LANDLINES

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Effects of Urban Density on Rail Transit

JUDY S. DAVIS
AND SAMUEL SESKIN

Despite the long-term and continuing trend away from central business districts and toward suburban development, a number of factors are motivating recent attention to rail transit. These factors include:

- concerns about the negative impact of auto-oriented sprawl
- desires to reduce air pollution and energy consumption
- interest in rebuilding urban communities
- need to provide access and mobility to those without autos
- desires to save the costs and avoid the impacts of new or widened roadways

Many metropolitan areas in the United States are considering the addition or expansion of light rail and commuter rail systems to link employees with business centers. The land use characteristics of the corridors where transit lines operate have been shown to influence transit ridership, but much of the previous work is more than 20 years old and based on data from a limited number of regions.

Our national research project, conducted for the Transit Cooperative Research Program with Jeffrey Zupan, expands and updates earlier research. We analyzed information on 261 stations on 19 light rail lines in 11 cities, including Baltimore, Cleveland and St. Louis, and 550 stations on 47 commuter rail lines in the six city regions of Boston, Chicago, Los Angeles, San Francisco, Philadelphia and Washington, DC.

The study shows that light rail and commuter rail serve distinctly different markets and land use patterns. Light rail with its closely spaced stations attracts more riders per station when it is located in denser residential areas. Feeder bus service helps to boost ridership. Light rail can function in regions with a wide range of CBD sizes and employment densities. Commuter rail depends more on park-and-ride lots at stations in low-density, high-income suburban areas farther from the CBDs, which tend to be larger and more dense than those in light rail areas.

Light rail, with its more frequent service, averages about twice as many daily boarders per station as commuter rail, even though light rail is more often found in smaller metropolitan areas. Figure 1 *(see page 6)* shows that light rail is most effective in attracting passengers close to the CBD. Figure 2 *(see page 7)* shows that commuter rail attracts the largest number of its riders about 35 miles out from the CBD. In both figures, other factors affecting ridership, except CBD employment density, are held constant.

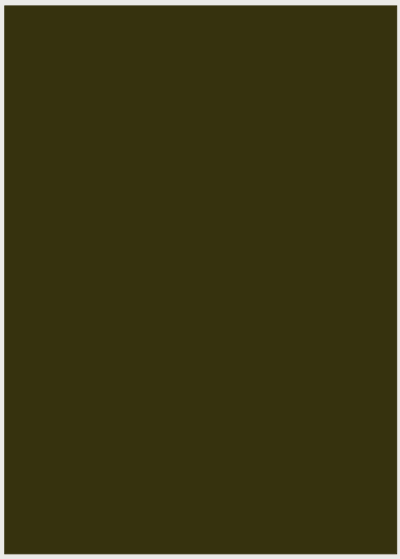
Because most transit systems emanate from and focus on a region's CBD, the amount of employment concentrated downtown clearly affects the demand for transit. Figures 1 and 2 also show that ridership increases with CBD density for both light rail and commuter rail. For light rail, the effects of CBD density on ridership are most pronounced for stations within 10 miles of the core, while for commuter rail the larger impacts occur at stations 20 to 50 miles outside the city.

Rail Transit
continued on page 6

INSIDE THIS ISSUE

Brown Named President

We are delighted to welcome Dr. H. James Brown as president of the Lincoln Institute," announces Kathryn J. Lincoln, chair of the Institute's Board of Directors and of the Search Committee. "Jim is an accomplished and



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innovative academician who has served on the faculty of Harvard University for the past 26 years. He has also directed several research centers that bring together constituencies similar to our own—educators, public officials and private sector representatives concerned about city and regional planning, urban development, housing and land use policies." Brown begins his tenure on May 1, 1996.

"I am very excited about this opportunity to help focus and expand the Lincoln Institute's excellent research, education and publication programs in land policy," Brown adds. "I hold the Institute in the highest regard for its important role

Brown
continued on page 2

Brown

continued from page 1

in linking academics, local officials and practitioners in the areas of land use, taxation and regulation. I look forward to contributing both my administrative and teaching experience beyond the university setting. Providing decisionmakers in the public and private sectors with up-to-date information on rapidly changing policy concerns is a very important priority for this organization."

A native of Indiana, Brown graduated from Ohio Wesleyan University in 1962 with a bachelor's degree in economics, and subsequently spent a year at the London School of Economics as a research student. He completed his Ph.D. in economics at Indiana University in 1967, and held a post-doctoral fellowship at the university's Institute for Applied Urban Economics. For the next two years Brown was a research associate in urban economic studies at the National Bureau of Economic Research in New York.

In 1970 Brown was appointed assistant professor and assistant chairman of the city and regional planning department at Harvard University. In 1976 he was promoted to full professor, and in 1981 became chairman of the department. In 1982 Brown was also named director of the MIT-Harvard Joint Center for Urban Studies, which had been established in 1959. The center was reorganized in 1984 as the Joint Center for Housing Studies, a collaborative venture of the Kennedy School of Government and the Graduate School of Design at Harvard. The center is supported by 40 corporate sponsors and other public and private constituencies, and is considered the most prestigious research center on housing in the country. Brown initiated the center's annual report titled *The State of the Nation's Housing*, now in its thirteenth year.

Building on his strong ties in the academic and business worlds and the public sector, Brown chaired the 1993 and 1995 sessions of the Housing Leadership Conference, a national forum for discussing and debating major issues affecting the housing industry. Some 100 private, public and nonprofit housing leaders participated in each conference, as well as members of Congress and the Clinton Administration, including Secretary of Housing and Urban Development Henry G. Cisneros.

"I'm especially eager to get involved in the Institute's education programs," Brown adds. "I really enjoy teaching, and have developed some new ways of teaching economics that allow the students to work through cases to learn and communicate the concepts as opposed to simply proving or disproving them." Brown has also taught operations management, total quality management and strategic management courses at the Kennedy School, and three years ago he was voted Teacher of the Year. "I look forward to working with land use practitioners and local policymakers in the Institute's courses," he says.

Kathryn J. Lincoln Succeeds David Lincoln as Institute Board Chair

David Lincoln is stepping down as chairman of the Board of Directors of the Lincoln Institute of Land Policy after 22 years of service. Mr. Lincoln became the chair at the inception of the Lincoln Institute in 1974 and has played a major role in its development. He remains on the Institute Board and continues to serve as president of the Lincoln Foundation.

"Certainly the Institute has benefited from David Lincoln's leadership over the past 22 years, and we count on his continued involvement," says Kathryn J. Lincoln. She takes the chair on May 1, 1996, having previously served as vice chair of the Board and acting president of the Institute. In addition to sitting on the Institute and Foundation boards, she serves on the Board of the Lincoln Electric Company and the Board of the Chautauqua Institution.

David Lincoln will be the featured speaker at the Institute's Founder's Day program on August 1, 1996, at Lincoln House in Cambridge. "It is particularly appropriate for David Lincoln to provide the Founder's Day speech this year since he has played a central role since the founding of the Institute," Ms. Lincoln notes. "Who could be a better Founder's Day speaker?"

Fellowship Honors Dr. Ronald L. Smith

The Board of Directors of the Lincoln Institute of Land Policy created the Ronald L. Smith Public Officials Fellowship Award to honor Dr. Smith on his retirement as president after ten years of outstanding service. The announcement was made at the Board's Annual Meeting in Arizona in February and at a reception for Dr. Smith at the Lincoln Institute in March.

The fellowship award is designed to encourage and support the participation of key elected or appointed public officials in the Institute's educational programs.

NEW POLICY FOCUS REPORT

On Borrowed Land: Public Policies for Floodplains

Until the summer of 1993 in the Midwest, the risks of living near a river's edge seemed insignificant compared to the advantages of access to water-borne commerce and rich agricultural bottomlands. But the Great Flood of 1993, the most destructive flooding event in the United States in more than 50 years, changed the way many people calculate the economic and social costs of floodplain development.

As documented in the Institute's new report *On Borrowed Land: Public Policies for Floodplains,* the Great Flood also forced the nation to question assumptions and government responsibilities regarding floodplains. For the preceding 150 years, the federal government had gradually assumed much of the responsibility for flood control and the risks of land uses in floodplains—by building and repairing levees, paying disaster relief, and providing subsidized flood insurance. While these measures helped protect many homes, businesses and farms, they also indirectly encouraged state and local officials to permit new development in flood-prone areas and allow other land use decisions that eliminated many of the natural flood control functions of floodplains and wetlands.

continued on next page

Sustainable Development in the Mekong River Basin

TRANG D. TU

The mighty Mekong, tenth largest river in the world, faces conflicting pressures for developing its floodplains and harnessing its powerful flow, which spans 4200 kilometers from the Himalayas through China, Laos, Thailand, Cambodia and Vietnam to the South China Sea. Turbulence characterizes the river's upper portions, but the lower Mekong is more placid, and annual flooding supports a biologically diverse ecosystem. Agriculture is the primary economic activity along the river, complemented by fish production, transportation and electricity generation.

Hydropower development has long been a critical issue for the people, planners and government officials of the Mekong's riparian countries, but the approach has changed over time. In a 1957 plan, the US Army Corps of Engineers proposed a cascade of seven large-scale dam projects that would create 23,300 megawatts of power and curb perceived flooding problems. The Indochina War halted implementation of this plan. Today, development planning has shifted from structural flood control to a regional approach based on participation and resource-sharing among countries.

Cambodia, Laos, Thailand and Vietnam signed an Agreement on Cooperation for the Sustainable Development of the Mekong River Basin in April 1995. It provides that signatories shall "cooperate in all fields of sustainable development, utilization, management and conservation of the waters and related resources of the Mekong River Basin, including but not limited to irrigation, hydropower, navigation, flood control… and to minimize the harmful effects that might result." These include inundation of large areas of agricultural lands and displacement of established populations, causing additional economic and cultural losses to this already endangered region.

In 1994, the four countries commissioned a study to determine the viability of Mekong hydropower development if it was deliberately constrained to minimize such impacts. Recognizing the negative effects of large reservoir-dependent dams, the study focused on a "run-of-river" dam structure that uses daily natural water flows rather than a reservoir to regulate the river. The study categorized nine sites according to social and environmental impacts, as well as by economic performance.

Sites of Proposed Mainstem Dams

Conflicting Pressures on Land and Water Resources

The rationale for hydropower stems from Asia's rapidly growing energy demand, which is doubling every 12 years. Yet, each country has its own unique concerns. Laos, for example, has enormous export capacity since it contains 80 percent of the Mekong's potential hydropower energy, and its small population consumes only a fraction of this potential. Thailand, in contrast, has 8.5 million hectares of arable land but a limited water supply. It needs electricity for its rapid industrialization and could import energy to boost development of its poor northeastern region. Cambodia has witnessed an 80 percent reduction in irrigated land in the last 20 years due to war. It seeks to develop domestic energy capacities and to export hydropower in the long run. Vietnam is most concerned about the impacts of its upstream neighbors' actions on the river's flow through its land on the way to the sea. Proponents of hydropower assert its comparative advantages over other energy sources, but opponents are concerned about the implications of the Mekong River Commission's alleged pro-dam policies. When the Mekong Agreement was signed, for example, Thai nongovernmental organizations agreed with the concept of cooperation, but strongly opposed the influence of the dam-building industry. Along with other environmentalists, the Thai NGOs feared that the Agreement equated "development" of the Mekong with

Mekong continued on next page

On Borrowed Land is one in a series of policy focus reports published by the Lincoln Institute to address timely land-related questions of concern to policymakers, scholars and citizens. It is based on the Institute's conference on "Community Land Policy and River Flooding: The Great Flood of 1993" held in Cambridge, Massachusetts, in September 1994. Participants included officials from 33 municipalities in nine upper Midwest states and professionals in planning, economics, geography, law, ecology and engineering.

Written for the Lincoln Institute by Scott Faber, director of floodplain programs at American Rivers in Washington, DC, the 32-page illustrated report is available for $14.00 each for 1 to 9 copies; orders of 10 or more copies receive a 25 percent discount, for a unit price of $10.50. Shipping and handling fees are added to all orders. *(See page 7.)*

Mekong

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dam building and elimination of natural floodplains.

The International Rivers Network voiced concerns about the 1994 Run-of-River Study, in particular the impact on local populations. The nine proposed run-of-river projects would displace an estimated 61,200 people and increase land pressures in resettlement areas. Agriculture would be affected if the dams reduced or eliminated the nutrient-rich silts deposited by floodwaters, and the remaining floodplain soils would be threatened by salinization if reservoirs caused underground salt deposits to dissolve and leach to the surface. The fishing industry that supports many local economies would also be affected by blocked fish migration routes, loss of nutrient movements downstream, inundation of spawning areas and turbine mortality.

Recognizing Risks and Developing Alternative Plans

The river basin countries recognize the risks posed by hydropower development, but seem to be caught between two difficult positions. Cambodia, for example, acknowledges downstream impacts of dam construction, yet it still senses the urgent need to develop its hydropower potential. The fact that 85 percent of its own population depends on subsistence farming and the river as a source of protein and transportation does not make its choice any easier.

The US, with its long history of large-scale dam building, offers a number of lessons. Daniel Beard, former commissioner of the US Bureau of Reclamation, highlighted these in his address at the Mekong River Conference held in Washington, DC, in November 1995. First, large-scale developmental and operating costs cannot be repaid through user charges alone. Other effects have manifested themselves in soil salinization, elimination of fisheries, reduction of wetlands, and agricultural degradation. Now the government must determine how to solve and pay for these problems that were caused in part by top-down planning and lack of accountability to local officials and the public.

The need for open decision making is critical to finding convergence between proponents and opponents of power projects, wherever they arise. Jon Kusler, of the Institute for Wetland Science and Public Policy, emphasizes the need for stakeholder involvement. Suraphol Sudara, of the Siam Environmental Club, believes that the Mekong River Commission could "play a more useful role if it looked to managing the river rather than building big projects." He would include consideration of non-structural alternatives and a broader definition of "river system development" that recognizes the economic and cultural value of floodplains.

Yasunobu Matoba, newly appointed CEO of the Mekong River Commission's Secretariat, acknowledges, "In developing and using water resources, priority has to be given to the satisfaction of basic needs and the safeguarding of ecosystems." It remains to be seen whether stated policy is ultimately implemented in the region's development plans.

Trang D. Tu is an editorial/research assistant at the Lincoln Institute of Land Policy, and is completing her master's degree in urban planning at Harvard University Graduate School of Design. In November 1995 she attended the Mekong River Technical Workshop on Sustainable Development in Washington, DC.

FYI

PUBLICATIONS

(See page 7 for ordering information or call 800/LAND-USE, choose option 2)

Barkin, "Wealth, Poverty and Sustainable Development," 1995. Working Paper. $7 plus shipping and handling.

Faber, *On Borrowed Land: Public Policies for Floodplains*, 1996. Policy Focus Report. $14 plus shipping and handling.

Ingerson, *Managing Land as Ecosystem and Economy*, 1995. Policy Focus Report. $14 plus shipping and handling.

Rodwin and Schon, *Rethinking the Development Experience: Essays Provoked by the Work of Albert O. Hirschman*, 1994. $38.95 hardcover or $16.95 paperback plus shipping and handling.

FOR REFERENCE

Mekong Mainstream Run-of-River Hydropower: Executive Summary. December 1994. Prepared by Compagnie Nationale du Rhone, Lyon, France, in cooperation with Acres International Limited, Calgary, Canada, and the Mekong Secretariat Study Team, Bangkok, Thailand. For further information, contact Mekong River Commission Secretariat, Kasatsuk Bridge, Rama I Road, Bangkok, Thailand 10330.

Have American Planne

STEPHEN ASHWORTH

If cynics know the price of everything but the value of nothing, then they may have something in common with contemporary American planners. Constrained by the courts, the planning fraternity sometimes appears to have spent the last decade rationalizing nexuses and quantifying costs without really addressing the social and environmental values that should underpin the planning process. Under assault from those criticizing government, as well as from the property rights movement, the profession seems to have retreated into the land of that dismal science, economics. This allegation has been made in a number of ways over the past few years by critics as diverse as New Urbanist architects and, in England, the Royal Family. Is it really justified?

This article is written from an English perspective and is based on research into the types of planning tools used in the United States to minimize the adverse effects and costs of development or to maximize public benefits. The intention is to adapt the best American practices for future use in the United Kingdom.

A broad analysis of the types of policy processes presently being used highlights an amazing breadth and depth of local policy innovation. The accompanying table outlines the range of policies found, broken down either by the way they have been justified or the process that has been used. This "family" grouping may help in suggesting other types of policies that can be used to achieve similar goals. It may also provide a useful reminder that the policies are always supposed to achieve aims, and that those aims should always be in a constant state of review.

The policies span a wide range, and some are not traditionally thought of as land use or planning policies. Indeed, in many cases the policies are not promoted with any explicit intention of achieving specific land use goals. They are, however, all capable of directly affecting land use patterns and, properly used, can all realize benefits to the community.

Purpose Policies

Harm, quality of life and control policies are all well-accepted planning tools. They work to prevent development in inappro-

ers Lost their Values?

priate areas—on wetlands or in congested districts, for example—or to require development in certain places. For the most part these policies do not offer any new lessons to UK planners. However, their scope is widening. New harms are being defined, such as air quality, lack of public transit accessibility and effects on the water table.

In addition, new, more limited types of land interests, such as easements and deed restrictions, are being used as controls, and new actors are becoming involved. For example, in South Florida the Water Management District is now a major purchaser of land and development rights, working in loose alliance with planning authorities. School boards, forest preserve districts and private utility companies have also become more interventionist.

Nevertheless, the main areas of experimentation are in other family groups. Cost policies are being used more proactively and are being expanded in scope. Fees are being used to either encourage or discourage development in particular locations. In San Diego impact fees in outlying zones have been set at economically prohibitive levels to deter development. In Dade County, Florida, road impact fees are banded and fees increase towards the urban fringe. In Montgomery County, Maryland, certain fees are waived when affordable housing is provided.

Cost policies can also be used to raise revenue to meet off-site costs for nontraditional "infrastructure." In Boston and San Francisco linkages have been identified between the construction of new offices and the need for housing, justifying the extraction of money sums. In principle the range of these fees could be expanded. The City of San Diego already charges developers for new libraries, fire stations and other community facilities, and includes some future maintenance costs. In rapidly growing areas, the public costs of new health infrastructure, hospitals and clinics might be considered.

Some municipalities have considered the possibility of charging "disassociation fees" that recognize the cost to the community of development away from central cities. "Historic investment" or "recoupment" fees could account for the cost of past provision of infrastructure. In the case of schools or hospitals, a charge could also be made to reflect the cost of wasted desk and bed capacity in the area from which migration has occurred. Alternatively, fees could be charged for the "softer" social costs of increasing the distance that citizens need to travel to reach open space or to reflect the additional stress that occurs from lengthy journeys through strip development.

Families of Planning Policies

PURPOSE POLICIES

Harm Policies
Environmental thresholds
Infrastructure (concurrency) thresholds
Aesthetic thresholds

Community or Quality of Life Policies
Inclusionary zoning
Mixed use areas
Special districts
Design reviews
Landmark protection

Control Policies
Land banking
Land leasing
Conservation easements
Partnerships (and profit sharing)
Land swaps
Condemnation

Cost Policies
Exactions
Impact fees
User or excise fees
Connection fees
Linkage fees
Developer cost recovery agreements
Betterment recovery

PROCESS POLICIES

Market Policies
Incentive zoning
Transferable development rights
Mitigation banking
Adult entertainment (quota) zoning
Limit or ceiling zoning
"Sunset" zoning

Fiscal Policies
Special assessment districts (including betterment/benefit districts)
Business improvement districts
Tax increment financing
Graduated or split property taxes
Resource taxes (e.g. on gas or land sales)
Hypothecated taxes

Transitionary Policies
Downzoning
Amortization of non-conforming uses
Reversionary policies

Miscellaneous Policies
Development agreements
Annexation agreements
Permitting delays
Processing fees

Process Policies

Market policies have been described as creating "a currency in the public domain that [can] then be traded." Unsurprisingly, new markets have developed swiftly, responding to local conditions. These policies generally require zoning that sets limits on development at lower levels than the market would otherwise build. A release from that limitation can then be "sold" or transferred for use either on or off site. Seattle, New York state, Maryland and New Jersey lead the way with policies of this type, creating the necessary currency in the form of bonus floor areas and transferable rights. They also provide "market" infrastructure such as credit banks in some cases. In Florida the private sector has set up profitable "mitigation banks" that reclaim damaged land to create mitigation credits for future use by developers whose projects would threaten wetlands. Private sector sales of "utility credits" also occur.

Fiscal policies are all too often seen as intended simply to raise revenue. Yet they can also guide land uses and capture public benefits from increases in the development value of private land. In some Business Improvement Districts, such as those in Miami Beach and Chicago, increased tax assessment streams have been bonded and the proceeds spent on capital works achieving planning aims. In San Diego's special assessment areas the cost of new social infrastructure, such as parks and libraries, is borne in this way.

In some areas it is possible to secure contributions towards public works that lead to private benefits, for example when major new transport links or services are provided. In downtown Miami, businesses that benefit from a transit system pay a property assessment that meets the county's share of the original infrastructure cost.

Planners continued on next page

Planners

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The final two categories of policies are important for different reasons. Adequate transitionary policies are essential. Politically and legally it is difficult to introduce new policies unless careful attention is paid to minimizing or mitigating the immediate costs. Providing for a lengthy period of introduction, or providing compensating credits, as in Montgomery County, may offer some comfort. In some areas "reversionary" permits have been proposed, where development rights revert back to an earlier or less valuable use if they remain unimplemented for a period of time. The miscellaneous policies provide clear means for enforcement. All too often well-intentioned policies are not rigorously applied. Agreements may allow easier control and greater certainty.

Conclusion

It is clear that a large number of policy tools are available to and used by American planners. The opening criticism questioned their fixation with economics. While economic issues are and always should be part of the planning process, the scope of planning policies itself shows that planning is about more than economics. However, it has also become apparent that planners tend to use only a limited range of instruments, even when alternative approaches might better achieve their policy goals.

For a variety of legal and institutional reasons, municipalities understandably concentrate on those policies that they have already used and that have worked. Notwithstanding that, to an English planner the American system as a whole offers a mouthwatering array of policy feasts. It is a shame that so many planners operating within the system only nibble at the corners of a table that is groaning with the weight of possible delights.

Stephen Ashworth is a visiting fellow at the Lincoln Institute and a Harkness Fellow in a program sponsored by the Commonwealth Fund of New York. In the United Kingdom he is a partner in the firm of Denton Hall, Lawyers. This article is drawn from his research on "Harnessing Land and Development Values for Public Benefit." He invites any reader aware of or using policy processes not mentioned above to contact him at the Lincoln Institute.

Rail Transit

continued from page 1

Changes in Employment and Residential Density

CBD employment density (as measured by employment per gross CBD acre) is nearly twice as important for commuter rail ridership as for light rail. Our study shows that a 10 percent increase in CBD employment density produces 7.1 percent more commuter rail riders, but only 4.0 percent more light rail riders. Commuter rail boardings are more strongly influenced by CBD employment density because these systems usually have a single downtown terminal. Higher-density CBDs assure that more jobs are within walking distance of the commuter rail station. Employment density in city centers is less important in light rail regions since they have more stations distributed throughout the CBD.

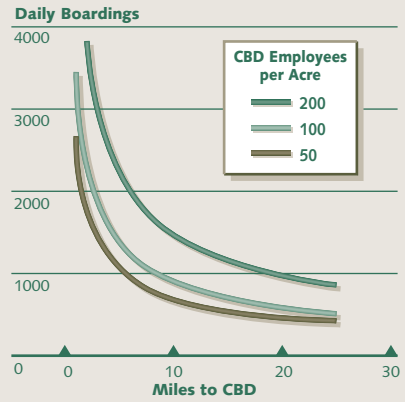
On the other hand, a 10 percent increase in station area residential density (as measured by number of persons per gross acre within two miles of a station) boosts light rail boardings by 5.9 percent and commuter rail boardings by only 2.5 percent. Throughout the study these effects are measured holding constant transit system characteristics such as parking availability, station distance to the CBD and station area income levels.

Light rail, with its relatively short lines, is most effective in attracting passengers when stations are in higher-density residential areas close to the CBD. Commuter rail ridership rises more slowly with residential density because commuter rail is a high-fare mode, and its higher-income riders tend to live in more expensive, lower-density places. Moreover, the higher speeds and longer distances on commuter rail tend to increase ridership to the CBD from precisely those places outside the city where residential densities tend to be low.

Cost-efficiency and Effectiveness

In this study, cost-efficiency is measured by annual operating costs plus depreciation per vehicle mile. Effectiveness is measured by daily passenger miles per line mile. For light rail, these measures indicate a strong positive relationship with CBD employment size and residential density. A weaker but still significant relationship occurs for CBD employment density and for the line distance from the CBD. This suggests that medium to large cities with higher density corridors work best for light rail. For commuter rail, larger, denser CBDs attract more riders per line mile, but add to the cost per vehicle mile, creating a trade-off between effectiveness and cost-efficiency.

Figure 1:
Light Rail Station Boardings



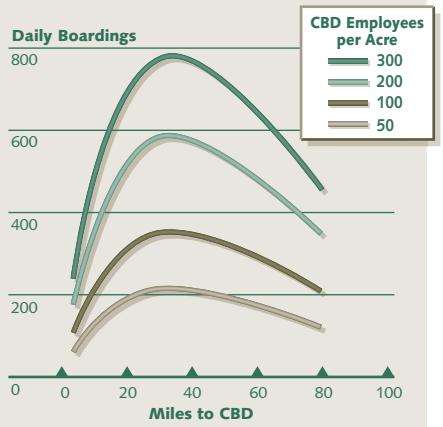
SOURCE: Parsons Brinckerhoff et al., forthcoming 1996.

The length of the rail line is important for both light rail and commuter rail. Longer light rail lines are both slightly more cost-efficient and effective, but ridership diminishes beyond 10 miles. Commuter rail lines are much more cost efficient when they are longer, but their effectiveness declines beyond 50 miles.

This summary does not address many other significant factors in rail transit usage and land use patterns, including operating, capital and environmental costs saved as a result of not using other modes of transportation, notably automobiles and buses. Cities considering investment in new or expanded rail systems need to examine carefully all transportation alternatives in a corridor, including site-specific conditions and local preferences. Further, our study makes clear the need to integrate transit planning with land use planning at the earliest possible stage.

Judy S. Davis is an urban planner and **Samuel Seskin** is a senior professional associate with Parsons Brinckerhoff Quade and Douglas in Portland, Oregon. As a faculty associate of the Lincoln Institute, Seskin also develops and teaches courses

Figure 2:
Commuter Rail Station Boardings



Constants:
- 5 persons per residential acre
- $52,000 household income
- Park-and-ride lot available

SOURCE: Parsons Brinckerhoff et al., forthcoming 1996.

linking land use and transportation. This article is derived from a report titled *Commuter and Light Rail Transit Corridors: The Land Use Connection*. It will be published by the Transit Cooperative Research Program in the summer of 1996 as part of Volume 1 of *An Examination of the Relationship Between Transit and Urban Form*, TCRP Project H-1. For copies or additional information, contact the Transportation Research Board, 2101 Constitution Avenue, N.W., Washington, DC 20418.

FYI

PUBLICATIONS
(See Request Form or call 800/LAND-USE, choose option 2)

Bae and Richardson, "Automobiles, the Environment, and Metropolitan Spatial Structure," 1994. Working Paper. $5 plus shipping and handling.

Downs, *New Visions for Metropolitan America*, 1994. $28.95 hardcover, $14.95 paperback, plus shipping and handling.

Downs, *Stuck in Traffic*, 1992. $31.95 hardcover, $12.95 paperback, plus shipping and handling.

Hughes, "Urban Employment Growth Patterns in Nine Large Metropolitan Areas, 1977-1987," 1995. Working paper. $7 plus shipping and handling.

Young, *Alternatives to Sprawl*, 1995. Policy Focus Report. $14 plus shipping and handling.

COURSES
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Transportation and Land Use: Choices for the Kansas City Region, Kansas City, MO, June 7

Land Use in America: Reflections and Directions, Washington, DC, June 12

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- ___ Other social scientist (14)
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12
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Washington, DC

25
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Sturbridge, MA

June

7
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