CHAPTER 9

SUMMARY AND RECOMMENDATIONS

As smart growth programs in some states approach their fourth decade, new environmental objectives—lowering carbon dioxide emissions, reducing energy consumption, ameliorating the effects of climate change—have raised the stakes on their success. With many years of experience behind us and the likelihood that reliance on growth management policies will grow in the future, this is an opportune moment to evaluate how effective smart growth programs have been at achieving their goals.

This evaluation began as a comparison between four states that had statewide smart growth policies in place by 2000 (Florida, Maryland, New Jersey, and Oregon) and four other states that did not (Colorado, Indiana, Texas, and Virginia). The second group of states did, however, have local smart growth initiatives that ranged from facilitating local options to doing little or nothing. These eight states constitute a purposive and not a random sample. The analysis revealed that the "treatment" varied greatly across the four smart growth states, producing a range of outcomes that overlap with some of those in the other selected states. Policies and outcomes were thus found to be more continuous across the eight states rather than dichotomous between the two groups of states.

The evaluation measured achievements of five smart growth objectives—promote compact development, protect natural resources and environmental quality, promote transportation options, supply affordable housing, and create positive fiscal impacts. It also utilized the eight state case studies summarized in the next section of this volume. The analytic methods used varied according to the data available, ranging from descriptive statistics to fixed-effect regression models. The focus was on changes in performance indicators over time, given that current levels of many measures (e.g., population density) reflect the cumulative effects of past policies, technologies, and relative prices. The effects of recent policies are likely to be observed only in current changes in performance indicators. It is also likely that some smart growth objectives reinforce each other, while others are antagonistic.

SUMMARY OF FINDINGS

This evaluation addresses two key questions. First, does the presence of state-level smart growth programs result in objectively measurable improvement in performance? Second, to the extent that smart growth programs are successful, what underlies this success? Conversely, if they fail, what are the causes of their shortcomings?

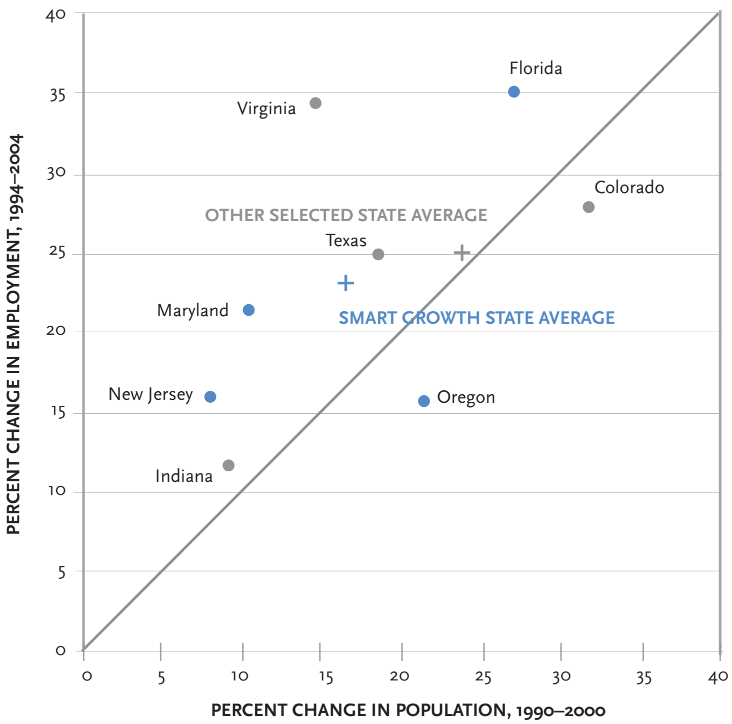
To make comparisons across states over multiyear periods, the evaluation developed a set of performance indicators that were consistently defined over time and available for all states. These indicators rely heavily on data from the U.S. Census Bureau and other nationally collected datasets uniformly available at the state and county levels. The analysis generally starts in 1990 and continues as far past 2000 as data allow, but focuses primarily on the 1990s. In addition to the performance indicators, the evaluation also looked at how opinion leaders perceive the effectiveness of smart growth programs and how implementation has changed over time.

GROWTH PATTERNS AND TRENDS

A major objective of smart growth policies is to alter the spatial distribution of population and employment, principally by increasing the density and intensity of development, promoting compactness, and slowing the spread of development to rural and undeveloped areas. Five measures of growth patterns are used to assess relative changes in spatial structure in the eight case study states: levels and changes in size and growth, land use patterns, spatial concentration, urbanization, and centralization.

Size and Growth. Although the eight states range widely in population (from more than 20 million in Texas to 3.4 million in Oregon), size (from 265,000 square miles in Texas to 7,500 square miles in New Jersey), and population density (from 1,115 persons per square mile in New Jersey to 35 in Oregon), their population and employment growth rates vary much less. As figure 9.1 shows, employment rose faster than population in all states except Oregon and Colorado. On average, population increased more slowly in the smart growth states (15.9 percent) than in the other selected states (19.4 percent), as did employment (22.5 percent versus 24.8 percent).

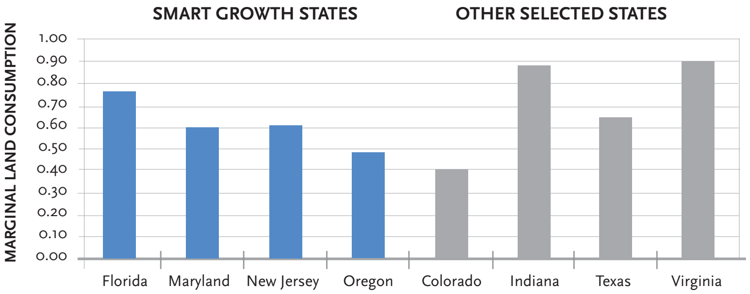
Figure 9.1 **Employment Growth Generally Exceeded Population Growth**



Land Use Patterns. Land use distributions also vary greatly across the states. For example, at least half of state area is rangeland in Texas, cropland in Indiana, forestland in Virginia, and federal land in Oregon. The area of developed land, which is most relevant to smart growth policy, increased in each of the eight states in every five-year interval from 1982 through 1997. The largest proportional increase in developed land occurred in Florida, followed by Virginia; the smallest was in Indiana. The average proportional increase was 26 percent for smart growth states and 21 percent for the other selected states.

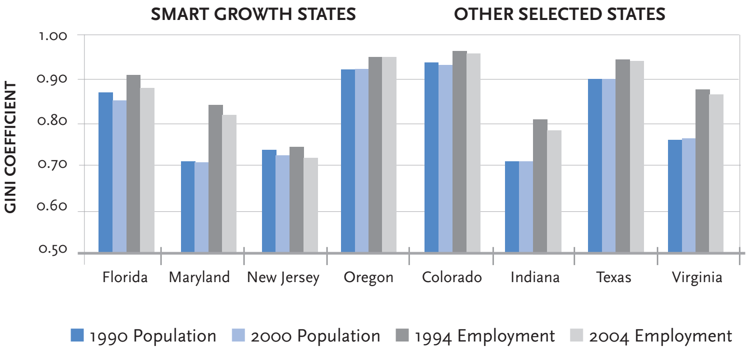
Because the states differ so widely in land use and growth, these proportional increases can be made comparable by relating the increase in each state's developed land area to the increase in population over similar periods. Figure 9.2 shows the ratio (marginal land consumption) as the increase in square miles of developed land per 1,000 new residents. While the average for smart growth states is lower than for the other selected states, the best performers—Colorado and Oregon—are from the two different groups.

Figure 9.2 **Developed Land Generally Increased Less in Smart Growth States than in Other Selected States**



Notes: Averages are 0.61 for smart growth states and 0.71 for the other selected states.
Growth in developed land is measured from 1987 to 1997 in square miles per 1,000 additional residents.
Population growth is measured from 1990 to 2000.

Figure 9.3 **Population and Employment in Most States Became Less Concentrated**



Spatial Concentration. Spatial Gini coefficients were used to measure the concentration of population and employment within states and metropolitan areas. The Gini coefficient is an index of inequality based on the Lorenz curve measuring how evenly a variable is spread. When activities are uniformly distributed, the Gini coefficient is zero; when activity is concentrated in one zone, it is one. Spatial Gini coefficients vary from 0.25 to 0.9 across all U.S. states, and are generally high in states with only one large city and low in states with no large cities and dispersed populations. Here the concern is more about the change in concentration over time than its level, which reflects the legacy of the past more than the effects of current policies. Increased concentration (higher Gini coefficients) is generally consistent with smart growth policies.

Figure 9.3 shows statewide Gini coefficients calculated from census tract data for population and from zip code data for employment over ten-year intervals. Oregon is the only state where population concentration increased and employment concentration did not decrease. While employment was generally more concentrated than population, its concentration declined more over the decade. The average reduction in Gini coefficients for the smart growth states was greater than for the selected other states, for both population (-.007 versus -.002) and employment (-.021 versus -.011). This outcome is generally counter to smart growth objectives. While these differences are consistent, they are generally not statistically significant across states.

Gini coefficients for population and employment also were calculated for each large metropolitan area (with population over one million) in the eight case study states. The results are similar to the statewide outcomes, but with larger Gini coefficients. Again, the average reduction in Gini coefficients in the smart growth states was greater than that in the other selected states for both population (-.019 versus -.017) and employment (-.044 versus -.028). Echoing the state results, Portland was the only metropolitan area where population concentration did not decrease.

Urbanization. Smart growth programs seek to encourage infill development in urbanized areas and reduce the spread of development to adjoining rural areas. To assess performance on these objectives, population growth was classified by three locations: areas denoted as urban in 1990; those newly urban between 1990 and 2000; and those rural in both 1990 and 2000. As figure 9.4 indicates, the smart growth states had a larger share of new residents settle in urban and newly urbanized areas, and a

Figure 9.4 **Smart Growth States Kept More Population Growth in Urbanized Areas**

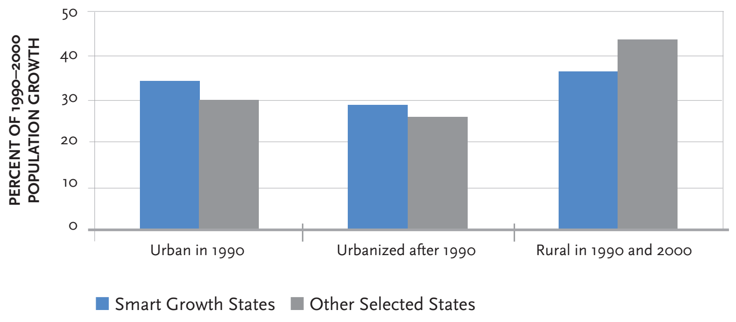
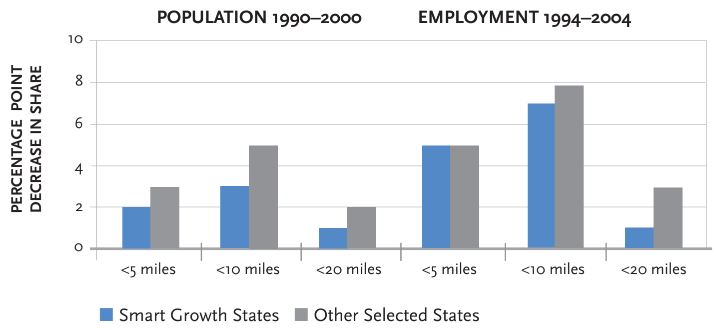


Figure 9.5 **Metropolitan Area Population and Employment Decentralized Less in Smart Growth States during the Decade**



smaller share in rural areas. Oregon had the highest share of population growth in already urbanized areas at 49 percent; New Jersey was second at 45 percent; and Colorado was third at 38 percent. Indiana had the lowest share at 6 percent. Using this same classification for large metropolitan areas, the results were similar to those at the state level. Portland had the highest share of additional residents settle in already urbanized areas in the 1990s (59 percent), while Miami–Ft. Lauderdale had the second highest (54 percent).

Centralization. To measure changes in the centralization of population and employment over time, each large metropolitan area in the eight case study states was divided into concentric rings with radii of 5, 10, 20, and 30 miles. The share of population and employment located within each ring was calculated at the beginning and end of a ten-year period. As might be expected, employment was more centralized than population. The shares of population and employment within the 5-, 10-, and 20-mile rings decreased or remained the same in all metropolitan areas. Employment decentralized more than population. Figure 9.5 shows that there was less decentralization in the metropolitan areas of the smart growth states, a result consistent with the analysis of urbanization above.

Summary. Overall, the changes in growth patterns in the smart growth states show some consistency with smart growth objectives. In these four states, marginal land consumption per new resident was lower, the share of new population locating in urban areas was higher, and population and employment decentralization was lower than in the other selected states. Smart growth states also added a smaller share of new population in rural areas. At the same time, however, the concentration of population and employment declined more in the smart growth states than in the other selected states.

When ranked in terms of overall performance, the top three states were Oregon, Colorado, and New Jersey, with Florida ranked eighth. Oregon performed well across most measures including land use, urbanization, and concentration. Colorado's strong showing indicates that smart growth outcomes can be attained without a mandatory statewide smart growth policy.

NATURAL RESOURCES AND ENVIRONMENTAL QUALITY

While smart growth policies are intended to improve the environment and protect natural resources, the strength of the linkages between specific programs and objectives varies. Smart growth policies often relate directly to land use, including land conservation, but only indirectly to air and water quality through impacts on transportation and development patterns. While data are reasonably available for land use and land conservation measures that are consistent over time and across states, it was impossible to obtain comparable data for air and water quality. As a result, all natural resource and environmental performance measures in this evaluation pertain to the use and conservation of land.

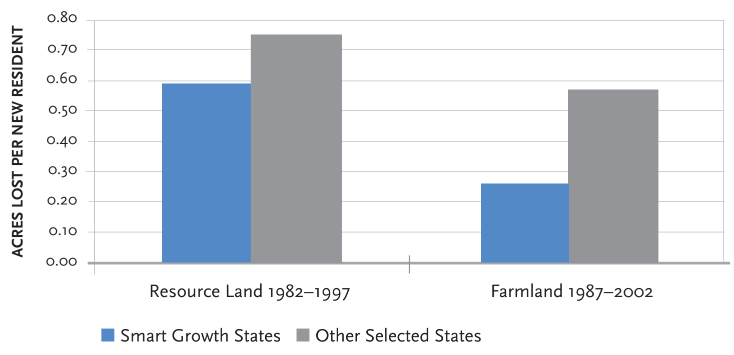
Land Conservation. While all of the case study states support land trusts and related conservation easements, state policies differ in many details. Maryland and Oregon have programs to protect open space and environmentally sensitive land and to preserve agricultural land. Maryland provides state funding to purchase conservation easements on farmland. New Jersey preserves agricultural lands by purchasing development rights and protects environmentally sensitive lands through regional planning. Florida has purchased over 2.5 million acres of environmentally sensitive land, but has yet to fund its program for protecting agricultural lands.

Among the other selected states, Colorado offers state tax credits for private conservation easements, purchases conservation land, and uses lottery proceeds to fund park and conservation programs. Indiana has a modest land trust program funded from sales of affinity license plates. Texas has three programs aimed at the preservation of forestland, one of which involves state purchase of conservation easements. Virginia has no statewide program, but facilitates local efforts to adopt conservation policies.

Resource Land and Farmland. The analysis relied on two comprehensive datasets available at five-year intervals. The first, the National Resource Inventory, provides information on several land use categories, five of which were aggregated into a single measure termed resource land: cropland, pastureland, rangeland, forestland, and conservation reserve program land. The second dataset, available from the National Agricultural Statistics Service, collects information on farm acreage through a census of farms. Changes in the amounts of resource land and farmland were related to the change in population in each of the eight state cases.

As figure 9.6 indicates, the smart growth states experienced smaller losses per new resident in both land categories. Maryland lost the least amount of resource land per new resident

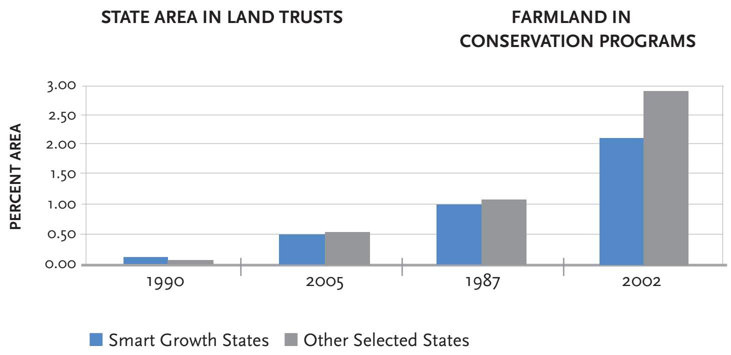
Figure 9.6 **Smart Growth States Lost Less Land per New Resident than Other Selected States**



(0.38 acres), while Indiana (0.90 acres) and Oregon (0.88 acres) lost the most. Virginia lost the least amount of farmland per new resident (0.04 acres), while Colorado (2.36 acres), Indiana (1.63 acres), and Oregon (0.89 acres) lost the most. Oregon's loss is surprising given the state's goal of protecting farmland. Further analysis revealed, however, that the loss was primarily in the sparsely populated eastern part of the state. Indeed, the densely settled Willamette Valley region around Portland actually increased the amount of farmland per new resident by 0.05 acres.

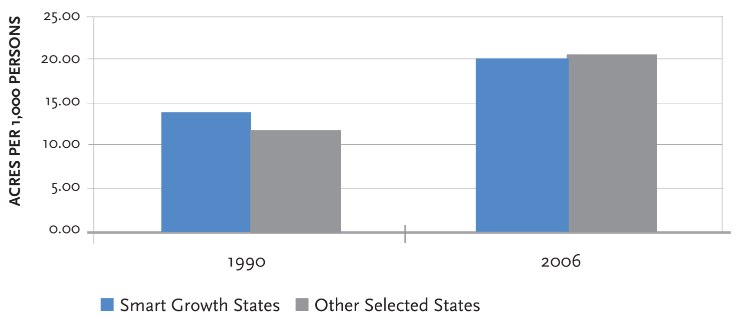
Land Trusts and Conservation Programs. All eight case study states support the placement of private land in land trusts and of farmland in conservation programs. During the two overlapping 15-year periods shown in figure 9.7, smart growth states performed less well than the other selected states, but the within-group performance varied widely. In 2005, New Jersey (3.6 percent) and Maryland (2.5 percent) had the highest percentages of their areas in conservation easements held by land trusts, while Oregon (0.1 percent) and Florida (0.2 percent) had among the lowest. In terms of farmland in conservation programs, Colorado (5.6 percent) performed best in 2002, followed by Maryland and Oregon (both at 2.8 percent). The share of area in land trusts is thus a poor predictor of the share of farmland in conservation programs, except in Maryland where both are reasonably high.

Figure 9.7 **Smart Growth States Protected Smaller Shares of Their Area in Land Trusts and Farmland Conservation Programs**



State Parkland. A final indicator related to conservation is the amount of land devoted to state parks. Acres of parkland per 1,000 persons, the level of service measure used by the National Recreation and Park Association, has changed over time in the two groups of states. As figure 9.8 shows, the smart growth states were slightly ahead of the other selected states on this indicator in 1990, but the difference between the two groups was negligible by 2006. In that year, Colorado provided the most parkland per 1,000 persons (42.5 acres), followed by New Jersey (38.5 acres). Virginia had the lowest service level (8.1 acres) and Indiana the next lowest (10.3 acres).

Figure 9.8 **Smart Growth States Lost Their Lead in State Parkland after the 1990s**



Summary. The evidence on natural resource and environmental measures is mixed, with neither group of states clearly outperforming the other in terms of protecting undeveloped areas. At the individual state level, Maryland had the highest average ranking across all measures, with New Jersey and Colorado tied for second. Indiana had the lowest average ranking. Colorado again performed well despite its lack of a statewide smart growth program.

TRANSPORTATION

Smart growth proponents view transportation as a major determinant of land use patterns and an important manifestation of the success of smart growth policies. They argue that expanding transport options, fostering pedestrian-friendly settings, and altering transport pricing yield less single-occupant car travel, less congestion, and more trips by transit, bike, and walking. These patterns are associated with more compact, mixed-use, and dense urban forms. This evaluation therefore looked at performance indicators related to mode choice and traffic congestion to assess how they are associated with smart growth programs.

Transportation data that are defined consistently across states are reasonably available, including census data that record commute mode and travel time. Data from the Texas Transport Institute, which estimates annual delay per peak-period traveler and a peak-period travel time index, have been used to examine levels and changes in congestion. Census data are available every 10 years for all states and municipalities, and the Texas Transport Institute data are available annually for 85 U.S. metropolitan areas. Congestion data were used for cities with populations of one to three million, and seven of the eight case study states (all but New Jersey) had at least one such metropolitan area with congestion data. Vehicle miles traveled (VMT) was one explanatory variable used to analyze the change in congestion.

Commute Modes. Data on mode choice for the work trip were tabulated for cities and counties with an average density of at least 50 persons per square mile. Counties were sorted into three density categories—very high (more than 500 persons per square mile), high (100 to 500), and medium (50 to 100)—to control for the level of urbanization.

Figure 9.9 **Work Trip Transit Share Was High and Rising in Smart Growth States during the 1990s**

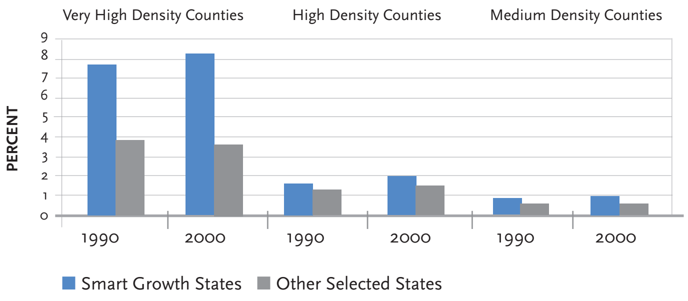


Figure 9.10 **The Bike/Walk Share Was Generally Higher in Smart Growth States, but Declined in the 1990s**

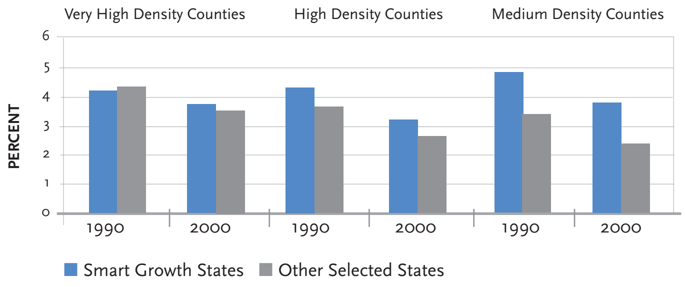


Figure 9.9 shows that the transit share of work trips varied greatly with population density in both the smart growth and other selected states. The transit share of work trips across the country in the 1990s was 6.0 percent in very high density counties, 1.0 percent in high density counties, and 0.5 percent in medium density counties. Work trip transit shares in the smart growth states thus exceeded U.S. averages, as did those in Colorado. In addition, average work trip transit shares increased from 1990 to 2000 in the smart growth states in all density categories, but generally declined in the other selected states except Colorado.

Given that smart growth programs typically provide bike lanes, bike racks, sidewalks, and priced parking, they should increase the share of bike/walk commutes or retard its decline. But as figure 9.10 indicates, while the bike/walk share was generally higher in the smart growth states, it declined over time and was essentially unrelated to population density. The exception to this pattern is Oregon, where the bike/walk share increased from 1990 to 2000 by more than 10 percent—likely reflecting the state requirement that local governments produce bike and pedestrian plans as part of their transportation plans.

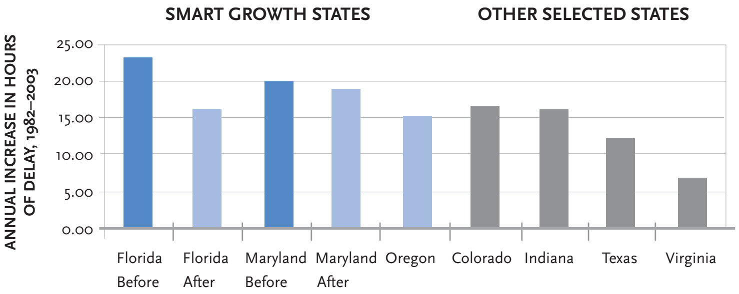
Congestion. The relationship between the form of development and traffic congestion is much debated. Some analysts believe that dense, compact development promotes transit use and shorter automotive trips, while others contend that decentralization reduces the distances from home to work and spreads car travel more widely over existing transport capacity. Since smart growth programs typically seek to reduce congestion, assessing the change in travel delays over time is essential.

Figure 9.11 shows average annual increases in peak-period hours of delay for two smart growth states before and after their programs were initiated. (Oregon's start date preceded the available data, and no data were available for New Jersey). The results are mixed. The average annual increase in congestion in the smart growth states (1.73 hours) exceeds that in the other selected states (1.31 hours). Yet the initiation of smart growth programs reduced the annual increase in traffic delays, thus providing some evidence of program success.

Using annual congestion data for several metropolitan areas, it was possible to estimate regression equations that included fixed effects for the year, the metropolitan area, and the presence of a smart growth program. Fixed effects methods essentially control for stable characteristics of the observation—even those that are difficult or impossible to measure. The results from a sample of six smart growth states indicate that smart growth programs have a statistically significant and behaviorally meaningful effect on congestion. The travel delay regression indicates that smart growth programs reduced the annual increase in delay by 2.2 hours for every year that the program was in place. For example, if the travel delay had been increasing by 4.0 hours per year, smart growth programs would reduce that number to 1.8 hours per year.

An attempt was also made to relate the congestion reduction from smart growth programs to three underlying

Figure 9.11 **Annual Increases in Traffic Delays in Smart Growth States Declined after Smart Growth Programs were Introduced**



Note: Light blue bars indicate that smart growth programs were in force during part of the 1982–2003 period.

causal factors—increased population density, increased transit ridership, and changes in VMT. Taken together, these variables were found to explain no more than 20 percent of the effect of state smart growth programs on congestion.

Summary. Analysis of the transportation indicators, especially of work-trip transit ridership and of changes in congestion, provides reasonably strong evidence that smart growth programs are associated with desirable outcomes. While the evidence on bike/walk commutes was less compelling than that on transit, smart growth states had somewhat higher shares of work trips by these modes. When performance across the three major indicators was aggregated for each state, Oregon ranked at the top. That state did very well in transit and bike/walk commutes, and was the top smart growth state in terms of congestion. Indiana and Texas were at the bottom of the overall rankings. It is noteworthy that the four states that performed best on transportation also performed best on growth patterns and trends.

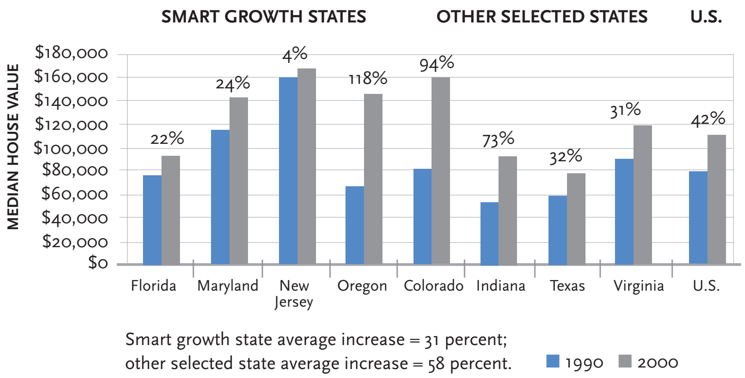
AFFORDABLE HOUSING

While improving the affordability of housing is a common goal of smart growth programs, the emphasis placed on this objective varies across the case study states. New Jersey has the strongest state-level requirement, which stems from the *Mt. Laurel I* and *II* court decisions requiring municipalities to provide realistic opportunities for low- and moderate-income housing on a regional fair-share basis. Florida requires that local plans include a housing element. Oregon has a requirement for provision of "needed housing," while Maryland has no specific state-level housing requirement. None of the other selected states had a state-level affordable housing requirement during the 1990s, although Virginia added a requirement in 2003.

Housing Values. The first measure used to assess housing affordability was the change in median housing values from 1990 to 2000. Figure 9.12 shows that median values rose in all eight states, with the largest percentage increase in Oregon. Although New Jersey posted the smallest percentage increase, it had the highest median housing value of the eight case study states in both 1990 and 2000. Colorado had the second highest median value in 2000, followed by Oregon and Maryland. Housing in the smart growth states was thus more expensive than in the other selected states.

Even so, the average increase in median prices was lower in the smart growth states (31 percent) than in the other selected states (58 percent). As a result, the difference in median house values between the smart growth and other selected states shrank from $34,000 in 1990 to $25,000 in 2000. The source of the price increases in the smart growth states could have been on the demand side (greater amenities), the supply side (higher regulatory costs), or both.

Figure 9.12 **Percentage Increases in Median House Value Varied Widely among the Case Study States**



Smart growth state average increase = 31 percent;
other selected state average increase = 58 percent.

Figure 9.13 **Smart Growth States Added a Larger Share of Multifamily Units in the 1990s**

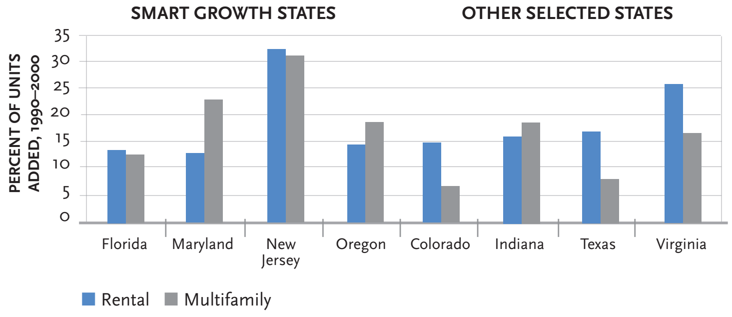
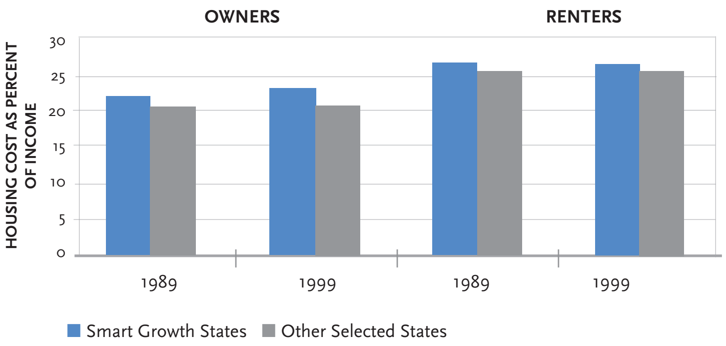


Figure 9.14 **Housing Cost Burdens Were Generally Higher in the Smart Growth States, Especially for Renters**



Multifamily and Rental Housing. States that successfully promote affordable housing are likely to produce more multifamily and rental units. As figure 9.13 shows, all eight case study states added about the same average share of rental units (18 percent) during the 1990s, but multifamily units made up a larger average share of new housing in the smart growth states (21 percent) than in the other selected states (13 percent). Smart growth states were also less likely to add housing in rural areas. New Jersey had the highest shares of both rental and multifamily units of the eight case study states, while Maryland had the lowest rental share and Colorado had the lowest multifamily share.

Housing Cost Burden. Affordability is determined by both housing prices and incomes. The housing cost burden is the percent of income spent on housing, commonly measured by the ratio of median house prices and rents to median household income. Figure 9.14 indicates that renter and owner housing cost burdens were slightly higher in the smart growth states than in the other selected states. The share of income spent on housing changed little from 1989 to 1999 except that owners in smart growth states saw their cost burdens edge up from 22 percent to 23 percent.

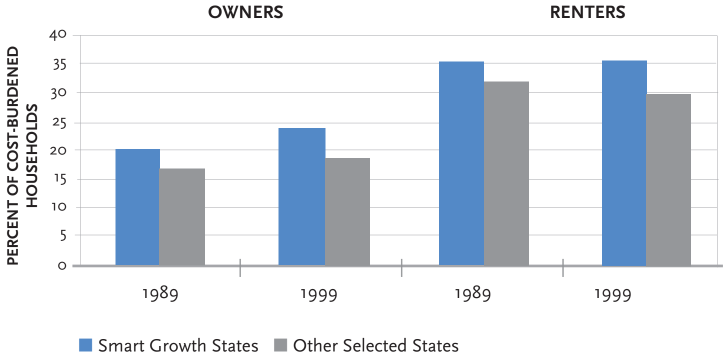
In both groups of states, the housing cost burden for renters was consistently higher than for owners. The renter burden fell slightly in all states except Oregon (up 5.5 percent) and Colorado (up 1.1 percent). The owner cost burden rose the most in Indiana (15.6 percent) and Oregon (13.7 percent), and decreased the most in Texas (-3.8 percent) and Virginia (-2.3 percent).

A generally accepted standard of affordability is that housing costs should be less than 30 percent of household income. Accordingly, a specific indicator of affordability (or its lack) is the share of households whose housing cost burden exceeds 30 percent of income. As shown in figure 9.15, the share of cost-burdened owners rose between 1989 and 1999 in both groups of states, while the share of cost-burdened renters fell or was unchanged.

In addition, the shares of cost-burdened owners and renters were higher in the smart growth states than in the other selected states. Oregon posted the largest increase in the share of cost-burdened owners (5.8 percent), followed by Maryland (3.8 percent). Texas was the only state to show a decline. The share of cost-burdened renters increased only in Oregon (2.5 percent) and Maryland (0.1 percent), and fell the most in Texas (-3.9 percent). Note that these changes in housing cost burdens do not account for any offsetting cost reductions, such as for transportation, that may be associated with smart growth programs.

Statistical regressions were used to analyze the determinants of the change in the shares of cost-burdened owners and renters across the case study states. Regressions that hypothesized a uniform effect from smart growth programs found a statistically significant relationship. Smart growth programs were associated with increased shares of cost-burdened households.

Figure 9.15 **The Share of Cost-burdened Owners Rose in the Smart Growth States in the 1990s**



Note: Cost-burdened households spend 30 percent or more of income for housing.

Additional regressions that allowed each state to have an independent effect found that the shares of cost-burdened renters and owners increased the most in Oregon and the least in Texas. But New Jersey and Florida—smart growth states that both require affordable housing elements in local plans—performed better than Oregon and Maryland for owners, and better than Oregon, Maryland, Virginia, and Colorado for renters.

Summary. These results indicate that smart growth programs that lack an affordable housing element have been associated with increases in housing cost burdens, especially for owners. While smart growth states experienced a smaller increase in median housing prices and added a greater share of multifamily units in the 1990s, they also had higher shares of cost-burdened owners and renters than the other selected states. Regression results indicate that the smart growth states had greater increases in the share of cost-burdened owners than of renters. New Jersey, with its court-mandated affordable housing requirement, was first overall in a composite ranking across all housing affordability indicators. Oregon ranked last, having experienced the largest increases in housing values, housing cost burdens, and shares of cost-burdened households.

FISCAL DIMENSIONS

Smart growth programs seek to concentrate economic activity in areas that are already developed and to control growth in undeveloped and rural areas. Fiscal revenues and expenditures have a role to play in the effort. Some central questions are the extent to which revenues from developed areas are sufficient to pay for expenditures, and how the balance of revenues and expenditures compares between smart growth and other states.

To examine these issues, counties in the eight case study states were separated into two groups according to their population densities—rural/undeveloped, and urban/suburban or otherwise developed. The densities that defined the two categories varied with the average population density of each state. The analysis looked at ten variables related to economic development for which comparable data were available for the decades from 1980 to 1990 and from 1990 to 2000: population growth and density, households, employment, personal income, retail sales, tax base, housing values, multifamily units, and journey-to-work travel times.

The shares of incremental growth in each variable that occurred in each state's urban/suburban and rural/undeveloped counties were calculated for both decades. The proportion in the 1980s was then subtracted from that in the 1990s to provide a simple summary statistic measuring the change in the distribution of economic activity. For example, if rural counties received 8 percent of a state's population growth in the 1980s and 13 percent in the 1990s, the net increment for rural counties would be 5 percent.

Figure 9.16 shows how much the shares of statewide growth in rural/undeveloped counties changed from the 1980s to the 1990s. The only activity where that share decreased was multifamily housing in the smart growth states. In all other cases the rural/undeveloped share of growth was equal to or larger in the 1990s than in the 1980s. It is striking that the rural growth rate for all activities in the smart growth states was less than or equal to that in the other selected states. This indicates that smart growth states were more successful in fostering density in urban/suburban areas and in moderating the growth of development in rural/undeveloped areas.

Figure 9.16 **Smart Growth States Had Less Growth in Rural/Undeveloped Areas in the 1990s than in the 1980s**

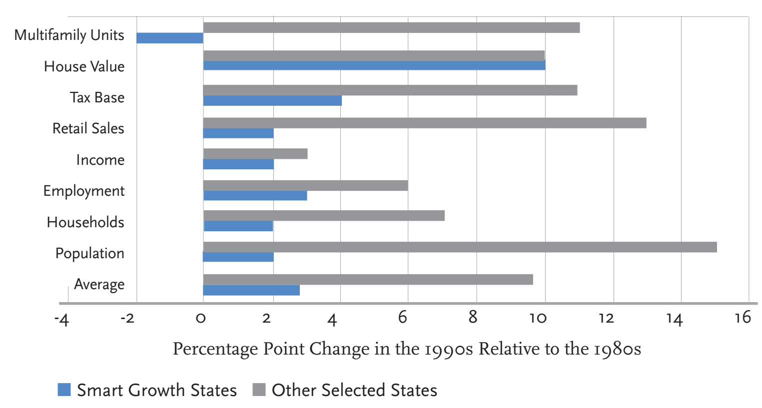
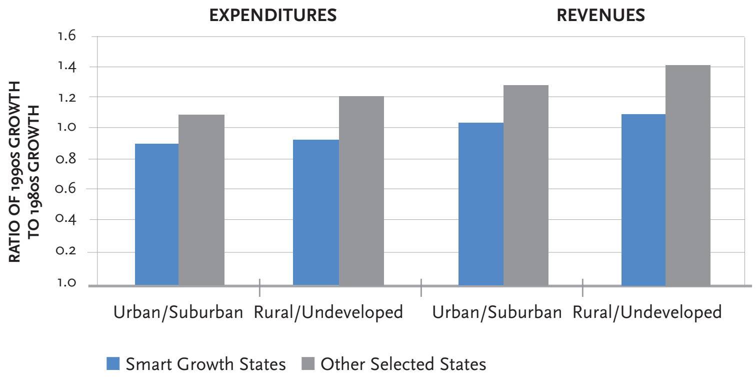


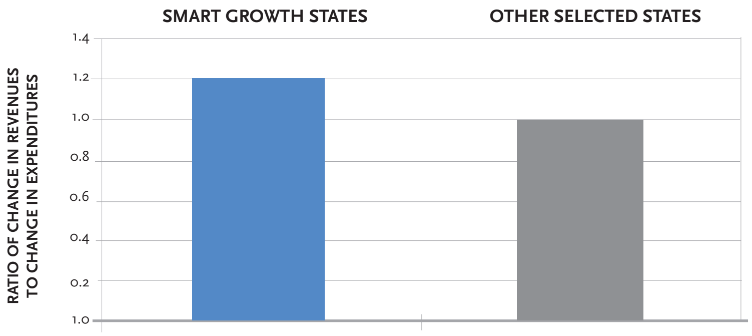
Figure 9.17 **Aggregate Expenditures and Revenues Increased Less in Smart Growth States than in Other Selected States**



The analysis of fiscal impacts was based on public finance data drawn from the Census of Governments. The 2002 census had serious data problems that made it necessary to impute values for many missing variables before expenditures and revenues could be analyzed. Figure 9.17 shows the ratios of their respective growth (in constant dollars) in the 1990s and the 1980s. A ratio over 1.0 indicates that growth accelerated; that is, its absolute magnitude in the 1990s exceeded that in the 1980s. This figure reveals three trends: (1) both revenues and expenditures grew faster in rural areas than in urban/suburban areas; (2) revenues grew faster than expenditures in all areas; and (3) smart growth states had lower growth in both revenues and expenditures than the other selected states. The faster growth in rural areas reflects increased development, as documented in figure 9.16, while the other patterns may reflect prudent fiscal management in the smart growth states.

Fiscal impact, a common metric used to evaluate fiscal performance, is the ratio of the change in revenues to the change in expenditures. When this ratio is greater than 1.0, revenues are growing faster than expenditures. Figure 9.18 indicates that the smart growth states had a more favorable fiscal balance in the 1990s than the other selected states in urban/suburban areas. What explains this outcome? Analysis of the change in tax bases

Figure 9.18 **Smart Growth States Achieved Better Fiscal Balance than the Other Selected States in Urban/Suburban Counties**



and tax rates reveals that the smart growth states increased taxes somewhat more than the other selected states to strengthen their fiscal positions.

Overall, smart growth states did better than the other selected states in controlling the growth of economic development activities in rural areas, and in achieving a favorable balance of incremental revenues over incremental expenditures. It is noteworthy that the more favorable fiscal balances in the smart growth states result from larger tax increases. This suggests that these states are generally more supportive of the public sector

Figure 9.19 **Survey Respondents Viewed State-level Programs in the Other Selected States as Least Effective**

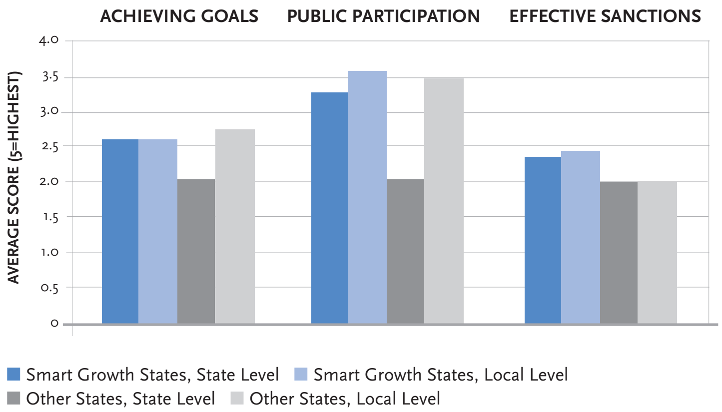
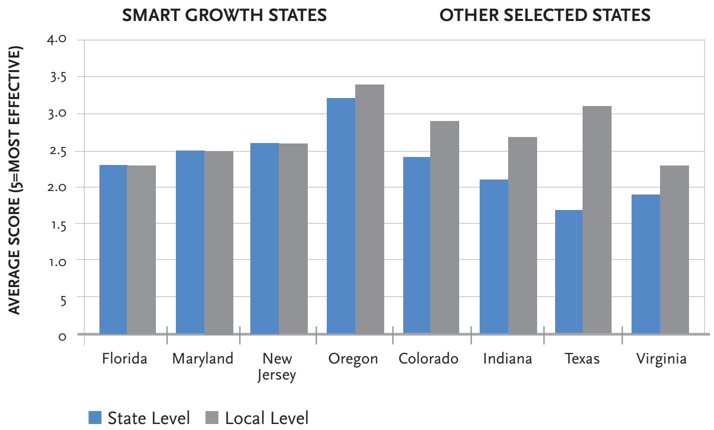


Figure 9.20 **Perceptions of State-level Effectiveness Vary Much More than Those of Local-level Effectiveness across all States**



than the other selected states, in terms of both the regulatory structure underlying smart growth programs and provision of financial resources to the public sector. New Jersey performed best overall on measures of the distribution of growth and fiscal impact, followed by Florida and Maryland. The lowest ranking states were Indiana and Virginia.

SURVEY OF OPINION LEADERS

This evaluation included a survey of 117 state and local opinion leaders—about 15 in each of the eight case study states. The questionnaire covered the period from 2000 to 2007 and addressed five major topics related to smart growth programs: effectiveness in achieving goals; effectiveness of sanctions and incentives; public participation; costs of regulatory compliance; and the government's role in guiding land use decisions. The survey was careful to differentiate between state- and local-level efforts and activities because several of the other selected states enable local governments to apply smart growth policies.

Respondents in the smart growth states were two to three times more likely to believe that the costs of smart growth policies and the time required to complete the review process had "become a lot higher" than respondents in the other selected states. Opinion leaders generally had similar views about the role of government in smart growth policies, except that those from the other selected states were more likely to believe that state governments should defer to local governments on such issues.

Responses on the effectiveness of achieving goals, of public participation, and of sanctions are summarized in figure 9.19. Opinion leaders felt that smart growth states had been more effective than the other selected states at the state level, but that the other selected states had been nearly as successful at the local level. These views reaffirm earlier findings in this chapter that states without statewide programs, such as Colorado, have succeeded in achieving smart growth objectives through locally implemented policies.

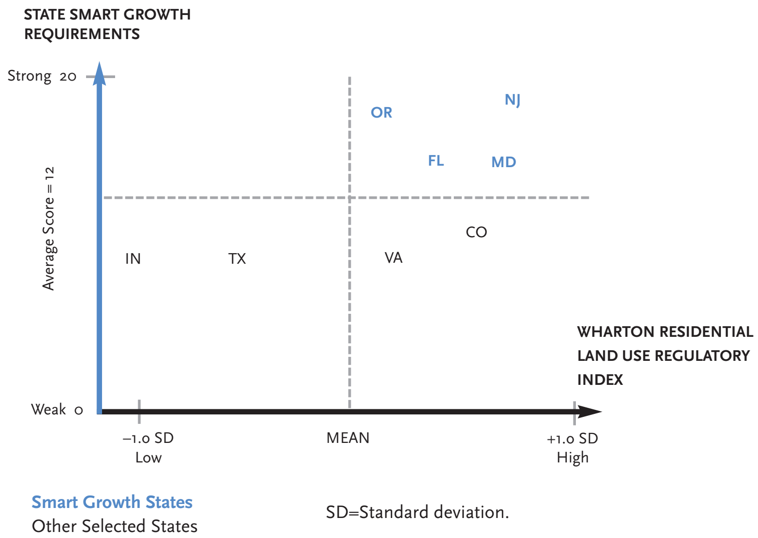
This point is reinforced in figure 9.20, which shows opinion leaders' views of the effectiveness of state and local governments in achieving smart growth objectives. The lack of a statewide smart growth program apparently leads to increased local activism that may exceed the perceived effectiveness of programs in smart growth states.

The views of opinion leaders in the survey correspond well with the analysis of state and local regulations presented in chapter 2. The strength of state regulatory regimes was assessed in terms of five attributes: state requirements for local planning; state specification of the size of communities that must plan;

and state requirements for internal consistency, vertical consistency, and horizontal consistency. The Wharton Residential Land Use Regulatory Index was used to measure the strength of local housing development regulation.

Figure 9.21 shows that both state and local regulations are strong in the four smart growth states. Colorado, which does well on many smart growth performance indicators, has relatively strong local regulations, suggesting that local regulations that are reasonably consistent within a state can produce smart growth outcomes similar to those in states with strong state-level regulation. In addition, whether a state is subject to Dillon's Rule (a legal doctrine holding that localities have only those powers specifically delegated by state law) has little relation to the presence of strong state or local regulations. For example, Maryland is a Dillon's Rule state and Oregon is not, yet both have strong state and local regulations (Richardson and Gough 2003).

Figure 9.21 **State versus Local Residential Regulation in the Eight Case Study States**



SD=Standard deviation.

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

CONCLUSIONS

The evidence presented here does not sustain the widely held view that statewide programs are either necessary or sufficient to attain all smart growth objectives, although most statewide programs clearly make progress on one or more of them. While the sample smart growth states as a group only marginally outperformed the other selected states, one of the smart growth states performed best on each objective. At the same time, however, another smart growth state often performed well below average on each objective.

There is a marked tendency for smart growth states to perform well in an area that is a high priority for that state. As table 9.1 shows, Oregon did best on growth patterns and transportation measures, New Jersey on affordable housing, and Maryland on natural resource and environmental protection. In contrast, Oregon and Maryland did poorly on affordable housing, an objective that their programs did not emphasize.

The programs adopted by both the smart growth and other selected states differ greatly in their details even beyond their emphasis on specific objectives, but some common patterns emerge. Table 9.1 suggests that linkages exist among some objectives. For example, the four states with the highest rankings on spatial structure also rank highest on transportation, supporting the idea that transportation and development patterns are closely related.

Table 9.1 **Ranking of State Performance by Smart Growth Objective**

State	Spatial Structure	Environmental Protection	Transportation	Housing Affordability	Fiscal Dimensions
SMART GROWTH STATES					
Florida	8	6	5	5	3
Maryland	6	1	6	7	4
New Jersey	3	2	4	1	1
Oregon	1	6	1	8	8
OTHER SELECTED STATES					
Colorado	2	2	3	6	2
Indiana	7	8	7	4	6
Texas	5	4	7	2	5
Virginia	4	4	2	3	5

Note: 1= highest ranking.

These linkages are summarized by the correlations in table 9.2. The highest correlation in the rankings is between spatial structure and transportation, reflecting the functional interactions between land use and transportation. The second strongest correlation is between environmental protection and fiscal dimensions, which suggests that land preservation and conservation occur more often in states with strong fiscal balances and modest development in rural areas. The performance on fiscal dimensions is independent of the performance on transportation. The correlation between housing affordability and transportation is somewhat negative, indicating that the factors associated with high transit use may also raise housing prices. These correlations suggest potential synergies and antagonisms among various smart growth objectives, and highlight the need for careful program design.

States without statewide programs that did well in achieving smart growth objectives provided supportive and enabling conditions for local governments to pursue those objectives. This is the case in Colorado, where several metropolitan areas on the Front Range have implemented similar smart growth programs—essentially simulating a statewide program. Texas and Virginia also facilitate or do little to constrain local smart growth initiatives. Indiana does very little to support smart growth policies at either the state or local levels, and performs poorly across all five objectives.

Table 9.2 **Correlation of State Rankings across Smart Growth Objectives**

	Spatial Structure	Environmental Protection	Transportation	Housing Affordability	Fiscal Dimensions
Spatial Structure	1.00				
Environmental Protection	0.33	1.00			
Transportation	0.76	0.09	1.00		
Housing Affordability	-0.17	0.06	-0.32	1.00	
Fiscal Dimensions	-0.08	0.62	-0.13	0.41	1.00

Because smart growth programs involve strengthened regulatory controls on development, higher housing prices are often seen as an inevitable consequence. This evaluation, however, does not support the view that smart growth is always associated with increases in housing prices or reductions in housing affordability. The evidence for New Jersey indicates that housing affordability can be achieved in a state that performs well on the main smart growth objectives. New Jersey also has a strong state mandate promoting affordable housing. Smart growth states with weak or no affordable housing mandates at the state level perform poorly in this area.

While no state performs well across all objectives, the rankings do support the conclusion that smart growth programs can and do achieve smart growth goals. Thus, this evaluation counters what might be termed "the smart growth impossibility theorem," that is, the conjecture that historic growth patterns and behaviors are so entrenched that they cannot be changed. The mixed results and imperfect performance of the smart growth states seem to reflect the priorities of specific programs and how the states focused their efforts.

RECOMMENDATIONS

These findings support several recommendations that can be grouped under three headings: program structure and transparency; functional linkages and program design; and program sustainability and monitoring. As state and local governments spend ever greater amounts of time and money in pursuit of smart growth objectives to meet new challenges such as climate change, it is essential to improve the efficacy of policies, the transparency of objectives and their performance indicators, and the evidence that objectives are being met.

PROGRAM STRUCTURE AND TRANSPARENCY

A vision of sustainable and desirable development outcomes needs to inspire and motivate smart growth programs and inform the package of policies, rules, incentives, and regulations that support such programs. Florida and Oregon best embody the evidence for this recommendation. Florida has a long history of promoting and requiring planning at all governmental levels. But when its outcomes were evaluated in terms of smart growth objectives, the state performed poorly compared with other states in this study. Florida has not articulated a coherent strategy for managing growth or a vision of what constitutes desirable development outcomes. Instead, it has followed a process-oriented approach that—at times because of unfortunate policy interactions—has essentially encouraged low-density development on the fringe of metropolitan areas. In contrast, Oregon's smart growth program, whose mission is clearly described in its initiating legislation, has focused strongly on preventing development on agricultural lands adjacent to urban areas and has had measurable success in achieving that objective.

Smart growth policies can be implemented on either a top-down or a bottom-up basis, but an approach that coordinates policies at the regional level is a minimal requirement to achieve smart growth objectives. This evaluation found that states with statewide smart growth programs tended to do somewhat better across a range of performance indicators than most states that had no such programs. Oregon and New Jersey have succeeded in more than one aspect of smart growth.

Exceptions to this pattern were often found in Colorado and sometimes in Texas and Virginia, which do not have statewide policies but do allow local governments to pursue extensive growth management programs. Colorado actually performed better than several states with statewide smart growth programs. A handful of its metropolitan areas on the eastern edge of the Rocky Mountains have taken a similar approach to urban development, with Denver making an aggressive effort to slow sprawl. This consistent policy approach at the local level essentially mimics an effective statewide program and provides coherence at the regional level.

Smart growth programs implemented by local governments with no regional coordination are unlikely to yield good outcomes because of negative spillover effects from communities pursuing their parochial interests. In addition, state-level programs that are poorly coordinated or do not take account of policy interactions across agencies also will perform poorly.

Smart growth policies should articulate the means of achieving objectives and specify implementation mechanisms, rather than just declare objectives. It is easy for policy makers to endorse legislation that extols the virtues of smart growth, such as improved environmental quality, more affordable housing, and reduced traffic congestion. But without confronting the challenges of how to achieve those objectives, such legislation is little more than statements about preferred states of the world.

Real progress on the smart growth agenda has come in states that have grappled with implementation and come up with new means of achieving smart growth objectives. For example, Maryland's initiatives have gained notice because of their avowed use of incentives to promote smart growth, which are seen as an advance over prior regulatory or command-and-control approaches. The results of this evaluation suggest that achieving smart growth objectives is extremely challenging. Further progress is needed in developing and refining policies that build on past experience and try new approaches to policy implementation that are politically feasible, technically sound, and economically efficient.

FUNCTIONAL LINKAGES AND PROGRAM DESIGN

The design of growth management policies should take account of interactions among policies and coordinate well across relevant agencies. In some cases, policies are put in place that focus narrowly on specific objectives. But those policies are part of a larger framework and may have potential synergies or antagonisms with other policies. One outstanding example is Florida's concurrency policy, which requires that development can occur only where there are adequate infrastructure and other public facilities. In retrospect, it is clear that Florida's unused infrastructure capacity existed largely on the fringes of urban areas, and that the concurrency policy helped to force development to those areas and thus exacerbated sprawl. While infill development was a policy objective in Florida, needed infrastructure investments were not forthcoming. As another example, none of the eight case study states requires government approval of conservation easements, raising the possibility that such easements can be inconsistent with existing land use plans.

Smart growth policies should make use of economic incentives, such as pricing and tax policies, that have shown promise in other countries. While Maryland has instituted policies that use incentives, such as facilitating growth in areas already served by infrastructure, relatively few programs have used pricing mechanisms to attain smart growth objectives. In transportation, for example, no U.S. city has implemented congestion fees along the lines of those in London and Singapore, even though the evidence indicates that these programs have successfully reduced peak-period congestion and promoted transit use.

While many municipalities levy impact fees on new development, these charges are based primarily on estimates of the capital investment attributable to the development, not on estimates of negative externalities (such as increased congestion, emissions, and greenfield development). Several municipalities do impose additional charges or levies, including the requirement that developers provide a percentage of affordable dwellings within a larger project or contribute to an affordable housing fund. However, outside of programs such as cap-and-trade schemes that allow trading of emissions, prices and fees have been used sparingly in smart growth plans. This is an area that deserves more focus.

Smart growth programs need to carefully consider the income distribution consequences of their policies. With the exception of affordable housing, smart growth programs generally pay little attention to their income distributional effects. While most smart growth programs do include affordable housing elements, these policies are working well in only a few states—most notably New Jersey. Affordable housing policies are critical because many smart growth programs have been associated with higher housing prices. Whether price pressures come from the demand side (because of the greater attractiveness of smart growth areas) or the supply side (because new constraints on low density housing are not offset by incentives for multifamily housing) is still unclear, but production of affordable housing is an achievable and important objective.

Other aspects of smart growth programs, especially those associated with transportation, are also likely to produce benefits for low-income residents in terms of improved access to employment or lower travel costs. Policies and programs that promote walking, cycling, and transit accessibility and use are likely to expand the opportunities of low-income households, many of whom may be captives of these modes. Improving transit accessibility more generally is likely to benefit low-income workers who are current transit users.

PROGRAM SUSTAINABILITY AND MONITORING

Because smart growth programs must be implemented over a long period to achieve results, success requires credible governmental commitment to their policies. Some of the smart growth states included here benefited from consistent application of policies over time, while others did not. Florida has sustained its focus on the adequacy of state-mandated plans for development. In contrast, Maryland's Governor Glendening implemented an innovative set of smart growth policies that his successor largely ignored.

New Jersey has made a highly credible commitment to one aspect of smart growth programs, following the state supreme court's *Mt. Laurel* decisions requiring implementation of policies to promote affordable housing. Many observers attribute the state's success in providing affordable rental housing to the subsequent oversight of policies and implementation that executive decision or inattention cannot undo. The need for credible governmental commitment strengthens the preference for state-level smart growth policies, since it may be difficult to make credible commitments at the local or even regional levels.

Measurement and collection of data, particularly related to environmental quality and public finance, are inadequate and need to be improved. Several objectives of smart growth programs, particularly those related to the environment, lack sufficient data to allow formulation of performance indicators that can be tracked over time or compared across jurisdictions. State-level data are particularly weak for assessing air and water quality and for creating measures related to flora and fauna. Comparable data are currently available only for performance measures related to land.

In the area of local public finance, existing datasets should be able to support the formulation of performance indicators, but they are missing extensive amounts of data and do not readily sustain comparisons over time or across states. Finally, data on population and many related measures are collected for geographic areas whose boundaries change over time. Reconfiguring zonal systems to make them consistent over time is very costly for individual studies and would be done more efficiently at a centralized level.

Smart growth programs would benefit from more research on important interactions among policies used to achieve different objectives. Much is known about the determinants of urban form and household behavior in urban settings. However, stronger evidence is needed about the interactions among land use, transportation, and emissions, as well as between land use policies and housing affordability. Policies are being put in place whose success depends on specific expectations about such interactions. For example, although there is still substantial uncertainty about the magnitude of the relationship between residential densities and vehicle miles traveled, the results expected from many smart growth policies depend importantly on assumptions about the nature of this relationship.

Clearer definition of performance indicators and measurement of their attainment would facilitate the evaluation of smart growth programs and contribute to their technical and political sustainability. This evaluation makes clear that few smart growth programs define specific performance indicators to measure the success of their policies. In addition, they have not collected the data necessary to monitor their performance or to carry out an evaluation of overall program effectiveness. Oregon's benchmark reporting system and Maryland's National Center for Smart Growth Research and Education are among the rare efforts to create monitoring capacity. Smart growth programs benefit from well-defined and measurable objectives, as well as from procedures to monitor relevant performance measures that demonstrate how the programs can achieve those objectives. Effective monitoring can help maintain voter support for smart growth policies and guide adjustments when the evidence indicates that policies are not working.

PART III.
STATE CASE STUDIES