

Artificial Intelligence (AI)

AI broadly refers to the machine mimicry of human cognitive traits and actions in learning and problem-solving activities such as communication, reasoning, knowledge, perception, and planning(Son *et al.*, 2023). In an urban context, it simulates the human mind by interpreting data, learning from it, and using that learning to complete tasks(Nikitas *et al.*, 2020). AI applications in urban planning are diverse, covering areas like land use, zoning, permitting, environmental planning, and transportation. AI is seen as a powerful technology with potential positive and negative externalities for cities(Yigitcanlar *et al.*, 2021; Son *et al.*, 2023).

1.Urban Planning AI

This specific term is defined as the process of plan-making that is conducted, either partially or entirely, by an AI agent during the urban planning process. An AI agent is a software program or system designed to perform planning tasks or make decisions based on rules or algorithms(Peng *et al.*, 2024).

- Limitations**
- 1.Data Bias:** Crowdsourced data may favor tech-savvy groups, missing Delhi's diverse voices.
 - 2.Identity Complexity:** Urban identity's depth is hard to quantify, risking oversimplified results.
 - 3.Privacy Issues:** Ethical use of personal data from social media is challenging to ensure.
- Scopes**
- 1.Efficient Data:** AI enables fast, large-scale urban insights from crowdsourced platforms.
 - 2.Real-Time Insights:** Timely analysis can guide dynamic urban planning in Delhi.
 - 3.Theory Impact:** Updates urban identity frameworks for the digital era.

URBAN IDENTITY

Urban identity is the unique character or personality of a city, shaped by its history, culture, architecture, and physical environment. It's how residents and visitors perceive and recognize the city, often tied to what makes it distinct.

When we define urban identity based on existing academic knowledge, we can say that it encapsulates the intricate interplay between individuals and their surrounding environments, wherein each exerts formative influences upon the other's identity. A broader array of distinctive elements—both palpable and abstract—situates this dynamic relationship that confers uniqueness upon an urban locale, shaping its distinctive sense of place. Urban identity is an intricate concept that reflects a city's or urban area's distinct physical, social, and cultural characteristics [1]. The built environment, economic structures, cultural practices, and social interactions all play a role in shaping it.

Source - A Comprehensive Methodological Approach for the Assessment of Urban Identity

THE IMAGE OF THE CITY

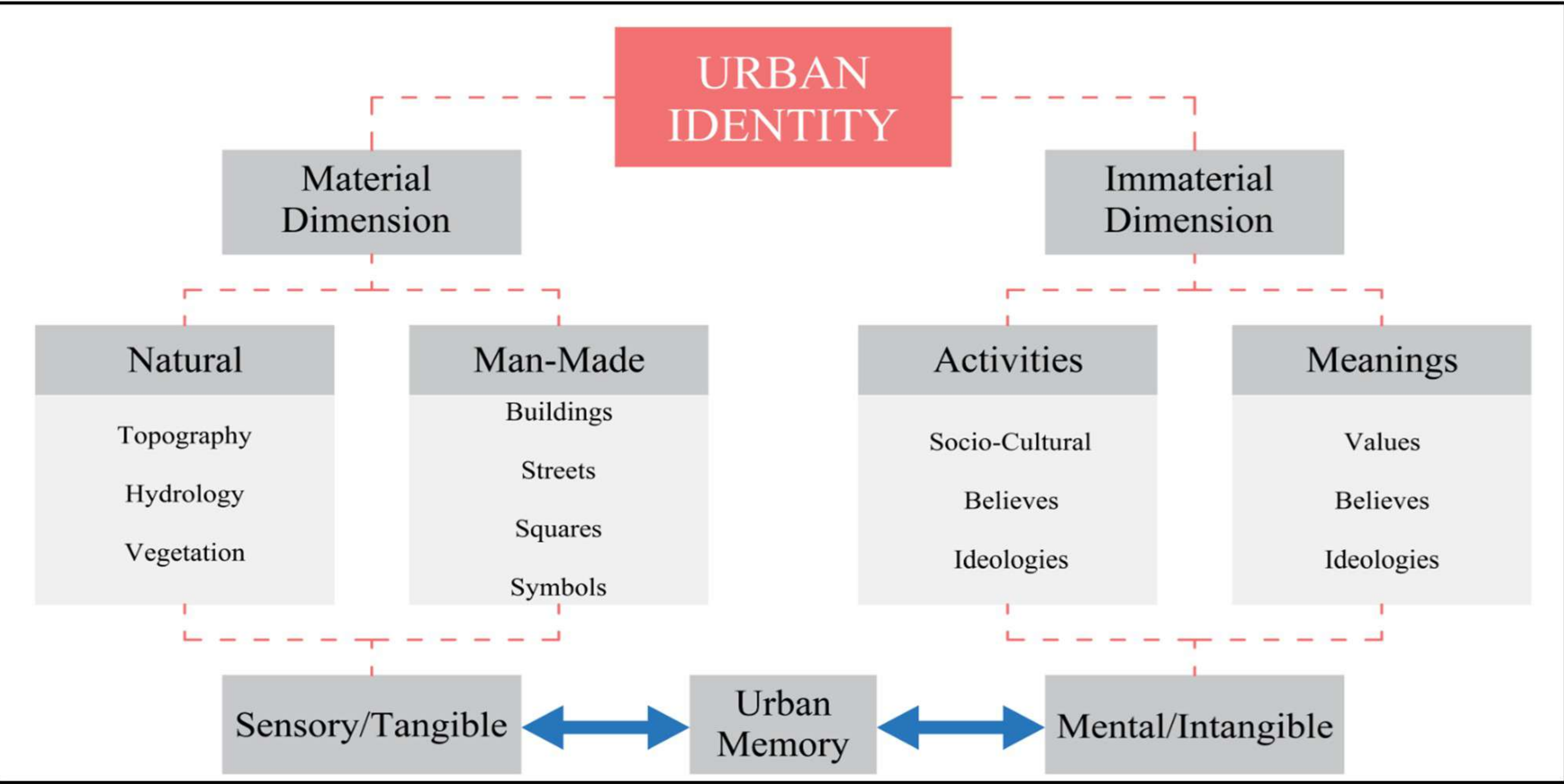
Kevin Lynch's "The Image of the City," published in 1960, is a seminal work on how people perceive and mentally map urban environments. Lynch conducted a five-year study of Boston, Jersey City, and Los Angeles, concluding that people form mental maps based on five basic elements:

- **Paths:** Channels of movement, such as streets, sidewalks, and transit lines.
- **Edges:** Boundaries like rivers, walls, or highways that separate areas.
- **Districts:** Large areas with a common character, like residential or commercial zones.
- **Nodes:** Junctions or focal points, such as squares or transit hubs.
- **Landmarks:** Notable features like monuments or tall buildings that serve as reference points.

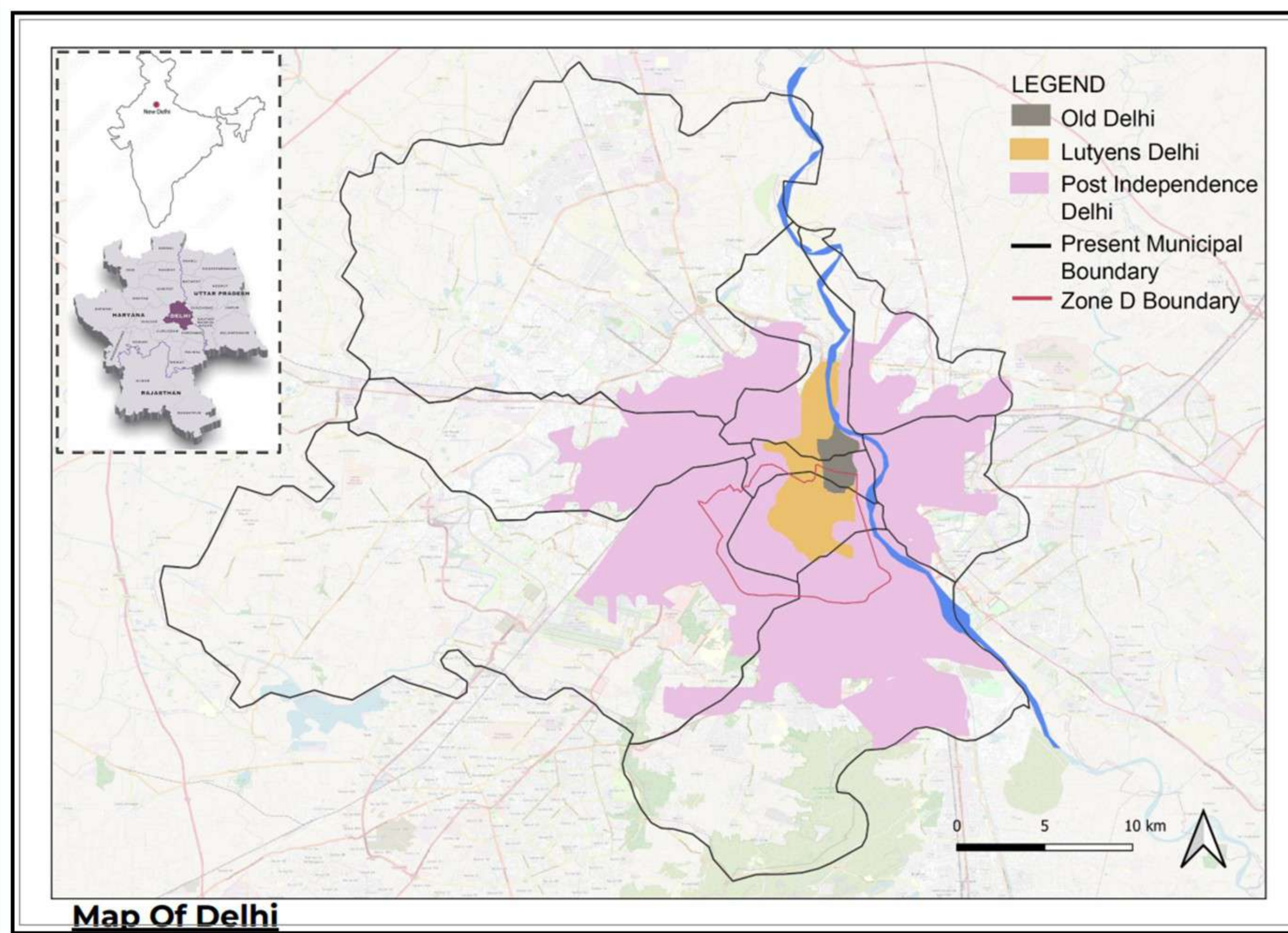
Lynch introduced the concept of "imageability," the quality that makes a city easy to form a clear mental image of, enhancing navigability and memorability (*The Image of the City - MIT Press*). This framework is not just about physical form but also about how these elements are perceived, influencing the city's legibility.

AIM - "To assess the urban identity of Delhi using Kevin Lynch's framework, supported by AI-driven analysis of crowdsourced data.."

- OBJECTIVES**
- **To identify and map Lynch's five urban elements through crowdsourced digital data.**
 - **To apply AI and NLP techniques for analyzing qualitative urban perceptions.**
 - **To develop a predictive model for urban identity using ANN and CNN architectures.**
 - **To validate the AI-based approach against traditional urban analysis methods.**
 - **To propose data-informed interventions for urban structure, policy, and real-time monitoring in Delhi.**



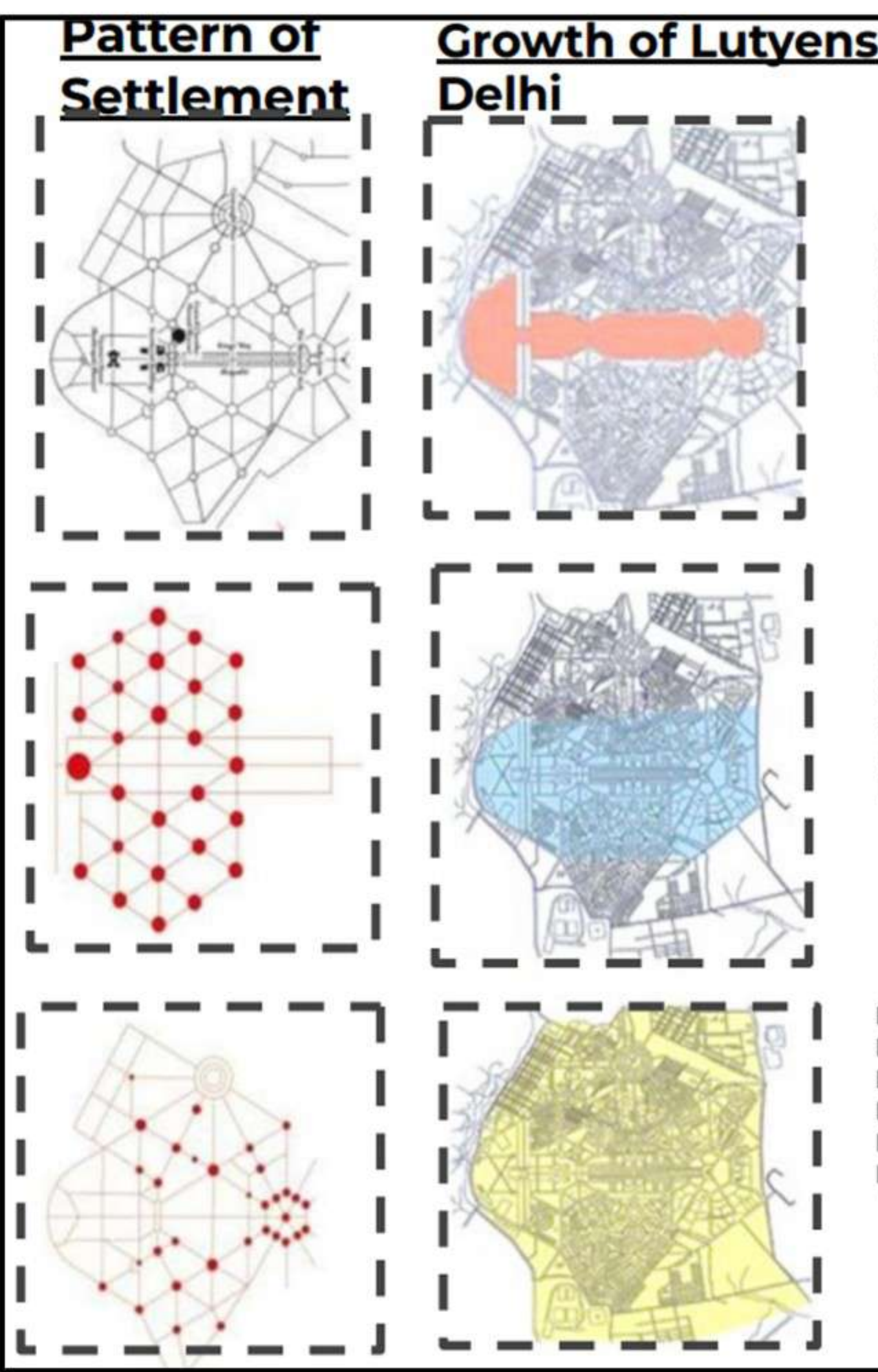
Element	Description	Contribution to Urban Identity Analysis
Paths	Routes like streets or highways	Reveals connectivity and navigability, shaping identity as accessible or vibrant.
Edges	Boundaries like rivers or walls	Defines spatial organization, contributing to identity through natural or planned separations.
Districts	Areas with common character, like neighborhoods	Highlights diversity and local cultures, adding to the city's unique character.
Nodes	Junctions like squares or transit hubs	Identifies focal points for social and economic life, defining vibrancy and community.
Landmarks	Notable features like monuments or towers	Symbolizes history and culture, making the city memorable and recognizable.



Map Of Delhi

Sir Thomas Hoderness, Permanent Secretary at Indian Office persuaded him to share the commission with Herbert Baker (Lutyen's old architect friend)

- Town planning Committee was formed which 2 architect and John A. Broodie as engineer and S.C. Swinton as municipal expert.
- Further Baker designed Secretariat, Parliament House and Bungalows.
- Lutyen did City Planning and designed Viceroy House (Rashtrapati Bhawan), Princely Houses and India Gate.



Phase 1 (1911-1914)

Phase 2 (1916)

Phase 3 (1933-1947)

MPD 2001

1982

Asian games

1985

Formation of National Capital Region Planning Board (NCRPB)

1994

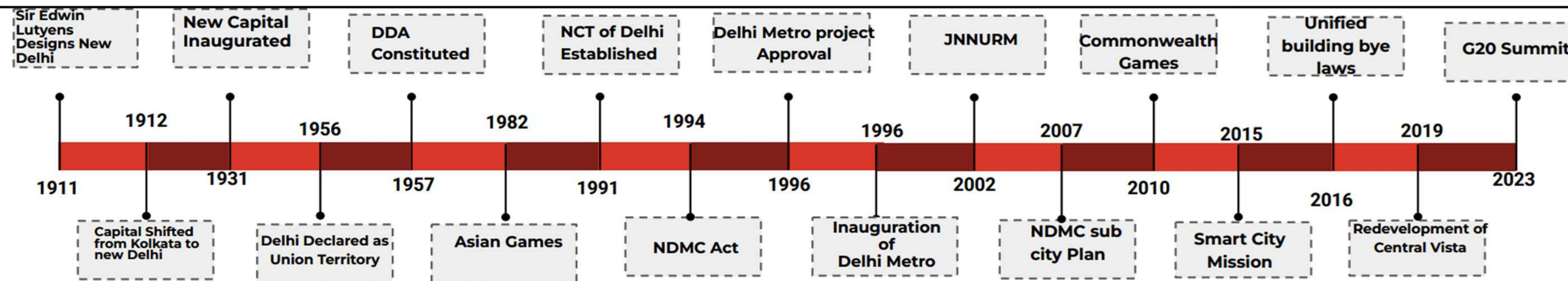
The NDMC Act, 1994

1995

Delhi Metro Project Approval

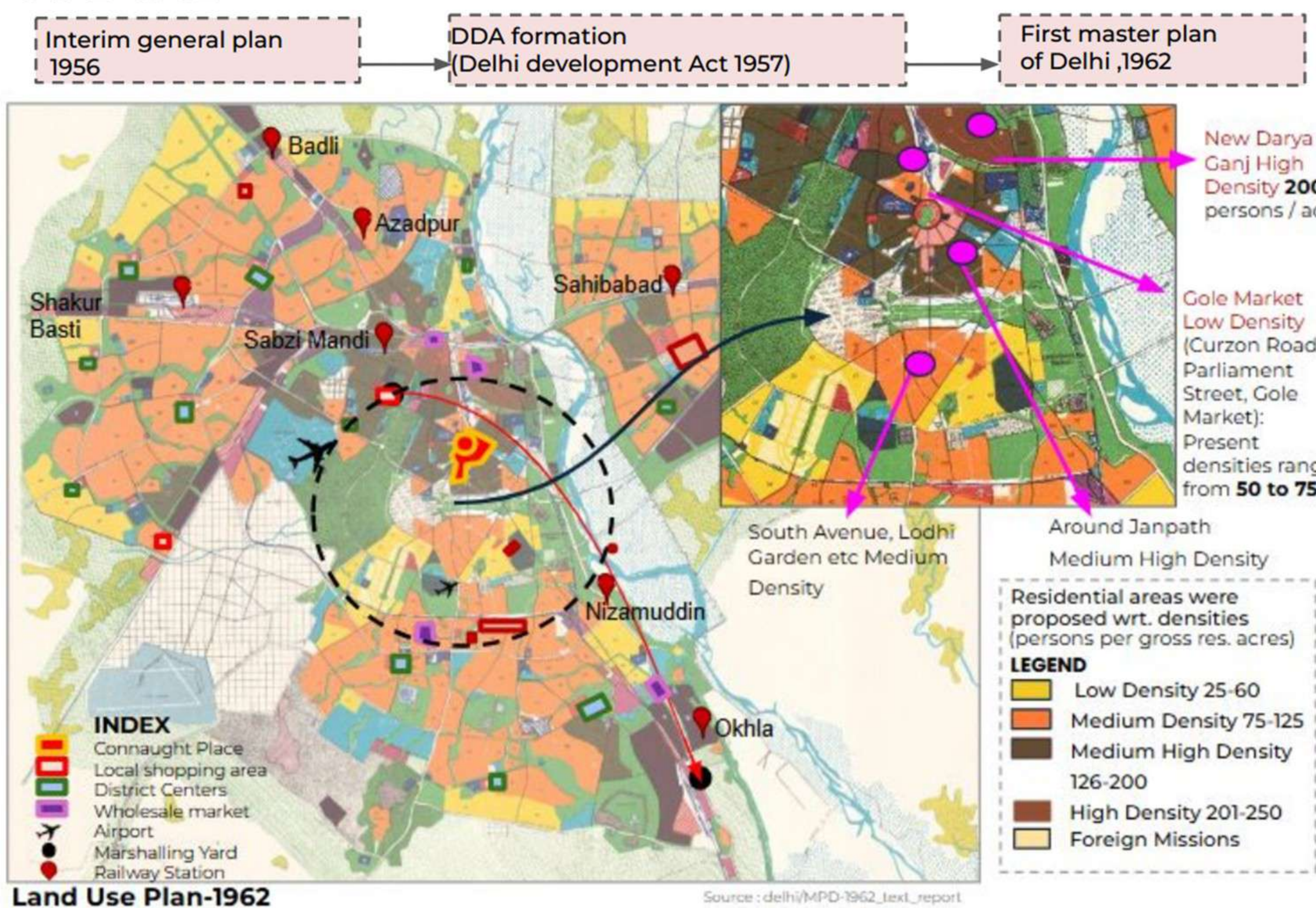
2000

Commonwealth Games Bid



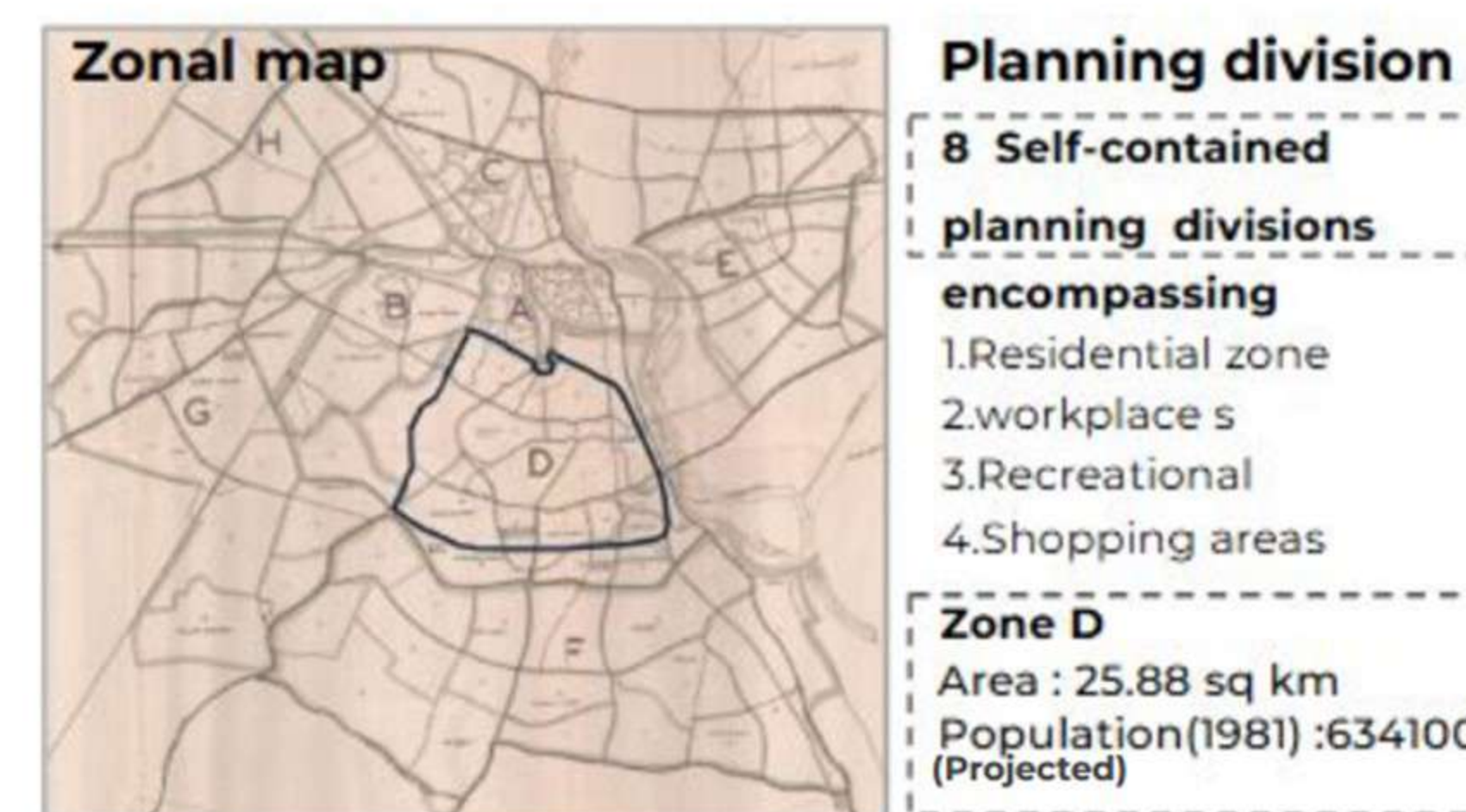
New Delhi forms an essential part of the broader Delhi area, a Union Territory Covering approximately 1,484 square kilometers.

MPD 1962

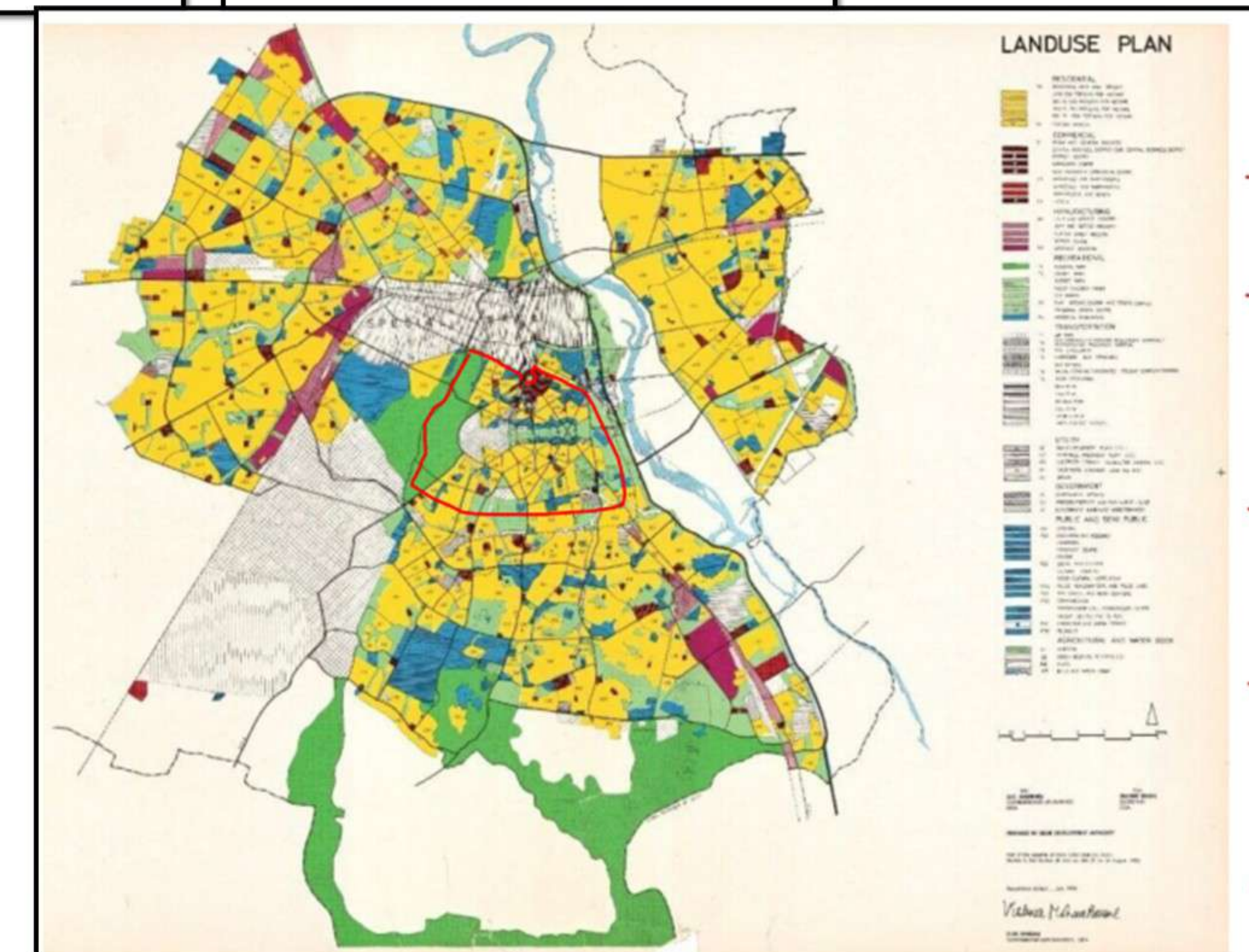


❖ Master plan Delhi, 1962 focussed on following key areas:

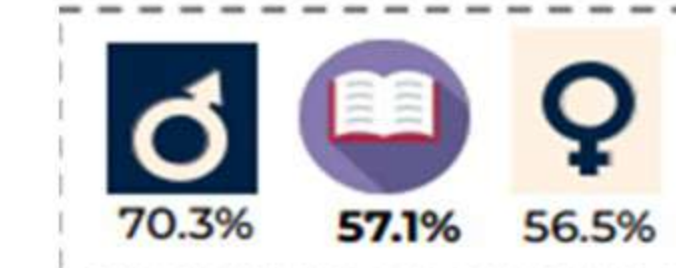
- To control Irregular and unplanned growth of Delhi
- Delhi should be planned in the context Of its region and Decentralisation of employment
- Areas that have healthy organic pattern must be conserved



Master Plan 2001



Population -
1981: 62.2 lakh
2001 (projected): 137.82 lakh



Population surge of 10 lakh occurred between 1981 and 1985, due to migration because of Asian games

Construction Period: 20 months

Stadiums and Sports Complexes: 4 Stadiums and sports complexes including JLN Stadium
Asiad Villages: 1000 units constructed
Hotels: To promote Games
Flyovers and Roads: 500 Kms of Road

Delhi transitioned to a tertiary sector-driven economy by 2001, with 60.78% GDP contribution from services. By 2001, the city's urban systems were transitioning from reactive (1962-1981) to proactive planning (e.g., Metro, housing, and infrastructure upgrades) (Source : Urban Design Lab, 2021, MPD 2021)



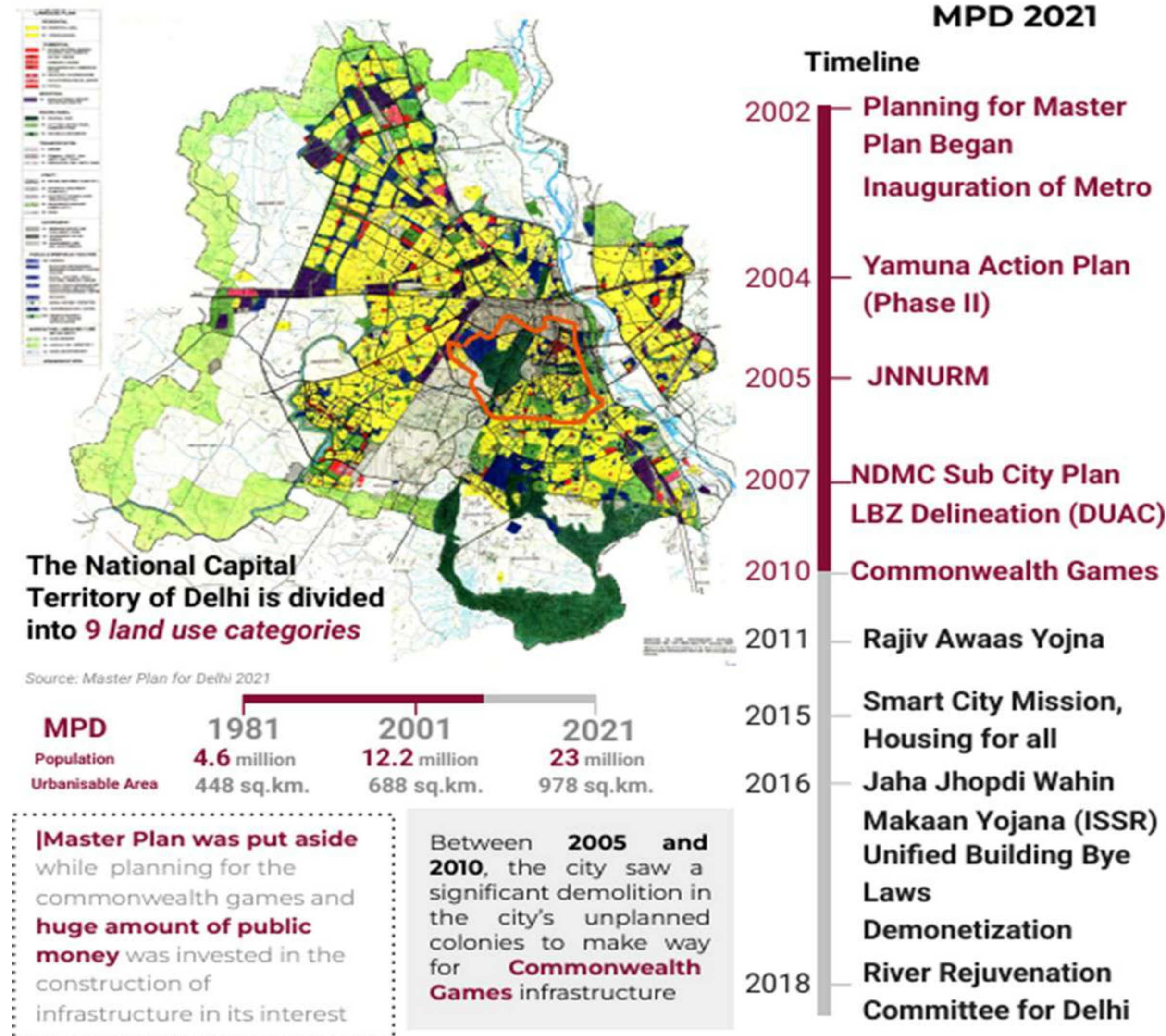
Delhi : AI and Urban Identity

INTRODUCTION TO STUDY AREA

SHEET - 2

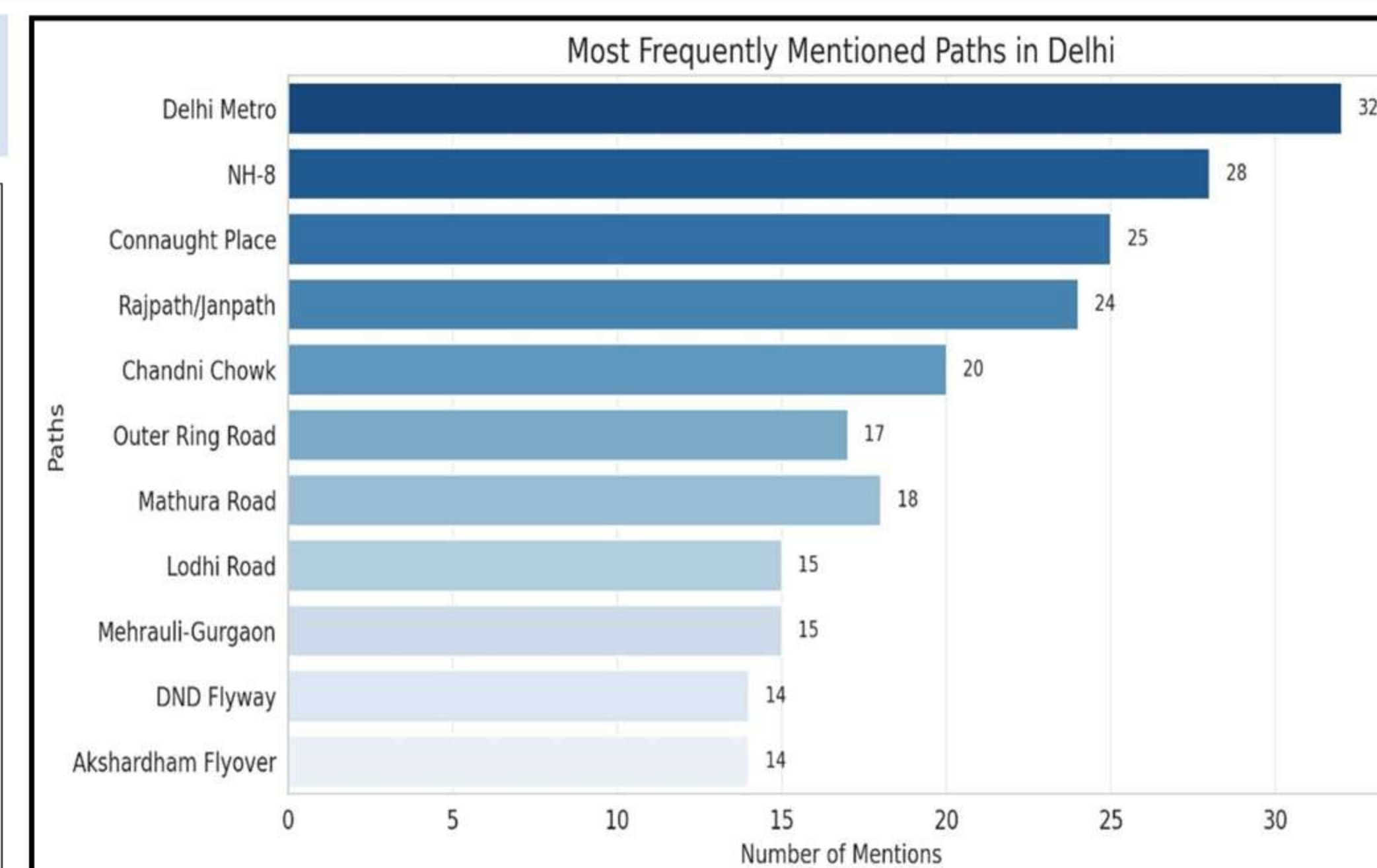
Aditya Maheshwari
SPA/NS/UP/2023/1609School of Planning and Architecture
New Delhi
M.Plan (Urban Planning) Semester 4

Master Plan 2021

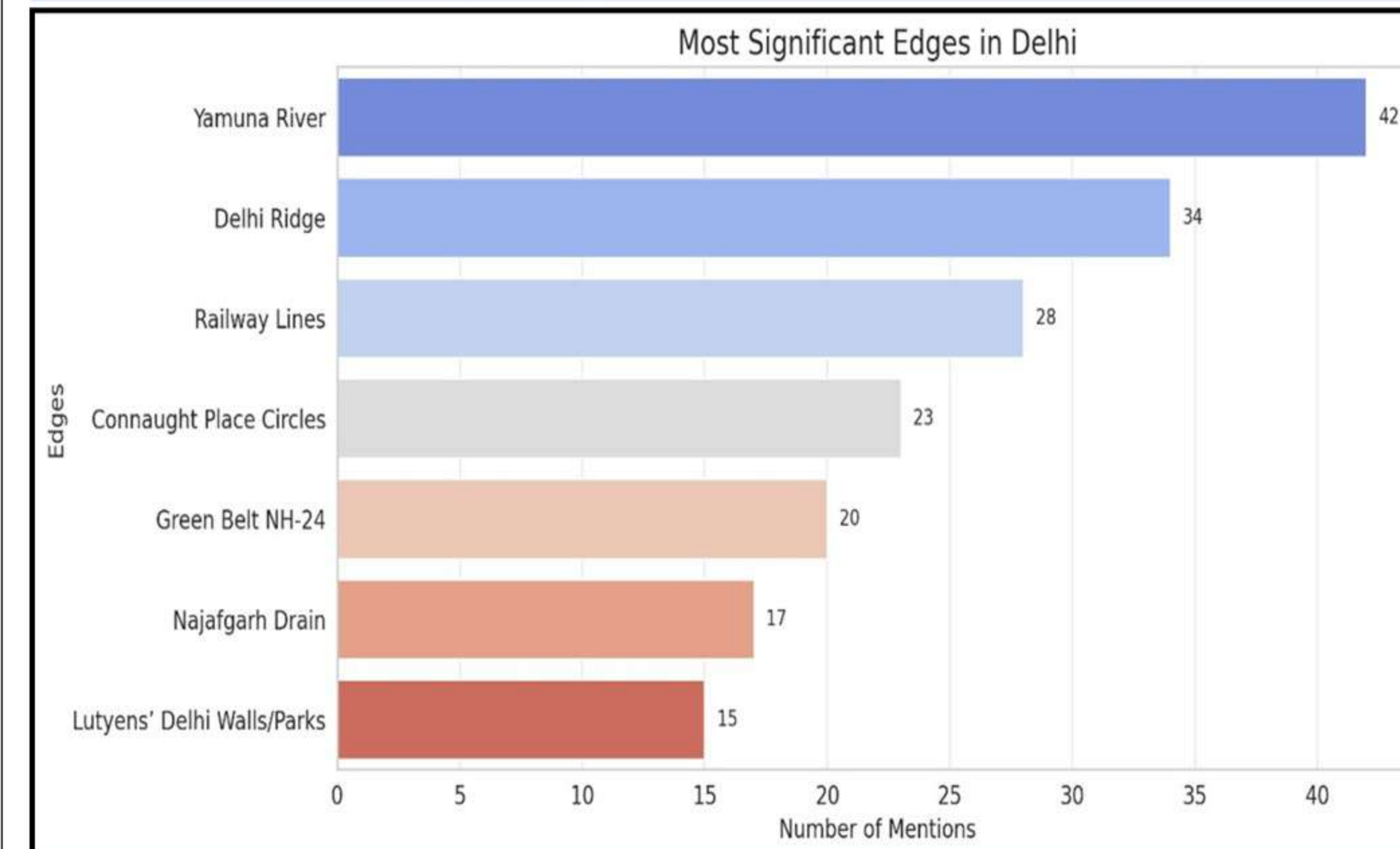


SURVEY QUESTIONS

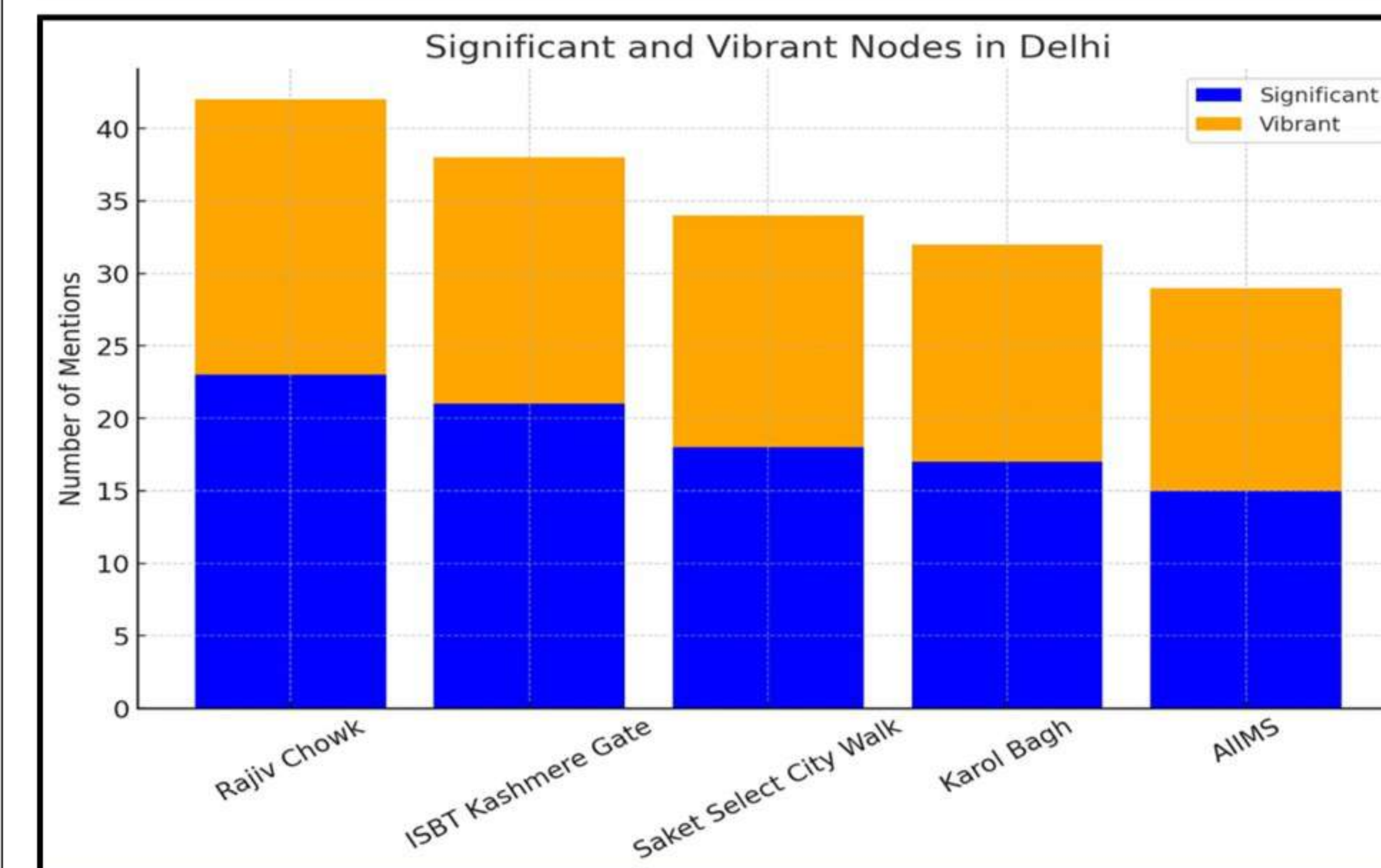
1. In your mind, what are the most important PATHS (streets, roads, metro lines, flyovers, walkways, etc.) in Delhi that you use or are aware of?
2. Which PATHS in Delhi do you find easiest to navigate? Why?
3. Which PATHS in Delhi do you find confusing or difficult to navigate? Why?
4. In your mind, what are the most significant EDGES (boundaries, barriers, breaks in continuity like rivers, railway lines, walls, parks, major roads separating areas) in Delhi?
5. Are there any EDGES in Delhi that you find particularly striking or noticeable? What makes them stand out?
6. For any 2-3 DISTRICTS, please briefly describe what you think are their defining characteristics or features.
7. Do you feel there are areas in Delhi that lack a clear DISTRICT identity? If so, where?
8. Which NODES in Delhi do you find particularly important or significant for the city's functioning? Why?
9. Are there any NODES in Delhi that are particularly lively or vibrant? What makes them so?
10. Which LANDMARKS in Delhi do you think are most important for understanding the city's history or culture? Why?
11. What are the most recognisable and memorable LANDMARKS (distinctive objects, buildings, monuments, natural features) in Delhi that you can think of?
12. If you could describe the 'image' of Delhi in a few words or a short sentence, what would it be?



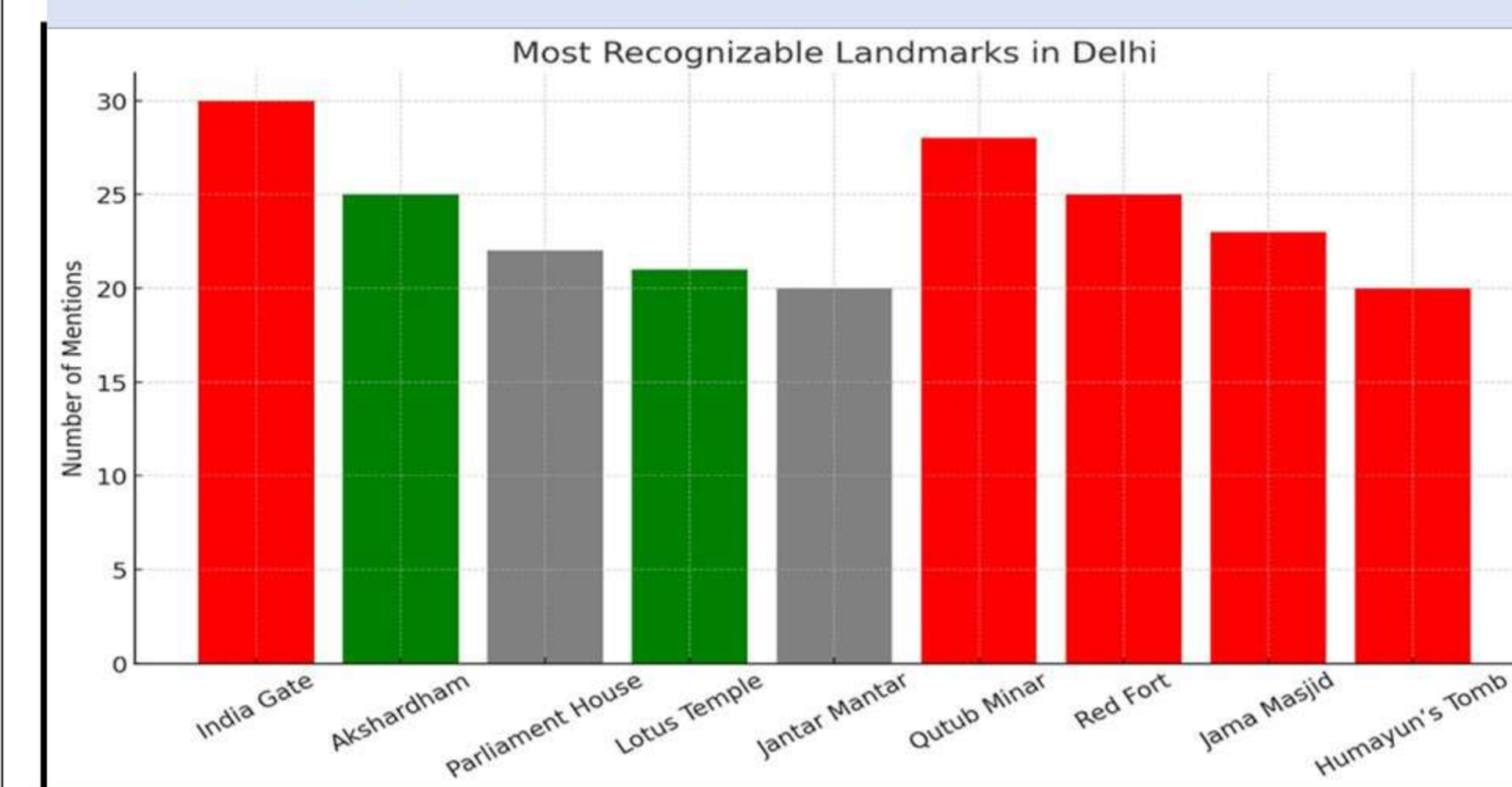
Most Frequently Mentioned Paths In Delhi



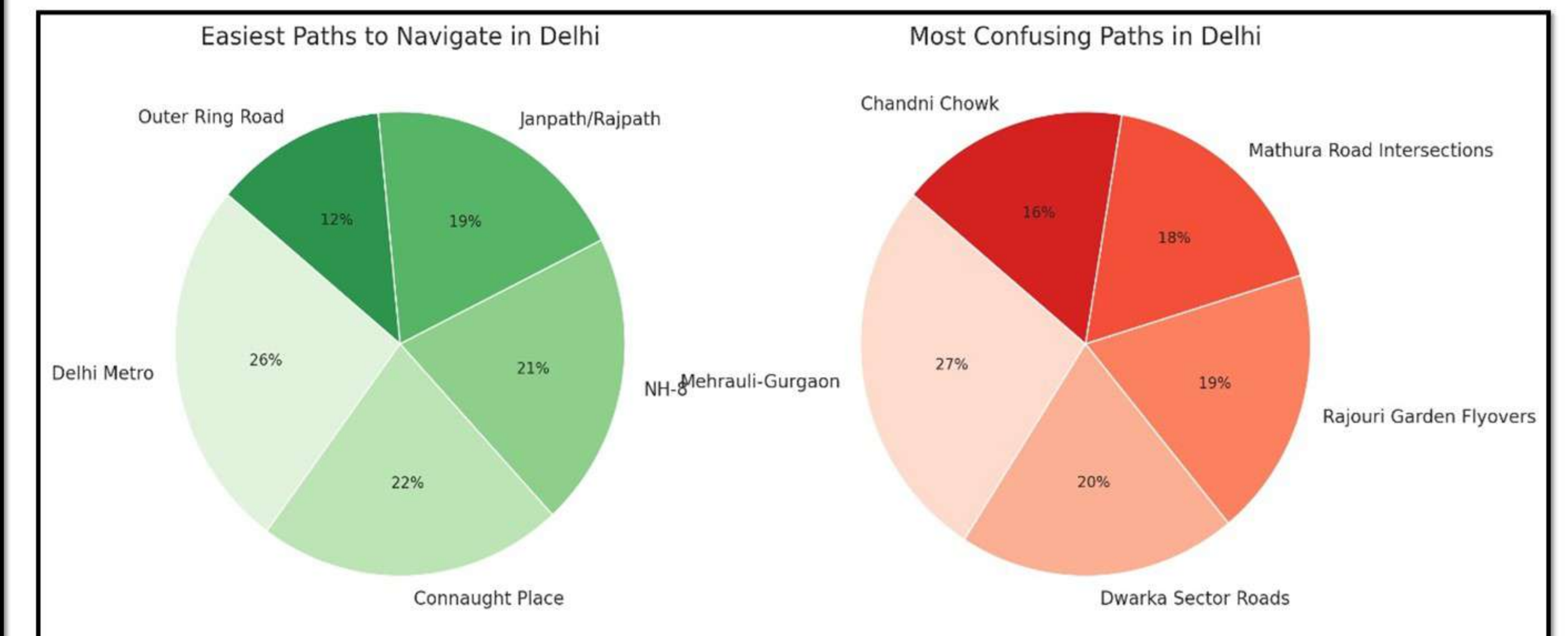
Most significant edges in Delhi



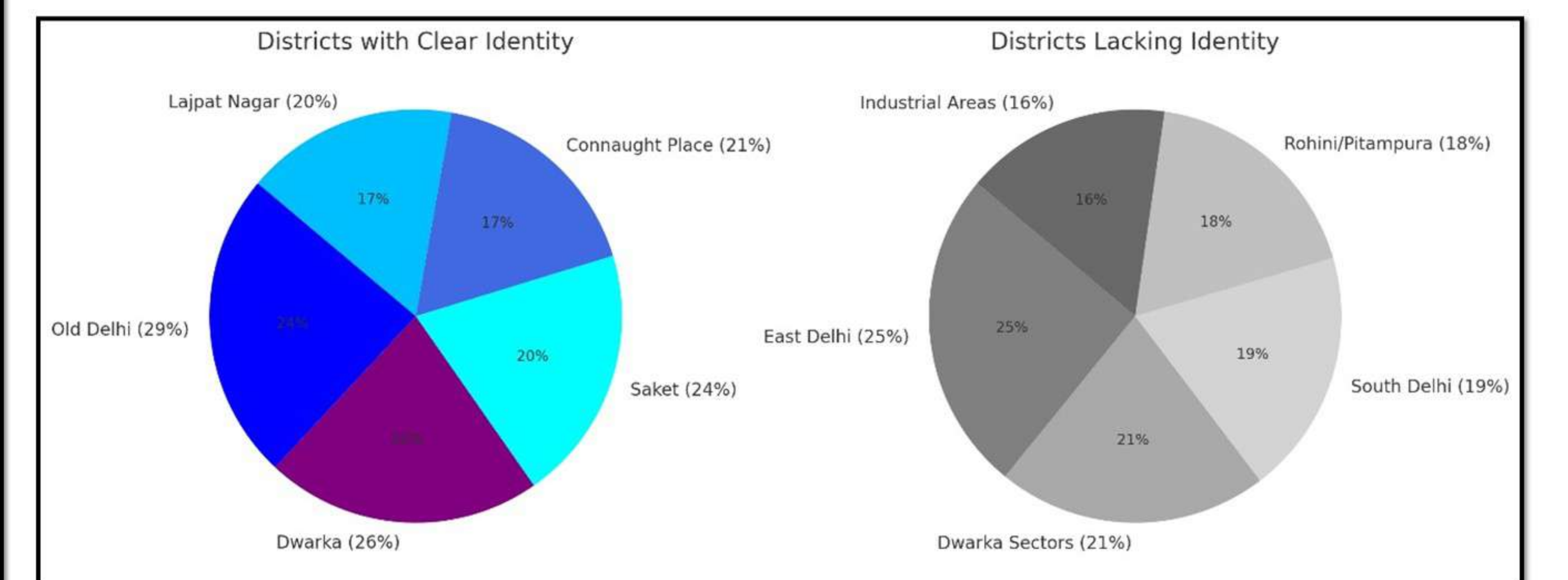
Significant & Vibrant nodes in Delhi



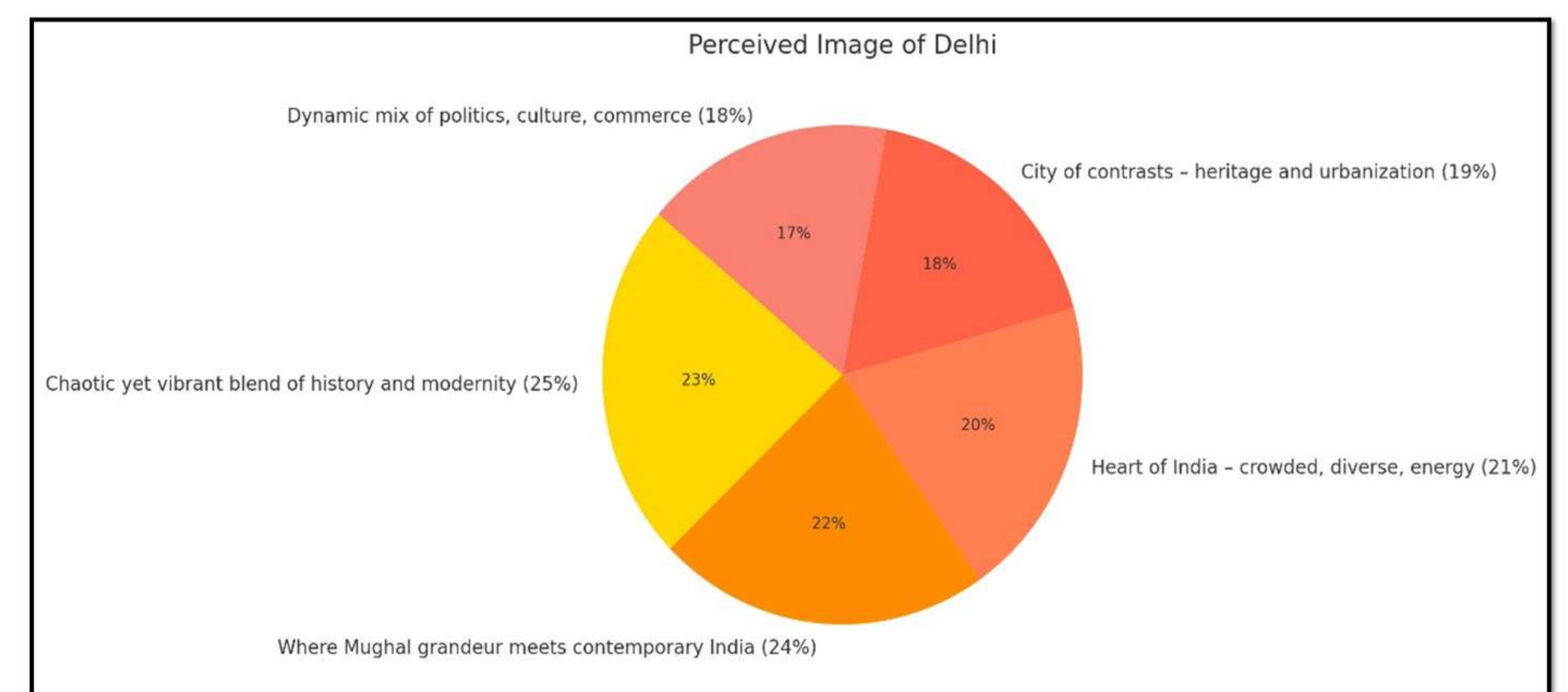
Most recognisable Landmarks in Delhi



The easiest path to navigate and confusing paths in Delhi

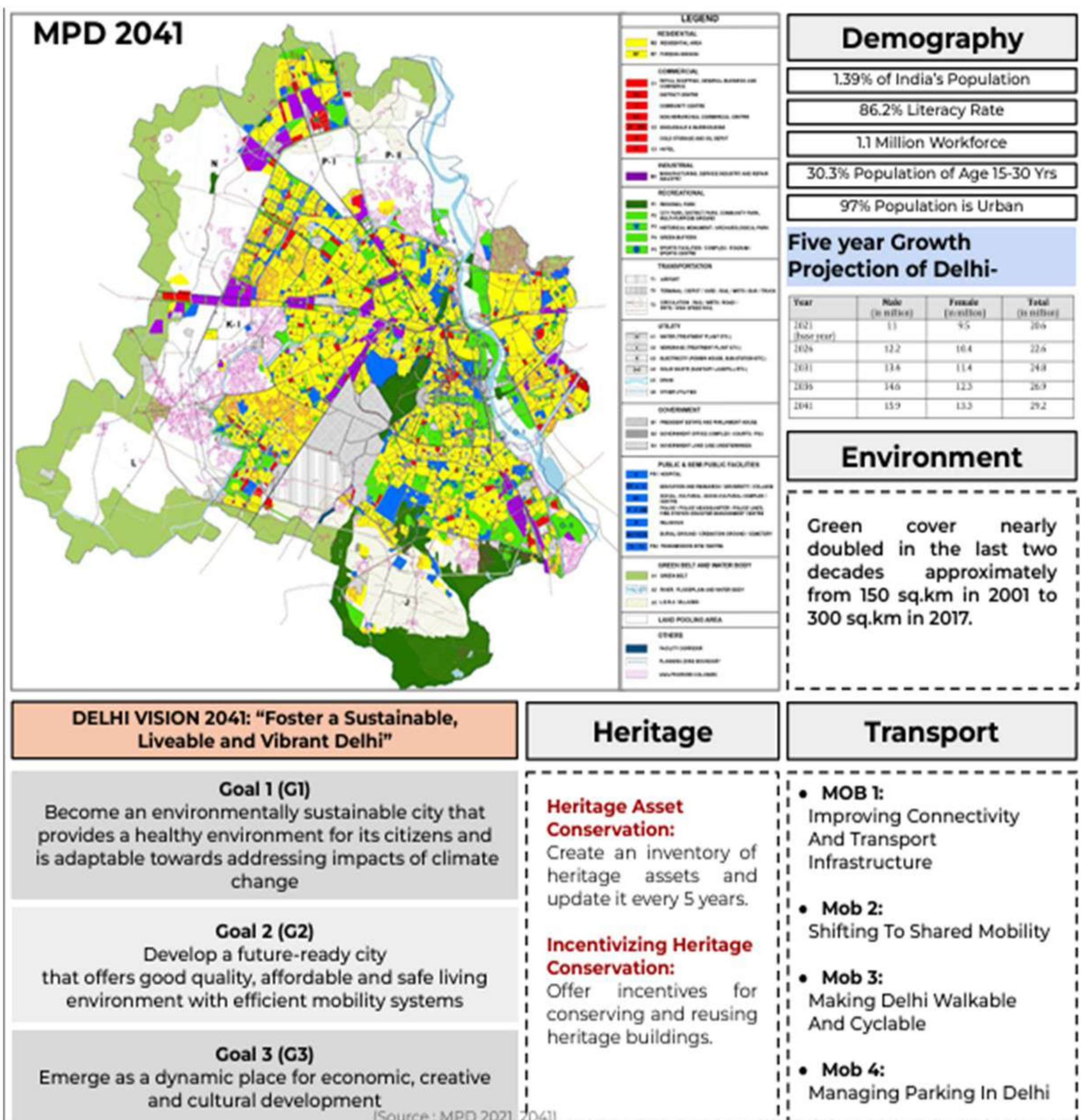


Clear & Lacking Identity



Perceived Image of Delhi

Master Plan 2041



Delhi : AI and Urban Identity

PRIMARY SURVEYS

SHEET - 3

Aditya Maheshwari
SPA/NS/UP/2023/1609



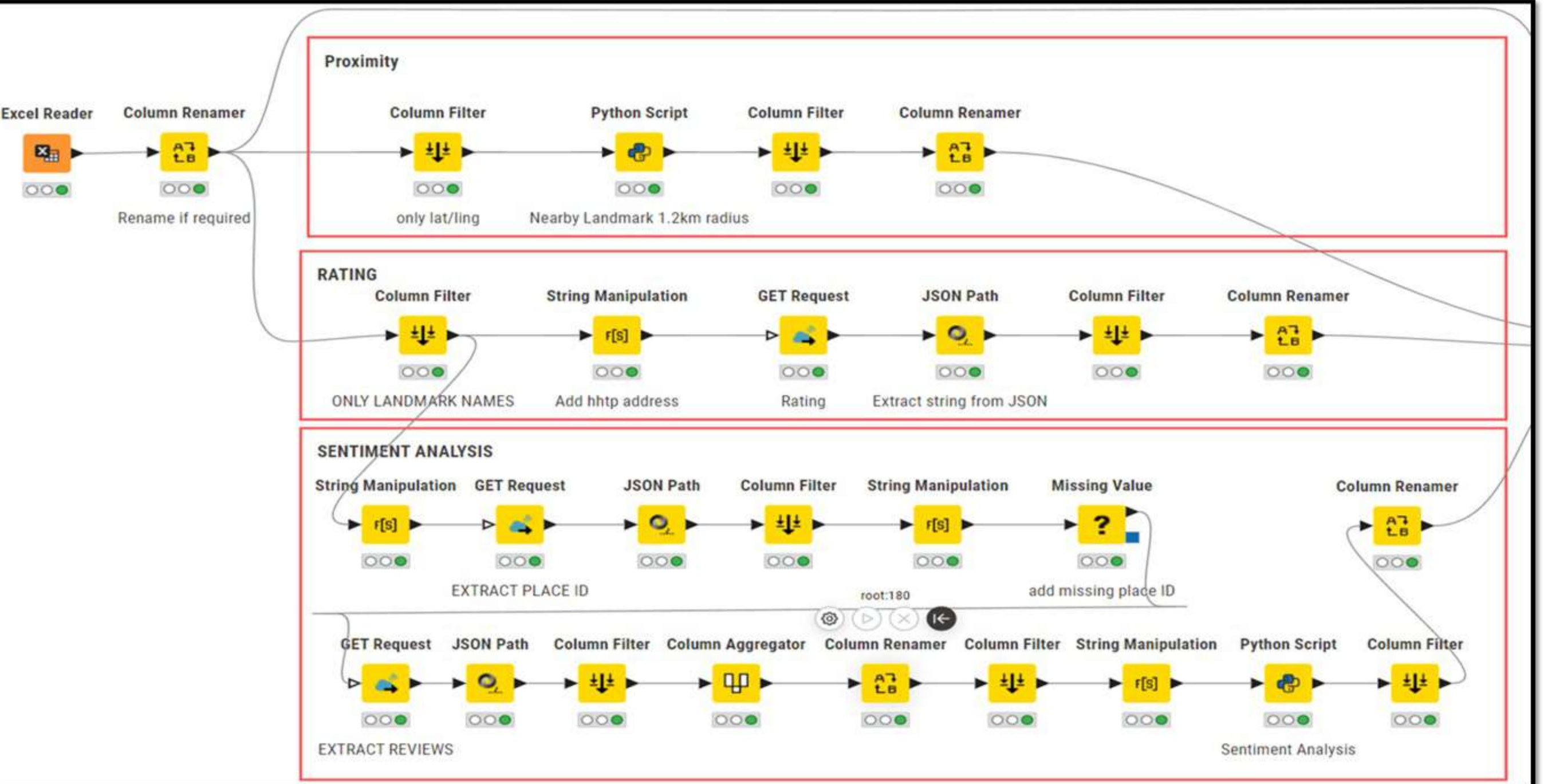
School of Planning and Architecture
New Delhi
M.Plan (Urban Planning) Semester 4

Methodology: Combining Metrics to Rate Landmarks
To assess landmarks in a city and rate them as "Excellent," "Average," or "Needs Improvement,"

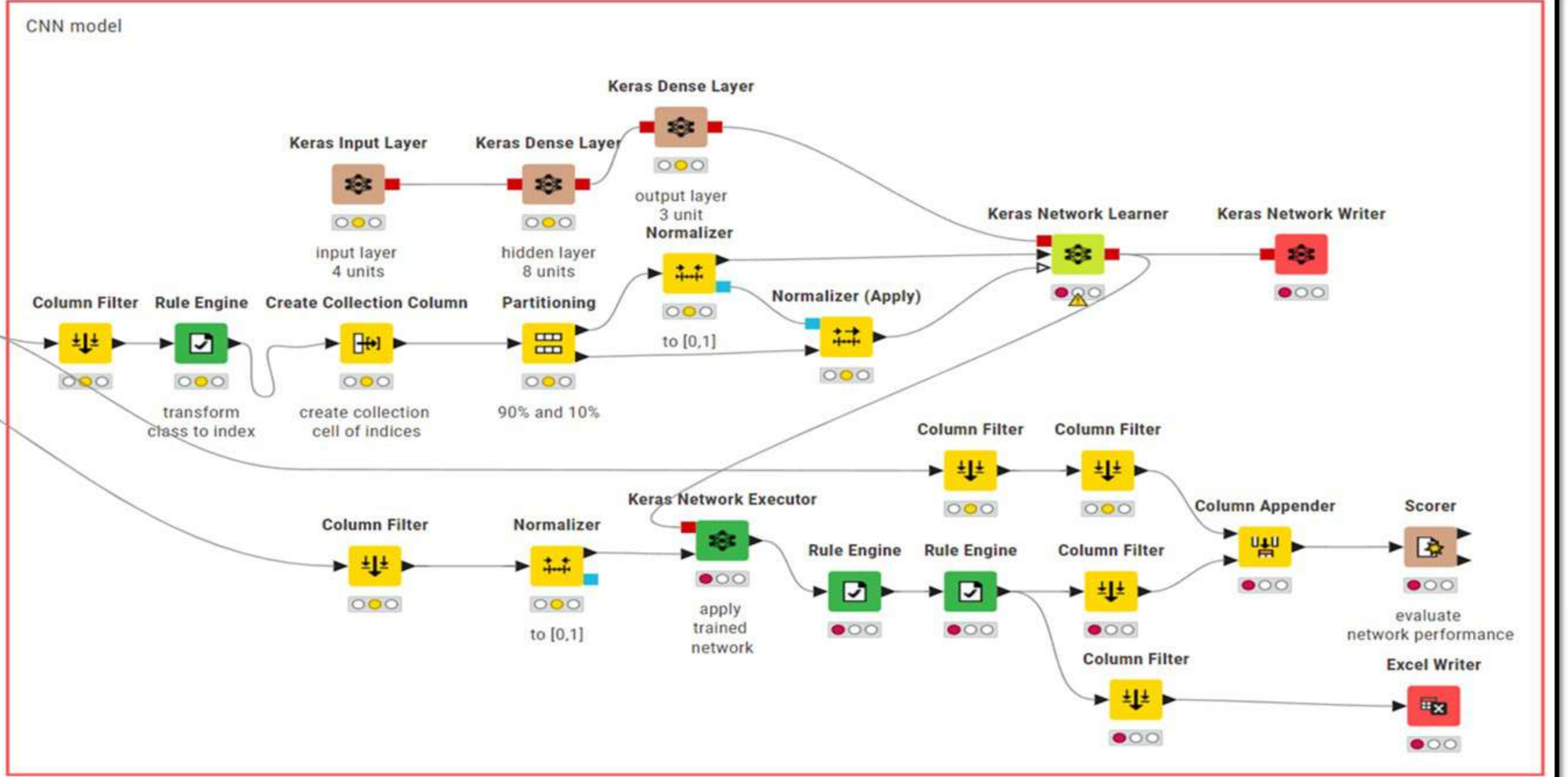
Google Ratings
Definition: A numerical score out of 5, based on user ratings on Google Maps.
Relevance: Reflects the landmark's popularity and perceived quality. High ratings

Sentiment Analysis of Google/Twitter/Reddit Reviews
Definition: A score (typically -1 to 1) derived from natural language processing (NLP) of textual reviews
Relevance: Provides qualitative insight into public perception, revealing nuanced feelings beyond numerical ratings.

Proximity Number (Landmarks within 1.2km Radius):
Definition: The count of other landmarks within a 1.2km radius of a given landmark, indicating clustering.
Relevance: Reflects the cultural or historical density of an area, which enhances a landmark's significance in urban identity.

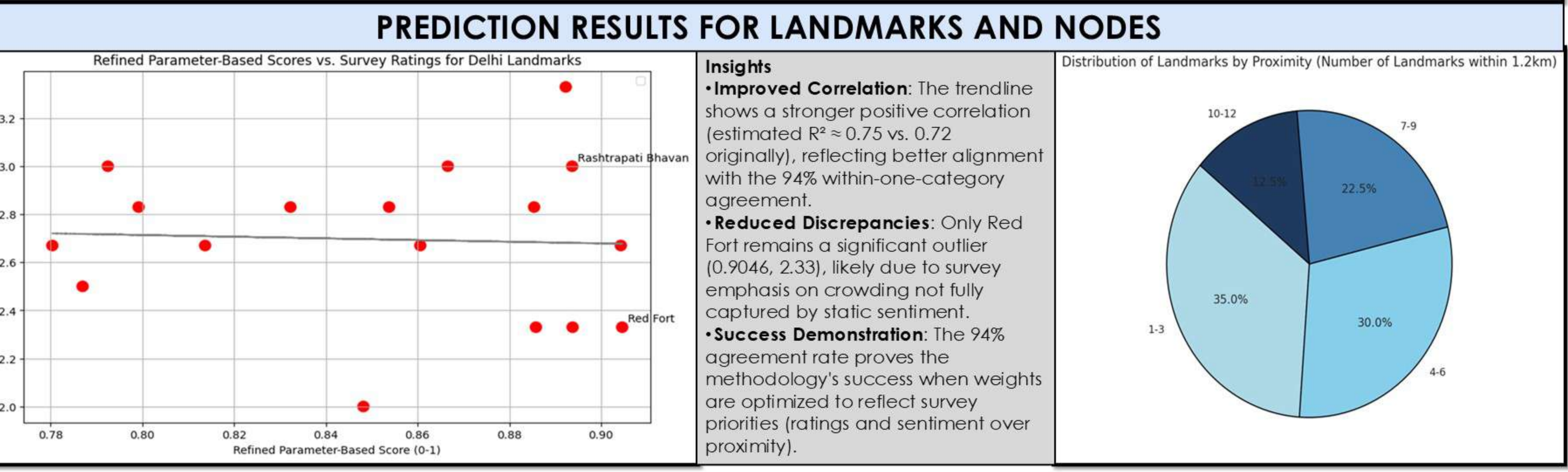
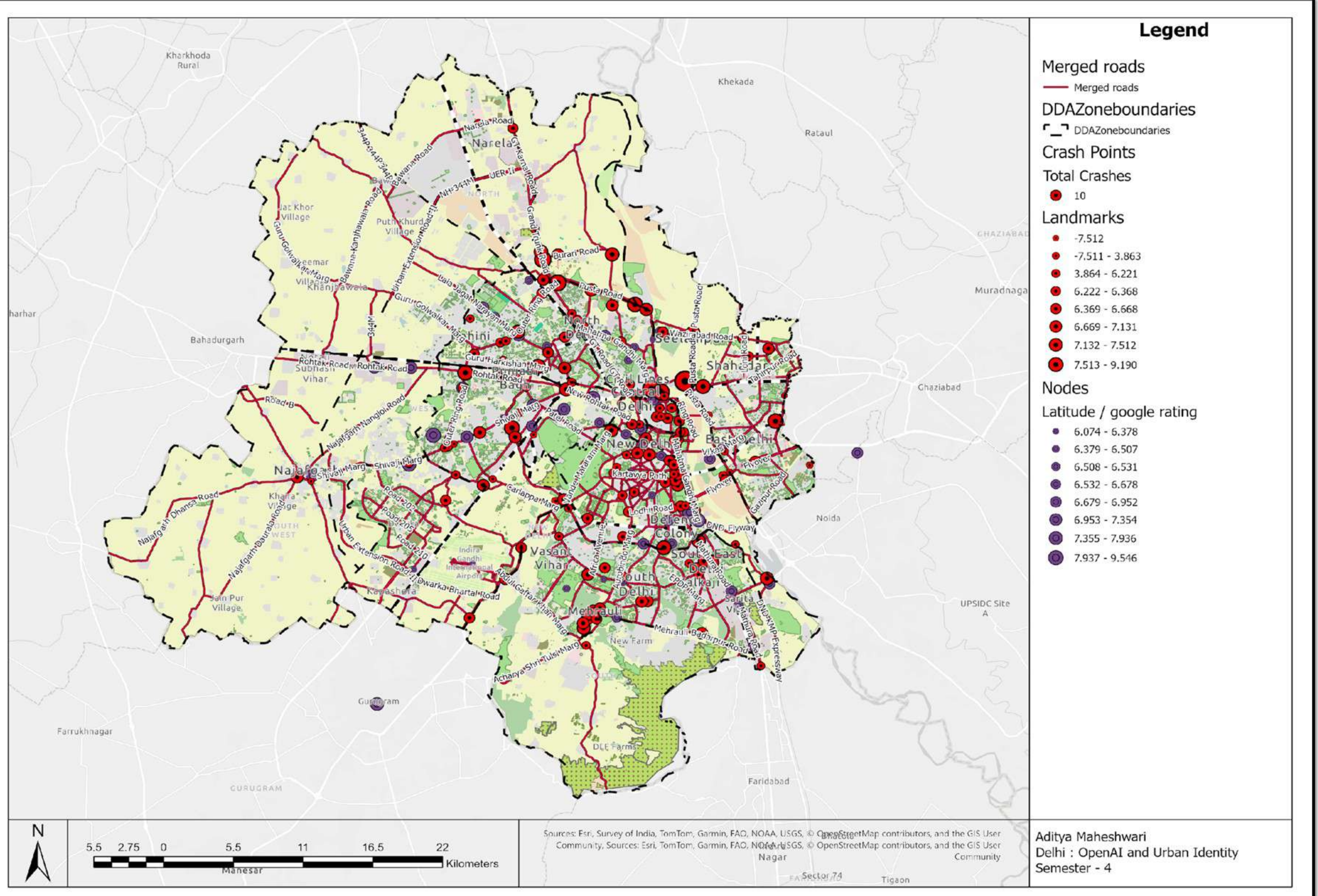


KNIME MODEL FOR PROCESSING LANDMARK AND NODE DATA



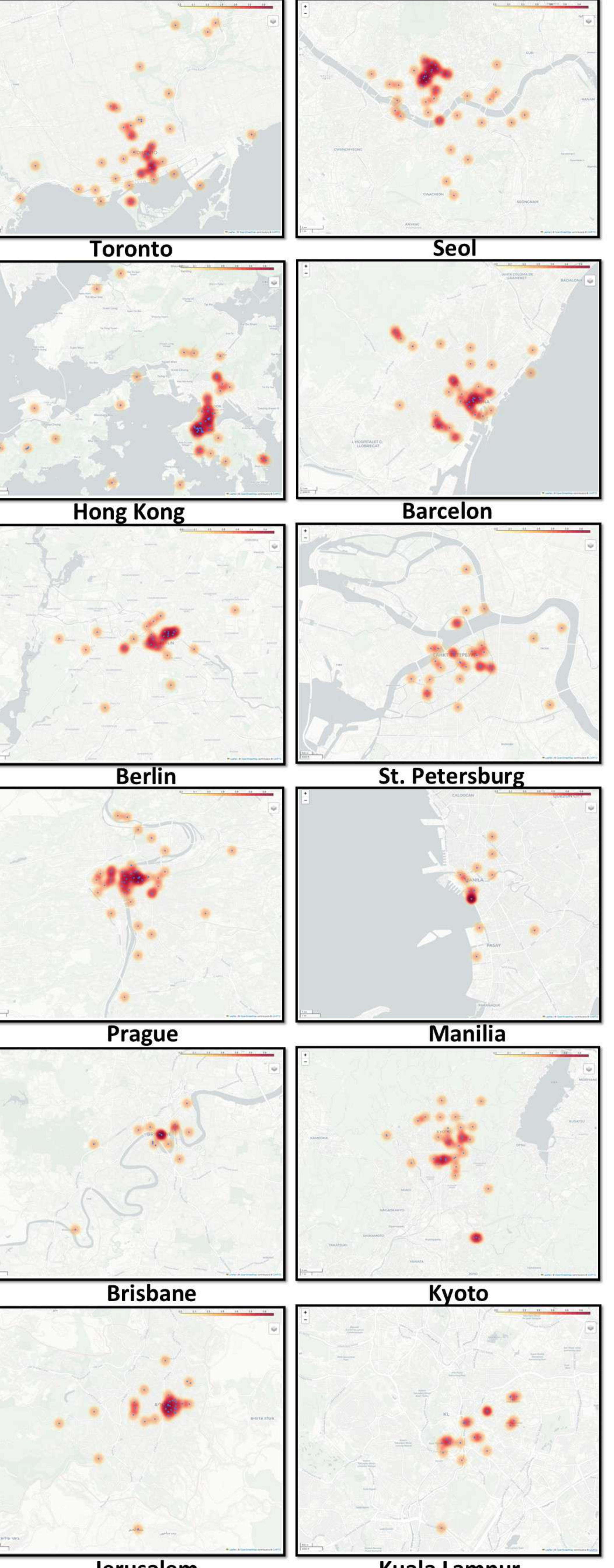
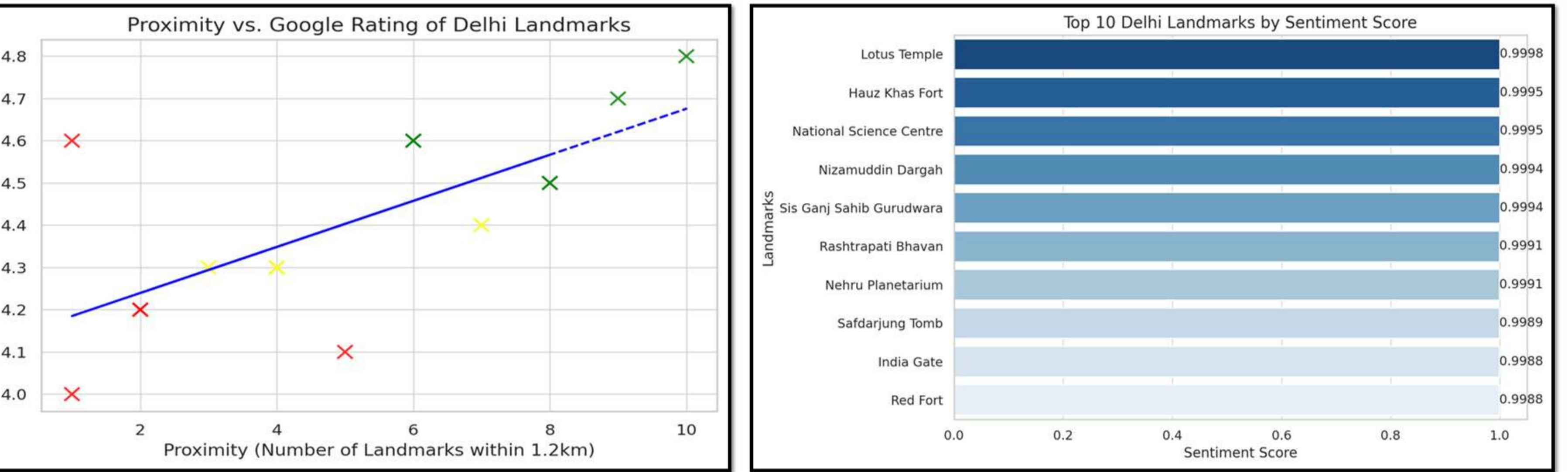
CONVOLUTIONAL NEURAL NETWORK MODEL

CNN Model Application
•**Why CNN?**: CNNs are effective for extracting spatial hierarchies and local patterns, traditionally in images but adaptable for text or structured data when combined with embeddings. For this task, the CNN can process sequences of word embeddings from reviews and numerical features (ratings, proximity) to identify patterns associated with rating categories.



Benefits

- Robust Model**: Training on diverse data reduces overfitting to a single city's context, improving accuracy (e.g., 85-90% validation accuracy is achievable with sufficient data and tuning).
- Global Benchmark**: Provides a standardized rating system across cities, facilitating comparative urban identity studies.
- Practical Application**: Predictions can guide tourism development, heritage preservation, or infrastructure planning, aligning with urban policy needs.



Methodology for Assessing Districts

The proposed methodology for evaluating districts using six parameters—1) number of landmarks within the district, 2) number of nodes within the district, 3) green space area, 4) TripAdvisor rating, 5) mean of night light image (NASA Black Marble), and 6) Wikipedia sentiment (for historical importance)

Number of Landmarks: Reflects the district's cultural and historical significance, aligning with Lynch's landmarks as memorable features.

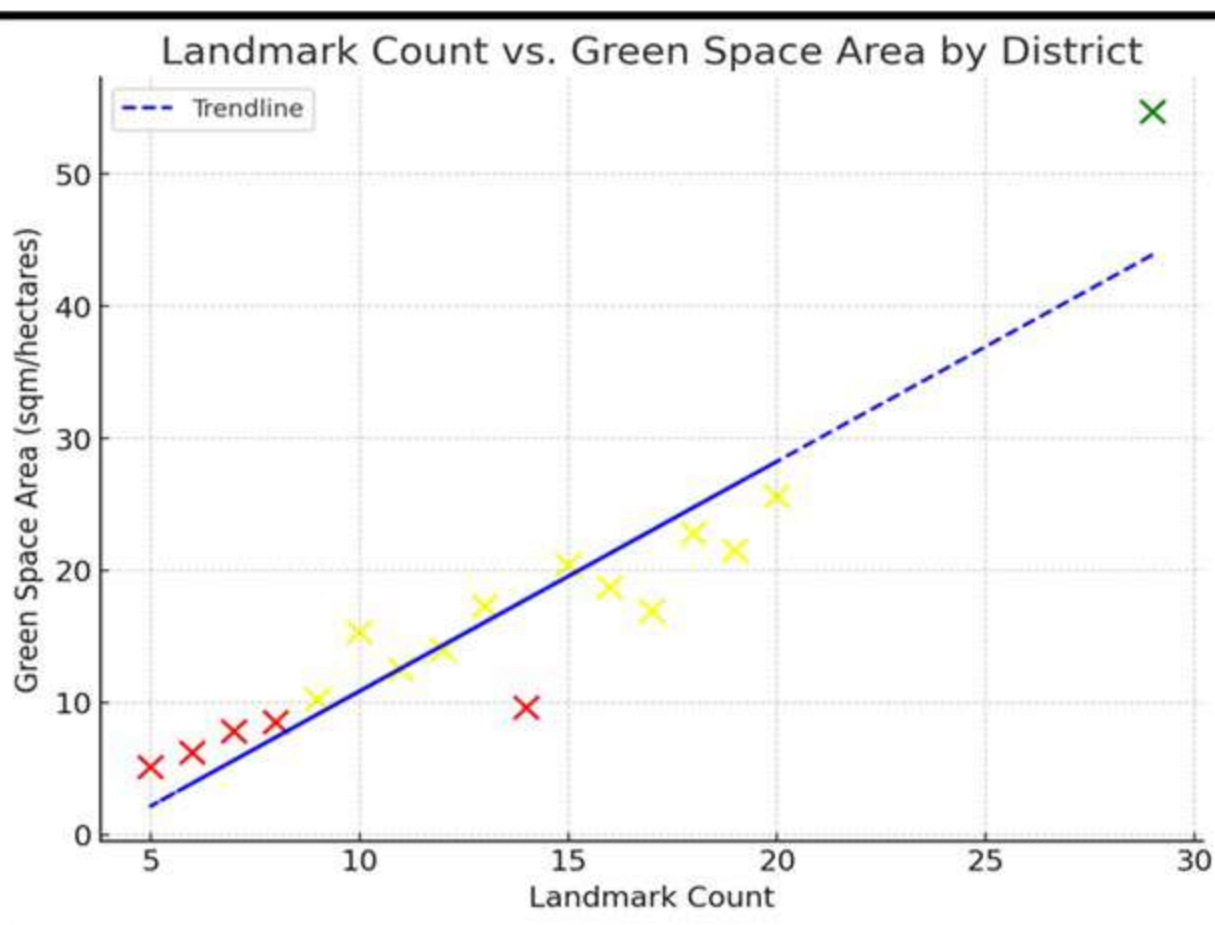
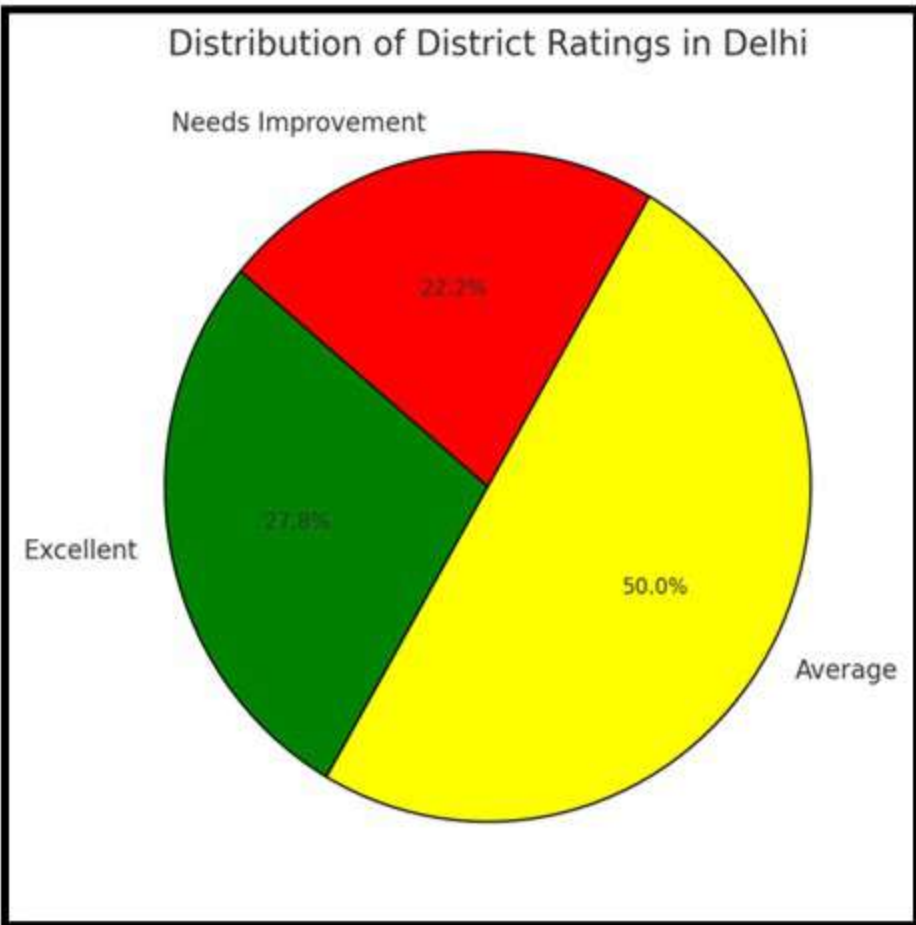
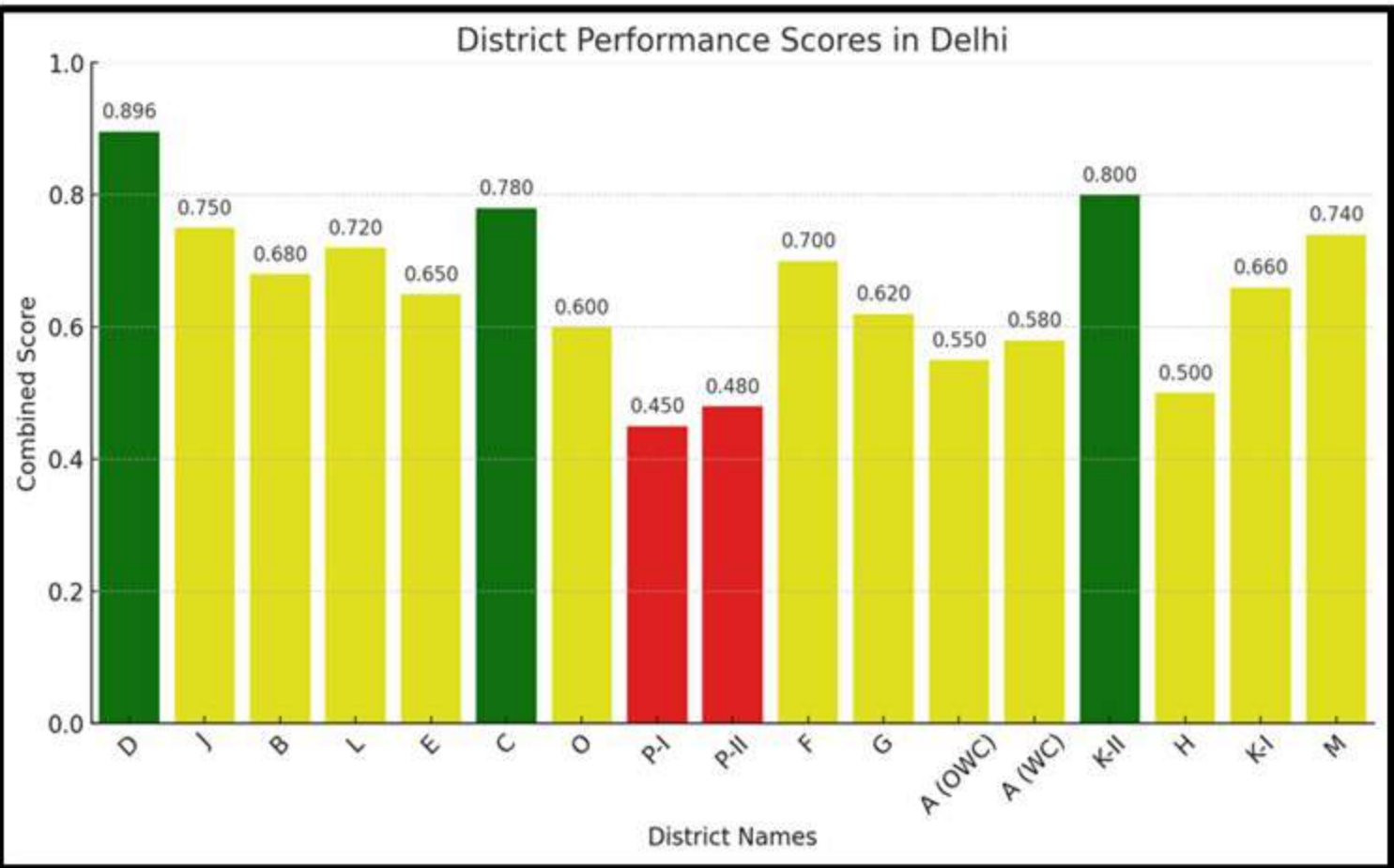
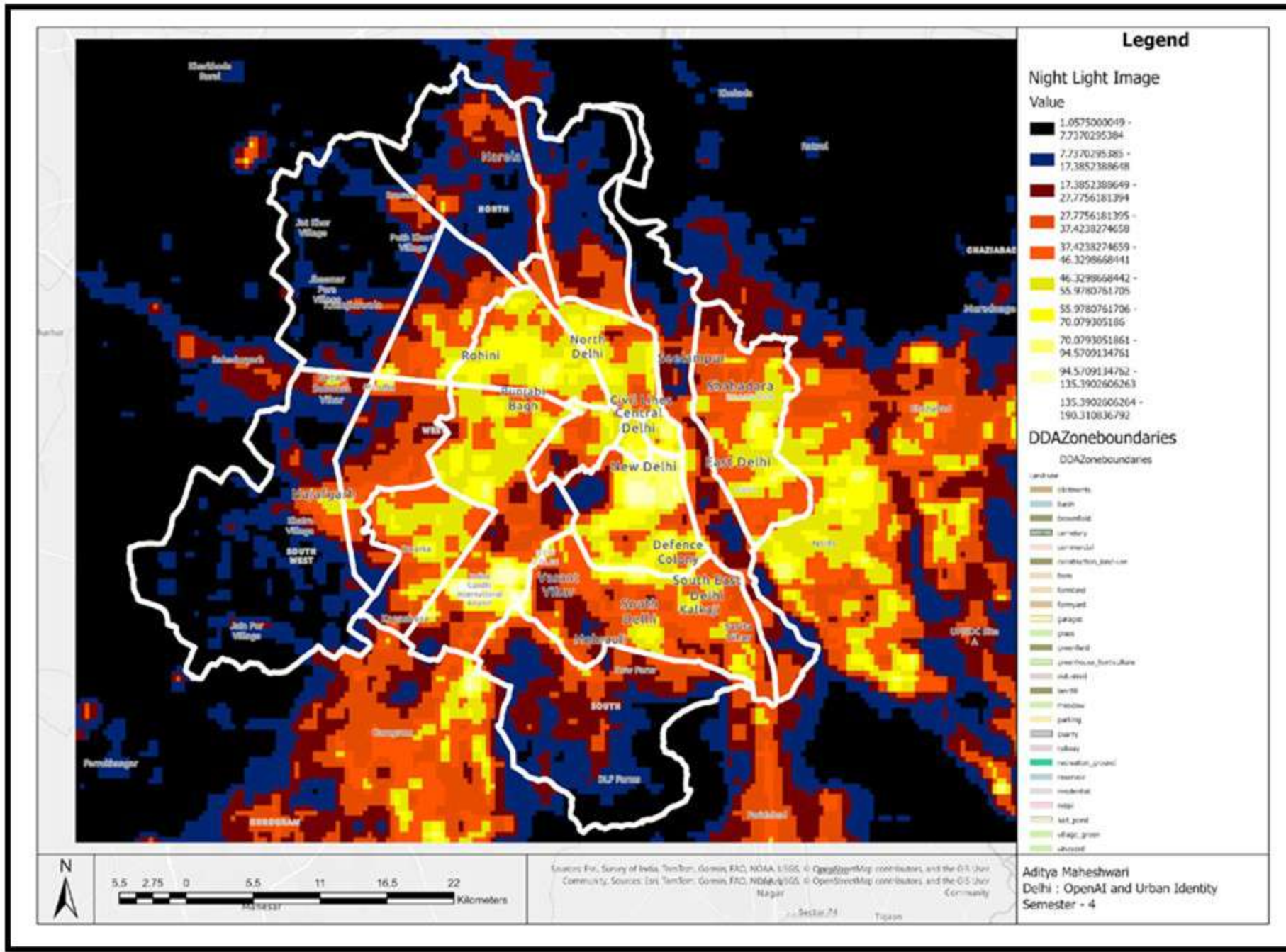
Number of Nodes: Captures focal points (e.g., transit hubs, squares) where activities converge, supporting Lynch's nodes as strategic orientation points.

Green Space Area: Represents environmental quality and recreational value, contributing to a district's livability and perceptual appeal, which ties into Lynch's imageability through natural edges or districts.

TripAdvisor Rating: Provides a crowdsourced measure of visitor satisfaction, reflecting the district's tourism appeal and public perception, a key aspect of urban identity.

Wikipedia Sentiment (Historical Importance): Gauges the district's historical narrative through text analysis, capturing its cultural depth and resonance, which aligns with Lynch's emphasis on mental mapping based on historical landmarks.

Mean of Night Light Image (NASA Black Marble): Measures economic activity and urban vitality through satellite data, offering an objective proxy for a district's development level.



The analysis using landmark count, node count, green space area, night light intensity, and assumed TripAdvisor/Wikipedia sentiment data supports the methodology's correctness. Visualizations confirm that districts with high cultural density, nodes, and green space (e.g., D) perform well, aligning with Lynch's urban identity framework and the thesis's AI-driven approach. Further data collection for TripAdvisor and sentiment will enhance accuracy.

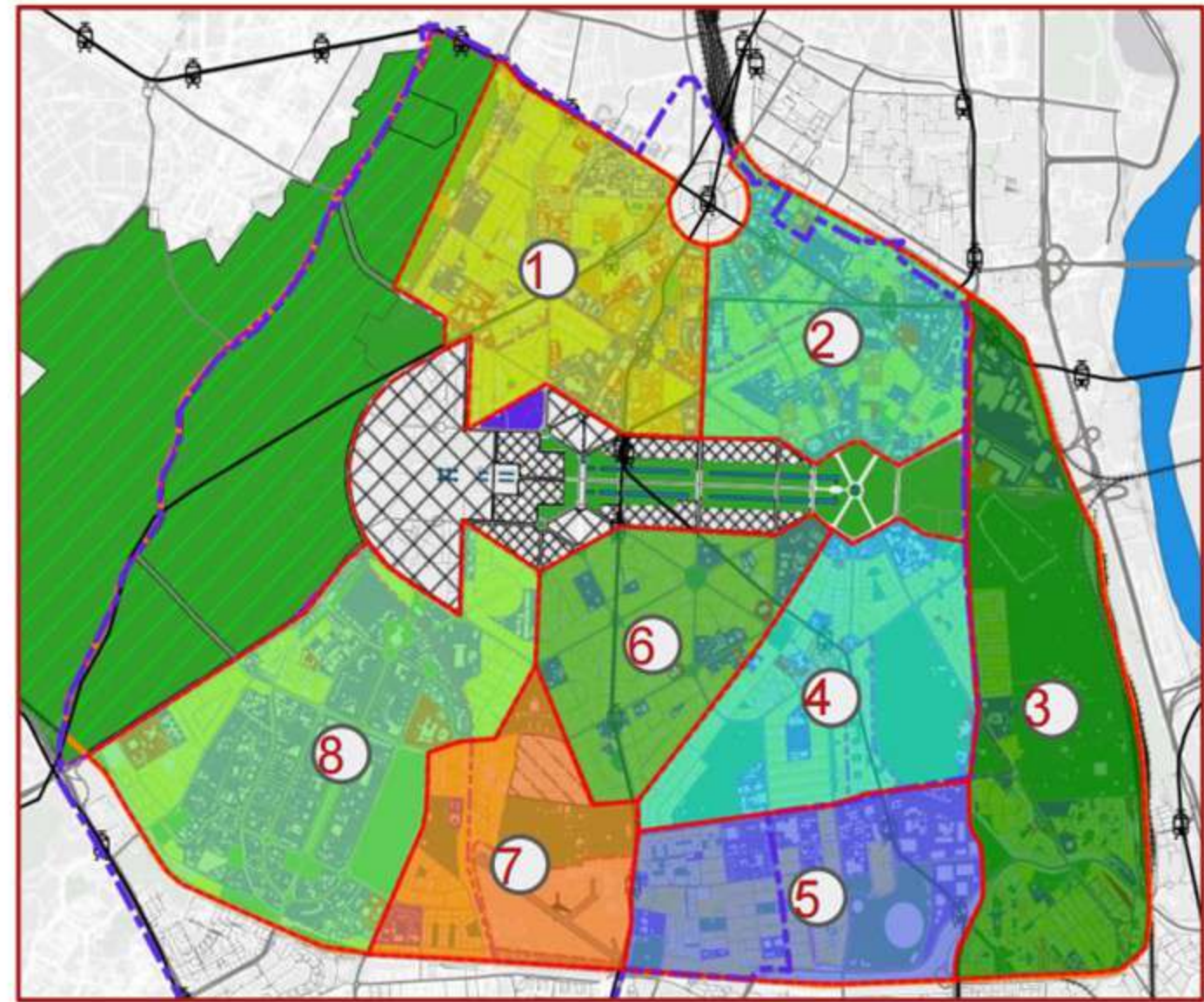
Analysing Zone D

1. Central Location and Accessibility
Zone D, likely encompassing Central Delhi, benefits from its prime position in the city. This centrality places it near major administrative hubs like Rashtrapati Bhavan and economic centers like Connaught Place. Its accessibility is enhanced by key transit nodes, such as Rajiv Chowk Metro Station, which increases its **node count**.

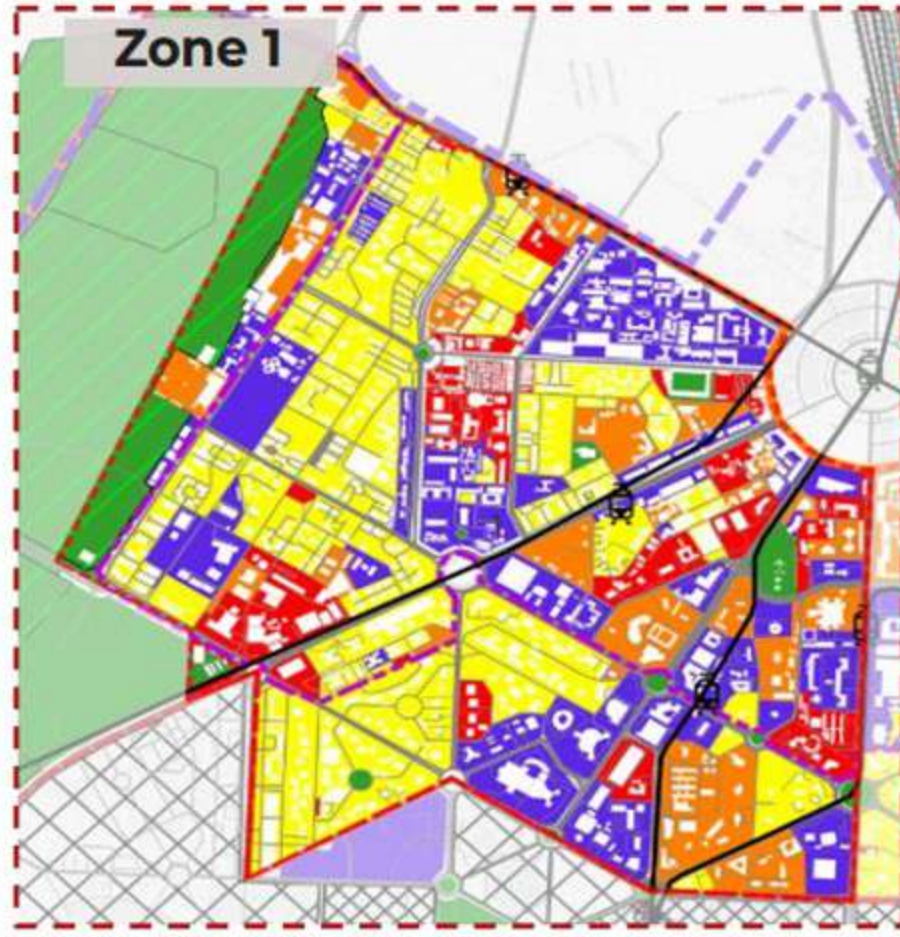
2. Historical and Cultural Significance
Zone D is home to iconic landmarks such as India Gate, Red Fort, and Jama Masjid, which contribute to a high **landmark count**. These sites are not just physical structures but symbols of Delhi's rich history, boosting the zone's **Wikipedia sentiment** with positive narratives about its cultural heritage.

3. Tourist Appeal
The presence of world-renowned attractions like India Gate and Rashtrapati Bhavan draws millions of tourists annually, leading to elevated **TripAdvisor ratings**. These high ratings reflect visitor satisfaction with the zone's offerings, from its monumental architecture to its vibrant public spaces.

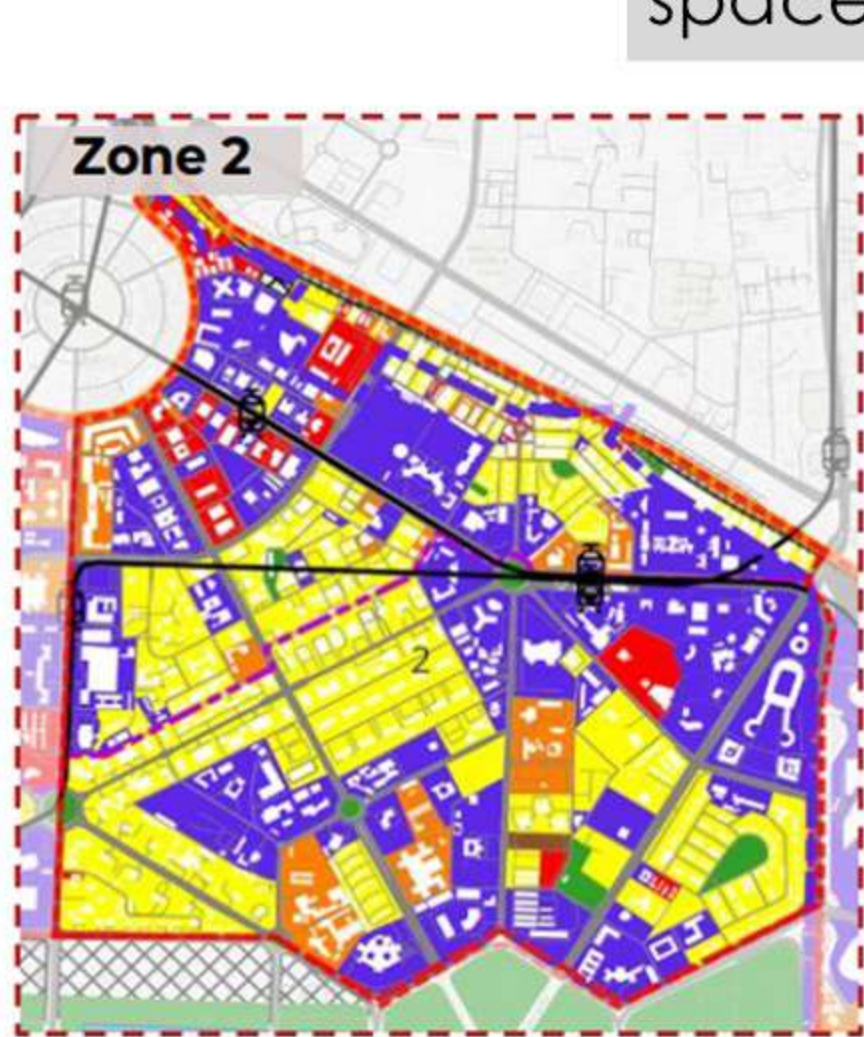
4. Well-Developed Infrastructure
Zone D's infrastructure, a legacy of thoughtful urban planning (e.g., Lutyens' Delhi), includes wide roads, efficient public transport, and commercial hubs. This development supports its high **node count** by facilitating movement and connectivity.



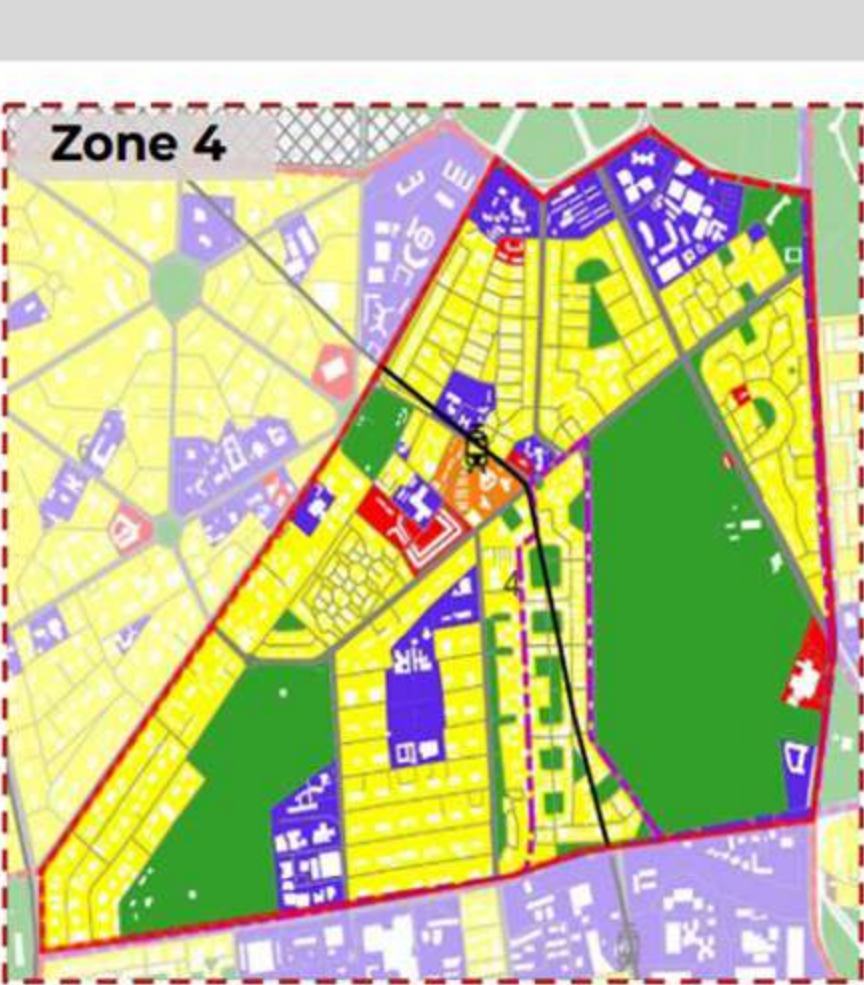
25% Residential, 2.6% Commercial, 2.1% Mixed, 24.4% Forest, 0.1% Public Utilities, 12.7% PSP, 3.9% President Estate & Parliament office, 2.3% Govt. Office Complex



Amalgamation of Residential, PSP's, Commercial and Mixed land use with **two prominent historical sites**, Jantar Mantar and Gurudwara Bangla Sahib with its nearby proximity to CP



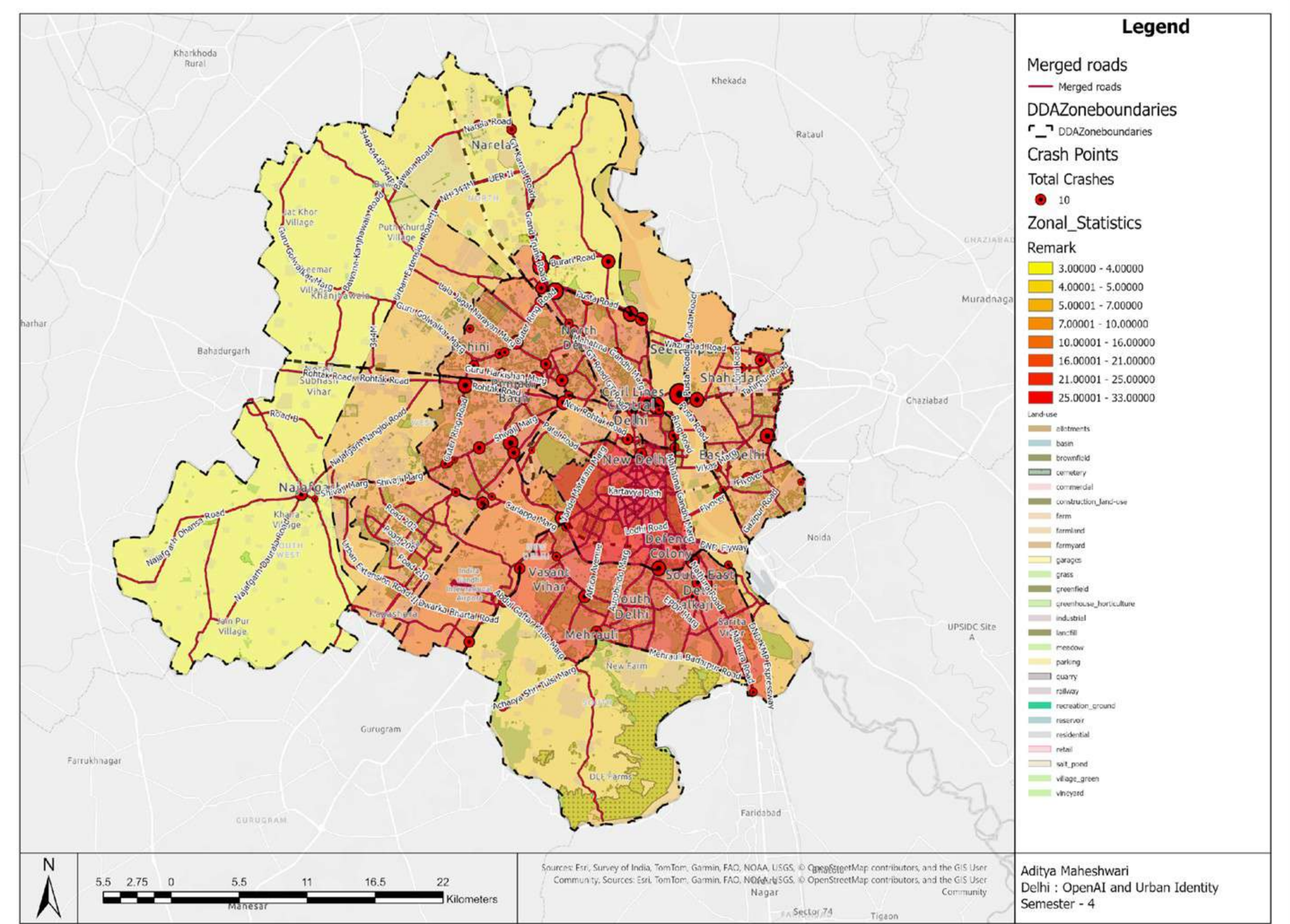
Symbolizes the **coexistence of New Delhi's historical past and modern urbanization**, exemplified by landmarks such as Agrasen Ki Baoli, Bengali Market



Majorly governed by **High end Residential** and recreational land use,, luxurious commercial, **bungalows of affluent high-ranking official**



Houses **headquarters of govt. Offices** and Uniquely famous for its **Lodhi Art district Project**



PREDICTION RESULTS FOR DISTRICTS

5. Environmental Quality
Despite its urban density, Zone D features significant **green space areas**, such as Lodhi Garden and Nehru Park. These spaces provide a balance to the built environment, improving livability and environmental quality.

6. Economic and Administrative Hub
As a center for government institutions and commercial activity, Zone D plays a critical role in Delhi's administrative and economic life. The proximity to government buildings and bustling markets increases its functional importance, reflected in its high **node count** and **night light intensity**.



primarily governed by Recreational and Residential Use with a percentage of **58%** and **40%**, respectively

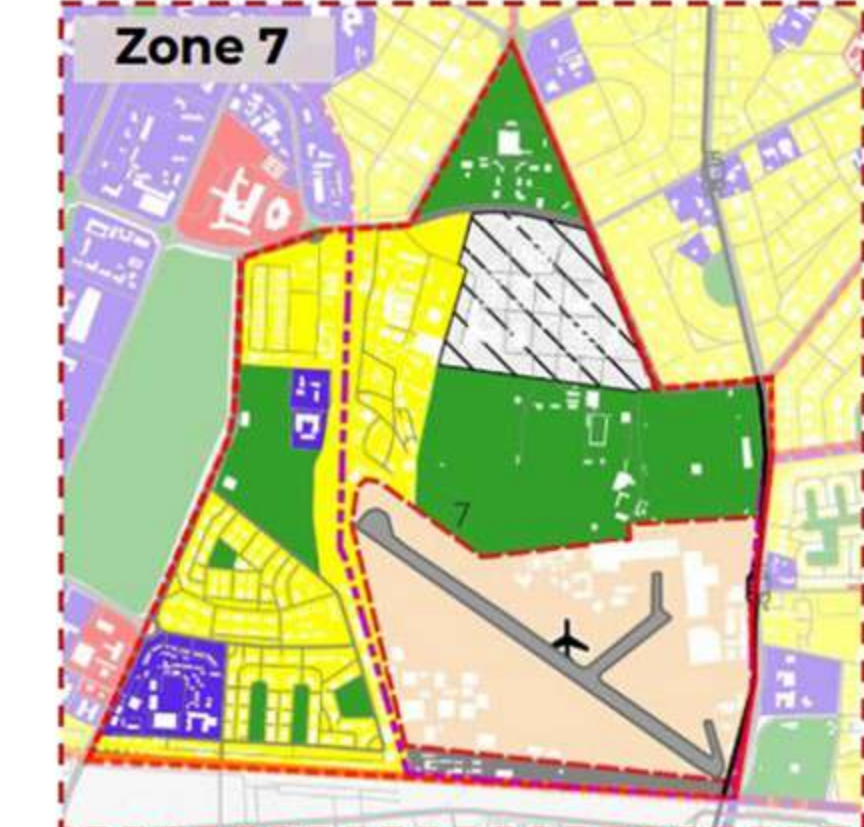
Key Planning Features:
Wide roads, **extensive green spaces**, and **low-density residential bungalows**
The Total number of residential bungalow plots in LBZ area are **600** approx

Important Landmarks

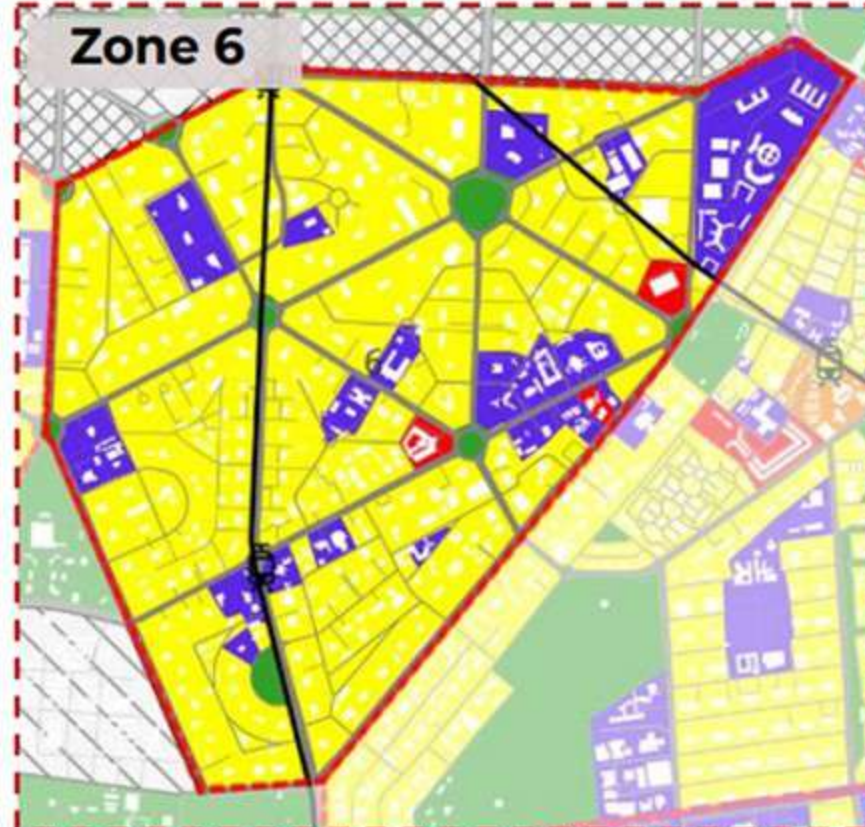
1. Rashtrapati Bhawan	3. North and South Blocks	5. Central Vista
2. Parliament House	4. India Gate	6. Central ridge forest
7. National Museum	8. National Gallery of Modern Art	



Primarily features the **embassies** and **private quarters of diplomats**

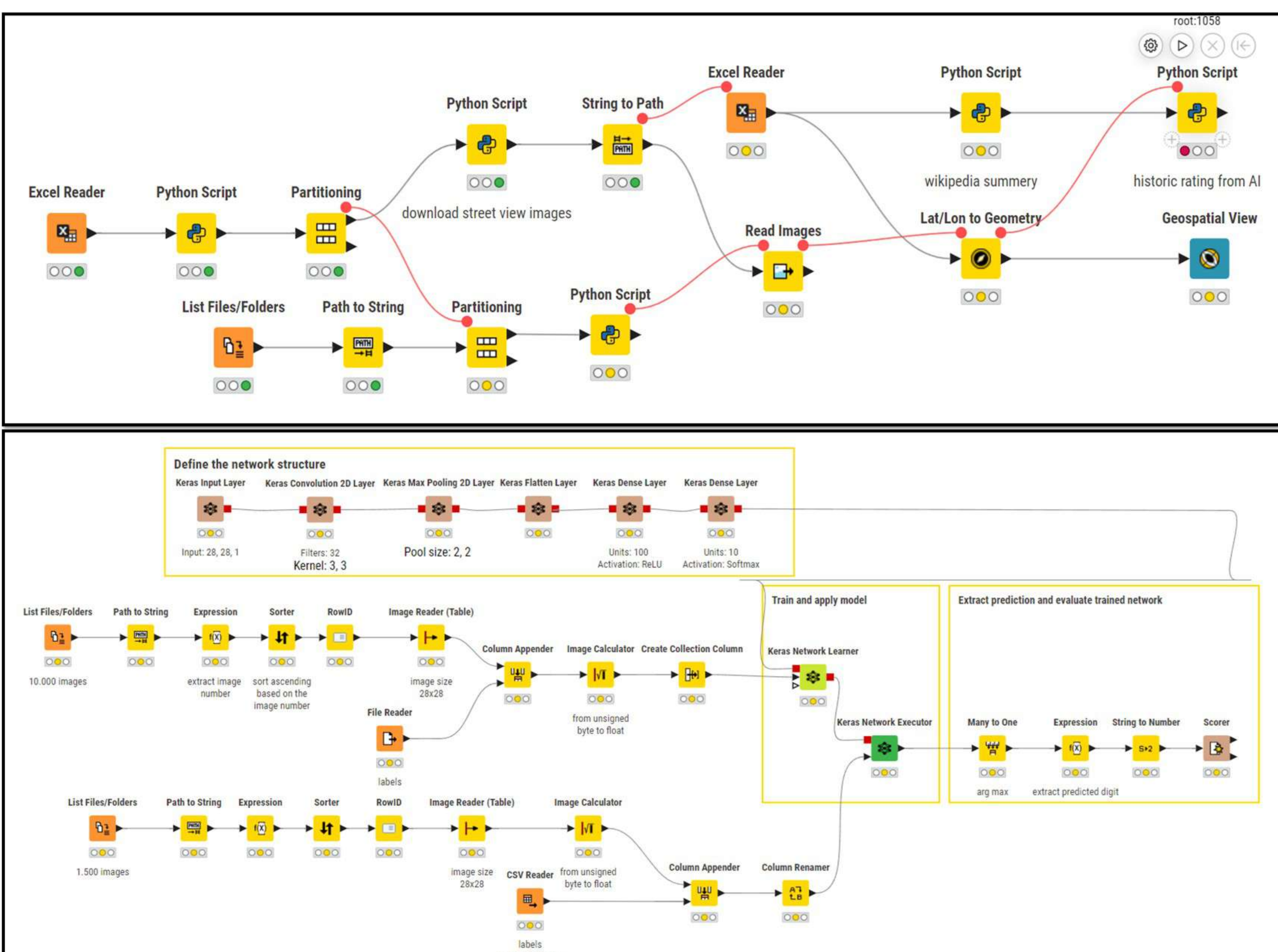
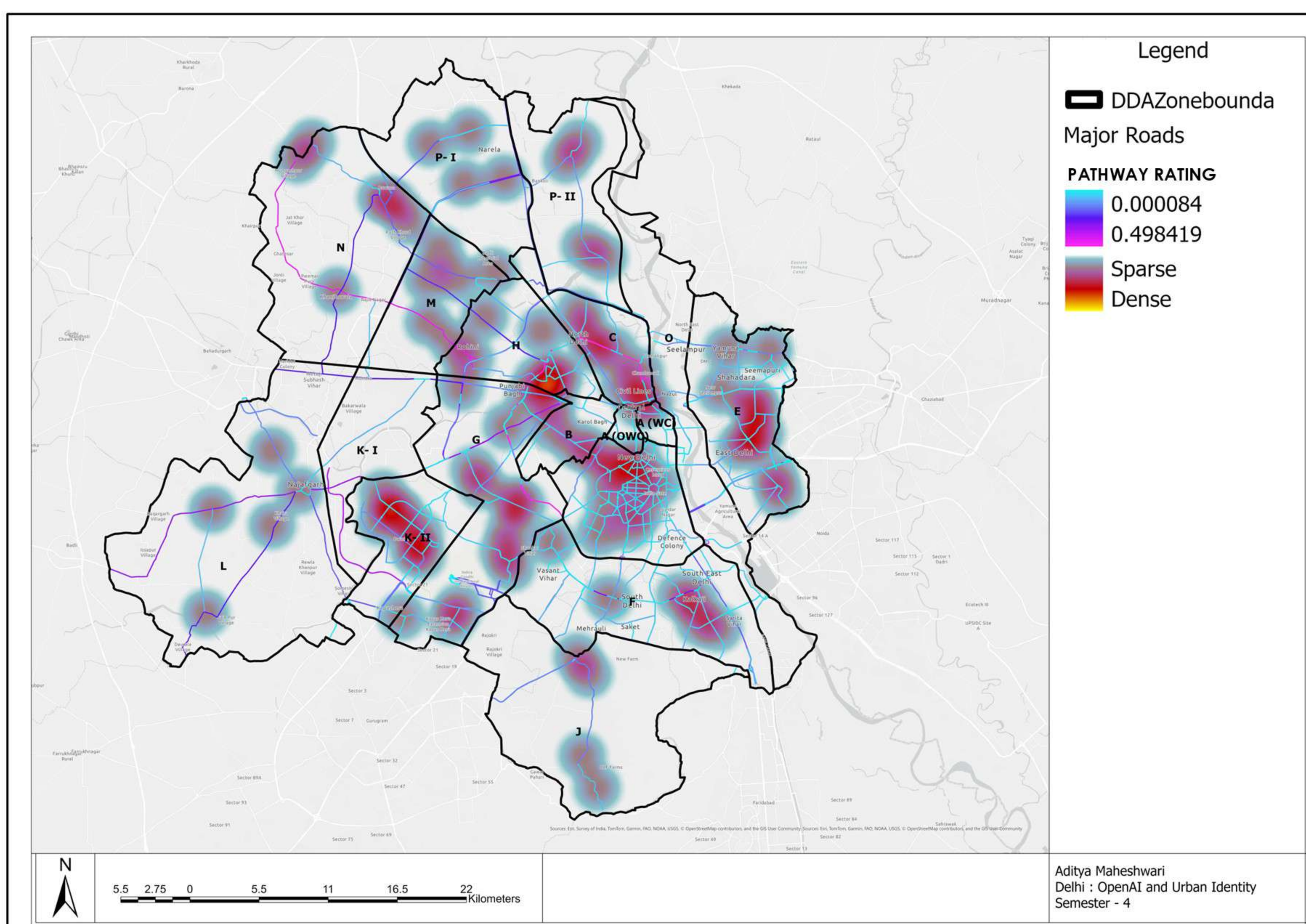


Major Land Parcels are under restricted usage such as **Safdarjung Airport & Tomb**



Primarily defined by Residential land use, High end **Residences of high ranking officials**





PREDICTION RESULTS FOR PATHWAYS

Methodology for Assessing Pathways
The proposed methodology for assessing pathways using six parameters—1) speed delay (TomTom), 2) sentiment analysis (Wikipedia for historical importance), 3) congestion level (TomTom), 4) road straightness (OpenAI Vision Model for street view images), 5) presence of landmarks (OpenAI Vision Model for street view images), and 6) directional approach (counting turns, minimum is good, using OpenAI Vision Model)

Speed Delay and Congestion Level: These TomTom-derived metrics measure the functional efficiency of pathways, reflecting how easily people navigate them

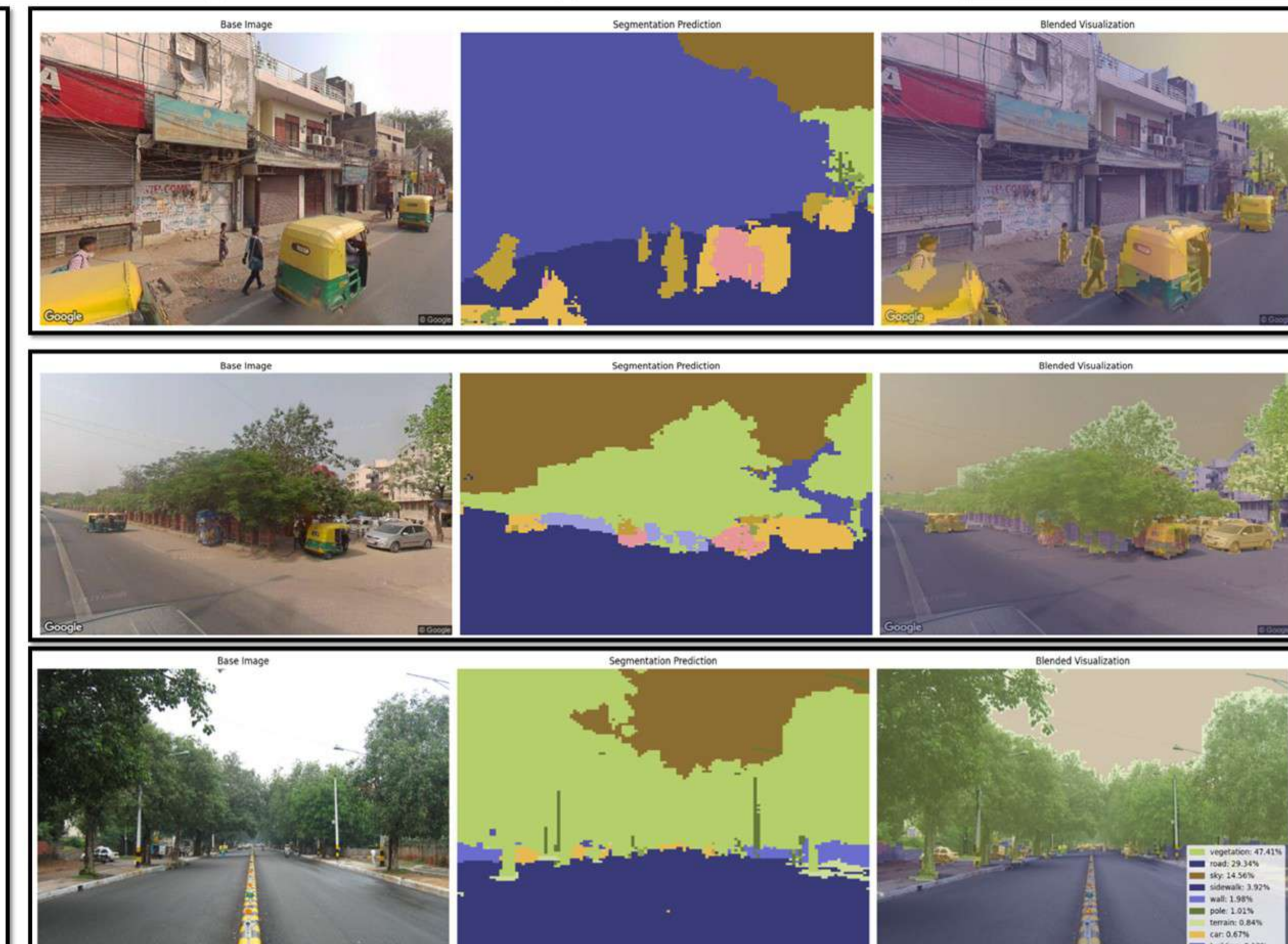
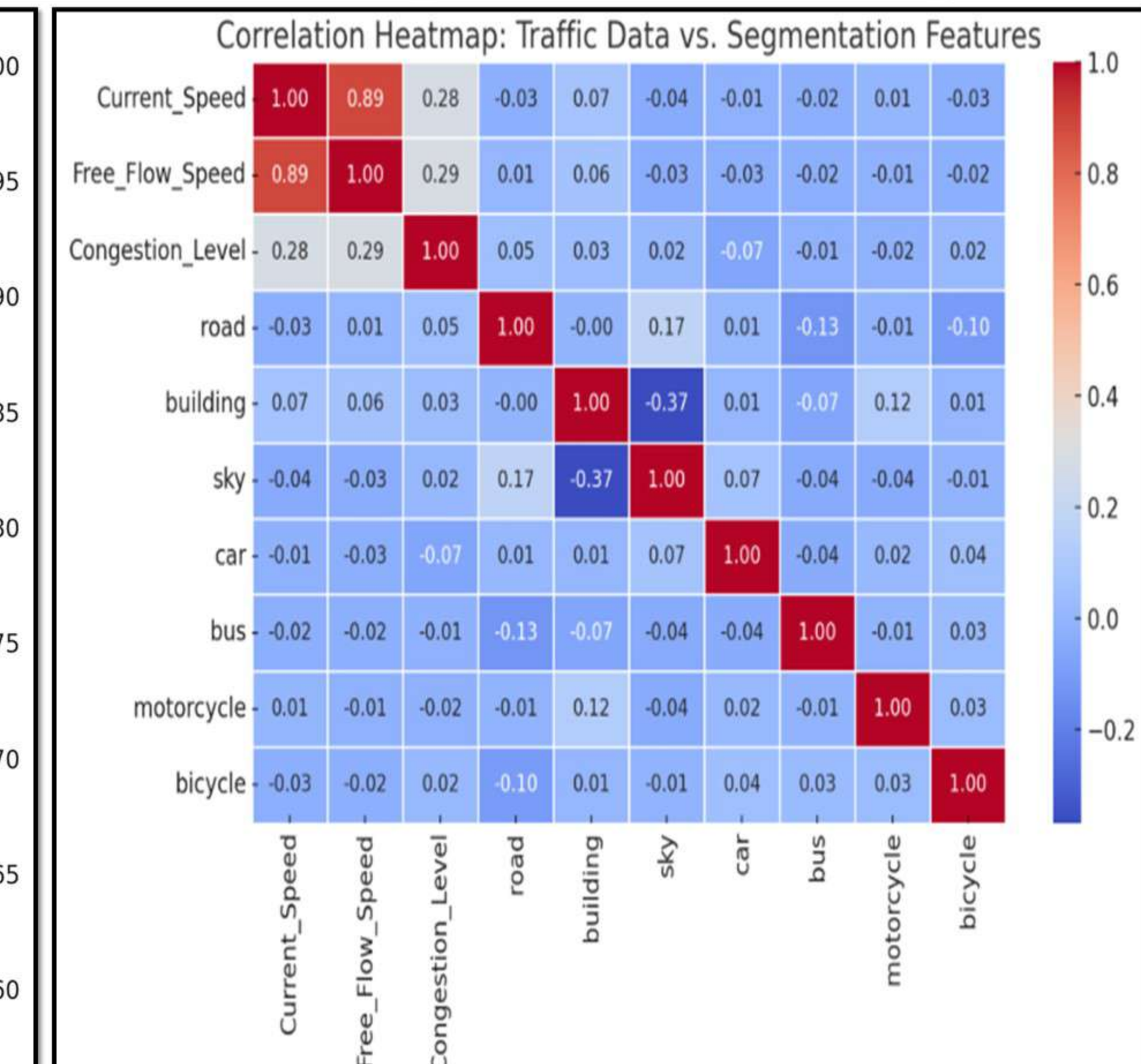
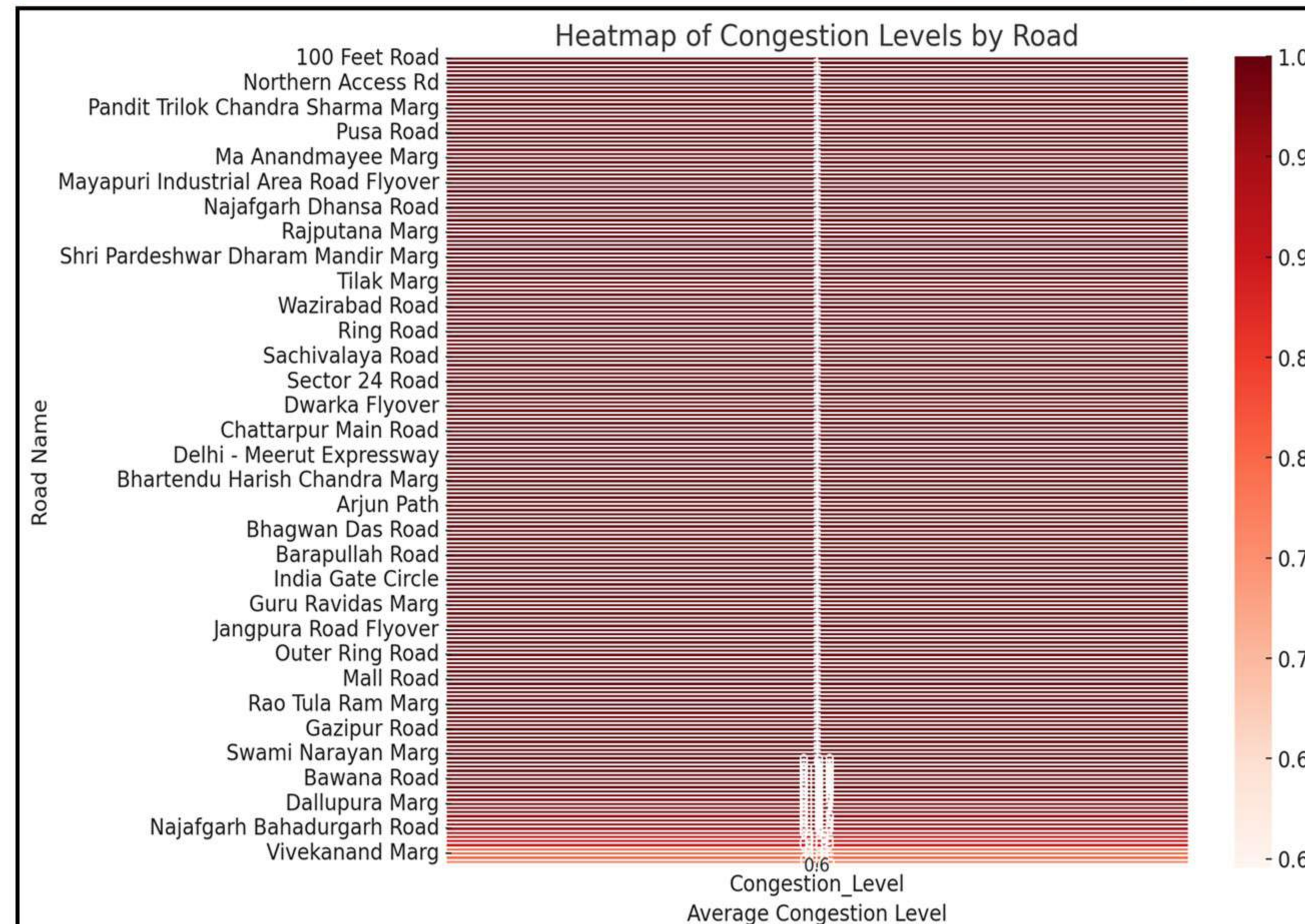
Presence of Landmarks: Identifies notable features along paths (e.g., India Gate along Rajpath), reinforcing their memorability and cultural significance

Sentiment Analysis (Wikipedia): Assesses the historical importance of a path through text analysis, capturing its cultural narrative

Road Straightness and Directional Approach: These AI-vision-derived metrics evaluate navigational clarity.

AI Vision Model: Utilizes street view images to quantify road straightness, landmark presence, and directional complexity.

Data Diversity: Combining real-time traffic data (TomTom), historical text (Wikipedia), and visual analysis (OpenAI)



NEW URBAN STRUCTURE PLAN

- Analyze district and pathway scores to identify low-performing areas.
- Use the CNN model to simulate interventions, such as adding landmarks or optimizing pathways, and predict their impact on urban identity.
- Prioritize and implement designs based on predicted outcomes, ensuring alignment with Delhi's Master Plan 2041 (Delhi Development Authority).

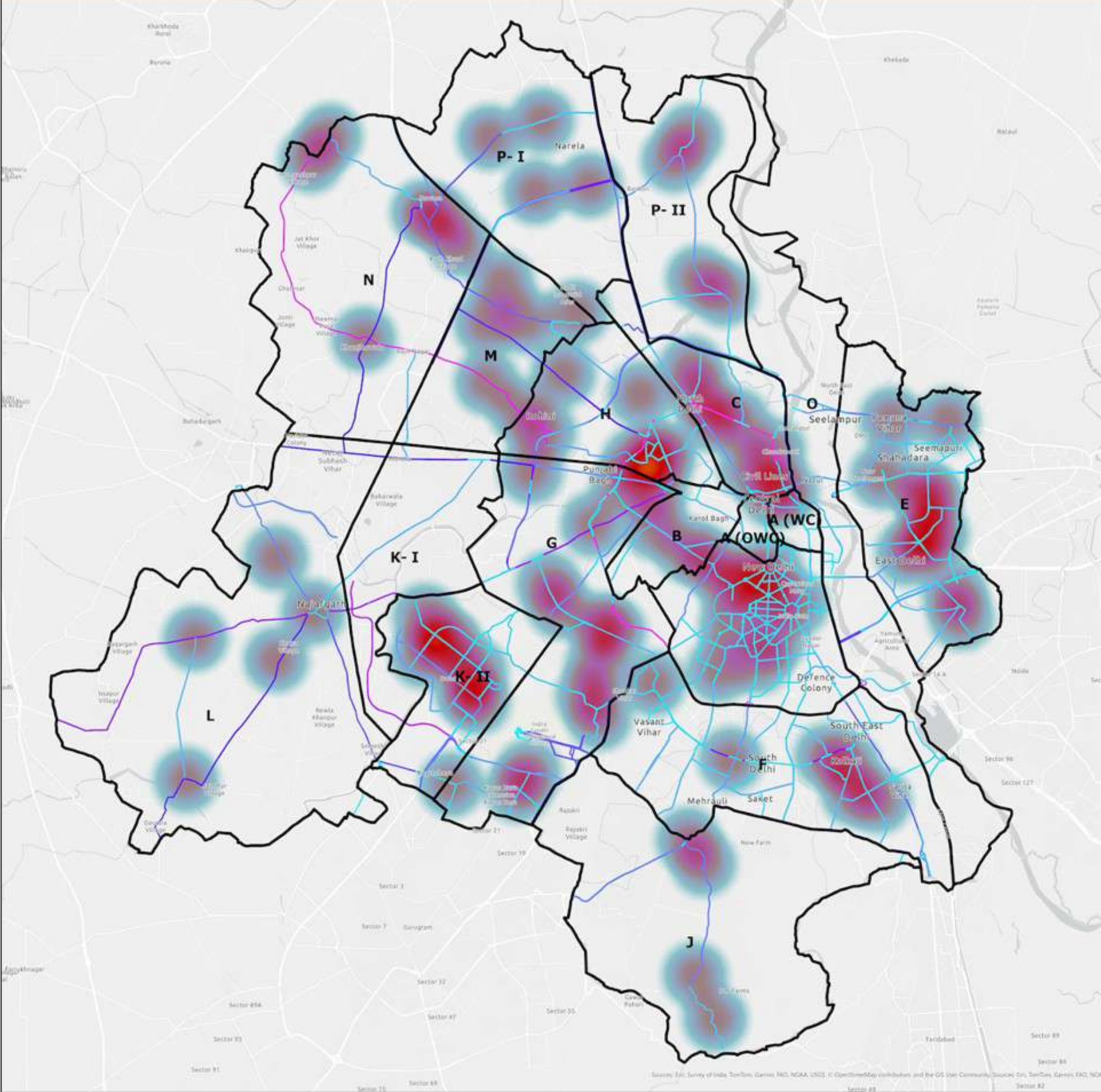
Improving Policy and Regulation

- Review existing urban planning policies, such as the Delhi Urban Art Commission Act, and identify areas for data-driven enhancements (Delhi Urban Art Commission).
- Propose amendments mandating AI model use for major projects, with guidelines for ethical data use.
- Propose zone based specific policies following the proposed zonal identity

Area-Based Proposals/ ZONAL PRAPOSALS D&K

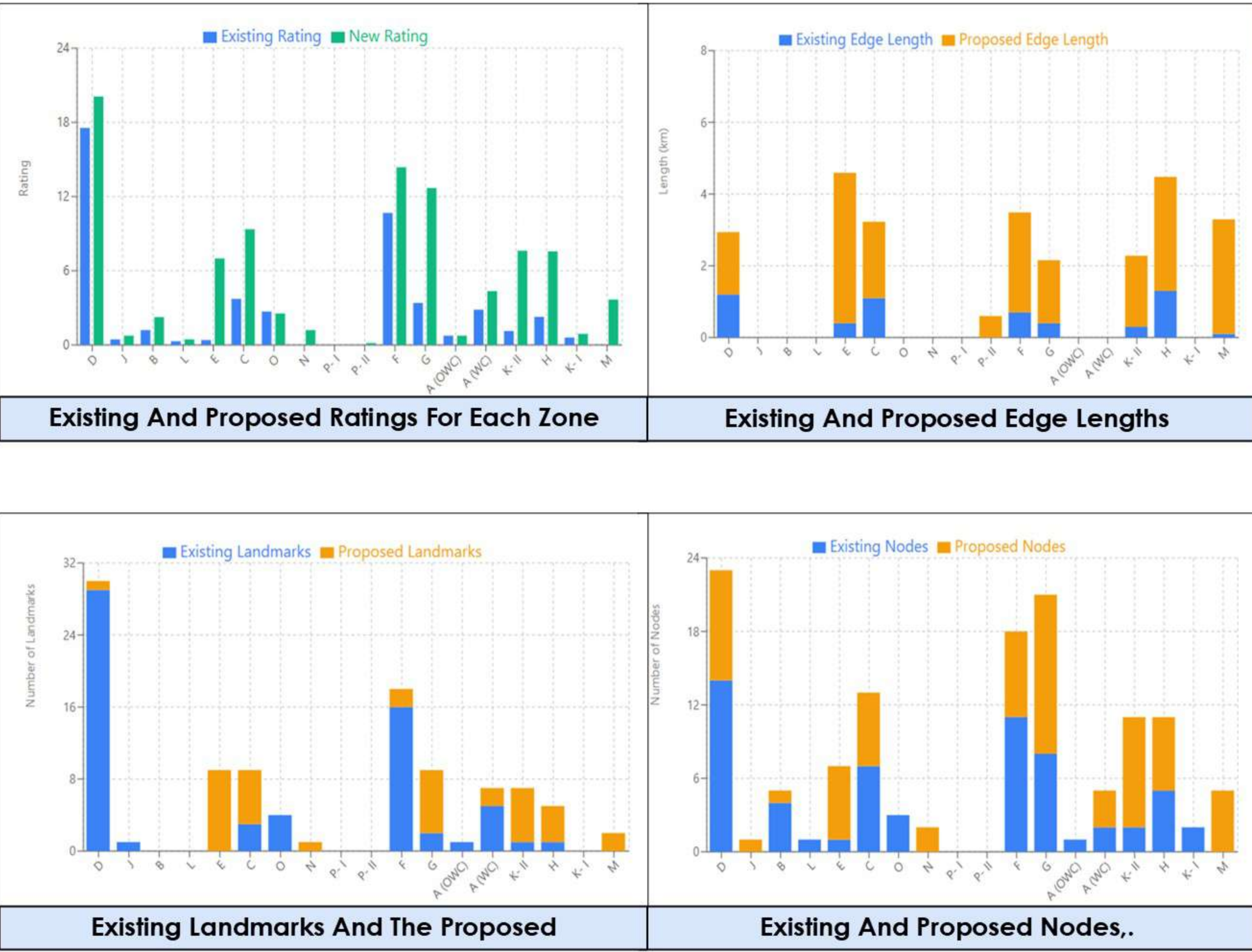
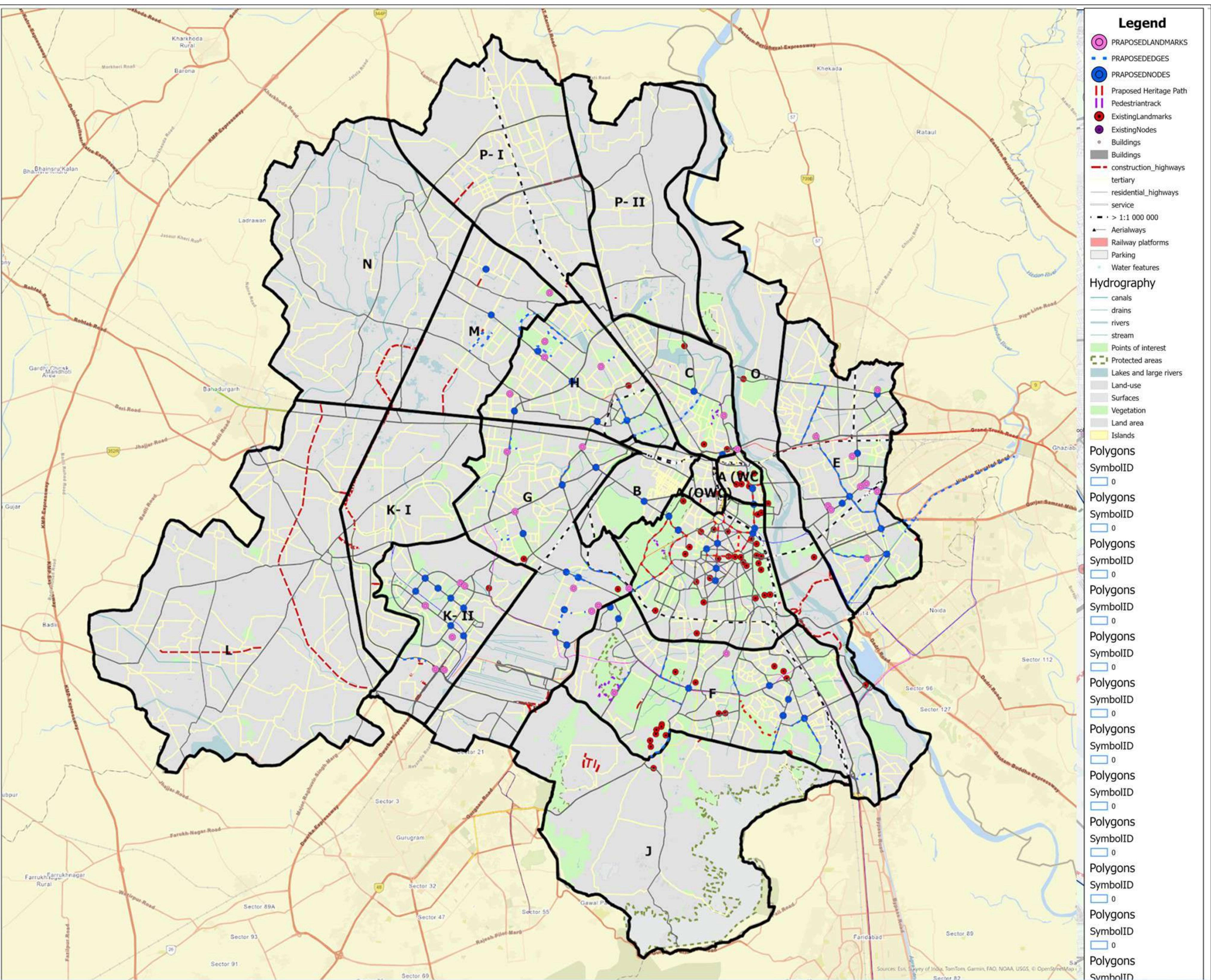
- Identify districts with scores <0.5 (e.g., "Needs Improvement") and diagnose reasons.
- Develop interventions, such as restoring historical sites, creating new parks, or improving pathways.
- Estimate impact using the AI model and prioritize based on potential improvement and location significance.

SUITABLE AREAS FOR INTERVENTIONS

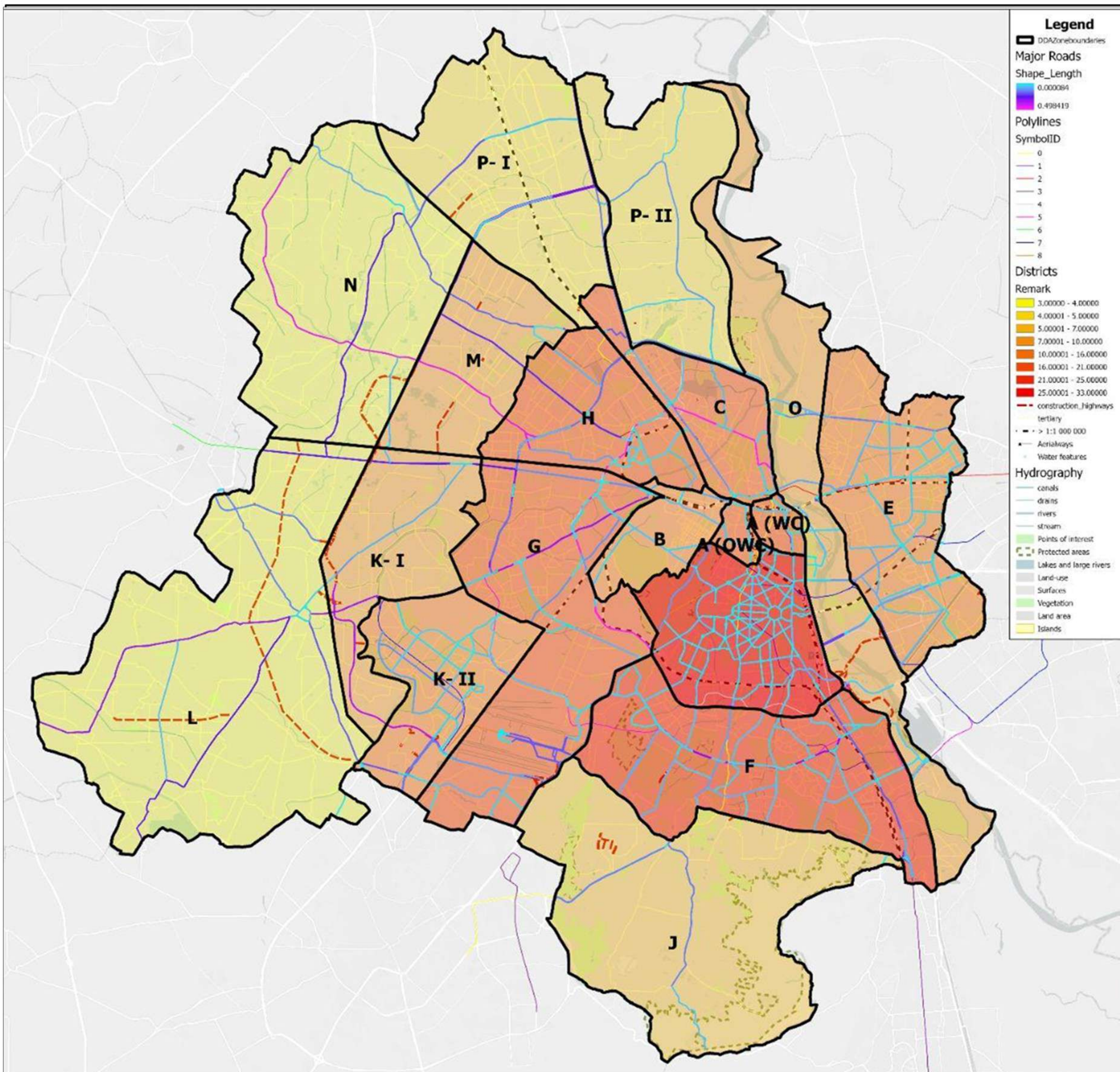


Real Time Ai Driven Prediction Model For Improving Urban Identity.

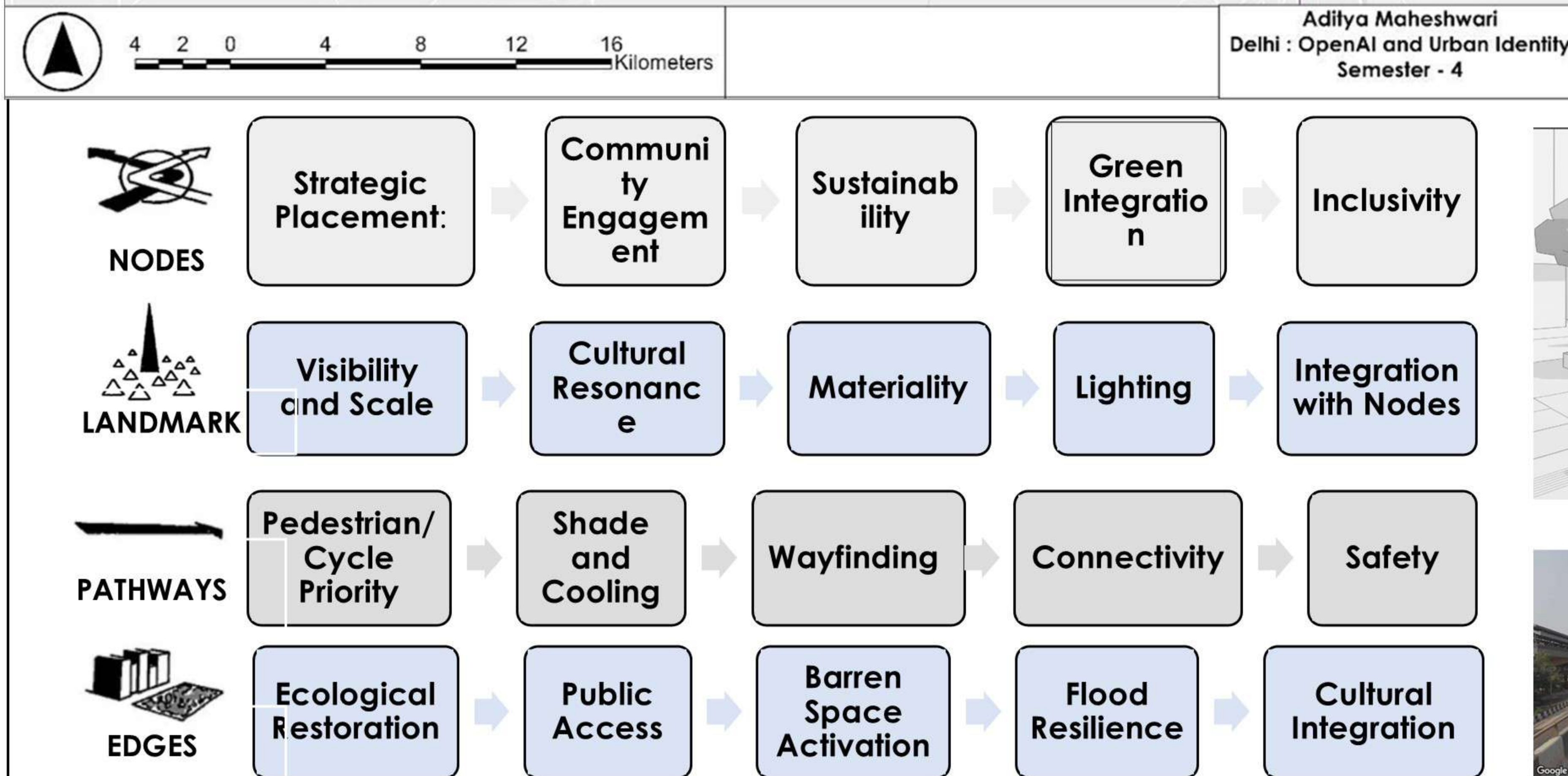
- Refine the CNN model by tuning hyperparameters and validating with cross-city data.
- Create a user-friendly interface, such as a web dashboard, where planners input city data and receive urban identity scores.
- Provide documentation, including a step-by-step guide and case studies, for model application.

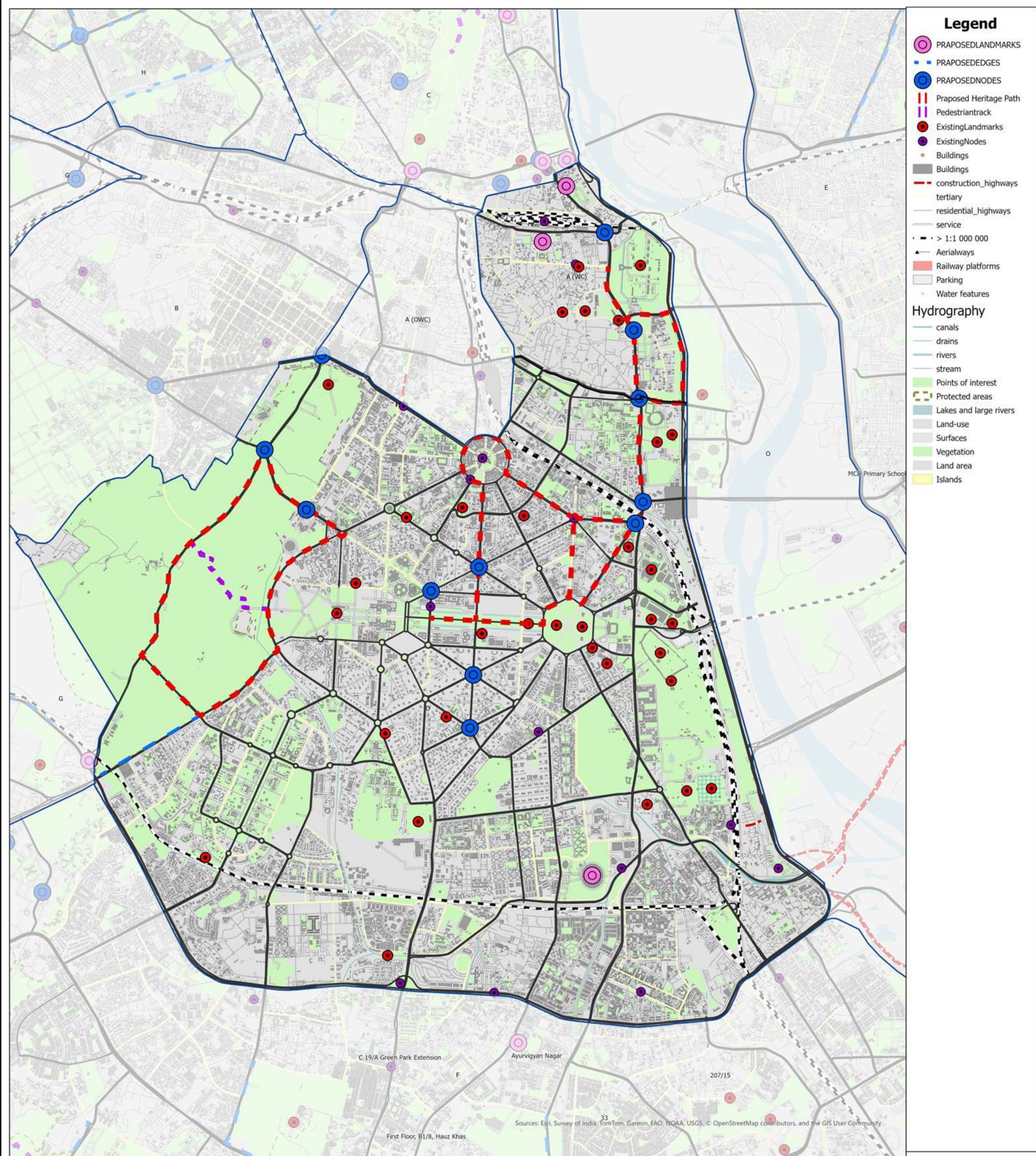


Element	Theory Summary	Proposal Summary	DUAC/DDA Guidelines	Strategies
Nodes	Nodes are focal points of activity where people converge, enhancing legibility.	Nodes along major pathways with green spaces, shaded seating, and waste-based statues.	DUAC: Nodes should be inclusive and sustainable, integrating art and green infrastructure. DDA: MPD-2021 promotes TOD and accessible, green public spaces.	<ul style="list-style-type: none">• Locate nodes at transit hubs to enhance visibility and accessibility.• Design via community workshops so nodes reflect local narratives.• Use recycled materials for statues to align with sustainability goals.• Incorporate native trees for shade and climate control.• Ensure accessibility via ramps, tactile paving, and multilingual signage.
Landmarks	Landmarks are visually prominent features that serve as reference points, enhancing imageability.	Landmarks at strategic locations reflecting district identity.	DUAC: Landmarks must respect heritage and skyline aesthetics. DDA: Iconic structures should promote tourism and cultural identity.	<ul style="list-style-type: none">• Position landmarks at district gateways or high vantage points.• Design landmarks to reflect local heritage or modern themes.• Use sustainable, locally sourced materials.• Incorporate solar-powered lighting for night visibility.• Position landmarks near nodes to create cohesive urban imagery.
Pathways	Paths are channels of movement structuring the city's mental map.	Cycle- and pedestrian-friendly shaded pathways with clear directionality.	DUAC: Emphasizes green corridors and heat-mitigating design. DDA: Supports NMT and integrated TOD pathways.	<ul style="list-style-type: none">• Prioritize pedestrian and cycle zones along major roads.• Use tree canopies and pergolas to reduce ambient heat.• Add digital kiosks and heritage signage for better wayfinding.• Connect paths with metro stations and major nodes.• Ensure safety using crosswalks, bollards, and surveillance.
Edges	Edges are linear boundaries that separate districts and enhance legibility.	Edges along water bodies, gardens, barren spaces, and nallahs.	DUAC: Supports ecological and aesthetic edges (e.g., along rivers). DDA: Focuses on riverfront/nallah reclamation and public use.	<ul style="list-style-type: none">• Restore riverbanks and nallahs into ecological green edges.• Create pedestrian and cycle-friendly promenades along edges.• Transform barren lands into gardens or forests.• Install bioswales and permeable paving for flood resilience.• Include art/heritage markers along edges to promote identity.



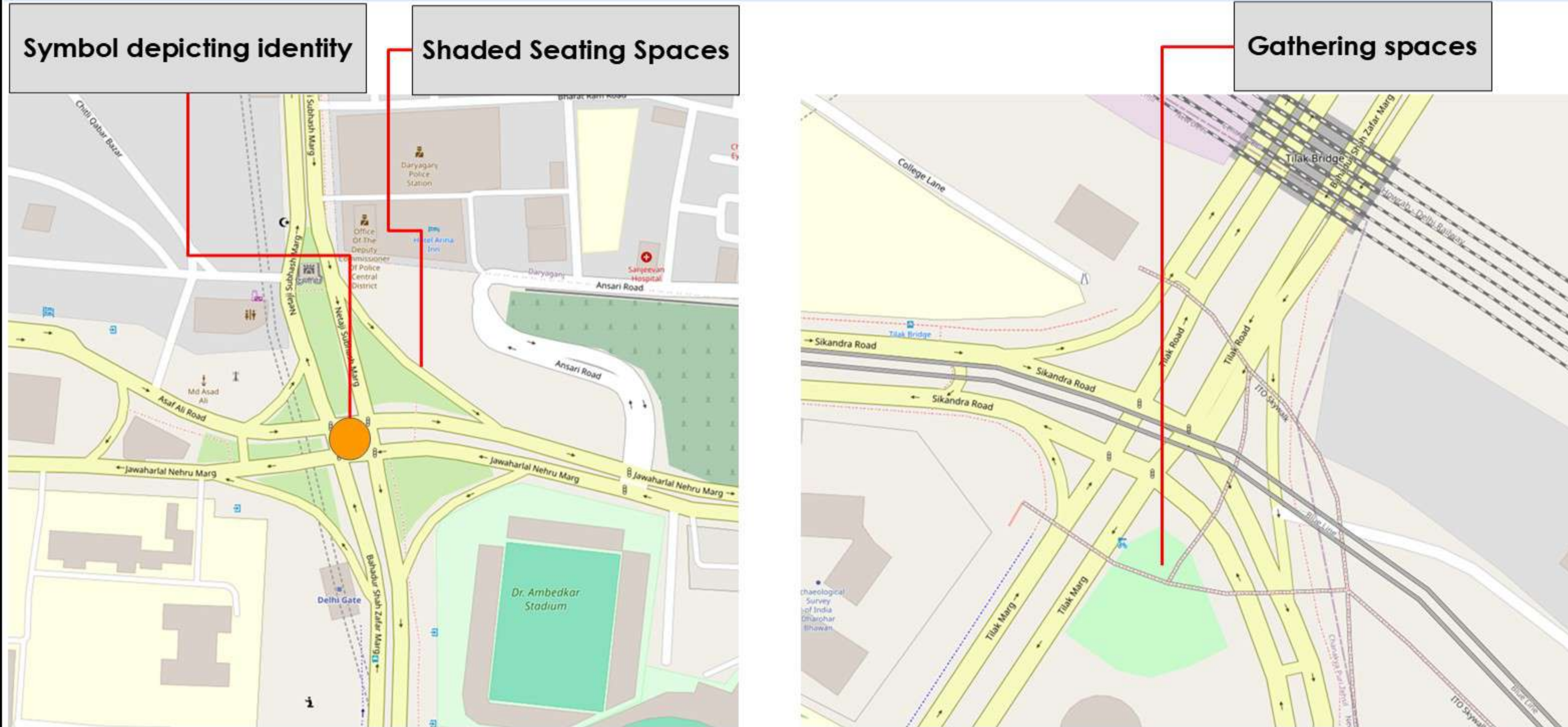
Zone	Proposed Identity	Summary
Zone D	Heritage Capital Green Hub	Emphasize Lutyens Delhi's historical and green identity.
Zone O	Ecological Lifeline Corridor	Focus on Yamuna rejuvenation and eco-friendly development.
Zone F	Cultural-Educational Green Oasis	Highlight heritage, education, and green spaces.
Zone H	Industrial-Community Fusion Hub	Balance industrial activity with community spaces.
Zone G	Heritage-Community Mosaic	Celebrate heritage and community cohesion.
Zone P-I	Self-Sufficient Urban Extension Hub	Develop as a self-contained urban hub.
Zone P-II	Green Urban Gateway	Position as a sustainable entry to Delhi.
Zone E	Emerging Urban Connectivity Hub	Enhance connectivity across the Yamuna.
Zone A (OWC)	Commercial-Cultural Nexus	Revitalize as a commercial hub with cultural depth.
Zone A (WC)	Living Heritage Core	Preserve and revitalize Shahjahanabad's heritage.
Zone K-I	Industrial-Residential Eco-Balance Hub	Balance industrial and ecological needs.
Zone K-II	Modern Planned Urban Oasis	Develop Dwarka as a sustainable, planned hub.
Zone L	Rural-Ecological Retreat	Focus on rural charm and ecological preservation.
Zone J	Heritage-Ecological Gateway	Blend heritage and ecology as a gateway zone.
Zone C	Historical-Commercial Transit Hub	Highlight historical and transit significance.



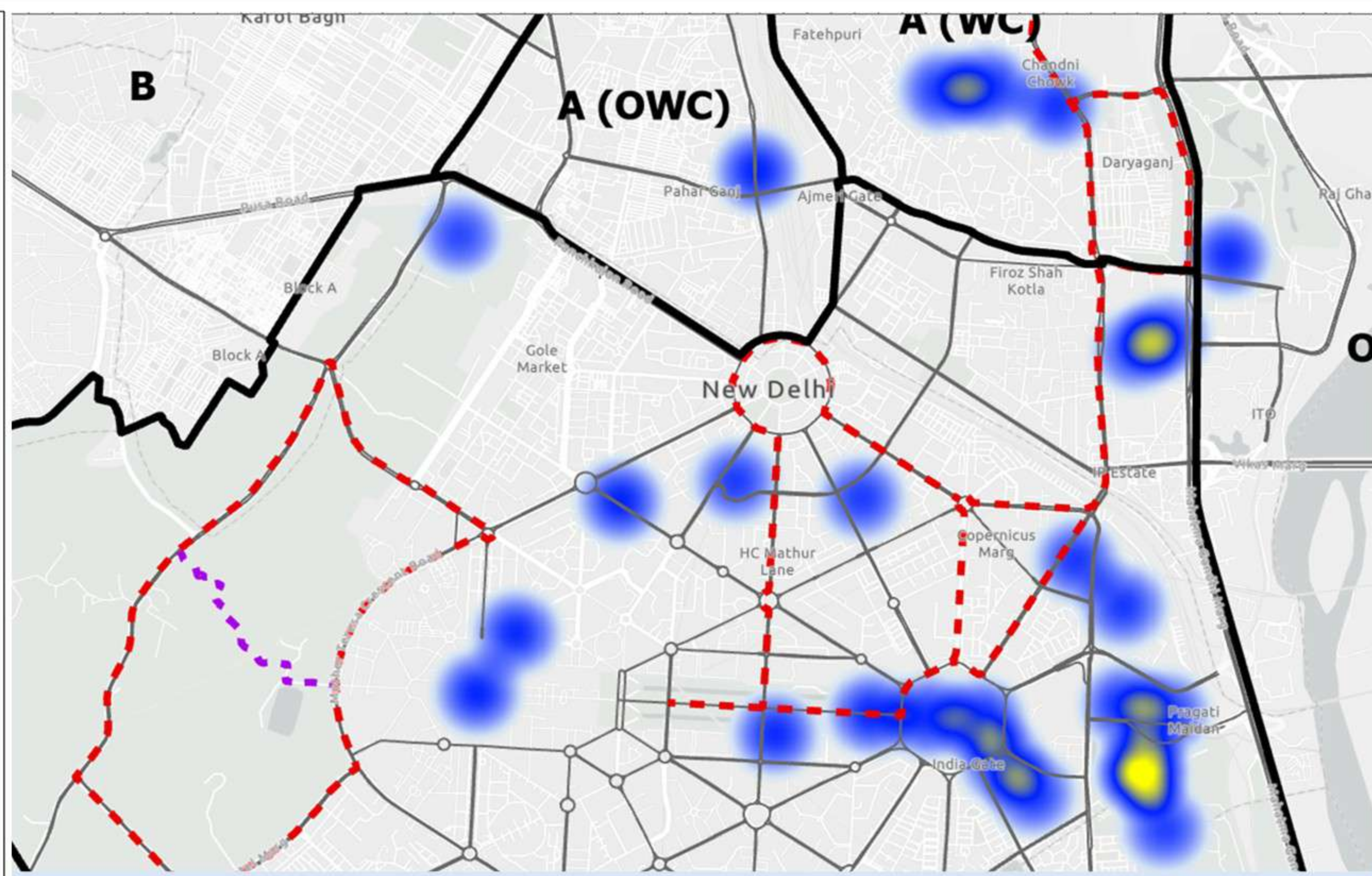


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Delhi : OpenAI and Urban Identity
Semester - 4

STRUCTURAL PLAN FOR ZONE D & A(WC)



PROPOSED NODES DESIGNS FOR ZONE D & A(WC)



PROPOSED HERITAGE PATHWAY IN ZONE D & A(WC)

Zone 'A' (Walled City)

Current Characteristics: A Special Area and Heritage Zone (Shahjahanabad), with mixed land uses, compact built form, and low-rise high-density developments. It's a redevelopment area focusing on in situ improvements and heritage preservation.

Proposed Identity/Character: "Living Heritage Core"

- Rationale:** Zone A (WC) is Delhi's historical heart, with Shahjahanabad's Mughal-era legacy. Its designation as a Heritage Zone calls for a focus on preserving and revitalizing its architectural and cultural character.
- Enhancement through Proposals:**
 - Nodes:** Create cultural plazas in heritage segments, with shaded seating and recycled-material statues depicting Mughal history .
 - Landmarks:** Install a Mughal-inspired arch at a key entry, using red sandstone, to reinforce the zone's heritage identity.
 - Pathways:** Develop shaded pedestrian paths with heritage signage, connecting key markets and monuments within Shahjahanabad.
 - Edges:** Use the Walled City's boundaries as cultural edges, with heritage markers and green buffers, preserving its distinct identity.



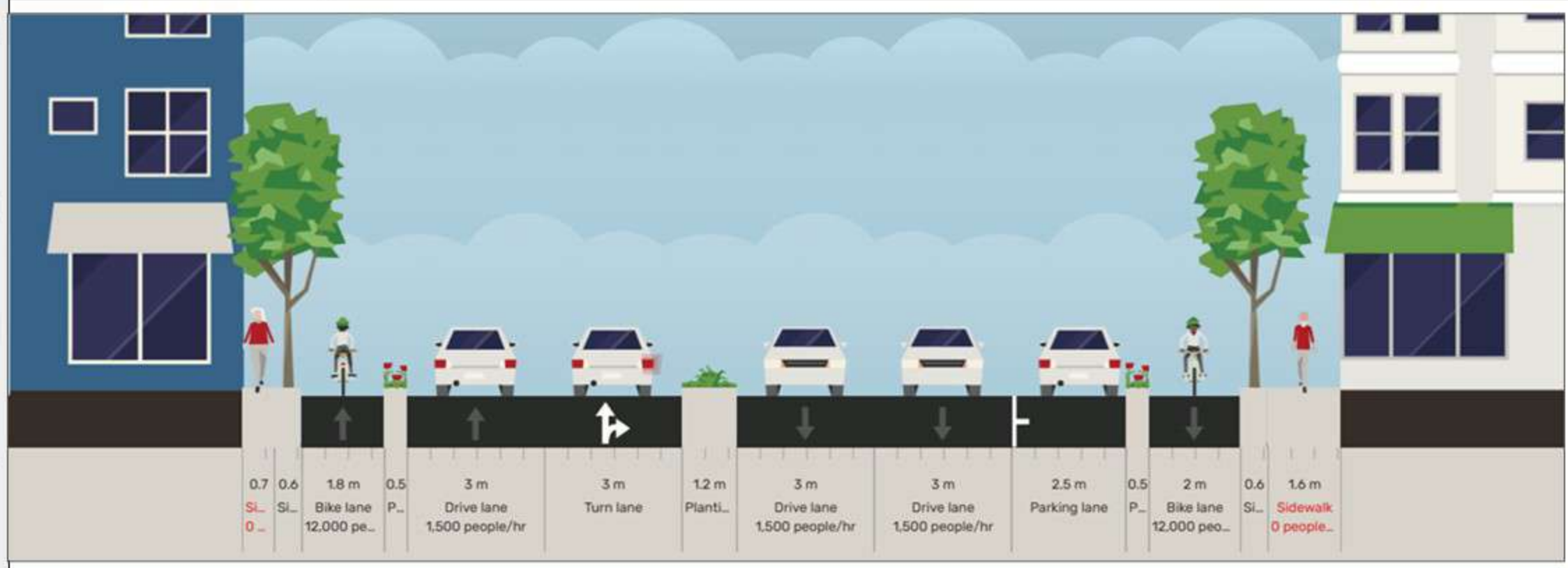
3D View of ZONE D & A(WC)

Zone 'D' (New Delhi)

Current Characteristics: Centrally located, encompassing Lutyens Delhi with historical monuments, landmarks , a tree-studded character, large parks , and the Central Vista. It has a pristine Ridge area, no major industry, and strict mixed-use restrictions in the Lutyens' Bungalow Zone (LBZ). It's a pollution-free zone with significant recreational spaces.

Proposed Identity/Character: "Heritage Capital Green Hub"

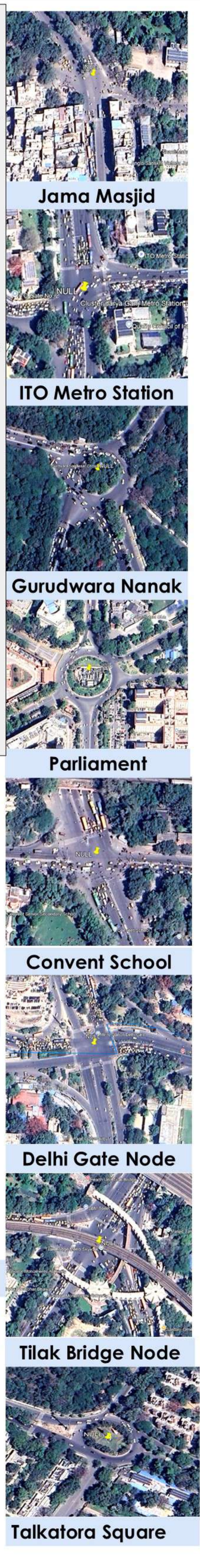
- Rationale:** heart of India's political and historical identity, with Lutyens Delhi's grand architecture and green spaces defining its character. The absence of pollution and the presence of landmarks like Rashtrapati Bhawan make it a symbol of governance and heritage. The tree-studded character and large parks further position it as a green oasis in Delhi.
- Enhancement through Proposals:**
 - Nodes:** Create cultural plazas near landmarks with shaded seating and statues made of recycled materials depicting India's independence movement, reinforcing the zone's historical significance.
 - Landmarks:** Install iconic sculptures or arches at entry points to Lutyens Delhi, using red sandstone to reflect the zone's architectural heritage, enhancing visibility and imageability.
 - Pathways:** Develop shaded, pedestrian-friendly paths along Central Vista, with heritage-themed signage highlighting the zone's history, connecting key landmarks seamlessly.
 - Edges:** Strengthen the Ridge as a green edge with eco-trails and biodiversity zones, preserving its pristine glory while adding public access points with informational markers.

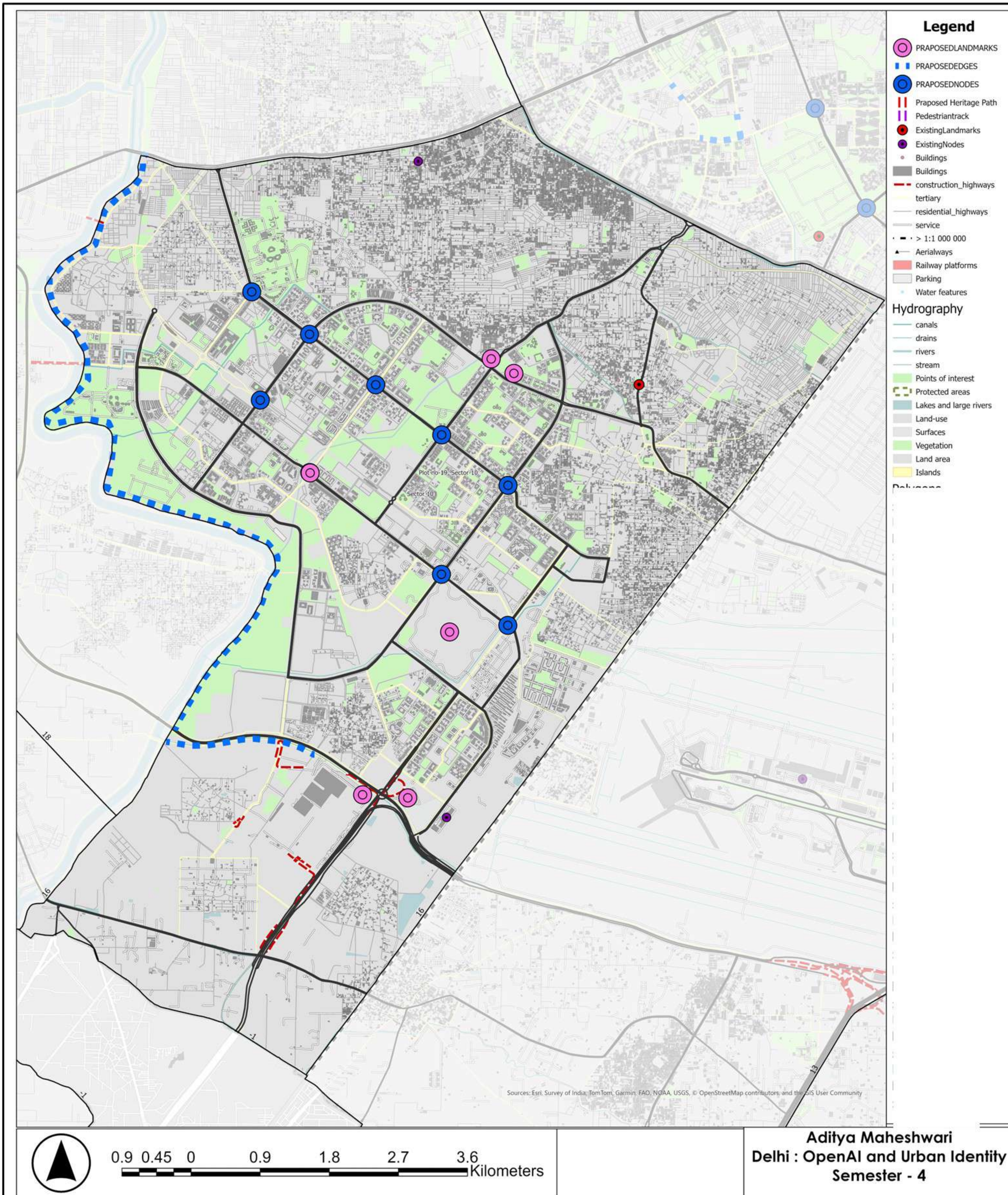


Proposed Street Section

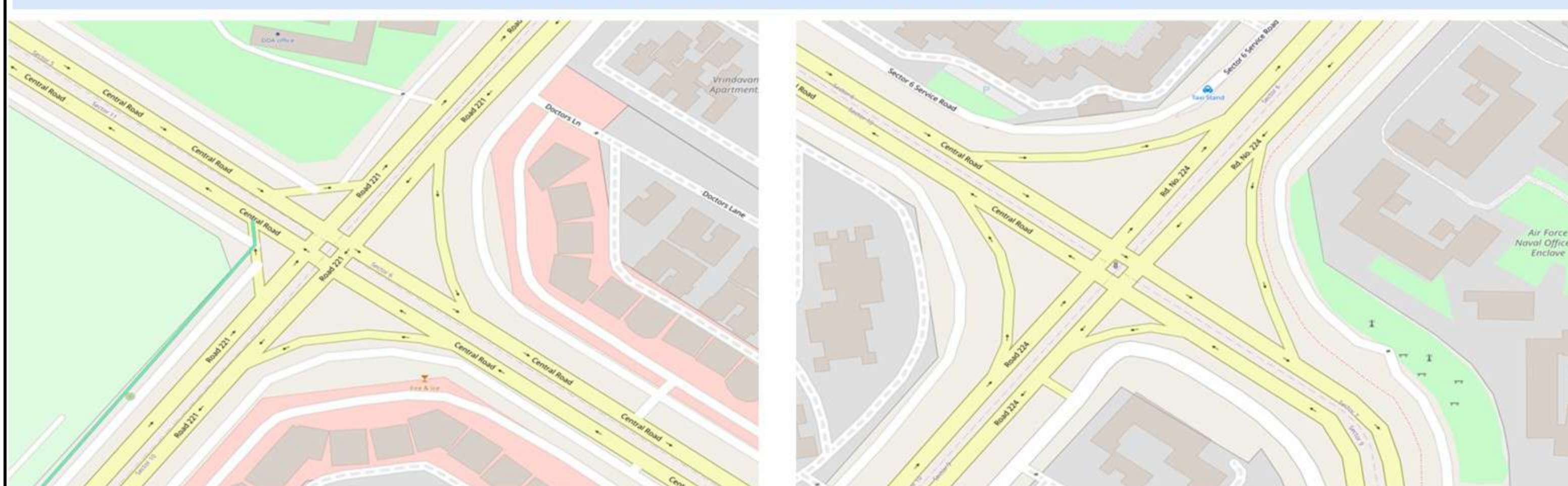
Metric	Existing	Proposed	Total
Edge Length (km)	1.2	1.74	2.94
Landmarks	29	1	30
Nodes	14	9	23
Rating	17.55	-	20.0
Rating Increase	2.53 (Improved)		
ELEMENT	Existing	Proposed	Total
Edge Length (km)	0	0	0
Landmarks	5	2	7
Nodes	2	3	5
Rating	2.85	-	4.35
Rating Increase	1.5 (Improved)		

ZONE A(WC)





STRUCTURAL PLAN FOR ZONE K2



PROPOSED NODES DESIGNS FOR ZONE K-II



Zone 'G' (West Delhi - I)

Current Characteristics: A heterogeneous zone with urban villages, rehabilitation colonies, unauthorized colonies, and five heritage sites (Begumpur Mosque, Bara Khamba Monument). It spans 11,865 Ha with a mix of planned and unplanned areas.

Proposed Identity/Character: "Heritage-Community Mosaic"

- Rationale:** Zone G's heritage sites and diverse communities (urban villages, rehabilitation colonies) suggest an identity that celebrates its historical roots while fostering community cohesion. The heterogeneous character calls for inclusive, heritage-focused development.
- Enhancement through Proposals:**
 - Nodes:** Establish cultural plazas near heritage sites (e.g., near Begumpur Mosque), with shaded seating and recycled-material statues depicting the zone's historical figures or events.
 - Landmarks:** Create a heritage tower at a district entry point, reflecting the zone's Mughal-era history, using sustainable materials to enhance visibility.
 - Pathways:** Develop shaded pathways linking urban villages to heritage sites, with heritage-themed signage to narrate the zone's history.
 - Edges:** Use the Najafgarh drain as a green edge, with pedestrian trails and native vegetation, connecting communities and heritage sites.

Zone K-II (Dwarka)

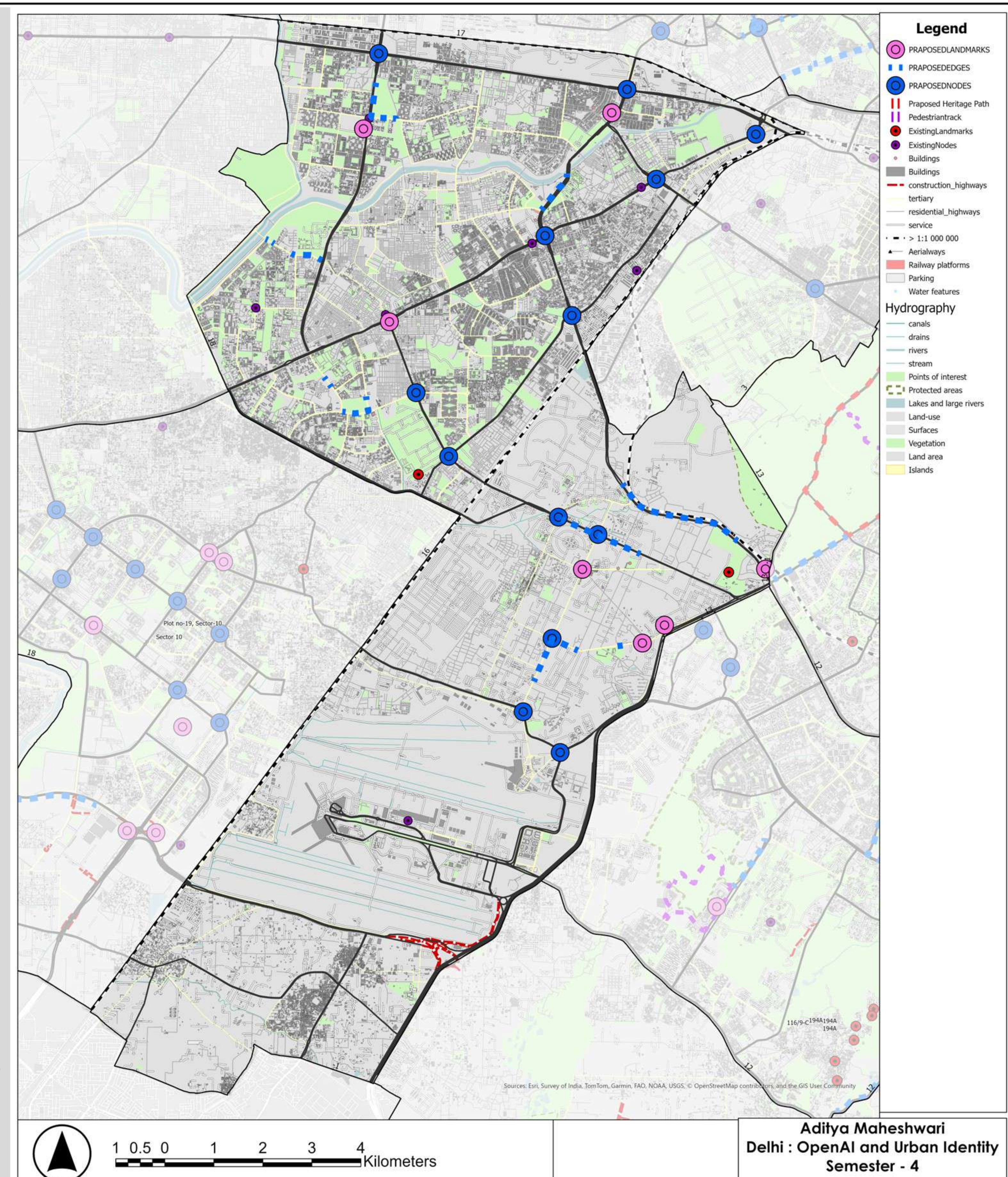
Current Characteristics: Part of the urbanizable area, including Dwarka Sub-city, with planned development spanning 5,924 Ha. It's bounded by the Najafgarh Drain and Delhi Rewari Railway Line.

Proposed Identity/Character: "Modern Planned Urban Oasis"

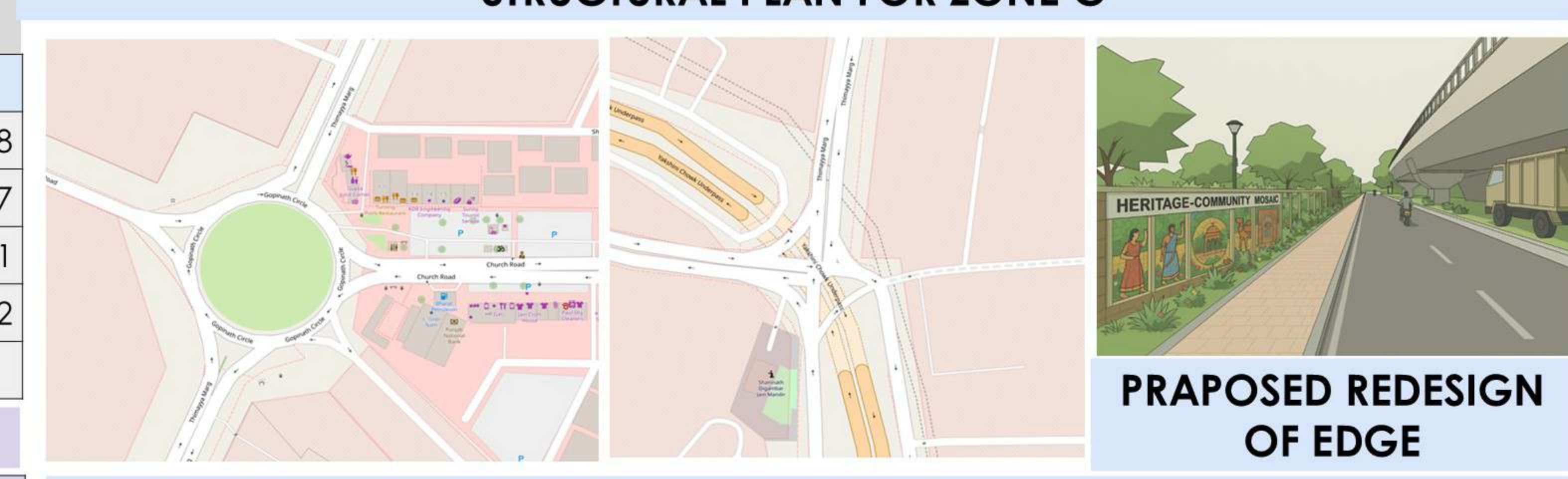
- Rationale:** Zone K-II's planned development as Dwarka Sub-city positions it as a modern, organized urban area, with potential to be a green, sustainable oasis in West Delhi.
- Enhancement through Proposals:**
 - Nodes:** Create community plazas in Dwarka, with green spaces, shaded seating, and recycled-material statues reflecting modernity.
 - Landmarks:** Install a modern sculpture at a key junction, symbolizing planned urban growth, to enhance visibility.
 - Pathways:** Develop shaded cycle paths connecting residential areas to amenities, with signage highlighting community facilities.
 - Edges:** Use the Najafgarh Drain as a green edge, with eco-parks and trails, reinforcing the zone's sustainable character.

Element	Existing	Proposed	Total
Edge Length (km)		0.3	1.98
Landmarks	1	6	7
Nodes	2	9	11
Rating	1.13	-	7.62
Rating Increase	6.50 (Improved)		

ZONE K2		ZONE G	
Element	Existing	Proposed	Total
Edge Length (km)		0.4	1.76
Landmarks		2	7
Nodes		8	13
Rating		3.4	12.69
Rating Increase		9.29 (Improved)	

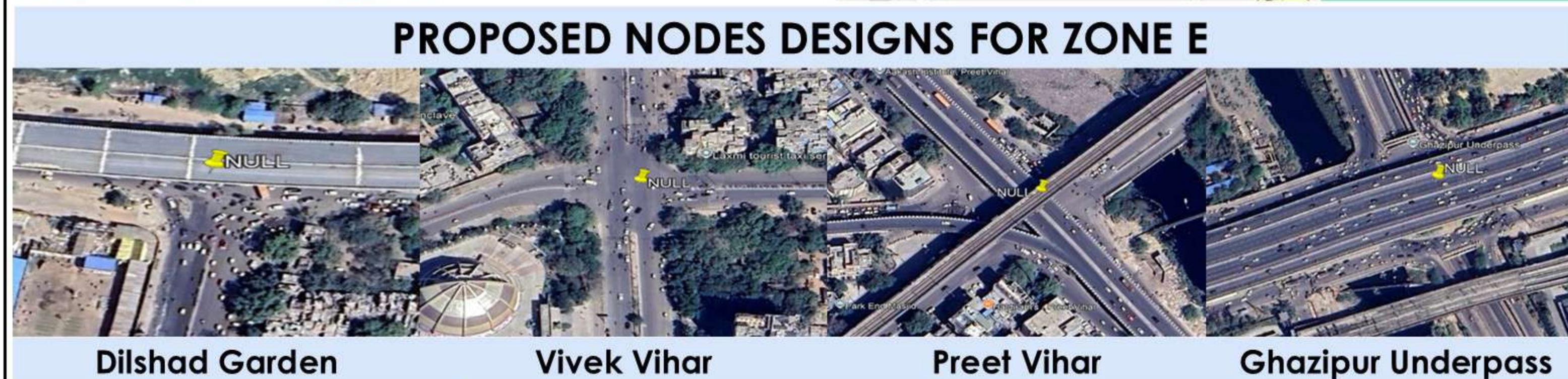
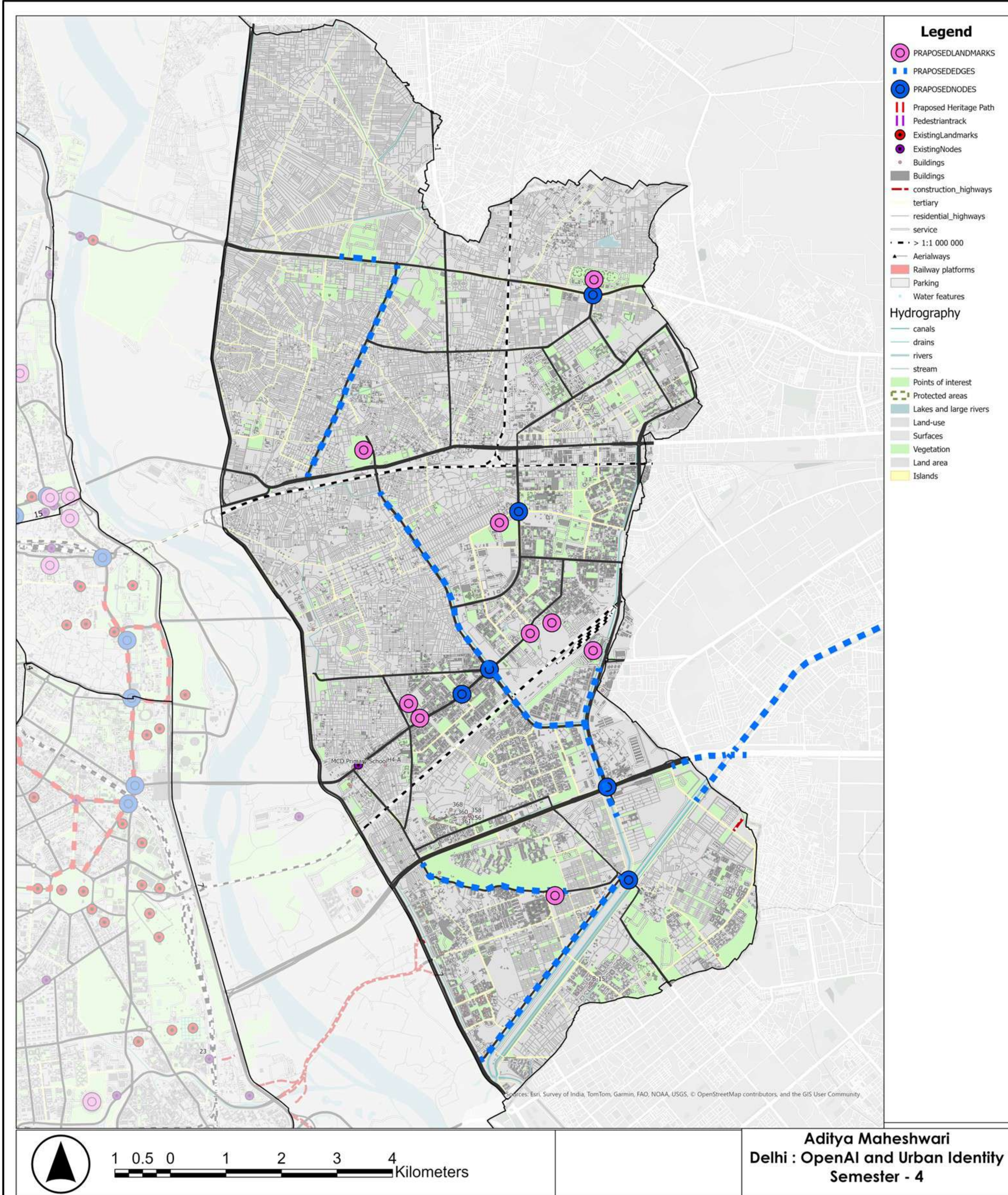


STRUCTURAL PLAN FOR ZONE G



PROPOSED NODES DESIGNS FOR ZONE G





Zone 'E' (Trans-Yamuna Area)

Current Characteristics: A heterogeneous zone across the Yamuna, known as Trans-Yamuna Area (TYA), with urban villages, unauthorized colonies, and a history of limited connectivity until the 1960s. It spans 8,797 Ha.

Proposed Identity/Character: "Emerging Urban Connectivity Hub"

- Rationale:** Zone E's location across the Yamuna and its historical isolation suggest an identity focused on connectivity and growth. The mix of planned and unplanned areas calls for balanced development that bridges the east-west divide.
- Enhancement through Proposals:**
 - Nodes:** Create transit-oriented hubs near metro stations, with green spaces, shaded seating, and recycled-material statues reflecting the zone's evolving identity (e.g., a bridge motif).
 - Landmarks:** Install a modern sculpture at a key junction, symbolizing connectivity, to enhance the zone's image as an emerging hub.
 - Pathways:** Develop shaded pedestrian paths linking urban villages to metro stations, with signage highlighting local markets and community spaces.
 - Edges:** Use the Yamuna as a green edge, with pedestrian trails and cultural markers, connecting TYA to central Delhi.

Zone 'F' (South Delhi – I)

Current Characteristics: A heterogeneous zone with prestigious institutions (AIIMS, JNU), historical monuments from Delhi's first four cities (Lal Kot, Siri, Tughlakabad, Jahanpanah), posh residential areas (Vasant Vihar, Hauz Khas), large green spaces (Hauz Khas city forest, Mehrauli Ridge), and district centers (Nehru Place, Saket).

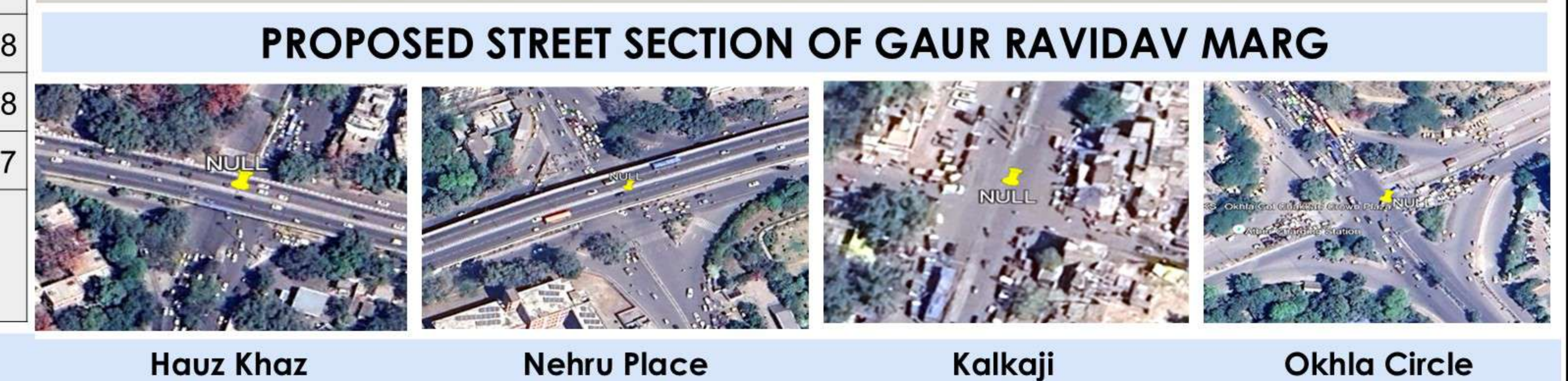
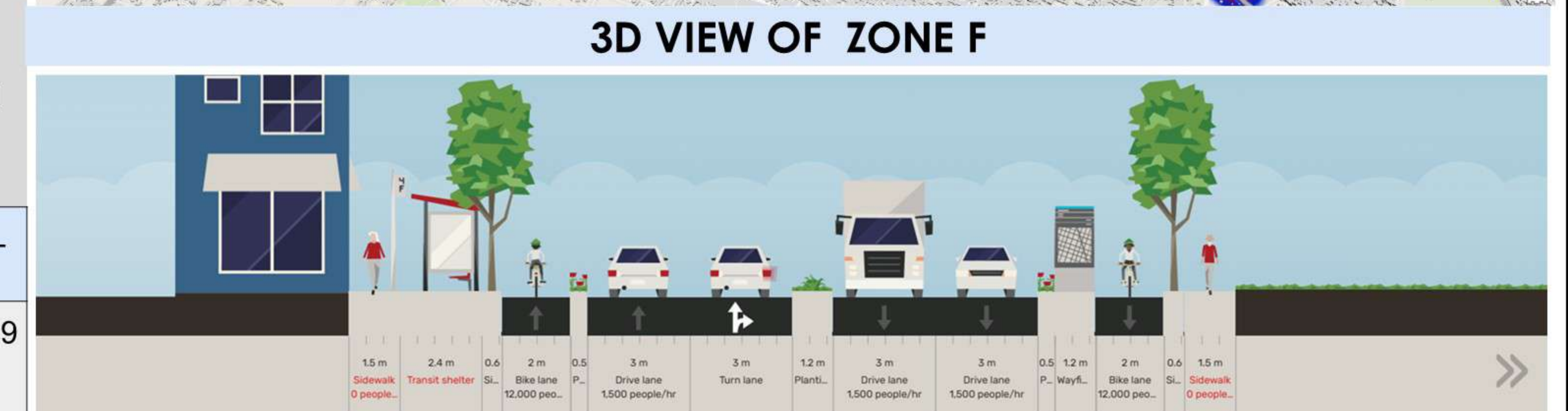
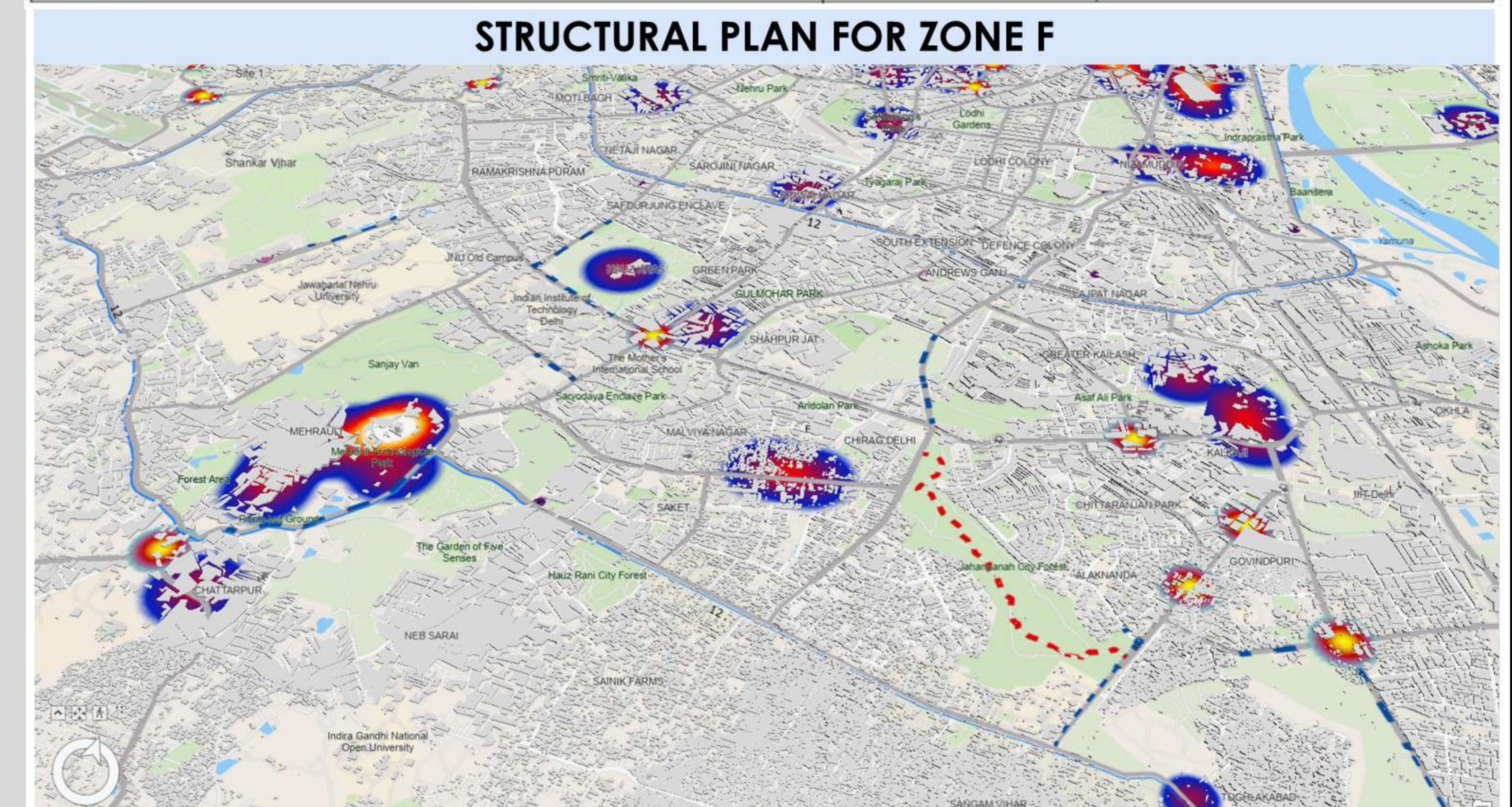
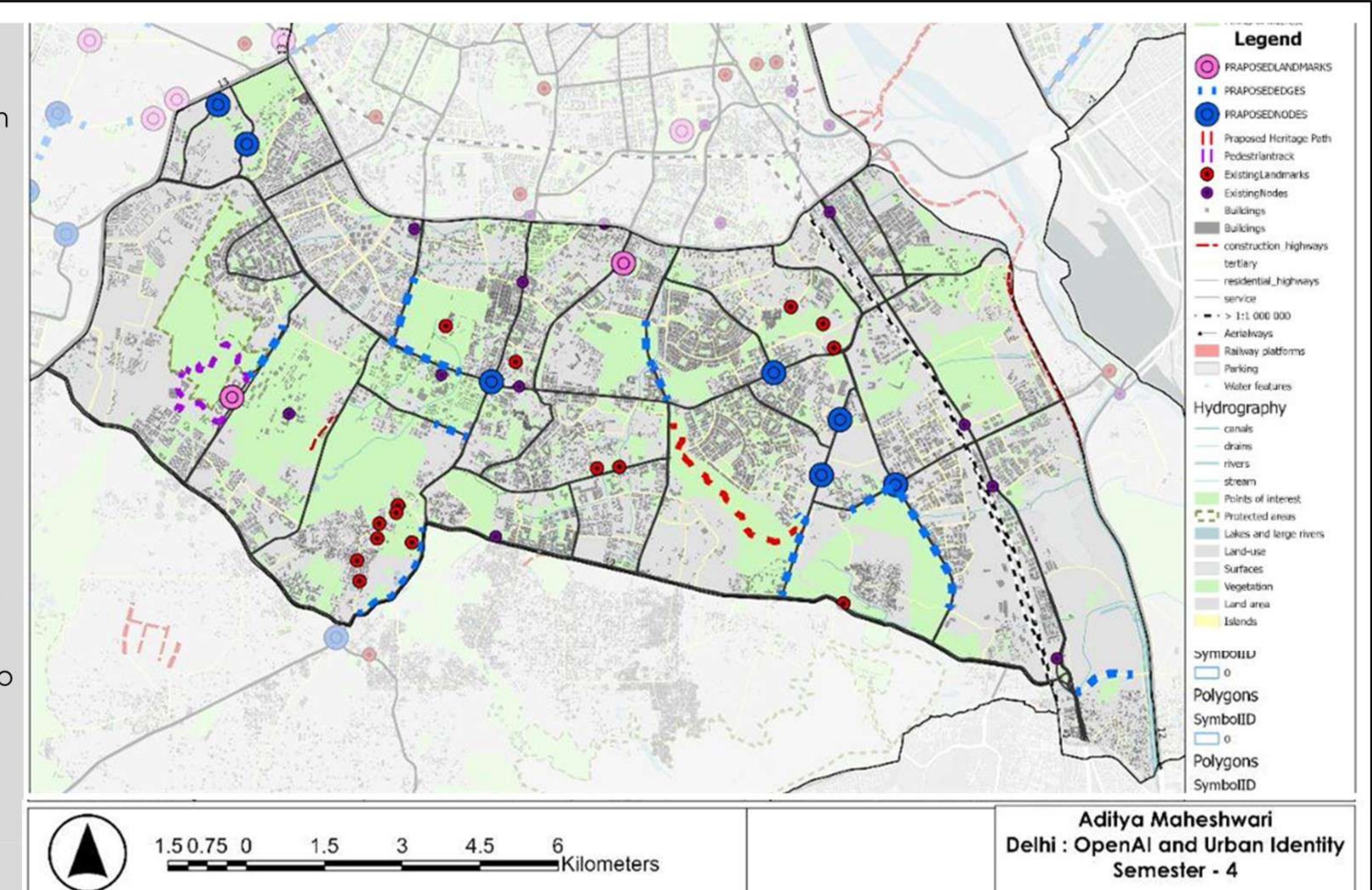
Proposed Identity/Character: "Cultural-Educational Green Oasis"

- Rationale:** Zone F's blend of historical significance, educational institutions, and green spaces makes it a cultural and intellectual hub. The low-density, posh residential areas and urban heritage sites position it as an upscale, heritage-rich zone with a focus on learning and leisure.
- Enhancement through Proposals:**
 - Nodes:** Create cultural plazas near historical sites (e.g., near Tughlakabad Fort), with shaded seating and recycled-material statues reflecting the zone's medieval history (e.g., a Tughlaq-era motif).
 - Landmarks:** Install modern sculptures near educational institutions (e.g., near JNU), symbolizing knowledge and innovation, using sustainable materials to blend with the green character.
 - Pathways:** Design shaded pathways connecting district centers (Nehru Place, Saket) with residential areas, featuring educational signage about the zone's history and institutions.
 - Edges:** Strengthen the Mehrauli Ridge as a green edge with eco-trails and heritage markers, linking it to city forests like Hauz Khas for a continuous green network.

Element	Existing	Proposed	Total	Element	Existing	Proposed	TOTAL
Edge Length (km)	0.4	4.19	4.59	Edge Length (km)	0.7	2.79	3.49
Landmarks	0	9	9	Landmarks	16	2	18
Nodes	1	6	7	Nodes	11	7	18
Rating	0.4	-	7	RATING	10.68	-	14.37
Rating Increase	6.60 (Improved)			RATING INCREASE	3.70 (Improved)		

ZONE E

ZONE F



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PRAPOSALS – ZONE E & F
SHEET - 11

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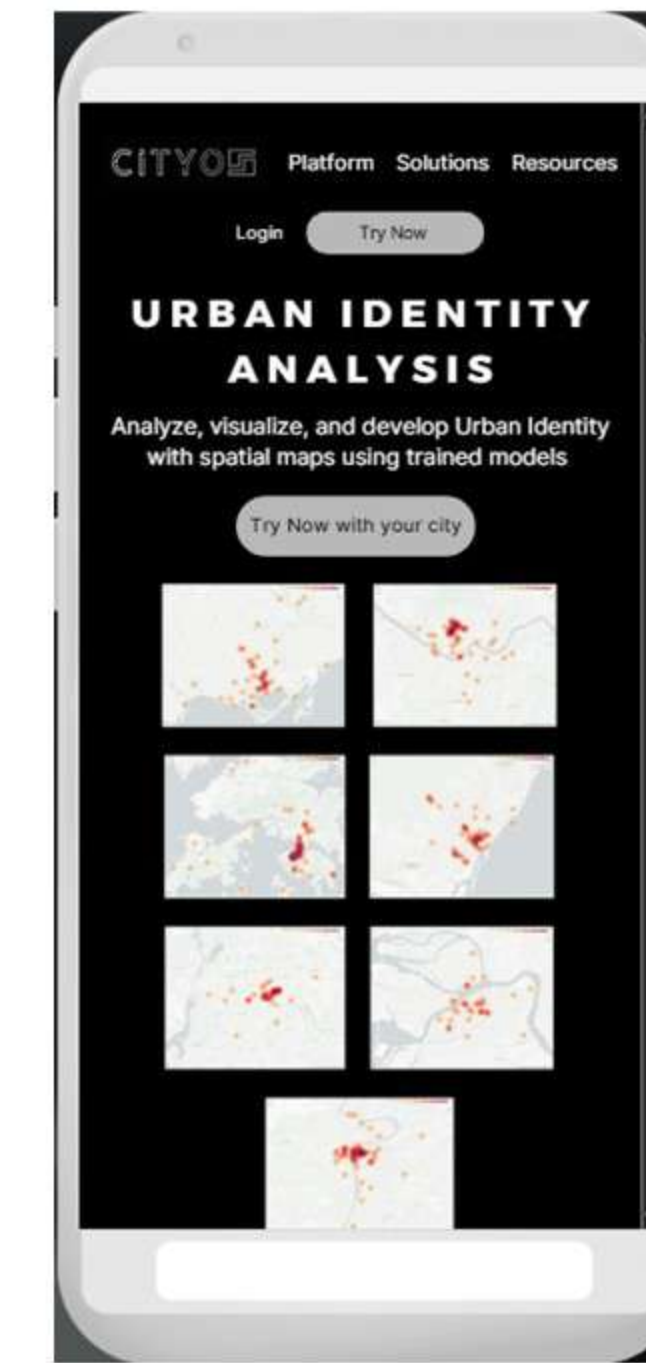
School of Planning and Architecture
New Delhi
M.Plan (Urban Planning) Semester 4



Real Time AI Driven Prediction Model For Improving Urban Identity.

ABOUT

The CITYOS dashboard, serves as a powerful tool for analyzing urban identity by leveraging AI-driven insights, geospatial data, and interactive visualization. The proposal outlines the development of an interactive dashboard that visualizes comprehensive urban maps and dynamic street-scape identities, deploying KNIME workflows for a web-based application to offer scalable, data-driven insights for effective urban planning and design. Below, I'll describe how CITYOS is used to analyze urban identity in the context of Delhi, aligning with your proposal's objectives.



Analyzing Urban Identity with CITYOS

1. Visualizing Urban Identity through Interactive Maps

CITYOS uses interactive maps to analyze and visualize urban identity based on Kevin Lynch's framework, which includes five key elements: Paths, Edges, Districts, Nodes, and Landmarks. Specifically for Delhi:

2. AI-Driven Analysis with OpenAI and Gemini Integration

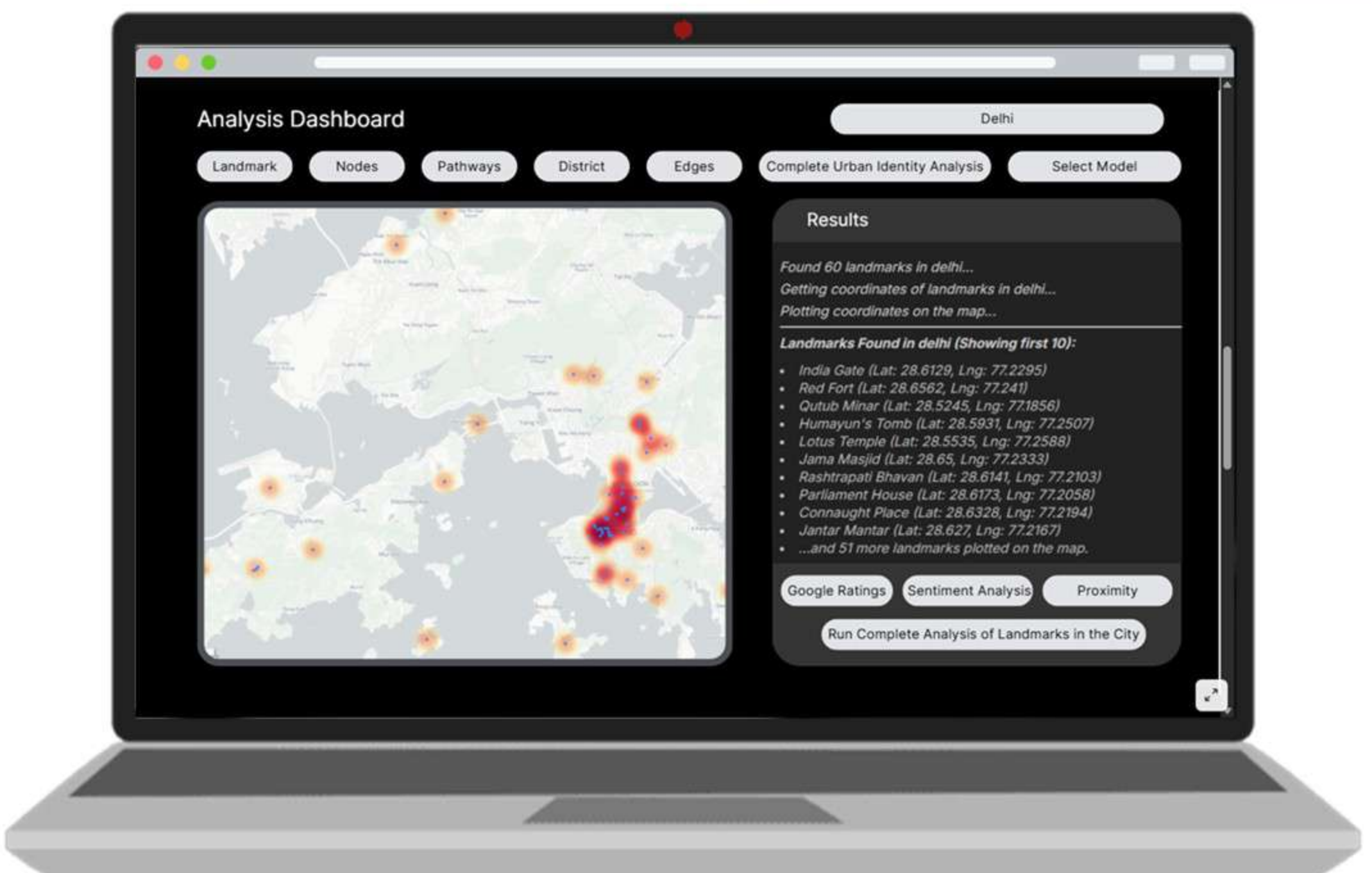
CITYOS leverages AI, specifically through OpenAI-inspired approaches and the Google Gemini API, to analyze urban identity elements in Delhi:

3. Scalable Insights with KNIME Workflows

Although not directly implemented in the current CITYOS codebase, the proposal's emphasis on deploying KNIME workflows for a web-based application can be realized to enhance urban identity analysis:

4. Data-Driven Insights for Urban Planning and Design

CITYOS translates urban identity analysis into actionable insights for effective urban planning and design in Delhi:

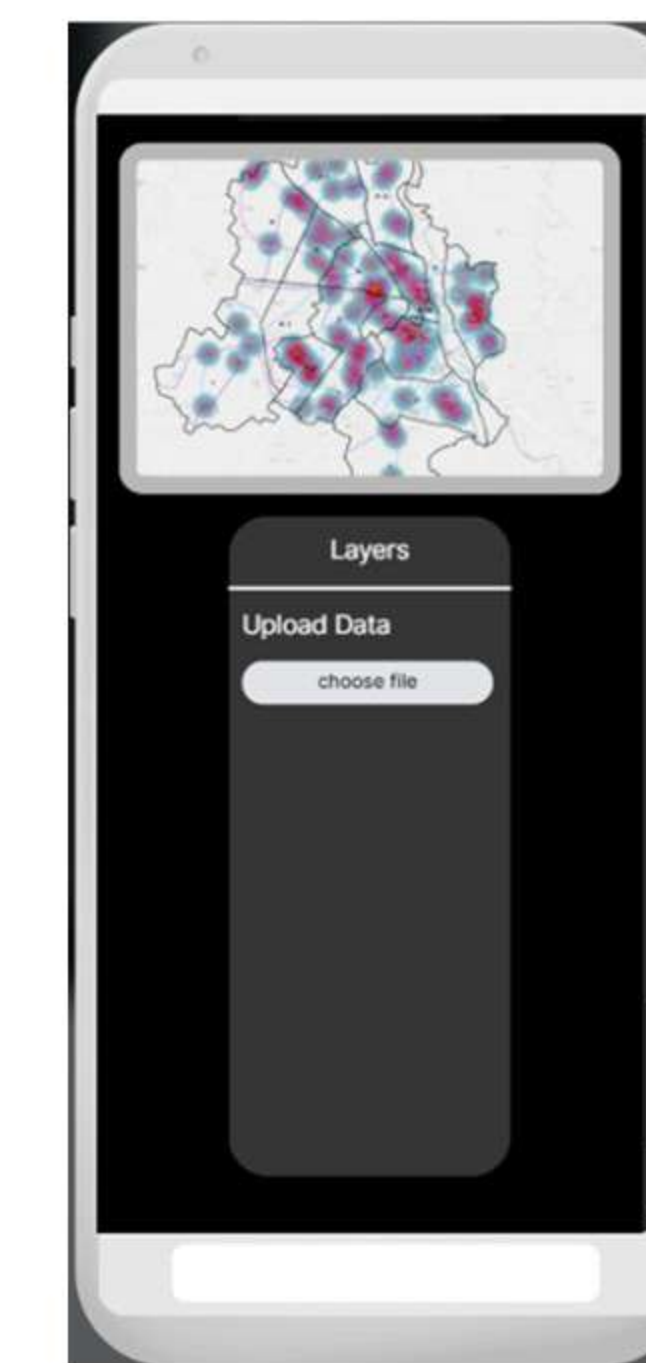
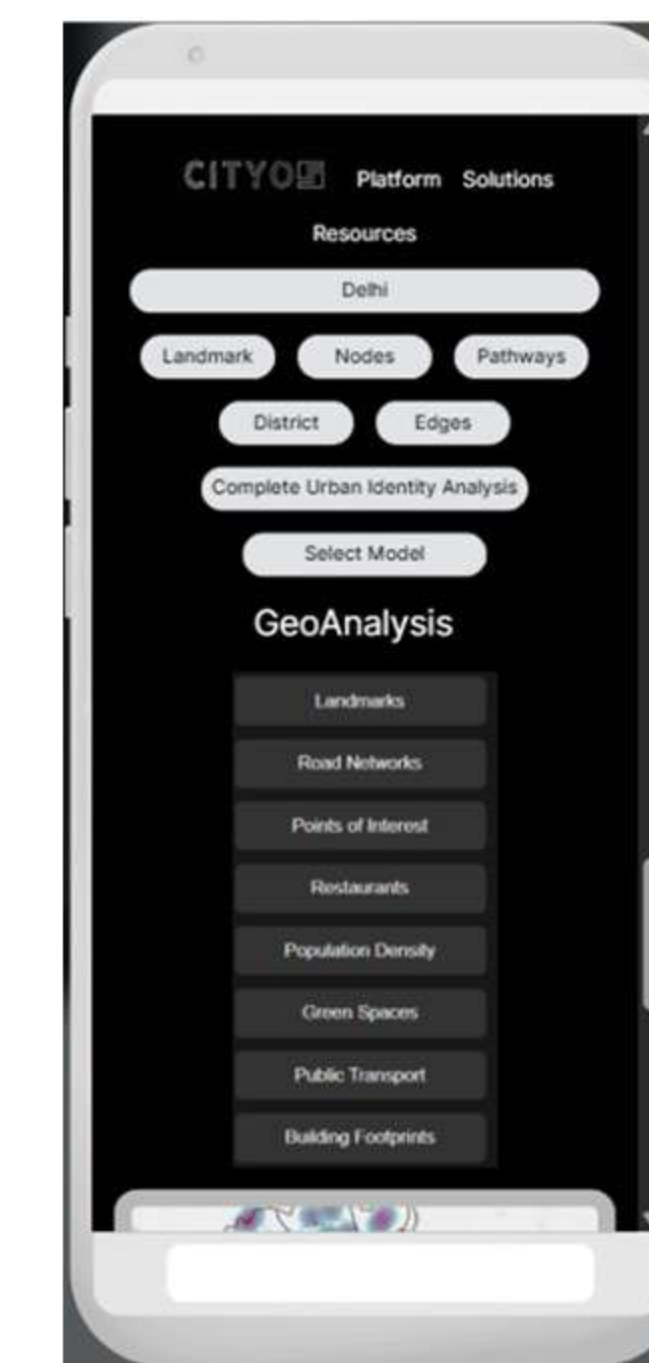
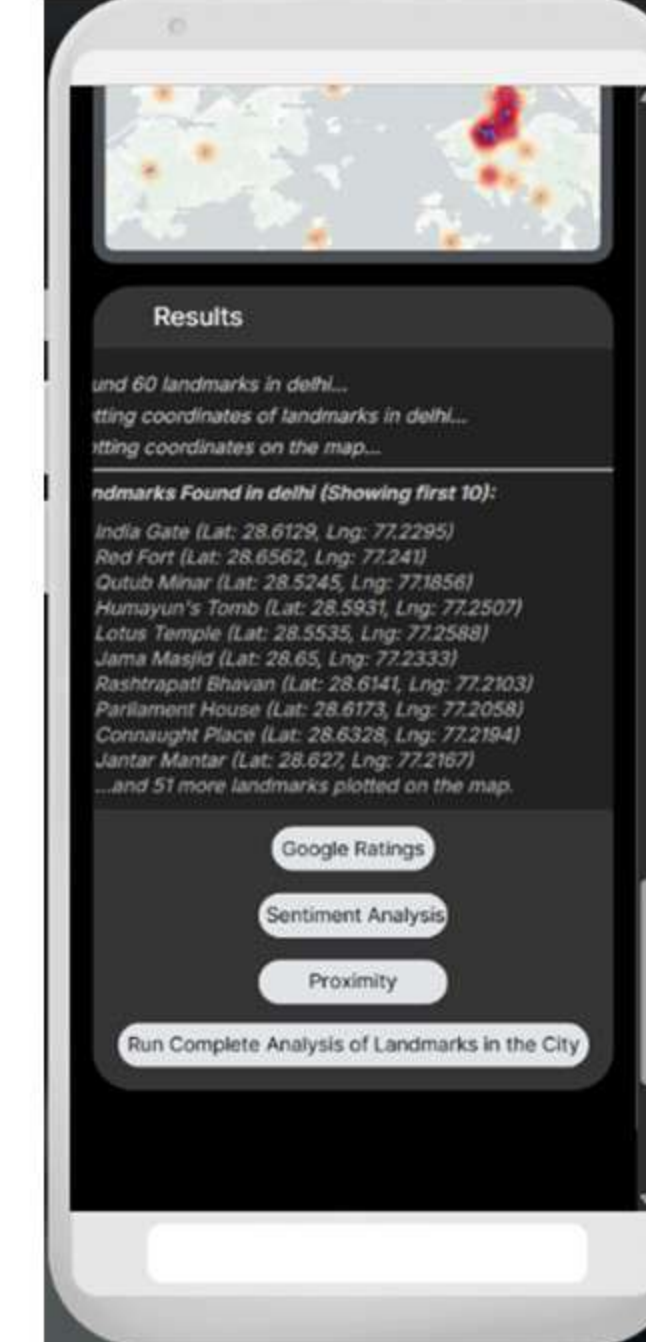


Comprehensive Urban Maps:
Dynamic Street-Scape Identities
AI-Driven Analysis with OpenAI and Gemini Integration
Sentiment Analysis
Proximity Analysis
Data Processing and Model Training
Identifying Areas for Improvement

Application in the Context of Delhi

- **Heritage and Modernity Balance:**
 - The platform highlights how historical districts like Old Delhi contrast with modern nodes,
 - **Connectivity and Mobility:**
 - By analyzing pathways and public transport, CITYOS identifies gaps in connectivity,.
- **Cultural Identity:**
 - Sentiment and landmark analysis reveal areas with strong cultural identities

CITYOS,, provides a robust framework for analyzing Delhi's urban identity using AI, geospatial tools, and interactive visualization. By visualizing urban maps, performing AI-driven analyses, and offering scalable insights, the platform empowers urban planners to make data-driven decisions, aligning with your goal of enhancing urban planning and design in Delhi through OpenAI-inspired technologies.



Zone Name	Zone Identity	Policy Focus	Policy
Zone D	Heritage Capital Green Hub	Preserve historical and political significance while enhancing green connectivity	- 50% of new developments must use red sandstone and white marble facades.
			- 30% of public space area to native tree plantations.
			- Prohibit commercial hoardings within 500m of heritage landmarks.
Zone F	Cultural-Educational Green Oasis	Enhance cultural heritage and educational accessibility while preserving green spaces	- Mandate that 40% of new buildings near historical sites use sandstone facades and heritage-inspired designs.
			- Require that 15% of educational campus areas allocate to public cultural spaces (e.g., amphitheatres, art galleries).
			- Enforce a 200m green buffer around the Mehrauli Ridge with native vegetation (e.g., dhak).
Zone H	Industrial-Community Fusion Hub	Balance industrial growth with community well-being and environmental mitigation	- Require that 10% of industrial land allocates to green spaces with native trees (e.g., neem).
			- Mandate that community hubs with shaded seating and public art develop within 500m of industrial clusters.
Zone G	Heritage-Community Mosaic	Celebrate heritage while fostering community cohesion	- Mandate that 50% of new developments near heritage sites use red sandstone and Mughal-inspired designs.
			- Require that urban villages have one cultural plaza per 1,000 residents with public art and shaded seating.
			- Provide tax incentives for businesses preserving traditional crafts (e.g., embroidery, pottery).
Zone P-II	Green Urban Gateway	Emphasize ecological preservation and a welcoming gateway aesthetic	- Mandate that a 50m-wide green buffer with native vegetation (e.g., vetiver grass) develops along all entry points.
			- Require that 25% of new developments incorporate agricultural elements (e.g., rooftop gardens, orchards).
			- Prohibit high-rise structures above 15m.
Zone E	Emerging Urban Connectivity Hub	Enhance connectivity and growth in historically isolated areas	- Require that 40% of new developments include pedestrian and cycle pathways linking to transit nodes.
			- Provide subsidies for developers creating green spaces with native trees (e.g., neem).
			- Mandate that 70% of new developments use red sandstone and Mughal-inspired designs.
Zone A (Walled City)	Living Heritage Core	Preserve and revitalize the Mughal-era legacy of Shahjahanabad	- Require that 15% of industrial land allocates to green spaces with native trees (e.g., neem).
			- Mandate that community hubs with public art and shaded seating develop within 500m of residential clusters.
			- Mandate that 40% of new developments use sandstone facades and heritage-inspired designs.
Zone J	Heritage-Ecological Gateway	Blend heritage and ecology while reinforcing the gateway role	- Require that a 50m-wide green buffer with native vegetation (e.g., dhak) develops along entry points.
			- Prohibit high-rise structures above 15m.
			- Mandate that 50% of new developments near historical sites use sandstone facades with Mughal-colonial designs.
Zone C	Historical-Commercial Transit Hub	Blend historical significance with commercial and transit functionality	- Provide tax incentives for businesses preserving traditional trades (e.g., metalwork, textiles).

ZONE WISE POLICY RECOMMENDATIONS



Delhi : AI and Urban Identity

PRAPOSALS – REAL TIME MONITORING AND POLICIES

SHEET - 12

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SPA/NS/UP/2023/1609



School of Planning and Architecture
New Delhi
M.Plan (Urban Planning) Semester 4

