



# The Cost Of Urban Sprawl in the Memphis MSA

David H. Ciscel

Urban sprawl is a term that has an immediate public policy connotation. The term implies the modern city is expanding in an irrational pattern—haphazardly in all geographic directions. Sprawl, the geographic spread of a city based on automobile commuting, has both positive and negative characteristics. After all, bringing the potential for suburban living to a larger portion of the population was one of the great social projects of the 20th century.

Researchers who are interested in the problems of urban sprawl raise two issues: (1) the social inequity and (2) the economic inefficiency of the large city. Most critiques of urban sprawl focus on the geographic unfairness in the delivery of services and jobs in the modern city. In addition, the urban elderly, young and poor suffer from living in the older, less maintained parts of the city. In many instances, it is the urban residents who finance, through their taxes, the infrastructure for the new suburban subdivisions. These questions of fairness are important, but urban sprawl also raises questions on economic efficiency in urban design.

I recently conducted a study to examine the structure and costs of urban sprawl in the Memphis metropolitan area. The results indicate that urban sprawl in Memphis has produced unintended side effects, including:

- Physical separation of the social classes;
- Abandonment of the old city infrastructure in favor of constant building of new infrastructure;
- Functional segregation of residential life from commercial life; and
- Increased dependence on the automobile for all work, shopping and leisure trips.

This analysis of the Memphis metropolitan statistical area (MSA) focuses on efficiency issues, including:

- Is sprawl the least costly way to build a functioning city?
- Is society using its limited labor and commuting resources to its best advantage?
- Is a short-run competitive advantage of new suburban malls and neighborhoods a long-run disadvantage in terms of higher infrastructure maintenance expenses?

I examined structure and operation of three components of the regional economy in order to analyze these three issues:

1. Physical location of jobs and incomes in the city;
2. Costs of commuting by automobile; and
3. Costs of providing government infrastructure for the greater metropolitan area.

## Background

Modern culture and, more importantly, modern market capitalism have remained primarily an urban phenomena. To protect themselves from the more chaotic elements of city life—crime, congestion and pollution—the growing, home-owning middle class helped create the sprawling suburban city. Sprawl creates a metropolitan area where residences are separated from commerce. And, most importantly, it is a city based

on automobile commuting. Some of the reasons cited for relocating to the suburbs include: the ability of residents to choose new homes, better schools and a more homogenous social environment. Much of modern urban economics, as a discipline, is devoted to listing the efficiency virtues of this geographic creation.

But urban sprawl was created at a cost, and those costs are quite large. More importantly, the data imply an alarming characteristic of the modern metropolitan area—it is becoming less efficient. Growth brings a long-term condition of geographic diseconomies of scale, notably in commuting and infrastructure provision.

## **City Design**

The group of researchers and urban planners who investigate alternatives to the sprawling metropolitan city are called the New Urbanists. Their social agenda calls for a new physical design for the city. Specifically, the New Urbanism identifies the car and the vast road system it requires as the key problem of today's urban organization. In structural terms, the New Urbanists argue for a "planned" physical restructuring of the city, including more mass transportation, higher-density housing and the integration of residential and commercial activities.

The poor physical design of the modern city—Memphis included—is the prime source of rising urban inefficiencies. Is sprawl really inefficient? While it is difficult to argue an emphatic "yes," given the lack of evidence from a compact urban model, the spiraling cost of sprawl suggests it is a model for city organization whose useful life is on the wane.

Sprawl, as a process, has a life of its own. It is very hard to stop sprawl because of the existence of "network economies." That is, once citizens, business and government understand how to operate and build a sprawling city based on the automobile, no alternative structural organization seems possible or practical.

## **The Structure of Jobs and Income**

Historically, the city has benefited from agglomeration: the cost efficiencies of businesses being close to another for trade, raw materials, labor and technological sharing. But, sprawl has made that process more complicated. With the functional segregation of residential, industrial and commercial activities, the ability to effectively use the economics of urban agglomeration for economic growth may be at an end.

Memphis has a diversified business economy with a significant focus on medical services, transportation and wholesale trade. Memphis' industry, particularly manufacturing, trade and services tends to be located in the old city where the number of jobs, the size of business establishments and the earnings per employee are higher than in the suburbs.

Housing data indicate that the suburbs around Memphis are growing more rapidly than the city; they also attract white residents rather than black, have far less poverty and, generally, have higher incomes per household. The city of Memphis is majority African-American. It also is older, has lower per-capita incomes, and suffers from far higher crime rates than the rest of the MSA, i.e., the suburbs. New construction helps identify the functional segregation of the metropolitan area. While three-fourths of the new residential units built in 1995 were in the suburbs, over half the commercial construction and over 95 percent of the industrial construction were in the city of Memphis.

## **Commuting by Car**

In the Memphis area, over nine out of 10 trips are made by car. Public transportation, bicycling and walking are not practical alternatives. There are three costs to commuting:

1. Lost and unpaid labor income of driving to and from work,
2. Costs of operating a car, and
3. Environmental impact of automobile use.

The implicit labor costs of commuting are extremely high. Long commutes (20 minutes or longer each way) make up the largest portion of the cost of work-based travel. In the Memphis MSA, commuting costs add up to \$1,278 million per year in lost labor time, a figure that breaks down to \$10.41 per day for the typical city commuter and \$11.11 per day for the typical suburban commuter.

The explicit costs of operating a car for commuting also are large. Memphis commuters spend approximately \$1,685 million per year to drive to and from work. Again, long commutes are responsible for the largest portion of automobile operating costs, and cars are major sources of mobile pollution. Each year, commuting automobiles in the Memphis area place millions of pounds of pollutants into the environment.

Finally, commuting makes up only a minority of all miles driven in the urban economy. The total costs of maintaining an urban transportation network based solely on the automobile may be as much as three times the costs of commuting.

## Costs of Commuting to and from Work Each Year

	<b>Memphis MSA Total</b>	<b>Long Commutes*</b>
Lost Labor Income	\$1,278 million	\$980 million
Cost of Car Operation	\$1,685 million	\$1,284 million
Emissions		
Hydrocarbons	19.5 million lbs	14.8 million lbs
Carbon Monoxide	147.7 million lbs	112.6 million lbs
Nitrogen Oxides	10.1 million lbs	7.7 million lbs
Carbon Dioxide	5.4 million lbs	4.1 million lbs

\* A long commute is 20 minutes or longer each way.

## Costs of Government

The costs of financing public infrastructure for the Memphis MSA have risen rapidly as the metropolitan area has expanded east and south geographically. As an indication of the diseconomies of urban scale, during the past decade, debt per person for the three major government entities—the public schools and the local governments of the city of Memphis and Shelby County—has risen rapidly in real dollars. Operating expenditures for the city of Memphis and Shelby County governments also have risen on a real dollars per-capita basis.

While there is no clear pattern of expenditures for road maintenance and construction in Shelby County during the 1990s, expenditures for law enforcement have risen dramatically during a time when local crime rates have not fallen significantly. While the number of schools has declined in the city and risen in the suburbs during the 1990s, education expenditures per pupil for primary and secondary schools have risen dramatically.

Each individual piece of data on urban sprawl is certainly explainable by a number of reasons other than a car-based, functionally segregated urban economy. However, as a whole, the numbers point to one conclusion. The Memphis MSA is an expensive city to operate because of sprawl. Unless action is taken, Memphis' rising costs for operating the basic infrastructure operating system will continue.

## What Is the Cost of Running Local Memphis Area Governments?

	1999	1990
Population	870,786	827,868
Debt--All Local Government	\$2,741 per capita	\$1,168 per capita
<b>Operating Expenditures</b>		
City of Memphis	\$637 per capita	\$466 per capita
Shelby County	\$532 per capita	\$600 per capita
<b>Critical Social Services</b>		
Law Enforcement	\$287 per capita	\$161 per capita
Road Maintenance	\$47 per capita	\$69 per capita
<b>Public Schools</b>		
City Schools	\$6,189 per pupil	\$3,831 per pupil
County Schools	\$4,832 per pupil	\$3,038 per pupil

## Future Urban Policy

New Urbanist alternatives to sprawl are straightforward. They recommend the replacement of cars with rapid transit, construction of high-density housing, and mixing of commercial and residential buildings. For the Memphis MSA, those alternatives seem somewhat far-fetched. In addition, urban sprawl in the Memphis metropolitan area is now crossing county and state boundaries so that future regional development planning will become more difficult.

The first step that needs to be accomplished is increasing awareness. Currently, government decisions and development planning ignore the costs of sprawl. Recognizing that geographic expansion has high business/labor and public costs is imperative to future urban design and planning. As long as the community only notices the benefits of sprawl, consideration of alternatives is unlikely.

The second step is to recognize that most of the important decisions regarding the structure of the metropolitan area are outside the marketplace of individual decisions. Expansion of roads, new schools, adequate infrastructure and law enforcement are all social decisions, though they facilitate individual decisions that encourage sprawl. The reduction of urban sprawl probably will be a long-term process of persuading the public that sprawl is inequitable, inefficient and a poor organizational technique for a city.

Public decisions to stop financing the engine of sprawl will have to occur before change really can occur at the neighborhood level.

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*The views expressed in this article are those of the author and are not necessarily the official opinions of the Federal Reserve Bank of St. Louis.*

## **ABOUT THE AUTHOR**



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<https://www.stlouisfed.org/publications/bridges/winter-2000/back-to-school-communities-ace-adaptive-reuse-test>

## Back to School: Communities Ace Adaptive Reuse Test

From the smell of lunch wafting from the cafeteria, to the squeak of sneakers reverberating off the gymnasium walls, to the persistent chatter of students navigating the locker-lined corridors, school buildings often evoke fond memories of student life. Yet, despite their symbolic role in the passage to adulthood, all too often the hallowed halls of many storied school buildings are threatened by the continuous population shift patterns in modern America.

During the last few decades, thousands of once vibrant schools have been shuttered as previous generations of students graduate and emigrate from the neighborhoods in which they were educated. For communities experiencing the changes that necessitate such choices, finding alternate uses for these often impressive structures appeases communities not ready to part with these marvelous structures. Often, it also means the community saves money on the development of needed services and facilities.

In fact, former schools have been retrofitted for diverse uses such as affordable housing, business incubators, job-training centers, and health, educational and social services facilities. Largely due to their size, these buildings can accommodate a diverse tenant base. Across the nation as well as here in the Eighth District, many communities are taking advantage of the opportunities vacant school buildings provide.

### Keeping the Faith

The former New Chicago Elementary School in North Memphis was built during the early 1960s and remained in operation until the late 1980s. After remaining idle for a decade, a 16-month effort—using funds from a variety of sources—helped community leaders renovate and convert the school into Chicago Park Place—a mixed-use structure encompassing 39 affordable rental units for seniors, a police mini-precinct and a community center. The interior and exterior renovation, which was completed in the spring of 1999, included new windows, a new pitched roof in place of the flat roof, revised entryways, off-street parking and new landscaping to provide a more residential design and feel.

A consortium of civic organizations and contractors helped make this restoration possible. The general partner in the Chicago Park Place project is Greater Community Projects, Inc., a nonprofit 501(c)(3)



*The once vacant New Chicago Elementary School in North Memphis was converted into senior citizen housing, a police miniprecinct and a community center.*



*The Chicago Park Place project represents a partnership between the city of Memphis, a church, a private developer, a bank and its CDC affiliate.*

corporation that is wholly owned by Church of God in Christ Greater Community Temple (GCT) located in the New Chicago area of Memphis. Other partners include the city of Memphis and First Tennessee Housing Corporation (FTHC), a development entity of First Tennessee Bank focusing on affordable housing opportunities. Capital Development, LLC served as the developer.

Joy Richmond, vice president, FTHC, said seeds for the Chicago Park Place project were sown years ago when Bishop W. L. Porter, GCT's founder, acquired the property several years before the renovation effort for approximately \$5,000. Bishop Porter's son, Brandon Porter, who is GTC's current pastor, was integral in making this project a reality.

Richmond says vacant schools provide a head start on projects that might otherwise be too demanding on the limited resources of economically depressed communities. "It allows for the utilization of a neglected resource," Richmond says. "Typically, the buildings are structurally sound and well-suited for elderly multifamily dwellings, given their prior uses as schools."

The project, according to Richmond, enabled FTHC and others to respond to a community in need. "This structure stood vacant for years in an area that was suffering from severe economic depression after a local plant closed, which was a major source of manufacturing jobs in the area," Richmond said. "New Chicago has a lot of history, and this development definitely sparked a renewed interest in the neighborhood."

## A Gift with Class

Rural communities also have seen the benefit of adapting closed school buildings to new uses. In fact, renovating a former school building in a rural community often means preserving one of the community's most significant historic structures.

The original high school in Salem, Ill., was auctioned by the school board on the courthouse steps in the mid-1970s. Thelma Bailey, a member of the community, bought the school, which was built in 1915, with the intent of turning it into a community center. Bailey spent \$25,000 to acquire the building and another \$100,000 for all the renovations necessary to convert the school to a community center.

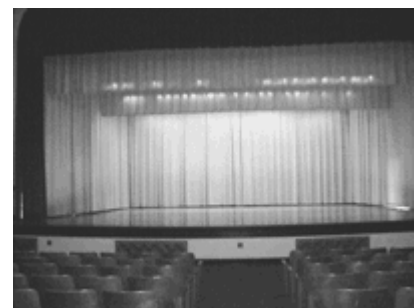
In 1980, the Salem Community Activities Center, Inc., opened. Currently, the center's tenants include the Boy Scouts of America, Girl Scouts of the United States of America, American Red Cross and the City Parks and Recreation Department. The center provides a variety of services such as a food pantry, karate classes, after school tutoring program, volleyball and basketball leagues, and GED classes.

Additionally, community members can rent areas in the center for parties and weddings.

The center has 501(c)(3) status, but the majority of its operating capital comes from fundraisers and weekly bingo. The only public money the center has received came last year in the form of Illinois First monies, which was used to replace the roof and make the restrooms handicap accessible. Otherwise, volunteers and the board of directors perform regular building maintenance, and many local businesses provide funding through sponsorships.



*The former Manual High building in Louisville, was spared from demolition through the collaborative efforts of various entities including: the city of Louisville, the Jefferson County Board of Education, The Courier-Journal, preservationists, Old Louisville neighborhood leaders, Male alumni and an investment group call Spectrum LLC.*



*The renovated facility currently*

The project began 25 years ago when one woman thought the town would be better off making use of an old school rather than tearing it down. And, according to Diane Holsapple, the center's managing director, the center provides one of only a few entertainment venues for the community's youth.

Former school redevelopment projects have many beneficiaries. Citizens in the communities surrounding the projects benefit from localized services. Service providers enjoy cost savings through shared expenses. And, the projects spur additional redevelopment, rehabilitation and revitalization throughout the neighborhoods surrounding the former school.

*houses: Project Empower, which is a youth training program; a childcare center; and Kentuckiana Nursing, a temporary employment agency for nurses. Half of the second floor is being renovated as offices for doctors who work nearby at University Hospital. Additionally, the auditorium (pictured above) is available for rent to community groups*

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## Chicago Park Place Sources of Funds

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First Tennessee Housing Corporation	\$ 1,846,092
First Tennessee Bank (permanent)	\$ 500,000
City of Memphis Division of Housing and Community Development	\$ 250,000
Greater Community Projects, LLC	\$ 156,000
Total	\$ 2,752,092

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<https://www.stlouisfed.org/publications/bridges/winter-2000/business-cluster-for-economic-impact>

## Business Cluster for Economic Impact

How do cluster-based strategies fit in the New Economy? This is a hot topic in economic development. In a knowledge-based economy, clusters of businesses form around sources of knowledge where information is developed, shared and exchanged. Recent cluster-based strategies have sought to boost innovation by recognizing the local elements of the New Economy, so that change is leveraged to work for, rather than against, the community.

Business clusters\* are:

- **Market-driven:** Focusing on bringing the supply and demand side of the economy together to work more effectively.
- **Inclusive:** Reaching out to companies (large and small) as well as suppliers and supporting economic institutions.
- **Collaborative:** Placing emphasis on collaborative solutions to regional issues.
- **Strategic:** Helping stakeholders create a strategic vision of their region's next generation economy and providing motivation and commitment to action.
- **Value-creating:** Improving depth (more suppliers) and breadth (more industries) to increase regional income.

For investors and economic developers, identifying a cluster may be more important than defining a cluster.

One example in St. Louis is a biomedical and biotechnology cluster that formed after years of strategic planning. It is located in an area extending along Forest Park Boulevard from Washington University to St. Louis University. The Center for Emerging Technologies, a business incubator, recently announced an \$8 million expansion into a nearby 93-year-old factory building. Although still in its infancy, the envisioned "Technopolis" strategic plan calls for an \$80 million investment over the next five years.

Many business clusters, however, are not technology-based. In fact, the new skill set in the New Economy includes speed, quality, flexibility, knowledge and network. Healthy businesses consist of, or are part of, business networks that support growth, expansion and development. The depth, quality and content of relationships help determine how well the business community or region performs.

Communities throughout the Eighth District are building business clusters around their existing strengths in industries including:

- Diversified manufacturing,
- Agribusiness,
- Business and financial services,
- Electrical/electronic components,
- Forest products,
- Information and media,

- Tourism,
- Transportation services and
- Construction.

What does this mean for governments, community leaders, lenders and economic developers? All parties need to consider the role of innovation and how it works to better stimulate the economy, redefine traditional roles to facilitate the process, clear regulatory impediments and create a setting that offers incentives for market-based clusters to form and operate.

### **How Do Clusters Benefit the Economy?\***

They:

- Encourage businesses to locate in an area.
- Spawn start-up businesses.
- Attract suppliers.
- Foster competitive spirit that contributes to increased innovation and stimulates growth.
- Create/attract pools of skilled, educated and experienced workers.
- Promote product and process improvements.
- Attract investment and investors in innovation (venture capitalists).
- Bring wealth into a region since clusters often are built around core export-oriented firms.

### **Endnotes**

\* U.S. Department of Commerce Economic Development Administration



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<https://www.stlouisfed.org/publications/bridges/winter-2000/spanning-the-region>

## Spanning the Region

### Faith Weekly Joins Community Affairs in Louisville

The Federal Reserve Bank of St. Louis has hired Faith Weekly as a community affairs specialist in the Louisville Branch. Weekly will assist in the Fed's efforts to provide banks with information on programs to meet community development needs and facilitate communication among local governments, community organizations, neighborhood groups and financial institutions.

Previously, Weekly was a CRA mortgage loan officer at Fifth Third Bank and managed its Community Resource Center, which promotes homeownership to low- and moderate-income residents. Weekly may be reached at (502) 568-9216.

### Southern Illinois Development Fund Formed

Wilhelm & Conlin Public Strategies, Inc., a policy and business development firm, has announced the formation of the Southern Illinois Development Fund. The fund will be a \$25 million for-profit, private equity fund that will invest in small business in southern Illinois (Springfield and south), eastern Missouri and western Kentucky. Investments will range from \$250,000 to \$2.5 million. The fund will be headquartered at Southern Illinois University (SIU)-Carbondale, and SIU will provide technical assistance. Currently, the fund has secured one investor for \$5 million and has interest from additional investors. The fund's organizers expect most of their investments to be in information technology, manufacturing, distribution services and agriculture-related services. For more information, contact Thomas E. Parkinson, fund manager, Wilhlem & Conlon, at (847) 866-1840 or [parkinson@wcstrategies.com](mailto:parkinson@wcstrategies.com).

### CDFI Fund Certifies First St. Louis CDFI

The CDFI Fund certified the first CDFI in St. Louis, Great Rivers Community Capital (GRCC). The CDFI Fund's \$660,000 award (\$150,000 capital grant, \$500,000 loan and \$10,000 technical assistance grant) will help GRCC achieve its objective of making first and second home-repair loans. GRCC is a start-up for-profit housing loan fund created by the nonprofit Justine Petersen Housing and Reinvestment Corporation to provide financing for low- and moderate-income homebuyers living in St. Louis. For more information, call Rob Boyle at (314) 664-5051, ext. 104.

### Fannie Mae Opens Kentucky Partnership Office

The Federal National Mortgage Association (Fannie Mae) will provide \$6 billion to finance affordable multifamily housing for 77,000 families over five years. Fannie Mae opened a Kentucky Partnership Office in Lexington, Ky., to administer the HouseKentucky initiative. The program is part of Fannie Mae's commitment to invest \$2 trillion to finance more than 18 million affordable units by the end of the decade.

## **NAACP Launches Loan Program**

The Memphis branch of the National Association for the Advancement of Colored People (NAACP) has been selected to participate in a five-year, \$6 million initiative to help increase homeownership among traditionally underserved populations, as well as increase small business loans to businesses that serve urban communities. For more information about the NAACP and Bank of America Home Ownership and Small Business Alliance Initiative, call (877) 622-2798.



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<https://www.stlouisfed.org/publications/bridges/winter-2000/resources>

## Resources

### Hannibal-Quincy Profile

The Federal Reserve Bank of St. Louis has produced a community profile, Community Investment Opportunities, for the Hannibal, Mo., and Quincy, Ill., region. The profile includes demographic data and areas of opportunity for lending, service and investment. It also identifies local, state and national development organizations offering services, programs and financing. For copies, e-mail [communitydevelopment@stls.frb.org](mailto:communitydevelopment@stls.frb.org).

### "I Love Being Self-Employed" Video and Training Kit

The Federal Reserve Bank of Cleveland has created a concise and simple microenterprise training kit. The training package includes a 12-minute videotape, instructor's guide, and student workbook. The kit is an excellent tool for educating bankers and funders about microenterprise. To order the \$25 kit, call Laura Kyzour at (216) 579-3111 or go to the Cleveland Fed's web site at [www.clevelandfed.org/community-development/overview](http://www.clevelandfed.org/community-development/overview).

### Building Wealth: A Beginner's Guide to Securing Your Financial Future

The Federal Reserve Bank of Dallas recently published this easy-to-read, how-to guide to provide information to your community on building personal wealth. To order a maximum of 50 copies of this free guide, call 1-800-333-4460, ext. 5254 or go to the Dallas Fed's web site at [www.dallasfed.org/pubs](http://www.dallasfed.org/pubs).