



How Suburban Sprawl Shapes Human Well-Being

H. V. Savitch

WELL-BEING AND THE PROBLEM OF CHANGE

It is not often that one has an opportunity to consider the politics of urban development and its relationship to human well-being. Many discussions of this kind are limited to political issues—or how groups use power to acquire terrain, set land use rights, and promote building policies. Other analyses point to the effects of urban development on land use—or how building policies change the placement of jobs, transportation, and commerce.^{1,2} Most socially oriented studies deal with how urban development affects income, class, or race.^{3,4} Economists tackling the issue are most interested in job creation, revenue generation, fiscal questions, and the like.^{5,6} These are not unimportant questions. Indeed, they touch our daily lives. After all, politics shape the rewards obtained by different groups, social relations determine where we live, and economics bear directly on the creation of wealth.⁷

Apart from these perspectives, human well-being has unique attributes and presents special opportunities. As I use the term *well-being*, it encompasses two components: (1) the evolving condition of our natural environment, and (2) the changing profile of our general health. Reversing the order somewhat, the World Health Organization employs the notion of health to include a variety of factors, defining it as not just the absence of disease but as “a state of complete physical, mental and social well being.”⁸ This approach points up the essential qualities and fundamental aspects of our existence. What can be more crucial than the surroundings in which we spend our waking lives, the relations we have with others, and our own physical vigor? Ultimately, we have to ask ourselves, to what purposes should we apply our energies? Why is it that we struggle over rewards to be obtained from designing the built environment? The answer lies in the improvement of our well-being.

While we can all agree on the general goal of improved well-being, achieving it is more easily said than done. The issue of well-being is confounded by the larger problem of how we change. Beyond this are corollary questions that require us to understand why certain situations cannot be changed, why some things might be changed, and how some situations can be changed. Addressing these questions requires backing up a bit—first by reviewing those forces that propel urban develop-

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Dr. Savitch is with the School of Urban and Public Affairs, University of Louisville, Louisville, KY.

Correspondence: H. V. Savitch, Urban and Public Affairs, University of Louisville, 426 West Bloom Street, Louisville, KY 40208. (E-mail: hvsavi01@louisville.edu)

ment, then by explaining why some may be immutable, next by tackling their effects on human well-being, and finally by determining how we might change.

SITUATIONS WE CANNOT CHANGE

Certain factors govern urban development that we cannot do much about. These are called *structural conditions* because they underlie our social order and pertain to relatively durable constraints on political decisions. Structure is a kind of genetic code over which we have little control, but which continues to shape manifest actions. Some of our foremost structural conditions include geography, culture, and the march of technological advance.

Geography has made America one of the few continental nations of the world. We sometimes take for granted that this country stretches across a huge expanse, conveying an impression of seemingly unlimited land. Geography has given Americans the capacity to travel across the continent, live wherever they choose, and become profoundly individualistic. Historically, Americans felt they could settle anywhere on the continent for religious reasons or any other reason. Massachusetts for Puritans, Maryland for Roman Catholics, Utah for Mormons, and the deserts of Nevada for gamblers are just a few examples of open spaces for practicing individualists. Our culture produced free-spirited cowboys who roamed across vast prairies or mountain trappers who survived by steely courage. Today's blue-collar hero drives an 18-wheel tractor-trailer and races across an open landscape. While the lifestyle of truckers may be easier, their penchant for individualism, mobility, and freedom is no less stringent.

Most important, the sheer availability of land prompts Americans to move onto new land once old uses have been deemed obsolete. Italians or Japanese would not think of abandoning cities because land is so scarce in those countries. Instead, our brethren in other countries preserve and restore old buildings, adapting them to new uses and bolstering city centers with public investment. By contrast, Americans are inclined to abandon industrial neighborhoods, sometimes leaving whole cities in favor of sprawled residential tracts, edge cities, and strip-zoned highways.^{9,10} For good or bad, we are a society of great abundance whose mentality leads us to believe that everything is disposable. Much as we might discard a used automobile, so too do we discard cities that no longer suit our purposes.

Cities that at one time held the industrial might of America have been reduced to shells. Within a few decades, Cleveland, Detroit, and St. Louis lost a third or more of their population and employment. We are not talking about a few isolated places, but a host of central cities that have been traumatized by deindustrialization, population flight, and disinvestments.¹¹

Table 1 presents a list of some of the most distressed cities in the country. It shows population and employment change between 1970 and 2000.

The shifts are dramatic and go beyond mere statistics. The physical damage is all too evident in abandoned downtowns, boarded-up buildings, run-down housing, and the devastation of social life. One can only fathom the effects these losses have on children, families, the infirm, and the elderly. When people and jobs evaporate, so too does the maintenance of municipal services, the care of open space, and the availability of health care providers.

For those lucky enough to escape these conditions, the boomtowns of the Sun Belt and metropolitan suburbs held considerable opportunities. The introduction of new ways of building (along horizontal planes rather than vertical poles), new

TABLE 1. Population and employment in 20 distressed cities: 1970–2000

	Population			Employed Residents		
	1970	2000	Percent Change	1970	2000	Percent Change
Hartford	158,017	121,578	–23	68,168	42,449	–37.7
Newark	382,417	273,546	–28	137,362	90,838	–33.9
Cleveland	750,903	478,403	–36	287,416	180,698	–37.1
Baltimore	905,759	651,154	–28	355,999	256,460	–28.0
Chicago	3,366,957	2,896,016	–14	1,390,161	1,220,633	–12.2
New York	7,894,862	8,008,278	1	3,204,995	3,280,124	2.3
Detroit	1,511,482	951,270	–37	562,043	331,638	–41.0
Gary	175,415	102,746	–41	62,744	35,922	–42.7
Dayton	243,601	166,179	–32	97,532	69,593	–28.6
St. Louis	622,236	348,189	–44	232,351	143,973	–38.0
Atlanta	496,973	416,474	–16	210,713	183,376	–13.0
Rochester	296,233	219,773	–26	121,762	91,993	–24.4
Milwaukee	717,099	596,974	–17	300,931	256,473	–14.8
Philadelphia	1,948,609	1,517,550	–22	769,370	585,353	–23.9
Buffalo	472,678	292,648	–38	172,172	114,213	–33.7
Boston	641,071	589,141	–8	267,915	286,147	6.8
San Jose	445,779	894,943	101	163,039	437,089	168.1
Richmond	249,621	197,790	–21	104,658	91,066	–13.0
Akron	275,425	217,074	–21	104,939	99,380	–5.3
Springfield	163,905	152,082	–7	64,967	60,689	–6.6

Sources: US Bureau of the Census, *Population of the 100 Largest Urban Places: 1970*; US Bureau of the Census, *Ranking Tables for Incorporated Places of 100,000 or More: Population in 2000 and Population Change from 1990 to 2000* (PHC-T-5); US HUD, *State of the Cities Data System*, 2003.

equipment (robotics, fiber optics), and high technology (computers, satellite imagery) changed the industrial face of America. As anyone can tell, we have entered an information age. This is a time Alvin Toffler has called “the era of the electronic cottage.”¹² Some scholars claim we no longer need highly dense surroundings and cities. Presumably, we can do everything from our computer terminals in the mountains and the deserts. According to some futurists, technology has shrunk space, and we should be able to live and work anywhere. As the theory goes, even face-to-face contact can be facilitated by occasionally hopping on a plane or taking the nearest interstate. That is a disputable conclusion, but it has some resonance. Planners have argued that we can have community without propinquity; we can build a highly interactive community in cyberspace and discard the quaint notion that human interaction requires physical proximity.¹³

Geography, culture, and technology fuel centrifugal forces that push human settlement well beyond central cities. Giving sustenance to these forces are automobiles and superhighways. The very character of freeways means that transportation patterns can be fluid. Automobiles expand the uses to which land can be put, making settlement patterns more explosive—almost randomly apportioned by points along fluid highway corridors. To appreciate that argument, think of the multiple exits one can take along interstate corridors and the local roads onto which people can fan. Consider this American pattern, as opposed to a European model of rail terminals, which are relatively fixed, and where settlement is clustered around set points,

such as traditional cities, small villages, and new towns. That is why the French, Germans, and British are able to build compact communities near newly extended rail stations.

THINGS WE CAN CHANGE BUT WILL NOT

Somewhere in a gray area between relatively unchanging structural factors and more malleable, discretionary conditions is our organization of government. To be sure, our government is built on long-term cultural features and social values. In America, few values are as highly regarded as the right to private property. The protection of private property is a sacred constitutional principle, and in some ways safeguards our right to sprawl across the landscape. So deeply ingrained is that value that two constitutional amendments are explicitly taken up with protecting private property. Indeed, some of the most quoted passages of the Federalist Papers deal with how limited government can protect private property.¹⁴

Our government is a guarantor of private property, and this entails safeguards against centralized, arbitrary authority. Limited government lies at the heart of democratic, pluralist societies, and we remain quite exuberant about that principle. One way of assuring those limitations was to decentralize power from federal levels to state and local levels.

Tip O’Neil’s aphorism that “all politics is local” tells us something about how local government has evolved in the United States. The more local governments proliferate, the better they are able to maintain that locus of power. By the year 2000, Americans could count over 85,000 governments, over 513,000 officials elected in townships, villages, small municipalities, and counties across the nation.¹⁵ This gives us a ratio of one government for every 3,529 residents. Keeping governments small means keeping them numerous. Keeping governments numerous enhances local choice, and enhancing local choice strengthens homegrown interest groups.

The power of local interest groups has profound consequences for the rise of what has been called growth machines, namely coalitions of realtors, bankers, newspaper publishers, developers, and public officials who are anxious to build. In varying degrees, growth machines dot every city and hamlet in the nation.³ Their members learn to control planning commissions, zoning boards, and local councils. Lawyers, realtors, and insurance brokers fill influential seats within these institutions. When not actively lobbying for particular projects, growth machines exercise passive or institutional control over the built environment. Investment bankers and developers are routinely consulted over the placement of roadways and bridges, over whether to build housing subdivisions, and over the construction of shopping malls. Generally, these organizations build with a view to maximizing profit—sometimes at the expense of the built environment.¹⁶

There is nothing necessarily “evil” about the activity of growth machines or “wrong” about maximizing profit. Indeed, one might argue that they are normal expressions of democracy and market economics. That said, growth machines do not arise through some natural complex of events, nor must they be inevitable. Rather, they are made possible by the construction of a fiscal system under which our local governments operate.¹⁷ More than anything else, local fiscal autonomy is the driving force of growth machines and, by extension, the impetus for urban development.

Unlike cities in Europe or most other parts of the world, American cities are

largely responsible for raising their own budgets and do so by taxing residents and business. Cities also take on this responsibility without much of a federal or state cushion. In a sample of 15 large cities, the average proportion of federal aid in 1996 was 6.2%, while the average state proportion amounted to 21.2%. This amounts to a total of just 27.4% of local budgets covered by intergovernmental aid, which is among the lowest for an advanced industrial nation. (This should be considered in the context of the fact that many European central governments pay for police, fire, and education—services that constitute a large proportion of local budgets.) This low proportion of intergovernmental aid exposes localities to a competitive marketplace. To survive and prosper, localities must attract as many revenue raisers as possible, while minimizing revenue consumers. Localities are constrained to limit expenditures and expand opportunities for private investment. Minimizing environmental protection, reducing land use controls, building more roadways, and extending infrastructure into the countryside is an ideal way to accomplish this.

No jurisdiction wants to embark upon growth restraint when it is competing with other jurisdictions for economic development.¹⁸ Growth machines can be valuable allies in the quest for investment dollars. They enable local governments to compete by helping them to recruit industry, lower taxes, and offer land concessions to potential investors. Growth machines are often lodged in local chambers of commerce, and it is not unusual for these coalitions to work under contract with city halls and take on quasi-governmental responsibilities. Growth machines can be very aggressive in competing for investment. The most sought-after development prizes are airports, sports teams, convention halls, new industry (sometimes pirated from another jurisdiction), or other sources of investment.^{19,20}

The competition for these prizes can be fierce. From the viewpoint of local economic development, we have embarked upon endless competition and what has come to be called “place wars.”²¹ In New York and New Jersey, the competition for jobs and capital became so severe that the two states had to sign a “nonaggression pact.”²² No sooner had the pact been signed than it was broken. Seen in perspective, these events reflect competitive struggles between governments that try to outbid each other and in the end defeat any common purpose.

In the Midwest and South, localities enthusiastically bid for sports teams and airline hubs. By and large, private investors determine placement and design of the stadiums used to attract professional teams and the facilities used to draw airlines. While some stadiums are built within urban cores, others cater to a “tailgate party” clientele and seek large parking spaces so that fans can picnic out of their automobiles. Similarly, airline maintenance centers and terminals are built across vast stretches of terrain. In the West, water and sewerage are extended into deserts to accommodate development. Built out of the desert, both Las Vegas and Phoenix are among the country’s fastest growing cities—made possible by an abundance of surrounding land.

Localities make up for low intergovernmental aid by attracting federal dollars in other ways. Military bases, air and space investments, and other governmental expenditures often boost local economies, serving as a source of indirect revenue.²³ Also, localities augment their revenue through highway and bridge building. Over the short run, federally supported construction indirectly fills local coffers by boosting sales or payroll taxes. Land values also increase around bridge and highway entry points, and this may augment property taxes. Yet for all the temporary stimulus brought by sprawl, it often creates other fiscal expenses (infrastructure, new schools, higher prices) as well as social costs (health, environment, esthetics).

Some of the largest defense contractors are located in open spaces like Southern California (Lockheed, Northrop), while a good many outlets have sprung up in Colorado (Hewlett Packard, Honeywell, United Technologies). Texas and Florida also house NASA, the nation's space enterprise. Highways and bridges push settlement outward into the hinterland and exacerbate the declustering of cities.

Not surprisingly, house building follows the placement of industry and the infrastructure laid out to accommodate new capital. Residence is built apart from commerce and separated from commerce, schools, leisure, and other types of social activity. Typically, one needs an automobile in order to buy groceries, shuttle children around town, or go to the movies. Simple acts like having a quick lunch, buying odd items, or making a bank transaction can all be carried out without even removing oneself from an automobile seat.

There are also political implications to this pattern of building. Once developed, many of the new communities incorporate as separate municipalities, which serves as a way to lock in tax revenues and is known as defensive incorporation. These localities are also able to control zoning and land use, thereby determining the type of resident who is able to buy a house in the area. The effect of this building pattern is to "zone in" prosperous white middle-class households while "zoning out" poorer minority residents.

This is one reason why the social gap between cities and suburbs has burst wide open. In 1950, \$1 earned by a suburbanite was matched by \$1.05 earned by a city dweller. By 1970 that ratio had been reversed, so that \$1 earned by a suburbanite was matched by only \$.96. By 1990 suburban income had soared and that same dollar was matched in the central city by just 59 cents.²⁴

Racial segregation was little better. Social scientists often rely on an index of dissimilarity to measure racial segregation. Such an index measures the distribution of a given group within a specific area. The index varies from zero, indicating perfect integration across an area, to 100, showing complete segregation. The differences between white and black Americans are especially sharp. Most of our major cities continue to show indices above .70, meaning that 70% of blacks would have to move for a neighborhood to be fully integrated. To illustrate, by the year 2000 the Cleveland metropolitan area registered .83 on its index of dissimilarity. Chicago scored similarly at .84, while Philadelphia was somewhat lower at .76. The New York metropolitan area stood at the higher end of the scale at .81. This tells us more than three-quarters of black residents in our major cities would have to move into white neighborhoods to achieve racial balance.

SITUATIONS WE CAN CHANGE BUT HAVE YET TO ACT UPON

At the other end of the spectrum are matters that are relatively short term, subject to change and to political discretion. These are largely issues of policy made by government over the course of time. The list of specific initiatives taken to support urban sprawl is quite extensive and reaches back a half century or more. By the end of World War II, single-family housing received an immense boost. The GI Bill did nothing directly to build suburban housing, but instead accelerated sprawl by insuring mortgages and writing down (indirectly subsidizing) interest rates. Before Washington's full-blown intervention, prospective buyers were required to put up a third of the appraised value of a house before obtaining a mortgage.²⁵ Typically, home loans extended over 10 or perhaps 20 years.

Once undertaken, federal insurance simply eliminated the risk to lenders and made mortgages not only more abundant but significantly cheaper and extended them over 30-year periods. Moreover, postwar benefits helped write down loans to veterans, and this opportunity was eventually extended to modest-income buyers. Interest rates were gradually shaved off, and by the 1950s were down to 5%. Houses could be bought with just a few thousand dollars in cash, and mortgage payments might very well equal the cost of renting an apartment. These policies paved the way for standardized housing construction. Much like automobile production, suburban housing could be erected with assembly-line techniques and division of labor. Farmland could be cheaply bought, subdivided, and covered with “Levittowns” spread across the landscape.

Federal tax laws proved to be an even more powerful incentive for residential householders. Interest on mortgages could be deducted from the tax bill, and these payments often climbed to roughly half the cost of a house purchase. Meanwhile, no such advantages were accorded to renters living in apartment buildings. People discovered that it was as cheap to buy as to rent shelter and quickly took advantage of the benefits. Since 1934, the proportion of families living in owner-occupied dwellings has risen from 44% to 67%.^{26,27} Home interest deductions have exacerbated the policy imbalances toward cities. Using 1997 as an example, the foregone taxes on these deductions (mostly benefiting suburbanites) were about four and a half times the Department of Housing and Urban Development’s direct spending on housing subsidies.^{28*}

At the same time, federal tax policy has been used to encourage commuting by private automobile. Tax laws permit deductions for parking spaces. Companies can offer up to \$175 per month in tax-free parking for each employee, while mass transit benefits over \$65 per month are counted as taxable income.²⁹ We have a situation in this country where a suburbanite driving a gas-consuming, highly polluting sport utility vehicle enjoys subsidized parking, while most of the costs for rail transit are passed on to passengers.

Tax policies related to property may also have keyed up the urge to sprawl through the Taxpayer Relief Act of 1997. Under this law, individuals are permitted to exclude up to \$250,000 (\$500,000 for joint filers) of capital gain on the sale of a residence. In theory at least, the exclusion would yield large profits for lavish houses and would encourage wealthier taxpayers to purchase larger homes on larger lots. Since the exclusion could be claimed every two years, prospective homeowners can move further into the countryside on larger spreads of land. The push toward exurbia is made all the more attractive by public subsidies for new sewer construction. By 1980, the federal government was absorbing 75% of sewer construction costs, up considerably from a previous 20-year period.²⁸ The irony is that while subsidies go toward the consumption of new land, the reuse of old land is actually penalized. Federal environmental requirements impose costs on city gov-

*There is no mistaking the popularity of tax benefits. Homeowners constitute a formidable political constituency and could prod politicians with measures for self-protection and taxpayer revolts. When President Jimmy Carter suggested a reduction in tax benefits for home mortgages, he found himself deluged with angry protests and immediately retracted his hasty proposal. Since then, national politicians have steered clear of the issue. In fact, Bill Clinton and Al Gore treated tax policies that encouraged sprawl very gingerly. They shied away from raising taxes on gasoline and took no stand on taxing vehicles that consume large amounts of gasoline.

ernments or potential purchasers to clean up brownfields before any development can be undertaken.

The most significant discretionary policy promoting sprawl is our penchant for highway construction. Americans have always loved roads and highways, but the romance blossomed with the adoption of the National Interstate and Defense Highway Act of 1956. Since then the amount of federal money put into endless ribbons of concrete has exploded. In the past three decades alone, over a trillion dollars have been spent on highways.³⁰

Figure 1 shows a line graph representing a recent 13-year period, and shows the relative amounts spent on highways versus mass transit. In order to better gauge the impact of this spending at the time of expenditure, the lines are calibrated to nominal dollars.

Note that the nominal amounts soared by more than 100% between 1982 and 1994. We can also see the lines between highways and mass transit spreading farther apart. In 1982, highways consumed at least 75% of total spending, and by 1994 this proportion had increased to 84%.³¹ Since that time, Congress passed in 1998 a massive 6-year, \$216 billion highway and mass transit law, which represents a 40% increase over previous spending. The measure has been hailed as the largest public works legislation in history. Again, in this new legislation, the proportional shares for highways versus mass transit are interesting. Highways absorb 80% of the bounty, while mass transit is left with 18% (2% is reserved for safety and miscellaneous purposes).³²

Moreover, federal funding for interstate highways began far ahead of programs for mass transit, and from the onset was protected through the Highway Trust Fund. Even after the introduction of mass transit, highways enjoyed a large advan-

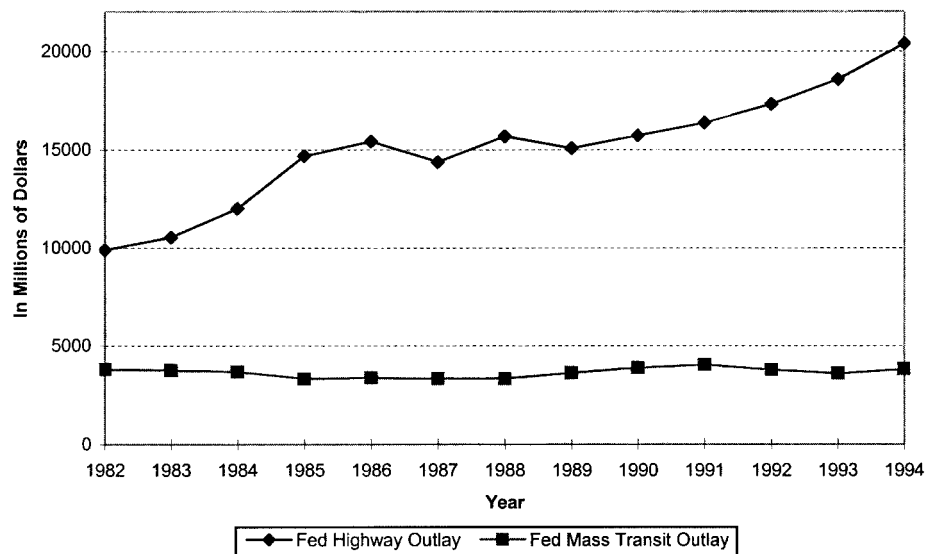


FIGURE 1. Federal outlays on highways and mass transit, 1982–1994. (Source: US Department of Transportation, Bureau of Transportation Statistics. 1997. *Federal, State and Local Transportation Financial Statistics, Fiscal Years 1982–1994*. Publ. No. BTS-97-E-02. Available at: www.bts.gov. Accessed May 2000.)

tage. Money for highway construction could be automatically tapped through user taxes with localities contributing just 10% of the cost, while Washington paid for 90% of the remainder. It took nearly two decades and a series of congressional brawls before cities could tap the trust fund for other transit purposes. Even then, cities choosing to substitute mass transit for highways received just 80% of matching funds from Washington.³³ Highway defenders often argue that motorists and truckers pay their own way and are entitled to those funds, but this is not quite the case. A study by the US Congress Office of Technology Assessment found that motorists “paid 62–72 percent of public expenditures for highway infrastructure,”^{34(p213)} while government absorbed the rest. This does not include a host of indirect subsidies for the occurrence of personal injuries, opportunity costs for land use, pollution, and congestion.

Commensurate with these findings, federal actions have their consequences. Directly or indirectly, federally encouraged sprawl has increased both trip length and travel time. Between 1969 and 1990, vehicle miles traveled by commuters soared by 74%, while all types of vehicle miles traveled rose even more, by 82%.³⁵ Mean travel time for most metropolitan areas has also increased. One study of more than 60 metropolitan areas showed that in many instances the average driver spent as much time in traffic each year as on vacation.³⁶ Another study put the figure higher, calculating that American drivers spend 443 hours each year in their automobiles.^{37,38} We can only speculate about the accumulation of wasted time, lost energy, and missed opportunities for rejuvenation created by this inefficiency.

The contradictions stemming from technological advance, patterns of settlement, and sheer politics are startling.³⁹ While technology has shrunk time and distance, patterns of human settlement and regional fragmentation have expanded the time it takes to get from one place to another as well as the distance required for travel. People, buildings, commerce, and leisure have thinned out across the American landscape, making it easy for some and difficult for others to reach. As I shall show below, there are important results for human well-being, ranging from increased air pollution to strains on water resources and our physical conditioning.

EFFECTS ON WELL-BEING

At the outset, we should recognize that it is not easy to draw causal links between one variable and another. In many cases, we may find an association, even a strong association, between different factors, but these variables can be related in many different ways. Sometimes they can be connected through intervening linkages, while at other times they may be connected by mere happenstance, showing up as spurious correlations. So we do need to be careful about how we connect events, and where the associations are loose we should treat observations as plausible though unconfirmed hypotheses. With this in mind, I begin with the strongest causal links and move toward weaker associations.

One apparent outcome of sprawl is its impact on traffic fatalities. The very design of most new suburbs is geared to automobile use. Built astride major highways, guided by clover-leaf construction patterns, and lacking in pedestrian walkways or dedicated bicycle paths, these suburbs can be a hazard for anyone not shielded by an automobile. Over a recent 2-year period, 10,696 pedestrians were killed by automobile accidents. As a society we make just 6% of our trips on foot, yet pedestrians absorb 13% of all fatalities caused by automobiles. Many of the

victims are people who never drive and include children and the elderly. In most cases, the accidents occur in places where crosswalks are not available.⁴⁰

More extensive damage is done by motor vehicles to the air we breathe. Automobiles and trucks are the major cause of air pollution. By the end of the last decade, road vehicles accounted for approximately 58% of carbon monoxide emissions, nearly 30% of nitrogen oxides, roughly 27% of volatile organic compounds, and about 9% of particulate matter.⁴¹ The Clean Air Act (1970) and the Intermodal Surface Transportation and Efficiency Acts (1991 and 1998) have dramatically reduced pollutants from motor vehicles.

Nevertheless, the total effect of clean air legislation has been limited because the proliferation of suburban development causes us to take shorter trips more often. According to recent surveys, most trips are taken by a single driver; 90% of those trips are 10 miles or less; and 25% are less than 1 mile.⁴² Thus, while “point of source” pollution has decreased, frequency of automobile use and increased numbers of automobiles on the road have offset hoped-for improvements.

Table 2 displays the impact of automobile use within 30 of our largest metropolitan areas. The table shows the annual number of pounds of smog per person as well as the percentage accounted for by cars and trucks.

While there is some variance in the relationship between sprawl and smog, some of the most affected areas are the most smog ridden. These include Charlotte, Dallas, Hartford, and Norfolk. Densely packed New York City does relatively well while Chicago, Providence, and San Francisco fare somewhat worse, but are better than average.

Considered over a period of time, the contradictions between reducing pollution at the point of source and its increase through suburban design are particularly sharp. Of 207 metropolitan areas analyzed between 1990 and 1999, less than 14 have experienced a reduction in pollution while more than 17 have seen an increase; the balance of these areas remained unchanged. All told, 20% of Americans lived in areas where the air was considered to be unsafe.⁴³

We pay a steep price for the privilege of sprawl. In one way or another, exposure to smog has been implicated in a host of illnesses. These diseases tend to be chronic and range from asthma to bronchitis, and ultimately to the exacerbation of heart ailments, emphysema, and pneumonia. Ascertaining the cost of pollution to human life is enormously difficult, and the figures are widely discrepant. But we do know that those most hurt are children as well as racial or ethnic minorities concentrated in poorer neighborhoods.³⁸

We also know that improved design and mass transit can substantially ameliorate this threat to well-being. Atlanta is one of the most sprawled metropolitan areas in the nation. Yet when that city hosted the 1996 Olympics, it temporarily changed its ways. This was done by concentrating activities in specific areas, investing in environmentally friendly landscape design, and using mass transportation. The quickest and most apparent result was a reduction by 41.6% in asthma admissions to hospital emergency rooms.^{41,44}

Sprawl has other environmental consequences. Carpeting rural areas with concrete parking lots has a serious effect on the water we drink. Under natural conditions, rainfall is captured by vegetation, swamps, trees, permeable soil, or other natural absorbents. These areas act to retain and purify water for further recycling. Once natural habitats are covered over with impermeable surfaces, the hydrologic cycle is destroyed, causing immense runoffs, floods, and water contamination. The volume of storm water that washes off a parking lot is 16 times greater than the

TABLE 2. Smog in 50 largest metropolitan areas: 2002

City	Pounds of smog per person	Percent of smog
New York, New Jersey	54	35.8
Chicago–Gary–Kenosha, Illinois	69	30.2
Las Vegas, Nevada	57	25.8
Los Angeles–Riverside–Orange County, California	65	47
Providence (All Rhode Island)	65	45.5
San Diego, California	69	47.8
San Francisco Bay area, California	65	46.9
Baltimore, Maryland	72	38.5
Miami–Fort Lauderdale, Florida	72	43.7
Phoenix, Arizona	70	36.3
Sacramento Metro, California	70	52.4
Washington DC Metro	72	38.5
West Palm Beach, Florida	73	38.4
Denver, Colorado	78	28.3
New Orleans, Louisiana	77	14.1
Philadelphia, Atlantic City–Trenton, Pennsylvania, New Jersey	77	35
Austin, Texas	83	43
Boston–Worcester–Lawrence, Massachusetts	82	39.3
Buffalo–Niagara Falls, New York	83	35
Charlotte–Gastonia, North Carolina	93	35
Dallas–Fort Worth, Texas	89	48.5
Hartford (Greater Connecticut)	91	46.8
Houston–Galveston–Brazoria, Texas	85	23.7
Norfolk–Virginia Beach–Newport News, Virginia	93	34.4
Pittsburgh–Beaver Valley, Pennsylvania	92	35.6
Portland, Oregon	93	40.3
Raleigh–Durham–Chapel Hill, North Carolina	92	40.3
Rochester, New York	87	36.7
Salt Lake City, Utah	90	34.4
Tampa–St. Petersburg–Clearwater, Florida	88	33.5

Source: Sierra Club. *Sprawl Report, Cleaning the Air*. San Francisco, CA: Sierra Club, 2001.

amount that can be absorbed in a field. Invariably, rainfall from parking lots mixes with grit, oil, and other debris, contaminating its flow into reservoirs or other holding bins.

Here again, environmental hazards contribute to health hazards. Waterborne diseases are a case in point. Research on this problem shows the highest incidence and quickest contagions occurred after heavy rainfall fell onto impervious surfaces. By contrast, groundwater contamination was slower and weaker.⁴⁵

Last, I turn to the effect of the built environment on our physical and psychological condition. Not only do we construct our built environment, but after that construction our built environment constructs us. In many ways we are products of that built environment. Cities enable their residents to remain anonymous (because one can easily get lost in crowds) or become avid participants (because crowds and organizations are available). Living in a city profoundly influences perspective because it opens us to multiple streams of information. Urban residents are more likely than their rural counterparts to be more tolerant, innovative, and lib-

eral. Accounting for social class, they are more likely to be concerned about energy conservation, environmental hazards, and the benefits of exercise.^{46, 47}

There was a time when urban societies were built in tight, integrative, clustered forms.^{48,49} At the heart of that society was a spatial idea that emphasized centrality, continuity, mixed use, and easy access. Classic cities around the world still function around those concepts. New York and Paris are easily identified by their most visible landmarks (Times Square, Champs-Élysées) where transportation lines converge (centrality). Streets, plazas, boulevards, and river walks are connected by a recognizable, continuous pattern of development (continuity). Normally, a variety of functions (commerce, schools, leisure, and housing) are located in close proximity to one another (mixed use). This developmental pattern integrates a multiplicity of different activities into the fabric of society. The mere act of moving from one activity to another requires that we use our muscles, stimulate our hearts, and activate our minds. Under these conditions, keeping fit is a normal, everyday requisite of life.

Since World War II, we have gradually traded in that built environment for a spatially diffuse, discontinuous, and functionally segregated spatial order. As mentioned, American suburbs are segmented by place of employment, separated by residence, and remain apart in distinct locations—most of which are difficult to access without a private automobile. This pattern of development limits physical activity, and exercise can only be undertaken by special effort. Gymnasiums and health salons may serve some, but the majority of suburbanites gravitate toward a more sedentary life.

Moreover, the design of most suburbs encourages sedentary behavior by making it difficult to walk, run, or cycle along safe pathways. More often than not, local streets are devoid of sidewalks, pathways and parks are at a distance from suburban housing, and the absence of street lamps discourages evening walks.

It may not be by chance that as suburbs have grown, we have seen a diminution of physical activity and suffered attendant health problems.⁵⁰ The effects of this lifestyle bear not just upon adults but upon children as well. One study shows that in 1977 children between the ages of 5 and 15 years walked or biked in 15.8% of their trips. Less than 20 years later, by 1995, that figure had dropped to just 9.9% of trips. Other studies show similar declines in the number of children who walk to school.⁵¹

The most worrisome trend in American life is the rise in numbers of obese and overweight individuals. Obesity rivals smoking as a major health problem. Those saddled with this condition have a higher risk of diabetes, cardiovascular disease, and cancer. Today, 20.1% of Americans are obese and 36.7% are overweight.⁵² Over time, the condition has become more prevalent. Shortly after the end of World War II the shift was gradual, but among adults it has jumped in the last two decades. Among children, obesity is now commonplace and continues to rise. Today, the obesity rate among children between ages 2 and 5 years is an astonishing 10.4%.⁵³

While many factors (diet, genetics, race, age, educational level) contribute to obesity, sedentary lifestyle stemming from sprawl may be important. The Centers for Disease Control has reported some connection between sprawl and obesity.^{41,54} Another independent study constructed a measure of sprawl (indexed from 0 to 100) and utilized self-described rates of obesity (reported by the Behavioral Risk Factor Surveillance System, BRFSS). It also controlled for a variety of other factors such as race, ethnicity, gender, and age. This study showed a strong association

between the extent of sprawl and rates of obesity. The conclusion was rather pointed, with the author claiming that for every single point rise in the sprawl index, the obesity rate increased by .5%.⁵²

While we can determine some association between sprawl and obesity, the causation is still murky. Conceivably, the lines of association could run in a different direction. For example, obese people may seek locations that are more easily accessible by automobile or suburbs that make few demands for physical exertion. Sprawl, then, could be an effect of obesity rather than a cause. Nevertheless, it seems likely that obesity is due to an accumulation of factors, none of which excludes the other. Evidence of a connection has begun to cohere and warrants serious consideration.

Taking a broader geographic plane, we can see how obesity manifests itself across the country. Figure 2 shows the extent of obesity by body mass index, based on weight and height, for 2001 in states on the US mainland. Note that the most severe obesity occurs in south central and north central areas of the country. In the south central area, states like Texas have high levels of sprawl, while north central areas like Indiana and Michigan are also high on sprawl indices.⁵⁵

However tentative, these linkages warrant further scrutiny. Lack of exercise can exacerbate already existing maladies such as hypertension and depression. The fiscal cost related to obesity is estimated at \$100 billion annually, while the costs to our well-being are incalculable.

HOW AND WHAT WE MIGHT BE ABLE TO CHANGE

The worse thing we can do in trying to bring about change is to attempt the impossible. We should recognize those things we cannot change. We are not likely to change the structure of intergovernmental relations or substantially change local fiscal autonomy. Certainly, we cannot change the geography, the culture, or the technology that feed sprawl. Suburbs and exurbs are here to stay, though their wildcat advance can be slowed and growth can be intelligently managed.

What we can most directly change is policy, and with care we can change some institutions that regulate local policy. My approach to this problem is to adopt what is sometimes called an incremental strategy. By incremental I take Lind-



FIGURE 2. Obesity by body mass index, 2001. All respondents 18 and older who report that their body mass index (BMI) is between 25.0 and 29.9. BMI is defined as weight in kilograms divided by height in meters squared (w/h^{**2}). (Source: US Department of Health and Human Services, Centers for Disease Control and Prevention, Behavioral Risk Factor Surveillance System, 2002.)

blom's^{56,57} definition, described as a step-by-step process of policymaking that involves a series of continual comparisons between means and ends. Incrementalism enables us to reach limited, though very achievable, results that can become cumulative over time. While incremental change can be slow, compromised, and frustrating, its flexibility can be a great source of resilience. To elucidate this point, I focus on three basic measures that can be accommodated by an incremental strategy.

The first measure is that we need regional authorities that foster cooperation among local governments and enable them to adopt common land use policies. We already have legislation that makes this possible. The Interstate Surface and Transportation Act (ISTEA) encourages localities to band together and operate loose confederations in order to contain sprawl, establish air pollution controls, and create growth boundaries. In addition, several states (Washington, Maryland, Florida) have authorized interlocal cooperation and/or mandated urban growth plans.

America is a vast country with enormous diversity. The Northeast is very different from the industrial Midwest, the agricultural West, and the high-tech far West. Regional authorities will have to operate with a great deal of flexibility. The American situation is also compounded by great racial and ethnic cleavages. Any effort to establish interlocal cooperation must inevitably deal with a host of emotions surrounding issues like race and poverty. Clearly, one size does not fit all, and we will have to create institutions whose political forms are quite diverse. Nevertheless, we can find or invent institutions that do the job.

The range of institutional choice is quite wide. Minneapolis–St. Paul (the Twin Cities) have gone a long way toward establishing a regional federation. As it is known, the Twin Cities Metro combines eight surrounding counties that still control basic land use. While allowing these localities breathing room, the Twin Cities Metro has been able to take its own deep breaths. It has established a regional strategic plan, bought land, engaged in tax-sharing, quelled some of the competition, and mandated that every locality absorb a modest proportion of low- and moderate-income housing. This means that developers have to allocate 10% of the total capital for moderate- to low-income housing. Twin Cities Metro presents a way of nibbling at the problem, while appreciating the thresholds that people will ultimately accept.

Portland, Oregon, presents still another model. It directly elects a regional council that operates common functions and over the years has adopted creative land use policies. By 1997 the Portland Plan was passed, enabling the region to reduce the size of building lots and adopt zoning ordinances that promote mixed-use development. Portland also utilizes a tramway for inner-city commuting, and it has established boundaries around which growth cannot take place.

Localities across North America have begun to take regional action, although it is not nearly enough to match the problem. Seattle, Washington, and Vancouver, Canada, utilize special districts to manage land use, pollution, mass transit, and economic growth. Some cities like Indianapolis, Jacksonville, and Louisville have turned to city-county consolidation—effectively abolishing their central cities in favor of unified county government.*

*This measure is controversial and may be self-defeating. First, unlike regional federations, city-county consolidation does not account for continued suburban growth and, once undertaken, it is difficult to extend the scope of regional institutions. Second, abolishing or merging central cities into larger suburban agglomerations tends to bury urban interests rather than resolve them. Third, its ability to promote democratic expression and minority interests is dubious because increased size dampens participation. Last, the efficiency and effectiveness of large-scale consolidation is in serious doubt.

The second measure is for regional institutions to adopt common land use policies and strategies for managed growth. Growth boundaries that limit development within a particular sphere can be immensely useful. These boundaries can be used in conjunction with land trust funds, so that green space can be purchased and set aside for preservation or recreation. Zoning ordinances such as those adopted in Portland and Vancouver can help in reclustered the American landscape by mixing commerce, leisure, schools, and housing so that activities are in close proximity. Farmland can be “up-zoned,” making it difficult for developers to subdivide property. All of this should set the preconditions for more efficient commuting. Mass transportation requires a mass of population settlement, and this remains a primary requisite for a sound environment.

We will never overcome our urge to sprawl unless we have a suitable rail policy. America has a very unbalanced transportation system, consisting of either automobiles or airways. Air travel is unfeasible for medium-range mass transit. Many interstate highways and bridges are clogged, and building more highways only creates a vicious cycle that encourages still greater reliance on automobiles. We remain one of the few industrial nations that does not have a reasonable rail policy, including light rail for the cities and medium rail transportation for medium-distance travel. The technology exists, including magnetic levitation devices that lift trains off platforms. Trains can carry three or four times the number of passengers that a single airplane does. Modern rail does this quickly and efficiently and delivers passengers to compact settlements.

Bringing these changes about is not easy. There are certain policies that middle America will accept and others it will categorically reject. Middle America will support environmental preservation, but not environmental intrusion. People will agree to higher taxes in order to set up land trusts or up-zone farmland, but they will not agree to blanket restrictions on land use or higher taxes to support low-cost housing.

This may seem like hypocrisy, and unfortunately it can result in inconsistent applications of public policy. But hypocrisy can also be the lubricant of politics. It can lead to incremental gains in some areas, while holding off murderous opposition in others. Middle America will not buy into policies that threaten too many people at once, but it will accept policies that cleave off smaller portions of the body politic for reform.

Not too long ago, some colleagues and I worked with a group in the Cincinnati suburbs. This group consisted of about 100 well-educated community leaders and public officials involved in three prosperous counties. To give them a glimpse of the future, we showed aerial maps of Los Angeles with the introduction, “If you want to see what your community will look like 10 years from now, here’s a picture of it.” Next, we surveyed the audience and asked how many would agree to land use restrictions in order to preserve the environment. Again, the response was overwhelmingly positive. The conclusion: shown the alternatives, most people are willing to put qualification on land use rights.⁵⁸

This brings me to the third and last measure for change. All of us can and do support greater public participation in land use policies. Unfortunately, much of that participation has been ceded to growth machines, with too few of us having influence over what and how things are built. In addition to a more active citizenry, we should be integrating planners, architects, researchers, and other professionals into land use decisions.

A major part of this integration should include health care providers. We are

accustomed to consulting with engineers about the need for utility lines. Developers often use market researchers to determine shopping needs. Town councils and planning boards often conduct transportation studies to determine the impact of growth on local roadways. But we rarely use health providers and environmentalists to help us make decisions about urban development. Yet this is essential for advancing human well-being.

We not only need to achieve this as a matter of practice, but we should formally incorporate this kind of participation into land use decisions. Before building another cloverleaf subdivision without recreational space, we should hear from professionals about its effects on well-being. Before constructing another roadway, we should learn about its potential for contaminating the air. And before neglecting to build sidewalks for easy access to shopping, we should be informed that daily walks can combat heart disease, depression, and obesity. Our well-being deserves those considerations.

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