How 'Smart Growth' Intensifies Traffic, Pollution (IP-7-2000)

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Issue Paper

By Wendell Cox

Residents and public officials in urban areas around the world are concerned about traffic congestion and air pollution. Of the two problems, traffic congestion is the more intractable, because improved vehicle technologies are already having a dramatic effect on improving air quality.

The problem of traffic congestion is very simple: it has to do with too many cars in too small a space. It would seem that the best approach to solving the problem would be to take actions to disperse traffic and to make it move faster.

But just the opposite strategies have come into vogue. Advocates of so-called 'smart growth' policies believe that traffic congestion and air pollution can be improved by forcing more people and more cars into smaller areas.

Proponents of so-called 'smart growth' see American urban areas as far too expansive and too reliant on the automobile. They propose to impose urban growth boundaries that would corral areas in which development would be allowed. Outside the urban growth boundaries, little if any development would be allowed. They assume that by forcing densities higher, people will be more inclined to abandon their automobiles and use public transit, bicycles or walking as an alternative. Unfortunately, nothing could be further from the truth. Transit is simply not available in convenient form for the overwhelming majority of urban trips.

American urban areas now spread for miles and miles, and trip origins and destinations are dispersed so widely that public transit is incapable of serving all but a small percentage of trips, and travel distances are simply too long for bicycling and walking.

Moreover, densifying urban areas will only *worsen* traffic congestion and air pollution. This is not theory, it can be proven by a simple examination of the experience in nations that have higher density urban areas.[1]

For example, European urban areas tend to have population densities more than four times that of US urban areas. The 10 million people who live in metropolitan Paris could be easily accommodated within the Denver urbanized area, which today has less than 2.5 million residents. Canadian urban areas are more than two times more dense while Asian urban areas are 14 times as

dense (Figure #1).[2]

Figure #1

Public transit carries a much higher percentage of urban travel in these more dense areas. In the United States, public transit accounts for less than two percent of urban travel. In Europe, transit's market share is more than 20 percent, while nearly eight percent ride transit in Canada. Asian transit market shares are much higher, at nearly 40 percent (Figure #2).

Figure 2

To achieve these much higher transit market shares, much higher levels of transit service are provided. European urban areas provide 16 times as much transit service per square mile, while Canadian urban areas provide five times as much transit service per square mile as in the United States. Asian urban areas provide nearly 70 times as much service. These much higher service levels mean that much more of the urban area is accessible by mass transit. This is possible, because these urban areas are smaller (more dense) and generally have larger percentages of employment in the central area (Figure #3).

Figure 3

But much higher transit service levels does not result in lower levels of traffic congestion. As any tourist to Europe or Asia can attest, traffic congestion is much worse in their large urban areas than in the United States. Traffic volumes per square mile in Europe are approximately 50 percent higher, while Canadian volumes are nearly 20 percent higher. Traffic volumes are more than 80 percent higher in the much more dense Asian urban areas (Figure #4).

Figure 4

As a result, traffic speeds are slower, since densities are higher. In the United States, average roadway speeds in urban areas is nearly 32 miles per hour. European speeds are under 20 miles per hour, while Canadian speeds are less than 25 miles per hour. The highly dense Asian urban areas have speeds less than 16 miles per hour (Figure #5).

Figure 5

As a result, the hours of motor vehicle operation per square mile are much greater in Europe, Canada and Australia (Figure #6).

Figure 6

Given the fact that air pollution rises as urban automobile speeds decline and as 'stop and start' operation increases, the result is greater air pollution.

And the data show just that. American urban areas have considerably lower air pollution levels than European and Canadian urban areas. Asian urban areas are by far the most polluted (Figure #7).

Figure 7

Within the United States, as everywhere else, as population density rises, so does traffic volume per square mile. The nation's densest urban areas--such as Los Angeles, San Jose and Honolulu--have traffic volumes per square mile that are nearly double that of the average urban area. As density rises, so does congestion (Figure #8).

Figure 8

All of these comparisons make the clear case that more intense traffic congestion and air pollution is associated with higher densities.

It is also important to understand that the government transit market shares of Europe, Canada and Asia are either stagnant or falling, as people in those areas grow more affluent. European cities have suburbanized at an astonishing rate, with central city population declines being the rule rather than the exception. In Stockholm, London, Paris, Hamburg, Copenhagen and a most other European cities, all the growth has been suburban growth. This has occurred independent of highway construction, since European cities tend to have much less well developed freeway systems. In Australia, there are few urban freeways, yet Australian urban areas have expanded at virtually the same population density as American urban areas.

Major efforts in a number of cities have failed to convert people from automobiles to public transit. At best, where large investments have been

made, such as in Zurich, transit has made a one or two percent market share gain. This is not because people dislike transit or love automobiles. It is because modern urban areas develop in a dispersed and decentralized pattern, and it is impossible to design transit systems that can effectively meet such dispersed demand. For example, very effective transit service is provided from the suburbs of Paris, where 80 percent of the population lives, into the city. But traveling around the suburbs of Paris by transit can be as inconvenient as in Denver. Auto competitive service is simply not available for most trips.

The problem with so-called 'smart growth' is that if forces more cars and more traffic into smaller areas. It does not take great intellect to understand that more of something in a constrained space increases crowding. For example, population densities in the Ballston, Virginia (Washington, D.C., area) rail station area are now five times that of surrounding neighborhoods. Traffic volumes are four times as high. It is true that the average amount of auto travel per person has declined, but the decline has been small, and the overall impact on the community has been to significantly increase traffic congestion, and by extension, air pollution.

One has only to look at Portland, internationally famous for its so-called 'smart growth' policies, to see the baleful effects. Traffic congestion has intensified rapidly. The Texas Transportation Institute's Roadway Congestion Index for Portland is nearly the same as in Atlanta with its legendary traffic. Portland has recently been found to be in violation of air quality standards.

And housing prices have skyrocketed as a result of forcing all development within the urban growth boundary. Portland has become the most unaffordable major housing market outside California. Compared to the other 16 major metropolitan areas growing by more than 15 percent from 1990 to 1998, median house prices in Portland rose $45,000 more relation to median income.[3]

The reality is that traffic volumes are increasing and will continue to increase as population grows. This is a reality that is acknowledged in virtually all of the long term transportation plans in urban areas throughout the nation. Yet planning authorities, which prepare these projections, persist in committing a large share of financial resources to transit improvements, which serve on average only two percent of trips.

For example, in Atlanta, traffic is projected by the Atlanta Regional Commission (ARC) to increase 40 percent over the next 25 years. Major government transit improvements are proposed in the ARC regional plan and a 'fairy tale' reorientation of growth toward the center is assumed. The result is that 55 percent of new spending will be for transit. All of this will increase government transit's market share by less than one percent, and even that projection is probably optimistic. At the same time, the average Atlantan will

spend 30 percent more time in traffic because roadway improvements (capacity improvements and management improvements) are neglected.

There is an ideological, if not theological view among planners that there is no point to building additional highways -- that they will be filled up by new traffic as soon as they are opened. But highways have become overcrowded because little new highway construction has occurred in urban areas. European and Canadian cities have far less effective roadway systems and have greater traffic congestion and air pollution as a result.

The same thing is occurring in Denver. Population growth has outpaced new highway construction for at least 15 years, and traffic congestion has become worse (Figure #9).

Figure 9

Transit trends are good. From 1988 to 1996, the Regional Transportation District (RTD) attracted a larger bus ridership increase than in any other major city. This was made possible by the savings from the legislatively mandated privatization (competitive contracting) program, which allowed services to be expanded. But transit carries such a small part of travel in the Denver area that this large increase is barely perceivable (Figure #10).

Figure 10

The problem is that in Denver, the only place that government transit provide auto-competitive mobility is to downtown. Trips to other parts of the area are available only on slow local buses and generally require time-consuming transfers. People will simply not use transit if their automobiles are significantly more convenient.

This is not simply a Denver problem. In virtually every urban area in the United States, automobile-competitive transit is provided virtually only to downtown. Downtown market shares are impressive, with 75 percent of commuters to Manhattan's business district using transit. Sixteen percent of downtown Denver commuters use transit. But in other areas, the share is much smaller and transit simply has no potential to make an impact on traffic congestion. Nonetheless, Denver planners intend to commit more than 50 percent of future revenues to government transit improvements.

The solution is for transportation planning to be based upon reality and not ideology. Everyone agrees that traffic demand will continue to grow. For traffic congestion to be mitigated, it will be necessary to accommodate that demand.

*Roadway expansions will be necessary.

* Adequate roadway capacity will need to be provided in newly developed areas.

* Improved traffic management systems need to be employed.

Most importantly, the provision of roadways requires significant reform. So long as roadways are subject to the political process, there will be shortages of road space. Congestion pricing and competitive franchising of urban sectors would provide the mechanisms by which existing roadway capacity could be better used, while improving the nexus between payment and benefit by road users.

But one thing is sure. If more of something is put in a smaller space, the space will get more crowded. This undeniable truth seems to have eluded the proponents of so-called 'smart growth.'

[1] Analysis of transport and environmental trends in 46 international cities. Internet: http://www.demographia.com/dbx-intlair.htm.

[2] Figures include data for Australia, Canada, Europe and the United States only. Asia is excluded to better illustrate the contrast among these four areas.

[3] Calculated from US Census Bureau 1990 data and National Association of Homebuilders 2000 data for metropolitan areas with more than 1,000,000 population in 1998. Portland's housing cost increase relative to these metropolitan areas ranged from $18,000 higher to $80,000 higher. The metropolitan areas surveyed were Atlanta, Austin, Charlotte, Dallas-Fort Worth, Denver, Houston, Jacksonville, Las Vegas, Nashville, Orlando, Phoenix, Raleigh-Durham, Salt Lake City, San Antonio, Seattle and West Palm Beach.

JON CALDARA is President of the Institute.

WENDELL COX is a Senior Fellow in Urban Policy at the Independence Institute.

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Please send comments to Independence Institute, 14142 Denver West Pkwy., suite 185, Golden, CO 80401 Phone 303-279-6536 (fax) 303-279-4176 (email)webmngr@i2i.org