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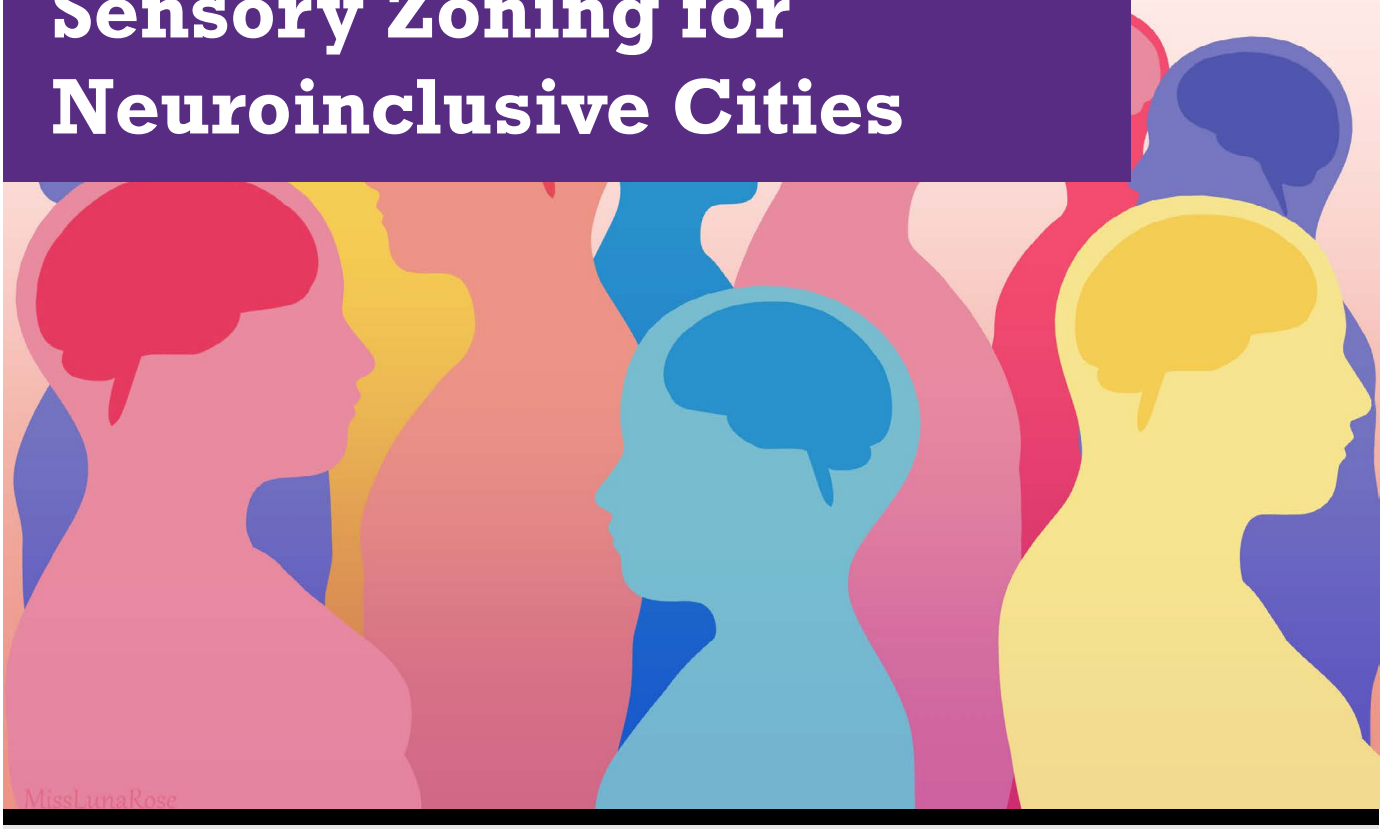
Sensory Zoning for Neuroinclusive Cities



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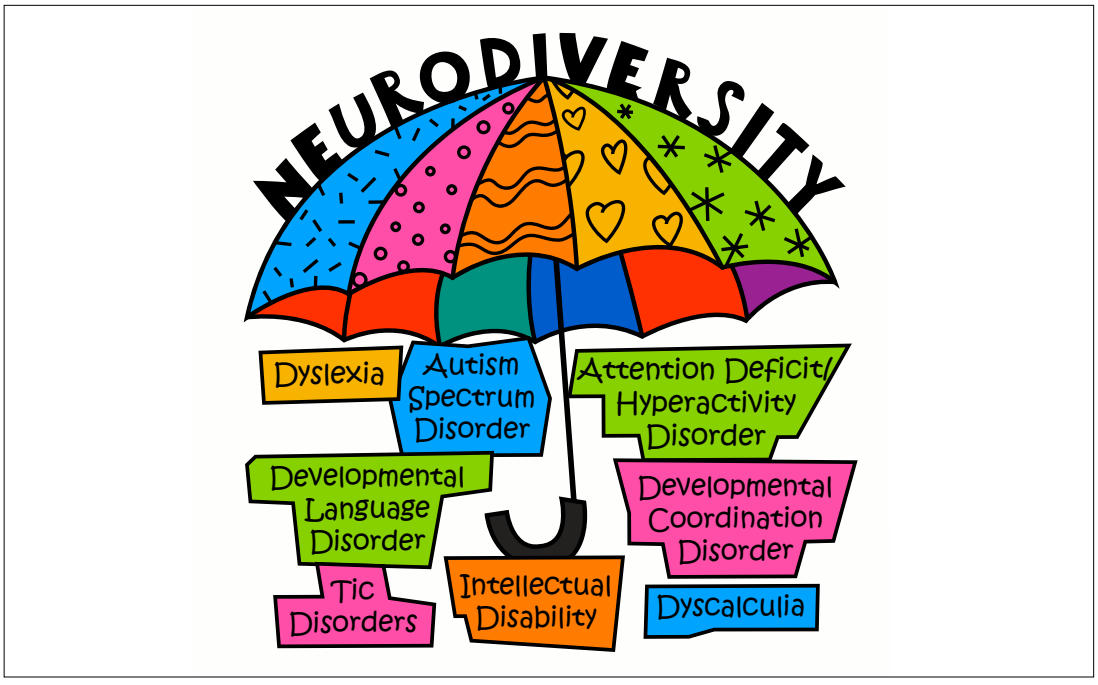
Sensory Zoning for Neuroinclusive Cities

By Abdulrahman Alharthi, AICP

The concept of neurodiversity acknowledges that variations in neurological wiring and cognitive functioning are a natural and valuable form of human diversity, not deficits to be cured (Singer 1999). This paradigm encompasses autistic individuals and those with attention-deficit/hyperactivity disorder (ADHD), dyslexia, dyspraxia, Tourette's syndrome, anxiety disorders, and a range of other cognitive styles (Walker 2021). Conservative estimates suggest that at least 15 to 20 percent of the global population is neurodivergent (Doyle 2020). However, this fundamental dimension of human experience—neurodiversity—remains largely invisible to the codes, regulations, and standards that shape our built environment.

Development regulations aren't just about land use; they are powerful levers for social belonging. To build truly inclusive cities, we must reform regulations with neurodiversity in mind. Incorporating the perspectives of neurodivergent individuals can lead to policies that are more representative and effective. While physical accessibility standards in building codes and street design manuals represent significant progress in designing for bodily diversity, local land use and development regulations have overwhelmingly neglected the diversity of the mind.

This issue of *Zoning Practice* introduces *sensory zoning* as a new framework to foster neurologically inclusive communities. It begins by exploring how sensory characteristics of the built environment and standard public participation methods present barriers to neurodivergent individuals before outlining a phased strategy of regulatory reform, sensory-aware design, and authentic co-creation.



Neurodiversity, an umbrella term for various cognitive styles (Credit: Anna Bergbauer/ iStock/Getty Images Plus)

Core Challenges in the Built Environment

The modern city, a marvel of human invention, often functions like a poorly designed interface for a neurodivergent user. Its default settings create a cascade of friction points that can render daily life exhausting, anxiety-provoking, and sometimes impossible. Understanding these challenges in detail is the first step toward designing solutions.

Regulatory Inflexibility and Neurodivergent Exclusion

Zoning codes, which dictate what can be built where, focus almost exclusively on physical dimensions like height and density, while completely ignoring the sensory and cognitive character of a place. This regulatory framework seldom addresses critical elements like decibel levels, light luminance, visual complexity, or olfactory pollution. Consequently, a new development can be fully code-compliant, while creating an environment of profound sensory assault. For example, a building with a legally permissible facade of reflective, patterned glass might cause disorientation and cognitive overload, or a pedestrian-oriented commercial district that encourages outdoor dining but sets no acoustic performance standards might create a legally cacophonous environment that is physically painful for some individuals. This regulatory silence on sensory pollution normalizes an environment of constant, low-grade neurological aggression, leaving neurodivergent individuals without recourse and forcing them to endure public spaces that are physically accessible but neurologically hostile.

This sensory blindness is compounded by the fact that current codes are ill-equipped to handle the core paradox of neurodiversity: creating spaces that can be both stimulating for some and calming for others. The broad classification of land as "residential," "commercial," or "industrial" fails to account for the vast sensory differences within these categories. A quiet bookstore and a loud arcade are both commercial uses, yet they have diametrically opposed sensory profiles.

Ultimately, this inflexibility culminates in a public realm that fails to accommodate basic neurodivergent needs. Without formal requirements to assess neurological impact, plan for sensory transitions, and welcome diverse bodily expressions, our zoning codes implicitly design for a neurotypical, stationary body, systematically excluding the full spectrum of human neurology from public life.

Overwhelming Stimuli and Hyperstimulation: The Sensory Assault

Perhaps the most immediate and visceral challenge is the problem of sensory overwhelm. Urban environments are too often engines of uncontrolled and excessive sensory input, a relentless barrage that can be physically painful and mentally corrosive for those with sensory processing differences (Finnigan 2024).

A typical night in New York City's Times Square (Credit: Starcevic/iStock/Getty Images Plus)

Auditory Onslaught

The urban soundscape is a chaotic symphony of traffic roar, construction equipment, sirens, jackhammers, loudspeakers, and the cacophony of crowded spaces. For individuals with hyperacusis—a heightened sensitivity to sound where specific frequencies or volumes are perceived as unbearably loud, uncomfortable, or painful—these noises are not filtered out (Paulin, Andersson, and Nordin 2016). They are experienced at jarring volumes, triggering a constant state of fight-or-flight response and anxiety. This auditory distress frequently leads to a need to escape the environment, a

common behavioral consequence of the condition.

Visual Chaos

The visual field in a typical street is a riot of competing information: flickering digital advertisements, blinking traffic lights, erratic signage, complex architectural patterns, and the unpredictable movement of crowds and vehicles. This "visual noise," which can be measured as high levels of streetscape complexity based on local contrast and spatial frequency, makes it difficult to focus, locate important cues, or find a moment of visual rest (Cavalcante et al. 2014). For autistic individuals or those with visual processing disorders, this clutter can lead to disorientation, dizziness, and overload, as navigating complex pedestrian environments like shared zones places significant cognitive and sensory demands that are particularly challenging for these individuals (Earl et al. 2018).

Lighting and Glare

Exposure to harsh, flickering fluorescent lighting in streets, buildings, public spaces, and transit stations is associated with adverse neurological responses, including disorientation, headaches, and seizures, while unshielded or poorly directed outdoor fixtures create significant glare by projecting light directly into pedestrians' line of sight (Mańkowska et al. 2022). This results in high-contrast visual fields characterized by sharp gradients between illuminated and shadowed areas, a condition that contributes to disorientation and poses safety hazards by impairing spatial awareness (Leonards et al. 2024).

Many neurodivergent individuals rely on a strong sense of proprioception—the awareness of one's body in space—to feel grounded and secure.

Olfactory Intrusion

Olfactory intrusion involves exposure to strong, unpredictable ambient smells, such as vehicle exhaust, food vendor emissions, concentrated perfume in enclosed spaces, and public waste. For individuals with heightened olfactory sensitivity, fragrances are physically intrusive and can trigger symptoms like nausea, migraines, and sensory overload, rather than being mere background scents (Steinemann 2019). This transforms necessary activities like using public transit or visiting a public library into inaccessible experiences.

Tactile Intrusion

Many neurodivergent individuals rely on a strong sense of proprioception—the awareness of one's body in space—to feel grounded and secure. Unpredictable tactile intrusion can shatter this sense of bodily autonomy. This experience is compounded by a fundamental difference in sensory processing, where the brain's sensory gating mechanism—its ability to filter out irrelevant stimuli—can be altered, leading to a state of sensory overload where all tactile information floods the brain with equal, jarring intensity (Cascio et al. 2008). Furthermore, the internal sensory world of interoception can be so heightened that external touch feels amplified and physically painful (Miyashita et al. 2017). This unfiltered sensory onslaught is neurologically linked to the persistent activation of the amygdala, the brain's threat detection center, triggering a state of hypervigilance and distress (Voos et al. 2012).

This sensory assault is not a minor irritation. It is a primary reason why neurodivergent individuals might avoid parks, libraries, transit centers, and shopping districts—the very spaces that constitute public life. This leads to isolation, reduced access to essential services and social opportunities, and a diminished quality of life.

Exclusion from Planning Processes: Nothing About Us Without Us

True inclusivity and equity in public participation and planning processes are determined by its methods, which often inadvertently exclude. Neurodivergent individuals are a major case in point—they

represent a significant part of the community but are largely invisible in planning processes, making them one of the biggest, yet most frequently overlooked, groups in public engagement. This exclusion stems from several core oversights:

- **Invisibility in Planning:** Neurodivergent individuals are frequently not recognized as a distinct stakeholder group that requires intentional outreach and accommodation, despite their significant numbers.
- **The "Abstract User" Problem:** Planners design for a neurotypical abstraction, a hypothetical "average" person, rather than for the real, neurologically diverse population, which results in a one-size-fits-all approach that fits almost no one well (McAllister, McBeth, and Galway 2022).
- **Lack of Legal & Policy Frameworks:** While laws like the Americans with Disabilities Act (ADA) and the Rehabilitation Act of 1973 mandate "reasonable accommodations," the specific application to neurodiversity in participatory planning is often underdeveloped and inconsistently applied.
- **The "Invisible Disability" Paradox:** Because many neurodivergent traits are not physically visible, the need for accommodation is often overlooked or dismissed by organizers who lack awareness (National Disability Authority 2022).
- **Untapped Expertise:** This systematic exclusion means the unique strengths of neurodivergent individuals, like deep empathy, creative thinking, pattern recognition, and a strong sense of justice, are lost to the process (Doyle 2020).

Standard public engagement techniques are often a recipe for exclusion, creating barriers through their format, sensory environment, and communication demands:

- **The Adversarial Public Hearing:** Public hearings are often loud, confrontational, and require on-the-spot verbal testimony, which is inaccessible to those with communication differences, social anxiety, or who need processing time (Lemar 2024).
- **The Unstructured Workshop:** Workshops without clear agendas, timings, or rules for interaction can be socially overwhelming and unpredictable, creating high anxiety for many autistic people or those with ADHD (Guthrie and Kroiss 2024).
- **Inaccessible Surveys & Materials:** Engagement materials often use complex jargon, lack visual supports, and do not provide multiple ways to respond (Burchell 2015; Minocha et al. 2024).
- **Over-Reliance on Verbal Communication:** Processes that prioritize speaking and rapid debate disadvantage those who are nonverbal, have auditory processing disorders, or who communicate more effectively in writing or through other means (Minocha et al. 2024).
- **The Tyranny of the Quick Response:** The pressure to contribute ideas immediately does not allow for the deep reflection and processing time that many neurodivergent individuals require and excel with (Burchell 2015; Minocha et al. 2024).

These challenges are not isolated; they are interconnected, creating a synergistic effect that can make urban life profoundly difficult. They fracture the potential for a genuine sense of belonging and highlight the critical need to move beyond solely physical accessibility towards embracing cognitive and sensory inclusion as foundational principles of urban design and zoning.

A public comment session during a Greenville, North Carolina, City Council meeting in June 2022 (Credit: City of Greenville, North Carolina/ Flickr)

Foundational Regulatory Reforms

The journey toward neuro-inclusion begins with the foundational documents that dictate land use and urban form: zoning codes and related development regulations. These documents, largely based on century-old Euclidean principles of separation, require substantive revision to accommodate neurological diversity.

Beyond creating specialized zones, a neuro-inclusive approach would also integrate sensory standards throughout all zoning classifications.

Reforming Zoning Codes and Classifications

The rigid segregation of land uses—residential here, commercial there—is one of the most significant structural barriers to neuro-inclusive communities. This model mandates frequent travel between zones for basic needs, creating insurmountable challenges for those who cannot drive due to conditions like epilepsy or severe anxiety, and for whom public transit is a sensorily hostile experience. The solution is a strategic pivot toward sensory-aware mixed-use development that creates complete, walkable neighborhoods.

This could involve introducing innovative zoning classifications, such as "sensory-sensitive zones." Planners and local officials could establish these zones in areas adjacent to healthcare facilities, therapeutic centers, and supportive housing, implementing heightened controls on lighting levels, noise emissions, and signage intensity to create environments conducive to recovery and regulation. Furthermore, they could develop "sensory overlay districts." Similar to historic or environmental overlays, these districts would apply specialized sensory and cognitive standards to specific geographic areas, providing heightened protections against sensory pollution, while actively encouraging development that incorporates universal design principles.

Beyond creating specialized zones, a neuro-inclusive approach would also integrate sensory standards throughout all zoning classifications. This requires rethinking definitions of permissible uses to include spaces that have traditionally fallen through regulatory cracks.

Zoning ordinances could define and explicitly permit uses that incorporate the following features:

- **Sensory Respite Rooms:** Designated, quiet, and dimly lit spaces in commercial buildings, libraries, and transit hubs (Finnigan 2024).
- **Stim-Friendly Areas:** Public spaces explicitly designed to welcome self-regulatory movements like rocking, pacing, or fidgeting (BSI 2022).
- **Social Navigation Spaces:** Areas designed for parallel engagement rather than forced direct interaction, reducing social anxiety.

Additionally, other conventional requirements may need reforms. For example, parking standards should prioritize accessible passenger loading zones that provide extra time and space for transitions. Setback and landscaping rules should be leveraged to create sensory buffer zones—using vegetation and landforms to provide visual and acoustic separation, facilitating gradual transitions between areas of differing sensory intensity rather than jarring, abrupt changes.

Sensory Zoning and Performance-Based Standards

Traditional zoning regulates physical parameters like height and density but is utterly blind to the sensory characteristics that determine a space's true accessibility. *Sensory zoning* introduces a paradigm of performance-based standards for the sensory environment.

This approach establishes measurable, enforceable limits on sensory inputs across different zoning districts, including the following:

- **Acoustic Performance Standards:** Maximum allowable decibel levels (dB) for different times of day and zone classifications, with significantly lower thresholds in residential, institutional, and sensory-sensitive zones.

A sensory respite room at the Gerald R. Ford International Airport near Grand Rapids, Michigan (Credit: HKS Inc.)

- **Luminance Regulations:** Limits on lighting intensity (measured in lux or foot-candles) and strict restrictions on flicker frequency, crucial for preventing migraines and seizures in individuals with epilepsy or light sensitivity.
- **Visual Complexity Index:** Guidelines limiting the density of signage, advertisements, and architectural elements within key sightlines to reduce cognitive overload and visual clutter.
- **Olfactory Emission Standards:** Maximum permissible concentrations of specific odorants at the property line, requiring operational or design mitigation to prevent nuisance conditions in adjacent zones.

These standards would function similarly to environmental regulations, with compliance verified through developer-submitted assessments and municipal monitoring. A tiered system would create a logical sensory gradient across the city, allowing for appropriately vibrant commercial and entertainment districts, while rigorously protecting the sensory integrity of residential, healthcare, and educational areas. Practical applications could include "sensory quiet hours" in commercial districts, during which amplified sound and certain types of construction would be restricted.

To ensure transparency and effectiveness, municipalities should develop a "sensory design scorecard." This tool would allow for the objective evaluation of proposed developments across multiple dimensions of accessibility—acoustic, visual, olfactory, and cognitive.

Mandating Sensory Impact Assessments (SIAs)

Just as the environmental impact assessment (EIA) revolutionized development's relationship with the natural world, a "sensory impact assessment" (SIA) could be essential for evaluating a project's effect on the sensory well-being of the community. The SIA would become a mandatory component of the entitlement process for major developments, providing planners and local officials with crucial, previously absent data on a project's sensory footprint—the aggregate external acoustic, visual, and olfactory emissions it generates.

A comprehensive SIA framework would include the following components:

- **Baseline Sensory Analysis:** Comprehensive documentation of existing on-site and adjacent sensory conditions, including acoustic mapping, light-level measurements, and olfactory sources.
- **Projected Sensory Impact:** A quantitative and qualitative analysis of how the proposed development would alter the sensory environment, during both

construction and operational phases (e.g., new noise sources, light spill, and traffic patterns).

- **Sensory Mitigation Strategies:** Identification of specific design measures to minimize negative sensory impacts, such as acoustic barriers, lighting controls, buffering, and material selections.
- **Community Sensory Profile:** An assessment of the surrounding area's sensory-sensitive uses, such as schools, hospitals, or neurodivergent community hubs, to evaluate potential disproportionate impacts.
- **Alternative Design Analysis:** Consideration of project designs or operational plans that would achieve the same goals with a reduced sensory footprint.

By institutionalizing the SIA process, municipalities can make informed, equitable decisions and hold developers accountable for the sensory externalities of their projects, ensuring human sensory well-being is considered alongside traffic, environmental, and economic factors.

Sensory Design Guidelines

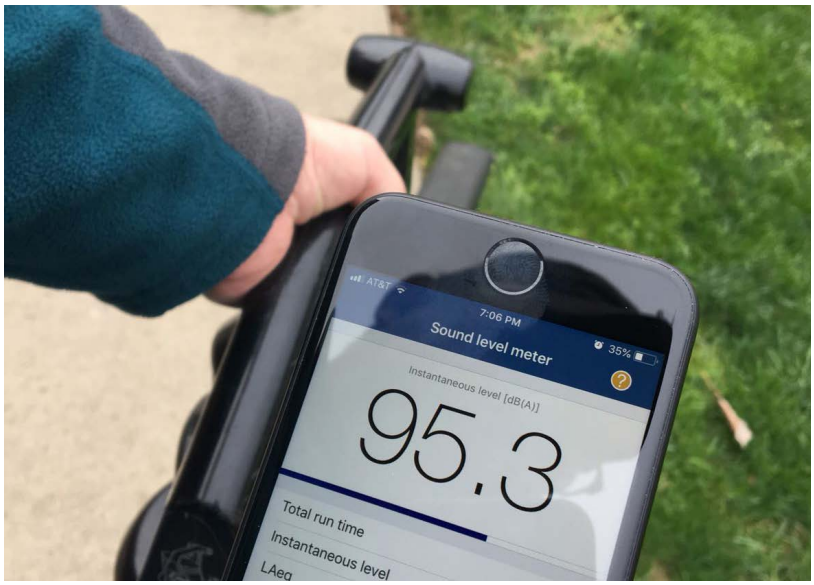
Regulatory reform must be coupled with a clear set of design principles that translates policy into tangible, human-centered experiences. These principles provide the blueprint for creating environments that reduce sensory overwhelm and support cognitive accessibility.

Engineering Sensory-Friendly Environments

Designing for the senses requires a meticulous, multifaceted approach that acknowledges the profound impact of the environment on neurological states (Table 1).

Visual Design

Lighting should prioritize natural illumination where possible, supplemented with artificial lighting that is dimmable, anti-flicker, and anti-glare. Circadian lighting systems that mimic the natural progression of daylight can support neurological health for all users, particularly benefiting individuals with ADHD and OCD by regulating sleep patterns. Color selections should favor muted, neutral, and natural tones that provide visual calm. High-contrast and intensely saturated hues should be reserved for critical wayfinding elements, as high-contrast patterns have a neurological basis for causing visual discomfort, eyestrain, and headaches (Wilkins et al. 1984).



Measuring noise from a handheld leaf blower using the National Institute for Occupational Safety and Health's Sound Level Meter app (Credit: Chuck Kardous/Wikimedia)

Acoustic Control

Managing sound is perhaps the most critical dimension of sensory design (BSI 2022). A multilayered approach is essential, beginning with acoustic insulation in walls, floors, and ceilings to prevent sound transmission. Interior spaces should heavily incorporate sound-absorbing materials—acoustic panels, baffles, and fabric-wrapped surfaces—to reduce reverberation and echo (Sadia 2020). In unavoidably noisy spaces like transit hubs, designated quiet areas and the availability of sensory kits with noise-reducing headphones are vital accommodations.

Tactile and Olfactory Considerations

Surfaces and materials should offer a variety of pleasant, natural textures to support tactile regulation and provide nonintrusive wayfinding cues. For olfactory sensitivities, research has confirmed that individuals on the autism spectrum can posess enhanced olfactory sensitivity (Ashwin et al. 2014). Therefore, design interventions such as zoned HVAC systems, fragrance-free

Table 1: Sensory Design Strategies for Neuroinclusive Spaces

Sensory Modality	Common Challenges	Design Solutions	Benefits for All Users
Visual	Flickering lights, glare, visual clutter	Dimmable circadian lighting, muted color palettes, visual rest areas	Reduced eye strain, improved mood, better sleep patterns
Auditory	Noise, echo, unpredictable sounds	Acoustic insulation, sound-absorbing materials, designated quiet zones	Clearer announcements, reduced stress, improved concentration
Tactile	Unpleasant textures, temperature extremes	Natural soft fabrics, textured wayfinding cues, temperature regulation	Enhanced comfort, intuitive navigation, thermal comfort
Olfactory	Strong or unpredictable smells	Zoned HVAC, fragrance-free policies, natural ventilation	Improved indoor air quality, reduced allergy triggers

policies in certain areas, and enhanced natural ventilation are critical to mitigate the impact of strong or unpredictable smells.

Integrating Biophilic Design in Outdoor Spaces

The incorporation of natural elements into the built environment—offers profound benefits for neuroinclusive communities. Exposure to nature is proven to reduce stress and anxiety (Yin et al. 2020), improve focus, and boost cognitive recovery (Kellert, Heerwagen, and Mador 2008), benefits that are particularly significant for neurodivergent individuals. Natural settings provide "soft fascination" that allows overstimulated nervous systems to recover.

Implementing Intuitive Wayfinding and Cognitive Navigation

Effective wayfinding is a cornerstone of cognitive accessibility, reducing the mental load required for navigation and conserving cognitive resources for other tasks. Sensory wayfinding begins with a clear informational hierarchy.

Signs should present information in order of importance, with content limited to a maximum of five items to prevent cognitive overload. The physical design of wayfinding elements should prioritize high-contrast text on non-glare backgrounds, open sans-serif fonts with generous spacing, and universally recognized symbols that transcend language barriers.

The overarching layout of spaces must support "cognitive mapping"—the mental representation people form of their environment. This is achieved through consistent spatial layouts with logical circulation patterns; distinct landmarks at key decision points; and color-zoned pathways, which create visual districts within larger complexes.

Digital wayfinding technologies—such as mobile apps with step-by-step guidance and augmented reality overlays—offer powerful complementary tools. However, they must be designed with customization options (e.g., adjustable notification frequency) and must never replace physical cues, ensuring accessibility for those without smartphones or during technology failures.

To integrate sensory wayfinding into regulations, zoning codes can require major developments to install permanent, standardized navigation beacons alongside tactile paving. The ordinance would mandate that the beacon data is formatted into an open, city-managed digital layer. This creates a regulated physical-digital

framework, enabling accessible navigation tools while ensuring the primary, equitable wayfinding remains in the permanent, non-digital built environment.

Embracing Universal Design and the "Cognitive Curb-Cut Effect"

The "curb-cut effect"—where design features for disabled people end up benefiting everyone—applies profoundly to sensory design (Blackwell 2017). This "cognitive curb-cut effect" means that features reducing cognitive load and sensory overwhelm for neurodivergent individuals typically create more usable, intuitive environments for all.

The framework of universal design provides seven guiding principles for creating inclusive environments (Connell et al. 1997):

1. **Equitable Use:** The design is useful and marketable to people with diverse abilities.
2. **Flexibility in Use:** The design accommodates a wide range of individual preferences.
3. **Simple and Intuitive Use:** Use of the design is easy to understand, regardless of the user's experience or concentration level.
4. **Perceptible Information:** The design communicates necessary information effectively to the user, regardless of ambient conditions or sensory abilities.
5. **Tolerance for Error:** The design minimizes hazards and adverse consequences of accidental actions.
6. **Low Physical and Cognitive Effort:** The design can be used efficiently and comfortably with minimal fatigue.
7. **Size and Space for Approach and Use:** Appropriate size and space is provided for approach, reach, and manipulation, regardless of body size or mobility.

Community Engagement and Participatory Processes

Authentic inclusion in community planning requires a fundamental shift away from traditional methods like town halls and public hearings, which often exclude neurodivergent individuals and create significant barriers to participation (BECG 2021). To be truly effective, planning processes must intentionally center neurodivergent voices by moving beyond these limited formats. This involves fundamentally rethinking public engagement to value different forms of expertise and create multiple, accessible pathways for participation.

Democratize Input with Flexible, Low-Pressure Formats

Launch "idea harvesting" pop-ups. Place simple, prompt-based kiosks in calm community hubs like libraries. This captures spontaneous input with zero commitment, bypassing the executive function required to attend a formal meeting.

Cultivate asynchronous "comment gardens." Create an online platform where ideas are "seeds" that community members can "water" (comment on) or "cross-pollinate" (connect to other ideas) over weeks. This eliminates the pressure of real-time social performance and allows for deeper reflection.

A wayfinding sign at Universal Studios in Los Angeles (Credit: Ekaterina Chizhevskaya/ iStock Editorial/ Getty Images Plus)

A prompt-based kiosk to collect feedback for Kodiak, Alaska's Housing Action Plan (Credit: Kodiak Economic Development Corporation)

Engineer Sensory-Safe Physical Spaces

Host "sensory safaris" that radically reimagine the open house. Replace chaotic, overwhelming events with scheduled, small-group explorations. Engineer the environment with lowered lighting, noise-cancelling headphones at the door, designated quiet zones, and a strict fragrance-free policy.

Deploy tactile modeling stations to make planning tangible. Provide detailed, physical 3D models of proposed projects. This is crucial for kinesthetic learners, non-speaking individuals, and anyone who understands space through touch rather than abstract plans.

Structure Collaboration for Cognitive Clarity

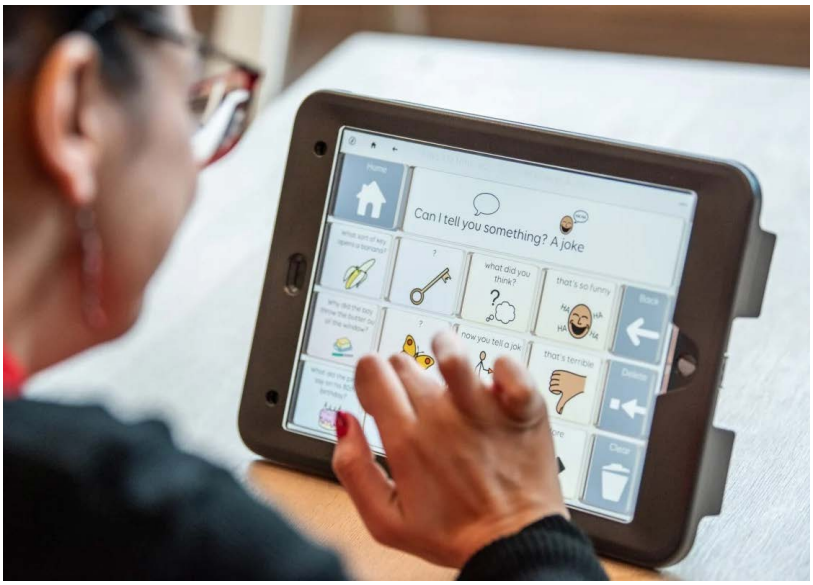
Run "idea sprints" to transform workshops into focused, productive sessions. Use ultra-clear visual agendas, assign defined roles, and—critically—schedule built-in movement breaks. This structure is essential for ADHDers and reduces anxiety for all by making the process predictable.

Mandate pre-engagement insight packets. Distribute clear, visually supported summaries days in advance. This act of respect levels the playing field for those with ADHD, anxiety, or cognitive disabilities who need time to process information.

Champion Multiple Forms of Expression

Utilize visual preference surveys to communicate through imagery. Leverage photos and diagrams to gather nonverbal feedback, empowering autistic individuals, those with dyslexia, and visual thinkers.

Integrate augmentative and alternative communication (AAC)—tools and methods for nonverbal expression—as a standard practice. Have symbol-based boards and speech-generating devices readily available, and ensure all facilitators are trained to use them. This actively welcomes non-speaking individuals into the conversation as equal partners.



An augmentative and alternative communication device (Credit: Smartbox)

A Phased Approach to Neuro-Inclusion

The work of building a neuroinclusive city is an ongoing, strategic process. To manage the complexity of systemic change while ensuring tangible progress, the work is structured in three distinct phases. Each phase builds upon the last, starting with foundational actions to build momentum, advancing to the development of formal policy tools and incentives, and ultimately aiming to fully integrate neuro-inclusion into the standard, daily practice of city-building.

Short-Term Actions

Implementation begins with immediate actions that build momentum while laying groundwork for comprehensive reforms. Here are some ideas for initial steps that focus on building awareness, developing resources, and initiating demonstration projects without extensive regulatory changes.

Municipal Staff Training

Develop and implement comprehensive neurodiversity awareness training for planning department staff, zoning officials, and other municipal employees who interact with the public or make decisions affecting the built environment.

Stakeholder Advisory Group

Establish a formal neurodiversity advisory committee with representation from neurodivergent individuals, family members, service providers, and universal design experts to provide input into planning decisions from the outset.

Education

Create practical resources and workshops for developers and design professionals that highlight both the ethical imperative and business case for sensory design strategies.

Pilot Projects

Identify and implement two to three public facility renovations or small-scale development projects that serve as living laboratories and visible demonstrations of neuroinclusive principles in practice.

Regulatory Audit

Conduct a thorough review of existing zoning codes, building regulations, and design guidelines to identify specific barriers and opportunities for improvement.

These initial steps require minimal regulatory changes while building essential knowledge, relationships, and evidence of effectiveness that support more substantial reforms in subsequent phases.

Medium-Term Strategies

Building on lessons learned from initial pilots, this phase focuses on developing formal standards, creating incentive structures, and systematically integrating neuroinclusive principles into ongoing planning processes. Here are some strategies to shift the emphasis from demonstration to institutionalization.

Sensory Design Guidelines

Develop comprehensive, practical design guidelines specifically addressing neuro-inclusion across public spaces, multifamily housing, commercial development, and institutional facilities using both prescriptive and performance-based approaches.

Incentive Programs

Formalize tangible incentive programs including density bonuses, expedited review processes, and fee waivers for projects that achieve specified neuro-inclusion standards, creating clear business advantages for compliant development.

Sensory Impact Assessment Protocol
Create and pilot a standardized SIA framework for evaluating major development projects, establishing mandatory neurological considerations alongside traditional environmental and traffic impacts.

Zoning Text Amendments
Implement specific, targeted amendments to zoning regulations that address identified barriers and actively support neuroinclusive development through mixed-use provisions, sensory buffers, and updated public space requirements.

Interdepartmental Coordination
Establish formal collaboration mechanisms between planning, transportation, parks, public works, and social service departments to ensure consistent application of neuroinclusive approaches across all municipal functions.

During this phase, municipalities should actively monitor and evaluate the effectiveness of implemented strategies, collecting both quantitative metrics and qualitative feedback from neurodivergent community members. This evidence-based approach allows for continuous improvement and creates a compelling case for further investment in neuroinclusive initiatives.

Long-Term Integration

The final phase focuses on complete institutionalization of neuroinclusive principles, transforming them from special initiatives into fundamental, automatic considerations within standard planning practice. Here are some ideas for sustainable, business-as-usual approaches that consistently prioritize neurological accessibility.

Comprehensive Zoning Reform
Undertake thorough revision of zoning ordinances to incorporate neuroinclusive principles as foundational elements, including new zoning districts with sensory performance standards and updated definitions of permissible uses.

Capital Improvement Integration
Systematically incorporate sensory design standards into all municipal capital improvement projects, ensuring consistent implementation of best practices across public buildings, infrastructure, and spaces.

Regional Coordination
Expand neuroinclusive planning approaches to regional scale through coordination with adjacent municipalities and regional agencies, creating consistency and accessibility across jurisdictional boundaries.

Implement specific, targeted amendments to zoning regulations that address identified barriers and actively support neuroinclusive development through mixed-use provisions, sensory buffers, and updated public space requirements.

Monitoring and Evaluation Systems
Establish permanent, embedded systems for monitoring neurological accessibility and evaluating strategy effectiveness, including regular feedback mechanisms with neurodivergent community members.

Professional Development
Integrate sensory design into standard professional development and certification requirements for planners, designers, and developers, creating a self-sustaining workforce with specialized expertise.

This strategic phased approach manages the complexity of systemic change while maintaining momentum through visible achievements at each stage, ultimately building toward comprehensive neuro-inclusion as a standard characteristic of urban development.

Conclusion

The implementation of sensory zoning is not a niche concern but a fundamental component of creating sustainable, resilient, and truly equitable cities. The regulatory and design framework outlined here provides a comprehensive

roadmap. It begins with transformative policy changes—moving from segregated zoning to a sensory-aware mix of uses, establishing performance-based sensory standards, creating smart incentives, and mandating sensory impact assessments. These policies must then be brought to life through human-centered design principles that engineer sensory-friendly environments, implement intuitive navigation, and harness the healing power of nature.

This integrated approach embodies the highest ideals of universal design, creating a "cognitive curb-cut effect" that benefits the entire community. From the elderly experiencing cognitive decline to tourists navigating an unfamiliar city, to any person feeling overwhelmed by the stresses of modern life—designing for neurodiversity means designing for humanity itself. The task is complex and requires sustained commitment, but the result—communities that welcome the full spectrum of human neurology—is undoubtedly a future worth building.

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Kellert, Stephen R., Judith Heerwagen, and

About the Author

Abdulrahman Alharthi, AICP, leads with a profound belief that the purpose of urban planning is to improve lives. His mission is to forge a lasting impact on both human lives and cities by championing the development of livable, sustainable, and human-hearted urban environments. As the CEO of the Hathera Institute, he focuses on turning this vision into actionable research and policy.

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