

**TOPIC: -  
URBAN SPRAWL.**

**PAPER NAME: - URBAN GEOGRAPHY  
SUBJECT: - GEOGRAPHY  
SEMESTER: - M.A. –IV  
PAPER CODE: - (GEOG. 401)  
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## **URBAN SPRAWL.**

### **INTRODUCTION: -**

The history of urbanization is yet unwritten, only a small part of the preliminary work has been done. The history of urbanization dates back from the ancient times of the origin of cities (during what is referred as the first phase of urbanization in the world). In this long span, what was witnessed was the evolution of cities from ancestral form (the village) to small port /rail based towns and to the present day cities with skyscrapers adorning landscapes. By the end of the 20th century, urban growth was rapidly pushing cities further and further out and the cities were expanding spatially while in the 21st century the automobile revolution changed the dominant form of city living. This stretched form of the city with low density at the periphery is sometimes called sprawl. Since sprawl is one name for many situations, there has been no clear consensus regarding what exactly 'urban sprawl' is or how it is caused. Although many scholars tried to come up with explanations of the term, the central component of most definitions and most people's understanding of sprawl is this: Sprawl is the spreading out of a city and its suburbs over more and more rural land at the periphery of an urban area. This involves the conversion of open space (rural land) into built-up, developed land over time.<sup>1</sup>

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### **DEFINITION AND CONCEPT: -**

Urban growth is a critical cause of Sprawl - as cities get bigger, they expand around their Peripheries. But sprawl is more specific in nature, it is defined as '*uncoordinated growth*': the expansion of a community without a real concern for consequences of poor environmental conditions or environmental impact.

Urban sprawl is also known as '**horizontal spreading**' or '**dispersed urbanization**'. The uncontrolled and disproportionate expansion of an urban area into the surrounding countryside, forming low-density, poorly planned patterns of development is described as urban sprawl. Appearing both in high-income and low-income countries, urban sprawl is often characterized by a scattered population who live in separate residential areas, with long blocks of houses and poor access, often population is over dependent on motorized transport and the place is missing well defined hubs of commercial activity.(UNICEF, 2012) 'Sprawl' is also a highly political word, framing debate over the loss of agricultural land and wildlife habitat, the costs of automobile use, and appropriate design and policy solutions (Duany, Plater-Zyberk and Speck, 2000). It is also described as a dispersed, low-density development on the edges of urban areas, characterized by fragmented and ribbon development. It is often associated with edge cities and with bland, car-oriented and functionally segregated landscapes. Although sprawl is often associated with a lack of planning or a failing planning apparatus, there are some authors who suggest that significant government policies and public agencies, influencing decisions about road construction, housing financing and zoning, have shaped the rise of sprawling cities (Wolch, Pastor and Dreier, 2004). In most cases, urban sprawl is regarded as one of the major effects of urban growth. As a land-use phenomenon, it is typically characterized in the following way in American literatures.

- Excessive land consumption
- Low densities at peripheries in comparison with older centers
- Lack of choice in ways to travel
- Fragmented open space, wide gaps between development and scattered appearance
- Lack of choice in housing types and prices
- Separation of uses into distinct areas

- Repetitive one story development
- Commercial buildings surrounded by acres of parking and
- Lack of public spaces and community centers

There are two counterviews as far as sprawl is concerned- While some argue that urban sprawl is bad, harmful and a threat to ecology and environment, others argue that it is something inevitable and thus may even be encouraged.

Until recently, the problem of urban sprawl was restricted to the developed world. But it also exists in developing countries although in different form. For developing countries sprawl is largely a result of necessity- people move to the city in search of better employment and opportunity (Menon, 2004). This leads to an increase in size well beyond the limits of the city. In contrast, sprawl in developed countries is a result of higher incomes, which in turn result in people preferring (and affording) to live in the outskirts of the city, with open spaces at reasonable distances from cities. Depending on the context in which they occur, causes and patterns of sprawl are different, solutions proposed are similar with some modifications. Prior needs and economic viability should be taken into consideration for best results. 'Concentrating growth' is what many planners recommend as a measure against sprawl for a sustainable city.

Simply put, 'Sprawl' is just spreading out of a city and its suburbs over surrounding rural land at the periphery of an urban area while in reality it is a complex phenomenon that mean different things in different areas and conditions. Early uses of the term suggest that it consumes excessive space in an uncontrolled, disorderly manner leading to poor distribution and loss of open spaces, high demand for transportation, and social segregation. This definition has not changed much through time. Modern usage of the term 'sprawl' was coined by Earle Draper, one of the first city planners in the United States in 1937 (Black, 1996)<sup>2</sup>. Since then, the issue became popular and concerns continue to grow with different measures introduced to combat it in one way or another.

The multidisciplinary nature of the phenomenon of 'sprawl' has caused much confusion. Possible mathematical regressions attempting to explain sprawl from land use perspective such as the degree of compactness did not generate statistically significant results (Wassmer, 2005) and hence the difficulty to mathematically define the term. The Vermont Forum on Sprawl

defines sprawl as: dispersed development outside of compact urban and village centres along highways and in rural countryside.<sup>3</sup> In her report, *Revisiting Sprawl: Lessons from the Past*, Burgess (1998) defined sprawl as "...expanding physical development, at decreasing densities, in metropolitan regions, where the spatial growth exceeds population growth"<sup>4</sup>

On the other hand, *The Oxford English Dictionary* (2001) defines the word as "the straggling expansion of an indeterminate urban or industrial environment into an adjoining countryside; the area of this advancement." Here, sprawl as an adjective has been used to describe the pattern of a city's growth, as a verb- describing the process of that growth, and as a noun describing an urban landform.

In a paper titled 'Wrestling Sprawl to the Ground (2001)' six general categories are put forward of defining sprawl from an analysis in social science and planning perspective.<sup>5</sup>

**SPRAWL IS DEFINED AS ONE OR MORE EXISTING PATTERNS OF DEVELOPMENT:**

Those most frequently mentioned are low-density, leapfrogging, distance to central facilities, dispersion of employment and residential development, and continuous strip development. This definition characterizes land use conditions, and it is conceivable that continuous, development (ribbon development along corridors), and leapfrog development are two different kinds of sprawl (Harvey and Clark 1965). Other development patterns frequently characterized as sprawl in different literatures include large lot single-family residential, radial discontinuity, single land use or physical separation of land uses and widespread commercial development.

**SPRAWL IS DEFINED AS A PROCESS OF DEVELOPMENT THAT OCCURS OVER SOME PERIOD OF TIME AS AN URBAN AREA EXPANDS:**

This suggests that some parts of an urban area may pass through a sprawl stage before eventually thickening and diversifying so they can no longer be characterized as sprawl, at least by those authors who used to signify a stage or process of development. They hose sprawl as a verb, rather than a noun connoting a condition. But there is little in the literature to indicate when sprawl metamorphoses into non-sprawl.

**SPRAWL IS DEFINED BY AN EXAMPLE, BY REFERENCE TO THE AVERAGE DENSITY OF A PARTICULAR URBAN AREA:**

In some literatures, sprawl is frequently defined by one or more examples of low-density or scattered patterns of urban development. Los Angeles is usually named the best exemplary definition of sprawled city. The flexibility of definition by example makes it possible to include all sorts of development patterns, from planned communities with clustered housing and mixed uses to exurban rural estates.

**1. Sprawl is used as an aesthetic judgment about a general urban development pattern:**

Generally, sprawl is widely known as ugly development with tendency to discontinuity and haphazard layout.

**2. Sprawl is a cause of an externality, such as high automobile dependence, isolation of the poor-**

Traffic congestion (Downs 1999 and Black 1996 (Vermont Forum on sprawl1999) environmental contamination (Sierra Club 1999), income and racial segregation of neighborhoods (Downs 1998), the jobs-housing mismatch (Orfield 1997), conversion of farmland to urban uses (U.S. General Accounting Office, 1999), and civic alienation (Popenoe 1979), are among problems of urban life and have been attributed to sprawl. But the description is basically dealing with what sprawl does (or is supposed to do) rather than what it is.

**3. Sprawl is the consequence or effect of some independent variable, such as fragmented local government, 'poor' planning, or exclusionary zoning-**

Sprawl occurs as a consequence of the fragmentation of control over landuse in metropolitan areas.

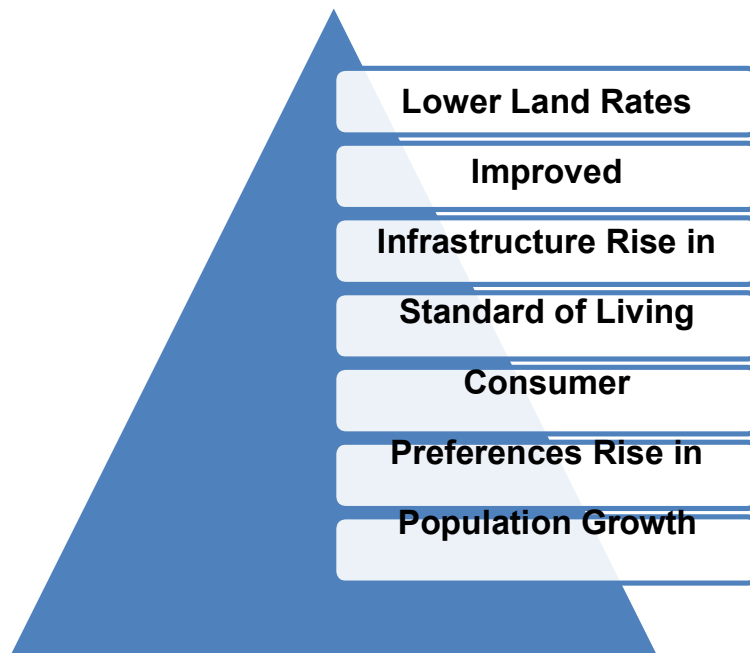
Thus generally speaking, as a noun, sprawl implies a condition characterizing an urban area or part of it at a particular time. Based on descriptions of conditions characterizing sprawl in

literature and amplified by observation and experience, the following conceptual definition is suggested (Galster, Hanson, R.Ratcliffe, Wolman, Coleman and Freihage, 2001)-

Sprawl is a pattern of land use in an urbanized area that exhibits low levels of some combination of eight distinct dimensions: density, continuity, concentration, compactness, centrality, nuclearity, diversity and proximity.

### **REASONS FOR THE DEVELOPMENT OF SPRAWL**

Urban sprawl can be caused by a variety of different things. These causes will mainly include:



**Figure1: Causes of Urban Sprawl**

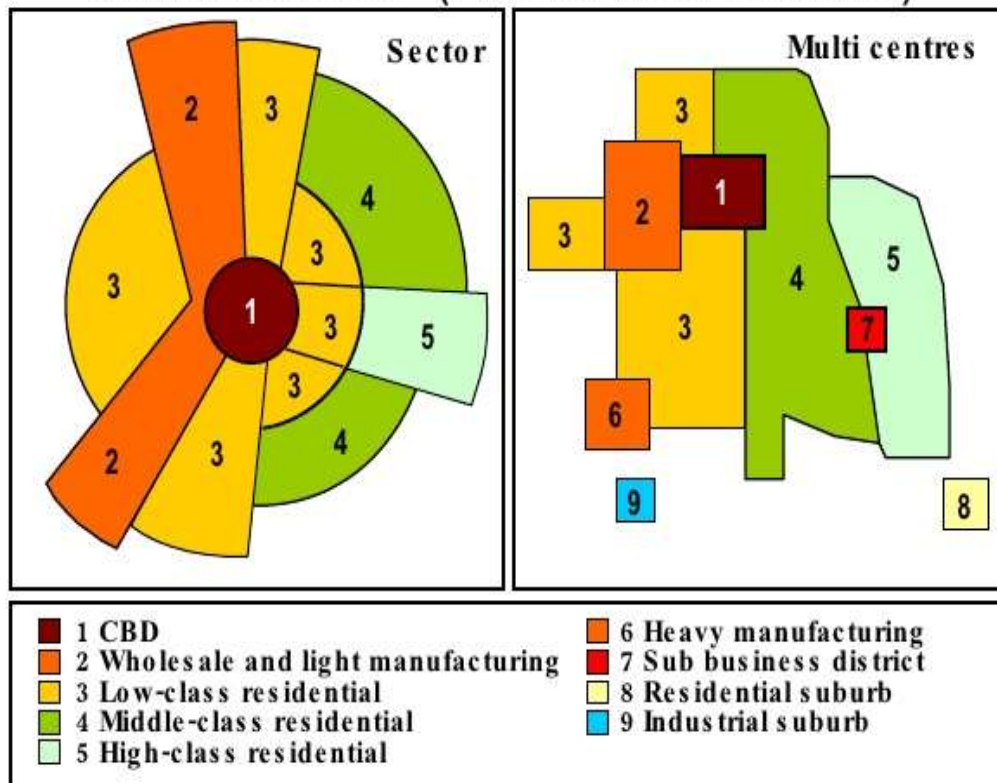
- **LOWER LAND RATES:** Lower cost land and houses in the outer suburbs of the cities, because the centers of urban development have really made people want to stop settling in these areas and want to venture further out.

- **IMPROVED INFRASTRUCTURE:** There is increased spending on certain types of infrastructures, including roads and electricity. This is something that hasn't always been available, and there are still some areas that don't have these luxuries. That doesn't mean that they aren't working on it.
- **RISE IN STANDARD OF LIVING:** There are also increases in standards of living and average family incomes, which means that people have the ability to pay more to travel and commute longer distances to work and back home.
- **LACK OF URBAN PLANNING:** People love to find areas that are less trafficked and more calm, which leads them to sprawl out to other sections of the town. Unprecedented development, cutting of trees, loss of green cover, long traffic jams, poor infrastructure force people to move out to new areas.
- **LOWER HOUSE TAX RATES:** Cities will usually have high property taxes, and you can usually avoid these taxes by living in the outer suburbs because the taxes are usually lower than they would be in other situations.
- **RISE IN POPULATION GROWTH:** Another factor that contributes towards urban sprawl is rise in population growth. As number of people in a city grows beyond capacity, the local communities continue to spread farther and farther from city centers.
- **CONSUMER PREFERENCES:** People in high income groups have stronger preferences towards larger homes, more bedrooms, bigger balconies and bigger lawns. This also causes urban sprawl as this option is not available in crowded cities. People generally look out for low-density residential areas where they can get home according to their preference.

The causes and catalysts of urban growth and sprawl, discussed by several researchers, can be summarised as follows- (for a general discussion one may refer Burchfield et al. 2006; Squires 2002; Harvey and Clark 1965). Bhatta (2010) has delineated twenty-five different causes for the growth of urban sprawl.



## Models: 'sectors' (Hoyt) and 'multi centres' (Harris and Ullman)



## **EFFECTS, IMPACTS AND CONSEQUENCES OF URBAN SPRAWL:**

The places of sprawl and the region that is impacted by it are distinct from each other. When sprawl takes place at the periphery of a certain city it could have its direct or indirect impact on other parts of the city within its administrative border or on a neighbouring city. Generally, two conflicting views are taken about the consequences or effects of sprawl. On one hand some authors argue that it is harmful and strong measures should be taken to fight it, others support and even encourage it. Urban sprawl may have both positive and negative consequences and impacts; but, negative impacts are often more highlighted as this is an uncontrolled or uncoordinated growth and eventually the negative impacts obliterate the positive sides. There are some positive impacts of urban sprawl, like increase in economic production, increase in opportunities for employment, better opportunities and better services creating better living conditions, better lifestyles. Urban sprawl can extend better basic services, infrastructure as well as social capital such as transportation, sewer, and water, better educational facilities, health care facilities to a larger population. However, since it is an uncontrolled and uncoordinated growth resulting in sprawl, the positive impacts are covered up inviting focus only on the negatives.

During the nineteenth and early twentieth centuries, in developed countries, urbanization was created from and it also led to industrialization. Surplus population from the villages were motivated to make a mass movement towards cities because of new job opportunities created there. For the cities too, these migrants provided cheap labour for the newly established factories. Due to present globalized scenario and opening up of economies, the circumstances are similar in developing countries. The huge concentration of investments in cities attracts large number of migrants from villages who are looking for employment. This creates a large surplus labour force, and because of which the wages remain low. Developed and developing countries of the world differ not only in the number of people living in cities, but also in the way in which urbanisation is occurring. In many megacities of developing world, urban sprawl is a common problem and a substantial amount of city dwellers live in slums within the city or in urban periphery in poverty and degraded environment. These high-density settlements are often highly polluted owing to the lack of urban services, including running water, sewer, trash pickup,

electricity or paved roads. Nevertheless, cities provide poor people with more opportunities and greater access to resources to transform their situation than rural areas.

Evidence of the environmental impacts of sprawl continues to mount. Kirtland et al. (1994) report that the impact of urban land on environmental quality is much larger than its spatial extent would imply. The consequences and significance of sprawl, good or ill, are evaluated based on its socioeconomic and environmental impacts. Often these are overlapping or one may have several indirect impacts. Major consequences of urban sprawl can be summarised as follows:

Some organizations and planners see sprawl as a sign of economic vitality and not as ecological threat. They claim that for countries like America with large land area, there are too vast farmlands and open spaces to worry about how much land is converted. They also stress the primary advantage of sprawl, which is decentralization of employment to different parts of a city. They argue that car culture enables people to commute shorter distances at any time and own bigger homes. In addition, it is not healthy for people to live in areas with increased densities and smaller meter square of space per individual ratios since this creates psychological and health problems. Therefore, their recommendation is for people to live in bigger plots with their own green spaces away from city centres and work areas.

#### **ECOLOGICAL IMPACTS: -**

– **LAND CONSUMPTION:** The amount of open space used by each inhabitant has increased in the last 20 years by two or three times.

– **ENERGY CONSUMPTION:** The level of gas consumption can be used as a parameter of the level of car use. The United Nations and the European Union have moved in favour of the compact city embracing the position, supported by research (that denser cities consume the least amount of energy for transport).

-**ATMOSPHERIC POLLUTION:** The level of pollution due to motorcar dependency can more easily be connected to population densities.

#### **LOSS OF NATURAL RESOURCES: -**

All sprawl leads to loss of an important limited resource that is land. Over the years, sprawl has directly contributed to and resulted in the degradation and decline of natural habitats such as wetlands, woodlands and wildlife. It has also reduced farmland and open spaces. Water use and energy consumption has increased. Sprawl leads to land-use patterns which are unfavorable to

the development of sustainable transport modes and hence, increase the use of private car that in turn result in increased trip lengths, congestion, increase in fuel consumption and air pollution. It is in general a threat to ecology. Even though automobile and truck engines have become far cleaner in recent decades, motor vehicle emissions are still the leading sources of air pollution. As homes and businesses spread further and further apart, local governments are forced to provide for widely spaced services and infrastructure leading to higher costs and increased tax burden.

#### **IMPACTS ON WILDLIFE AND ECOSYSTEM: -**

In areas where sprawl is not controlled, the concentration of humans in residential and industrial areas of the sprawl may lead to an modification of ecosystems patterns and processes (Grimm et al. 2000). Development associated with sprawl not only decreases the amount of forest area (Macie and Moll 1989; MacDonald and Rudel 2005), farmland (Harvey and Clark 1965), woodland (Hedblom and Soderstrom 2008), and open space but also breaks up what is left into small chunks that disrupt ecosystems and fragment habitats (Lassila 1999; McArthur and Wilson 1967; O'Connor et al. 1990). The reach of urban sprawl into rural natural areas such as woodlands and wetlands ranks as one of the primary forms of wildlife habitat loss. Roads, power lines, subdivisions and pipelines often cut through natural areas, thereby fragmenting wildlife habitat and altering wildlife movement patterns. The fragmentation of a large forest into smaller patches disrupts ecological processes and reduces the availability of habitat for some species. Some forest fragments are too small to maintain viable breeding populations of certain wildlife species.

#### **LOSS OF FARMLAND: -**

Urban sprawl and urbanization contribute to loss of farmlands and open spaces. Only in the United States, urban sprawl is predicted to consume 7 million acres of farmland, 7 million acres of environmentally sensitive land, and 5 million acres of other lands during the period 2000–2025 (Burchell et al. 2005). Preferred taxation and landuse policies work in sync to create financial pressures that drive farmers to sell arable land to speculators. Low and unfair prices of farm commodity often results that it is far more profitable in the long term for farmers to sell their land than to continue farming it. Also, thousands of small parcels of farmland are being severed off to create rural residential development. Collectively, these small lots contribute to the loss of hundreds of hectares of productive agricultural land per year. The loss of agricultural land

to urban sprawl means not only the loss of fresh local food sources but also the loss of habitat and species diversity, since farms include plant and animal habitat in woodlots and hedgerows. The presence of farms on the rural landscape provides benefits such as greenspace, rural economic stability, and preservation of the traditional rural lifestyle.

#### **LESSENING OF THE PRODUCTIVITY OF CITY: -**

It is an economic theory that productivity is much more enhanced with dense development since ideas move quickly when people are in close proximity. But when jobs move to the suburbs, people follow them. This may reduce productivity in the city leading to social loss. In addition, authors state that sprawl leads to creating regional imbalances, such as pulling jobs and people further away from poor communities, increasing inequality. Sprawl also creates segregation of rich and poor or social isolation in general. The problem lies not to the people who have moved to the suburbs but rather to the people who have been left behind. The low-income groups are abandoned in the downtown because they cannot afford car-based lifestyle. Role of transport technology can explain this social fragmentation. The much congested and deteriorated central towns end up being favorable places for crime and social unrest.

#### **INCREASE IN TEMPERATURES: CREATION OF URBAN HEAT ISLANDS: -**

On warm days, urban areas can be 6–8°F (3.5–4.5°C) warmer than surrounding areas, an effect known as an *urban heat island* (Frumkin 2002) The heat island effect is caused by two factors. First, dark surfaces such as roadways and rooftops efficiently absorb heat from sunlight and reradiate it as thermal infrared radiation; these surfaces can reach temperatures of 50–70°F (28–39°C) higher than surrounding air. Second, urban areas are relatively devoid of vegetation, especially trees; that would provide shade and cool the air through *evapotranspiration*. As urban centres sprawls, the heat island effect expands, both in larger geographic extent and in intensity. This is especially true if the pattern of development features extensive tree-cutting and road construction.

#### **DETERIORATION IN THE AIR QUALITY: -**

The lifestyle dependent on automobiles especially cars forced by sprawl leads to increases in fossil fuel consumption and emissions of greenhouse gases Urban sprawl contributes to poorer

air quality by encouraging more automobile use, thereby adding more air pollutants such as carbon monoxide, carbon dioxide, ground-level ozone, sulphur dioxide, nitrogen oxides, volatile organic carbons, and microscopic particles. These pollutants can inhibit plant growth, create smog and acid rain, contribute to global warming, and cause serious human health problems. Apparently it seems that low-density urban growth or sprawl can provide better environmental condition and fresh air, but Kahn and Schwartz (2008) found that urban air pollution progress despite sprawl.

#### **CONCLUSIONS: -**

A new development be it planned or unplanned could arise on vacant land or on land that was previously used for some other purpose. In most instances though, whenever the need arises, it is the outskirts of the city that provides for "unlimited" vacant land since inner cities are usually intact. Different situations are observed to cause sprawl. In almost all cases, rise in population plays a major role as a main cause. Urban sprawl has been recognized as a problematic aspect of metropolitan growth and development in the world over. The growing concern about the issue is shared among planners, policy makers, environmentalists and people in general.