

Geospatial Assessment of Women's Social and Economic Empowerment in Delhi

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ABSTRACT

This study is based on a geospatial assessment of women's social and economic empowerment across the districts of Delhi to identify patterns of spatial inequality and their underlying determinants. Using indicators such as female literacy, workforce participation, and financial services, the research integrates data from Census 2011, NFHS-5, and other secondary sources. Spatial analysis through GIS mapping and statistical tools reveals significant disparities in the level of women's empowerment within Delhi. The findings highlight that how uneven access to education, infrastructure, and employment opportunities contributes to persistent gendered inequalities in Delhi. By interpreting these disparities, the study provides valuable insights for policy interventions aimed at promoting women empowerment for an inclusive development of Delhi.

Keywords: Women empowerment, Human right, Inequality, Beti Bachao Beti Padhao, Ladli Yojana, Pradhan Mantri Awas Yojana

INTRODUCTION

Women empowerment means giving women the platforms, power, freedom, and confidence to make their own decisions and control not only their lives but also their choices.

It is the process through which women become strong enough to participate equally in the decision making of their family, society, economy, and politics. It refers to the process through which women recognize existing gender-based power imbalances and gain the confidence, resources, and agency to challenge and overcome inequality within the household, workplace, and wider society. This means that empowering women entails helping them recognize their own value, their capacity for self-determination, and the creation of a society in which they can enjoy their rights and respect like everyone else. When women are given equal rights, opportunities, and the ability to make decisions, they can actively participate in social, economic, and political activities. Their participation helps improve families, strengthen communities, and support the overall progress of a

country. After Post-Independence, Indian Constitution guarantee of equality for all, especially to the women and deprived sections of our society. Many legal reforms, such as the Hindu Code Bills of the 1950s and laws related to Maternity Benefit Act, 1961, have played an important role in empowering women in India. During 1980s–90s, Women's reservation in Panchayati Raj Institutions (73rd & 74th Amendments) get focused and much more programs like Development of Women and Children in Rural Areas (DWCRA) for rural women's livelihoods were implemented. From 2000s onwards, policy mainly focus on education, economic inclusion, and safety measures for women in the society. As per World Economic Forum's Global Gender Gap Report 2025, India has been ranked 131st out of 148 countries. This signifies a drop of two positions from its 2024 ranking. The report evaluates gender parity across four key areas: economic participation and opportunity, educational attainment, health and survival, and political empowerment.

Literature review:

Interviewing participants in microcredit programs

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in two Bangladeshi regions, Kabeer (2001) investigated the connection between microcredit and women's empowerment. According to reports, women using microcredit had greater access to finance and a stronger sense of self-worth. Though taking part in a microcredit program has occasionally resulted in an additional burden, the ladies are happy about their increased financial contribution to the household. Additionally, it was noted that microcredit frequently improved women's capacity for making decisions at home. The economic empowerment of women is one of the most essential elements of attaining gender equality and women's empowerment in general, according to the OECD report 2021. In comparison to a business-as-usual scenario, women's equal participation in the economy might contribute up to USD 28 trillion, or 26%, to the yearly GDP in 2025. This economic potential is greatest in developing nations. But only emphasizing women's economic empowerment won't result in more gender equality; instead, larger aspects of power disparities in society must be addressed, as well as the underlying causes of inequality. One example of this is the uneven allocation of unpaid care labour, which is impeding growth in this area. Furthermore, it's important to comprehend how programs and policies may have unforeseen negative effects and create further obstacles for the most marginalized and disadvantaged women and girls. UNDP (1995) The United Nations Development Programme (UNDP) published the Human Development Report (HDR) in 1995- "The Report examines the advancements made in the last few decades to reduce disparities between men and women, stressing the significant and enduring divide between women's increasing potential and constrained opportunities" (UNDP, 1995). As per the World Economic Forum (2005), women's economic engagement is crucial not just for mitigating poverty among themselves but also for augmenting household income and promoting economic growth nationwide. Still, research demonstrates that a number of obstacles stand in the way of economic empowerment, with patriarchy being the most significant. According to Ministry of women and child development (GoI), Women are becoming increasingly aware of their roles in the home, in society, and their nation, as well as their health, education, and careers. They are participating in all areas and demonstrating a keen interest in each one. They are now obtaining their rights to move forward on the correct path after many years of arduous fighting. In this process, the

Indian government has been making several laws and launching welfare programs time to time which are playing an instrumental role in empowering women in India.

Women's Empowerment Through Government Schemes in Delhi

1) **Policy as a catalyst social change:** Various schemes and institutions provide multiple forms of support to women, including **financial assistance, educational opportunities, technical guidance, and administrative support**. These initiatives also help women access legal protection and support services, such as protection against domestic violence and the provision of safe shelter through various support and placement schemes.

Women in India are not only protected but also empowered through several constitutional provisions and legal frameworks. For example, **Article 14 of the Constitution of India** ensures equality before the law for all citizens. **Article 15(1) of the Constitution of India** prohibits discrimination on the basis of religion, race, caste, sex, or place of birth, while **Article 15(2) of the Constitution of India** guarantees equal access to public spaces and facilities. In addition, **Article 21 of the Constitution of India** protects the right to life and personal liberty, ensuring that every woman can live with dignity and security. These constitutional safeguards form the foundation for protecting women's rights and promoting gender equality in India.

In addition, several laws ensure women's safety, dignity, and rights. These include the *Protection of Women from Domestic Violence Act, 2005*, *Sexual Harassment of Women at Workplace (Prevention, Prohibition and Redressal) Act, 2013*, *Dowry Prohibition Act, 1961*, and legal provisions under the Indian Penal Code Sections 375 and 376. Other important laws include the *Maternity Benefit Act, 1961* and the *Hindu Succession (Amendment) Act, 2005*, which ensure maternity rights and equal property rights for women. Furthermore, women can seek help through **legal aid services, helplines, and institutional support provided by the National Commission for Women Act, 1990**,

which works to safeguard women's rights and address their grievances.

- 2) **Access to resources of opportunities:** Delhi is ranked the highest among the other states and UTs of the India in employment and literacy but still there is a gap between the gender. In multiple areas, the female literacy rate in 2011 was 81.7% compared to male literacy which was 91% whereas female work participation rate is only 11% however male work participation was 54.8% (IHD), which means that there is still a huge gap between gender in terms of not only literacy but also in the work participation. Government is trying to minimise this gap through different schemes in different sector like '*Beti Bachao Beti Padhao*', '*Ladli Yojana*' scheme in education sector. '*PM Mudra Yojana* for women entrepreneur in economic and financial resources sector, '*Pradhan Mantri Vandana Yojana*' in health sector, in land and property sector, women get equal right on inheritance property under *Hindu Succession (Amendment) Act, 2005*. A '*One Stop Centre Scheme*' provides integrated support and assistance to women who face violence or distress. These centres offer services such as medical aid, police assistance, legal support, psychological counselling, and temporary shelter at a single place. These schemes provide strength, promote economic independence and safety along with increasing the rate of empowerment among the women in Delhi.
- 3) **High safety risk:** According to the National Crime Records Bureau report *Crime in India 2022*, Delhi records one of the highest crime rates among metropolitan cities in the country. The overall crime rate in Delhi was 1832.6 per lakh population, which is about 3.36 times higher than the average crime rate of 544 per lakh population recorded for major cities. The report also highlights the serious issue of crimes against women in the national capital. In 2022, around 14,158 cases of crimes against women were reported in Delhi, with a crime rate of 186.9 per lakh population, making it the city with the highest number of such cases among India's metropolitan cities. These figures indicate that ensuring women's safety remains a major concern in

Delhi. Major category of NCRB report 2022 are following:

- a) Assault and sexual harassment which is approx. 30% of total case.
 - b) Rape and sexual offence are a round 1300 to 1500 cases per year.
 - c) In Delhi, 1,100 cases of domestic violence and cruelty by husbands and relatives were registered in 2022, along with 572 cases of the murder of women. In comparison, in 2011, 657 cases of domestic violence and 1,480 cases of murder of women were recorded. Cases of assault on women with intent to outrage modesty under IPC Section 354 increased from 727 in 2011 to 1,480 in 2022. Cases of dowry deaths, however, declined from 134 in 2011 to 69 in 2022.
 - d) This data highlights how women's safety challenges continue to restrict their mobility and opportunities, contributing to stress and fear in public spaces. On the other hand, the government has taken steps to control crimes against women. Initiatives such as the '*Himmat App*' by Delhi Police enable women to send distress alerts with GPS location. '*Women Help Desks*', '*Pink Booths*', and '*Pink Autos*', along with reserved spaces in public transport like buses and the metro, further support women's safety. Several NGOs are also actively involved in campaigns—such as Jagrookta campaigns—to promote gender sensitization.
- 4) **Persistent socioeconomic inequality:** Delhi, besides being the capital of the country, is also one of the fastest-growing city in India, it exhibits both affluent residential areas and extensive slums, highlighting the persistence of economic inequality. The city's per capita income is 2.5 times the national average. The economic growth has been concentrated in the real estate sector, primarily benefiting the elites, top of the ladder and, to a lesser extent, the middle class. Marginalized groups, including migrant and informal-sector workers, continue to face significant challenges. This difference has contributed to unemployment, particularly among youth and women in economically disadvantaged districts, many of which contain large numbers of unauthorized colonies of the city. According to the 2011 Census, approximately 1.8 million

residents live in slums, reflecting high levels of urban poverty and resulting in unsafe conditions for women. The majority of employed women (mainly coming from low-income households) work in informal or low-wage sectors such as domestic labour, garment production, and vending services. These women encounter financial barriers due to their limited awareness, and restricted mobility. These hardworking women experience health issues, such as anaemia, malnutrition, reproductive health concerns and mental stress, but their constrained decision-making and low bargaining power further impact their empowerment. . In political contexts, women has33% of seats in local government reserved, which nominally enhances their status, though their decision-making but their authority often remains limited due to the patriarchal set up of the society. There are certain programs designed to integrate gender equality into development planning, ensuring equitable access to resources and opportunities for women from diverse backgrounds.

Objective:

There are three objectives of this paper which are mentioned below:

- To assess the influence of socio-economic and demographic factors on the Women Empowerment Index.
- To identify high-performing and low-performing districts in terms of women’s empowerment.
- To analyse inter-district disparities in women’s empowerment within Delhi.

METHODOLOGY

The study relies entirely on secondary data obtained from credible sources, including the Census of India (2011), National Family Health Survey (NFHS-4 and NFHS-5), National Sample Survey (NSS), and District Statistical Handbooks (Delhi) and NCRB, 2022.

The methodology of the study involves several key steps. First, appropriate indicators are selected to represent various dimensions of the women empowerment analysis. Next, the data are normalized using either the Z-score or Min–Max normalization method to ensure comparability across variables. After

normalization, a composite Women Empowerment Index (WEI) is constructed. Finally, GIS mapping and spatial analysis are used to visualize and interpret the spatial distribution and patterns of women’s empowerment across regions. Principal composite index is also used in analysing the awareness level of women empowerment.

Dimension and Indicator:

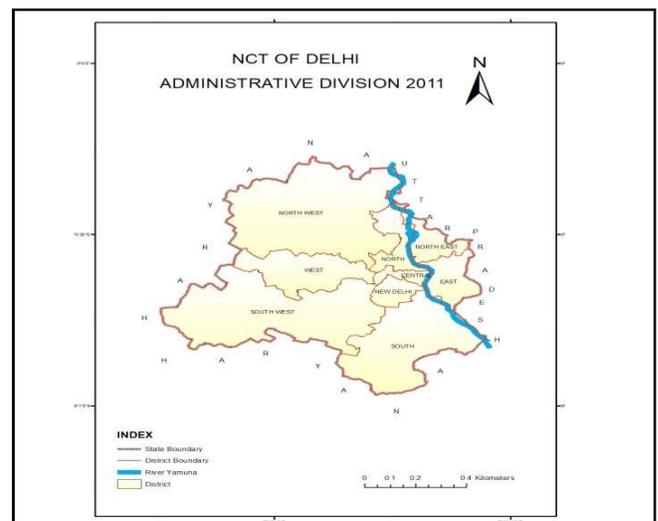
Select the indicator relevant variables and Indicator that represent a different aspect of women empowerment in Delhi which help the special analysis in Delhi. All the indicators are in a positive form. For normalization of data, minimum minus maximum is used to bring value between zero and one for positive indicator in which higher means better and which values near to 1 and then assign the weight to each indicator through equal weight method. After that compilation of composite index women empowerment index (W E I) of each district is created and then classified the region into empowerment categories.

WEI Range	
Categories	Range
High	more than 0.703
Medium	0.488 - 0.703
Low	less than 0.488

Source: Calculated by Author, using PCA method.

Study area:

Delhi, the capital of India, is one of the most urbanized, economically developed, and politically



Source: Prepared by Author

Fig. 1 : Study area

Table 1 : Showing the list of indicators for Women Empowerment Index (WEI)

Social	Economic	Housing status (female Headed)
Sex ration	Percentage of female main worker in main worker in main worker	Percentage of household having concrete material of proof
Percentage of Households with any usual member covered under a health insurance/ financing scheme (%)	Percentage of female main worker in main worker having technical degree or degree equal to degree or postgraduate	Percentage of household having drinking water within premises
Percentage of female completed graduation and above	Percentage of female main worker in main worker involving in tertiary sector	Percentage of household having electricity
Percentage of Current Use of Family Planning Methods (any modern method)		Percentage of household having LPG/PNG and biogass
Percentage of Female sterilization		Percentage of household having kitchen inside the premises
Female Literacy rate		Percentage of household having telephone/ mobile phone
		Percentage of household having scooter motorcycle
		Percentage of household having washroom facility within premises
		Percentage of household having permanent and semi permanent house (excluding institutional building)
		Percentage of household availing banking services

important regions in the country. It functions not only as the administrative centre but also as a major hub of commerce and services, attracting people from many other states. Despite rapid urban growth and modernization, women in Delhi still face several challenges in their daily lives due to socio-economic inequality, safety concerns, and unequal opportunities (Fig. 1).

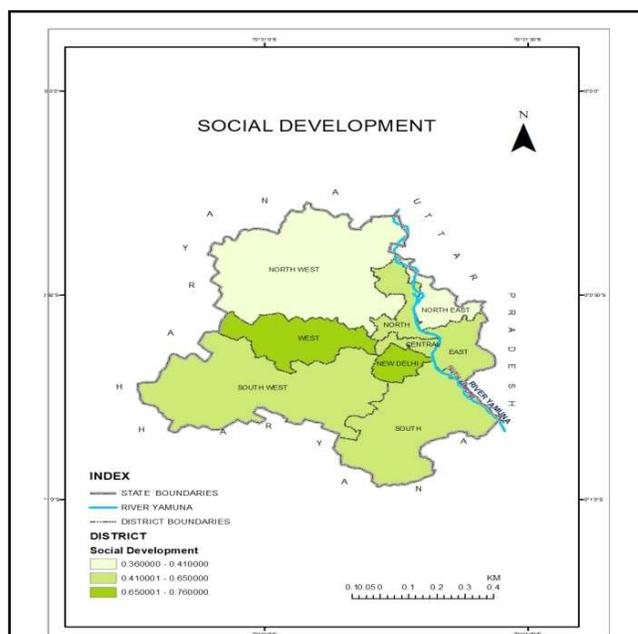
List of indicators :

List of indicators for women empowerment index is shown in Table 1.

RESULTS AND DISCUSSION

Social Development of women in Delhi:

To measure the social development of women in Delhi we have selected six indicators *i.e.* literacy rate, sex ratio, percentage of households covered by health insurance or financial schemes, percentage of females who have completed graduation or higher education, percentage of current users of any modern family planning method, and percentage of female sterilizations. Based on these indicators, and using the principal composite method, Delhi's districts are classified into three groups: high, medium, and low. The mean value is 0.6, and the standard deviation is 0.130 (Fig. 2).



Source: Prepared by Author

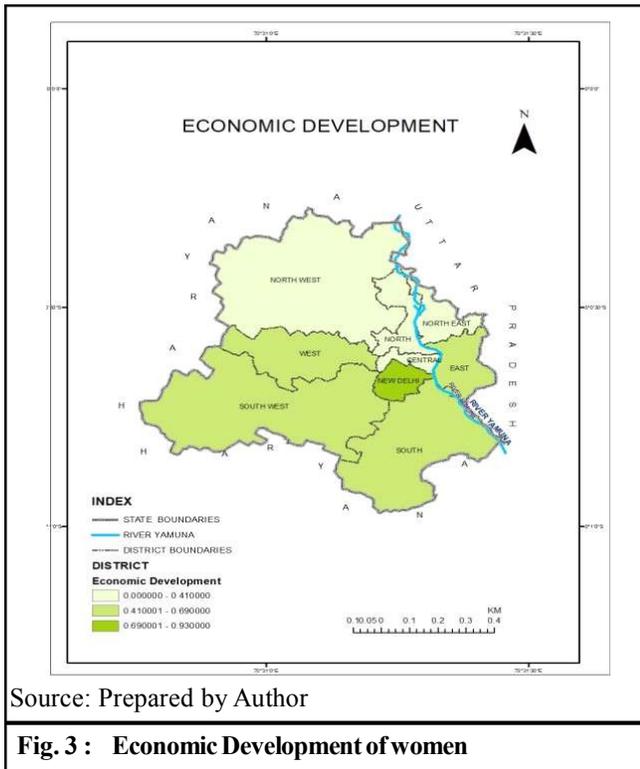
Fig. 2 : Social Development of women

As the map suggests, out of eleven districts there are only two districts of Delhi *i.e.*, West Delhi and New Delhi, that fall under the high category of social development of women. The analysis shows that out of

the eleven districts of Delhi, only **West Delhi** and **New Delhi** fall under the **high category of women’s social development**. This higher level of development may be attributed to better awareness, access to education, healthcare facilities, and government welfare schemes in these districts. In addition, higher levels of urbanization, improved infrastructure, and greater socio-economic opportunities contribute to better awareness and participation of women in social and health-related programmes. In contrast, districts placed in the medium and low categories may face challenges such as lower educational attainment and limited access to services, which affect the overall social development of women.

Economic Development of Women in Delhi:

To measure the economic development of women in Delhi, we have selected three indicators, *i.e.* percentage of female main workers, the number of main workers in households who have a technical degree or a qualification at the graduate or postgraduate level, and the percentage of females and males working in the tertiary sector (Fig. 3).



Source: Prepared by Author

Fig. 3 : Economic Development of women

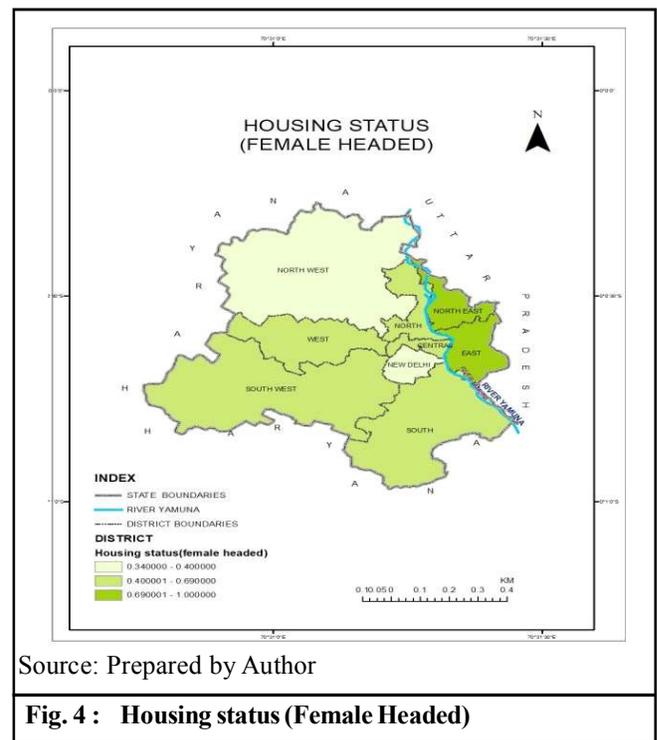
The map shows three groups in this category: high, medium, and low, based on a mean of 0.5 and a standard deviation of 0.28. Only New Delhi district falls in the

high category. In the low category are Central Delhi, North District, and Northeast District, but not West District. New Delhi includes Connaught Place, Parliament Street, and Chandrapuri. In this area, people in Connaught Place and Parliament Street are involved in the tertiary sector.

Housing status (Female-Headed): household have 10 indicators:

To measure the housing status (female headed) in Delhi, we have selected ten indicators which is mentioned in Table 1 above.

As a map, there are high, medium, and low categories, north-west and New Delhi, with a standard deviation of housing status is 0.24, and the mean value calculated is 0.63. Northeast Delhi has. 99.2% of households having electricity, whereas 97.6% households have permanent and semi-permanent houses excluding institutional buildings. The New Delhi district has 86.3% households have Bank facility services, follow by East, Southwest, and South, lowest in Northeast and Northwest. 98.7 per cent of households have latrine facilities within premises in the Northwest, followed by the Northeast district and East district, whereas New Delhi has only 33.8% of households have a scooter or motorcycle, the lowest among all districts (Fig. 4).



Source: Prepared by Author

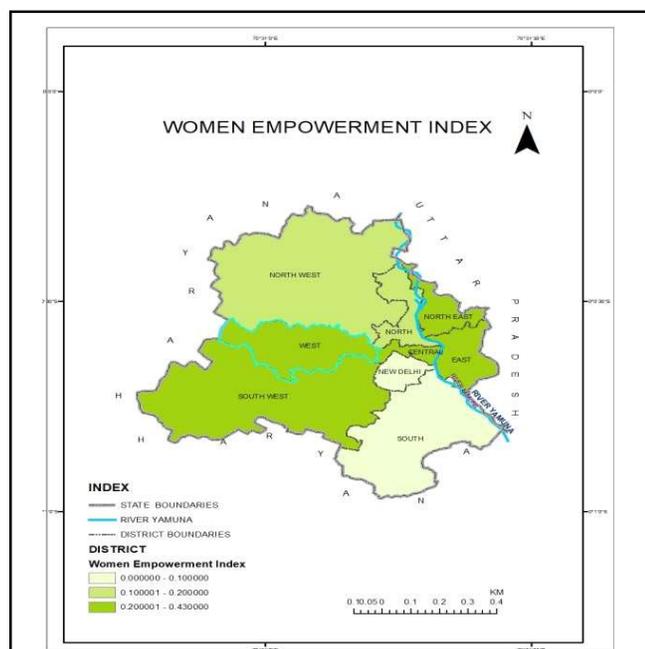
Fig. 4 : Housing status (Female Headed)

Women empowerment index:

Table 2 and Fig. 5 shows that there are 9 districts which get their rank by calculating principal component analysis on the basis of standard deviation value. The total mean is 0.595 and standard deviation value is 0.17. The districts carrying rank one or near to one have highest women empowerment compared to other districts of Delhi.

Table 2 : Women empowerment index		
Districts	Standard Deviation Value	Ranking
Northwest	0.344	3
North	0.283	6
Northeast	0.513	1
East	0.317	4
New Delhi	0.405	2
Central	0.288	5
West	0.166	9
Southwest	0.242	7
South	0.192	8

Source: Calculated by Authors, using PCA method



Source: Prepared by Author

Fig. 5 : Women Empowerment Index

The Women's Empowerment Index for the districts of Delhi is calculated using standard deviation values based on selected socio-economic indicators. The index helps to understand the relative level of women's empowerment across different districts and highlights spatial variations in women's development.

The results show that North East Delhi ranks first with an index value of 0.513, followed by New Delhi (0.405) and North West Delhi (0.344). The higher ranking of these districts may be linked to better access to education, higher female literacy, improved healthcare facilities, and greater awareness of government welfare and family planning programmes. In particular, New Delhi benefits from strong administrative infrastructure and better socio-economic conditions, which support women's participation in social and economic activities.

Districts such as East Delhi and Central Delhi fall into the medium category, indicating moderate levels of women's empowerment. Although these areas have basic educational and health facilities, population pressure and socio-economic inequalities may limit women's overall development. In contrast, South West Delhi, South Delhi, and West Delhi appear in the lower ranks. This may be due to lower female participation in higher education and employment, uneven access to social services, and differences in socio-economic conditions.

When grouped into high, medium, and low categories, North East Delhi and West Delhi fall in the high category, mainly due to favourable indicators such as a better sex ratio, higher housing quality, and greater use of modern family planning methods. The presence of coaching centres, affordable higher education institutions, active community networks, and informal service-sector jobs also contributes to improving women's participation and economic independence in these districts.

On the other hand, North Delhi and North West Delhi fall in the low category. These districts include several semi-urban areas where traditional social norms remain strong, and women are often more engaged in household work than in formal employment. In addition, the local economy is dominated by sectors such as transport, construction, and heavy retail, which are largely male-dominated, and provides limiting employment opportunities for women.

Conclusion:

The study shows that there are major spatial inequalities in women's empowerment across different districts of Delhi. It becomes clear that empowerment is deeply influenced by social, economic, demographic, and infrastructural factors. Districts like West Delhi and New Delhi have higher levels of empowerment because of better literacy rates, greater access to education, more

employment opportunities in the service sector, and improved living conditions. In contrast, North and North-West Delhi continue to lag behind, reflecting ongoing gender gaps in work participation, mobility, and access to opportunities. Even though Delhi has relatively high literacy and income levels, women still face structural challenges such as urban inequality, safety concerns, and limited involvement in decision-making. Government schemes such as *Beti Bachao Beti Padhao*, *Ladli Yojana*, and *Pradhan Mantri Awas Yojana* have helped improve the situation, yet clear disparities remain between districts. The findings highlight the need for focused, area-specific policies that combine social, economic, and spatial approaches to promote inclusive and sustainable women's empowerment throughout Delhi.

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