Understanding the Growth Pattern of Slums in Pune

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ABSTRACT
Slums have emerged in many quickly expanding cities, including Pune, Maharashtra, India, as a result of urbanization and migration. This study aims to investigate the growth trends of slums in Pune in-depth, offering insight into the underlying socioeconomic, environmental, and regulatory issues that are driving their rise. The research employs a multidisciplinary method, integrating geographical analysis, demographic data, and unstructured interviews to create a more comprehensive picture of slum expansion. This approach is used by the researcher to gain a better understanding of the demographic and spatial aspects of slum expansion. Spatial studies demonstrate slum inhabitants' migration patterns, which have led to land coverage. The study reveals the intricate tapestry of socioeconomic dynamics driving slum construction and spread by considering characteristics such as income levels, education, and employment. Interviews with residents and stakeholders give further light on the lived experiences, ambitions, and challenges that slum dwellers face.
Keywords: Slum growth, Urbanization, Socio-economic factors, Spatial patterns, Urban planning, Environmental factors.

1. INTRODUCTION

Slums are densely populated underdeveloped regions with poor quality housing, poor sanitation, and restricted access to essential services like clean water, healthcare, and education. They occur in diverse forms all over the world and are a clear representation of urban poverty and inequality. Slums are becoming a major issue in India because of the country's increasing urbanization, rural-to-urban migration, and the difficulties in meeting the needs of an expanding population. A slum is usually defined by several elements, including inadequate housing, overcrowding, a lack of essential services, and shaky land ownership. The National Sample Survey Organization (NSSO) in India uses parameters including insufficient access to clean drinking water, poor sanitation, congested living conditions, and non-durable or decaying building constructions to classify slums. The concept of urbanization has emerged as one of the defining features of the twenty-first century, with cities throughout the world seeing unprecedented increases in population and infrastructure. Slum growth in India's cities has been a significant and noticeable urban concern that has coincided with the country's growing urbanization over the past few decades. Slums are a significant aspect of urban life in the country and are characterized by overcrowding, poor housing, limited access to basic facilities, and sometimes insecure legal status. Slums exist in towns and cities all throughout India, although they are more prevalent in bigger and urban areas that are developing more quickly. Some of the most significant slum populations in the country are found in cities like Mumbai, Pune, Delhi, Kolkata, and Chennai.

Talking about Pune, a busy metropolis in Maharashtra's western area, as the city continues to attract people looking for economic possibilities, educational chances, and a better quality of life, there has been a corresponding rise in the formation and extension of slum communities.

The complicated problem of slum growth in Indian cities is examined in the paper Nature of Slum Growth in Indian Cities. It explores the complex nature of slums and sheds insight into the socioeconomic, demographic, and policy-related elements that contribute to their growth. In exploring the different aspects of this issue, this study sets a strong framework for future research and policy interventions targeted at improving the living circumstances of slum dwellers, serving as a significant resource for understanding the complexity underlying slum growth in Indian cities.

This needs a thorough assessment of the underlying reasons, socioeconomic dynamics, and policy consequences that have led to Pune's slum development trends. Pune, known for its educational institutions, thriving IT industry, and dynamic cultural setting, has become a destination for migrants from rural and urban regions. This inflow has created a simultaneous demand for homes, putting enormous strain on the city's

infrastructure. The result is a complicated pattern of official housing sectors contrasted with enormous slum areas, each indicative of the city's deep socioeconomic contrasts. Understanding the growing trends of slums in Pune demands a holistic approach incorporating historical, demographic, economic, and policy aspects. A historical examination traces the origins of slum expansion back to urbanization tendencies, industrialization periods, and historical socioeconomic transformations. Furthermore, a demographic lens sheds insight into the composition of slum dwellers, revealing migratory patterns, age groups, and socio-cultural diversity within these communities.

In addition, Pune's youth-centric orientation, due to its prominence as an educational center, has resulted in a sizable student population. Many students migrate to slum neighborhoods in quest of inexpensive housing, increasing their size and prominence within the urban fabric.

Economic forces have a significant impact on the outlines of slum expansion. While promoting economic progress, Pune's increasing industrial and IT industries have unconsciously contributed to a demand-supply imbalance in the housing market. As a result, informal settlements have emerged as a coping strategy for people who have been barred from the conventional housing market. Another important aspect in understanding the growth patterns of slums in Pune is policy interventions and governance frameworks.

The effectiveness of urban planning, slum rehabilitation programs, and affordable housing regulations all have a substantial impact on the trajectory of slum growth. Furthermore, slum settlements' geographical distribution and durability are influenced by land-use rules, titling concerns, and eviction procedures. The city's economic landscape is characterized by stark contrasts, with pockets of affluence juxtaposed against areas plagued by poverty and deprivation. The inability of a significant percentage of the population to acquire formal housing alternatives has accelerated the growth of slums. The shortage of affordable rental housing and the lack of inclusive urban planning strategies have added to the problem, driving more people into informal settlements. A key aspect has been the lack of ability of urban planning to keep up with the huge influx of migrants. The lack of comprehensive land-use planning, zoning laws, and an emphasis on equitable housing policy has produced ideal ground for the spread of slums. Also, past land tenure concerns and uncertainties in property rights have worsened the situation. Many slum inhabitants may not have legal title to the land they live on, making them vulnerable to eviction. The lack of defined land tenure regulations has hampered efforts to conduct long-term slum rebuilding projects.

Source: Census of India, CSP 2012 and, Slum Atlas Mashal NGO, 2009
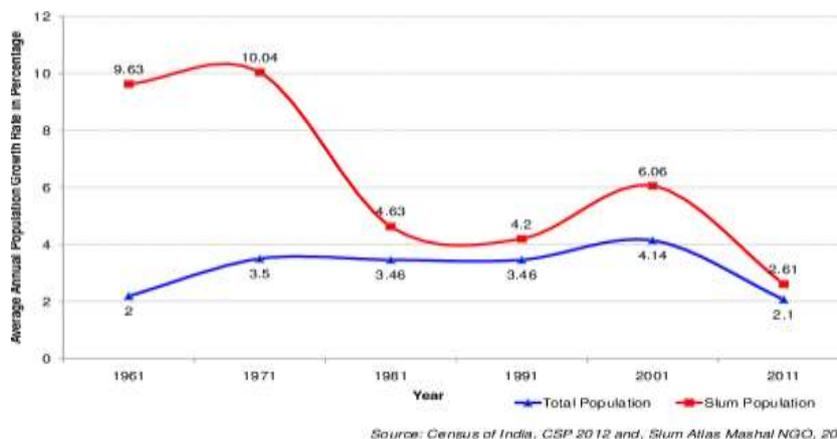
Source: Census of India, 2011 and ESR, 2016-2017

Figure 1. Average Population Growth Rate annually
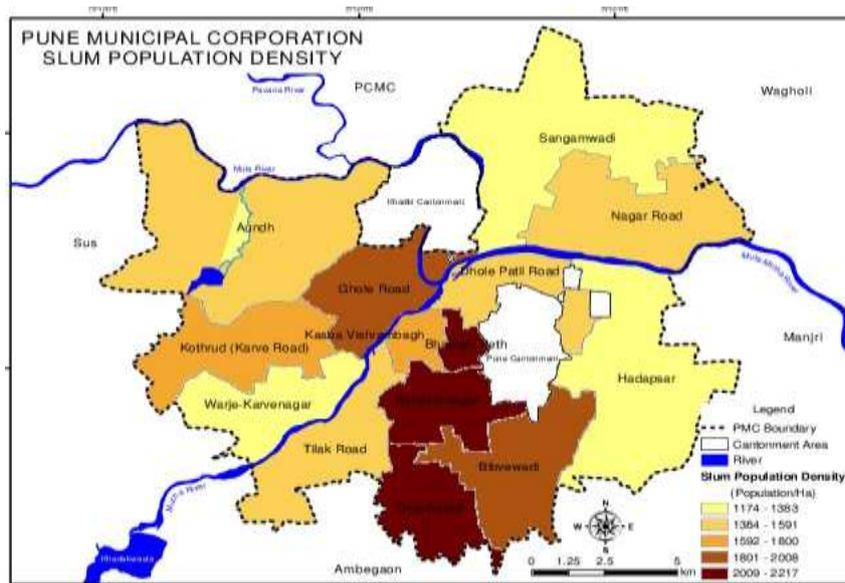
Figure 2. Ward-wise slum Population Density
Source: --https://pmc.gov.in

I. Aim of the study
To understand the slum growth pattern of Pune city.

II. Objectives of the study
1. To know about slums and the parameters for the growth of slums.
2. To identify the study area based on selected parameters and find out growth patterns of slums w.r.t land use.
3. To know about slums in Pune and study the timeline of slum growth in Pune.
4. To find out the reasons for the growth patterns of slums in Pune and implement government measures.

2. RESEARCH METHODOLOGY

Exploratory research attempts to look at a subject with little prior knowledge, offering first-hand information and highlighting crucial variables for future investigation. An exploratory method enables us to identify relevant variables, trends, and potentially related elements for understanding slum growth patterns in Pune. This exploratory research will be conducted as follows: --
1. Conduct a literature review to identify the key factors influencing slum growth in Pune and any existing research on the city's slum growth patterns.
2. Spatial analysis will be done indicating a decadal growth of slums in Pune w.r.t. slum atlas (Springer;1st ed.2021 edition (1 April 2021).
3. Structured and semi-structured interviews with local government officials, community leaders, NGOs, and the residents of the slum.
4. Analyze data: Use statistical methods to detect patterns in slum expansion over time, or use qualitative analysis to identify the key variables impacting slum growth in Pune.

Scope and limitations of the study:
Scope:
1. The study aims to identify the factors that contribute to slum growth and the spatial distribution of slums in the city.
2. The collected data will be analyzed using qualitative and quantitative methodologies to identify patterns and trends in Pune's slum expansion.

Limitations:
1. Data Availability and Quality: The study's accuracy and comprehensiveness rely heavily on the availability and quality of current data sources. Data inaccuracies or gaps could affect the accuracy of the conclusions.
2. Variable Scope: The study may focus on certain variables impacting slum growth, possibly leaving out other important elements.

3. STUDY AREA
The Taljai, Dandekarpul and Janata vasahat, Parvati slums are one of important neighborhoods in Pune, Maharashtra, India. Dandekarpul slum area is important for its nearby to the Mutha River and Shani war

Wada; the establishment of a slum in this area may be connected to urbanization pressures, population increase, and socioeconomic inequities.

Taljai is most known for the Taljai Mata Temple, which has been built on Taljai Hill and has religious importance for the local people. The development of a slum in the region may be attributed to several causes, including rapid urbanization, migration from rural areas, and a lack of inexpensive housing alternatives. Hence by studying this particular slum can help understand the growth patterns.

In Pune, Maharashtra's Parvati neighborhood, Janata Vasahat serves as an illustration of the urban issues that India's increasingly expanding cities. The slum has had substantial population shifts and infrastructure issues over the years. It is distinguished by informal settlements, substandard living conditions, and limited access to essential services.

1.DANDEKARPUL, PARVATI:
Dandekar Pul Slum is a recognized slum colony in Pune, Maharashtra, India. Dandekar pul was established in 1962 and covers an area of 5,335 sq.m. This slum has an estimated population of 8,065 members in 1,613 households. It is a microcosm of the urban issues that millions of people face across the world. This densely populated neighborhood is distinguished by cultural variety, restricted access to basic utilities, and a lively yet marginalized community striving to better their standard of living.

Figure 3. Dandekarpul, Parvati
Source: --https://app.shelter-associates.org/city::Pune

2.TALJAI VASAHAT, SAHAKAR NAGAR:
Taljai Slum is located in Pune, Maharashtra, India. Taljai Vasahat is a slum in Padmavati. It was established in 1970 and covers an area of 55,946 Sq.m. There is an estimated population of 10,760 members and 2,152 households. It is one of the several informal settlements that have emerged in urban areas due to factors such as rapid urbanization, migration, and limited access to formal housing. These settlements are characterized by makeshift, often precarious, housing structures.

Figure 4. Taljai Vasahat, Sahakar Nagar
Source: --https://app.shelter-associates.org/city::Pune

3.JANATA VASAHAT, PARVATI:
Janata Vasahat's roots can be traced back to the mid-20th century, during a period of rapid-fire urbanization in Pune. The understanding surfaced as a response to the growing inflow of settlers seeking employment and profitable openings in the megacity. Janta Vasahat, Parvati was established in 1983 and covers an area of 3,47,015 sq.m. It has an estimated population of this slum is 41,980 members and 8,396 households.

Figure 5. Janata Vasahat, Parvati:
Source: --https://app.shelter-associates.org/city::Pune

4. DATA COMPILATION & ANALYSIS

Case Study-1: Dandekarpul, Parvati:
To understand the growth, a year-wise slum expansion of Dandekar pul slum is studied with the help of Google Maps which helps us to understand the boundary of growth and the number of houses increasing every year. Following were the observations made.
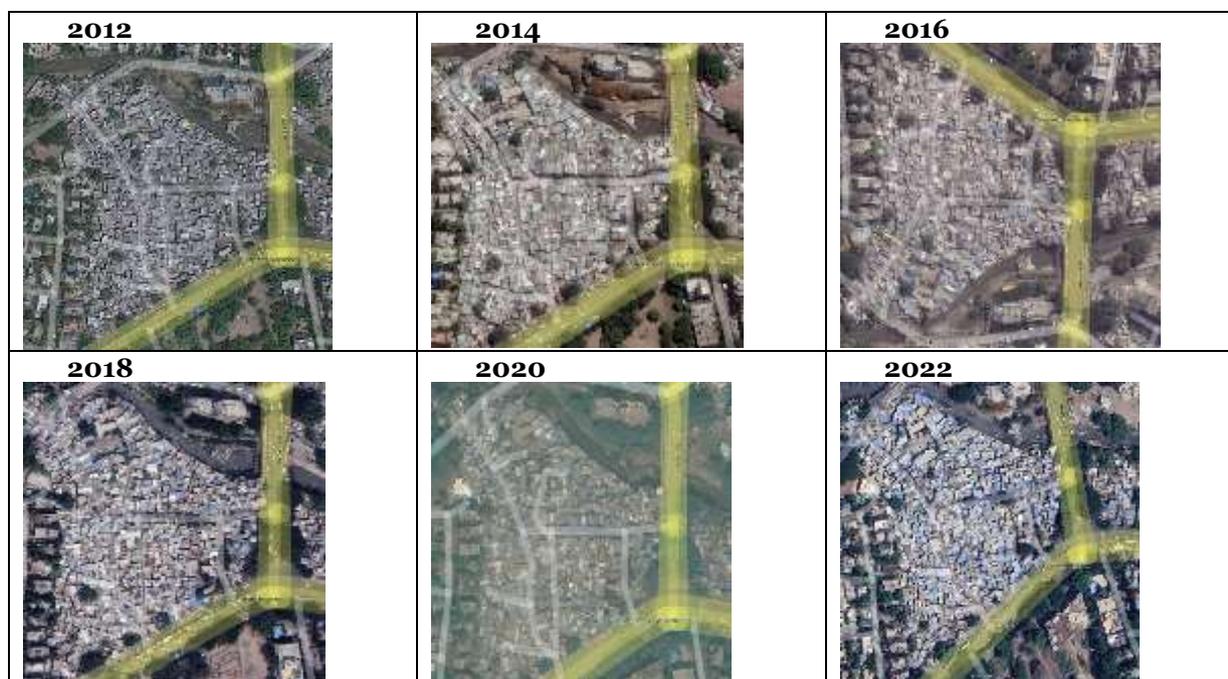

Figure 6. Dandekarpul slums
Source: author

The images identify growth in the settlement from 2012 to 2022. The pictures indicate an informal nature of land use, with buildings often constructed without adherence to formal zoning or planning regulations. This suggests a lack of formalized land tenure and legal status.

Figure 7 photos of Dandekarpul slum
Source: author

Photographs show a variety of slum-based livelihood activities, such as street selling goods, small workshops,

and home-based businesses. The visual record highlights the importance of promoting and formalizing these irregular means of livelihood and highlights the community's economic vitality.

Case Study-2: Taljai Vasahat, Sahakar Nagar:
The Taljai Vasahat, nestled in the heart of Pune, Maharashtra, demonstrates the complications of urbanization in contemporary India. This case study gives insight into the complicated nature of Taljai Vasahat, checking its socio-economic dynamics, structure challenges, and community-driven action.

Figure 8-- Taljai Vasahat, Sahakar Nagar:
Source: author

This analysis of maps over the years shows that initially the slums had more open spaces but with the growth it reduced and overcrowding can be seen.
Comparative photography taken at various points in time could identify some noticeable alterations, enhancements, or deteriorations within the town. This long-term viewpoint offers insightful information on Taljai Vasahat's changing dynamics.
The pictures show a high housing density within the slum areas. Dwellings are closely packed, often sharing walls, and multi-story constructions are common. This suggests a high demand for housing in these localities. This heterogeneity in housing indicates a diverse socio-economic population within the slums.

Figure 9-- Taljai vasahat slum
Source: author

Case Study-3: Janata Vasahat, Parvati:
Janata Vasahat is an important case study in urban development and slum rehabilitation, situated in the Parvati neighborhood of Pune, Maharashtra. This area, like many others in Pune, was created as a result of rapid urbanization and migration from rural areas to urban areas. The Janata Vasahat case study demonstrates the key role of community engagement, development of policies, and cooperation with non-governmental organizations (NGOs) in accomplishing sustainable slum rehabilitation in addition to shedding light on the transformational interventions carried out by PMC.

2012	2017	2022

Figure 10-- Janata Vasahat, Parvati:
Source: author

The images show a transition of slum density from 2012 to 2022. There has been a constant increase in the settlements from the foothill leading to an upward expansion.

One can see the various house typologies in Janata Vasahat through images. This ranges from more permanent if unofficial, constructions to temporary houses built out of recycled materials. These pictures highlight the flexibility and resourcefulness that define slum settlements by capturing the ongoing creativity of the inhabitants in constructing shelters.

The settlement's dwelling unit density and layout are seen in photographs. The difficulties of congested and constrained personal space is illustrated by narrow passageways and closely placed constructions. The necessity for intelligent urban planning initiatives to enhance living circumstances is shown by this graphic portrayal.

4.1 COMPARISON OF THESE SLUMS BASED ON THE FOLLOWING POINTS: --
Density of Population:
1. Janata Vasahat: Displays a high population density, with sparsely spaced dwelling units and a high density of inhabitants per square meter.
2. Dandekar Pul: Like Janata Vasahat, Dandekar Pul has a high population density, which causes traffic and a lack of open space.
3. Taljai Vasahat: Compared to Janata Vasahat and Dandekar Pul, Taljai Vasahat has a significantly lower population density and slightly greater space between individual homes.

Housing Structures:
1. Janata Vasahat: A region mainly defined by improvised and semi-permanent house constructions, frequently built from a range of materials.
2. Dandekar Pul: Similar to Janata Vasahat, Dandekar Pul has a mixture of temporary and semi-permanent houses, indicating a lack of official housing choices.
3. Taljai Vasahat: Displays an identical pattern of housing structures, with an abundance of temporary homes and semi-permanent buildings.

Infrastructure and Amenities:
1. Janata Vasahat: Lack of access to formal infrastructure and necessities, with communities depending on unofficial networks for power, water supply, and sanitation.
2. Dandekar Pul: Similar challenges to known infrastructure exist in Dandekar Pul, where inhabitants frequently rely on neighborhood traders and shared amenities.
3. Taljai Vasahat: In recent years, there have been slight enhancements in Taljai Vasahat's access to necessities, mainly due to community-led initiatives.

4.2 COMPILATION OF INTERVIEW INFERENCES
As a result of nonstop urbanization and migration patterns, we've seen modest growth in population in both areas during the former ten times. The main causes of slum expansion in these regions include fast urbanization, migration from pastoral to civic areas, a lack of access to formal casing, and profitable injuries, which beget the development of informal agreements.

Both areas (Janata Vasahat-Parvati & Dandekar Pul) contain a large chance of low-income residents and a high proportion of workers who are employed in unorganized diligence and informal frugality. The position of

education is frequently lower, and access to healthcare services may be limited.

Inadequate living conditions, a lack of suitable sanitation facilities, irregular availability of clean water, and restricted access to healthcare and educational services are problems that residents of both slums must deal with. To determine and analyze the geographical distribution of slums in these locations, we made use of geospatial data and technologies. This enables an educated and focused approach to infrastructure development and urban planning.

5. INFERENCE DRAWN & FINDINGS

Overall, the interview questions show a thorough and erudite method for understanding and dealing with the slum expansion in Taljai Vasahat and Dandekar Pool. They demonstrate an understanding of the complexity of the problem and a desire to address urban development diversely and cooperatively. The questions asked show an awareness of the complexity of the problem and a dedication to inclusive, sustainable, and flexible urban design methods.

Question about plans and strategies signals a forward-allowing mindset in urban planning. This indicates an understanding that urban development is an ongoing process, taking rigidity and a visionary approach to address evolving challenges and opportunities. Pictorial analysis revealed distinct clusters of slum settlements, primarily located on the perimeters of Pune. This concentration indicates a clear spatial pattern influenced by factors similar to the availability of urban amenities and economic openings.

Interviews with slum residents and community leaders constantly stressed rural-to-urban migration as a primary driver of slum growth. This inpouring of settlers seeking better profitable prospects has contributed significantly to the expansion of informal settlements. Both interviews and literature review underlined the inadequate provision of essential services in slum areas. Issues similar to unreliable access to clean water, poor sanitation installations, and limited healthcare services surfaced as intermittent themes.

A visual survey of slum regions revealed a variety of dwelling forms, from temporary homes to more permanent, unofficial, buildings. This diversity in socioeconomic standing and status among slum inhabitants is reflected in this diversity. Interviews with slum dwellers indicated a high impact of employment in the informal sector, including jobs doing household work, construction work, and street vending. This emphasizes how crucial the informal economy is to maintain livelihoods in slum areas.

Various government initiatives for slum rehabilitation and improvement were discovered in the literature study. However, conversations with community leaders revealed implementation flaws, such as poor project execution and difficulties obtaining benefits. Involving slum dwellers in planning and decision-making is emphasized in interviews with community leaders. To ensure that interventions are targeted to the particular needs and goals of the communities, it is important to use a participatory approach. Based on knowledge of the growth patterns of slums in Pune is given by the combination of graphical analysis, interviews, and literature study. These results show how socioeconomic, demographic, and policy factors interact in a complicated way to affect slum dynamics in the city. They also emphasize the significance of comprehensive, community-centered approaches to urban planning and slum development.

6. Conclusion:

Observing the growth trends of slums in Pune, it is clear that a variety of factors have combined to make these unofficial settlements essential parts of the urban environment. Through the use of graphical analysis, in-depth interviews, and a thorough assessment of the literature, this extensive investigation has shown a complex web of socioeconomic, demographic, and policy factors that contribute to the growth of slums.

Slum settlements naturally arose as a result of the constant stream of migrants drawn by the economic possibilities and improved living circumstances in metropolitan centers same is happening with Pune. The significant variation within these communities and linear growth is a notable aspect of Pune's slum environment. sanitation issues are made inferior by the lack of basic utilities, emphasizing the urgent need for focused measures to close this gap.

As revealed by the interviews, an essential component of livelihoods in slum areas is the informal sector. Many locals rely heavily on jobs in the unorganized economy, including domestic work, construction labour, and street hawking. Understanding this sector's importance is essential for developing policies that support slum dwellers' economic empowerment and sustainable livelihoods. Urban development plans need to be inclusive and consider the diversity and unique requirements of slum populations. The importance of community involvement should also be emphasized, enabling locals to actively participate in decision-making processes that affect their lives. In addition, new laws are necessary to safeguard land tenure rights, provide access to essential services, and support sustainable livelihoods in slums. Collaborations between governmental, non-governmental, and community-based organizations are essential for combining resources and experience for slum rehabilitation programs that are more successful. Furthermore, the growth patterns of the slums in Pune serve as a reflection of the urban issues that face the world's increasingly expanding cities. Understanding the intricacies of slum dynamics provides the way for more informed, compassionate, and effective responses.

This study provides information about the development trends of slums in Pune, and many directions in this

area may be explored further. An in-depth look at the trends of slum expansion might be obtained by conducting longitudinal research over an extended period. This would make it possible for researchers to monitor changes, evaluate the success of methods, and spot new trends. Comparative studies with other Indian cities or major cities across the world experiencing similar slum dynamics would provide insightful cross-contextual information. The potential for inclusive strategies in urban development would be highlighted by looking at successful examples of community-led projects within slums, such as nonprofit organizations and cooperative companies. Research on the psychological well-being of slum dwellers, including coping strategies and mental health issues, may provide insight into all-encompassing methods for raising quality of life. What new technologies, such as data analytics, the Internet of things, and AI, may be used to improve service delivery in slums?

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