

Cities and Fertility: Timing Health in Urban Lifestyles

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Abstract

Urbanization is inevitable in today's world. With the growing population and development comes the responsibility to maintain the quality of life for its people. The economic growth and cost of living created an urgency and aspiration in people to keep up with the maximum level of prosperity that an urban city can offer. This gave birth to the phenomenon of 24-hour cities to tap into the potential of a night life, characterized by night-time activities, round-the-clock entertainment and services.

When comparing the fertility rate and trend of urbanization in the world, it is observed that the fertility decline has accelerated from mid-1900s which coincides with the time of rapid urbanization. Thus, the study tries to understand the indicators of a 24-hour city and its effect on fertility. Although this trend is associated with economic growth, and development, its effects on fertility and population decline are concerns that has not been researched to its full extent. The study tests this hypothesis with case studies of New York, London, Bangalore and Tokyo. The study analyses the complex relationship between urbanism and fertility in a 24-hour urban environment.

Keywords

24-hour cities, fertility, reproductive health, urban environment, population

1. Introduction

The emergence of "sleepless cities" or 24-hour cities is a recent phenomenon in the modern urban environments which is characterized by night-time activities, round-the-clock entertainment and services. Literatures provide several indicators but do not define 24-hour cities judiciously hence this project attempts to provide the same.

This study tries to understand the indicators of a 24-hour city and its effect on fertility through four case studies, New York, London, Bangalore and Tokyo, considering factors such as work-life balance, lifestyle, mental and physical health, access to healthcare services, noise and light pollution, social and cultural influences, infrastructure, and economic opportunities.(Khorsand et al., 2020) Although this trend is typically associated with economic growth, prosperity, and development, its effects on fertility and population decline are still very real concerns. Women play a significant role in metropolitan economies and communities, and as such, they may face particular possibilities and problems in 24-hour settings that affect their decisions about personal, familial, and professional lives. Fertility is a multi-faceted essential criterion to be studied for any environment as it alters the demographic characteristics of a region as well as affects the nucleus of a family (Tadesse & Headey, 2011). The study tries to understand the concept of fertility from the city level perceptive, while also considering the fertile female population.

The study analyses the complex relationship between urbanism and fertility in a 24-hour urban environment. This study can form a foundation for further urban planning initiatives, policy interventions and legislations for the stakeholders involved.

1.1. Need for the Study

With the growing population and development comes responsibility to maintain the quality of life and livability of its people. An ultra-urbanized phenomenon which has been sought after is the 24-hour cities. The concept of "sleepless cities" refers to urban environments where activity and services are available around the clock, blurring the distinction between day and night. This trend is more prevalent in major metropolitan areas and is often associated with economic vibrancy, cultural richness, and increased convenience for residents and visitors. 24-hour cities provide economic growth and opportunities. The cities often offer a vibrant social and cultural scene, with numerous entertainment options and nightlife activities. Also, 24-hour cities tend to attract diverse populations and offer a wide range of employment opportunities across different industries (Costa, 2001).

Overall, while 24-hour cities offer numerous benefits and opportunities, the impact on fertility is influenced by a complex intermix of social, economic, environmental, and cultural factors. Further research is needed to better understand the relationship between urban environments and fertility outcomes, and to form inform policy interventions aimed at supporting reproductive health and sustainable population growth in urban environments.

Fertility in men and women has frequently been analyzed in a biological and anatomical sense from the medical community. There are multiple definitions for fertility and infertility in today's world. One of which defines fertility as the capacity to conceive and produce offspring (Ki Yoon & Young Youn, 2005). While the perceptions are true, for an urban planner it is imperative to understand fertility from a demographic annotation. This study has defined fertility as the phenomenon that has the potential to cause demographic changes in a region with a population surge and which can lead to physical, mental and environmental alteration in the society and its inhabitants.

The total fertility rate (TFR), defined as the number of children born per woman living to the end of childbearing years (15–49 years), has been decreasing dramatically for decades in many countries. By 2050 and 2100, respectively, 77% of predominantly high-income countries and 93% of all countries will have a TFR below the replacement level of 2.1 children per woman. (Vollset et al., 2020; Dao et al., 2021). This evolution of the world population growth rate will cause demographic changes with profound societal implications. The dramatically increasing ratio between elderly people and young adults already affects historical social norms with major economic ramifications (Mester, 2018).

While comparing the total fertility rate projection graph, it is observed that the decline has accelerated from 1970s which is around the time of rapid urbanization began and the pattern of growth is nearly inversely proportional to the TFR. Hence, it is worth studying the relationship between rapid urbanization brought in from 24-hour environments and the factors causing the decline of fertility.

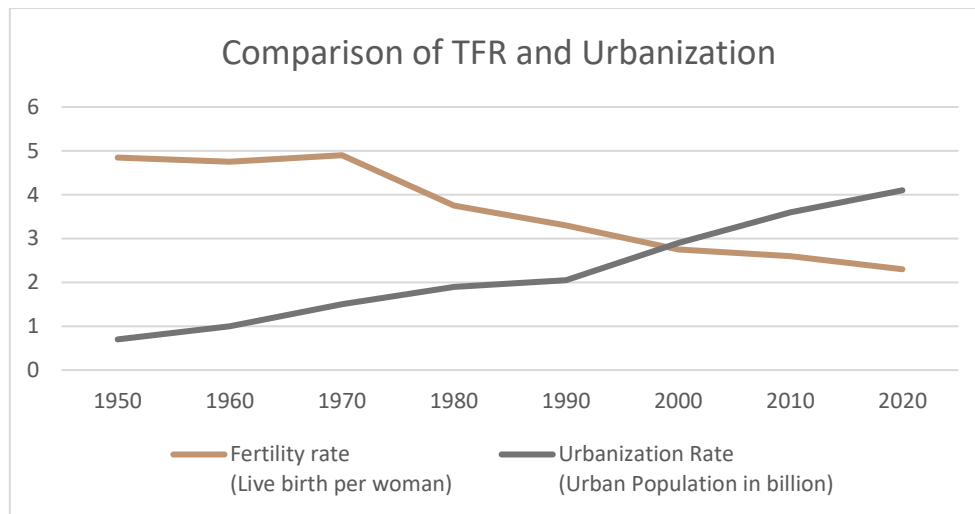


Figure 1. Comparison of World Total Fertility Rate and Urbanization. Source: Author (Derived from data by Department of Economic and Social Affairs, Population Division).

2. 24-Hour Cities

The term '24-hour city' is not a new concept. In the 1980s, the American sociologist Murray Melbin drew an analogy between the scarcity of land and the scarcity of time, turning the latter into the new development in the urbanization process (Khorsand et al., 2020). After a few more years, this phenomenon was simultaneously witnessed and studied in different parts of the world.

Beyond the economic boost that they provide to the city, it has a social dimension that has been relatively unexplored in the urban planning realm (Costa, 2001). This project tries to provide a definition for the 24-hour city with that in mind and also studies real-life cases to tabulate its economic, social, environmental and physical characteristics.

2.1. Features of a 24-hour city

The 24-hour city has positive and negative attributes to its name. Some positive features include better educational facilities and literacy rate, greater career growth, greater gender ratio in the workplace even though it has negative impacts like delayed marriage for both genders due to personal and professional needs, disturbed family planning with parents becoming pet parents, decreased human relations and interactions and also increasing crime rates. The rate of living and expenditures also increases in a 24-hour urban environment (Bala et al., 2021). The area also gives way to greater traffic and congestion, higher levels of noise and air pollution and consumption of alcohol and other drugs (Gaskins et al., 2019).



Figure 2: Features of a 24-hour city. Source: Author (derived from literature).

2.2. Case Regions

The case studies of London, New York, Tokyo and Bangalore has been conducted to understand the concept of 24-hour cities better and evaluate the indicators of a 24-hour city. Further, other indicators have been identified through general reading and tabulated for analysis. Three well-established and an emerging 24-hour city are considered to include a diverse set of indicators to analyze. They have been exhibiting 24-hour city characteristics since the introduction of urbanization. The cities have been selected in such a manner that the areas are spread out across the globe. The cities have higher quality of life and are well-known economic hubs of commercial activities.

2.2.1 New York

New York emerged as a 24-hour city in the early 20th century and earned its reputation as one in the mid-20th century. By the end of 1980s, New York was advertised as an all-nighter. The city organizes a plethora of cultural events and performances during the night-time for entertainment which garners youth attention. This increases the tourists in the city, leading to economic growth. This increases job opportunity and higher living expense in the city (Laquatra & Boggess, 2004).

2.2.2 London

London came to be known as a 24-hour city from the 1990s. The rise of parties, clubs and pubs in areas like Soho contributed to a fuller night-life. The number of people who enjoy London at night is increasing and the market is growing steadily as during the day. The changing lifestyle in London increases the demand for economy and infrastructure to work 24-hours (Greater London Authority, 2018).

2.2.3 Tokyo

The evolution of Tokyo is gradual and came later compared to London and New York. From the early 21st century, Tokyo began to grow as a strong economic power utilizing its night-activities. The city has attracted several businesses and owns a strong transportation network. The commercial businesses and stores also run 24-hours to provide the basic utilities for its all-nighters (Dimmer, 2017).

2.2.4 Bangalore

Bangalore is a new addition to the 24-hour city world. Bangalore started developing from the mid-21st century into an IT agglomerate. The city outsourced into a cosmopolitan with a diverse economy and night-life. The data regarding family planning, education and effects of shift work and job pattern are more

profoundly discussed for Bangalore compared to the other 24-hour cities. This might be due to the recent development and knowledge gain in this niche (Saba.I & Kishore, 2014).

Table 1: Indicators of 24-hour city. Source: Author (derived from literature).

New York ([21])	London ([8],[20])	Bangalore ([16],[22])	Tokyo ([6],[11])
Economic growth	Consumption	Job Pattern	Recreation
Tourism	Pubs and Bars	Shift Work	Public Spaces
Reduction of green space	Food Consumption	Recreation	Domestic Capital
Increase of activities	Waste generation	Public Spaces	Development
Housing Unaffordability	Domestic Capital	Restaurants	Increased income
Increased living expense	Economic Boost	Green Space	Public Services
Diverse group of people	Transport networks	Increase of activities	Taxis
Cultural diversity	Public Services	Air pollution	Walking space
Interaction of people	Decreased Security	Mental Health	Delivery of errands
Education	Night Crime	Work Pressure	Traffic
Entertainment	Physical Health Problems	Family planning	Pubs and Bars
Pubs and Bars	Air pollution	Reduced children	Alcohol Consumption
Alcohol Consumption	Noise pollution	Delayed marriage	Food Consumption
Food Consumption	Increased infrastructure	Physical Health Problems	Waste generation
Waste generation	Traffic	Increased healthcare cost	Increase of activities
Air pollution	Road Crowd	Noise pollution	Commercial businesses
Noise pollution	Parking space reduction	Disruption	Entertainment
Family planning	Job Pattern	Consumption	Recreation

A total of 52 major indicators of the 24-hour case cities were selected and each indicator was studied in detail and scored based on occurrence, relevance and similarity to select 11 core features of a 24-hour city. They were noted to be job pattern, consumption pattern, physical health detriments, mental health detriments, public Services, family planning views, increased traffic, security, environmental degradation and affordability and quality of life.

3. Fertility

3.1. Trend of fertility in case regions

The fertility rates of the four case regions are not overtly discussed in literatures. Reports and articles published by established sources are referred to understand the trends of fertility.

For the case of New York, there have been several studies published for the declining fertility rates in the U.S. The United States has witnessed around 50% of decline in birth rates between 1950 and 2021, from

25 births per 1,000 people to 12. This is true for New York, with a TFR of 1.6 in 2021. (Center for Disease Control and Prevention, 2021)

Like all developed countries, London has also been facing with a declining birth rate since the 2000s. The total fertility rate fell to 1.49 children per woman in 2012 from 1.55 in 2022. (Revisiting the Fertility Transition in England and Wales, 2020)

Japan has been under scrutiny for decreasing young population since 2000s. The total Japanese population has fallen by about 250,000 every year since 2010. In Japan, Tokyo has the lowest TFR at 1.13 (Dimmer, 2017).

In Indian context, there has been a decline in the female fertility in Bangalore city since 2010. As per the National Health Survey, Bangalore city has a fertility rate of 1.7 while Karnataka has a rate of 2, which is lower than the national average.

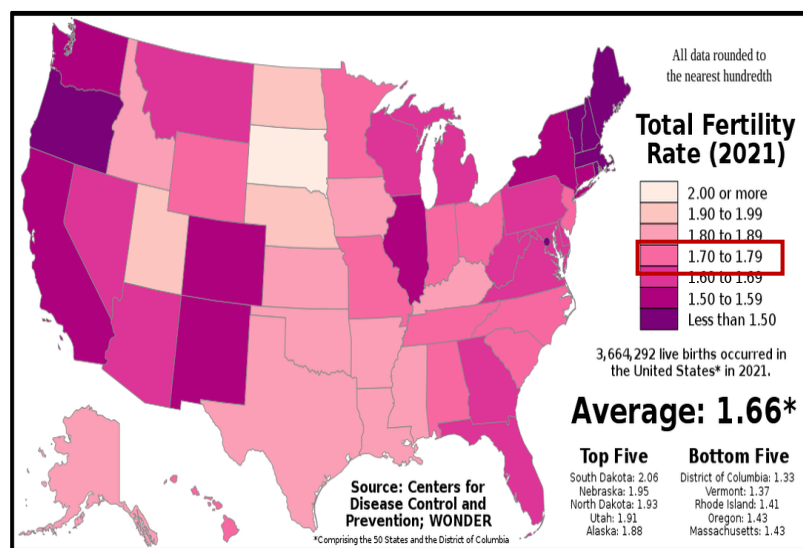


Figure 3: Map highlighting lower fertility in New York. Source: Center for Disease Control and Prevention, WONDER.

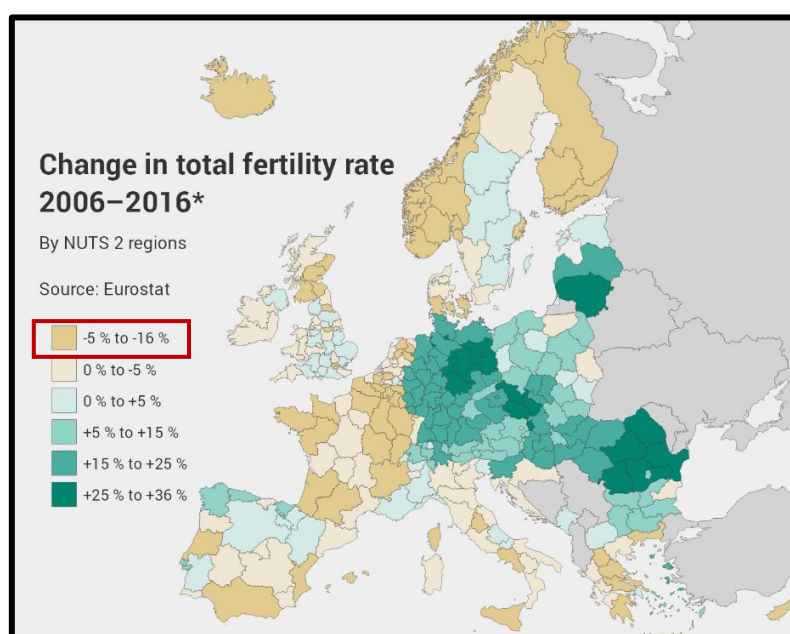


Figure 4: Map highlighting lower fertility declining fertility in London. Source: Financial Times.

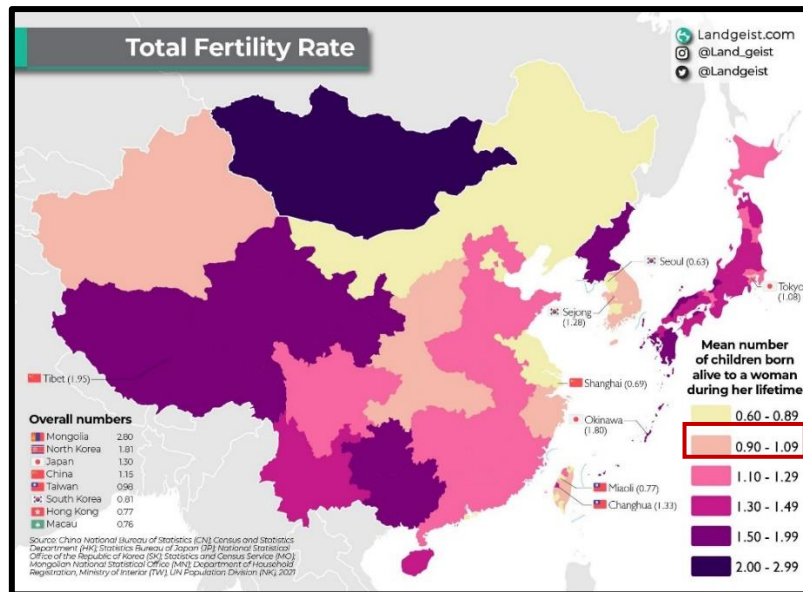


Figure 5: Map highlighting lower fertility declining fertility in Tokyo. Source: The Japanese Pregnancy Rotation System.

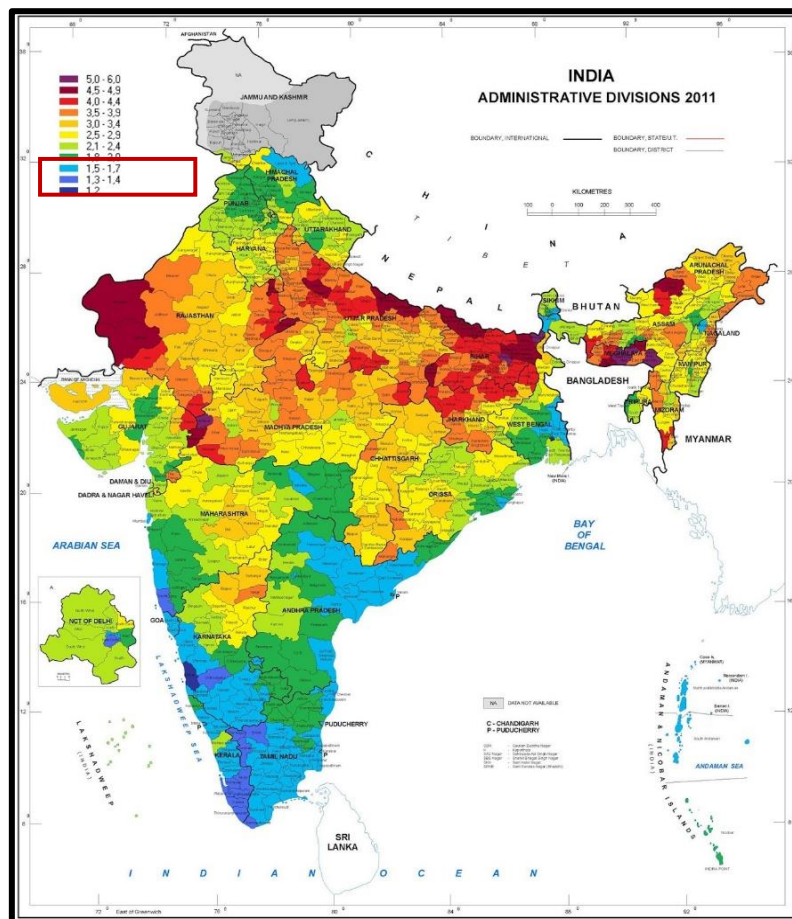


Figure 6: Map highlighting lower fertility declining fertility in Bangalore. Source: Statista.

From the literatures, it is evident that the case regions have lesser fertility rate compared to other cities around it. This can be indicative of lowering fertility as the urbanization evolves into a 24-hour city. The factors contributing to the declining fertility in the case regions have been studied and tabulated.

Table 2: Factors causing fertility decline in case regions. Source: Author (derived from literature).

New York ([15])	London ([9],[10])	Bangalore ([22],[24])	Tokyo ([11],[13])
Delayed parenthood	Cost of living	Work-life balance	Delayed parenthood
Job opportunities	Lifestyle	Job opportunities	Delayed marriage
Work-life balance	Work-life balance	Work pressure	Work-life balance
Education	Family planning	Alcohol	Job opportunities
Cost of health care	Better health care	Junk food	Work pressure
Changing social norm		Lifestyle	Reduced need
		Family planning	Migration
			Family planning

Through a similar procedure, the factors effecting the decline of fertility can be summarized as stress levels, quality of life, family planning, reduced reproductive health, urban lifestyle and other environmental factors.

4. Relationship between 24-Hour Cities and Fertility

The relationship between cities and female fertility is a complex and multifaceted topic. They cannot be addressed in a two-dimensional scope, but an attempt has been made to understand and correlate the indicators of a 24-hour city from case studies of New York, Tokyo, London and Bangalore.

Through the mapping, each indicator is found to have a direct or indirect relation to the factors identified, this strengthens our hypothesis. The mapping clearly suggests a connection between indicators of a 24-hour city and factors affecting fertility. The lifestyle, working hours and air quality were found to be the most repetitive connection from the literature review.

Further, environmental factors like particulate matter, noise pollution and air pollution were also considered an important feature of a 24-hour city that affects its fertile residents. From analysis, mental stress and work-life balance go hand in hand, with one increasing the other and leading to poor quality of life.

In 24-hour cities, consumption, decline of mental health, traffic and domestic capital are also severe characteristics that contribute to the factors affecting female fertility.

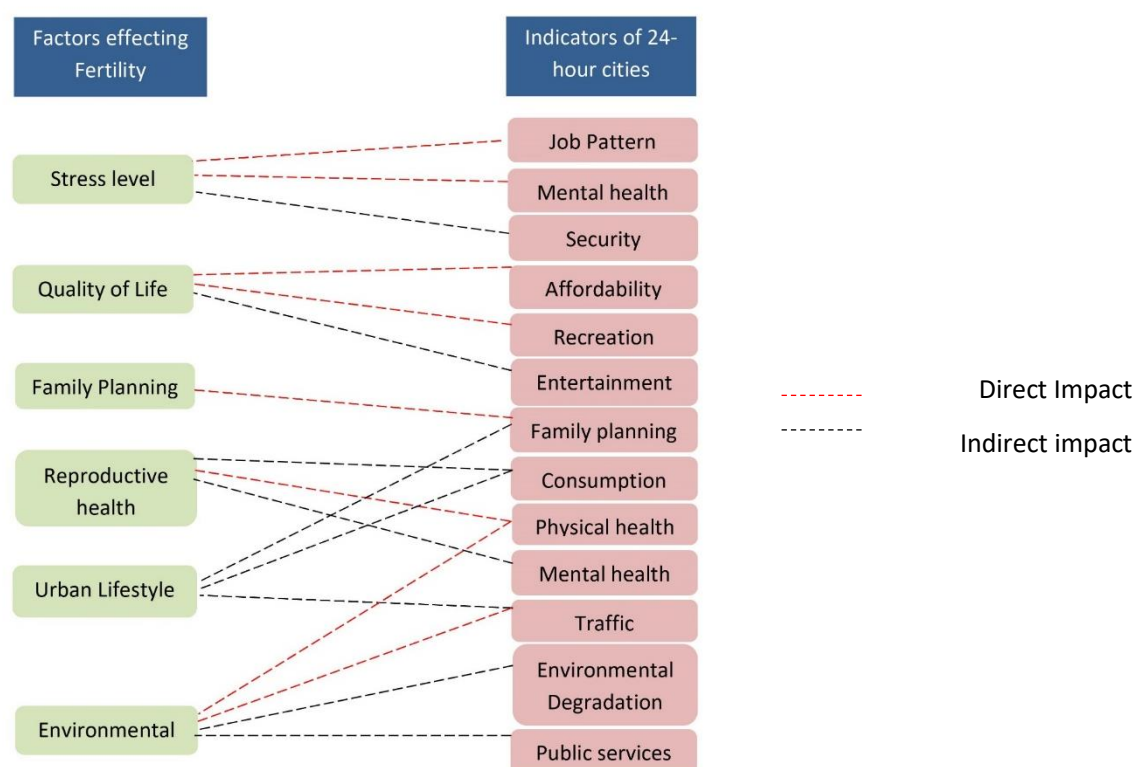


Figure 7: Mapping of 24-hour cities and fertility. Source: Author.

5. Conclusion

The study underlines that the changes in dynamics in an urban setting has impacts on fertility. A 24-hour environment provides several positive impacts on people and development but there are underlying impacts that need to be addressed for the inclusive and sustainable development of a city.

The study shows that all the four case regions considered of 24-hour environments demonstrate a lower fertility rate compared to less urbanized cities. The factors effecting the depleting fertility rates are found to follow a similar pattern in all case regions. The mapping of the indicators of a 24-hour city and fertility is comprehensive but solidifies the hypothesis of its effect on declining fertility rates.

There has not been enough research on the 24-hour environments beyond its economic impacts and its social implications has to be discussed further to form informed policy interventions in appropriate stages. There needs to be an in-depth study to suggest policy interventions through studies with case regions of varied characteristics for intersectionality. This project can form a foundation for further research and study on urban environments and their effect on fertility.

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