SMART GROWTH POLICIES

AN EVALUATION OF PROGRAMS AND OUTCOMES

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CAMBRIDGE, MASSACHUSETTS

Library of Congress Cataloging-in-Publication Data

Smart growth policies : an evaluation of programs and outcomes / edited by Gregory K. Ingram ... [et al.].
p. cm.
Includes bibliographical references and index.
ISBN 978-1-55844-190-3
1. City planning--United States. 2. Urban policy--United States. 3. Cities and towns--United States--Growth. I. Ingram, Gregory K.
HT167.S53 2009
307.1'2160973--dc22
2009015272

Designed by Jean Wilcox / Wilcox Design, Cambridge, MA

Composed in Scala. Printed and bound by Kirkwood Printing, Wilmington, MA.
The paper is Rolland Opaque, an acid-free, 30 percent recycled PCW sheet.

MANUFACTURED IN THE UNITED STATES OF AMERICA

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PREFACE AND ACKNOWLEDGMENTS

Smart growth principles have guided some U.S. policy makers since the early 1970s in planning for urban growth, promoting transit, and reducing low-density development. These growth management approaches have attracted much public attention and research, but they have received little systematic evaluation. Several states have applied smart growth policies for decades, and others are just beginning to use them to address emerging issues. As the country faces significant challenges in its housing markets, energy policies, and environmental priorities, this is an appropriate time to assess the impacts of smart growth programs and document lessons that can be learned for the design and implementation of future policies.

To this end, the Lincoln Institute of Land Policy initiated a research project in late 2006 to evaluate the effectiveness of statewide smart growth policies from 1990 to 2000 (or as far past 2000 as data allowed). The analysis focused on four states with well-established statewide smart growth programs (Florida, Maryland, New Jersey, and Oregon) and four other states (Colorado, Indiana, Texas, and Virginia) that offered a range of other land management approaches.

The goal of the evaluation was to examine the effectiveness of various policies in achieving five commonly shared smart growth objectives: (1) promote compact development; (2) protect natural resources and environmental quality; (3) provide and promote a variety of transportation options; (4) supply affordable housing; and (5) create net positive fiscal impacts. Using 52 indicators based on U.S. Census Bureau data and other state and local datasets, several research teams compared differences in performance among all the selected states and between the groups of smart growth and other states.

The evaluation reveals that the states, their policies, and their priorities are very heterogeneous. No state did well on all smart growth principles or on all performance measures, although individual states succeeded in one or more of their priority policy areas. For example, Oregon's commitment to establishing urban growth boundaries was able to reduce development on farmland in the Willamette Valley. Oregon also performed well in reducing automobile congestion by encouraging commuters to use transit and by systematically planning for bicyclists and pedestrians.

New Jersey policies that responded to state supreme court decisions led to an affordable housing approach that slowed house price escalation and encouraged rental and multifamily housing production. Although the state's affordable housing requirement mandated by the courts was established somewhat independently of smart growth concerns, the legal rules ensure New Jersey's long-term commitment to this goal.

Maryland was successful in protecting natural resources through its land preservation programs and state funding for the purchase of farmland conservation easements. At the same time, some smart growth states did poorly in policy areas that were not given high priority during the study period, such as housing affordability in Florida, Oregon, and Maryland.

The message is clear: achieving smart growth is possible, but states have to remain focused on their key policy goals. No single approach is right for all states, and the most successful states use a variety of regulatory controls, market incentives, and institutional policies to achieve their objectives. Although Colorado has no statewide smart growth program, for example, it outperformed some states with such policies by supporting local government actions to pursue effective land use planning within a regional context.

The findings of this study offer quantitative evidence about the effectiveness of smart growth policies that may be useful as governments struggle to manage growth and development in the context of high energy costs, historic housing market difficulties, and increasing pressures to reduce greenhouse gas emissions. Many objectives of smart growth—such as the creation of compact, transit-accessible environments—are precisely the outcomes posited to address these current challenges. The study concludes with recommendations on how to strengthen program structures by increasing

transparency, identifying functional linkages for policy design, and improving the sustainability and monitoring of programs.

The evaluation was conducted by several research teams that drew on the results of case studies commissioned for the eight selected states. Separate teams assessed the degree of success in attaining each of the five smart growth objectives by analyzing performance indicators across all eight states. Another team surveyed opinion leaders on their perceptions about the efficacy of smart growth programs and the institutional structure for implementing growth management policies.

The principal investigators of each policy area and authors of the corresponding chapter are:

- Growth Patterns and Trends: Gerrit Knaap and Rebecca Lewis
- Natural Resources and Environmental Quality: Terry Moore and Beth Goodman
- Transportation: Tim Chapin and Keith Ihlanfeldt
- Affordable Housing: Stuart Meck and Timothy MacKinnon
- Fiscal Dimensions: Robert W. Burchell and William R. Dolphin
- Survey of Opinion Leaders: Allan Wallis

State case studies provide detailed background on the political, environmental, and regulatory conditions in the states and their performance on smart growth or other growth management policies. The researchers and authors of the eight case studies are:

- Florida: Tim Chapin and Keith Ihlanfeldt
- Maryland: Gerrit Knaap and Rebecca Lewis
- New Jersey: Stuart Meck
- Oregon: Terry Moore and Beth Goodman
- Colorado: Allan Wallis
- Indiana: Eric D. Kelly
- Texas: Robert G. Paterson, Rachael Rawlins, Frederick Steiner, and Ming Zhang
- Virginia: Casey Dawkins

Tom Clark and Allan Wallis created the state flowcharts of major growth regulations and initiatives in the appendix. Without the dedication, enthusiasm, and good humor of all these scholars, the evaluation and the publication of this book would not be possible.

At the Lincoln Institute, Gregory K. Ingram synthesized the findings of the research teams, drafted the policy recommendations, and prepared the summary presented in chapter 9. Yu-Hung Hong collaborated with Tom Clark and Allan Wallis on chapter 2, which outlines the methodology used to evaluate smart growth programs and describes the regulatory systems in the eight case study states. The book editors worked together on chapter 1 to set the stage for the analysis with a brief review of U.S. urban growth patterns from 1970 to 2000 and the evolution of state policies designed to shape land use.

Many colleagues provided valuable comments, advice, and research assistance at different stages of the project. We thank Shlomo Angel, Steven C. Bourassa, Randall Crane, Richard England, Michael J. Greenberg, Michael L. Lahr, David Luberoff, and Peter Pollock for useful comments on earlier drafts of particular chapters. Diana Brubaker and Raphael Isaac provided skillful assistance in literature review and data gathering.

Over the course of this two-and-a-half-year study, members of the research teams met three times at Lincoln House to present and discuss interim results. Valuable logistical support for these events was provided by Vikram Bapat, Brooke Digges, Mary Hanley, and Rie Sugihara.

No book can be published without the endless efforts of editors. Marcia Fernald skillfully edited the original manuscript and turned it into a more integrated and readable text. The copyediting and production process was managed with great care and patience by Ann LeRoyer, with assistance from Jean Wilcox on book design.

To all these highly dedicated individuals who have contributed to this project, we give our heartfelt thanks.

Gregory K. Ingram
Armando Carbonell
Yu-Hung Hong
Anthony Flint

PART I.
INTRODUCTION AND METHODOLOGY

CHAPTER 1

URBAN DEVELOPMENT PATTERNS AND SMART GROWTH POLICIES

Despite the widespread adoption of smart growth principles (see box 1.1), there has been little systematic assessment of their effectiveness or consequences. To fill this need, the Lincoln Institute of Land Policy collaborated with 14 of the country's leading public policy researchers and planners to measure performance in four states with statewide smart growth programs (Florida, Maryland, New Jersey, and Oregon) and performance in four states without such programs (Colorado, Indiana, Texas, and Virginia). The analysis begins with the 1990s, the first decade for which detailed, consistent data are available.

This introductory chapter sets the stage for the evaluation with a brief review of long-term urban growth patterns in the United States, and describes the evolution of state policies from an anti-growth to a growth-accommodating stance.

URBAN GROWTH PATTERNS

Low-density development at the urban periphery has been endemic since World War II. Over recent decades as concerns

Box 1.1 **Ten Smart Growth Principles**

1. Direct urban development to area where land is already served by existing infrastructure to avoid costly duplication of services.
2. Provide a variety of housing choice (especially affordable housing) by promoting mixed land use.
3. Ensure an equitable and predictable process in land development decisions.
4. Facilitate an adequate mix of transportation modes.
5. Improve environmental quality by conserving open space, farmland, and sensitive land areas.
6. Preserve local culture and natural environmental features in designing new development.
7. Promote stakeholder collaboration and community participation.
8. Design staged growth in urban fringes with compact development patterns.
9. Enhance access to public and private resources for all residents.
10. Revitalize existing urban and rural neighborhoods into safe and livable communities.

Source: Adapted from DeGrove (2005).

mounted about the economic, social, and environmental impacts of sprawl, many states and localities began to put policies in place to shape settlement patterns. By the 1990s, these efforts—intended to encourage more compact development, greater transit use, and enhanced environmental protection—came to be known as "smart growth" programs. While the meaning of this term continues to evolve, today's sustainable development initiatives share many of the goals originally promoted by the smart growth movement.

While researchers and policy analysts agree that low-density developments have been expanding beyond urban areas, the scope and pace of this shift are less well known. As figure 1.1(A) shows, average developed land per capita in the United States increased from 0.32 acres in 1982 to 0.38 acres in 2002.[1] At the same time, however, figure 1.1(B) indicates that incremental land consumption (i.e., the amount of newly developed land per additional person) averaged about 0.6 acres—nearly twice the level of average land consumption.

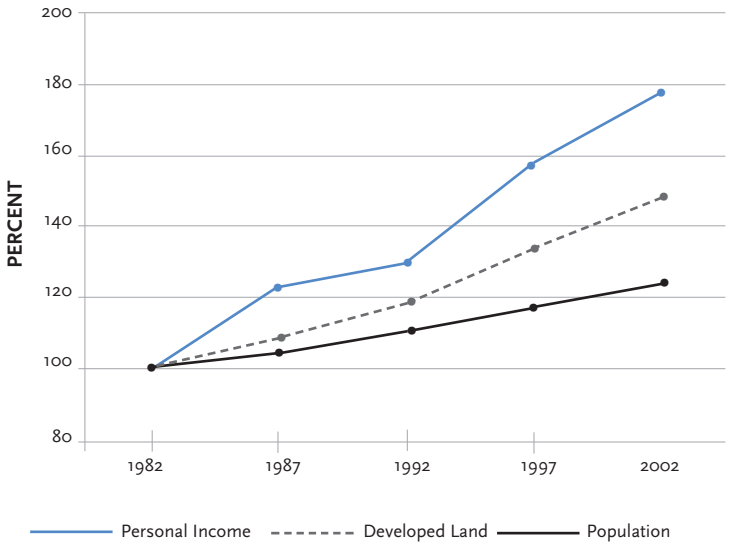
Figure 1.2 illustrates how population and income growth have helped to drive up land consumption and reduce development densities. During the same 20-year period, the U.S. population increased by 24.2 percent and personal income by 77.2 percent, while the number of acres of developed land climbed by 46.3 percent. If developed land area rises in line with population, these growth rates imply that the income elasticity of demand for developed land is about 0.3. Glaeser, Kahn, and Rappaport (2008) estimate that the elasticity of demand for lot size with respect to household income ranges from 0.25 to 0.5 for single-family detached homes and apartments. In other words, if personal income doubles, lot size will expand by 25 to 50 percent and overall developed land by about 30 percent.

Spatial Gini coefficients provide another perspective on the deconcentration of the U.S. population. If the population were evenly distributed, the spatial Gini coefficient would be zero; if the population were concentrated in a single zone, it would be one. Increases in the spatial Gini coefficient over time

Figure 1.1 **Change in Developed Land, 1982–2002**

Sources: U.S. Department of Agriculture (2003); U.S. Census Bureau (2007).

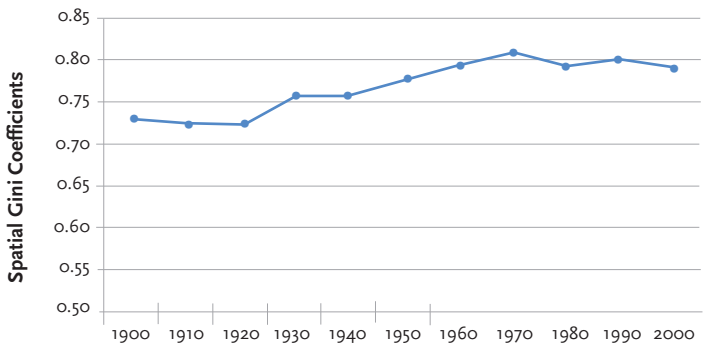
Figure 1.2 **Percent Growth in Personal Income, Developed Land, and Population, 1982–2002**



Notes: Personal income is in 2005 dollars. Population and developed land estimates do not include Alaska.

Sources: U.S. Census Bureau (1990c; 2000c); U.S. Census Bureau (1990d; 2000d); U.S. Census Bureau (2007); and U.S. Department of Agriculture (1982; 1987a; 1992; 1997; 2003).

Figure 1.3 **Spatial Gini Coefficients for Population Concentration in the Lower 48 States, Based on County Data**



Source: Ingram and Whitehead (2008).

therefore indicate that the distribution of the population is becoming more concentrated, while decreases indicate that the pattern is becoming more dispersed (Ingram and Whitehead 2008).

The spatial Gini coefficients from 1900 to 2000 for the country as a whole, excluding Alaska and Hawaii, are presented in figure 1.3. Starting in about 1920, the concentration of population at the county level rose more or less steadily from 0.73 to 0.80. By 1970 overall concentration leveled off, just at the point when concerns about urban sprawl began to escalate.

REGIONAL DEVELOPMENT PATTERNS

Regional trends in population density are similar to but more diverse than the national trend. Table 1.1 details land consumption and development density by region in 1982–1992 and 1992–2003, while figure 1.4 shows average and incremental densities during the same two periods. The table data show that in 1982 average density in the Northeast (6.16 persons per acre) was more than twice that in the South (2.72 persons per acre) and in the Midwest (2.67 persons per acre), while density in the West (3.52 persons per acre) was in between. By 1992, the South, Midwest, and Northeast had low incremental densities (in the 0.90 to 1.77 persons per acre range) while the West had a higher density of 4.08 people per acre.

Between 1982 and 1992, the incremental density was lower than average density in all regions except the West, and it declined over time in all regions except the Midwest. Between 1992 and 2003, the Northeast had by far the highest average density and the lowest incremental density (see Fulton et al. 2001 for similar findings).

During these two periods, population growth and incremental density were not closely related. The Northeast experienced the slowest growth in population and developed area,

Table 1.1 **Change in Land Consumption and Development Density by Region, 1982–1992 and 1992–2003**

	Average Developed Acres per Person at Beginning of Period	Average Density at Beginning of Period (Persons per Acre)	Added Population (Millions)	Added Developed Acres (Millions)	Incremental Developed Acres per Person	Incremental Density Over 10 Years (Persons per Acre)
1982–1992						
West	0.28	3.52	9.89	2.43	0.25	4.08
Northeast	0.16	6.16	0.16	0.09	0.57	1.77
Midwest	0.37	2.67	2.14	2.38	1.11	0.90
South	0.37	2.72	10.44	7.10	0.68	1.47
1992–2003						
West	0.28	3.61	10.76	3.53	0.33	3.05
Northeast	0.18	5.49	0.17	0.21	1.21	0.82
Midwest	0.40	2.50	4.42	3.80	0.86	1.16
South	0.40	2.47	15.75	11.69	0.74	1.35

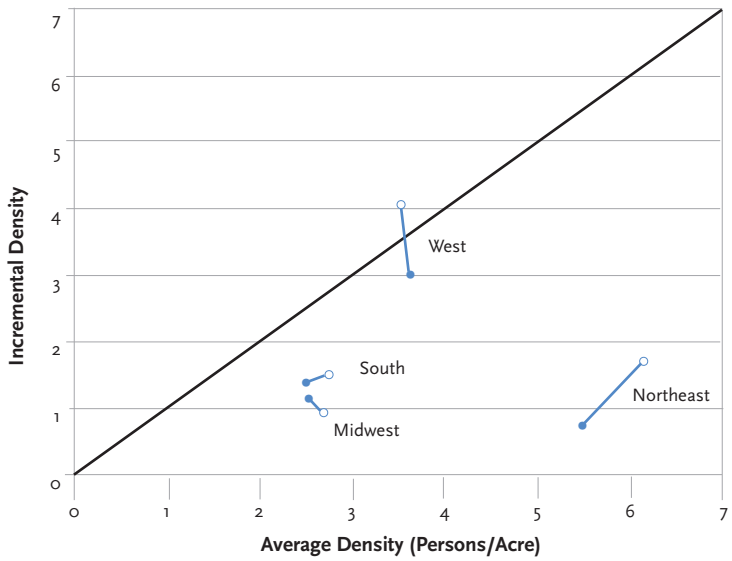
Sources: U.S. Census Bureau (2007); U.S. Department of Agriculture (2003).

and incremental density was low. The Midwest had the second slowest population growth, along with low average and incremental densities. The South gained the most population and continued its pattern of low density development. In contrast, the West saw rapid population growth but still managed to keep incremental densities higher than elsewhere in the country.

CHANGES IN STATE POPULATION DISTRIBUTION

The sharp variation in the distribution of population is most apparent at the state level. Indeed, the populations of 27 states became more spatially concentrated at the county level between 1970 and 2000, while the distribution in 21 states became less concentrated. As figure 1.5 shows, 11 of these 21 states saw their population disperse steadily over the period. While this deconcentration appears to be independent of the pace of population growth and the state's spatial Gini coefficient, high density states (such as California, Michigan, Pennsylvania, and Florida) seem more likely to experience population dispersal than low density states (such as Idaho and Missouri).

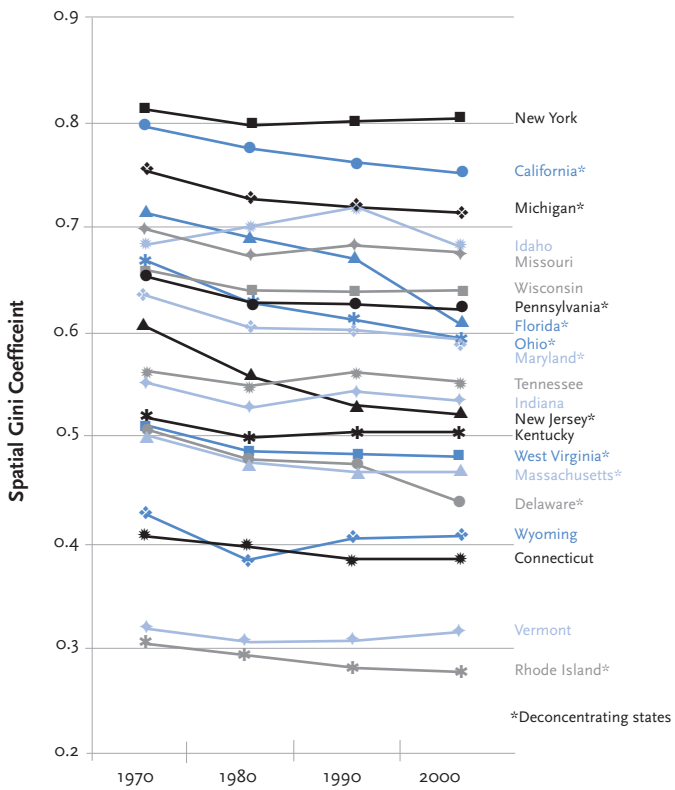
Figure 1.4 **Change in Average and Incremental Densities of U.S. Regions, 1982–2003**



Source: Calculations by the authors.

These measures indicate that densities in the nation as a whole, as well as in many regions and states, have indeed fallen as growth in developed land area continues to outpace increases in population. This dispersion of the population—both within and across counties—has prompted some states to enact smart growth programs in an effort to limit urban and residential sprawl and its attendant effects. The potential negative impacts include increased costs of local infrastructure and service provision, transportation, land conservation, urban decay, and environmental pollution. The balance of this chapter describes the history of state programs that attempt to address these issues.

Figure 1.5 **Spatial Gini Coefficients for 21 Selected States, 1970–2000**



Source: Ingram and Whitehead (2008).

THE EVOLUTION OF SMART GROWTH

This study defines "smart growth" as a family of related policies with similar goals that have evolved over time. As such, the term refers not only to the latest incarnation of policies originally known as "land use control" and "growth management," among others, but also to the movement itself. This movement reflects a more or less continuous process of state land use policy development that began sometime before 1970 and continues today. Although different states join or exit the smart growth movement and policy priorities shift over time, the essential coherence of these programs has persisted.

The antecedents of smart growth were environmentally driven, regional planning friendly land use programs that extended to the substate, state, and even federal levels, although proposals for national land use legislation were short-lived. Instead, national legislation focused on clean air, clean water, and coastal zone management, all of which required states to adopt a higher level of planning.

The roots of smart growth go back to the regionalists of the 1920s and national resource planning of the Progressive Era. But it was the seminal work of Fred Bosselman and David Callies (1971) in *The Quiet Revolution in Land Use Control* that marks the beginning of the smart growth movement we know today. Their book was prepared at the behest of the Council on Environmental Quality, the oversight body created by the National Environmental Policy Act of 1969. The environmental underpinnings of the movement are evident in groundbreaking state legislation such as the Vermont Environmental Control Law, the San Francisco Bay Conservation and Development Commission, the Massachusetts Wetlands Protection Program, and the Wisconsin Shoreland Protection Program.

John DeGrove (1984; 1992; 2005) developed a "three-wave" model to chronicle the evolution of this movement from growth management policies in the 1970s to contemporary notions of smart growth. In the first wave during the 1970s, seven states enacted growth management programs as a way to advance environmental protection. These programs were based on the regulation of land development either throughout the

state or within specially designated zones. Of these states, only Oregon and Hawaii had truly comprehensive statewide programs. In California and North Carolina, the programs were limited to coastal areas. In Vermont, Florida, and Colorado, the focus was on developments of regional impact and areas of critical state concern. Just two of these first-wave states, Florida and Oregon, remain identified as smart growth states today.

The second wave, from the 1980s into the early 1990s, marked a shift from controlling growth to planning for growth. In the words of Maryland's Economic Growth, Resource Protection, and Planning Act of 1992, this was a period when planning was aimed at "furtherance of a specific economic growth and resource protection policy," and responsibility for important public policies was reallocated among state, regional, and local governments (DeGrove 1992). It was also a period when the deployment of infrastructure became more important as a land use planning tool. DeGrove's second-wave states are Florida, New Jersey, Maine, Vermont, Rhode Island, Georgia, and Washington.

DeGrove (2005) calls the third wave, beginning in the late 1990s, the "shift to smart growth." With a renewed emphasis on economic development, this stage arguably marked the evolution from an anti-growth to a growth-accommodating movement. Statewide efforts moved away from land use regulation, urban growth boundaries, and requirements for local comprehensive plans. They focused instead on policies to revitalize cities; reform local zoning to encourage compact development and infill; coordinate state agencies and their growth policies; and overhaul capital investments to align with a sustainable agenda.

Maryland's landmark smart growth initiative, passed by the state legislature in 1997, became a national model with its system of incentives and disincentives to preserve open space and farmland while also concentrating development in urban areas rich in infrastructure. The third wave brought several additional states into the fold, among them Minnesota, Utah, Pennsylvania, and Tennessee. This period also saw the "Fix It First" programs in Massachusetts, Pennsylvania, Michigan, and Ohio, which called for investments to keep existing infrastructure in good repair before constructing new roadways.

Following a political and cultural backlash in some parts of the country—fueled by property rights advocates, Libertarian groups, and interests aligned with suburban development patterns—the term "smart growth" began to fall out of favor. Instead statewide initiatives were aimed at "livable communities," "community design," "quality of life," or "sustainability." At the same time, smart growth advocates began to place greater emphasis on action at the local, metropolitan, and regional levels, and less on the hegemony of statewide programs.

SMART GROWTH TODAY

The Massachusetts model illustrates the latest approach to smart growth. In 2003 Governor Mitt Romney established the Office for Commonwealth Development to coordinate the major state agencies with a role in growth and development, including housing, transportation, energy, and the environment. The Commonwealth Capital system scored cities and towns on their smart growth efforts. Those with high ratings had preference in receiving $500 million in state funding for local infrastructure and economic development projects. As an incentive for more compact and dense development, the state passed legislation in 2004 that provides additional funding to communities that amend zoning to allow higher density housing near transit, town centers, and other smart growth locations.

The legislation also required that 20 percent of new housing developments in these areas be affordable. Commonly referred to as 40R, the smart growth zoning legislation provides a community between $10,000 and $600,000 in unrestricted funds up front, plus an additional $3,000 for every dwelling unit that is built. As of January 2008, 22 out of 351 cities and towns had received approval for 40R districts. Additional financial incentives were added for the education of school-age children. Other states have implemented a variety of similar policies with a mix of restrictions and incentives (see box 1.2)

Metropolitan and regional efforts to implement smart growth policies include Envision Utah, a citizen-based planning program in the Salt Lake City area. In Denver, for example, voters approved a $4.1 billion light-rail network predicated on

Box 1.2 **Smart Growth Policies in Selected States**

Pennsylvania Governor Edward Rendell launched a statewide smart growth program shortly after being elected in 2002 to redirect sprawl from greenfield sites to established cities. Rendell provided over $500 million in a Business in Our Sites program for economic development and water and sewer infrastructure improvements in urban neighborhoods, as well as tax relief for brownfield reclamation opportunity zones. He also proclaimed a Fix It First policy barring construction of new roadways until existing infrastructure was in satisfactory repair.

Michigan Governor Jennifer Granholm in 2002 campaigned on revitalizing the state's cities and older suburbs as the key to economic well-being. Her smart growth policies to slow the rapid consumption of farmland and open space for suburban development were described as "quality of life investments," linking environmental protection, transportation, land conservation, and urban investment. Supporting programs for these goals include a Land Use Leadership Council, a Cool Cities effort to revitalize Michigan's cities, and a Fix it First policy. By 2005, however, the governor's office shifted emphasis from statewide smart growth initiatives to policy priorities that would address the economic downturn.

Virginia Governor Tim Kaine took on the issue of rapid population growth and sprawling development patterns in his 2005 campaign. In 2007 the State Legislature passed the $3 billion Comprehensive Transportation Funding and Reform Act, which included significant land use planning reforms. For example, all large counties are required to designate specific areas for higher-density development, employ pedestrian-friendly, New Urbanism design principles, and implement impact fees.

Arizona Governor Janet Napolitano made sprawl a major theme of her second term beginning in 2006, emphasizing a Tucson–Phoenix rail link and other transit projects, and establishing a Growth Cabinet composed of state officials from 13 agencies engaged in development issues. She directed the group to integrate land use and infrastructure planning and development while considering the effects on water quality, air quality, and wildlife. In 2004, voters in the state approved the first 57 miles of the Valley Metro light-rail project, the first section of which was set to open in December 2008. The $1.4 billion, 20-mile light-rail line extended from northwest Phoenix, through downtown and the airport, and on to Tempe and Mesa southeast of Phoenix.

In Connecticut, Governor M. Jodi Rell issued an executive order establishing the Office of Responsible Growth in 2006 to coordinate state agencies, including economic development, to work on an agenda of clean water, recreation, and natural heritage programs; brownfield remediation; and open space and farmland preservation. Her stated goal is to create more attractive, livable, economically strong communities while protecting natural resources.

Since 2000 several states have made more targeted efforts. South Carolina passed legislation modifying minimum acreage requirements and other site guidelines for the construction of new schools. Illinois offers incentives for workforce housing and the location of housing near major employers. The State Legislature also passed the Green Neighborhood Grant Act, providing subsidy and financial incentives for energy-efficient, environmentally sustainable, pedestrian-friendly communities. Rhode Island offers tax incentives for the redevelopment and adaptive reuse of historic properties and for construction of affordable housing, along with new requirements for local comprehensive plans and brownfield remediation.

Sources: Napolitano (2007); Schneider (2007).

transit-oriented development at all stations. The Denver area also has promoted so-called "greyfields" redevelopment of deteriorating shopping malls and of the former Stapleton Airport, as well as a voluntary growth boundary as part of its Mile High Compact.

NEW RATIONALES FOR SMART GROWTH

The climate change crisis, soaring energy costs, and a new emphasis on investments in public works infrastructure have bolstered the argument for smart growth initiatives. With the link between automotive travel and greenhouse gas emissions firmly established, efforts to encourage more compact development patterns have gained new priority.

California is seen as a leader in this regard. In 2006, Governor Arnold Schwarzenegger signed the Global Warming Solutions Act (AB32), a pledge to reduce greenhouse gases by 25 percent by 2020. In 2008 the state legislature passed SB375, which spells out a process for land use planning and regional

transportation policies to implement the goals of AB32 in lowering greenhouse gas emissions. SB375 puts incentives in place for metropolitan regions to reduce pollution from cars and trucks by calculating how those emissions would vary under different development scenarios. In 2007 California's attorney general filed a lawsuit charging that San Bernardino County's land use policies continued to encourage sprawl and thwarted any chance of reaching the emissions reduction goals.

Until the recent awareness about the impact of land use patterns on global warming, the question was whether the incentive-based programs characteristic of the third wave of smart growth could achieve the same dramatic effects as Oregon-style regulatory approaches. Now, however, the threat of climate change may bring a return to the more command-and-control structure of the Clean Air Act.

Major development projects are increasingly subjected to regulatory scrutiny on the amount of stationary and mobile-source greenhouse gas emissions they will generate. For example, in August 2008 Massachusetts Governor Deval Patrick signed the Global Warming Solutions Act, which included a provision authorizing the Massachusetts Environmental Protection Agency to require analysis of emissions associated with large projects that need a state permit and the filing of an Environmental Impact Report.

In summary, a possible fourth wave of smart growth policies is emerging. States are expected to turn to land use planning to help achieve emissions reduction goals; a new regulatory regime will benefit development proposals that adhere to a smart growth framework; and market forces may also encourage more compact, mixed-use development as households attempt to limit their travel costs and achieve other energy savings. The findings of this study should help to guide decisions about the designs of new policy initiatives and regulatory regimes.

Note

1. The census definition of urbanized land area has changed several times, making comparisons unreliable. This discussion therefore focuses on developed land area.

CHAPTER 2

RESEARCH METHODOLOGY AND REGULATORY FRAMEWORKS

The central question of this evaluation is how effective state programs have been in achieving their commonly shared smart growth goals. The study also examines the manner in which states and local jurisdictions have configured their institutions, policies, and procedures to achieve these ends.

The following section describes the criteria for selecting the dimensions of state-sponsored smart growth programs for analysis, as well as the indicators used to measure performance. The next section introduces the eight case study states and examines the differences in their regulatory systems and defined goals. If a state intends to achieve specific smart growth goals, its regulatory system must explicitly identify and support those objectives. The presence of such provisions can therefore be treated as an *a priori* measure of effectiveness in that the states have laid the foundation for goal achievement. Chapters 3 through 7 examine these propositions empirically.

POLICY GOALS AND PERFORMANCE INDICATORS

State smart growth programs address a bundle of interrelated goals associated with the evolving physical—and consequently social—development of towns, cities, and regions. These goals are achieved largely by influencing both the sequence and pattern of land development and the placement of infrastructure (Downs 2005; Yin and Sun 2007). State and local efforts to regulate growth "smartly" therefore succeed to the degree that fiscal, regulatory, and other means shape development patterns in desired ways, and that these altered spatial outcomes help to achieve the broader goals associated with smart growth (Howell-Moroney 2007; Gale 1992).

This study focuses on five commonly shared goals of state smart growth programs.

1. Promote compact development.
2. Protect natural resources and environmental quality.
3. Provide and promote a variety of transportation options.
4. Supply affordable housing.
5. Create positive fiscal impacts.

The 52 performance indicators used to gauge the effectiveness of state smart growth programs in achieving these selected goals are listed in the appendix of this chapter. Three criteria were used for choosing these measures.

1. *Validity*. The linkage between a statewide planning policy intervention and the relevant indicator must be relatively strong and theoretically sound, and must affect the indicator in observable ways. In addition, anyone with knowledge of state and local land use planning must be able to easily understand the connection between the indicator and the policy goal, as well as the units of measurement.

2. *Availability*. The indicators must be quantifiable, and relevant secondary data must be available.

3. *Reliability*. To ensure comparability, data must be collected by a federal agency or by the states or other entities. In the latter case, the formats must be consistent across all states. If federal regulations or reporting requirements change, time series data may not be comparable; in these instances, adjustments to the data or caveats are noted.

The analysis also includes a survey of opinion leaders to provide additional perspective on the effectiveness of state smart growth programs versus local land management initiatives. Responses from 117 individuals addressed five key topics: effectiveness in achieving smart growth goals; public participation; costs of regulatory compliance; effectiveness of sanctions and incentives; and government role in guiding land development decisions.

REGULATORY SYSTEMS IN THE CASE STUDY STATES

Selection of the eight case study states was based on similarities in their population growth and differences in the stringency of their regulatory regimes. The states in the smart growth group—Florida, Maryland, New Jersey, and Oregon—had ambitious state-level smart growth programs in effect during the 1990s. Those in the other group—Colorado, Indiana, Texas, and Virginia—did not adopt such programs and thus provide a point of reference for comparison. In some instances the analysis looks at particular pairings of these states: Florida and Texas, Maryland and Virginia, New Jersey and Indiana, and Oregon and Colorado. However, the states in these pairs are very different in terms of land area, industrial base, level of economic development, political ideology, and local culture. Thus, the other states should not be treated as counterfactuals of the smart growth states.

The state regulatory systems were rated on their state-level consistency, goal-specific requirements, capacity to achieve smart growth goals, and the stringency of their local regulations, to come up with projections of which states might perform best in particular policy areas.

INTEGRITY OF STATE REGULATORY SYSTEMS

Land use–related laws, together with provisions for their administration, comprise a state's regulatory system. These systems provide the capacity both to regulate private action and to tax and spend in ways that encourage or discourage private action, or that empower government to amass revenues to be spent in ways that shape development patterns.

Public expenditures can profoundly shape land development through fiscal actions that, for example, preserve open space, protect environmentally sensitive places, encourage housing affordability, or—perhaps most importantly—build infrastructure. Indeed, the presence of critical infrastructure for transportation, water supply, waste management, and energy transmission can fundamentally alter the landscape of development opportunity.

Table 2.1 compares the current planning and regulatory regimes of the eight case study states. Given that smart growth programs represent a set of interdependent goals, the regulatory

framework developed to achieve those goals requires a high degree of coordination and integration between the state and its municipalities. The state stipulations for planning and coordination, rated in columns 3–7, have the following dimensions.

- *Local plan content* denotes the specificity, degree, and manner in which the state stipulates the extent of local plans.

- *Mandate to plan* defines the threshold for local planning. In Colorado, for example, all counties with populations over 100,000 must plan, but among counties with populations over 10,000, only those with growth rates above a prescribed threshold must do so.

- *Internal consistency* refers to the integration of local or regional land use plans, typically the conformance of zoning ordinances and the zoning map with the plan itself. In some states, the zoning map indicating future placements of infrastructure must be generally or specifically consonant with the plan (Burby and May 1997; Carruthers 2002; Gale 1992).

- *Vertical consistency* implies oversight of local and/or regional plans by higher-order governments. Such consistency can be achieved either by top-down prescriptions that provide the standard of sufficiency for local plans, or by adjusting regional or state plans to accommodate local plans.

- *Horizontal consistency* means that the content of local plans is coordinated with that of adjoining jurisdictions overseen by co-equal governments. This may also entail a broader requirement for regional coordination, in which the state defines regions and designates the coordinating agency (such as a regional planning council).

Columns 8–10 rate the recent activism of the state legislature and high court, and measure the degree of statewide tolerance for planning regulation.

In general, all eight states score as expected on these criteria. The four smart growth states scored high in their commitment to state-level planning (columns 1–2), while the other selected states did not. Although Oregon does not mandate local plans per se (column 3), the state does call upon localities to set urban growth boundaries (UGBs). This policy yields a "plan-like" outcome—hence Oregon's high score on this criterion. Moreover, all of the smart growth states include a land use element in their guidelines. Even so, the mandate for local planning (column 4) is as strong in Colorado and Virginia as it is in three of the four smart growth states.

SMART GROWTH GOAL-SPECIFIC REQUIREMENTS

Table 2.2 rates the capacity of each state's regulatory system to produce favorable outcomes in four smart growth goal areas.[1] These assessments reflect a thorough examination of local, regional, and statewide institutional practices rather than on-the-ground performance. In addition, the assessments do not anticipate how much actual conditions might accelerate or impede the favorable effects of regulatory and fiscal provisions.

To promote compact development (columns 1–2), states generally intervene in two distinct ways: limiting sprawl and encouraging urban infill. Provision of public transit is often regarded as a further boost to compact development. Explicit state legislative encouragement to secure compact development is moderate to high among the smart growth states, but essentially absent in the other selected states. Oregon stands apart in mandating urban growth boundaries throughout the state, although Maryland's designation of urban development areas achieves much the same result.

In terms of coordinating growth patterns with infrastructure capacity (columns 3–5), Florida receives high scores because of its concurrency requirement, even though this regulation has induced more sprawl rather than less. New Jersey ranks next in line, with Oregon third and Maryland last among the smart growth states. Among the other selected states, Indiana leads the list, with Colorado second, and Texas and Virginia trailing behind.

As for environmental protection (columns 6–8), Maryland and New Jersey score the highest while Florida, Oregon, and Colorado tie for second. Indiana, Texas, and Virginia lag well

Table 2.1 **State-level Land Use Planning and Regulatory Criteria, 2007**

	STATE-LEVEL SPATIAL PLANNING		STATE STIPULATIONS REGARDING SUBSTATE PLANNING					MUNICIPAL REGULATORY ACTION, 2005			UNWEIGHTED ROW TOTALS
			Local Plan Content	Mandate to Plan	Internal Consistency	Vertical Consistency	Horizontal Consistency				
	1 Strength of State Plan Guidelines	2 Presence of Land Use Element in State Plan Guidelines	3 Degree to Which State Specifies Local Plan Content	4 Threshold of State Mandate for Local Planning	5 Strength of State Requirement that Local Zoning Conform with Local Plans	6 Strength of State Requirement that Local Plans Be Consonant with State or Regional Plans	7 Strength of State Requirement that Local Plans Conform with Those of Neighboring Jurisdictions	8 Level of Recent Local Regulatory Involvement	9 Tolerance of Appellate Courts for Local Regulatory Action	10 Degree of Acceptance of Residential Regulatory Action	11
SMART GROWTH STATES											
Florida	3	3	3	3	3	3	3	2	2	2	27
Maryland	3	3	3	3	3	3	3	3	2	3	29
New Jersey	3	3	2	1	3	3	3	3	2	3	26
Oregon	3	3	3	3	3	3	3	2	2	2	27
OTHER SELECTED STATES											
Colorado	1	1	2	3	2	2	1	3	2	3	20
Indiana	1	1	2	1	2	1	1	1	3	1	14
Texas	1	1	1	1	1	1	1	2	2	2	13
Virginia	1	1	1	3	1	1	1	2	2	2	15

Notes: Because information about the state regulatory systems in the 1990s was difficult to compile, their 2007 systems are used as proxies to construct the *a priori* measures of effectiveness.
Scores in columns 1–7 were reported originally by the Institute for Business and Home Safety (2007) and updated to 2008. On this 3-point scale, "3" indicates the greatest degree of state-level activity or influence. For example, in columns 1–2, a rating of "1" means no state stipulation to plan at all or in a particular fashion, and "3" means such stipulations exist. In columns 3–7, "1" denotes no state involvement; "2" means a state prescription exists but is unenforceable; and "3" means there is an enforceable state provision.
Scores in columns 1–2 were derived from the IBHS assessment.
Scores in columns 8–10 are from Foster and Summers (2005). In column 8, a score of "1" indicates little recent regulatory activity; "3" indicates recent activity has been high. In column 9, "1" means the courts have been highly restrictive of municipal regulation; "3" means the courts have been highly supportive. In column 10, "1" indicates state legislature and appellate courts have been unwilling to tolerate local regulatory approaches that might advance smart growth practices; "3" indicates their willingness to tolerate such approaches.

Sources: Institute for Business and Home Safety (2007); Foster and Summers (2005).

behind. What sets the leaders apart in this goal area is the determination to protect both agricultural and sensitive lands, and the ongoing dedication of revenues for the purchase of development rights and outright acquisition of real property (in fee simple). Colorado is particularly effective in such funding, and is nearly alone in the awarding of marketable tax credits for development easements. Although it has no such program, Oregon is noteworthy for its regulations for preserving open space and setting urban growth boundaries.

Of all eight states, only New Jersey has strong provisions for expanding the supply of affordable housing (columns 9–10). A series of State Supreme Court decisions provided the impetus for a coordinated statewide approach to eliminating barriers to affordable housing production and proactively supplying residential units. Because such policies are inseparable from more general planning, these court cases provided a strong stimulus for more aggressive regional planning overall.

Table 2.2 **Intermediate Policy Outputs of State Policy/Planning Systems: *A Priori* Effectiveness of Regulatory and Fiscal Criteria, 2007**

	COMPACT DEVELOPMENT			COORDINATION OF GROWTH PATTERNS WITH INFRASTRUCTURE CAPACITY			ENVIRONMENTAL PROTECTION				AFFORDABLE HOUSING			UNWEIGHTED ROW TOTALS
	1 Degree to Which State Legislation Encourages Compact Development	2 Effectiveness of Urban Growth Boundaries (UGBs) or Urban Development Areas (UDAs)	Subtotal Columns 1–2	3 Strength of Concurrency or Adequate Public Facilities Requirement	4 Utility of State Provisions for Exactions, Dedications, and Impact Fees	5 Effectiveness of State Limits on Formation of Special Districts to Slow Sprawl	Subtotal Columns 3–5	6 Effectiveness of State Policies to Preserve Agricultural Land	7 Effectiveness of State Policies to Protect Sensitive Lands	8 Sufficiency of Dedicated Funding Streams to Preserve Open Space using Easements or Fee-Simple Purchases	Subtotal Columns 6–8	9 Strength of State Guidelines	10 Degree of Financial Support for Affordable Housing	Subtotal Columns 9–10	11
SMART GROWTH STATES														
Florida	2	1	**3**	3	3	3	**9**	1	3	3	**7**	2	2	**4**	23
Maryland	2	2	**4**	2	3	1	**6**	3	3	3	**9**	2	1	**3**	22
New Jersey	2	1	**3**	3	2	3	**8**	3	3	3	**9**	3	3	**6**	26
Oregon	3	3	**6**	2	2	3	**7**	3	3	1	**7**	2	1	**3**	23
OTHER SELECTED STATES														
Colorado	1	2	**3**	1	3	1	**5**	2	2	3	**7**	1	1	**2**	17
Indiana	1	1	**2**	1	2	3	**6**	1	2	1	**4**	1	1	**2**	14
Texas	1	1	**2**	1	2	1	**4**	1	2	1	**4**	1	1	**2**	12
Virginia	1	1	**2**	1	2	1	**4**	1	2	1	**4**	1	1	**2**	12

Notes: Each criterion is scored on a 3-point scale. A "3" denotes the greatest degree of state-level activity or influence; "1" denotes no state involvement. These assessments derive from an analysis of state statutes, with some regard for case law. The scores are inferred from the nature and degree of the *a priori* legislative intent, gauged in accord with generally held understanding of what approaches tend to be most effective. This appraisal, then, does not rely on actual empirical outcomes and is therefore "intermediate" as the title suggests.

It should be noted that the *a priori* output categories in table 2.2 involve complex tradeoffs, and some are problematic. For example, fostering compact development preserves peripheral open space, but increasing population and employment densities can also drive up the cost of land, which in turn can at times raise the cost of producing housing, including affordable units. Similarly, concurrency requirements may increase the spatial congruence between land development and infrastructure and other related capacities, but they may also encourage sprawl when that capacity is located in suburban and exurban areas. As a result, funding infrastructure and related public service capacities in urban regions is sometimes essential if the concurrency requirement is to foster higher density infill. When local preferences for low density development are strong, however, regulatory efforts to promote infill may on occasion meet resistance—yielding public dissatisfaction with the regulatory process itself.

CAPACITY TO ACHIEVE SMART GROWTH GOALS

Table 2.3 combines the results of the preceding analyses of state regulatory systems and goal-specific requirements to project the rating of states on their capacity to achieve specific goals. Each score is a composite index, standardized by dividing points

Table 2.3 **State-level Policy/Planning Inputs and Intermediate *A Priori* Outputs**

		STATUTORY LAND USE PLANNING INPUTS (From Table 2.1)			INTERMEDIATE POLICY OUTPUTS (From Table 2.2)				SUMMARY SCORES	
	Year Comprehensive Program First Established or Substantially Augmented	State-level Spatial Planning	State Stipulations Regarding Substate Planning	Degree of Acceptance of Municipal Regulatory Action, 2005	Compact Development	Coordination of Growth Patterns with Infrastructure Capacity	Environmental Protection	Affordable Housing	Unweighted Row Totals	Rank
SMART GROWTH STATES										
Florida	1974, 1985	100	100	67	50	100	78	67	562	4
Maryland	1992, 1997	100	100	89	67	67	100	50	573	2.5
New Jersey	1986, 1997	100	80	89	50	89	100	100	608	1
Oregon	1973	100	100	67	100	78	78	50	573	2.5
OTHER SELECTED STATES										
Colorado		33	67	89	50	56	78	33	406	5
Indiana		33	47	56	33	67	44	33	313	6
Texas		33	33	67	33	44	44	33	287	8
Virginia		33	47	67	33	44	44	33	301	7

Notes: Standardization is achieved by dividing the points assigned in each column by the total possible and multipling by 100. As a result, each column in this table is on an equal footing with all others, while expressly allowing for the fact that the degree of difference among states in individual columns does vary. Since each criterion in prior tables is scored on a 3-point scale, the maximum number of points achievable is 3 times the number of associated columns in those tables. The maximum score for each state on each criterion is 100.

assigned by total points possible and multiplying by 100. In this rating system, the higher the number, the greater the state's capacity to achieve a specific smart growth goal.

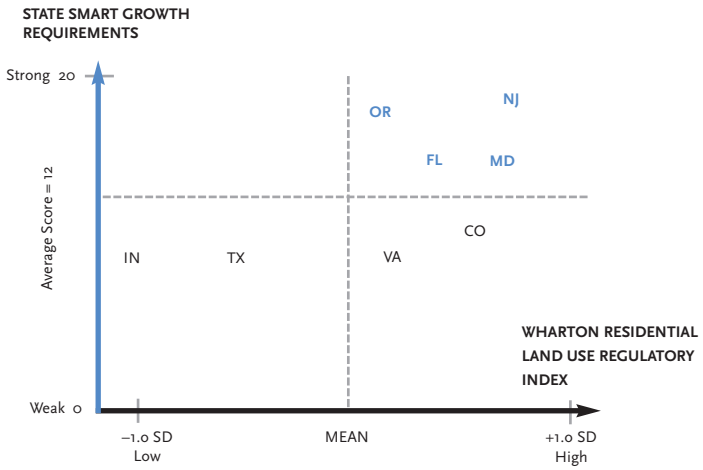
Among the smart growth states, New Jersey occupies the top rank in terms of having the regulatory capacity that would enable the state to meet its smart growth goals. Maryland and Oregon tie for second, and Florida is last. Among the other selected states, Colorado leads Indiana, Virginia, and Texas (in that order).

In terms of ability to achieve specific policy goals, Oregon has the highest score in compact development. Florida appears to be more capable of coordinating growth patterns with infrastructure development than the other states. Both Maryland and New Jersey are expected to perform well on environmental protection. New Jersey is most likely to attain the goal of providing affordable housing. These projections of state performance are tested and discussed in chapters 3 through 6.

STATE VERSUS LOCAL REGULATION

The analyses underlying the preceding tables all favor smart growth states in that they focus on state laws designed to achieve smart growth goals. But many municipalities within the states that do not have smart growth programs may act on their own initiative to pass land use regulations intended to achieve smart growth goals. Voluntary local action could arguably be as effective as the presence of statewide regulations. Having some measure of local regulation is therefore important when comparing measures of regulation (inputs) against performance (outputs).

Figure 2.1 **State versus Local Residential Regulation in the Eight Case Study States**



SD=Standard deviation.

Source: Gyourko, Saiz, and Summers (2006).

Figure 2.2 **Consistency and Effectiveness of State Planning Systems**

AGGREGATE CONSISTENCY (Internal, Vertical, and Horizontal)	LOCAL PLANNING EFFECTIVENESS: LOW (3)	MODERATE (4–5)	HIGH (6)
HIGH (9)	NJ	AR, MN, WA	DE, FL, MD, ME, NV, OR, PA, RI
MODERATE (6–8)	CT, MO	GA, HI, KY, MT, VT, WI	CA, SC, WY
LOW (3–5)	AL, IA, IN, KS, LA, MI, ND, NH, NM, NY, OH, OK, WV	CO, IL, MA, MS, NC, NE, TX	AK, AZ, ID, SD, TN, UT, VA

Sources: Institute for Business and Home Safety (2007); Foster and Summers (2005).

A recent survey by the Zell/Lurie Real Estate Center at the University of Pennsylvania's Wharton School provides a useful measure for this purpose. In this study, planning officials from communities across the country were asked to assess the degree of local regulation of residential land uses (Gyourko, Saiz, and Summers 2006). The summary score on the resulting Wharton Residential Land Use Regulatory Index is a measure of deviation from the mean for all states. A score of one represents one standard deviation above the mean. The higher the score is, the heavier the local regulation over residential development. Similarly, a minus score indicates lighter than average regulation.

Figure 2.1 graphs the aggregate scores from table 2.1 against the Wharton Index, providing a visual comparison of the relative intensity of state versus local regulations. Not surprisingly, all of the smart growth states score above average on the Wharton Index. Colorado, however, scores higher on this index than two of the smart growth states and tops the list of other selected states in terms of local regulation. As a result, Colorado should be a good state to look at when considering the performance of regulatory systems.

NATIONWIDE COMPARISON OF STATE PLANNING STRUCTURES

Figure 2.2 sorts all 50 states according to their planning characteristics and capacities. Aggregate consistency, shown in the rows, is the sum of scores for internal, vertical, and horizontal consistency. Each state is assigned a score from one to three for each consistency dimension. Numeric intervals in each row are low (3–5), moderate (6–8), and high (9).

The numeric values for local planning effectiveness, shown in the columns, are low (3), moderate (4–5), and high (6). This dimension is based on the sum of two scores: first, the presence or absence of a state mandate for local plans; and second, whether formal adoption of the local plan is required.

The four smart growth states score uniformly high on aggregate consistency. Three of the four—Florida, Maryland, and Oregon—also receive high scores on local planning effective-

ness. New Jersey is the exception. While that state subsequently strengthened the mandate to plan, it nevertheless remains in the lowest class of local effectiveness. Meanwhile, the other selected states have uniformly low scores on aggregate consistency, but show considerable variation on local planning effectiveness. Virginia is the only one of the four to score high on this criterion.

LIMITATIONS OF DATA AND METHODOLOGY

The original objective of this evaluation was to compare the performance of states with and without smart growth programs in the 1980s (before the programs were enacted) and in the 1990s (after they were in effect). The four smart growth states initiated their programs in different decades, however. For example, Florida and Oregon launched their smart growth programs in the mid-1970s. As a result, the 1990s outcomes for these two states differ little from 1980s outcomes because their land use regulations were in place during both decades. In sharp contrast, Maryland did not enact its comprehensive smart growth plan until 1997.

In addition, some parts of the analysis focus on different time periods because of data constraints. Chapter 7, for instance, bases its fiscal impact analysis on U.S. Census of Governments data for the years 1982 to 2002. The period for the opinion leaders survey described in chapter 8 is from 2000 to the present.

While considerable effort was made to standardize the data and to control for factors other than smart growth policies that might affect outcomes, full comparability cannot be assured for several reasons.

1. The sample states are neither randomly selected nor are they grouped in statistically matched pairs.

2. Although the data sources are the most authoritative available, their statistical methods, coverage, practices, and definitions sometimes differ. In some instances, estimates indicate trends and characterize major differences in policy effectiveness among the case study states, rather than provide precise quantitative measures of those differences.

3. While most economic and demographic data are drawn from regular administrative files, some are from special surveys or periodic census inquiries. For census data, figures for intermediate years have to be interpolated or estimated from the base reference statistics. These estimates are derived from models based on assumptions about prevailing trends and conditions.

4. These analyses can neither control perfectly for the enactment of key public policies, nor discern with precision the baseline trends that would have existed in each goal area if those policies had not been in place.

Readers should keep these limitations in mind when comparing the results for the smart growth states and those for the other selected states. Regardless, the analyses offered in this book provide the most comprehensive investigation into the impacts of state smart growth programs undertaken to date. One of our recommendations based on this evaluation is to improve the measurement and collection of data for assessing the performance of smart growth policies, particularly those related to environmental quality and public finance (see chapter 9).

Note

1. This approach is subject to two types of error. In the first instance, reasonable state regulatory systems may appear to fall short when the challenge is great and measurable progress is slow. In the second instance, favorable trend lines may appear to follow the onset of various interventions, but may not necessarily be attributable to them.

APPENDIX 2
SMART GROWTH POLICY GOALS, INDICATORS, AND DATA SOURCES

Policy Goals and Indicators	Data Sources
PROMOTE COMPACT DEVELOPMENT	
Size and Growth	
Changes in employment and population densities	U.S. Census Bureau (1990b; 1996; 2000b; 2006b)
Land Use	
Change in land use shares	U.S. Department of Agriculture (2000)
Land use by category	Same as above
Developed land per capita	Same as above
Marginal developed land per capita	Same as above
Concentration	
Spatial Gini coefficient for population distribution	U.S. Census Bureau (1990b; 2000b); GeoLytics (2002)
Spatial Gini coefficient for employment distribution	U.S. Census Bureau (1996; 2006b)
Gini coefficients for population distribution for every metropolitan area with more than one million residents	U.S. Census Bureau (1990b; 2000b); GeoLytics (2002)
Gini coefficients for employment distribution for every metropolitan area with more than one million residents	U.S. Census Bureau (1996; 2006b)
Urbanization	
Shares and densities of urban land	U.S. Census Bureau (1990b; 2000b); GeoLytics (2002)
Percent of population growth in urban, new urban, and rural areas	Same as above
Percent change in densities in urban, new urban, and rural areas of major metropolitan areas	Same as above
Centralization	
Distribution of metropolitan area population in concentric rings	U.S. Census Bureau (1996; 2006b)
Change in metropolitan area population density in concentric rings	Same as above
Distribution of metropolitan area employment in concentric rings	Same as above
Change in metropolitan area employment density in concentric rings	Same as above

Policy Goals and Indicators	Data Sources
PROTECT NATURAL RESOURCES AND ENVIRONMENTAL QUALITY	
Change in acres of resource land	U.S. Department of Agriculture (2000)
Change in resource land per additional person	Same as above
Change in farmland per additional person	U.S. Department of Agriculture (1987b; 2002)
Change in farmland enrolled in conservation programs	Same as above
Change in acres held in private land trusts	Land Trust Alliance (n.d.; 2005)
Change in state parkland	National Association of State Park Directors (n.d.)
PROVIDE AND PROMOTE A VARIETY OF TRANSPORTATION OPTIONS	
Modal Mix	
Share of commute trips by public transportation	U.S. Census Bureau (1990e; 2000f)
Share of commute trips by bicycling and walking	Same as above
Trip Time and Distance	
Change in mean annual delay per peak-period traveler in large cities	Texas Transportation Institute (n.d.)
Change in population density and effect on automobile congestion	Same as above
Change in annual per capita public transit trips	Same as above
Change in daily per capita vehicle miles traveled	Same as above
SUPPLY AFFORDABLE HOUSING	
Affordability	
Median housing values and percent of change	U.S. Census Bureau (1990a; 2000a)
Median gross rent as a percent of household income	Same as above
Median selected monthly owner costs as a percent of household income	Same as above
Shares of cost-burdened households (paying at least 30 percent of income on housing)	Same as above
Housing Mix	
Percent of new rental housing in the total of added housing units	U.S. Census Bureau (2003)
Percent of multi-family units in the total of added housing units	Same as above

Policy Goals and Indicators	Data Sources
CREATE POSITIVE FISCAL IMPACTS	
Population growth by county type	U.S. Census Bureau (1980; 1990c; 2000c)
Population density change by county type	Same as above
Household growth by county type	Woods and Poole Economics, Inc. (2005)
Employment growth by county type	Same as above
Personal income growth by county type	Same as above
Retail sales growth by county type	Same as above
Tax base growth by county type	Same as above
Housing value growth by county type	Same as above
Multifamily unit growth by county type	U.S. Census Bureau (1980; 1990c; 2000c)
Journey-to-work time change by county type	Same as above
Aggregate expenditure change by county type	U.S. Census Bureau (1982b; 1992; 2002b)
Per capita expenditure change by county type	Same as above
Aggregate revenue change by county type	Same as above
Per capita revenue change by county type	Same as above
Ratio between aggregate revenue change and aggregate expenditure change	U.S. Census Bureau (1992; 2002b)
Ratio between per capita revenue change and per capita expenditure change	Same as above
Change in aggregate property tax, tax base, and tax rate in urban/suburban counties	Same as above
Change in per capita property tax, tax base, and tax rate in urban/suburban counties	Same as above