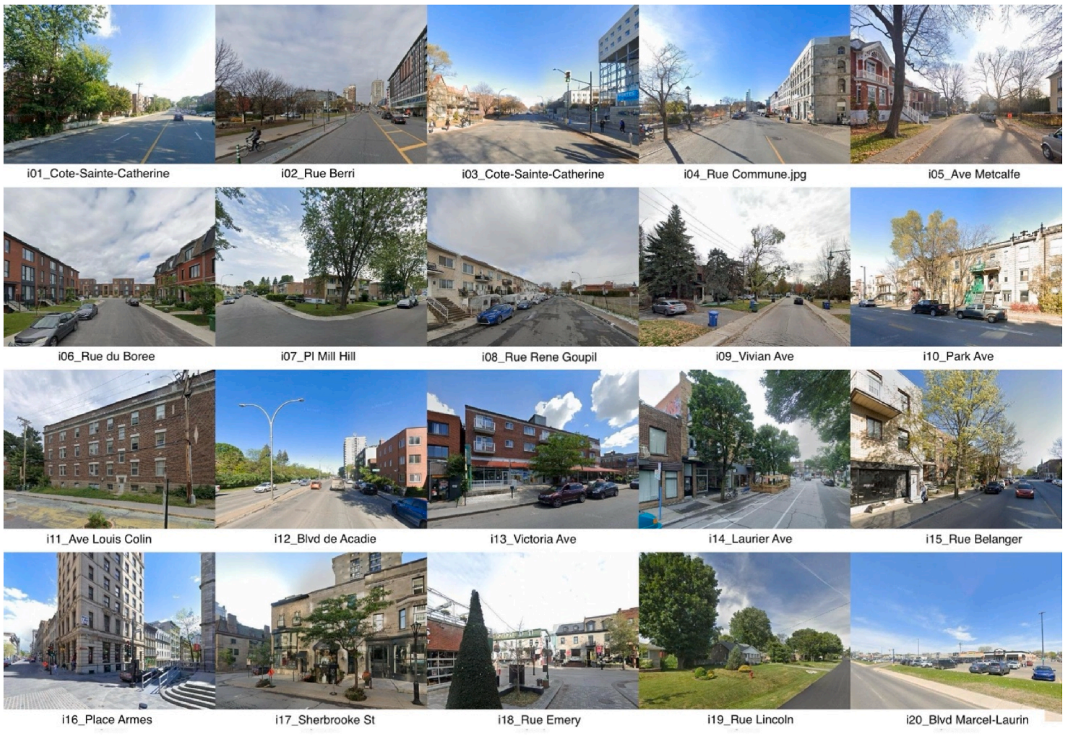

Fig. 2. Set of 20 street view images curated for rating and ranking experiments (Mushkani, Berard, & Koseki, 2025).

allowing for open-ended engagement and revealing how different understandings shaped respondents' visual and emotional judgments.

To effectively operationalize our research objectives, we implemented a visual-based evaluation method using curated street-view images (Yang et al., 2024). By presenting printed photographs, we ensured a uniform basis for discussion, minimizing distractions and variations that might arise from on-site observations (Al-Kodmany, 1999; Salesses et al., 2013). This approach also accommodated participants with varying abilities, allowing them to engage with the visual stimuli at their own pace.

Although we recognize that static images cannot fully capture the temporal and interactive aspects of urban life, this method minimized extraneous variables and ensured that all participants responded to the same baseline stimulus. Each image was accompanied by color-coded scoring circles ranging from 1 to 4, facilitating consistent and comparable assessments across both individual and group evaluations. The selected images represented a diverse array of street typologies, including commercial versus residential and historic versus modern environments, as detailed in Table 1. This diversity enabled participants to evaluate different urban forms within a single session (Al-Kodmany, 1999). Additionally, labeling each photograph with the street's name and depicting post-occupancy conditions allowed participants to draw on their personal experiences and envision potential improvements.

To promote inclusivity, the evaluation sessions were held in accessible venues, with clear instructions provided to support the participation of seniors, individuals with disabilities, and others who might find on-site visits challenging (Roque de Oliveira & Partidário, 2020). During group discussions, images were displayed on boards, and participants used color-coded stickers to indicate their ratings after deliberating collectively. We employed equitable moderation techniques to ensure that all voices were heard, preventing any single individual from dominating the conversation and allowing for a balanced expression of perspectives (Arnstein, 1969; Forsyth, 2014). This structured yet flexible methodology enabled us to capture both individual impressions and the influence of group dynamics on perceptions of public space quality (Al-Kodmany, 1999).

3.4. Data analysis

All qualitative data from interviews and audio recordings of the focus groups underwent thematic analysis. Quantitative results from the rating and ranking exercises were examined through descriptive statistics and three correlation-based measures:

Intraclass Correlation Coefficient (ICC) was employed to determine the consistency of multiple ratings within each criterion, helping to identify whether participant evaluations converged enough for reliable collective interpretation. (Bartko, 1966; Koo & Li, 2016).

$$\mathrm{ICC} = \frac{MS_B - MS_W}{MS_B + (k-1) \times MS_W}$$

Where MS_B is the mean square between groups, MS_W is the mean square within groups, and k is the number of ratings. High ICC values indicate strong agreement among participants.

Pearson correlation coefficient (r) measured the linear relationship between individual scores and group averages, highlighting how strongly individual assessments aligned with aggregated trends (Puth et al., 2015):

$$r = \frac{\sum (X - \overline{X})(Y - \overline{Y})}{\sqrt{\sum (X - \overline{X})^2 \sum (Y - \overline{Y})^2}}$$

Where X and Y are the individual and group ratings. A high Pearson correlation indicates a strong similarity between individual and collective evaluations.

Kendall's Tau was used to analyze the ranking data, measuring the ordinal association among participants (Puth et al., 2015; Romdhani et al., 2014):

$$\tau = \frac{2(C - D)}{n(n-1)}$$

Where C is the number of concordant pairs, D is the number of discordant pairs, and n is the total number of pairs. A high Kendall's Tau suggests significant agreement in how participants rank the images.

A standardized scale was adopted to interpret these correlation metrics (e.g., strong positive around 0.75, moderate around 0.5, weak around 0.25), enabling more tangible statements about the extent of consensus, see Table 2 for more details. Given that each measure has its own limitations—especially in a small-sample study—the team triangulated findings across the three metrics to draw more robust conclusions.

Although the rating scales were technically ordinal (1–4), we treated them as approximately interval for practical correlation analyses, following established precedents in small-scale perceptual research (Carifio & Perla, 2008; Norman, 2010). Pearson correlation coefficients and ICC can yield interpretable results when Likert-type data are reasonably assumed to lie on an underlying continuum, especially in exploratory contexts with relatively small samples. For the strictly ordinal rankings, we employed Kendall's Tau, which does not assume interval properties and is appropriate for analyzing concordance in rank-order data (Puth et al., 2015). By triangulating across these three measures, we aimed to capture both the consistency (ICC), linear associations (Pearson), and ordinal concordance (Kendall's Tau) of participant evaluations. This mixed approach provides a more robust picture of agreement and divergence under different statistical lenses.

Table 2
Interpretation of agreement and disagreement using Pearson correlation, Kendall Tau, and Intraclass Correlation Coefficient (ICC).

Value	Pearson Correlation	Kendall Tau	ICC (Intraclass Correlation)
1	Perfect positive linear relationship	Perfect positive ordinal association	Perfect agreement
0.75	Strong positive linear relationship	Strong positive ordinal association	High agreement
0.5	Moderate positive linear relationship	Moderate positive ordinal association	Moderate agreement
0.25	Weak positive linear relationship	Weak positive ordinal association	Low agreement
0	No linear relationship	No association	No agreement
−0.25	Weak negative linear relationship	Weak negative ordinal association	Low disagreement
−0.5	Moderate negative linear relationship	Moderate negative ordinal association	Moderate disagreement
−0.75	Strong negative linear relationship	Strong negative ordinal association	High disagreement
−1	Perfect negative linear relationship	Perfect negative ordinal association	Perfect disagreement

In practice, we employed ICC to evaluate the reliability of participant ratings within each criterion, clarifying whether a stable consensus could be achieved—a key consideration for policies that rely on aggregated feedback. Pearson's correlation was used to gauge how closely individual ratings tracked group averages, thereby revealing whether personal perspectives diverged from collective assessments of attributes like accessibility or inclusivity. Finally, Kendall's Tau was applied to the strictly ordinal ranking data, indicating the degree of concordance in how participants prioritized multiple criteria. Taken together, these three metrics provide complementary insights into the convergence or divergence of participant perceptions, illuminating the practical potential for consensus-driven decision-making in public space management.

Overall, this multi-phase methodology was designed to respect both the complexity and subjectivity of public space evaluations. The interviews ensured that criteria were grounded in how residents naturally describe and experience streetscapes, rather than applying an externally imposed framework. The subsequent focus groups allowed participants to articulate, defend, and reconcile different viewpoints, reflecting the everyday negotiations that take place when people discuss urban environments. By contrasting a more detailed rating approach (focusing on four key criteria) with a broader ranking exercise (involving all twelve), the study captured both the depth and breadth of participant perspectives. This approach was grounded in understanding how these divergences or convergences might inform pragmatic decisions about managing or redesigning Montréal streetscapes.

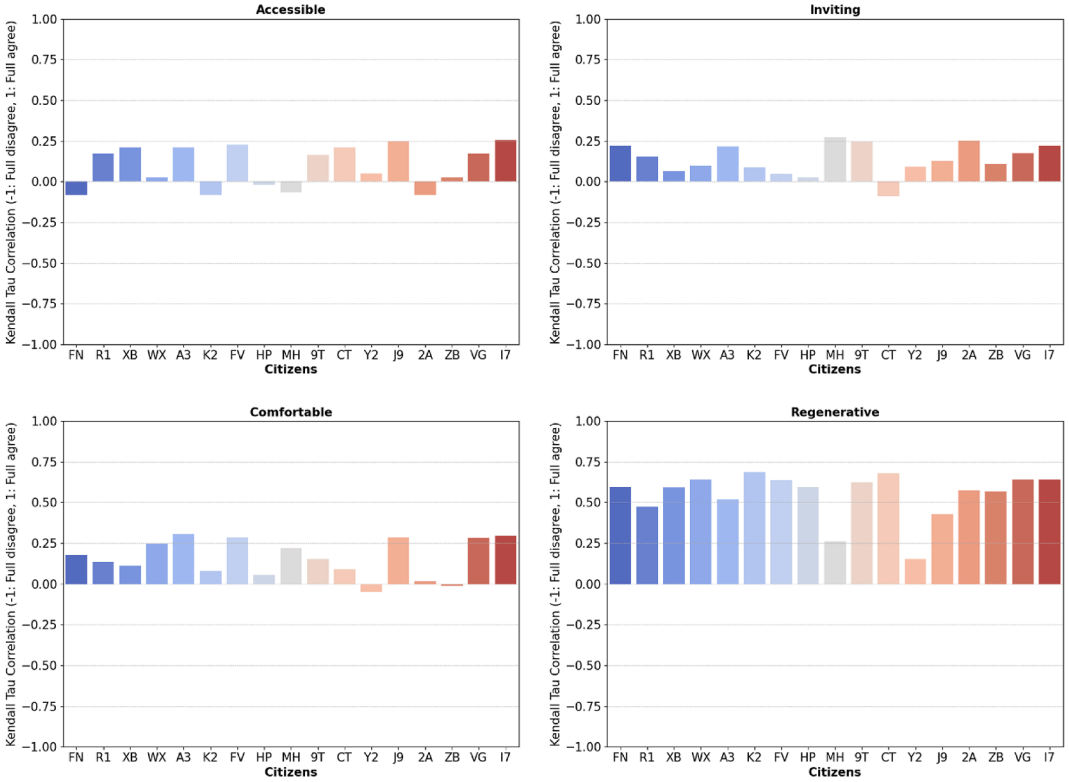

Fig. 3. Kendall's Tau correlation for four criteria—accessibility, inviting, comfortable, and regenerative—indicating the extent of ranking agreement among participants (Mushkani, Berard, & Koseki, 2025).

4. Findings

This section presents key insights drawn from the ranking and rating experiments, illuminating how Montréal residents variously perceive street environments in terms of accessibility, comfort, aesthetics, and other criteria. The results highlight both the areas of convergence among participants—particularly in group contexts—and the persistent divergences that underscore the challenges of inclusive public space management.

4.1. Ranking experiment

In the ranking experiment, participants individually ordered a set of streetscape images according to twelve criteria: accessibility, inviting, comfortable, regenerative, beautiful, practical, maintained, inclusive, dynamic, representative, oppressive, and secure. Figs. 3, 4, and 5 present the Kendall's Tau correlation coefficients for each criterion, illustrating the degree of agreement among participants.

4.1.1. Accessibility and inviting

Across participants, the accessibility criterion yielded low to moderate agreement. Some individuals (e.g., codes FN, K2, MH, and 2A) exhibited negative correlations, indicating that their rankings diverged from the broader collective. Others (XB, A3, FV, J9, I7) showed slightly positive correlations, suggesting a modest alignment on what constitutes an accessible streetscape. A similar pattern emerged for inviting, where most participants agreed only slightly on what features make a space welcoming (except CT, who strongly disagreed with the collective assessment). Overall, these findings underscore varying personal or situational perspectives on how a street fosters a sense of welcome and physical accessibility.

4.1.2. Comfortable and regenerative

The comfortable criterion elicited slight agreement overall. Participants such as WX, A3, FV, J9, VG, and I7 tended toward moderate consensus, whereas Y2 had a notably distinct view of what constitutes comfort in a public space. By contrast, regenerative showed consistently high agreement. Participants K2, WX, CT, and FV, for example, demonstrated strong positive correlations with one another, highlighting a broadly shared notion that “regenerative” spaces—those perceived to support personal rejuvenation or environmental well-being—share recognizable attributes. No participant's ranking deviated significantly on this criterion.

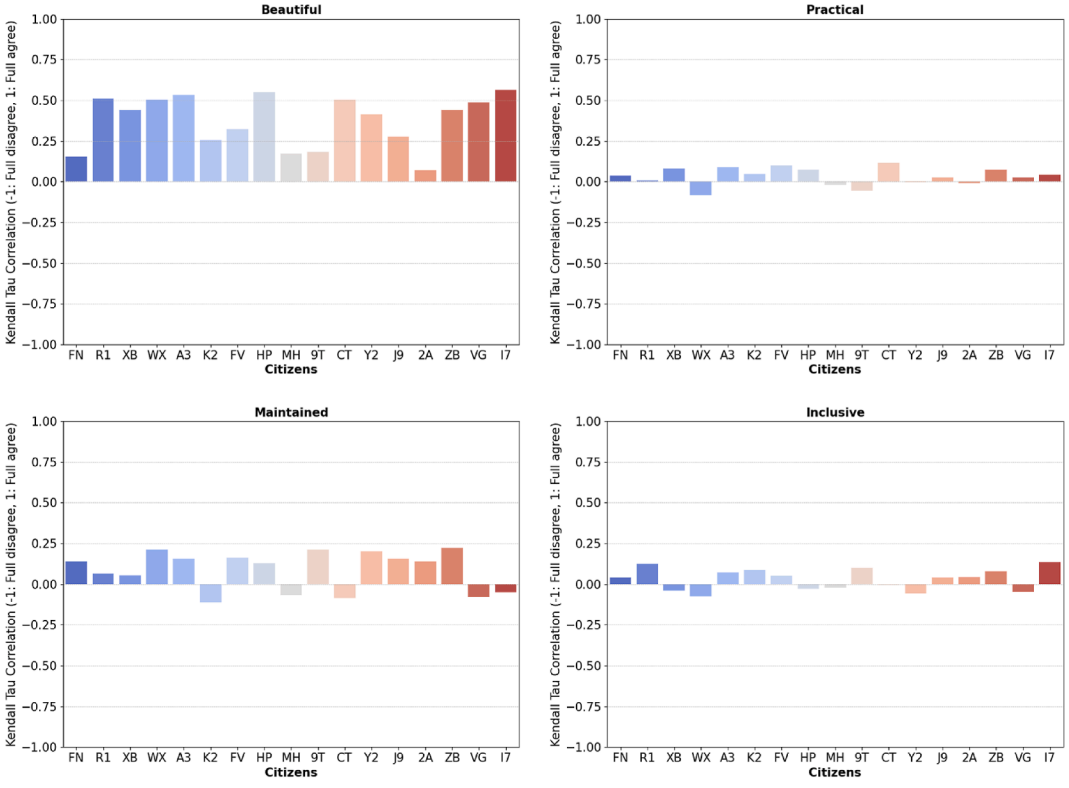

Fig. 4. Kendall's Tau correlation for four criteria—beautiful, practical, maintained, and inclusive—illustrating how strongly participants' rankings converge or diverge (Mushkani, Berard, & Koseki, 2025).

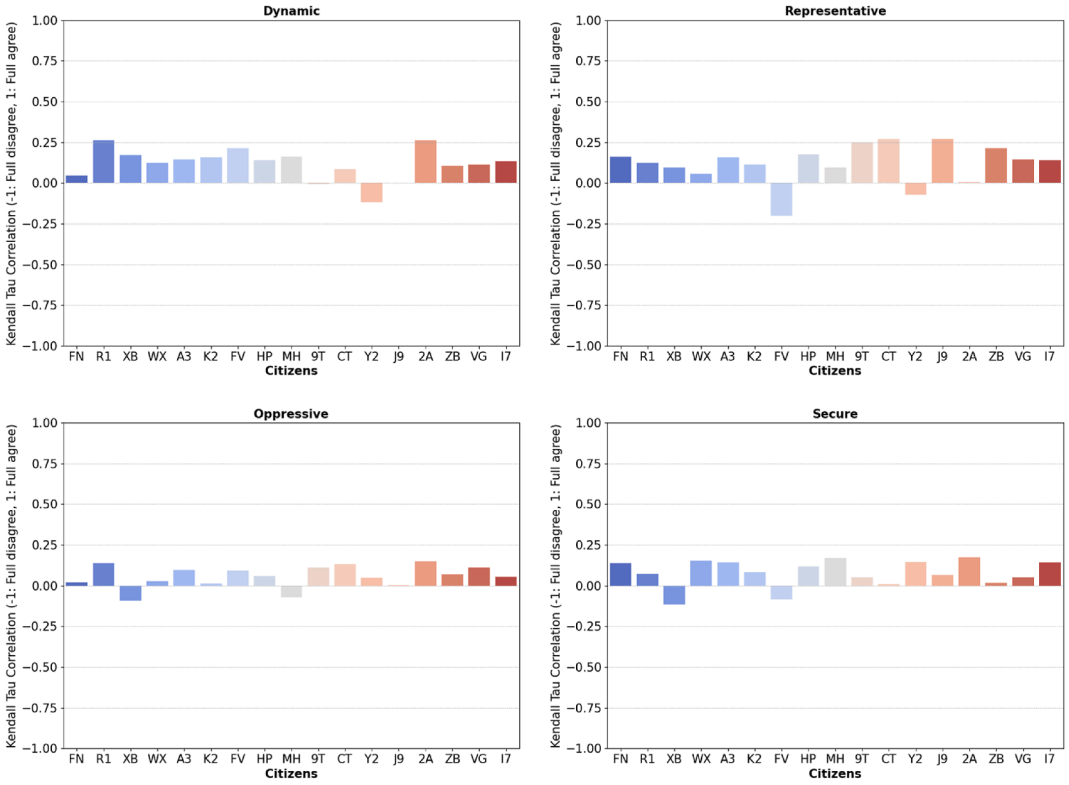

Fig. 5. Kendall's Tau correlation for four criteria—dynamic, representative, oppressive, and secure—highlighting differences in how participants interpret these more subjective concepts (Mushkani, Berard, & Koseki, 2025).

4.1.3. Beautiful and practical

Beautiful emerged as another criterion with relatively high agreement. While participants FN, 2A, MH, and 9T showed lower correlations, others (R1, A3, HP, CT, I7) aligned more closely, suggesting that aesthetic appeal (e.g., greenery, architectural charm) can be widely recognized. However, practical prompted minimal consensus. Some participants (A3, CT, ZB, FV) had particularly low correlations, and the remainder hovered around near-zero or slightly negative values. This pattern points to differing interpretations of what constitutes practicality—whether it is about seating, signage, road width, or upkeep.

4.1.4. Maintained and inclusive

The maintained criterion likewise showed low-to-moderate agreement, indicating variations in how participants judge cleanliness, infrastructure upkeep, or similar factors. Some (WX, 9T, Y2, ZB) ranked images in ways that diverged substantially from the collective. Meanwhile, inclusive appeared to generate the least consensus, with many participants expressing distinct criteria for whether a space felt socially open to all. R1, 9T, and I7 indicated lower correlations, echoing wide-ranging experiences and understandings of inclusivity in public realms.

4.1.5. Dynamic and representative

For dynamic, agreement levels remained low to moderate. While some participants (R1, FV, 2A) somewhat clustered in their rankings, 9T and Y2 diverged significantly, reflecting different notions of what activities or visual cues make a street dynamic. Similarly, representative showed slight agreement overall. Negative or no correlations from participants Y2 and 2A, for instance, underscore how personal or cultural contexts can shape whether a space is perceived as depicting community values or identities.

4.1.6. Oppressive and secure

Criteria such as oppressive and secure also revealed weak consensus. Some participants viewed certain images as signifying social or spatial constraints (oppressive), while others saw them as neutral or acceptable. On security, the majority displayed only slight correlation, indicating that judgments about lighting, personal safety, or surveillance varied widely—XB, FV, CT, and ZB even showed zero or negative correlations with the group as a whole.

Overall, the highest agreement emerged around regenerative and beautiful, possibly due to more universally recognized markers of greenery or aesthetic allure. In contrast, inclusivity, practical, and maintained showcased minimal alignment, signaling deeper subjectivities and potentially divergent lived experiences. These patterns underscore the complexity of capturing public perception

through discrete categories, which can be particularly challenging for urban planners seeking to accommodate diverse definitions of functionality, inclusivity, or security.

4.2. Rating experiment

The second phase—rating 20 streetscape images—focused on four criteria: practicality, inclusivity, aesthetics, and accessibility. Participants completed these evaluations both individually and in groups. Figs. 6 and 7 display Pearson correlations among participants, offering two perspectives on the degree of consensus: (1) within each group and (2) across individuals.

4.2.1. Group-based evaluations

Practicality and inclusivity. As shown in Fig. 6, groups F1G and F2G aligned more closely on the notion of practicality, posting moderately high correlation values, whereas F3G lagged slightly behind yet still exhibited a positive relationship with the collective. Inclusivity, however, varied among the groups. F2G demonstrated a stronger shared definition, while F1G and F3G displayed lower correlations, indicating that participants in these groups differed on whether and how certain images exemplified inclusivity.

Aesthetics and accessibility. Correlations for aesthetics were relatively high, indicating a group-level consensus on street features. Specifically, Groups F2G and F3G demonstrated the strongest agreement, while Group F1G showed slightly less alignment, though still positive. Accessibility followed a similar pattern: Groups F1G and F3G reported high correlations, and Group F2G also clustered positively, albeit to a somewhat lower degree. This suggests that some participants within Group F2G assigned different weights to the street spaces depicted in the images.

4.2.2. Individual evaluations

Practicality and inclusivity. At the individual level (Fig. 7), moderate consensus emerged around practicality. Notably, participants F2P1, F3P3, and F3P1 deviated from the group mean, possibly due to unique priorities (e.g., emphasis on amenities vs. design elements). Inclusivity again sparked only slight agreement; some participants (F3P2, F3P4, F3P5) displayed higher correlations with the collective, while others (F1P1, F3P1) held alternative viewpoints, revealing that personal background and social experiences may play a larger role in how inclusivity is judged.

*Aesthetics and accessibility***.** Aesthetics elicited moderate to high agreement, indicating that while participants might weigh artistic qualities differently, overall visual appeal can be somewhat consistently recognized. Notably, F2P3 and F3P1 scored lower correlations. Accessibility also showed generally positive alignment among most participants, though F3P1 and F1P3 diverged slightly, highlighting personal nuances in assessing walkability or user-friendliness.

Overall, compared to the ranking exercise, the rating experiment revealed clearer signals for criteria such as practicality and inclusivity—especially when participants deliberated in groups. While discrepancies persisted at the individual level, group discussions appeared to generate more convergent judgments on inclusivity and accessibility. These results suggest that structured dialogues may help reconcile differing perspectives, thereby offering valuable insight for urban planners seeking to balance diverse opinions.

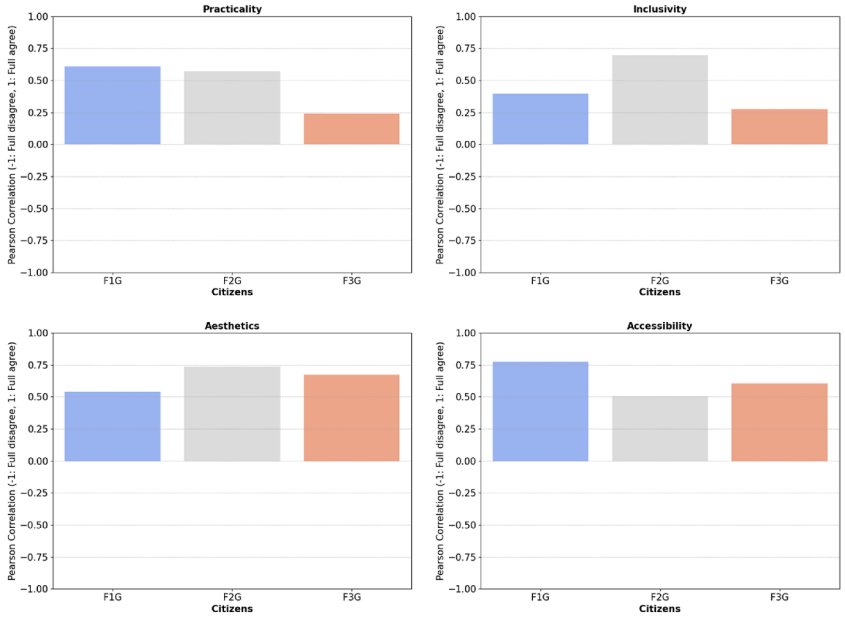

Fig. 6. Pearson correlation coefficients for practicality, inclusivity, aesthetics, and accessibility across three participant groups (F1G, F2G, F3G). Higher bars indicate stronger agreement within each group.

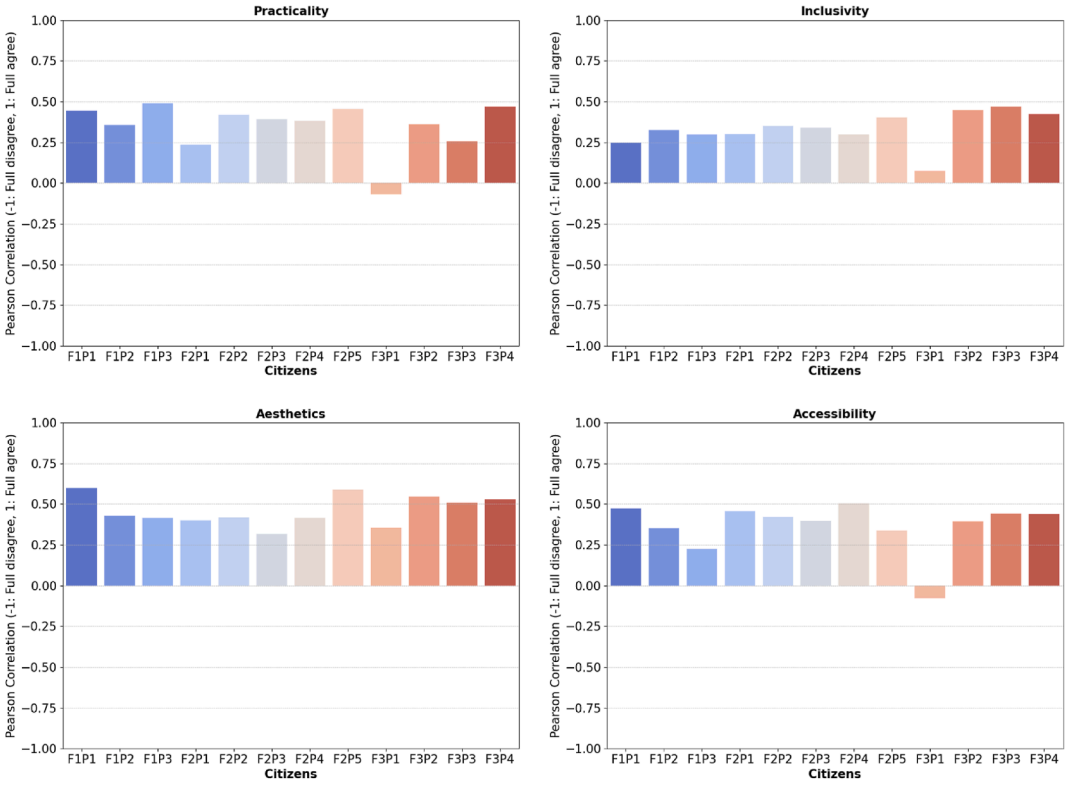

Fig. 7. Pearson correlation coefficients for practicality, inclusivity, aesthetics, and accessibility among individual participants. Higher values suggest greater alignment with the collective average.

4.3. Evaluation reliability

To further probe the stability and reliability of the participants' judgments, we examined Intraclass Correlation Coefficients (ICC) for both ranking and rating exercises (Figs. 8 and 9), alongside additional comparisons using polar charts (Figs. 10 and 11).

4.3.1. ICC for ranking

In the ranking experiment, criteria such as regenerative, beautiful, comfortable, and inviting achieved higher reliability scores, aligning with participants' strong consensus about visually or emotionally appealing attributes. However, practical and inclusive exhibited notably negative or near-zero ICC values, indicating inconsistent and often conflicting opinions. This result echoes the earlier finding that certain social dimensions of public space (e.g., inclusivity) may be more context-dependent and less universally agreed upon.

4.3.2. ICC for rating

For individual-level ratings of practicality, aesthetics, and accessibility, ICC values were moderate, reflecting decent consistency across participants. However, inclusivity showed lower reliability, underscoring the complexity of this dimension. When ratings were aggregated at the group level, ICC values rose across the board, with aesthetics in particular displaying the highest degree of agreement. Thus, the group-based rating approach seems more robust for developing shared assessments, likely due to the dialogue and negotiation that occurred during focus-group sessions.

4.3.3. Criteria reliability

Fig. 10, the polar chart highlights strong agreement on regenerative and beautiful, while criteria like accessible and practical register lower values. This pattern aligns with the detailed correlations in Figs. 3–5, confirming that participants more easily converge on aesthetic and environmental qualities than on functional or social attributes. Fig. 11, for group ratings, accessibility and aesthetics exhibit a stronger linear relationship with the collective average than do inclusivity or practicality. However, the correlations for inclusivity and practicality show improvement compared to individual evaluations.

4.4. Synthesis of findings

Overall, the results point to several salient themes:

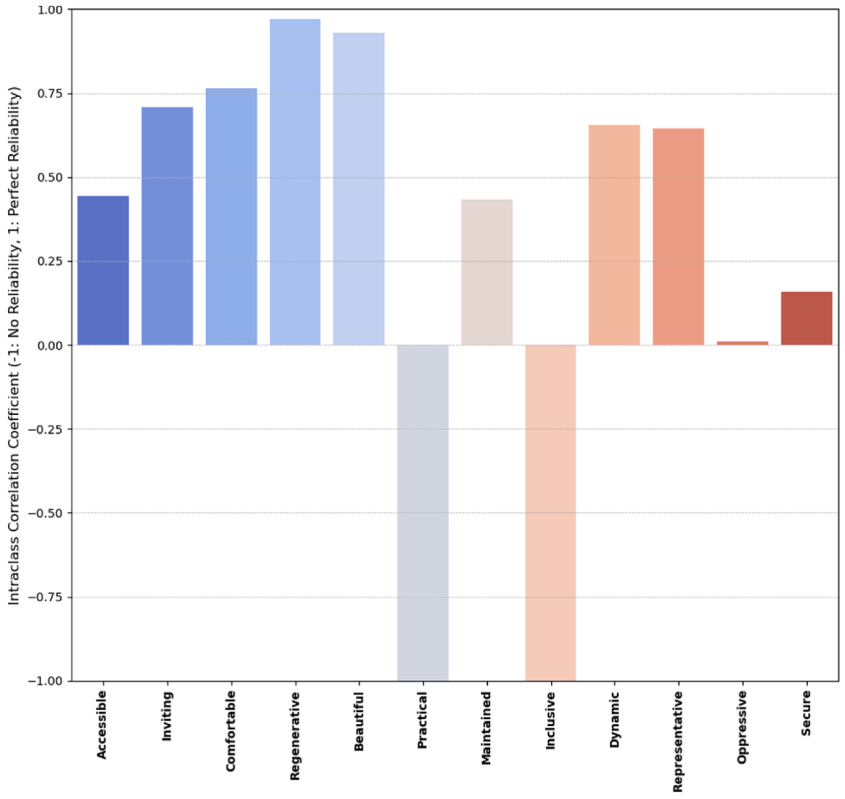

Fig. 8. ICC values for twelve criteria in the ranking experiment, illustrating the overall reliability of participant judgments.

1. High consensus on aesthetics and regenerative aspects. Participants generally recognized and agreed upon visually appealing or rejuvenating features, hinting that certain environmental cues (e.g., greenery, seating, coherent design) are more universally appreciated.
2. Persistent disagreement on social dimensions. Criteria like inclusivity and practical showed considerable variability, with negative or weak agreement across both ranking and rating methods. This suggests that social, cultural, or personal factors heavily influence how individuals judge a street's functionality, openness, or sense of belonging.
3. Group discussions enhance convergence. In the rating exercise, participants demonstrated greater alignment when evaluating images in small focus groups. This shift underscores how collaborative engagement can help reconcile or clarify divergent viewpoints, an important lesson for participatory urban planning.
4. Relevance for public space management. Identifying where opinions cluster or diverge can guide the development of targeted management strategies. For example, strong agreement on aesthetics could inform consistent landscaping or beautification efforts, while highly contested dimensions such as inclusivity may call for deeper engagement with marginalized groups or tailored interventions to address specific barriers.

Together, these findings underscore the multifaceted and context-dependent nature of urban street evaluations. For planners, designers, and policy-makers striving to create equitable and appealing streets, an in-depth understanding of both widely shared preferences (e.g., aesthetic upgrades) and contested domains (e.g., inclusivity, practicality) is crucial. By integrating rating and ranking methods in participatory processes, practitioners can better capture the diverse voices of local communities, ultimately shaping street environments that resonate more inclusively with their intended users.

5. Discussion

The variability uncovered in individual assessments underscores that what counts as “inclusive” or “inviting” is deeply personal, shaped by participants’ intersecting identities (Armstrong & Greene, 2022; Johnson & Miles, 2014; Low & Iveson, 2016). From a managerial perspective, these findings caution against one-size-fits-all solutions or purely quantitative indicators. Instead, management practices could benefit from iterative engagement with diverse user groups—particularly those who have historically faced obstacles in urban spaces (Bambó Naya et al., 2023; McAndrews et al., 2023; Zamanifard et al., 2018).

While consensus around aesthetics and regeneration appeared stronger, these domains are also heavily contingent on local context. Group evaluations showed that participants aligned better when discussing intangible concepts like inclusivity, accessibility, and

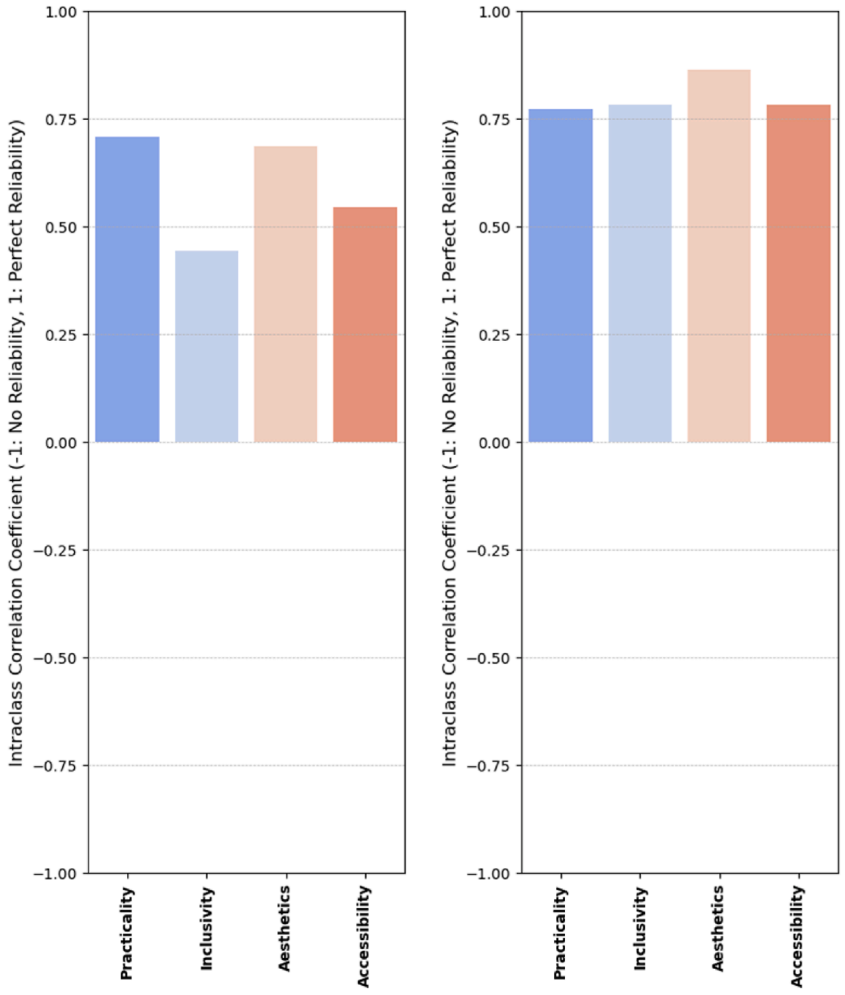

Fig. 9. ICC values for four criteria in the rating experiment, comparing individual-level (left) and group-level (right) evaluations.

practicality. Hence, municipal managers might adopt multi-tiered measures: clear, measurable benchmarks for physical design features (e.g., sidewalk width, seating, curb conditions) combined with ongoing qualitative engagement to refine understanding of dynamic concepts like inclusivity and practicality.

Our findings indicate that focus-group dialogues facilitated more convergent perceptions on certain criteria. This suggests that public space management processes—such as consultations or participatory workshops—can help communities negotiate shared understandings, thereby yielding guidelines that are more robust and broadly acceptable (Fainstein, 2010; Forsyth, 2014; Woolley et al., 2010). Notably, these dialogues did not fully homogenize views on inclusivity; rather, they permitted partial agreements while respecting differences.

For urban policymakers and planners, this points to the practical utility of small-scale, repeated engagement sessions. Instead of single, large-format public hearings, structuring multiple focus-group–style events may allow deeper discussions of contested dimensions like inclusivity. In this study, though rating and ranking exercises can elicit detailed feedback, the approach demands careful curation of images, clear instructions, and sufficient time for participants to reflect. Maintaining diversity in the participant pool is also critical; in this study, we strove for inclusivity but remained limited by the small sample size. Larger-scale implementations would require greater resources, ongoing partnerships with community organizations, and increased financial capacity (Creswell & Creswell, 2022).

Translating these divergent priorities into actionable policies requires a structured conflict-resolution approach within participatory processes. Municipal agencies, for instance, could organize targeted neighborhood forums that bring together groups with opposing concerns—such as recent cases of bike path construction in the city of Montréal, elderly people's concerns about safety, business owners prioritizing parking access, and residents advocating for traffic-calming measures—to individually and collaboratively evaluate potential design interventions (Carpentier-Laberge et al., 2024). By embedding these processes into official planning cycles, policymakers can more effectively mediate and negotiate conflicts, ensuring that changes in street management and design reflect a balanced consideration of diverse stakeholder interests.

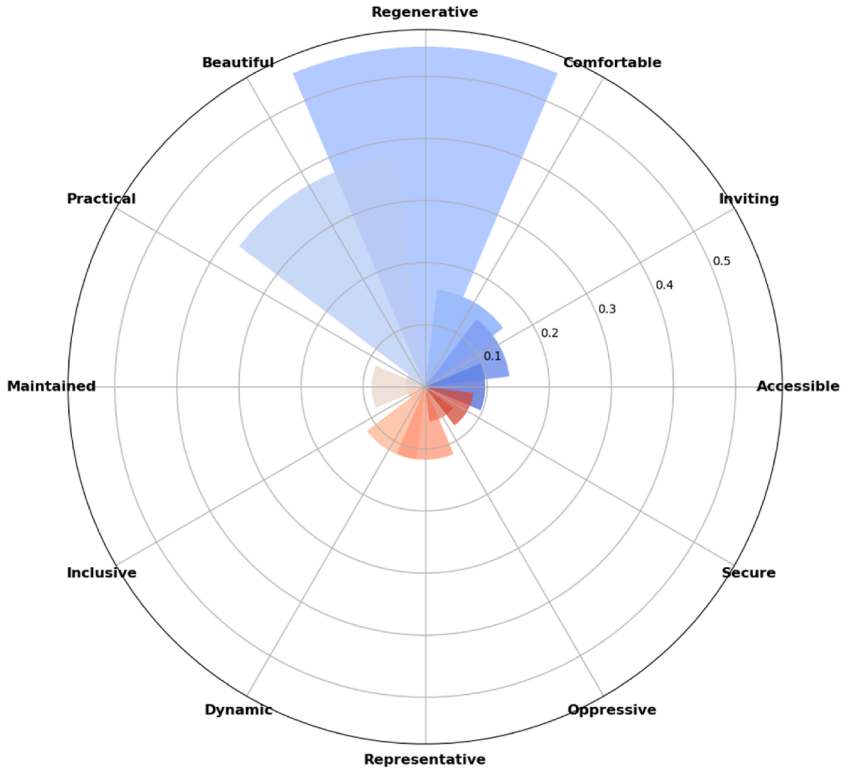

Fig. 10. Polar chart summarizing Kendall's Tau from the ranking experiment. Higher values reflect stronger consensus in ordinal rankings for each criterion.

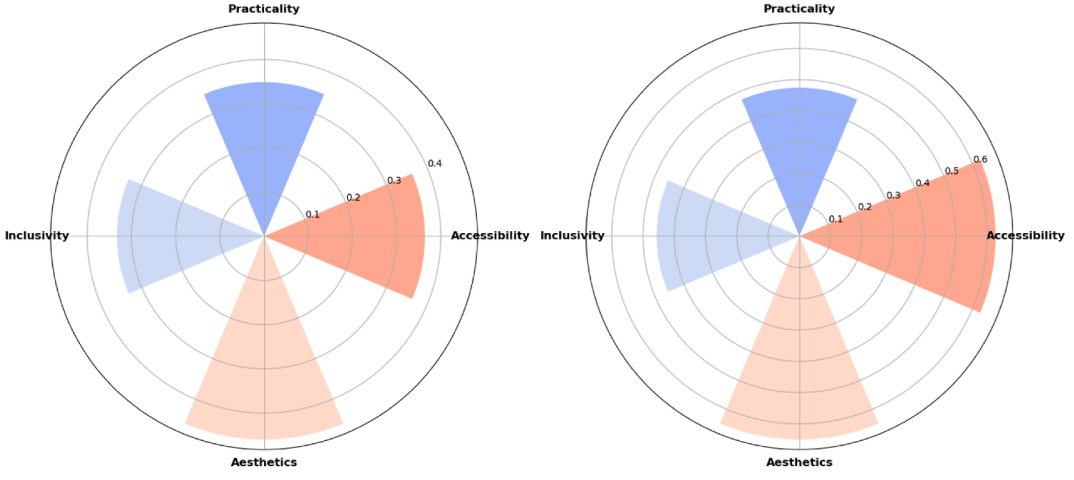

Fig. 11. Polar chart summarizing Pearson correlations from the rating experiment. Higher values reflect stronger linear agreement with collective assessments. Left: Individual evaluations. Right: Group evaluations.

A further challenge lies in managing participant fatigue when discussing nuanced criteria. Some participants reported difficulty distinguishing "representative" from "inclusive," or "practicality" from "comfortable," especially without formal definitions. While we intentionally left the terms open-ended to capture individualized perceptions, future efforts might blend both open and closed definitions, ensuring clarity while respecting the fluidity of people's subjective experiences.

The central contribution of this study lies in illustrating how diverse user perceptions can reveal tensions or alignment in what a street should provide. Discrepancies in ratings for inclusivity show that the "public" is not a singular entity but a composite of many publics (Latour & Weibel, 2005). This resonates with post-colonial critiques that question whose values and experiences are being privileged in planning decisions (King, 2012). Through structured yet flexible methods of gathering community insights, urban

managers may develop strategies that actively respond to localized definitions of the public good.

Ultimately, public space cannot be effectively managed by a single actor or metric; it involves constant negotiation with multiple stakeholders. Our results highlight that while certain design or physical features (e.g., greenery, good lighting) often gain consensus, intangible criteria like oppression or inclusivity demand ongoing reflection and collaborative problem-solving. This is especially important given the rapidly shifting demographic, socio-political, and ecological conditions shaping modern cities (Dmowska & Stepinski, 2018; Felix de Souza, 2023; Herzog et al., 2024; Kitchin, 2023).

6. Limitations

Although our findings offer valuable insights for inclusive public space management, several limitations should be acknowledged. First, budgetary and logistical constraints constrained the scale and representativeness of our sample, and we were unable to secure participation from certain demographic groups (notably teenagers, Indigenous communities, and some intersectional identities). Second, relying on static images to capture street conditions necessarily omits dynamic, real-time interactions and cannot fully replicate the on-site experience. Additionally, language nuances posed translation challenges when moving between French and English, as certain key concepts (e.g., "inclusivity," "oppression") can carry different connotations and do not always map seamlessly across languages. While we strived to minimize these issues through bilingual transcripts and clarifying discussions, cultural and linguistic subtleties may still have influenced participants' evaluations. A larger-scale, multi-lingual study with more diverse cohorts could help address these limitations in future research.

Moreover, the choice to rely on static imagery was largely pragmatic. Budgetary and logistical constraints made it unfeasible to develop or administer virtual tours or on-site evaluations for a similarly diverse sample. Although printed photographs helped achieve uniformity in presentation and inclusivity for participants with different abilities, we acknowledge that static visuals do not replicate the dynamic, real-time interactions that occur in public spaces. Future research could incorporate more immersive tools—such as short video clips, 360-degree virtual tours, or augmented reality simulations—to better capture the temporal and social complexity of street life. Such methods would allow participants to observe multiple cues (e.g., pedestrian flow, noise levels, changing lighting conditions) that are difficult to convey through still images alone.

7. Conclusion

This study investigated how Montréal residents from diverse backgrounds perceive inclusivity and quality in public streetscapes, utilizing interviews, rating, and ranking methods. We found a strong consensus on dimensions such as regeneration and aesthetics, but notable divergences regarding inclusivity and practicality. Although group-based discussions improved alignment on certain aspects, deeply personal concerns remained resistant to homogenization.

These findings highlight the value of context-sensitive, participatory approaches to public space management. For stakeholders seeking equitable, publicly accessible streetscapes, three key lessons emerge:

1. Combine quantitative and qualitative inputs: Relying solely on metrics can overlook intangible experiences of inclusion and comfort.
2. Employ repeated, small-group consultations: Multiple, focused discussions can reconcile differing perspectives.
3. Attend to local specificity: Perceptions of inclusivity and practicality vary widely, even within a single urban area.

By acknowledging the negotiated nature of the "public," managers can design interventions that better reflect diverse urban realities. Although the limited sample size and specific setting of this study constrain its generalizability, the research framework—integrating rating, ranking, and group-based reflection—offers a template for other contexts. Future work can expand the participant pool or explore shifts in perceptions over time as social and demographic conditions evolve. Ultimately, this study demonstrates that while participants converge on certain visual qualities, inclusive design and management must also account for divergent definitions of a welcoming or equitable environment. Acknowledging and negotiating these differences fosters a more inclusive vision of urban publicness that supports civic life and social well-being.

CRediT authorship contribution statement

Rashid Mushkani: Writing – review & editing, Writing – original draft, Visualization, Validation, Software, Resources, Methodology, Investigation, Formal analysis, Data curation, Conceptualization. **Hugo Berard:** Validation, Resources, Conceptualization. **Toumadher Ammar:** Project administration, Investigation, Data curation. **Shin Koseki:** Supervision, Project administration, Funding acquisition.

Ethical statements

This study was approved by the appropriate Research Ethics Committee of the Université de Montréal.

Data availability statement

Research data are available upon request.

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Declarations of interest

None.

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