

# The Costs of Sprawl in Pennsylvania

Executive Summary January 2000



Executive Summary  
of the Study on the Costs of Sprawl in Pennsylvania  
*Conducted by Clarion Associates, Inc.*  
*Prepared for 10,000 Friends of Pennsylvania and*  
*Sponsoring Organizations*

## 21 Communities Studied in the Costs of Sprawl in Pennsylvania

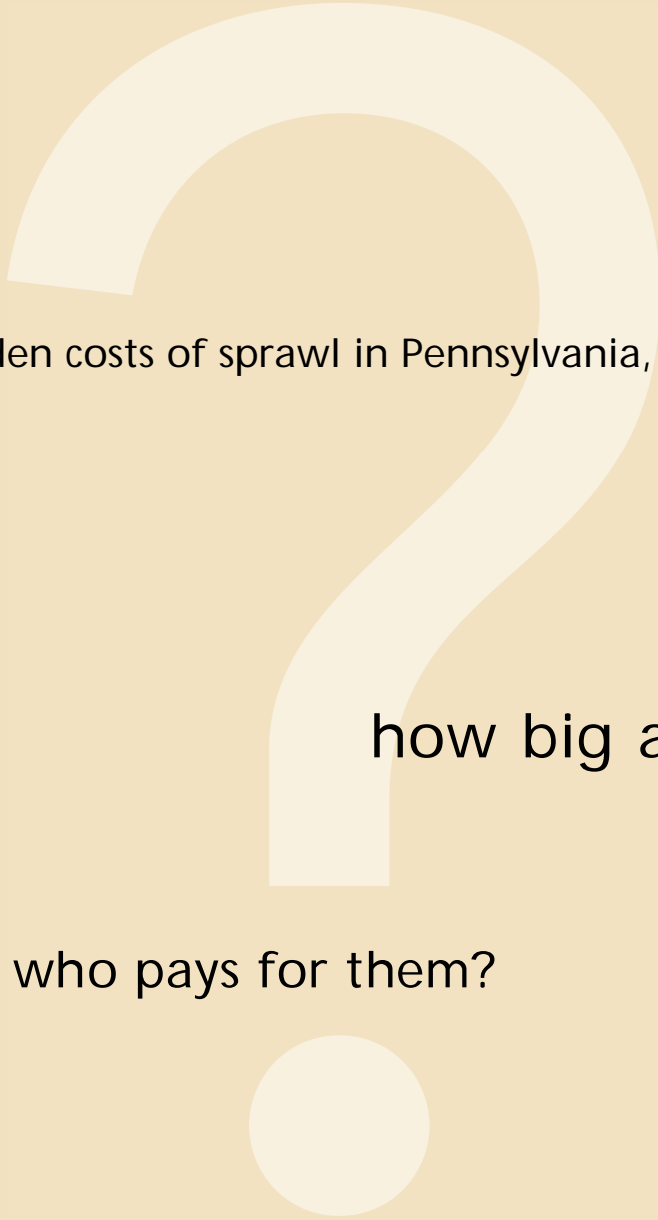


- Lehigh Valley Area  
(Includes Allentown, S. Whitehall, N. Whitehall)
- Meadville Area  
(includes Meadville, W. Meade, Vernon)
- Philadelphia Area  
(includes Philadelphia, Bensalem, Buckingham, Tredyffrin Township, Upper Darby Township, Uwchlan Township)
- Pittsburgh Area  
(includes Pittsburgh, Monroeville, Hempfield)
- Williamsport Area  
(includes Williamsport, S. Williamsport, Loyalsock)
- York Area  
(Includes York, Spring Garden, Springettsbury)



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What are the hidden costs of sprawl in Pennsylvania,

how big are they,

and who pays for them?

## INTRODUCTION

Americans are good at making choices - and pride themselves on their ability to make them well. Our thriving market economy provides us with a staggering variety of goods and services from which to choose. In fact, most Americans have developed skills to wade through the daily ocean of information and come to a relatively quick decision as to “what I want to buy.” The question then becomes “what does it cost?”

In many cases, the answer is easy – it’s the price written on the price tag. In other cases, it is not so easy. A car or a refrigerator has costs, beyond the initial price, that are ongoing, but those costs can be quantified with relative ease.

Unfortunately, it is much harder to quantify the true costs of our public policy and investment decisions with regard to land use. Ever since World War II, Pennsylvania, along with most states, has been making or tolerating public investment decisions and land use policies that have contributed to “sprawl” development patterns. In recent years, analysts’ warnings that sprawl carries hidden costs that are not being priced in the marketplace have begun to ring true in many people’s experience. Citizens and taxpayers who move to more rural suburbs for open space and inexpensive living find traffic congestion, decreasing open space, and increasing taxes to pay for new schools and services. Citizens and taxpayers in Pennsylvania’s many cities, towns (boroughs), and suburbs experience decaying infrastructure, loss of property values, and declining quality of life. All taxpayers, regardless of where they live,

often end up paying for these costs in duplicate as new infrastructure, schools, and services create new tax burdens in addition to those that already exist.

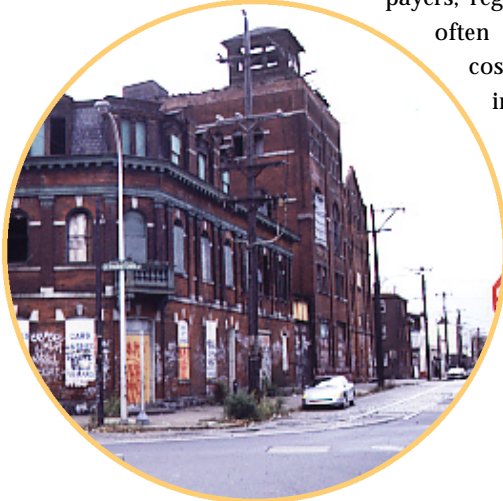
It has become increasingly clear that decisions about where to buy a house or locate a business are being made without a true understanding of the full costs involved. As the rate of sprawl has increased during the 1980s and 1990s, Pennsylvanians’ concerns about the impacts of sprawl have also increased.

The *Costs of Sprawl in Pennsylvania* study was undertaken in the belief that Pennsylvanians want and have the right to know what those costs are, how big they are, and how they may be required to pay those costs. They know that investment decisions do change when true costs are known, and that the economy will adjust to provide what people want to buy when they know what it really costs.

There is no denying that some aspects of sprawl development create benefits that are valued by many Pennsylvanians. In fact, the benefits of larger private open spaces and the freedom of individual automobile travel appear to be valued in every society where they are made available without reflecting the costs of use. But, it is important to realize that those benefits have costs associated with them that are borne by the general public, as well as individuals.

The *Costs of Sprawl in Pennsylvania* attempts to answer the basic question:

What are the hidden costs of sprawl in Pennsylvania, how big are they, and who pays for them?





# Sprawl

## What is Sprawl and How Do We Measure its Impact?

Although most Pennsylvanians probably “know it when they see it,” sprawl is difficult to define. The study defines “sprawl” according to the latest nationwide study evaluating the costs of sprawl.\*

Sprawl is a regional pattern of real estate development that is characterized by:

- Low density;
- Unlimited and non-contiguous outward expansion;
- Spatial segregation of different land uses;
- Consumption of outer suburban agricultural lands and environmentally sensitive lands;
- Travel dominance by motor vehicle;
- Small developers operating independently of each other; and
- Lack of integrated land use planning (due to a fragmented system of local governments with varying fiscal capacities).

All of the metropolitan regions analyzed in the study are experiencing sprawl according to this definition.

## The ‘costs’ of sprawl are:

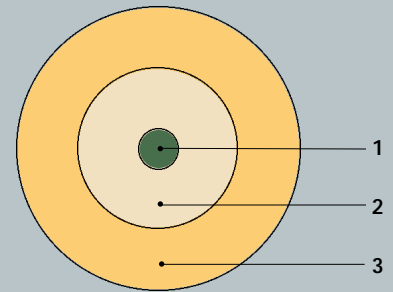
1. Costs to the individual, to the community, and to society;
2. Physical, monetary, temporal, and social/psychological; and
3. The resources expended relative to a type, density, and location of development.

Using this definition, the study documented as many costs as were capable of being quantified with available data. It identified not one, but many different price tags for sprawl.

## Methodology

The study documented the costs of sprawl through: a summary of national literature; a summary of Pennsylvania’s literature and specific studies on aspects of sprawl; seven case studies about the costs of sprawl in 21 Pennsylvania communities; and a final report on the costs of sprawl in Pennsylvania that synthesizes key information from the first three phases (supplemented by local government statistics, U.S. Census data, and other studies) and draws conclusions about sprawl in Pennsylvania.

As shown on the map on the inside cover, a wide range of areas from across the state was chosen for the study to compare the impacts of sprawl development among a geographically and economically diverse group of communities. Specifically, the study examined three different community sizes (small, medium, and large) in six different sample areas (Meadville, Williamsport, Lehigh Valley, York, Philadelphia, and Pittsburgh). The communities were characterized as a Core City, Inner Suburb, or Outer Suburb as follows.



1. *Core City* represents the historical center city of the area;

2. *Inner Suburb* is a jurisdiction representative of the first ring of post-WWII expansion outward from the Core City; and

3. *Outer Suburb* is a fringe area, further away from the Core City, which is still feeling the effects of active land development and growth.

The study also examined data from three different suburban townships in southeastern Pennsylvania (Upper Darby, Tredyffrin, Uwchlan) to provide more detailed data on the impacts of sprawl on older, mature, and expanding suburbs.

\* Burchell, et al. *The Costs of Sprawl-Revisited: Transportation Research Board, National Research Council (1998)*

*Clarion Associates, Inc., the firm that conducted the study, is a national real estate and land-use consulting firm with offices in Chicago, IL, Denver, CO, and Wayne, PA. With over 70 years of combined experience, Clarion's principals have worked for a variety of clients, including financial institutions, developers, corporations, law firms, architects, not-for-profits, and government agencies. Some of Clarion's clients include: Allegheny County, PA; City and County of Denver, CO; City of Anchorage, AK; Montex Property Management; Rockford International Airport, Rockford, IL; U.S. Agency for International Development; Equitable Real Estate Investment Management; Federal Reserve Bank; and General Land Development Corporation.*

*Clarion is particularly known for its expertise in: market studies; fiscal impact analysis; zoning and development codes; tourism-related development and community character; performance standards and innovative growth management tools; and airport-area development.*

### Major Findings

The study found that sprawl imposes five important types of costs, those costs are substantial, and most Pennsylvanians pay for those costs in one way or another. Sprawl development patterns create hidden costs that are borne by the people in the regions where the sprawl occurs, and in some cases, by all of the people of Pennsylvania. Some of the costs are paid through taxes and charges that are higher than they would be if sprawl did not occur. In other cases, they are "paid" through losses in the quality of life in the region where the sprawl occurred. The five types of costs that sprawl imposes are:

- Increases in the costs of roads, housing, schools, and utilities;
- Increases in the costs of transportation;
- Consumption of agricultural lands, natural areas, and open spaces;
- Concentration of poverty and acceleration of socio-economic decline in cities, towns, and older suburbs; and
- Increases in pollution and stress.

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## Sprawl Increases the Costs of Roads, Housing, Schools, and Utilities

Each year, Pennsylvania's local governments spend up to \$120 million more than they would spend if more compact forms of development were built.

### Sprawl results in:

- **Higher costs to build infrastructure and schools;**
- **Higher costs to operate infrastructure and schools;**
- **Higher combined construction and operating costs (life-cycle costs); and**
- **Higher land costs for housing.**

### Findings:

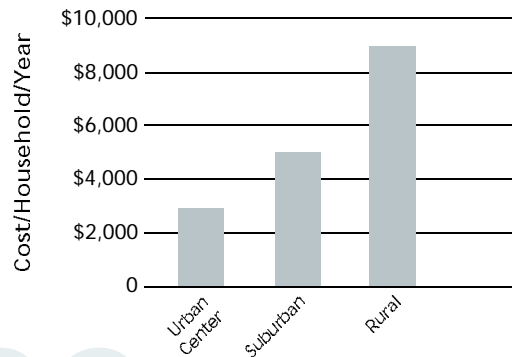
- Three major research investigations by Burchell (see *Phase I: Summary of National Literature Review*) have concluded that planned growth scenarios that avoid sprawl development can lower construction costs for roads, utilities, and schools up to 25%.

- Applying the above percentage savings to Pennsylvania would reduce costs borne by the citizens of the state at the local level. Applying the 25% savings in road construction costs to just the \$210 million that the state's local governments spent on road construction in 1995 would have saved approximately \$52 million in 1995 alone. Applying a blended savings rate of 10% (lower than the documented savings rates for roads and utilities, but higher than the documented savings rates for schools and "other" facilities) to the \$1.2 billion that Pennsylvania's local governments spent on all capital construction in 1995 would have saved \$120 million in 1995 alone.
- In the Philadelphia area between 1989 and 1998, sprawl led to the need to construct 21 new schools in the Outer Suburbs (to accommodate enrollment growth of 14%), while the number of schools in the Core City and Inner Suburbs declined by one (and still accommodated enrollment growth of 9%). Class size accounted for some of the difference between the Core City and other jurisdictions, but none of the difference between Inner and Outer Suburbs.
- National studies have found that at a statewide level of analysis, sprawl will raise private housing costs between 2% and 8% above what they would be under a planned growth scenario (provided that the total supply of housing is high enough to meet the demand).





Annual Transportation Costs for the Pittsburgh Region (1990)



Source: Southwest Pennsylvania Corporation and Clarion Associates, Inc.

# Utilities

## Sprawl Increases the Costs of Transportation

The study found a strong correlation between sprawl patterns of development and increased transportation and travel costs, including:

- Increased vehicle miles traveled (VMT);
- Lower use of transit, bikes, and walking;
- Higher costs from automobile accidents; and
- Less cost-efficient and effective public transit.

Following are some of the conclusions from the study:

- Throughout Pennsylvania, daily VMT per capita in the suburbs is about 50% higher than in urban areas, while VMT per capita in rural areas is about 150% higher than in the urban locations. Because of differences in VMT, the average suburban household spent about \$1,500 more per year on automobile-related costs, and the average rural household spent about \$4,600 more per year, when compared to a similar household in an urban location.

- Sprawl diverts public sector spending on transportation infrastructure to areas where more road miles are necessary to serve fewer people. Between 1986 and 1995 the City of Philadelphia received the lowest level of state funding for highway construction and maintenance in the Philadelphia case study area (far lower than its share of highway usage). Even after disproportionately high spending for mass transit is taken into account, Philadelphia received 50% fewer transportation dollars per capita than suburban areas with similar trip use and origin patterns.
- In the Pittsburgh area between 1970 and 1990, VMT per person increased by over 90%, average trip length increased from about seven miles per trip to 10 miles per trip, and VMT per household increased by over 60%.
- The low-density characteristic of sprawl makes the use of public transit as an alternative transportation mode less cost-efficient and effective. In the Philadelphia area, 40% of the Southeastern

Pennsylvania Transportation Authority's (SEPTA) annual operating deficit is attributable to only 13.6% of the total number of transit trips, which are longer suburban-city commutes.

- Indirect environmental and social costs (including air and water pollution, waste, noise, and costs of parking and accidents not paid by the transportation user) constitute about 16% of the cost per passenger mile for single-occupant vehicles (SOV), but are less than 7% of the total costs for transit use and a negligible share of the costs for walking and biking.
- Sprawl increases reverse commuting (commuting outward from Core Cities to Suburbs in order to find jobs). In the Delaware Valley, reverse commuting on public transit is subsidized at the rate of \$3.47 per trip, while intra-Philadelphia commuting is subsidized at the rate of only \$0.81 per trip. The net rise in reverse commuting between 1970 and 1990 increased public transit subsidy costs by about \$6 million per year.

## Sprawl Consumes Agricultural Lands, Natural Areas, and Open Spaces

### Sprawl has the following impacts:

- **Higher consumption of land per household;**
- **Loss of agricultural and environmentally sensitive lands; and**
- **Increased costs to maintain agricultural lands and open spaces.**

### Highlights:

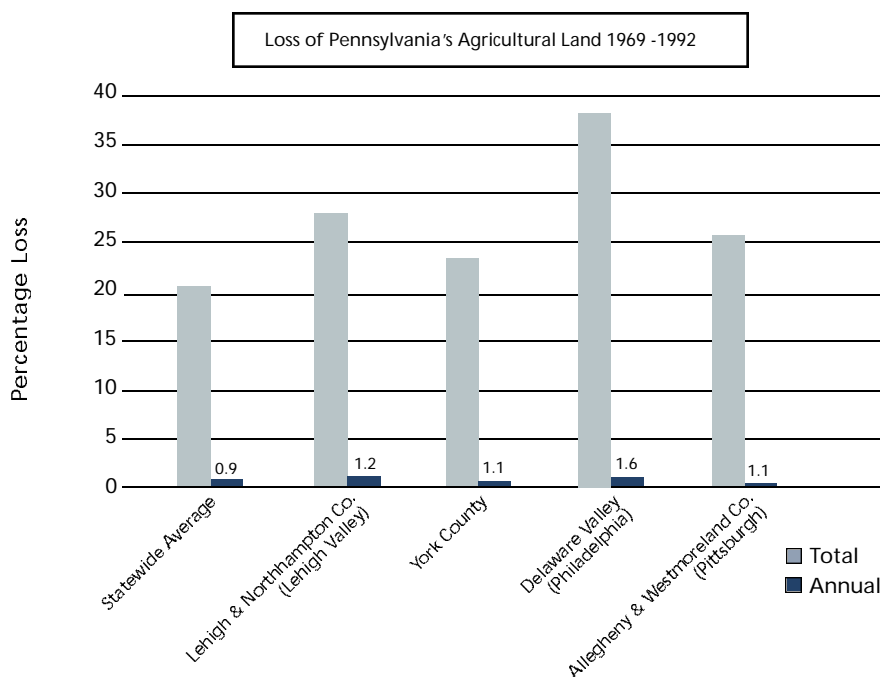
- Pennsylvania lost over 1 million acres of cropland, forest, and open space in just five years (1992-1997), ranking number two in the nation (after Texas) in conversion of total acres of land to development.
- While Pennsylvania has lost much agricultural land over the last 25 years, urban areas, such as Allentown, Philadelphia, Pittsburgh, Harrisburg, and Reading, have lost the most. These are also the areas producing Pennsylvania's highest value for farm products: 66% of the 1997 market value of PA agricultural products sold were from farms located in Pennsylvania's largest metropolitan regions.

- In just three short decades, almost 30% of York County's farmland was lost to suburban sprawl. The York County Planning Commission forecasts that if current trends continue the total percentage of farmland in York County may be less than 20% in approximately 20 years.
- In Chester County, every 100 acres of single-family residential development is supported by an additional 38 acres of roads and 18 acres of utilities. Because of the need for land to support the roads and utilities that support new homes, every one acre of single-family, residential development results in the loss of an average of 1.56 acres of agricultural, wooded, and vacant land.
- As shown in the graph below, Pennsylvania lost agricultural land from 1969 to 1992 at a rate of 0.9% per year, with a total loss of 20.9% over 23 years.
- The rate of agricultural land loss has accelerated during recent years, compared to historical rates of loss dating back to 1969. From 1969 to 1992, the average annual rate at



which Pennsylvania lost farmland was 0.9%. From 1982 to 1992, the average annual rate at which Pennsylvania lost farmland was 1.4%—that's a 50% increase in the rate of loss, compared to the 23-year average.

- Pennsylvania loses between one and six acres of agricultural land for each new household created. The figure is approximately one acre per household in larger communities, and increases to five or six acres per household in smaller communities.
- From 1980 to 1990, the population of the Reading metropolitan area grew by 16% and the number of households increased by about 21%, but the urbanized land area grew by 81%.
- Over the past decade, some Pennsylvania counties have incurred average costs of between \$22 and \$89 per household per year to preserve open space and farmland in the face of sprawl development pressures.
- Based on national studies, Pennsylvania could see reductions in the loss of fragile lands (which include wetlands, flood plains, critical habitat, aquifer recharge areas, stream corridors, and steep slopes) of between 17% and 27% under compact growth scenarios.



Source: Center for Rural Pennsylvania; Setting the Agricultural Agenda: Issues and Directions for Crawford County Agriculture, Crawford County Planning Commission, 1996; Lycoming County Comprehensive Plan, Amended December 18, 1997; and Clarion Associates, Inc.

## Sprawl Concentrates Poverty and Accelerates Socio-Economic Decline in Cities, Towns, and Older Suburbs

**Sprawl diminishes many Pennsylvanians' quality of life by:**

- **Increasing the concentration of poorer citizens in urban areas;**
- **Creating a lack of affordable suburban housing where job growth is greatest;**
- **Increasing tax burdens and fiscal distress for urban residents;**
- **Over-concentrating tax-exempt properties in urban areas;**
- **Over-concentrating regional financial obligations in urban areas; and**
- **Increasing pressures on historic properties.**

Highlights:

- Sprawl has concentrated poverty in both large and small urban areas across the state. In York, the percentage of children under 18 in poverty in 1990 was 31%; while in the Inner and Outer Suburbs, the percentage was 6%. In Williamsport, the urban core had 30% of children under 18 in poverty, while the suburbs had approximately 10%.

- Sprawl, and the relatively more expensive housing it tends to foster, reduce affordable housing opportunities and reduce the ability of the labor pool to locate closer to outer-ring suburban employment opportunities, exacerbating the spatial mismatch between some working populations and jobs. There were only two incidents (out of 12) in the case studies conducted in Pennsylvania where residents of a Core City could afford to buy a median-priced home (ranging between \$53,000 and \$245,050) in an Inner or Outer Suburb.
- The Delaware Valley Regional Planning Commission found that in 1990 a household earning the regional median income (ranging between \$23,392 and \$33,271) could not afford to purchase the median-priced housing unit in 81% of the Delaware Valley region's municipalities.
- Sprawl is not limited to Pennsylvania's major metropolitan areas. In Crawford County, most of the growth in the last 20 years has occurred in rural areas, even beyond the outer ring suburbs. The city of Meadville lost over 9% of its population between 1980 and 1996.
- Sprawl development generally results in residents of Core Cities having significantly higher real estate tax bills than residents of their Inner and Outer Suburbs.
- Sprawl has led to an over-concentration of tax-exempt properties in Core Cities. If the value of tax-exempt properties in each Core City were proportionate to its share of the regional population, the real estate tax burden on taxable real property in the Core City could be reduced between 15% and 25%.
- The fragmented system of local governments associated with sprawl development patterns results in Core Cities providing numerous expensive services that are consumed by the region as a whole, but for which the citizens of the Core City have to pay. In Philadelphia, the total cost of un-reimbursed regional services is over \$460 million per year. If it were able to be reimbursed for those expenses, Philadelphia's wage tax could be reduced by almost 40%.

Between 1985 and 1995,  
the provision of poverty-  
related services cost  
Philadelphia over  
\$134 million per year.

# Suburbs

- Sprawl is partly responsible for disinvestment and demolition of older properties. Some of these costs are borne by municipalities as they try to avoid the maintenance costs and liability risks of vacant tax properties. Since 1970, Philadelphia alone has demolished close to 29,000 residential buildings. The City of Erie has demolished 423 historic buildings, while the City of New Castle has demolished 174 historic buildings.
- Disinvestment and demolition of historic structures in older downtowns undermine the growing and lucrative heritage tourism industry. Heritage tourism accounts for 25% of tourism spending in the state. Each lost heritage tourism visit costs the state approximately \$335.
- Conversion of historic landscapes to residential development creates fiscal losses for the local governments where the land is located. A 1992 study of Straban Township in Adams County found that the costs of services provided per dollar of tax revenue was only \$0.12 for open land versus \$1.10 for land developed for residential uses.







# POLLUTION

## Sprawl Increases Pollution and Stress

### Sprawl leads to:

- **Increased air and water pollution; and**
- **Increased stress.**

### Findings:

- Studies by the North American Forestry Association estimate that, on an annual basis, a 50-year-old tree provides soil erosion and storm water control benefits valued at \$75, wildlife shelter benefits valued at \$75, air cooling services valued at \$73, and air pollution control benefits valued at \$50. If the value of these benefits were capitalized at a conservative rate of 5%, the market would value each tree at over \$55,000.
- The current growth rates of vehicle miles traveled (VMT) and the increase in the number of auto trips that are associated with sprawl are significant contributors to ozone and other air pollutants.

A study by the Chesapeake Bay Commission in 1997 found that air quality could be significantly improved by a 10% per year reduction in the growth rate of VMT. This could result in a reduction of 19.2 tons/day for ozone and oxides of nitrogen as well as a 287 tons/day decrease in carbon monoxide by the year 2020.

- Sprawl patterns of development appear to be linked with an increase in water pollution in the Chesapeake Bay watershed and other areas. A study in the Chesapeake Bay area found that moving from a sprawl pattern of development to a more concentrated pattern of development could decrease sedimentation by 2.3 million pounds, nitrous oxides by 1.5 million pounds, and water consumption by 38.1 billion gallons by the year 2020.

- Two studies suggest that greater stress is associated with a lifestyle that includes automobile commuting, which is, in turn, associated with sprawl. Nationally, between 1983 and 1995, the average commute time increased by 14% and commute lengths rose by 37% (from 8.6 to 11.6 miles). (Benfield 1999) According to a 1990 Novaco study, travel congestion was found to have statistically significant effects on job dissatisfaction, work absences due to illness, and overall incidence of colds or flu. This study also found that stress effects are strongly associated with freeway travel and road rage, both of which increase with the low densities and dispersed development patterns of sprawl.

Key Impacts of Alternative Development Patterns on the Chesapeake Bay & Watershed (1990-2020)

	Dispersed/Sprawl Pattern	Concentrated Pattern
Increase in Sedimentation	5.7 million tons	3.4 million tons
Increase in Nitrous Oxides	1.6 million pounds	.08 million pounds
Increase in Water Consumption	108.8 billion gallons	70.7 billion gallons

## CONCLUSION

Unlike many areas of the country, in Pennsylvania sprawl and its associated costs do not result from population growth pressure, but from changing demographics and patterns of development. In fact, Pennsylvania's population growth rate is not only low but actually decreasing. According to U.S. Census data, from 1970-80, Pennsylvania's population grew by 0.54%. From 1980-90, the growth rate decreased to 0.34%. In regions such as Atlanta, Denver, and Phoenix, sprawl is exacerbated by a high rate of population growth. When population growth is considered, Pennsylvania is consuming more land per person than any other state.

Pennsylvania needs and wants economic development and strong communities. The question is: Where do we want growth, how do we pay for it, and how can growth be accomplished in ways that keep our diverse urban, suburban, and rural communities healthy? The *Costs of Sprawl in Pennsylvania*, which is the most detailed and comprehensive study undertaken to date in Pennsylvania, begins to address this question. The findings from the study provide data to inform Pennsylvanians' public and private investment and policy choices so as to foster economic development that sustains our communities, protects our farmland and natural resources, and enhances our quality of life.

To obtain copies of the study, contact 10,000 Friends of Pennsylvania via email ([info@10000friends.org](mailto:info@10000friends.org)), fax (215-563-2204), or phone (877-568-2225). Copies of the study will also be made available on 10,000 Friends of Pennsylvania's website at [www.10000friends.org](http://www.10000friends.org).

### HOW TO USE THIS REPORT

This report should be used by individuals and firms to make location and development decisions, by local government officials to understand the impacts of development patterns and land use decisions in their area, and by state government officials to inform spending and policy decisions.

## ACKNOWLEDGEMENTS

The report on the Costs of Sprawl in Pennsylvania would not have been possible without generous contributions of time and money from many organizations and individuals. The sponsors of the study would like to extend particular thanks to the organizations that provided the financial support, to those individuals who served on the Advisory Committee, and to all of the local government officials who volunteered their time during the course of the case study process. The study was prepared by Michael Samuels and Donald L. Elliott of Clarion Associates, Inc. with project coordination by Joanne Denworth, Esq. of 10,000 Friends of Pennsylvania.

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10,000 Friends of Pennsylvania

Preservation Pennsylvania

Pennsylvania Environmental Council

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Pennsylvania Department of Conservation and Natural Resources

The information presented in this report does not necessarily represent the views nor imply endorsement by the participating governmental agencies.

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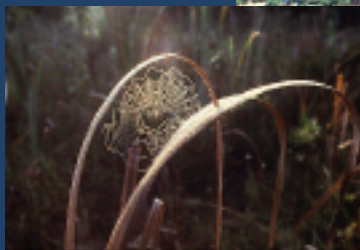
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