The Effects of Urban Sprawl on Daily Life

by

Andrew Brunner

Graduate Student

Master of Transportation Program

South Carolina State University

Orangeburg, SC 29117

Abstract

Urban sprawl is a multifaceted concept, which includes the spreading outwards of a city and its suburbs to its outskirts to low-density and auto-dependent development on rural land, high segregation of uses, and various design features that encourage car dependency. Urban sprawl directly impacts traffic congestion, high oil consumption, and many other transportation issues. It is evident that urban sprawl has negative impacts on both air quality and public health, which affects the human condition. This results in health issues for inner-city residents and air pollution. Air pollution can affect our health in many ways with both short-term and long-term effects. The purpose of this research paper is to determine the specific effects of urban sprawl on daily life in major cities in the United States, as well as those in other countries. In addition, to discover measures that should be taken to address these issues efficiently and the most cost effective.

Introduction

Urban sprawl is a multifaceted concept, which includes the spreading outwards of a city and its suburbs to its outskirts to low-density and auto-dependent development on rural land, high segregation of uses, and various design features that encourage car dependency. It has been argued that urban sprawl is the root of many environmental problems. Urban sprawl also has a negative impact on infrastructure and the sustainability of cities. In most cases, sprawl translates to an increase in the cost of transport, public infrastructure and of residential and commercial development. Moreover, sprawling metropolitan areas require more energy, metal, concrete and asphalt than do compact cities because homes, offices, and utilities are set farther apart. It is evident that urban sprawl has negative impacts on both air quality and public health, which affects the human condition. This results in health issues for inner-city residents due to high emission levels causing air pollution. People with health problems such as asthma, heart and lung disease may also suffer more when the air is polluted (Ewing, R., 1994).

The objectives of this research paper is to determine the specific effects of urban sprawl on daily lives using examples of major cities in the United States of America, and other major cities in around the world. In addition, to discover measures that should be taken to address these issues efficiently and the most cost effective. By analyzing reviewing past studies, and urban sprawls relation to land use adequate conclusions can be drawn on measures and policy development to hopefully combat urban sprawl. It is known that urban sprawl hasn't just spontaneously arrived in today's society. This paper will study trends and urban development not only in the United States, but from metropolitan areas around the world. Recently studies have been conducted on sprawl from the earliest of times. Understanding how sprawl came into existence a better understanding can be accessed. Also probing policies past, present, and possible ones in the future will give insight information from which to draw conclusions.

Literature Review

Many believe that urban sprawl is a recent phenomenon, but actually dates back to ancient times. In his controversial book, Sprawl: A Compact History, Robert Bruegmann (2005) claims that urban sprawl has always been with us. Low-density, unplanned residential areas have surrounded most cities, from the Urban Revolution to the present. Bruegmann states that as long ago as the Ming dynasty in the 14th century, the Chinese gentry sang the praises of the exurban life, and the rustic villa suburban was a common feature of ancient Rome. Pliny's maritime villa was 17 miles from the city, and many fashionable Roman villa districts such as Tusculum where Cicero had a summerhouse was much closer. He claims that it has been an issue for a long time. He also observes that medieval suburbs those urbanized areas outside cities' protective walls had a variety of uses. Manufacturing processes that were too dirty to be located inside the city were in the suburbs; so were the homes of those who could not afford to reside within the city proper. This pattern continued during the Renaissance. Those compact little cities bounded by bucolic landscapes, portrayed in innumerable idealized paintings, were surrounded by extensive suburbs.

According to the Oxford English Dictionary, "sprawl" first appeared in print in this context in 1955, in an article in the London Times that contained a disapproving reference to "great sprawl" at the city's periphery. But, as Bruegmann shows, by then London had been spreading into the surrounding countryside for hundreds of years. During the 17th and 18th centuries, the poor moved increasingly eastward, and Londoners built suburban estates in the westerly direction of Westminster and Whitehall, commuting to town by carriage. These areas are now the Central West End. As Bruegmann says, "Clearly, from the beginning of modern urban history, and contrary to much accepted wisdom, suburban development was very diverse and catered to all kinds of people and activities." Even more recent research has been done in Cambodia. BBC News reports that the medieval temple of Angkor Wat in Cambodia was once at the center of a sprawling urban settlement, according to a new, detailed map of the area. Using radar, an international team has discovered at least 74 new temples and complex irrigation systems. The map, published in the journal PNAS, extends the known settlement by 1000 sq. km, about the size of Los Angeles. Analysis also lends weight to the theory that Angkor's residents were architects of the city's demise. "The large-scale city engineered its own downfall by disrupting its local environment by expanding continuously into the surrounding forests," said Damian Evans of the University of Sydney and one of the authors of the paper and map (BBC News 2007).

Urban sprawl has a significant importance to nearly every factor in our daily lives and has been a trend long associated with North American cities, which is engulfing many different developing countries. In many developing countries, urban sprawl comprises two main, contrasting types of development in the same city: one is characterized by large peri-urban areas with informal and illegal patterns of land use (Fulton, W. (1996). This is combined with a lack of infrastructure, public facilities and basic services, and often is accompanied by little or no public transport and by inadequate access roads. The other is a form of “suburban sprawl” in which residential zones for high- and middle-income groups and highly-valued commercial and retail complexes are well-connected by individual rather than public transport (Ewing, R. (1994). Urban sprawl adds to the urban divide, pushing social segregation along economic lines that result in spatial difference in wealth and quality of life across various parts of cities and metropolitan areas run down inner cities and more suburbs (Brueckner, J.K., & Fansler, D.A, 1983). Urban sprawl involving the poor occurs because authorities pay little attention to slums, land, services, and transport. Authorities lack the ability to predict urban growth and, as a result, fail to provide land for the urbanizing poor. In addition, the urban poor are denied land rights, which are one of the main factors driving people to the periphery of towns, associated with urban sprawl in developing countries (Brueckner, 2000). Other features typically associated with sprawl include overdependence on personal motorized transport coupled with a lack of alternatives, limited housing options, and urban spaces that discourage pedestrian traffic. Most South African cities are an example of this. They are expanding primarily through development of new housing areas which, being located beyond the existing urban periphery, are relatively unplanned (C. Davis, T. Schaub, 2005). As a result, the urban periphery consists of pockets of

housing developments that are isolated and separated from each other by trunk roads or open spaces. In the United States, suburbanization and sprawl started after World War 2 II in many developed industrial cities. With the development of urbanization at an unprecedented rate for many decades, many cities came up with lots of problems. The well-documented problems include environment deterioration, traffic congestion, air pollution, crime, poverty, racial tension, poor schools, poor public services, and so onto name a few. SoTherefore, the rich people escaped from the inner cities in order to escape from the problems above and look forward to high quality of life. The suburban, with ready access to open space, provide city dwellers with a chance to enjoy nature and an easy escape from the city problems (Brueckner, 2000). So more and more people move to live in the suburban, and the phenomenon, which called population suburbanization, has lasted for decades. And job suburbanization and commerce suburbanization have also occurred as the cities have grown spatially. In addition, the population growth, rising incomes, and falling commuting costs have contributed to the suburbanization process in the U.S. cities. In this sense, urban sprawl in the U.S. cities is the consequence of suburbanization, and is a spontaneous phenomenon that city dwellers look forward to high quality of living environment (Fulton, W., 1996).

Meanwhile, in the late 20th century, strong sentiment against urban sprawl has developed in the U.S. (Brueckner, 2000). The sentiment includes critics. It is alleged that excessive urban expansion have encroached so much farmland and open space. Urban sprawl is also thought to contribute to the decay of the downtown area and a number of social problems. Moreover, urban sprawl always means overly long commute, contributing traffic congestion and air pollution. At the root of the perception that urban sprawl is against the idea of sustainable development, many policies have been made to restrict urban sprawl in the United States. Several strategies such as New Urbanism and Growth Management are suggested. However, urban sprawl in the U.S. and other western cities is still in existence and even will continue in the future. After all, urban sprawl is a complicated phenomenon, and to restrict urban sprawl is not an easy task.

Land use and urban sprawl are major environmental concerns affecting us in a variety of ways. An adaptation of sustainable patterns of development which are not self-destructive is crucial to the advancement of today's infrastructure. Wild forests, meadows, and wetlands are disappearing, being replaced by pavement, buildings, and sterile urban landscaping (Bruegmann, Robert 2005). The remaining habitat is smaller, degraded and more fragmented, making survival of certain wildlife species very difficult as they try to reach breeding ponds, hibernation sites, feeding locations, or to establish viable nesting areas (Bruegmann, Robert 2005). The costs of providing community services have skyrocketed as homes and businesses spread farther and farther apart, and local governments are forced to provide for widely spaced services. It increases car and truck traffic, leading to major increases in air pollution and smog. Vehicles are the number one cause of air pollution in many urban areas, and a threat to the public Low-density development produces more than its share of this runoff. In addition, more water is consumed for lawn watering and other landscape activities, straining local water supply systems. At a time

when we desperately need to reduce our energy use, sprawled developments increase our energy consumption per person, for increased gasoline, home heating, and electricity use. Old-fashioned neighborhoods with compact housing, front porches, a corner store, and a school two blocks away were much more conducive to social interactions (Mieszkowski, P., Mills, E. S. (1993). It was possible to feel a sense of belonging and community. Now, in sprawled generic housing tracts, many people never meet their neighbors as they pass them in their cars. It's rare for neighborhood events to occur. Families are more isolated and those living alone are marooned in a hostile environment (Mieszkowski, P., Mills, E. S. (1993). People are forced to spend more time commuting longer distances to reach their jobs, homes, schools and shopping areas. In a compact, efficient city, these travel times are often minimal, but sprawled cities take time to navigate. Sprawling business and homeowners often fail to realize the long-term personal costs and risks of maintaining distant properties. As property taxes rise to cover service costs, and fuel costs increase for travel and heating large buildings, the owners' budgets may have trouble keeping up. Transportation costs for children and handicapped family members are much greater. As sprawled homeowners age, their large properties become a greater burden to maintain. When they can no longer drive their car, they are stranded. As baby boomers age, large numbers of people will be forced to sell their suburban or country homes to move into the city, creating displacements and possibly lowering the value of expensive homes. Overall urban sprawl is an issue that must be addressed and handled before it continues to spiral out of control.

Observations and Discussion

In 1990, the 1,000 Friends of Oregon created the Making the Land Use, Transportation, Air Quality Connection (LUTRAQ) project in response to a proposal to build a bypass around the southwest side of Portland, Oregon. The project analyzed the use of transit oriented development (TOD) in conjunction with a light rail system as an alternative to a proposed highway bypass with more tradition low density suburban development patterns. They wanted to test the efficiency of how land use development using neo-traditional town planning principles was designed to encourage more walking, biking, and transit use as an alternative to the increased use of automobiles. (Bartholomew, 1995 and 1,000 Friends of Oregon, 1997) LUTRAQ reviewed current land use-transportation models, implemented improvements to the modeling capability, developed a land use-transportation alternative around a light rail line and TOD, analyzed the highway bypass and light rail alternatives and, developed a series of implementation actions for the light rail/TOD alternative.

The study concluded that the light rail/TOD strategy could significantly reduce congestion, automobile trips, VMT, and air pollution emissions over the highway bypass alternative. It was the only alternative to satisfy the Clean Air Act requirements. The Portland area regional government endorsed the LUTRAQ plan and incorporated its components into the region's 50-year land use and transportation. In a study done in Shenzhen, China results are different compared to cities in the US. The study showed that unlike the western countries, where urban sprawl is the consequence of suburbanization, and it is a spontaneous phenomenon

that city dwellers look forward to high quality of living environment and escape from problems in inner cities, the nature of urban sprawl in Shenzhen is a phenomenon of low-density urbanization. The study shows that from 2001 to 2005, the built-up area of Shenzhen increased rapidly, and the low density, excessive urban expansion is most due to the rapid growth of industrial land and residential land, especially the industrially land. Taking account of the nature of urban sprawl in Shenzhen, factors like gross output value of industry, population, institutional and policy factors, incomes growth, GDP, investment in real estate development, density of main road are included to establish the empirical model. The authors of this study suggest that urban sprawl in China is a phenomenon of low density of urbanization and mainly caused by industrialization and population growth is correct. Also that the tendency of urban expansion could not easily restrained in cities of China, where is experiencing a high rate of urbanization. They felt that use of more zone policies would address more growing concerns (Lei, 2008). A recent project was done in the U.S. to measure urban sprawl in the Trans boundary region of the Pacific Coast of North America. The metropolitan centers of Portland, OR, Seattle, WA and Vancouver, BC, span two nations, three state/provincial governments and dozens of cities. As a region, this was a global leader in population growth in the 1990s. Though the results confirm the value of varied approaches, it is clear that each metric reveals a different dimension of urban sprawl and is necessarily subject to various limitations. As a dynamic landscape form, the character and shape of urban sprawl is highly dependent upon the spatial and temporal scale at which it is studied. This study explains how, and to a lesser degree why, urban sprawl took different forms in three North American metropolitan centers subject to very similar socioeconomic forces. Using three distinct analytical metrics, it also revealed the advantages and disadvantages to researching landscape form using varied methods that account for the effects of spatial and temporal scale. One frequent problem with many sprawl measurement techniques is an inability to recognize the landscape features of sprawl in low-density, rural lands where growth pressures may have their greatest impacts. The permit metric provided the resolution necessary to capture this phenomenon. It was also useful in disaggregating the patterns of growth within a metropolitan region to understand how public policy differences across a metropolitan region may influence development patterns (C. Davis, T. Schaub, 2005).

Conclusion

In conclusion, of the research and studies shown it is evident that urban sprawl has been an issue dating back to ancient times. From oversight of environmental factors and more focus on economic progress, urban sprawl has been allowed to go unchecked. In addition, that urban sprawl is caused by different means via geological location. Solutions that prove to be successful in one location may not endure in others. Culture, economic structure, and the government play a role in the outcome of urban sprawl. In addition, as we began to address sprawl on a variety of levels from local zoning, personal transportation, land-use decisions to federal regulations, it is imperative to consider health considerations into policy development. Understanding the health costs of urban sprawl, we can design the most effective solutions. Urban planning is the most

potentially effective method, with its use of “smart growth,” characterized by its higher density, preserved green space, limited road construction balanced by transportation alternatives, a balanced development and capital investment between central city and periphery; and effective coordinated regional planning. Further research is needed to clarify the relationship between urban sprawl and daily life. This research would be most effective if concentrated in linking land-use, transportation, and health. One thing certain, if urban is not checked in the US, as wells as other countries it will reach the point of no return. As it has been proven that urban sprawl has led to adverse effects on our environment, and in return the human condition has also been affected. More attention needs to be directed towards this emerging dilemma.

References

1. Bruegmann, Robert 2005) Sprawl: A Compact History. University of Chicago Press, Chicago.
2. Brueckner, J.K. (2000).Urban Sprawl: Diagnosis and Remedies. International Regional Science Review, 23(2):160-171.
3. Brueckner, J.K., & Fansler, D.A. (1983). The economics of urban sprawl: Theory and evidence on the spatial sizes of cities. Review of Economics and Statistics, 65:479–482.
4. Ewing, R. (1994). Characteristics, causes, and effects of sprawl: A literature review. Environ Urban Issues, 21(2):1–15.
5. Fulton, W. (1996). The new urbanism. Cambridge: Lincoln Institute of Land Policy
6. Li, Q., Yang, K.Z. (2007). Urban Sprawl. Beijing: China Machine Press.
7. Mieszkowski, P., & Mills, E. S. (1993). The causes of metropolitan suburbanization. Journal of Economic Perspectives, 7: 135-47.
8. C. Davis, T. Schaub (2005). International Journal of Applied Earth Observation and Geoinformation 7 268–283
9. I Lei, LU Bin. Urban sprawl: A case study of Shenzhen, China. 44th ISOCARP Congress 2008
10. "For 1000 Friends of Oregon, land-use legacy is a flame that needs tending". The Oregonian
11. http://news.bbc.co.uk/2/hi/science/nature/6945574.stm