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Baseline Report

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Addressing gaps leading to inaccessible infrastructure for Persons with Disabilities (PwDs) in Delhi NCR

Contents

1 Table of Abbreviations

Abbreviation	Full Form
BBL	Building By-Laws
GNCTD	Government of National Capital Territory of Delhi
HG	Harmonised Guidelines
MODEL BBL	Central Public Works Department
MoHUA	Ministry of Housing and Urban Affairs
NCR	National Capital Region
PwDs	Persons with Disabilities
ULBs	Urban Local Bodies
UNCRPD	United Nations Convention on the Rights of Persons with Disabilities

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3 Executive Summary

This research examines the accessibility requirements ensured by the Building By-Laws (BBL) in several municipalities within the Delhi NCR. It compares them to the more comprehensive Harmonised Guidelines for accessibility. The analysis reveals significant discrepancies among the municipalities, with Gurugram exhibiting the most missing critical components, followed by Noida, Greater Noida, and Delhi.

An important finding from the study is the lack of essential amenities like reception areas and eating spaces in the BBL framework, suggesting severe regulatory deficiencies. Outdated regulations and unclear wording exacerbate these gaps by failing to provide the precise dimensions necessary for compliance and implementation.

The findings emphasise the urgent need for thorough and up-to-date regulations that align with the HG. Addressing these limitations is crucial to promoting more accessibility and inclusion in urban development, thereby improving the overall quality of life for all individuals in the area.

4 Background

The proposed research will investigate the gaps in the building design policies/rules (BBL) of municipalities in Delhi that make the city infrastructure less accessible to PwDs. Based on the findings of primary research through the survey conducted among the sample of appropriate participants and secondary research, which will comprise the theoretical analysis of the existing policy documents, we aim to suggest reforms in BBL to make them more comprehensive and lead to more accessible buildings in the capital region of the country. To carry out this research, we will use Harmonised Guidelines and Standards for Universal Accessibility in India (HG) – 2021 (Harmonised Guidelines 2021). as a guide for ideal standards to operationalise the concept of accessibility of city infrastructure. Harmonised Guidelines 2021 is a policy document that was created in compliance with The Rights for Persons with Disabilities Act of 2016 (The Rights Of Persons With Disabilities Act n.d.) and thus acts as the guiding document to address the requirements of populations with different accessibility needs.

The proposed study will adopt two methodologies to produce suitable findings for the policy recommendations, these being secondary research to analyse the BBL to assess its coherence with the HG, and primary research comprising interviews with critical stakeholders like policymakers in the Municipal Corporation of Delhi, city planners, and architects to understand the gaps and inefficiencies within the BBL, which makes it incoherent with the HG. Also, surveys comprising persons with permanent and temporary disabilities will be conducted to assess the accessibility of the city infrastructure and get first-hand feedback on the policy reform required.

5 Background of Area of Intervention

Delhi NCR includes the city of Delhi and the adjacent areas in the states of Haryana, Uttar Pradesh, and Rajasthan. It is a vibrant centre of economic, political, and cultural activities due to its advantageous location and status as India's capital territory. The area is distinguished by swift urbanisation, population expansion, and substantial infrastructural advancement in recent decades.

Climatic Factors :

Delhi NCR has a subtropical climate characterised by scorching summers, mild winters, and a monsoon season from June to September. In summer, temperatures frequently exceed 40°C, resulting in heatwaves and difficult living conditions. In contrast, winter temperatures can plummet to 2°C, often accompanied by thick fog and high levels of air pollution. The climate fluctuations present distinct obstacles to urban planning and infrastructure development, especially when it comes to ensuring the accessibility and comfort of outdoor areas for individuals with disabilities.

The Delhi NCR region plays a crucial role in India's economy, significantly contributing to the country's GDP. It is home to the Information Technology, Banking, Manufacturing, and Services sectors. The presence of multinational firms, business parks, and commercial centres has resulted in a swift increase in population, which has brought forth prospects and difficulties for infrastructure development. Despite its economic affluence, inequalities in income and resource availability endure in the area, affecting the availability of infrastructure for vulnerable people, including PwDs. [4], [5], [6]

A combination of contemporary high-rise buildings, ancient landmarks, residential communities, and unregulated settlements marks the urbanisation of Delhi NCR. The rapid urbanisation has caused a rise in the need for housing, transportation, and public facilities, leading to the growth and intensification of urban regions. Nevertheless, the expansion of infrastructure has not consistently matched the rate of population increase, resulting in problems such as traffic congestion, inadequate public transit, and limited availability of services accessible to individuals with disabilities. [5], [6]

The policy framework of Delhi NCR is intricate, encompassing various administrative entities such as the Government of the National Capital Territory of Delhi (GNCTD), Municipal Corporations, Development Authorities, and Urban Local Bodies (ULBs) in adjacent states. [4], [7] Every municipality in the region is responsible for creating and enforcing building rules and regulations that control construction and development activities. Nevertheless, the synchronisation and integration of these policies across various jurisdictions continue to be difficult, frequently leading to disparities and deficiencies in the availability of provisions for PwDs. [8]

Delhi NCR is characterised by fast urbanisation, economic expansion, and varying climate, making it a vibrant and diversified region. Although there has been notable progress in developing infrastructure, it is crucial to address policy deficiencies and guarantee that infrastructure is accessible to individuals with disabilities. This research aims to examine and evaluate the building regulations of municipalities in Delhi NCR considering HG as the standard. The objective is to identify areas that may be improved and make recommendations to promote infrastructure accessibility for PwDs in the region. [9].

6 Objectives of the Study

- Documentation and analysis of BBL of municipalities in Delhi NCR considering HG as the standard document to understand the policy gaps leading to the inaccessibility of infrastructure.
- Suggest recommendations to concerned authorities to make its standard guidelines more effective to ensure infrastructural accessibility in Delhi NCR.

7 Methodology

1. **Secondary Research : Theoretical analysis of existing policy documents**

Theoretical Analysis of BBL considering HG the standard for ensuring universal accessibility. Through the analysis, I will identify the gap in BBL that makes buildings in the Delhi NCR region inaccessible to people of diverse groups.

2. **Primary Research: Survey conducted among participants.**

❖ **Survey Design:** A survey was designed to assess the requirements and preferences of persons about infrastructure accessibility.
- The survey questionnaire included physical and cognitive accessibility experiences.
- Questions were designed to learn about participants' experiences, issues, and ideas for enhancing built environment accessibility.

❖ **Survey Administration:** The survey was administered using the Google Forms. Online participation allowed Delhi NCR residents from diverse backgrounds and localities to share their views on accessibility.

❖ **Participant Selection:** A representative sample was recruited randomly from the target demographic, including persons of different ages, genders, and abilities in Delhi NCR. Disabled people, caregivers, and accessibility advocates were included.

❖ **Data Collection:** Participants submitted survey responses online. The survey was long enough to collect all responses, ensuring data dependability.

- **Data Analysis:** The data was analysed using quantitative (to substantiate the primary research) and qualitative (to extract essential insights from textual replies) methods.
- **Synthesis and Interpretation:** Data analysis findings were analysed to identify infrastructure accessibility needs and difficulties in Delhi NCR. The process revealed policy gaps and opportunities to improve infrastructural accessibility for disabled and marginalised groups.

Secondary Research Analysis

8 Theoretical Data Analysis

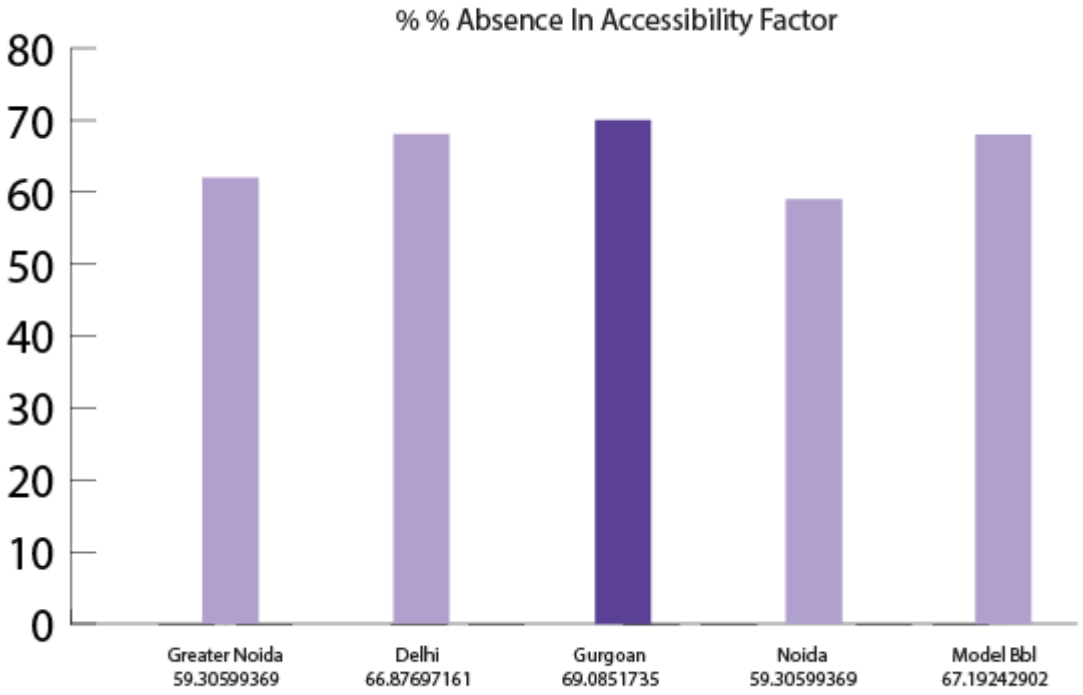
Municipality	Building entrance	Waiting areas and seating spaces	Internal corridors and access	Staircases	Internal ramps	Lifts And escalators	Drinking water facility	Sanitary facilities	Doors	Windows	Controls and operation
Greater Noida	13	11	34	11	3	42	11	35	10	5	13
Delhi	12	17	21	10	2	37	0	44	33	10	26
Gurugram	8	17	21	9	1	27	0	65	35	10	26
Noida	13	11	34	11	3	42	11	35	10	5	13
Model BBL	12	17	21	11	2	37	0	44	33	10	26
Total number of accessibility factors in HG	34	17	37	22	5	47	14	70	35	10	26

Table 1: Number of absent factors in BBL of municipalities as compared to HG

Municipality	Essential Factors Absent in BBL (Total Factors in HG = 317)
Gurugram	219
Model BBL	213
Delhi	212
Noida	188
Greater Noida	188

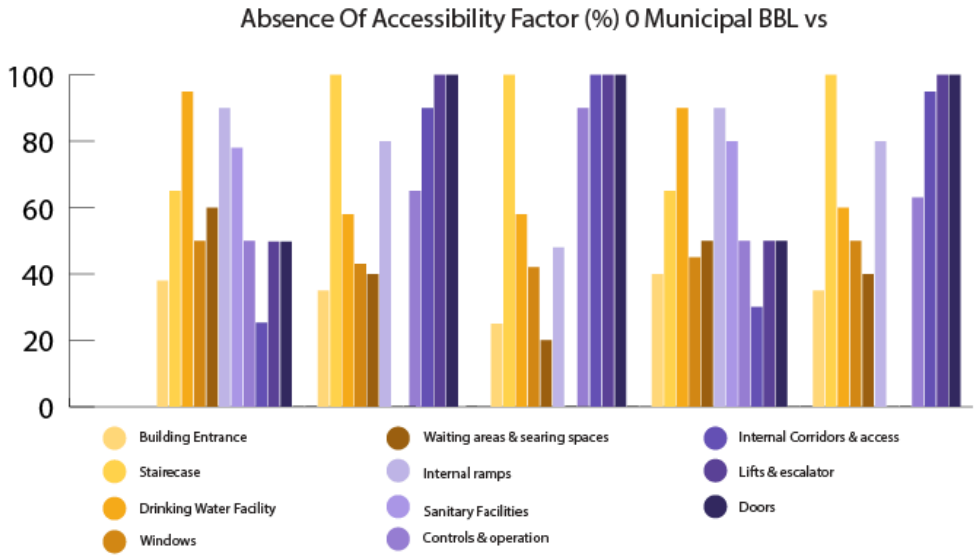
The above table compares the number of essential factors absent in BBL across municipalities in the Delhi NCR to a hypothetical ideal standard (HG) for ensuring accessibility. The total number of factors considered is 317.

Gurugram has the highest number of absent factors, with 219 missing, indicating significant gaps in accessibility provisions within its BBL. Delhi follows closely with 212 essential factors absent, suggesting relatively better but inadequate accessibility measures. Noida and Greater Noida lack 188 essential factors. Model BBL by MoHUA shows 213 absent factors, indicating room for improvement in ensuring accessibility within their building guidelines.



Plot 1: Overall absence of Accessibility Factor in BBL of municipalities as compared to HG

Plot 1 presents an analysis of the percentage of essential factors absent in the BBL of various municipalities compared to the HG for accessibility. Gurugram has the highest deficit, with 70% of factors missing. Greater Noida and Noida, both lack 59% of the necessary guidelines. Delhi and MODEL BBL's guidelines exhibit deficits of 66% and 67% respectively. These findings underscore the urgent need for reform in the BBL of these municipalities to align with the HG and ensure accessibility in their respective jurisdictions. The substantial gaps identified in the BBL highlight the importance of harmonising regulations across municipalities to create inclusive and accessible built environments for all citizens.



Plot 2: Facilities-wise absence in Accessibility Factor (%) in BBL of municipalities as compared to HG

Plot 2 reveals that Gurugram has the most absent accessibility factors among the three cities. These include guidelines for controls, operation, windows, doors, waiting areas, and seating space. Noida shows relatively fewer absent factors. Moreover, Greater Noida stands out as having the least absent factors, as evidenced by the height of the towers in the Greater Noida section of the plot. This analysis highlights the disparities in accessibility standards across different cities and emphasises the need for improvements, particularly in Gurugram, to ensure better accessibility for all individuals.

9 Primary Research Survey Results

Total (97)					
Male (62)			**Female (35)**		
Age Group	Education	Occupation	Age Group	Education	Occupation
0-15 (0)	X (1)	Student (33)	0-15 (1)	X (0)	Student (12)
15-30 (47)	XII (6)	Working (21)	15-30 (21)	XII (1)	Working (21)
30-45 (7)	Graduate (48)	Unemployed (6)	30-45 (10)	Graduate (20)	Unemployed (2)
45-60 (8)	Other (7)	Other (2)	45-60 (3)	Other (14)	Other (0)

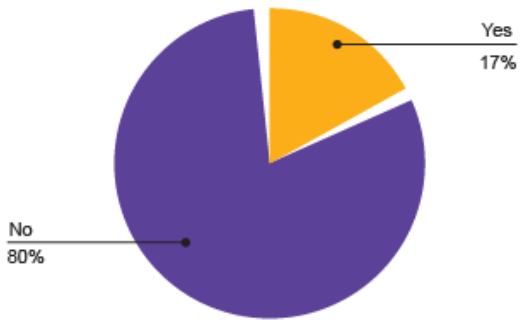
Respondent Details

The statistics offer a comprehensive overview of the demographics of the participants who responded to the survey to assess workplace accessibility. Here is an elaboration of the key findings.

1. Total participants: The survey received responses from 97 individuals.
2. Gender distribution: Among the participants, 62 were male and 35 were female, indicating a higher representation of males.
3. Age distribution: Most participants (68) fell in the age group of 15-30 years. This suggests that the survey predominantly captured the perspectives of young individuals.
4. Educational background: A significant proportion of the participants (68) were graduates. This indicates that the survey attracted individuals with a higher level of education, potentially influencing the insights provided regarding workplace accessibility.
5. Occupational status: The survey included participants from both student (45) and working professional (42) categories. This distribution highlights a balanced representation of individuals at different stages of their careers.

Overall, the statistics reveal a diverse participant pool, with a majority of young, educated individuals contributing to the assessment of workplace accessibility. The insights gathered from this demographic can provide valuable perspectives on the current state of accessibility in various work environments and inform efforts to enhance inclusivity and accommodation for all individuals.

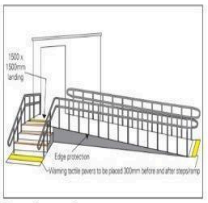
No accounts for the majority of 'Are you a person with Disability (PWD)?'.



These data provide insight into the perceptions of individuals about accessibility and disability. Some interpretations are as follows.

1. Non-disabled: A significant majority (80), did not classify themselves as PwDs.
2. Awareness and concern: Although they do not have disabilities themselves, non-PwDs are impacted by the lack of accessibility in the infrastructure, as indicated by the data. This statement implies that accessibility concerns have a broader impact beyond individuals directly affected by impairments
3. Demand for accessibility: The data indicates that even those without disabilities have voiced concern about the lack of accessibility and a preference for accessible infrastructure. This suggests an increasing consciousness and acknowledgement among the public of the importance of accessibility and inclusivity for all individuals, regardless of impairment or not.
4. Implications: The consideration of accessibility for individuals without impairments signifies a societal shift towards embracing inclusivity. This is an implementation of the rights and requirements of individuals with disabilities and the necessity to advocate for accessible surroundings that are highly advantageous to everyone

Which of the following matches the ramps of the building you visit most often?	Count of the matches
Option 1	48
Option 4	20
Option 2	9
Option 3	5
Options 1 and 4	5
Options 2 and 4	4
Options 1, 2 and 4	3
Options 1, 2, 3 and 4	2
Options 1, 3 and 4	1
Total	97


Option 1

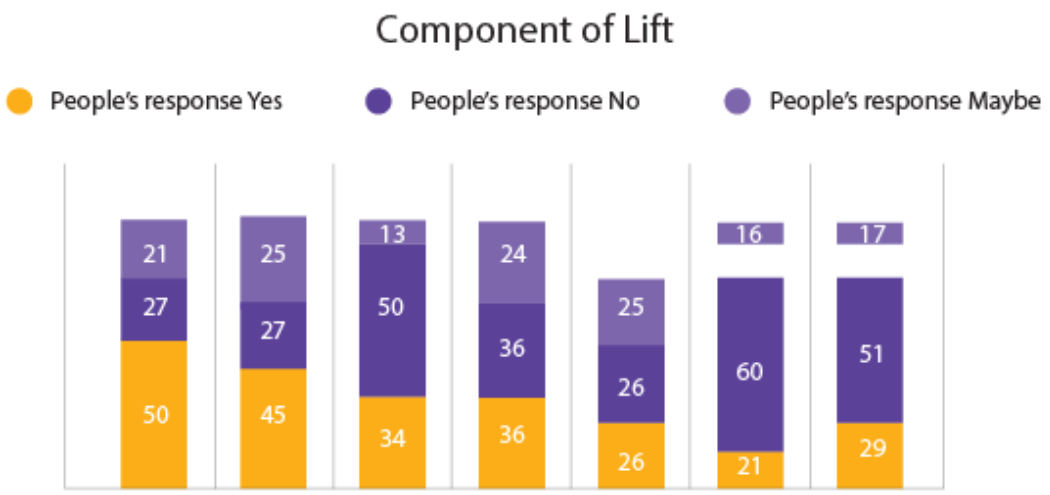

Option 2


Option 3


Option 4

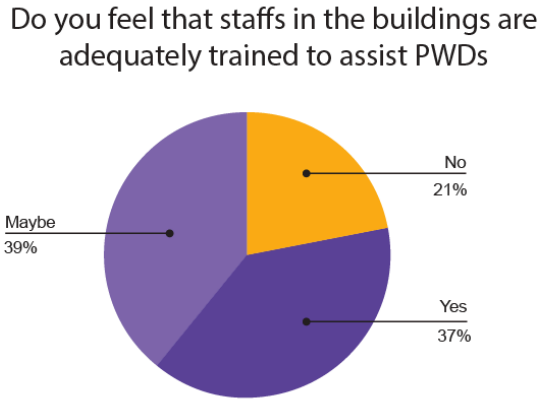
The figures offer valuable insights into the current accessibility status of ramps in buildings, as determined by survey replies. Here is a detailed explanation of the main points.

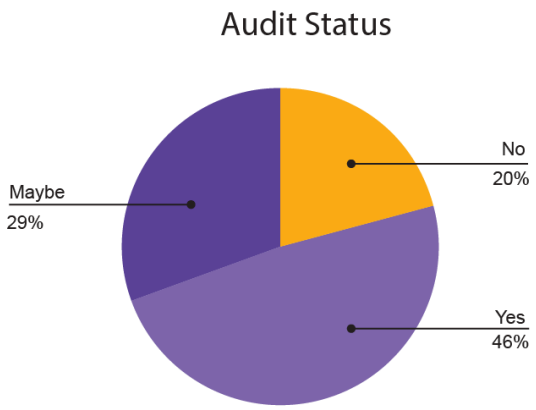
1. Perceived Adequacy: Around half of the participants reported that they consider the ramps in their buildings to be entirely sufficient based on the HG. This indicates that a substantial proportion of participants believe that the current ramps adhere to the criteria specified in the accessibility guidelines.
2. Accessibility Issues: Although 50% of the respondents find the ramps to be satisfactory, around 50% of the ramps are considered inaccessible based on respondents choosing options other than A (which means entirely adequate according to the HG). This signifies a disparity between how something is seen and the truth, emphasising that several ramps fail to meet the required accessibility criteria.



1. Absence of essential features: 50 respondents noted the absence of brailled/raised buttons in the lifts, indicating a lack of tactile cues for individuals with visual impairments to operate the lift independently. Additionally, 60 respondents observed the absence of audio/video systems in the lifts, which are crucial for providing auditory information to individuals with visual impairments. 51 respondents noticed the absence of handrails on three sides of the lift, which are essential for providing stability and support, particularly for individuals with mobility impairments. These observations highlight significant deficiencies in features necessary to ensure lift accessibility for individuals with visual impairments.
2. Adequacy of basic facilities: Despite the absence of certain essential features, the data indicates that some basic facilities are considered adequate. For instance, 50 respondents indicated that the door opening time is adequate, suggesting that the time provided for individuals to enter and exit the lift is sufficient. Additionally, 45 respondents observed that the height of the call button is adequate as per HG, indicating that basic aspects of lift design comply with accessibility standards. These findings suggest that while some aspects of lift accessibility meet basic requirements, there are still areas for improvement to ensure full accessibility.
3. Skid-resistant flooring: 36 respondents observed that the floor of the lift is skid-resistant. Skid-resistant flooring is essential for preventing slips and falls, particularly for individuals with mobility impairments or those using mobility aids such as wheelchairs or walkers. The observation that skid-resistant flooring is present in some lifts suggests a positive aspect of accessibility, indicating efforts to enhance safety within lift environments.

Only 21 respondents expressed confidence in the level of training of the building's staff to help PwDs. Such help may involve aiding with navigation, facilitating the use of assistive technologies, or offering necessary accommodations.





1. Perception of accessibility audits: Only 20 respondents expressed confidence that accessibility audits are being carried out in the buildings they frequently visit. Most respondents are unlikely to observe or be aware of accessibility audits in the buildings they often visit.
2. 46 respondents said that they were unsure about the current state of accessibility audits in the facilities they utilise. The absence of clear information indicates a widespread problem of insufficient knowledge and openness concerning efforts and methods to make buildings accessible.

Case Studies

3. Apart from surveys, I have conducted case studies that depict the status of accessibility in the Delhi NCR area.

Case Study 1: Suman Kumar Rajak

Name: Suman Kumar Rajak Age: 24

Gender: Male

Education: B. Tech (Computer Science)

Highest education: Pursuing B. Tech at IIT Delhi

Type of Impairment: Locomotor (Orthopaedic)

Suman Kumar Rajak experienced a life-altering event when he lost his legs in an accident. Despite the challenges, Suman maintained a positive outlook and aimed to break barriers.

He said, “One day, I ventured to a barber shop within the IIT Delhi campus. However, the shop was located on the first floor, a challenge for me due to my difficulty navigating the stairs. Undeterred, I approached the barber and politely requested him to come down and give me the haircut.”

To his surprise, the barber rudely responded, “I will not come down. Put in a request for a lift and use it to reach the shop if you want the haircut.” This insensitive attitude frustrated him, highlighting the inadequacy of infrastructure and the lack of empathy within the IIT Delhi campus.

Undeterred by this encounter, he decided to explore online barber services. However, this attempt met with resistance from the hostel guards and caretakers, who cited security concerns. Determined to overcome these obstacles, he approached the Dean of Student Affairs, seeking permission to have a barber inside the hostel for a much-needed haircut. Finally, after this, he was able to get a haircut.

This story sheds light on the challenges faced by individuals with locomotor disabilities, and the insensitive nature of authorities that aggravates the problem and makes the life of PwDs harder.

Case Study 2: Kartik Singh

Name: Kartik Singh Age: 22

Location: IIT Delhi campus, New Delhi Gender: Male

Education: Bachelor's in Computer Science Marital status: Unmarried

Highest education: Pursuing Master's in Information Technology

Type of Impairment: Visual (Blind)

Other members with disabilities in the family: No

Kartik Singh lives on the IIT Delhi campus in New Delhi. Despite being academically minded and committed to getting on with his studies, Kartik faces several barriers to accessing the campus and academic resources.

Kartik reflects on his journey and states that even though IIT Delhi offered great academic opportunities, accessing them with a disability was a challenge.

"The inability to move around the campus and challenges of accessing lecture notes and other academic resources on my own have made me rely on fellow students or faculty members to help me," Kartik stated.

According to Kartik, his disability poses an overwhelming challenge in navigating the campus and accessing academic resources without assistance. He states that many policies and practices in support of inclusive practices need to be introduced at the university and other institutions of learning to accommodate the needs of students with disabilities. He states that physical accessibility, including ramps, tactile markings, and audio guidance systems, needs to be provided at the campus so that students with disabilities can move around the campus by themselves.

Another aspect of support that Kartik proposes is the provision of assistive technologies and accessibility features within the academic materials and digital platforms used by the students and faculty members. He argues that students with disabilities and diverse learning needs need alternative formats of textbooks, lecture notes, and online resources.

The difficulties Kartik faces in transportation include the inaccessibility of the transportation system and the exclusion of public transportation facilities on campus for PwDs. He advises the institution to introduce accessible transport facilities and to provide subsidies or incentives to such students for making use of transportation facilities. Despite the challenges, Kartik is enthusiastic about continuing his academic and professional journey. He is an active member of the campus activities and research

projects and demonstrates his commitment towards overcoming barriers and advocating the inclusion of PwDs in higher education institutions.

Looking ahead, Kartik aims to contribute to the development of innovative solutions and policies that will further assist in improving the accessibility and inclusion of PwDs in academic institutions. He also brings up several recommendations, including:

1. Campus Accessibility Audits: There is a need for regular audits of the campus facility and infrastructure for the identification of barriers and prioritised accessibility interventions.
2. Support for Adopting and Using AT: Extensive support must be provided for the adoption and usage of assistive technology by students with disabilities, including training, technical support, and financial support for the acquisition of assistive devices.
3. Faculty Training and Awareness: Training programs and workshops should be organised for the faculty members and staff on disability awareness, inclusive teaching practices, and the use of accessible technologies and materials.
4. Student Support Services: Dedicated support services must be provided to students with disabilities, including academic accommodations, counselling services, and peer support networks to provide a platform for academic achievement and healthiness.
5. Policy Development: Inclusive policies and guidelines on accessibility and accommodation of higher education institutions should be developed and implemented in line with international standards and best practices.

Kartik Singh's case statement shows the importance of making academic environments inclusive and accessible to support the full participation and success of students with disabilities. His advocacy efforts and recommendations provide valuable insights into how to make higher education institutions more inclusive and equitable.

10 Insights and Observations

The findings of the research highlight significant disparities between the BBL of municipalities and the guidelines outlined in the

HG. Several key facilities crucial for ensuring accessibility and usability of buildings, such as reception areas, service or information counters, eating spaces, wardrobes and storage, and guest rooms, are either absent or inadequately addressed in the BBL of municipalities. This discrepancy underscores a potential gap in regulatory oversight, as these facilities play a crucial role in facilitating the comfort and accessibility of building occupants, including PwDs.

Furthermore, it is observed that the BBL of the studied municipalities have not been updated for long. For instance, the BBL of Noida and Greater Noida remain unchanged since 2010, while that of Delhi saw an update in 2016 after a lapse of 33 years. This lack of regular updates raises concerns about the relevance and applicability of existing regulations in addressing evolving needs and challenges in urban development.

Another noteworthy observation is the general and ambiguous nature of the text in the BBL of local authorities, which often relies on the interpretation of authorities for implementation. This ambiguity may lead to inconsistencies in enforcement and hinder the effective implementation of accessibility standards.

Moreover, the absence of specific dimensions for facilities in many instances further complicates compliance with accessibility standards. Clear and standardised dimensions are essential to ensure uniformity and adherence to accessibility requirements across different building projects.

11 Conclusions

The thorough examination of the accessibility rules within the BBL of municipalities in Delhi NCR compared to the ideal criteria outlined in the HG highlights notable differences and deficiencies. Secondary research further verifies the gaps identified through primary research.

I have captured the case studies of thousands of students and professionals like Kartik and Suman. These people find it difficult to do even their basic work. It not only puts a big question mark on the right to a dignified life guaranteed by the

Constitution but also hinders the socio-economic inclusion and development of the country. An important finding from the study is the absence of consistent updates and adjustments within the BBL framework across municipalities. This inadequacy has led to regulations that are obsolete and frequently unclear in their wording. The lack of precise measurements for crucial infrastructure exacerbates these problems, creating challenges for stakeholders in ensuring adherence to accessibility standards.

Furthermore, the results indicate widespread neglect in giving importance to the requirements of PwDs during the planning of urban infrastructure development. Based on the analysis, we can say that there is a lack of BBL and the absence of regular updates in them. The suggestions and recommendations in the recommendation sections can be adopted to eradicate the existing problem.

The objective should be to construct physical surroundings that are not just easily accessible but also inviting and accommodating to individuals of various ages, genders, abilities, and backgrounds. By rectifying the observed deficiencies in policies and implementing the suggested actions, the municipalities in Delhi NCR may make substantial progress in achieving the goal of a more inclusive and accessible urban environment.

12 Limitations and Challenges

- Variability Among Municipalities: Delhi NCR consists of several municipalities, each with its distinct set of BBL and enforcement methods. Examining and contrasting these varied regulations to discover similarities and differences requires substantial exertion and resources. [12]
- Dynamic Nature of Regulations: Building laws and accessibility standards are subject to revisions and modifications. Staying updated with these changes and ensuring that the research accurately represents the most recent situation is difficult, especially in a fast-changing urban area such as Delhi NCR. [14]

- Stakeholder Engagement: It is essential to effectively interact with stakeholders, such as municipal authorities, legislators, advocacy groups, and PwDs, to comprehend the practical consequences of policy deficiencies and obtain inputs on relevant suggestions. Nevertheless, establishing agreement and cooperation across individuals with varying objectives, interests, and views can be difficult. [16]
- Ethical Considerations: Maintaining ethical behaviour throughout the study process, especially when addressing sensitive matters of accessibility and disability rights, necessitates meticulous attention. Ensuring the privacy and dignity of individuals with disabilities during interviews or data collection is of utmost importance, requiring explicit ethical principles and protocols. [17]

13 Policy Recommendations

From the results of the study, here are some policy proposals to remedy the deficiencies in accessibility regulations under the BBL of municipalities in Delhi NCR.

- Revision and Updating of BBL: Municipalities, particularly Gurugram, should thoroughly assess their BBL to rectify the highlighted deficiencies in accessibility considerations. The Policy Recommendations table in the document could be incorporated to make the BBL more effective. The revision of the BBL should include engaging in discussions with disability rights advocates, experts, and stakeholders to ensure that the needs of PwDs are properly addressed. [19]
- Capacity Building and Training: Municipal authorities and building inspectors should undergo training and capacity-building programs focused on accessibility requirements and guidelines, including the HG. This will improve their understanding of the significance of accessibility and their capacity to ensure adherence to pertinent legislation throughout the construction and approval procedures. [20]
- Promoting Public Awareness and Engagement: It is necessary to enhance the understanding and involvement of developers, architects, and the public on the significance of accessibility in physical infrastructure. Municipalities ought to organise awareness campaigns and outreach activities to foster a culture of inclusivity and urge stakeholders to prioritise accessibility in their projects. [21]
- Integration of Universal Design Principles: The updated BBL should integrate universal design principles to guarantee that buildings and infrastructure are accessible to individuals of all ages, genders, and abilities. This would entail creating spaces and

facilities that are accessible to all individuals, including PwDs, without requiring modifications or specific elements. [22]

- Municipalities should implement robust monitoring and enforcement procedures as given in Institutional Recommendations to guarantee adherence to the accessibility standards specified in the BBL. The institutional change recommended in the document can be adopted for effective monitoring and enforcement of the guidelines.
- Stakeholder Consultation and Participation: Municipalities should proactively involve disability rights groups, PwDs, and other relevant stakeholders at every stage of the policy-making process to ensure their input and viewpoints are considered.

Municipal authorities and the government should adopt these recommendations to enhance the inclusivity and accessibility of the built environment in Delhi NCR. This will lead to an improved quality of life for all citizens, including PwDs. [24]

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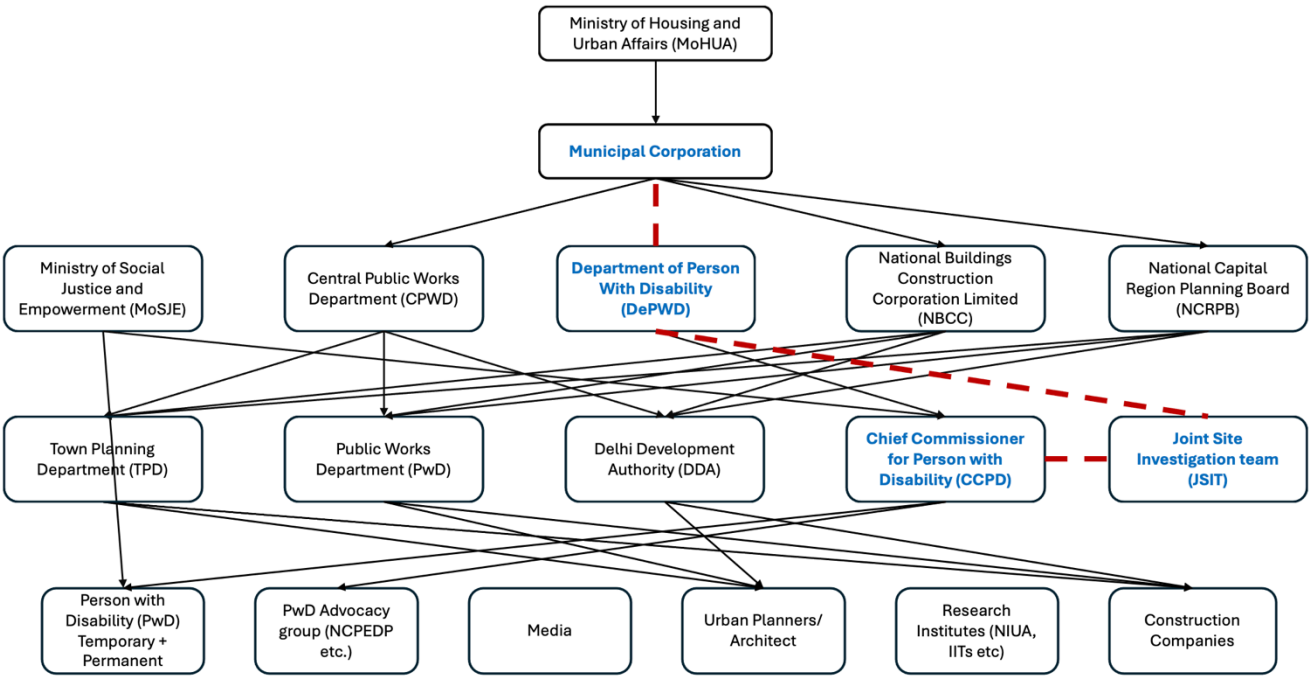
15Policy Recommendations (Suggested change in BBL)

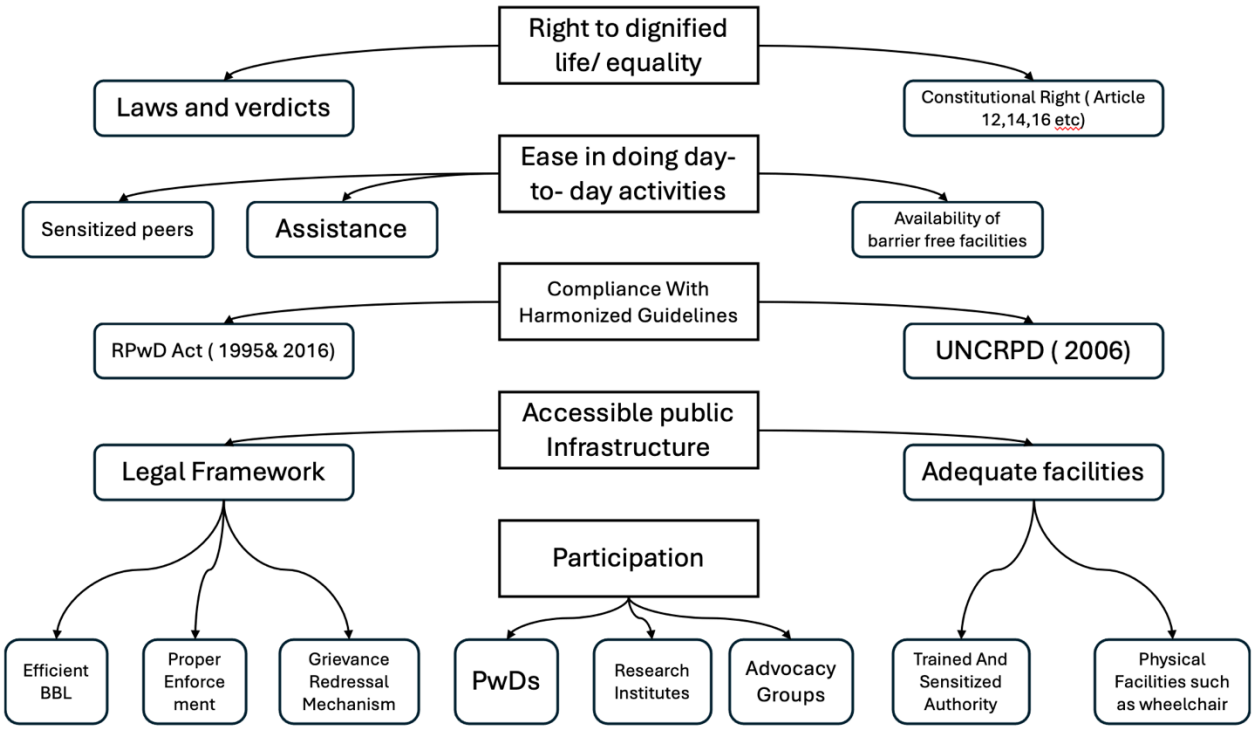
Facilities	HG	Delhi	Noida	Gurugram	Greater Noida	Model Building by Law
Building Entrance		Although the guidelines cover most accessibility factors, they lack the accessibility guidelines for essential facility components such as signage, TGIs and audio guiding system, colour contrast, and lightning. They can be added to make the guidelines more efficient.	Sufficient guidelines are provided to make the entrance accessible but a few more things such as obstacles, TGIs, and visual guiding system-related guidelines can be incorporated.	The guidelines are adequate but they can be further enriched by adding dimensions and obstacle-related guidelines to existing guidelines.	Sufficient guidelines are provided to make the entrance accessible but a few more things such as obstacles, TGIs, and visual guiding system-related guidelines can be incorporated.	Although the guidelines cover most accessibility factors, they lack the accessibility guidelines for the essential facility components such as signage, TGIs and audio-guiding system, colour contrast, and lightning. They can be added to make the guidelines more efficient.
Waiting Areas and Seating Spaces		No guidelines were provided to ensure the accessibility of the facility.	Only regulation related to chair/seating facility is provided. No guidelines related to other essential components such as the location of the facility, signage, queue management system, visibility and lightning are available.	No guidelines were provided to ensure the accessibility of the facility.	Only regulation related to chair/seating facility is provided. No guidelines related to other essential components such as the location of the facility, signage, queue management system, visibility and lightning are available.	No guidelines were provided to ensure the accessibility of the facility.
Internal Corridors and Access		The lack of guidelines related to some essential factors such as resting bench, floor surface, lightning and signage, and obstacles is making the guidelines inadequate.	Only guidelines related to doors leading to the corridor are provided. Non-availability of guidelines related to other aspects of the internal corridor such as width, surface, obstacles, lighting, signage, and TGIs is making the provision inadequate to counter inaccessibility in the facility.	Only guidelines related to width, lightning and signage, and floor surface are provided. Non-availability of guidelines related to other aspects of the internal corridor such as obstacles, TGIs and handrails, doors leading to the corridor, and resting bench is making the provision inadequate to counter inaccessibility in the facility.	Only guidelines related to doors leading to the corridor are provided. Non-availability of guidelines related to other aspects of the internal corridor such as width, surface, obstacles, lighting, signage, and TGIs is making the provision inadequate to counter inaccessibility in the facility.	The lack of guidelines related to some essential factors such as resting bench, floor surface, lightning and signage, and obstacles is making the guidelines inadequate.
Staircase		The guidelines are inadequate in countering accessibility challenges as they do not cover some other important aspects such as landing,	Provided guidelines can successfully ensure basic accessibility but they can be further strengthened by	1. Guidelines related to trends and raiser, number of steps, width, noising etc. are provided.	Provided guidelines can successfully ensure basic accessibility but they can be further strengthened by incorporating other	Only regulations related to TGIs surface nature are provided. The absence of other aspects such as the location of the ramp, handrails, and

		space, consistency in height and depth, handrails on the staircase, colour contrast of the staircase, and warning sign before the staircase.	incorporating other aspects such as the number of steps, width, TGIs, and intermediate handrails in the guidelines.	2. Guidelines related to handrails are provided but they are general and dimensionless. 3. No regulation related to colour contrast, and TGIs is provided.	aspects such as the number of steps, width, TGIs, and intermediate handrails in the guidelines.	edge protection is making them inadequate to face the accessibility challenge.
Internal Ramps		Only regulations related to TGIs surface nature are provided. The absence of other aspects such as the location of the ramp, handrails, and edge protection is making them inadequate to face the accessibility challenge.	No guidelines related to TGIs, mid-lending, edge protection, and handrails of Internal Ramps are provided, which may lead to inaccessibility in the facility.	All the regulations are provided to ensure accessibility but they can be strengthened by adding aspects related to TGIs.	No guidelines related to TGIs, mid-lending, edge protection, and handrails of Internal Ramps are provided, which may lead to inaccessibility in the facility.	Only regulations related to TGIs surface nature are provided. The absence of other aspects such as the location of the ramp, handrails, and edge protection is making them inadequate to face the accessibility challenge.
Lifts And Escalator		Although the guidelines are quite good, the lack of guidelines related to call buttons, signage, and control panels makes them insufficient to ensure the accessibility of lifts and escalators.	Non-availability of guidelines related to essential facilities of the lifts, such as lift door, call button, grab bars, audio and visual indicators, signage, and airlifts are not provided, which may be a potential cause for the lifts to be inaccessible.	1. Very few regulations related to lift doors, and call buttons are provided. 2. No regulation related to grab bars and platform lifts is provided. These pointers signify the need for modification in BBL.	Non-availability of guidelines related to essential facilities of the lifts, such as lift door, call button, grab bars, audio and visual indicators, signage, and airlifts are not provided, which may be a potential cause for the lifts to be inaccessible.	Although the guidelines are quite good, the lack of guidelines related to call buttons, signage, and control panels makes them insufficient to ensure the accessibility of lifts and escalators.
Drinking Water Facility		No guidelines related to the height, and width of drinking water facilities, water taps, and drainage are provided.	Only a single generalised, dimensionless statement is provided, which fails to cover all the accessibility factors.	Only a single generalised, dimensionless statement is provided, which fails to cover all the accessibility factors.	Only a single generalised, dimensionless statement is provided, which fails to cover all the accessibility factors.	No guidelines related to the height, and width of drinking water facilities, water taps, and drainage are provided.
Sanitary Facilities		The guidelines do not cover the accessibility factors related to washroom accessories such as taps/faucets, washbasins, water closets, and toilet doors, which may lead to inaccessibility in sanitary facilities.	1. Non-availability of guidelines related to washroom accessories such as taps/faucets, grab bars, and water closets. 2. Brief and dimensionless nature of guidelines related to aspects such as family-friendly washrooms, and unisex toilets. Tackling the above problems can make sanitary facilities accessible to a larger extent.	Few guidelines for door width and size of washrooms have been provided in the BBL of this municipality. A major change in guidelines related to washroom facilities such as doors, WC, and grab bars is required to make washrooms accessible.	1. Non-availability of guidelines related to washroom accessories such as taps/faucets, grab bars, and water closets. 2. Brief and dimensionless nature of guidelines related to aspects such as family-friendly washrooms, and unisex toilets. Tackling the above problems can make sanitary facilities accessible to a larger extent.	The guidelines do not cover the accessibility factors related to washroom accessories such as taps/faucets, washbasins, water closets, toilet doors, etc., which may lead to inaccessibility in sanitary facilities.
Doors		Only for the accessible door and a short note on the revolving door is provided in the guideline. Nothing has been mentioned regarding the following. • Other types of doors used, such as automatic doors and sliding doors. • Door hardware, s. a door handles, push buttons. • Thresholds, wheelchair manoeuvring space. Non-availability of guidelines regarding the factors mentioned above can be a cause for inaccessible doors.	The guideline covers almost all the aspects to ensure an accessible door. However, it can be improved further by specifying dimensions and guidelines regarding the various types of doors used.	No guidelines were provided to ensure accessibility.	The guideline covers almost all the aspects to ensure an accessible door. However, it can be improved further by specifying dimensions and guidelines regarding the various types of doors used.	Only for the accessible door and a short note on the revolving door is provided in the guideline. Nothing has been mentioned regarding the following. • Other types of doors used, such as automatic doors and sliding doors. • Door hardware, s. a door handles, push buttons. • Thresholds, wheelchair manoeuvring space. Non-availability of guidelines regarding the factors mentioned above can be a cause for inaccessible doors.
Windows		No guidelines were provided to ensure accessibility.	Guidelines only cover accessible height and glare. But it is missing other aspects such as ventilation, guard rails around the sill, and manoeuvring space that may make windows inaccessible.	No guidelines were provided to ensure accessibility.	Guidelines only cover accessible height and glare. But it is missing other aspects such as ventilation, guard rails around the sill, and manoeuvring space that may make windows inaccessible.	No guidelines were provided to ensure accessibility.
Controls and Operation		No guidelines were provided to ensure accessibility.	The guidelines are too general. They can be more elaborate and supported with dimensions.	No guidelines were provided to ensure accessibility.	The guidelines are too general. They can be more elaborate and supported with dimensions.	No guidelines were provided to ensure accessibility.

16 Actor's Analysis



17 Means End Analysis



18 Annexures

1. BL and HG (ext.).xlsx
2. Analysis.xlsx
3. https://forms.gle/QgDEB8P5S2jpznCN9

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