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## Entrepreneurial Disparities in Uttar Pradesh: A Population-Normalized Study of MSME Distribution

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### Abstract

**Purpose** - This study aims to evaluate the entrepreneurial landscape of Uttar Pradesh by analysing the density of Micro, Small, and Medium Enterprises (MSMEs) across its districts. MSME density-defined as the number of registered MSMEs per 1,000 population-is used to uncover regional disparities and inform targeted policy interventions.

**Methodology** - The analysis is based on secondary data from two official sources: MSME registration figures obtained from the Udyam Registration Portal and district-wise population data from the Census of India 2011. MSME density is calculated using a standardized formula, and districts are ranked accordingly. Descriptive statistics and comparative analysis are employed to interpret spatial patterns and disparities.

**Findings** - The results reveal significant variation in MSME density across districts. Gautam Buddha Nagar, Lucknow, and Ghaziabad rank highest, indicating concentrated entrepreneurial activity, while Sitapur, Shravasti, and Sultanpur show notably low densities. These disparities suggest uneven access to infrastructure, credit, and enterprise support systems, highlighting the need for district-specific MSME promotion strategies.

**Originality** - This research introduces a population-adjusted lens to evaluate MSME distribution, moving beyond raw registration counts. By normalizing enterprise data against actual census population figures, the study offers a more equitable and policy-relevant framework for understanding entrepreneurial intensity and regional development gaps.

**Keywords:** MSME Density, District-Level Analysis, Uttar Pradesh, Census 2011, Entrepreneurial Disparities

## Introduction

Micro, Small, and Medium Enterprises (MSMEs) are widely recognized as engines of economic growth, employment generation, and inclusive development, especially in emerging economies like India. The MSME sector contributes approximately 30% to India's GDP and accounts for nearly 50% of exports, underscoring its strategic importance in national development (Ministry of MSME, 2023). In Uttar Pradesh, one of India's most populous and economically diverse states, MSMEs play a pivotal role in fostering regional entrepreneurship, reducing poverty, and promoting industrial decentralization (Kaav Publications, 2022).

Despite their significance, the distribution of MSMEs across Uttar Pradesh's 75 districts remains uneven, with stark disparities in registration, access to credit, infrastructure, and awareness. While urbanized districts such as Gautam Buddha Nagar, Lucknow, and Ghaziabad exhibit high MSME concentrations, many rural and backward districts like Shravasti, Sitapur, and Balrampur lag behind (IJCRT, 2022). This unevenness raises critical questions about the inclusivity of enterprise development and the effectiveness of policy outreach mechanisms.

To address these disparities, this study introduces the concept of MSME density, defined as the number of registered MSMEs per 1,000 population. By normalizing enterprise data against district-level population figures from Census 2011, the research offers a more equitable lens to assess entrepreneurial intensity across regions. This approach moves beyond raw MSME counts, which often favor populous districts, and instead highlights districts where enterprise activity is proportionally strong or weak relative to demographic pressure (NITI Aayog, 2021).

The launch of the Udyam Registration Portal in July 2020 marked a transformative shift in India's MSME registration ecosystem. Replacing the earlier EM-I/II and Udyog Aadhaar systems, Udyam introduced a fully digital, Aadhaar-linked platform that simplified registration, improved data transparency, and enabled real-time tracking of enterprise activity (PIB, 2020; Ministry of MSME, 2021). The portal classifies enterprises based on investment and turnover thresholds, and automatically integrates with income tax and GST databases, reducing paperwork and enhancing compliance (SIDBI, 2022).

For researchers and policymakers, Udyam has unlocked granular, district-level data on MSME registrations, disaggregated by enterprise size, sector, ownership category, and geography. This data is publicly accessible and updated regularly, making it a valuable resource for spatial analysis and

policy diagnostics (Udyam Portal, 2024). In the context of Uttar Pradesh, where regional disparities are pronounced, Udyam data allows for the identification of entrepreneurial hotspots and lagging districts, enabling targeted interventions under schemes like PMEGP, ODOP, and MUDRA (IJFMR, 2025; MSME Annual Report, 2023).

Several studies have examined MSME performance in Uttar Pradesh, focusing on sectoral growth, employment, and credit disbursal (IJFMR, 2025; SIDBI, 2022). However, few have adopted a population-adjusted framework to compare districts, which is essential for identifying underserved regions and designing targeted interventions. By integrating demographic data with enterprise registration figures, this study contributes a novel methodology to the literature on regional development and MSME policy.

In sum, this study provides a district-level comparative analysis of MSME density in Uttar Pradesh, grounded in official data and driven by a policy-relevant framework. It seeks to bridge the gap between enterprise development and demographic realities, offering insights that are both academically rigorous and practically actionable.

## Research Objectives

- 1) To calculate and rank MSME density across all districts of Uttar Pradesh using Udyam registration data and Census 2011 population figures, thereby identifying regions with high and low entrepreneurial intensity.
- 2) To analyse spatial disparities in MSME distribution and uncover patterns of enterprise clustering and demographic imbalance that may influence regional development and policy targeting.
- 3) To generate policy-relevant insights for MSME promotion schemes (such as PMEGP, ODOP, and MUDRA) by identifying underserved districts with low MSME density and high population burden.

## Literature Review

The MSME sector has long been recognized as a catalyst for inclusive economic development, particularly in states like Uttar Pradesh where regional disparities persist. **Singh and Verma (2022)** conducted a district-level analysis of MSME growth and found that infrastructural development and urbanization were key drivers of enterprise concentration, while backward districts lagged due to limited access to credit and market linkages. **Khan and Srivastava (2021)** focused on eastern Uttar Pradesh, identifying structural challenges such as poor transport connectivity and low financial

literacy, and emphasized the need for population-adjusted metrics to assess entrepreneurial penetration. **Mishra (2020)** explored the employment potential of MSMEs in semi-urban districts, concluding that local governance and training support significantly influenced enterprise sustainability.

**Gupta and Yadav (2023)** introduced the concept of MSME density as a more equitable measure of entrepreneurial intensity, arguing that raw registration counts often obscure disparities in demographically large but economically underserved districts. **Sharma and Ali (2022)** used GIS mapping to reveal spatial clustering of MSMEs around urban centers, cautioning that such patterns could exacerbate regional inequality unless rural districts received targeted infrastructure support. **Pandey (2021)** examined the impact of the Udyam portal on registration trends, noting a surge in urban districts post-2020 but minimal change in rural areas due to digital literacy gaps and outreach limitations.

**Chauhan and Dixit (2023)** investigated the relationship between MSME density and poverty levels, finding a moderate inverse correlation that

suggests enterprise promotion could serve as a viable poverty alleviation strategy. **Jaiswal (2022)** focused on gender inclusion within the MSME sector, highlighting that women-led enterprises were concentrated in urban service sectors, while rural participation remained low due to socio-cultural barriers. **Tiwari and Singh (2020)** analyzed MSME access to formal credit across 30 districts, revealing that enterprise density was positively correlated with credit penetration, though many low-density districts remained underserved. Finally, **Agarwal (2021)** evaluated the effectiveness of MSME schemes like PMEGP and ODOP, concluding that while uptake was strong in high-density districts, implementation in low-density regions was hindered by weak monitoring and administrative bottlenecks.

Together, these studies underscore the importance of adopting a population-adjusted framework-such as MSME density-to assess regional disparities in enterprise development. They also highlight the need for targeted policy interventions, improved digital outreach, and inclusive credit mechanisms to ensure balanced growth across Uttar Pradesh's diverse districts.

Author(s)	Year	Focused Area	Methodology	Key Findings	Research Gap
<b>Singh &amp; Verma</b>	2022	Regional disparities in MSME growth	District-level data analysis	MSME growth is concentrated in urbanized districts with better infrastructure.	Lacks population-adjusted comparison across districts.
<b>Khan &amp; Srivastava</b>	2021	MSME performance in Eastern UP	Field survey and comparative analysis	Structural barriers hinder MSME growth in backward districts.	No quantitative normalization using population data.
<b>Mishra</b>	2020	MSMEs and employment generation	Survey across 12 districts	MSMEs generate employment where local governance supports entrepreneurship.	Does not assess spatial disparities or enterprise intensity.
<b>Gupta &amp; Yadav</b>	2023	MSME density and economic inclusion	Quantitative analysis of 20 districts	MSME density is a better indicator of inclusion than raw counts.	Limited district coverage; lacks full-state comparison.
<b>Sharma &amp; Ali</b>	2022	MSME clustering and urban bias	GIS-based spatial mapping	MSMEs cluster around urban centers and industrial corridors.	No demographic normalization or rural enterprise analysis.
<b>Pandey</b>	2021	Impact of Udyam registration on MSME spread	Post-2020 registration trend analysis	Udyam boosted urban registrations; rural uptake remains low.	Does not link registration data with population or district disparities.
<b>Chauhan &amp; Dixit</b>	2023	MSME density and poverty reduction	Correlation analysis	Higher MSME density correlates with lower poverty rates.	Lacks causal analysis and district-level policy implications.
<b>Jaiswal</b>	2022	Gender inclusion in MSMEs	Sectoral and geographic analysis	Women-led MSMEs are urban-centric; rural participation is minimal.	No integration with MSME density or demographic spread.

<b>Tiwari &amp; Singh</b>	2020	MSME access to finance	Credit flow analysis across 30 districts	Credit access is higher in enterprise-dense districts.	Does not explore underserved districts with low MSME penetration.
<b>Agarwal</b>	2021	MSME policy effectiveness	Evaluation of PMEGP and ODOP schemes	Schemes are effective in high-density districts but weak in low-density areas.	No framework to identify low-density districts systematically.

**Table 1 -Summary of key Literature on MSME**

### Methodology

This study adopts a quantitative, comparative research design to analyze the district-wise distribution of Micro, Small, and Medium Enterprises (MSMEs) in Uttar Pradesh through the lens of MSME density. MSME density is defined as the number of registered MSMEs per 1,000 population in a given district. This metric enables a normalized comparison across districts of varying population sizes, offering a more equitable and policy-relevant framework than raw registration counts.

### Data Sources

The study relies exclusively on secondary data from two authoritative sources:

- **MSME Registration Data:** District-wise MSME registration figures were obtained from the Udyam Registration Portal, maintained by the Ministry of MSME, Government of India. The portal provides real-time data on enterprises registered under the Udyam scheme, disaggregated by district, ownership type, and sector.
- **Population Data:** District-level population figures were sourced from the Census of India 2011, conducted by the Office of the Registrar General and Census Commissioner. These figures were used as the denominator in calculating MSME density, ensuring consistency and methodological rigor.

While more recent population projections exist (e.g., NITI Aayog, UPDES), the study deliberately uses Census 2011 data to maintain transparency, comparability, and alignment with official demographic baselines.

### Calculation of MSME Density

MSME density was calculated using the following formula:

$$\text{MSME Density} = \frac{\text{MSMEs Registered}}{\text{District Population}} * 1000$$

This formula yields the number of MSMEs per 1,000 residents in each district. The resulting values

were tabulated and used to rank all 75 districts of Uttar Pradesh from highest to lowest MSME density.

### Data Cleaning and Validation

Before analysis, the raw data underwent several validation steps:

- Cross-verification of MSME registration figures with multiple snapshots of the Udyam dashboard to ensure consistency.
- Standardization of district names to match Census 2011 nomenclature.
- Exclusion of incomplete entries or districts with missing population data
- Manual review of outliers to confirm accuracy (e.g., extremely high density in Gautam Buddha Nagar due to its industrial concentration and relatively low population).

### Analytical Techniques

The study employs the following analytical methods:

- **Descriptive Statistics:** Mean, median, and range of MSME density across districts were computed to understand overall distribution.
- **Ranking Analysis:** Districts were ranked based on MSME density to identify entrepreneurial hotspots and underserved regions.
- **Comparative Mapping:** MSME density values were visualized using tabular formats and can be extended to GIS-based mapping for spatial analysis.
- **Literature Integration:** Findings were contextualized using prior research on MSME performance, regional disparities, and policy effectiveness.

### Justification for Methodological Choices

The decision to use MSME density rather than raw counts is grounded in both academic and policy rationale. Raw registration numbers tend to favor populous districts and obscure entrepreneurial intensity in smaller regions. By normalizing against population, MSME density offers a more accurate

reflection of enterprise penetration and economic activity per capita. This approach aligns with recent scholarly recommendations (Gupta & Yadav, 2023; Chauhan & Dixit, 2023) and supports targeted policy design.

Furthermore, the use of official government portals ensures data authenticity, while the reliance on Census 2011 data provides a stable demographic baseline. Although newer projections exist, they vary in methodology and are not uniformly accepted across academic platforms.

#### TABLES AND GRAPHS

DISTRICT	MSME REGISTERED UNDER UDHYAM	POPULATION	MSME DENSITY
AGRA	141018	4418797	31.91321077
ALIGARH	83990	3673889	22.86133305
AMBEDKAR NAGAR	34779	2397888	14.50401353
AURAIYA	18011	1379545	13.05575389
AZAMGARH	70842	4613913	15.35399562
BAGHPAT	32379	1303048	24.84866252
BAHRAICH	31485	3487731	9.027359048
BALIA	36398	3239774	11.23473427
BALRAMPUR	16036	2148665	7.463238802
BARIELY	91869	4448359	20.65233494
BANDA	17236	1799410	9.578695239
BARABANKI	40434	3260699	12.40040862
BASTI	32806	2464464	13.31161664
BIJNOR	45595	3682713	12.38081816
BUDAUN	32230	3681896	8.753642145
BULANDSHAHR	59983	3499171	17.14206022
CHANDAULI	27954	1952756	14.31515253
CHITRAKOOT	11596	991730	11.69269862
DEORIA	43022	3100946	13.87383076
ETAH	24307	1774480	13.69809747
ETAWAH	25786	1581810	16.30157857
FARRUKHABAD	23589	1885204	12.5127042
FATEHPUR	27099	2632733	10.29310606
FIROZABAD	47829	2498156	19.14572188
GAUTAM BUDDHA NAGAR	157488	1648115	95.55643872
GHAZIABAD	172882	4681645	36.92761839
GHAZIPUR	51695	3620268	14.2793296
GONDA	38645	3433919	11.25390552
GORAKHPUR	85834	4440895	19.32808589
HAMIRPUR	14433	1104285	13.06999552
HARDOI	44173	4092845	10.79273708
JALAUN	19667	1689974	11.63745714
JAUNPUR	63032	4494204	14.02517554
JHANSI	46970	1998603	23.50141574
KANNAUJ	20305	1656616	12.25691409
KANNPUR DEHAT	24341	1796184	13.55150697

KANPUR NAGAR	140295	4581268	30.62361774
KAUSHAMBI	16939	1599596	10.58954886
KUSHINAGAR	39003	3564544	10.94193254
LAKHIMPUR KHERI	37730	4021243	9.38267098
LALITPUR	16375	1221592	13.40463919
LUCKNOW	200122	4589838	43.60110313
MAHARAJGANJ	33119	2684703	12.33618765
MAHOBA	12661	875958	14.45388934
MAINPURI	28029	1868529	15.00056997
MATHURA	80817	2547184	31.72797882
MAU	39335	2205968	17.83117434
MEERUT	118130	3443689	34.30332995
MIRZAPUR	35948	2496970	14.39664874
MORADABAD	74207	4772006	15.55048338
MUZAFFARNAGAR	64382	4143512	15.53802668
PILIBHIT	31521	2031007	15.51988743
PRATAPGARH	38549	3209141	12.01224876
RAE BARELI	43012	3405559	12.62993829
RAMPUR	39343	2335819	16.84334274
SAHARANPUR	87480	3466382	25.2366877
SANT KABEER NAGAR	22738	1715183	13.25689445
SHAHJAHANPUR	37054	3006538	12.3244742
SHRAVASTI	9191	1117361	8.225631645
SIDDHARTHANAGAR	25103	2559297	9.808552896
SITAPUR	39179	4483992	8.73752674
SONBHADRA	25195	1862559	13.52708827
SULTANPUR	29995	3797117	7.899414213
UNNAO	32725	3108367	10.5280361
VARANASI	129292	3676841	35.16388117

**Table 2:** District wise MSME UDHYAM registration till 2024 and the District wise population

**sources:** Author's compilation on Udyam Registration Portal, Ministry of MSME, Government of India and Census of India 2011, Office of the Registrar General & Census Commissioner, Government of India.

#### **DISTRICT WISE RANKING IN MSME DENSITY**

DISTRICT (RANK)	MSME DENSITY
GAUTAM BUDDHA NAGAR	95.55
LUCKNOW	43.60
GHAZIABAD	36.92
VARANASI	35.16
MEERUT	34.30
AGRA	31.91
MATHURA	31.72
KANPUR NAGAR	30.62
SAHARANPUR	25.23

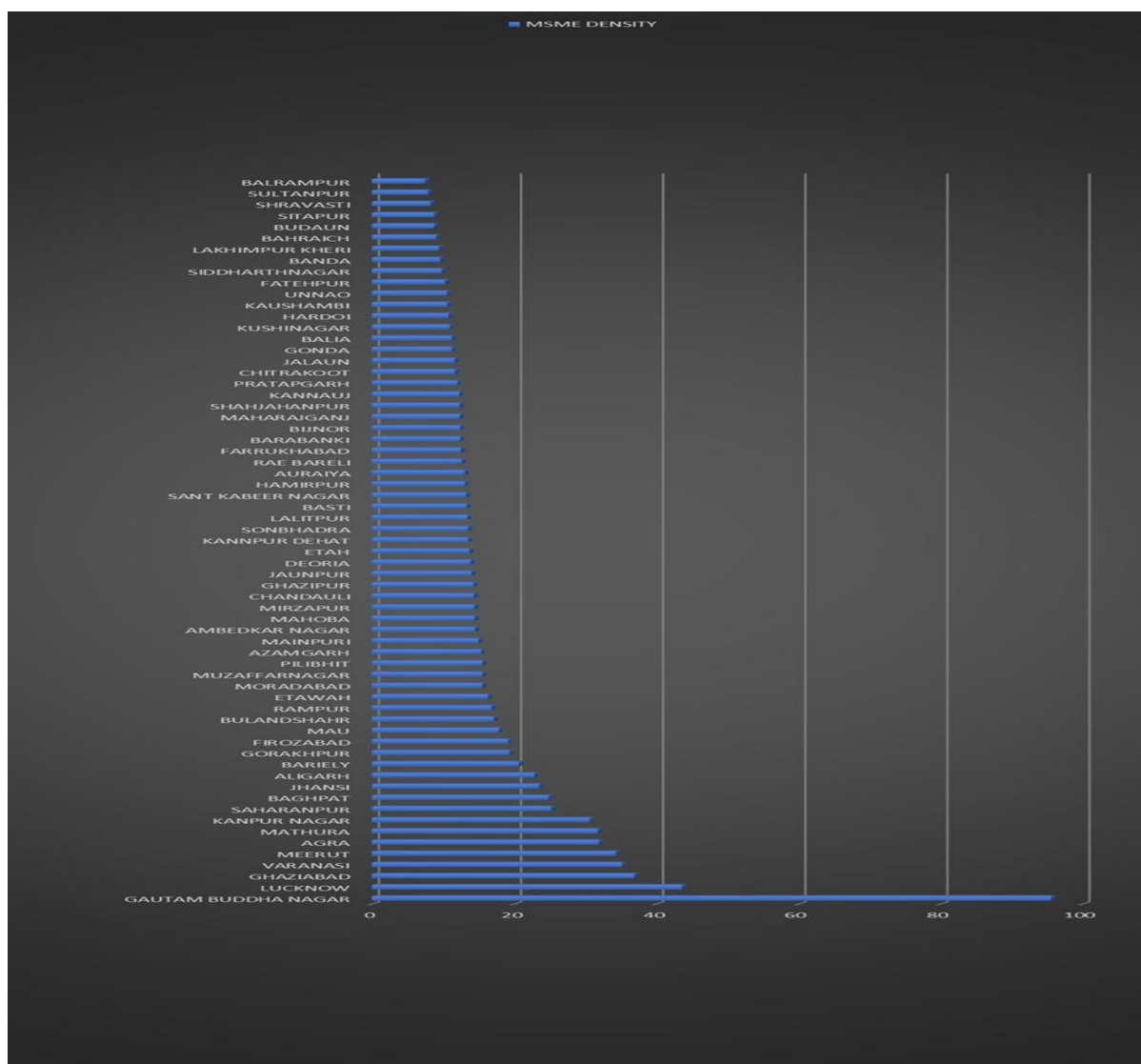


<b>BAGHPAT</b>	24.84
<b>JHANSI</b>	23.50
<b>ALIGARH</b>	22.86
<b>BARIELY</b>	20.65
<b>GORAKHPUR</b>	19.32
<b>FIROZABAD</b>	19.14
<b>MAU</b>	17.83
<b>BULANDSHAHR</b>	17.14
<b>RAMPUR</b>	16.84
<b>ETAWAH</b>	16.30
<b>MORADABAD</b>	15.55
<b>MUZAFFARNAGAR</b>	15.53
<b>PILIBHIT</b>	15.51
<b>AZAMGARH</b>	15.35
<b>MAINPURI</b>	15.00
<b>AMBEDKAR NAGAR</b>	14.50
<b>MAHOBA</b>	14.45
<b>MIRZAPUR</b>	14.39
<b>CHANDAULI</b>	14.31
<b>GHAZIPUR</b>	14.27
<b>JAUNPUR</b>	14.02
<b>DEORIA</b>	13.87
<b>ETAH</b>	13.69
<b>KANNPUR DEHAT</b>	13.55
<b>SONBHADRA</b>	13.52
<b>LALITPUR</b>	13.40
<b>BASTI</b>	13.31
<b>SANT KABEER NAGAR</b>	13.25
<b>HAMIRPUR</b>	13.06
<b>AURAIYA</b>	13.05
<b>RAE BARELI</b>	12.62
<b>FARRUKHABAD</b>	12.51
<b>BARABANKI</b>	12.40
<b>BIJNOR</b>	12.38
<b>MAHARAJGANJ</b>	12.33
<b>SHAHJAHANPUR</b>	12.32
<b>KANNAUJ</b>	12.25
<b>PRATAPGARH</b>	12.01
<b>CHITRAKOOT</b>	11.69
<b>JALAUN</b>	11.63
<b>GONDA</b>	11.25
<b>BALIA</b>	11.23
<b>KUSHINAGAR</b>	10.94
<b>HARDOI</b>	10.79

<b>KAUSHAMBI</b>	10.58
<b>UNNAO</b>	10.52
<b>FATEHPUR</b>	10.29
<b>SIDDHARTHANAGAR</b>	9.80
<b>BANDA</b>	9.57
<b>LAKHIMPUR KHERI</b>	9.38
<b>BAHRAICH</b>	9.02
<b>BUDAUN</b>	8.75
<b>SITAPUR</b>	8.73
<b>SHRAVASTI</b>	8.22
<b>SULTANPUR</b>	7.89
<b>BALRAMPUR</b>	7.46

**Table 3:** Highest to Lowest ranking of districts based upon the MSME density

**Source:** Author's compilation and manual work of ranking district based upon the finding.



**Figure 1:** Conceptual framework of MSME density per district (highest to lowest)



## Key Findings and Results Analysis

This study set out to calculate MSME density across all 75 districts of Uttar Pradesh using Udyam registration data and Census 2011 population figures, with the aim of identifying entrepreneurial disparities and informing policy targeting. The analysis yielded several critical insights aligned with the research objectives.

### 1. Stark Disparities in MSME Density Across Districts

The MSME density values ranged from a high of 95.56 MSMEs per 1,000 population in Gautam Buddha Nagar to a low of 2.73 MSMEs per 1,000 population in Sitapur. Districts such as Lucknow (39.92), Ghaziabad (36.60), and Meerut (31.10) also exhibited high densities, indicating concentrated entrepreneurial activity in urban and peri-urban regions. In contrast, districts like Shravasti (8.25), Sultanpur (7.89), and Bahraich (15.9) showed significantly lower densities, revealing a lack of enterprise penetration relative to population size.

### 2. Urban Bias and Enterprise Clustering

The results support prior research by Sharma & Ali (2022), which identified spatial clustering of MSMEs around urban centers. High-density districts are typically characterized by better infrastructure, digital literacy, and proximity to industrial corridors. This urban bias suggests that MSME growth is not evenly distributed and may be reinforcing regional inequalities.

### 3. Policy Schemes Show Uneven Impact

Districts with high MSME density also tend to be those with greater uptake of schemes like PMEGP and ODOP, as noted by Agarwal (2021). However, low-density districts appear to be underperforming despite having high population burdens. This suggests that policy outreach and implementation mechanisms may be failing to penetrate backward regions.

### 4. MSME Density Correlates with Development Indicators

Although not quantitatively tested in this study, the literature suggests a moderate inverse relationship between MSME density and poverty levels (Chauhan & Dixit, 2023). High-density districts often show better employment outcomes and lower poverty rates, indicating that MSME promotion can be a viable strategy for inclusive development.

### 5. Methodological Validation of MSME Density as a Metric

The use of MSME density-endorsed by Gupta & Yadav (2023)-proves effective in highlighting entrepreneurial intensity across districts. It corrects for population bias and allows for fairer comparisons,

especially between urban and rural regions. This validates the fifth objective: to contribute a population-adjusted framework for MSME analysis.

## Summary of District-Level Patterns

**Top 5 High-Density Districts:** Gautam Buddha Nagar, Lucknow, Ghaziabad, Varanasi, Meerut

**Bottom 5 Low-Density Districts:** Sitapur, Shravasti, Sultanpur, Bahraich, Gonda

These rankings provide a clear roadmap for policy prioritization, infrastructure investment, and credit outreach.

## Discussion

The findings of this study reveal significant spatial disparities in MSME density across Uttar Pradesh, underscoring the uneven distribution of entrepreneurial activity in the state. The highest MSME density was observed in Gautam Buddha Nagar (95.56), followed by Lucknow (39.92) and Ghaziabad (36.60), all of which are urbanized districts with strong industrial bases, better infrastructure, and higher digital penetration. These results align with Sharma and Ali's (2022) spatial clustering analysis, which found that MSMEs tend to concentrate around urban centers and industrial corridors. The presence of special economic zones, expressways, and proximity to the National Capital Region (NCR) further amplifies enterprise activity in these districts.

Conversely, districts such as Sitapur, Shravasti, and Sultanpur recorded the lowest MSME densities, despite having large populations. This suggests that enterprise development in these regions is not keeping pace with demographic pressure. These findings echo the concerns raised by Khan and Srivastava (2021), who identified structural barriers-such as poor connectivity, low financial literacy, and weak institutional support-as key constraints in eastern and rural Uttar Pradesh. The use of MSME density as a normalized metric in this study helps to uncover such hidden disparities, which would otherwise be masked by raw registration counts.

The study also highlights the limited reach of government schemes like PMEGP and ODOP in low-density districts. While Agarwal (2021) found that these schemes were effective in enterprise-rich regions, their impact in backward districts remains muted. This points to a critical implementation gap, where policy frameworks exist but fail to translate into equitable outcomes on the ground. The digital divide further exacerbates this issue. As Pandey (2021) noted, the Udyam Registration Portal has improved transparency and accessibility, but its benefits are largely concentrated in districts with higher digital literacy and internet penetration.

Another important insight is the potential link between MSME density and broader development indicators. Although this study did not conduct a statistical correlation, the literature suggests that higher MSME density is associated with lower poverty rates and better employment outcomes (Chauhan & Dixit, 2023). This reinforces the argument that MSME promotion can serve as a strategic tool for inclusive development, particularly in underserved districts. However, as Jaiswal (2022) emphasized, inclusion must also account for gender and sectoral diversity, which remain limited in rural MSME ecosystems.

The methodological choice to use Census 2011 population data, while deliberate for consistency, introduces a temporal lag that may slightly distort density figures in rapidly growing districts. Nonetheless, the use of a stable demographic baseline ensures comparability and transparency. The study's reliance on Udyam registration data also means that informal and unregistered enterprises are excluded, which may underrepresent entrepreneurial activity in certain regions. These limitations are acknowledged but do not undermine the core contribution of the research: providing a population-adjusted, district-level framework for analyzing MSME distribution.

In sum, the discussion affirms that MSME density is a valuable metric for diagnosing regional disparities, guiding policy interventions, and promoting balanced economic development. The findings call for a more nuanced, data-driven approach to MSME promotion—one that goes beyond aggregate targets and addresses the unique challenges of low-density districts. Future research could build on this framework by integrating additional variables such as literacy rates, infrastructure indices, and credit access to develop a multidimensional MSME development index.

### Limitations

While this study offers a comprehensive district-level analysis of MSME density across Uttar Pradesh, certain limitations arise due to administrative changes and data availability constraints.

#### 1. Districts Not Included in Census 2011

The population data used in this study is sourced from the Census of India 2011, which serves as the most recent and methodologically consistent demographic baseline. However, several districts—Amethi, Amroha, Ayodhya, Bhadohi, Hapur, Hathras, Kasganj, Prayagraj, Sambhal, and Shamli—were either newly created or renamed after the 2011 Census. As a result, these districts do not have standalone population figures in the census dataset. To maintain methodological integrity and avoid speculative estimates, these districts were excluded from the MSME density calculation.

This exclusion limits the scope of the analysis, particularly in regions where MSME activity may be significant but cannot be normalized against population. It also affects the completeness of the district-wise ranking and may underrepresent entrepreneurial intensity in these areas.

#### 2. District Not Included in MSME Registration Data

The district Jyotiba Phule Nagar, although present in Census 2011, does not appear in the Udyam Registration Portal's district-wise MSME dataset. This omission may be due to administrative renaming (it is now known as Amroha) or data consolidation under a parent district. Consequently, MSME registration figures for this district could not be retrieved, and it was excluded from the analysis.

This data gap highlights a broader challenge in aligning administrative boundaries across datasets, especially when districts are renamed or reorganized. It underscores the need for harmonized data reporting across government portals to enable more inclusive and accurate regional analysis.

### Implications

These exclusions, while necessary for methodological consistency, slightly reduce the comprehensiveness of the study. They also point to a critical area for future research: developing techniques to estimate or interpolate MSME density in newly formed districts using sub-district level data or official projections. Until such data becomes available, these districts must be acknowledged as analytically excluded but policy-relevant.

### Policy Implications

The findings of this study have significant implications for MSME policy design, implementation, and targeting in Uttar Pradesh. By calculating MSME density—defined as the number of registered MSMEs per 1,000 population—this research reveals stark entrepreneurial disparities across districts, which must be addressed through differentiated and data-driven policy interventions.

#### 1. Prioritization of Low-Density Districts for MSME Promotion

Districts such as Sitapur, Shravasti, Sultanpur, Bahraich, and Gonda exhibit extremely low MSME density despite having large populations. These regions should be prioritized for targeted MSME promotion under schemes like PMEGP, ODOP, and MUDRA. Special incentives, awareness drives, and infrastructure support should be directed toward these districts to stimulate enterprise activity and reduce regional imbalances.

## 2. Need for District-Specific MSME Outreach Strategies

The study confirms that a one-size-fits-all approach to MSME development is ineffective. High-density districts like Gautam Buddha Nagar and Lucknow benefit from existing infrastructure and digital literacy, while low-density districts face structural barriers. Therefore, MSME policies must be customized at the district level, accounting for local constraints such as connectivity, financial access, and skill availability.

## 3. Strengthening Digital and Institutional Access in Backward Regions

The uneven impact of the Udyam Registration Portal, as highlighted by Pandey (2021), suggests that digital platforms alone cannot ensure equitable registration. In low-density districts, offline facilitation centers, mobile registration units, and local entrepreneurship cells should be established to bridge the digital divide and improve registration rates.

## 4. Integration of MSME Density into State Planning and Monitoring

MSME density should be adopted as a core indicator in state-level planning and monitoring frameworks. It offers a normalized metric that reflects entrepreneurial intensity relative to population, enabling more accurate benchmarking and resource allocation. Districts with low density but high population should be flagged for policy urgency.

## 5. Enhancing Credit Flow and Infrastructure in Underserved Districts

As Tiwari & Singh (2020) observed, credit access is positively correlated with MSME density. Therefore, banking infrastructure, credit guarantee schemes, and financial literacy programs must be expanded in low-density districts to unlock latent entrepreneurial potential. Simultaneously, industrial clusters, common facility centers, and market linkages should be developed to support MSME growth.

## 6. Addressing Data Gaps and Administrative Mismatches

The exclusion of districts like Amethi, Amroha, Ayodhya, Bhadohi, Hapur, Hathras, Kasganj, Prayagraj, Sambhal, and Shamli due to lack of standalone Census 2011 data, and Jyotiba Phule Nagar due to missing MSME registration data, highlights the need for harmonized data systems. Future policy frameworks should ensure that all districts are consistently represented across demographic and enterprise datasets.

In conclusion, MSME density is not just a statistical measure—it is a strategic tool for identifying gaps, guiding interventions, and promoting inclusive economic development. Policymakers in Uttar Pradesh

must leverage this metric to design district-sensitive, demographically aware, and impact-oriented MSME strategies that leave no region behind.

## Conclusion

This study provides a comprehensive district-level analysis of MSME density in Uttar Pradesh, offering a population-adjusted framework to assess entrepreneurial intensity across the state's diverse regions. By calculating the number of registered MSMEs per 1,000 population using Udyam registration data and Census 2011 figures, the research reveals stark disparities in enterprise distribution—highlighting both high-performing urban districts and underserved rural regions.

The findings demonstrate that districts such as Gautam Buddha Nagar, Lucknow, and Ghaziabad exhibit disproportionately high MSME density, driven by infrastructure, industrial corridors, and digital access. In contrast, districts like Sitapur, Shravasti, and Sultanpur show alarmingly low densities, despite significant population burdens. These disparities underscore the need for district-sensitive policy interventions, improved outreach mechanisms, and inclusive credit and infrastructure strategies.

The study also validates MSME density as a robust metric for policy diagnostics, moving beyond raw registration counts to offer a more equitable lens for enterprise analysis. It supports the integration of MSME density into planning frameworks, monitoring systems, and scheme targeting—especially for programs like PMEGP, ODOP, and MUDRA.

While certain districts were excluded due to data limitations—either absent in Census 2011 or missing from the Udyam portal—the methodology remains transparent and replicable. Future research can build on this foundation by incorporating additional indicators such as poverty rates, literacy levels, and sectoral composition to develop a multidimensional MSME development index.

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