GETTING to WORK:

Reconnecting Jobs with Transit

November 2008

NEW JERSEY FUTURE

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Executive Summary

The distribution of employment in New Jersey has changed dramatically since 1980, in ways that create cause for concern. Many of New Jersey's job centers of the past have declined in importance, eclipsed by new clusters of suburban office parks. Most of the newer job centers are not accessible by public transportation, meaning that each of their workers represents an additional car on the road, adding to congestion. The number of major workplace destinations has swelled over the last two decades, with the resulting dispersed job distribution pattern producing a seemingly omnidirectional rush hour and inhibiting future transit service, which relies on the spatial concentration of activity.

Worse, some older job centers with good transit access have actually been losing jobs, reducing the number of people who have the option of commuting by means other than their car. Many of the most serious job losses have taken place in urban municipalities that are already plagued by a host of socioeconomic challenges; these places can ill afford rising unemployment or a declining tax base.

As jobs have spread out, they have also tended to shift away from transit-accessible locations and toward automobile-dependent ones. Consider the difference between the 20 municipalities that experienced the greatest private-sector job gains between 1980 and 2003 and the 20 municipalities that lost the most jobs over the same period. In the 20 biggest job-losing municipalities, 11.7 percent of workers commuted by transit, 5.6 percent walked to work, and only two-thirds (67.9 percent) drove to work alone. In contrast, the 20 biggest gainers had a 7.2 percent transit ridership rate and 3.9 percent rate of walking to work. But the difference becomes much more dramatic when Jersey City – a rare example of an older, transit-accessible job center that actually gained jobs since 1980 – is removed from the analysis. The other 19 largest job-gaining municipalities together had only a 4.0 percent transit ridership rate (one-third the rate of the job losers) and a 2.9 percent rate of walking to work, while 81.7 percent drove alone.

If New Jersey continues to scatter its employment sites to suburban locations accessible only by highway, it can expect congestion to get worse, possibly even to the point of discouraging potential employers from locating here for fear of not being able to attract employees who are put off by the prospect of long commutes. New Jersey already has the nation's third-longest average travel time to work, at 30 minutes as of the 2000 Census. (Mid-decade estimates indicate that New Jersey continues to hold its high ranking.) This represents an increase of 4.7 minutes over the 1990 average – the third-largest increase in the country for the 1990s. Commutes are longer in New Jersey than in most of the rest of the country, and getting longer faster.

The redistribution of employment away from transit is simultaneously creating undesirable effects in several other public policy arenas. It is contributing to the plight of older urban centers by depriving them of jobs that could help their residents break the cycle of poverty and unemployment. And it is undermining state policy goals regarding the reduction of greenhouse-gas emissions, since every new job created in a car-dependent office park means one more car on the road, emitting more CO_2.

The number of major workplace destinations in New Jersey has swelled over the last two decades, with the dispersed job distribution pattern producing a seemingly omnidirectional rush hour and inhibiting future transit service. As jobs have spread out, they have also tended to shift from transit-accessible locations to automobile-dependent ones.

These problems are avoidable. By steering jobs back to transit- and pedestrian-friendly locations, New Jersey can get commuters out of their cars and onto trains and buses (or onto the sidewalks), thereby reducing congestion, per-capita energy consumption and greenhouse-gas emissions. This recentralization strategy would also give a much-needed economic boost to some of the state's struggling urban areas by creating employment opportunities where they are most needed and by shoring up

these municipalities' commercial tax bases, generating revenues that could be used to improve local services.

New Jersey is well positioned to execute such a strategy – it is blessed with an extensive rail transit system that is the envy of the rest of the country. And experience has shown that if good transit service is available, people will use it, especially for traveling to work. As of the 2000 Census, 70.6 percent of New Jerseyans working in Manhattan rode public transportation to work, as did 24 pecent of those who worked in Philadelphia. At the same time, only 5 percent of people who work in New Jersey use transit to get to work; this is no better than the national rate of transit commuting and clearly leaves room for improvement. With its existing transit network and a population already more inclined to ride transit than in most of the rest of the country, New Jersey ought to be able to improve its intra-state transit commuting rate; what is needed is a coordinated effort on the part of state agencies to make transit hubs the default choice for companies seeking to relocate or expand in New Jersey.

By steering jobs back to transit- and pedestrian-friendly locations, New Jersey can get commuters out of their cars and onto trains and buses (or onto the sidewalks), thereby reducing congestion, per-capita energy consumption and greenhouse-gas emissions.

New Jersey Future recommends the following steps toward reconnecting jobs with public transportation:

1) **Identify stations with the greatest potential to serve as transit-oriented employment hubs.**
2) **Incentivize development in candidate municipalities.**
3) **Promote transit-supportive land use.**
4) **Reorient state-level employer recruitment programs to encourage large employers to locate near transit stations.**
5) **Expand and improve the public transportation system.**
6) **Level the playing field between transit and driving.**
7) **Make the reduction of vehicle miles traveled (VMT) – and the expansion of transit ridership – explicit goals of state efforts to curb greenhouse-gas emissions.**

Introduction

The distribution of employment in New Jersey has changed dramatically since 1980, in ways that create cause for concern. Many of New Jersey's job centers of the past have declined in importance, eclipsed by new clusters of suburban office parks. Most of the newer job centers are not accessible by public transportation, meaning that each of their workers represents an additional car on the road, adding to congestion. The number of major workplace destinations has swelled over the last two decades, with the dispersed job distribution pattern producing a seemingly omnidirectional rush hour and inhibiting future transit service, which relies on the spatial concentration of activity. What's worse, some older job centers with good transit access have actually been losing jobs, reducing the number of people who have the option of commuting by means other than their car. Many of the most serious job losses have taken place in urban municipalities that are already plagued by a host of socioeconomic challenges; these places can ill afford rising unemployment or a declining tax base.

If New Jersey continues to scatter its employment sites to suburban locations accessible only by highway, it can expect congestion to get worse, possibly even to the point of discouraging potential employers from locating here for fear of not being able to attract employees who are put off by the prospect of long commutes. It can expect greenhouse-gas emissions to continue to rise, as more people are forced to drive to work. It can expect fiscal distress to get worse in its urban areas as more of their tax base is siphoned off to newer job centers.

These problems are avoidable. By steering jobs back to transit-friendly locations, New Jersey can get commuters out of their cars and onto trains and buses (or onto the sidewalks), while simultaneously giving a much-needed economic boost to some of its struggling urban areas whose glory days as employment hubs have long passed. New Jersey is well positioned to execute such a strategy – it is blessed with an extensive rail transit system that is the envy of the rest of the country. What is needed is a coordinated effort on the part of state agencies to make transit hubs the default choice for companies seeking to relocate or expand in New Jersey.

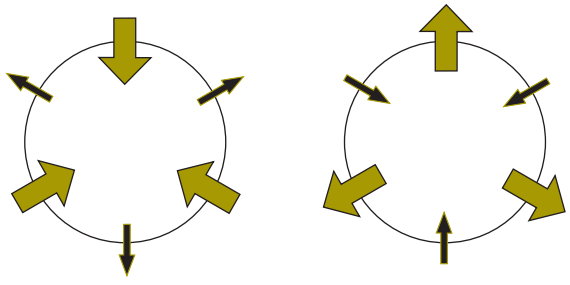
Documenting Job Decentralization

Before we can measure the degree to which employment has decentralized in New Jersey, we must have a clear idea of what job centralization means. In fact, job centralization can be defined in more than one way, based on different ways of identifying and counting employment centers. We can classify municipalities based on the absolute number of jobs that they host, with the most dominant employer municipalities being the ones that appear near the top of the list when all the state's municipalities are sorted in order of employment. Let us refer to municipalities having a large absolute number of jobs (wherever we decide to set the threshold) as "absolute centers," places where numerically large concentrations of jobs have clustered together.

Alternatively, we can identify important employment nodes in relative terms, by looking at the number of jobs located in the municipality as compared to the number of employed people residing there. These municipalities have a large number of jobs relative to their population, though maybe not in absolute terms. Let us refer to municipalities with a ratio of jobs to employed residents greater than a given threshold as "relative centers," places

Figure 1. Relative Job Center

A relative job center can be thought of as a municipality hosting more jobs than employed residents, meaning that more people commute into the municipality than commute out of it to jobs located elsewhere. The result is a net inflow of commuters, so that the municipality gains population during the workday.



that serve as locally important hubs of employment activity, regardless of the actual absolute number of jobs located in the municipality. **(See Figure 1.)** The most natural cutoff is to define a relative job center as any municipality having more jobs than employed residents (i.e., a ratio greater than 1.0), meaning that it gains population during the workday as the number of people commuting into the municipality from elsewhere exceeds the number of people commuting out of the municipality to work elsewhere. But it may also make sense to use other ratios in other contexts.

Under either the absolute or the relative concept of job centralization, jobs have been spreading out in New Jersey since 1980.

To illustrate the difference between an absolute center and a relative center, consider the examples of Jersey City in Hudson County and Lebanon Borough in Hunterdon County. Jersey City would certainly qualify as an absolute job center, thanks to the sheer number of jobs located there – nearly 100,000 as of 2003, the second-highest job total in the state, behind only Newark. Yet Jersey City has fewer jobs than employed residents and hence loses population during the day, thus not qualifying as a relative center (under the simplest definition). In contrast, Lebanon Borough has only about 2,000 jobs located within its borders, placing it in the bottom half of the state's municipalities when sorted by total jobs, hardly enough to rank it as an absolute job center. But Lebanon has three times as many jobs as employed residents, meaning it experiences a proportionally large net influx of people during the workday. Because it imports many more workers than it exports, Lebanon qualifies as a relative job center, even if its absolute number of jobs is relatively small. Each concept can be used to assess New Jersey's degree of job centralization, and each definition can illuminate patterns that the other measure might miss.

Using absolute job centers, we measure job centralization by determining the degree to which statewide total employment is concentrated in just a few municipalities. That is, when all the state's 566 municipalities are sorted in descending order of employment, we can look at how many or how few at the top of the list are required to comprise a given share (say, 50 percent) of statewide total employment. Greater centralization means that fewer municipalities are needed to reach a given threshold; greater decentralization means more job centers must be cumulated in order to exceed the threshold. In the extreme, total centralization would consist of a single municipality containing 100 percent of the state's jobs, making it the state's only job center. Total decentralization would mean all municipalities in the state having an equal number of jobs – or perhaps an equal number of jobs per square mile, considering that municipalities are not of uniform geographic size. In the perfectly decentralized case, exactly half of the state's municipalities (or half its land area) would account for half its total employment.

Using relative job centers, we can measure centralization simply by looking at the number of municipalities that qualify as centers. Job decentralization can be thought of as an increase in the number of relative job centers, as local concentrations of jobs appear in more and more places. Carrying this definition to its logical end, the extreme case of total job decentralization would take the form of each municipality having exactly as many jobs as employed residents (assuming no interstate commuting, for simplification purposes), meaning that no one municipality is more likely to host jobs than any other. Jobs are distributed in exactly the same pattern as are employed residents; every municipality is a job center, and thus no municipality is a job center.

Two Types of Job Centers:

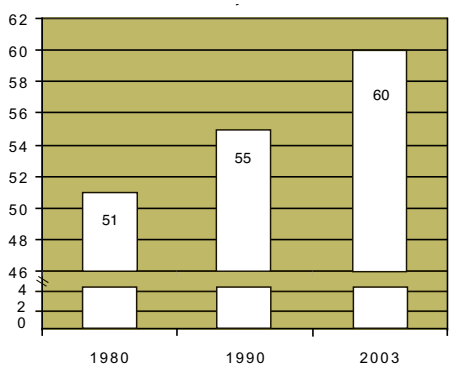
Absolute centers: municipalities having a large absolute number of jobs (e.g. Jersey City). When all the state's municipalities are sorted in descending order of employment, these appear near the top of the list. It takes only a few of them to account for a relatively large share of total statewide employment.

Relative centers: municipalities having a large number of jobs relative to their population, even if not in absolute terms (e.g. Lebanon Borough). Any municipality having more jobs than employed residents imports more workers than it exports and thus gains population during the day.

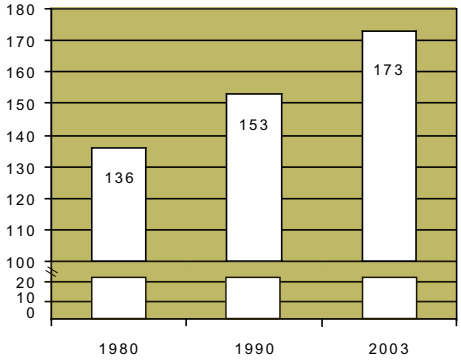
Figure 2. Job Decentralization: Employment Spreading Among More Municipalities

Since 1980, New Jersey has seen a steady increase in its number of absolute job centers, the largest-employment municipalities that together make up half of the state's total private-sector employment. This generally implies that the share of total employment accounted for by any individual center has dropped, if more of them must be cumulated to reach the 50 percent mark. Similarly, the number of relative job centers – those having more jobs than employed residents – has also increased, meaning that locally significant concentrations of employment have been appearing in more and more places. Under either measure, jobs are being spread among more and more places in New Jersey.

Number of absolute job centers
(large-employment municipalities)



Number of relative job-center municipalities
(more jobs than employed residents)



Data source: NJ Department of Labor

Under either the absolute or the relative concept of job centralization, jobs have been spreading out in New Jersey since 1980. **(See Figure 2.)** In 1980, half of New Jersey's total private-sector jobs[1] were concentrated in 51 large job-cluster municipalities (i.e., absolute job centers). In 1990, that number grew to 55 municipalities. By 2003, it was up to 60. **(See Table 1** for a list of absolute job centers. The job centers are also depicted in **Figure 6.)** When looking at the list of municipalities with the largest employment totals, the number that need to be added together to account for half of the state's job total has been steadily increasing, meaning employment has gotten less centralized. Looked at from a slightly different perspective, the 51 municipalities that together accounted for 50 percent of total statewide jobs in 1980 accounted for only 43 percent of the state total in 2003.

The 51 municipalities that together accounted for 50 percent of total statewide jobs in 1980 accounted for only 43 percent of the state total in 2003. In 1980, 136 municipalities had more jobs than employed residents; by 2003, it was up to 173 municipalities. Jobs are increasingly spread over a greater number of places.

In the context of jobs vs. employed residents but using only private-sector employment, we will define a relative job center as a municipality having a ratio of private-sector jobs to employed residents of at least 0.88.[2] In 1980, 136 municipalities qualified as job centers under this definition, or just about one in four municipalities. In 1990, the number was 153. By 2003, it was up to 173 municipalities, or more than three in 10.[3] Again, the pattern is of decentralization, of jobs being distributed over more municipalities rather than fewer.

Centralized vs. Decentralized Models of Employment Distribution

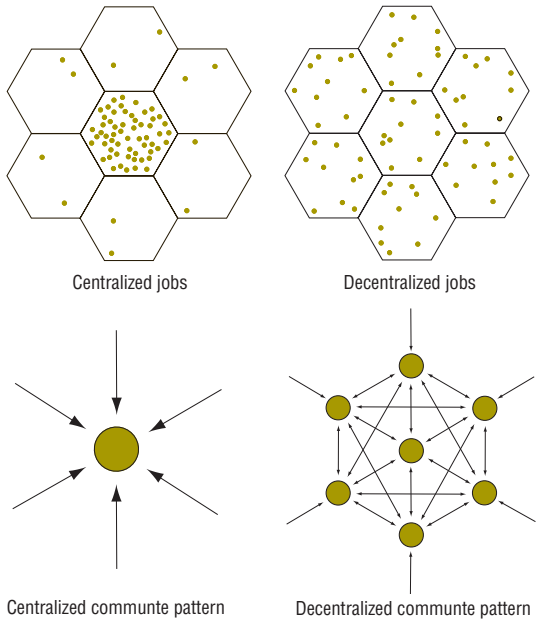
The distribution of employment in New Jersey has become more dispersed since 1980. But is job decentralization necessarily something to be concerned about? The centralized model of employment distribution and the decentralized model both have their advantages. On the one hand, concentrating jobs in a single large employment center will likely put congestion pressure on the major arteries that lead to that center (including transit lines, where present), while leaving unused capacity on tangential and circumferential routes. This is an

economically inefficient use of infrastructure investments. In contrast, by this line of reasoning, scattering employment sites throughout a region allows all roads in the region to be utilized equally; no single route gets any more traffic than any other because jobs are no more likely to be at any one location than another. **(See Figure 3.)** People are thus traveling in all directions at rush hour, spreading traffic evenly and making efficient use of all roads rather than overloading a few.[4] But how does this reasoning play out in the real world?

The fact is that no region has a truly homogeneous or omnipresent road network. Road networks are inherently hierarchical – some roads can carry greater volumes and at higher speeds, with multi-lane, limited-access highways at the top of the hierarchy. Road networks also vary in density, in terms of the number and quality of network links per square mile. As a result, some locations have better accessibility than others, particularly locations near the high-volume roads, and most especially those at the junction of two or more high-volume roads. No matter what the shape of the road network, certain locations are inevitably going to be more desirable than others from an employer's standpoint, especially large employers that need to attract a large workforce from a wide catchment area. It is simply unrealistic to expect employment to disperse equally to all points throughout a region, when transportation accessibility is not equal throughout the region.

Figure 3. Centralized and Decentralized Employment Models

A centralized employment model concentrates jobs in a single dominant node; the resulting commute pattern concentrates traffic on major arteries leading into the job center. In contrast, a decentralized pattern of employment spreads jobs evenly over adjacent municipalities; the resulting commute pattern spreads traffic evenly over the entire road network. Economies of scale in the centralized model may enable some of the major arteries to support public transportation.



As job growth continues uniformly throughout the region, omnidirectional commuting continues to add traffic volume to all links in the road network, so that rush hour gradually appears everywhere. The dispersed model may take a while to fail, but when it does, it fails spectacularly.

Even if it were feasible to scatter jobs evenly, would it be desirable? The answer might appear to be yes – up to a point. At first, in the absence of a distinctly identifiable "peak flow," no road seems to be unduly burdened with traffic because traffic is so spatially dispersed. But as job growth continues uniformly throughout the region, omnidirectional commuting continues to add traffic volume to all links in the road network, so that rush hour gradually appears everywhere. The critical point arrives when every link in the road system reaches capacity simultaneously, and the entire network seizes up; the dispersed model may take a while to fail, but when it does, it fails spectacularly. At this point, the only option – a very expensive one – is to try to add capacity to all links in the network, since each link is equally vital. It is impossible to take advantage of any economies of scale because there are no dominant centers that call out for preferential infrastructure investment that might enable larger-scale vehicle sharing. When every place is equally important as an employment destination, no argument can be made for prioritizing access to one particular node over another.

Concentrated Employment and Commuting: Sharing the Ride

The concept of economies of scale points toward the advantages of a more centralized model. Concentrating jobs in a single dominant center may at first sound like an invitation to trouble, because the arterial roads that lead to that center will soon be overloaded as everyone travels to the same work destination at the same time. But this is true only under the assumption that commuters will all be traveling alone in their individual vehicles. This doesn't have to be the case, which is precisely the strength of the centralized model. If everyone is indeed converging on the same place for his or her job, suddenly it becomes feasible for people to share rides.

Carpooling is one way for multiple people with proximate starting points and a common destination to share a vehicle. Each carpool takes at least one vehicle off the road, easing the congestion burden on the arterial roads into the center.

But why stop at filling up cars with two or three people each? If 50 people are all heading to the same place for work, they can share a bus. A single fully occupied bus produces the same congestion-reducing benefits as 15 or 20 carpools. Even better, a commuter train, subway or string of light-rail cars can haul hundreds of people at a time, if they're all going the same way. The availability of public transit reduces congestion pressure on arterial roads by removing significant numbers of private vehicles from the road network.

Public transportation, with vehicles able to carry dozens if not hundreds of people to a common destination, is what enables the centralized model of job distribution to succeed. Likewise, the success of transit depends on large numbers of people heading to the same destination; that is, it depends on a centralized employment model to generate – and sustain – sufficient demand for transit service. Centralized employment and public transportation are thus mutually dependent and mutually reinforcing.

Public transportation's enabling of large-scale sharing of vehicles has numerous other side benefits, aside from its ability to reduce congestion. It reduces highway maintenance costs, by reducing the number of vehicles using the road network over any given time period. It creates transportation options for those who cannot afford cars, who are unable to drive for other reasons or who would simply prefer not to drive, freeing themselves to use their commuting time for something else. It can support higher-density development without overwhelming the road network, development that creates additional transit riders and further reduces automobile dependence in a self-reinforcing cycle of land-use intensification. And, importantly, it reduces per-capita energy consumption and greenhouse-gas emissions, two important goals in the current effort to address global climate change.

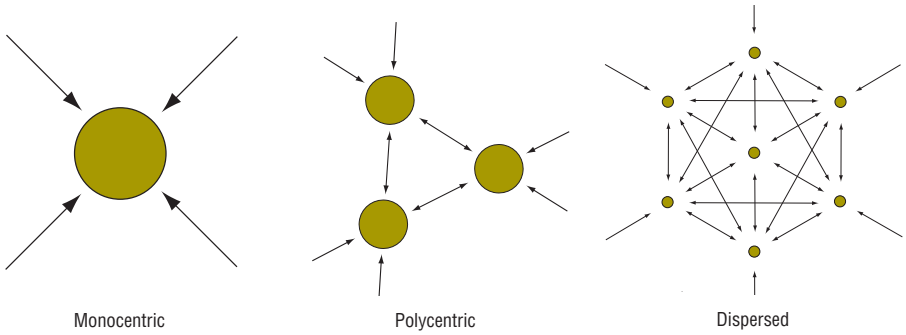
Concentrating jobs in a single dominant center may at first sound like an invitation to trouble, but this is true only under the assumption that commuters will all be traveling alone in their individual vehicles. Public transportation, with vehicles able to carry dozens if not hundreds of people to a common destination, is what makes the centralized model of job distribution the preferred approach.

It should be noted that a centralized model, whether highway-only or with transit service present, can incorporate multiple nodes, or centers. In a polycentric model, jobs cluster in multiple employment centers but are not spread ubiquitously. The centers may be transit-accessible or primarily highway-oriented. In practice, centers often naturally arise at important junctions in the transportation network (such as a transit terminal served by multiple lines, or the interchange of two major highways), since these locations maximize accessibility for a spatially dispersed workforce.

The advantages and disadvantages of the polycentric model are best expressed relative to the two extremes. **(See Figure 4.)** A polycentric distribution produces less pressure on major radial arterials than the monocentric model, because commute flows are somewhat more dispersed; smaller centers can serve as a kind of safety valve for congestion pressure. However, it produces more congestion than the totally decentralized model for a given number of workers; some routes (those oriented toward the job centers) host more work trips than others. As with the decentralized model, the polycentric model tends to produce a multi-directional rush hour, with congestion appearing on circumferential routes rather than only on a small set of routes radiating out of a single cen-

Figure 4. Job Distribution Models: Monocentric, Polycentric, and Dispersed

A centralized employment model can incorporate multiple centers. The polycentric model, with several employment nodes rather than just one, concentrates traffic on fewer links in the transportation system than is true of the dispersed model, but spreads it over more links than the monocentric model. On the other hand, the polycentric model offers greater opportunity for economies of scale than the dispersed model, though not as great as the monocentric model.



ter. The mirror image of this argument is to say that the polycentric model makes more efficient use of the road network than the monocentric model (in that more links in the network are utilized at or near capacity), but less efficient than the dispersed model.

Carpooling is more feasible than under the dispersed model, because of the greater likelihood of a shared destination. The same logic applies to transit service, though the presence of multiple centers means that any individual center will take longer to generate the critical mass of travel demand at which transit becomes viable than is the case in the monocentric model, making the polycentric model somewhat more difficult to serve with transit.

Transit Ridership to the Big City

Any discussion of the pattern of employment distribution in New Jersey would be incomplete without recognizing that the state's two most significant job centers are not actually within the borders of New Jersey. New York City and Philadelphia are, respectively, the 500-pound and 100-pound gorillas of the New Jersey employment scene. Together they employ 380,000 New Jerseyans, or about 10 percent of all employed New Jersey residents, according to 2000 Census journey-to-work data:

- One in every 15 workers, or 6.5 percent of employed New Jerseyans, work in Manhattan.
- Another 1.4 percent work in the other four boroughs of New York City.
- Philadelphia employs another 1.8 percent.

New York and Philadelphia certainly qualify as absolute job centers when compared with New Jersey's own municipalities:

- New York City employed 3.76 million people in 2000, according to Census journey-to-work statistics.
- Manhattan alone employed 2.09 million.
- Philadelphia employed 660,000.
- These figures dwarf those of Newark, New Jersey's largest indigenous employer city, whose 2000 Census estimated employment was 147,000.

And both import more workers than they export, thus meeting the definition of a relative job center:

- Using 2000 Census figures, New York's ratio of jobs to employed residents was 1.18. Philadelphia's was a similar 1.16.

New Jersey's employment distribution can probably best be described as two large historic employment hubs (New York and Philadelphia), each anchoring its own monocentric transportation network consisting of both road and rail arteries, with the whole picture increasingly overlain by a highway-oriented, polycentric constellation of office parks and retail nodes.

New York City is the dominant hub. In many counties, the dependence on New York is significant: 22.0 percent of Hudson County's employed residents work in Manhattan, as do 14.3 percent of those of Bergen, 8.6 percent of Essex, 7.7 percent of Monmouth, 7.1 percent of Middlesex, 6.8 percent of Union, 4.8 percent of Morris, 4.1 percent of Somerset, 4.0 percent of Passaic, 3.5 percent of

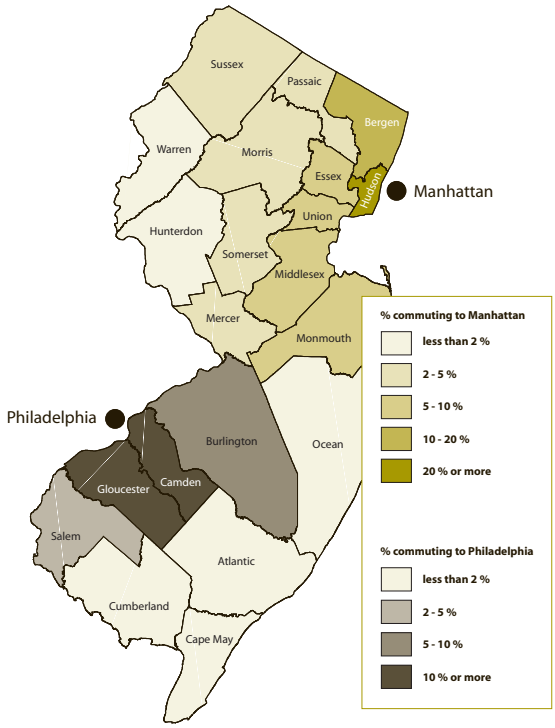
Mercer and 2.0 percent of Sussex. **(See Figure 5.)**

Philadelphia serves a similar role in the southern half of the state. It employs 1.8 percent of the state's total employed residents, including 14.3 percent of those in Camden County, 11.3 percent of Gloucester County, 8.5 percent of Burlington and 2.1 percent of Salem.

Both large employment hubs attract significant percentages of transit riders (and carpoolers) from New Jersey. As of the 2000 Census, 24 percent of New Jerseyans who worked in Philadelphia used public transportation to get to work (20 percent on rail transit, 4 percent by bus), and another 11.4 percent carpooled, while a relatively modest 63.4 percent drove alone. In Manhattan, the picture is even more dramatic, where car commuting from New Jersey is the exception rather than the rule – 21.3 percent drove alone and another 7.3 percent carpooled – and public transportation is by far the dominant mode of access. A total of 70.6 percent of New Jerseyans working in Manhattan rode transit to work, 39.1 percent by rail or ferry and 31.5 percent by bus.[5]

Figure 5. Percent of Employed Residents Commuting to Manhattan or Philadelphia from New Jersey, by County

New Jersey's employment distribution can probably best be described as two large historic employment hubs – New York and Philadelphia – each anchoring its own monocentric transportation network. Together, the two cities employ one in 10 employed New Jerseyans.



Data source: U.S. Census Bureau, 2000 Census
Spatial data source: NJ Department of Environmental Protection

New York City and Philadelphia are, respectively, the 500-pound and 100-pound gorillas of the New Jersey employment scene. Together they employ 10 percent of all employed New Jersey residents.

Transit is what makes the centralized model succeed, and it is a critical factor in determining whether decentralization is to be viewed with concern.

New Jersey Jobs Migrating Away from Transit

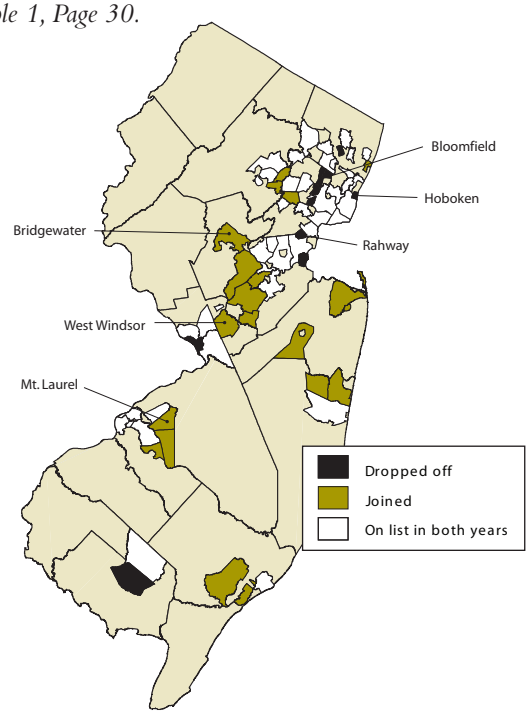
The suburbanization of employment over the last two decades[6] has added a new dimension to New Jersey's employment distribution model. As noted earlier, half of New Jersey's total private-sector jobs were concentrated in 51 large-employment municipalities in 1980, rising to 60 municipalities by 2003. But these numbers mask the actual membership of the group of absolute job centers that make up the first half of statewide employment. The net addition of nine municipalities to this group actually breaks down as 19 new municipalities entering the group and 10 municipalities dropping out of it. **(See Figure 6.)**

The 10 absolute job centers dropping off the list of municipalities comprising the first 50 percent of statewide employment were Bayonne, Bloomfield, East Orange, Hoboken, Irvington, Millville, Nutley, Perth Amboy, Rahway and Saddle Brook. As a group, these 10 municipalities had a 2000 Census carpooling rate of 13.0 percent and a transit ridership rate of 10.4 percent among commuters working in these municipalities.[7] Another 5.0 percent of employed residents walked to work.[8] Their median net residential density[9] in 1995 was 20,960 persons per square mile. These 10 municipalities together hosted 142,000 private-sector jobs in 1980 but only 104,000 in 2003, a 27 percent loss. **(See Figure 7.)**

Meanwhile, the 19 municipalities joining the list of the absolute job centers accounting for half the state's jobs

Figure 6. Municipalities Joining or Dropping Off the List of Absolute Job Centers Making Up Half the State's Total Private-Sector Employment, 1980 - 2003

Municipalities losing their status as absolute job centers tended to be older, urban, transit-accessible centers, like Hoboken, Bloomfield and Rahway. Those joining the list of the largest-employment municipalities tended to be suburban municipalities with good locations on the regional highway network and with high concentrations of low-density office parks, like Bridgewater, West Windsor Township and Mount Laurel. For list, see Table 1, Page 30.



Data source: NJ Department of Labor
Spatial data source: NJ Department of Environmental Protection

were Brick, Bridgewater, Cranbury, East Hanover, Egg Harbor Twp., Evesham Twp., Florham Park, Fort Lee, Franklin Twp. [Somerset County], Freehold Twp., Lakewood, Middletown Twp., Millburn, Mount Laurel, North Brunswick, Red Bank, South Brunswick Twp., Voorhees and West Windsor Twp. These municipalities together represented only 5.8 percent of statewide private-sector employment in 1980 (143,000 jobs) but 10.8 percent of the state total in 2003 (347,000 jobs, or a 142 percent increase over 1980), so they have risen substantially in importance in the statewide employment picture. As a group, they attracted only 2.0 percent of their workforce via transit and 10.2 percent in carpools as of 2000, while 85.1 percent drove alone to jobs in these municipalities. Only 1.6 percent of their employed residents walked to work. Their median 1995 net residential density was 4,960, less than a quarter of that of the 10 municipalities dropping off the list of the largest absolute job centers. Overall, on the list of the state's largest-employment municipalities, lower-density, automobile-oriented places are replacing higher-density, pedestrian- and transit-accessible ones.

In general, the pattern of employment distribution in New Jersey since 1980 has been one of new employment centers emerging in lower-density locations where the dominant means of access is by single-occupancy automobile, coupled with a relative diminution in importance of some older job centers with good transit and pedestrian connections.[10] All other things being equal, emphasizing job growth in places accessible mainly by car would appear to be a strategy for increasing the number of people commuting to work by car, and hence a recipe for more widespread and more chronic traffic congestion and all the harmful environmental and economic effects it engenders.

On the list of the state's largest-employment municipalities, lower-density, automobile-oriented places are replacing higher-density, pedestrian- and transit-accessible ones. Emphasizing job growth in places accessible mainly by car would appear to be a recipe for more widespread traffic congestion and all the harmful environmental and economic effects it engenders.

More Solo Drivers

Census data on the journey to work confirm the increase in the statewide percentage of workers driving alone to work. In 1980, only two out of three employed New Jersey residents (65.3 percent) drove to work alone; by 1990, it was up to 73.2 percent and by 2000, it was three out of four workers (75.1 percent). This is still somewhat below the national rate of 78.4 percent, thanks to New Jersey's high transit ridership rate relative to other states.

Interestingly, the percentage of New Jersey commuters riding public transportation to work has also increased. From a rate of 9.4 percent in 1980, transit commuting

Figure 7. Changing Commuting Characteristics Among Absolute Job-Center Municipalities Comprising Half of Total Statewide Private-Sector Employment

The 10 municipalities that had enough jobs in 1980 to place them in the small group of large-employment municipalities making up half the state's total employment, but fell out of that group by 2003. These places have high rates of commuting by transit, higher-than-average rates of walking to work and high building densities (as approximated by net residential density, the number of residents in the municipality divided by the number of square miles of land that are actually in residential use). In contrast, the 19 municipalities that have replaced them have very low rates of walking or riding transit to work, and tend on average to be less densely developed than the state as a whole – and far less dense than the job centers they have replaced.

	Percent commuting by transit	Percent carpooling	Percent walking to work	1995 net residential density (median)	Net private-sector job change, 1980-2003
10 municipalities dropping out of the group between 1980 and 2003	10.4%	13.0%	5.0%	20,959	-38,000
19 municipalities joining the group between 1980 and 2003	2.0%	10.2%	1.6%	4,961	+204,000
All workers working in New Jersey	5.0%	11.4%	3.2%	5,983	

(Note: Commute mode shares are tabulated by municipality of employment, not residence.)
Data sources: NJ Department of Labor (employment); U.S. Census Bureau, 2000 Census (commute mode shares); NJ Office of Smart Growth (residential density)

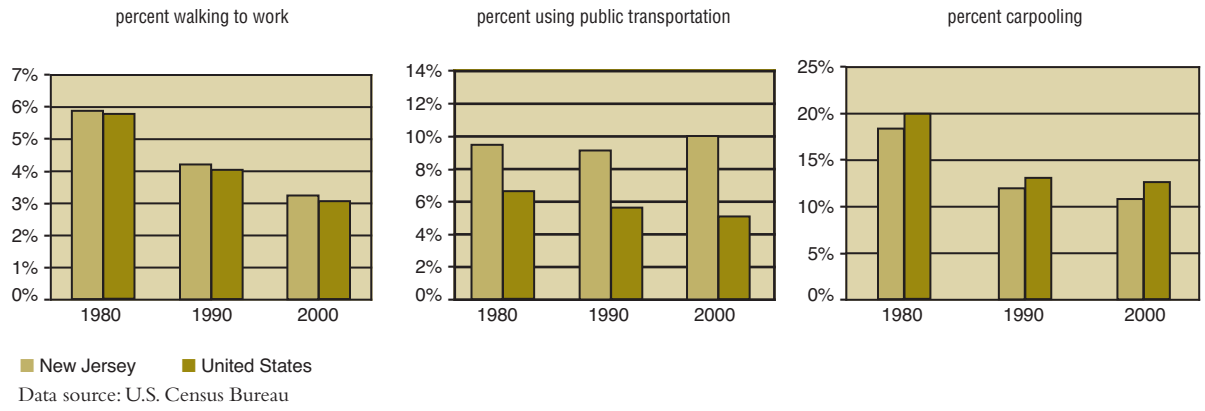
declined to 9.0 percent in 1990 but rebounded to 9.9 percent by 2000, the second-highest transit mode share in the country, after New York (25.2 percent). Almost 35,000 more commuters used transit in New Jersey in 2000 than in 1990. (Estimates from the 2006 American Community Survey indicate that the transit ridership rate has continued to climb and now stands at 10.6 percent.) New Jersey's increasing rate of transit ridership can mainly be traced to New York City's comeback as an employment center since 1990,[11] and to improvements in NJ Transit's service. Recall that one in every 15 employed New Jerseyans works in Manhattan, and that a large majority of them ride transit to work; when Manhattan employment goes up, New Jersey transit ridership goes up. Jersey City, an exception among New Jersey's own large older cities in having actually gained jobs between 1980 and 2000, also contributes to the rise in transit ridership.[12]

If the rates of both transit ridership and solo driving are up, where are the new solo commuters coming from? One casualty of the more dispersed pattern of employment distribution has been carpooling, reflecting a national trend. Nationally, one in five commuters (20.2 percent) carpooled in 1980[13] but only 13.8 percent did so in 1990 and only 12.6 percent in 2000, a drop of 7.6 percentage points over the 20-year period. New Jersey's decline was similar, falling 7.7 percentage points from 18.6 percent in 1980 to 12.6 percent in 1990 to 10.9 percent – or slightly more than one in 10 – in 2000. New Jersey has one of the lowest carpooling rates in the nation – in only 11 states is carpooling less common. Dispersed employment sites tend to inhibit carpooling, due to the decreased likelihood of any two workers who live near each other also working near each other.

In 1980, only two out of three employed New Jersey residents (65.3 percent) drove to work alone; by 2000, it was three out of four (75.1 percent).

Walking to work has also dropped off precipitously. In New Jersey, the percent of workers walking to work dropped from 5.8 percent in 1980 to 4.2 percent in 1990 to 3.2 percent in 2000. New Jersey's rates of walking

Figure 8. Non-Single-Occupancy Vehicle (SOV) Commuting, New Jersey and United States, 1980-2000



Data source: U.S. Census Bureau

were slightly higher than the national average in all three years.[14] **(See Figure 8.)** But not only has New Jersey's walking mode share fallen, the actual absolute number of people walking to work has decreased, by more than a third (34.5 percent) between 1980 and 2000, despite a 16 percent increase in the total number of commuters over the same time period. This should probably come as no surprise, given the redistribution of jobs into highway-oriented office parks over the last two decades. (The 2006 American Community Survey provides a glimmer of hope, however; the number of people walking to work is estimated to have increased by about 20,000 since 2000, bringing the percentage back up slightly to 3.5 percent of all commuters.)

New Jersey's overall average commute time is high relative to other states.

Commute Times Increasing

Less walking and carpooling and more single-occupancy vehicle (SOV) commuting translate to more cars on the road, even if the total number of commuters were held constant (which, of course, it isn't). More SOV drivers lead to more congestion and longer commute times. New Jersey's average travel time to work in the 2000 Census was 30 minutes, the third-longest in the nation after New York (31.7 minutes) and Maryland (31.2). (New York, Maryland and New Jersey retain the top three spots as of the 2006 American Community Survey.) What's more, New Jersey's commute times are rising fast, from an average of 24.9 minutes in 1980 to 25.3 minutes in 1990 to 30.0 minutes in 2000. The increase of 4.7 minutes between 1990 and 2000 was the third-largest in the country for that decade, after West Virginia (+5.2 minutes) and Georgia (+5.0).

New Jersey's long commute times are at least partly attributable to its high rate of transit ridership, coupled with the fact that transit riders are generally more willing to commute for longer times (because, among other reasons, transit commutes are less stressful and the time can be put to more productive uses than driving). New Jersey's average transit commute time was 56.6 minutes in 2000,[15] which pulls the overall average up. Similarly, New York's average transit commute was 50.5 minutes.

Removing transit commuters from the analysis changes the picture somewhat. Looking at non-transit commuters, New York falls from first place to ninth in terms of average commute time; clearly, New York's transit riders pull the state's average commute time way up. However, New Jersey still ranks third, behind Maryland and Georgia;[16] in other words, New Jersey's commutes remain among the longest in the country even when transit riders aren't counted. So New Jersey's overall average commute time is high relative to other states not only because of our high transit usage, but also because New Jersey drivers endure longer commutes than drivers in most other states. **(See Figure 9.)**

More evidence exists that long commutes do indeed plague New Jersey's automobile commuters and are not restricted to transit riders. In New York, a majority (60

Figure 9. Top 10 States by Average Travel Time to Work, Transit vs. Non-Transit

New Jersey's average commute time of 30 minutes is third-highest in the nation. The high rate of transit ridership tends to pull up the overall average, because transit riders are generally willing to undertake longer commutes. But even removing transit riders from the analysis, New Jersey still ranks third in the nation. New Jersey's average commute time is high not only because of our high transit usage, but also because New Jersey drivers endure longer commutes than drivers in most other states.

	all commuters:		transit riders:			all other modes:	
rank	state	time (min.)	state	time (min.)	percent commuting by transit	state	time (min.)
1	New York	31.7	Idaho	57.9	1.1%	Maryland	29.5
2	Maryland	31.2	New Jersey	56.6	9.9%	Georgia	27.2
3	New Jersey	30.0	Connecticut	55.1	4.1%	New Jersey	27.1
4	Illinois	28.0	Maryland	51.4	7.5%	California	26.6
5	California	27.7	New York	50.5	25.2%	Virginia	26.3
6	Georgia	27.7	Nevada	50.5	4.1%	West Virginia	26.1
7	Virginia	27.0	Wyoming	49.1	1.5%	Illinois	26.0
8	Massachusetts	27.0	Illinois	48.8	8.9%	Florida	25.8
9	West Virginia	26.2	California	47.8	5.3%	New York	25.4
10	Florida	26.2	Georgia	47.4	2.4%	Massachusetts	25.3

Data source: U.S. Census Bureau, 2000 Census

percent) of those with one-way commutes of an hour or more in 2000 were transit riders, while in New Jersey, it was only 35 percent. In fact, if transit riders are removed from the analysis, New York drops from first to seventh place in terms of the percent of commuters with hour-long commutes or more, with 8.5 percent. New Jersey, in contrast, retains its second-place status, with 9.8 percent of non-transit commuters commuting an hour or more; Maryland jumps to first place, at 10.5 percent.[17] New Jersey, like Maryland, has high average commute times that are a result of both high transit usage and high driving times for non-transit commuters. Nationally, only 6.7 percent of non-transit commuters have commutes of an hour or more.

Lengthening commute times hint – though don't necessarily prove – that congestion is getting worse. For confirmation, we can turn to statistics produced by the Texas Transportation Institute, in its Urban Mobility Report. According to the most recent report, annual hours of delay per traveler due to congestion[18] have nearly quadrupled in the New York-Newark urban area (which takes in much of northern and central New Jersey) between 1982 and 2005, increasing from 12 hours to 46 hours. In the Philadelphia urbanized area (which contains much of southern New Jersey), hours lost to congestion more than doubled, from 16 hours per traveler in 1982 to 38 hours in 2005. Looking back only as far as 1995, person-hours of delay have increased by 53 percent in the New York area and by 41 percent in Philadelphia. Of course, not all congestion delay occurs in the peak periods, but the data certainly suggest that worsening congestion is one of the causes of increasing commute times.

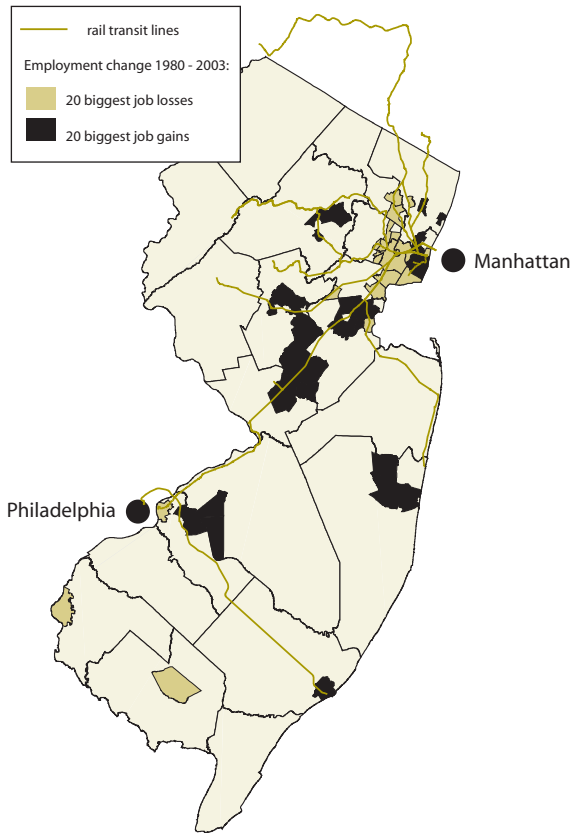
Job Loss in Older Job Centers

If New Jersey were self-destructively seeking a strategy to maximize automobile commuting and traffic congestion, steering new jobs into automobile-dependent locations remote from transit service would seem to be a sound foundation. But in addition to putting new jobs in places where people are forced to drive to work, we could also actively take jobs away from places where people can walk or take transit. Even in the absence of any net job growth, such a move would serve to increase the number of cars on the road by turning walkers and transit riders into solo drivers.

Sadly, this has indeed been happening.

Figure 10. Biggest Job-Gaining and Job-Losing Municipalities, 1980-2003, Relative to the Rail Transit Network

The municipalities that have experienced the greatest job losses since 1980 are mostly older, more urban, pedestrian-friendly places located near the convergence of multiple lines on the rail transit system, while those that have gained the most jobs – with the notable exceptions of Jersey City and Atlantic City – tend to be suburban places dominated by highway-oriented office parks. Although some of the new job centers may appear transit-accessible on the map because NJ Transit rail lines pass through them, the relationship is illusory. The clusters of jobs in Parsippany, Bridgewater, Franklin Twp., Edison and Woodbridge are there because of I-287, especially its key interchanges with other major highways, while South Brunswick Twp., Plainsboro and West Windsor Twp. owe their job growth to their locations along the Route 1 corridor in central New Jersey rather than to the Northeast Corridor rail line. For list see Table 2, Page 32.



Data source: NJ Department of Labor

Spatial data sources: NJ Transit (rail lines); NJ Department of Environmental Protection (county and municipal boundaries)

Consider the differences between the 20 municipalities that experienced the greatest private-sector job losses between 1980 and 2003 and the 20 municipalities that gained the most jobs over the same period.[19] **(See Figure 10** for a map of these municipalities relative to the rail transit network, and Table 2 for a list of the largest job gains and losses.) The 20 biggest job losers had a combined transit commuting mode share of 11.7 percent among people working in the municipalities in question, a carpooling rate of 12.9 percent, and a 5.6 percent rate of walking to work, while only two-thirds (67.9 percent) of their workforce drove to work alone. In contrast, the 20 biggest job gainers had a 7.2 percent transit ridership rate, 11.4 percent carpooling rate, and 3.9 percent rate of walking to work. But the difference becomes much more dramatic when Jersey City – a rare example of an older, transit-accessible job center actually gaining jobs since 1980 – is removed from the analysis. The other 19 largest job-gaining municipalities together had only a 4.0 percent transit ridership rate (one-third the rate of the job losers), an 11.1 percent carpooling rate, and a 2.9 percent rate of walking to work. Jersey City really is the exception that proves the rule.[20] **(See Figure 11.)**

If New Jersey were self-destructively seeking a strategy to maximize automobile commuting and traffic congestion, steering new jobs into automobile-dependent locations remote from transit service would seem to be a sound foundation.

Job losses afflicted a surprisingly large number of the top employer municipalities from 1980. Despite private-sector employment increasing by 30.1 percent statewide between 1980 and 2003, 21 of the 51 municipalities comprising the first 50 percent of state total employment in 1980 actually lost jobs over that time period: Newark, East Orange, Kearny, Irvington, Linden, Perth Amboy, Bloomfield, Paterson, Saddle Brook, Bayonne, Millville, Elizabeth, Camden, Hoboken, Clifton, Nutley, Carlstadt, Trenton, Passaic, North Bergen and Rahway. These 21 municipalities lost a combined 122,000 jobs over the 23-year period. Again, most of these have above-average rates of transit ridership and walking to work. Not only are many of the older, transit- and pedestrian-friendly employment hubs of the past declining in relative terms,

Figure 11. Commuting Characteristics in Large Job-Losing and Job-Gaining Municipalities (1980-2003), Tabulated by Municipality of Employment

	Percent commuting by transit	Percent carpooling	Percent walking to work
20 municipalities experiencing the largest job losses between 1980 and 2003	11.7%	12.9%	5.6%
20 municipalities experiencing the greatest job gains between 1980 and 2003	7.2%	11.4%	3.9%
job gainers minus Jersey City	4.0%	11.1%	2.9%

Data sources: NJ Department of Labor (employment); U.S. Census Bureau, 2000 Census (commute mode shares)

failing to keep pace with job growth elsewhere in the state, but they are also declining in absolute terms and actually losing jobs. Industrial and manufacturing jobs that have disappeared from these older centers have not been replaced with the office-oriented jobs of the information economy; instead, those new-economy jobs have congregated elsewhere.

The results are mixed regarding New Jersey's two biggest employment magnets, New York and Philadelphia. According to the Bureau of Labor Statistics, New York City's employment has gone up and down since 1980 (it dropped precipitously between 1970 and 1980 but moderated thereafter) but has generally trended upward. It increased between 1980 and 1990 and again between 1990 and 2000. It suffered a setback during the early 2000s but as of 2007 is now back up to almost exactly its 1970 level, having recouped all of the dramatic losses of the 1970s. Between 1980 and 2007, New York City's employment increased by 13.4 percent, a remarkable contrast to most of New Jersey's job-losing urban centers and a rare example of a transit-friendly success story. Philadelphia, on the other hand, is in the same boat with the likes of Newark, Elizabeth, Trenton and Camden. Its employment decreased by 15 percent between 1980 and 2007 (declining consistently throughout the period), yet another example of jobs migrating out of a major center with good transit connections.

Channeling jobs away from places with good transit service and pedestrian access is a good way to add cars to the road, exacerbating the traffic problem already being produced by the rise of automobile-dependent office parks. But it also creates or intensifies a host of socioeconomic problems for the job-losing towns. For example, the 21 large-employment municipalities from 1980 that lost jobs between 1980 and 2003 had a combined 2006 unemployment rate of 7.1 percent, more than half again as high as the statewide rate of 4.6 percent. They also had a median rate of children on welfare (Temporary Aid to Needy Families, or TANF) in 2005 of 7.98 children per 1,000 population, many times higher than the median rate of 1.08 over all 566 municipalities in the state. **(See Figure 12.)** All but two (Nutley and Saddle Brook) of the 21 municipalities had rates of children on TANF that were higher than the municipal median, and all but three (Nutley, Carlstadt and Hoboken) had unemployment rates higher than the statewide rate. For municipalities struggling with high incidences of socioeconomic distress, the loss of jobs to more automobile-dependent locations is more than just an abstraction that creates traffic somewhere else; it is a powerful obstacle to solving their socioeconomic problems, many of which depend on access

Many of the older, transit- and pedestrian-friendly employment hubs of the past are actually losing jobs. Industrial and manufacturing jobs that have disappeared from these older centers have not been replaced with the office-oriented jobs of the information economy; instead, those new-economy jobs have congregated elsewhere.

to employment options for their solutions.[21] It is no coincidence that many of the indicators used by the Brookings Institution in its recent *Restoring Prosperity* report[22] to characterize "older industrial cities" are related to job loss.

For municipalities struggling with high incidences of socioeconomic distress, the loss of jobs to more automobile-dependent locations is more than just an abstraction that creates traffic somewhere else; it is a powerful obstacle to solving their socioeconomic problems.

Job loss in older urban centers also casts light on, and exacerbates, the broad failures of the state's affordable-housing policy. The original intent behind the New Jersey Supreme Court's two "Mount Laurel" decisions was to declare that suburban towns were responsible for providing their fair share of the regional need for low- and moderate-income housing. Part of the rationale was that job growth was migrating to the suburbs in the 1970s and 1980s, and, as the Court expressed in Mount Laurel II, "if the area will accommodate factories, it must also find space for workers."[23] But 20 years later, despite the efforts of the Council on Affordable Housing (COAH), lower-income housing remained as concentrated as ever in a small handful of distressed urban municipalities[24] that, as a group, have continued to hemorrhage jobs. Concentrating affordable housing in those places afflicted with the worst job losses merely serves to perpetuate the cycle of poverty.

Reconnecting Jobs and Transit

The decentralization of employment in New Jersey is simultaneously creating undesirable effects in several major arenas of public policy concern. It is aggravating traffic by scattering commute destinations in all directions, inhibiting transit use and forcing more and more commuters to drive alone to work. It is contributing to the plight of older urban centers by depriving them of jobs that could help their residents break the cycle of poverty and unemployment. And it is working counter to recently articulated state policy goals regarding the reduction of greenhouse-gas emissions. Every new job created in a car-dependent office park means one more car on the road, emitting more CO_2, and one less potential transit commuter or walker. If New Jersey wants to reduce its greenhouse-gas emissions by 80 percent by the year 2050, it must start thinking about steering its job growth back to places with good transit and pedestrian connections, so that more people can leave their cars at home when heading to work.

So if decentralization of jobs – and, specifically, decentralization away from transit – is the problem, the solution would seem to be "recentralization" back to transit-friendly hubs. What would recentralization accomplish? And what might it look like?

Broadly, recentralization would involve steering new employment growth into municipalities that lend themselves to access by means other than single-occupancy private automobiles. To be clear, and to recap an earlier discussion, the creation or resuscitation of dominant employment nodes is not necessarily a self-evidently desirable goal; in fact, centralization of employment might not even be advisable in the absence of public transportation. But New Jersey is blessed with one of the most extensive and heavily patronized transit networks in the nation. Substantial benefits might thus be realized by (re)concentrating jobs in transit-accessible locations. Experience has shown that if good transit service is available, people will use it, especially for traveling

Figure 12. Socioeconomic Characteristics of Declining Job Centers vs. New Jersey Total

	unemployment rate 2006	children on TANF (per 1,000 population - municipal median) 2006
21 declining job centers	7.1%	7.98
all NJ municipalities	4.6%	1.08

TANF = Temporary Aid to Needy Families

Data sources: NJ Department of Labor (unemployment); NJ Legislative District Data Book (TANF)

to work. Transit ridership in New Jersey has risen steadily in recent years, thanks in part to new lines (the Hudson-Bergen Light Rail, the River LINE and the extensions to the Newark subway) and new, more convenient service on existing lines ("Midtown Direct" service offering a one-seat ride to New York Penn Station from the Morris & Essex and Montclair-Boonton lines; the new Secaucus Junction station facilitating transfers from the Hoboken-terminating Main/Bergen and Pascack Valley lines onto the Northeast Corridor for service into New York or Newark). NJ Transit continues to set records in the 2000s, with ridership gains persisting even through the Manhattan job losses in the first half of the decade.[25]

But greater transit ridership is, in economic terms, a "derived good;" it is desirable not in and of itself but because of the broader benefits that it produces. The real purpose of increasing transit ridership is reducing vehicle miles traveled (VMT), which in turn translates to less time lost to congestion on the roads, less consumption of finite energy resources and lower levels of greenhouse-gas emissions. All of these end results are features of a generally more efficient use of the transportation system.

Given that each transit commuter, in most cases, represents one car that is not on the highways at rush hour,[26] increasing transit ridership has obvious benefits in reducing congestion. If congestion in northern New Jersey is bad now, imagine how much worse it would be if the 180,000 people who commute by transit from New Jersey to jobs in Manhattan were suddenly forced to drive alone to work.

Every transit commuter – and, importantly, every person walking to work – also represents one car that is not burning fossil fuels and pumping carbon dioxide into the atmosphere. The Board of Public Utilities and the Department of Environmental Protection – the state agencies charged, respectively, with updating the state's Energy Master Plan and with producing recommendations for meeting the greenhouse-gas reduction targets articulated in the Global Warming Response Act – have both recognized the connection between land-use patterns and travel behavior. Because the transportation sector accounts for more than 70 percent of New Jersey's petroleum consumption and a third of its greenhouse-gas emissions, influencing travel behavior is an important strategy in efforts to reduce both of those quantities. The need to foster higher-density, mixed-use, transit-friendly development patterns that reduce the need for people to drive should be a key component of both agencies' plans.

New Jersey gives dramatic testament to the relationship between development patterns and travel behavior, both internally and as compared to the rest of the country. It is the most densely populated state in the nation and also one of the oldest, meaning that much of its development took place before the age of the Interstate Highway System and is hence less automobile-dependent than most development in states that have experienced rapid growth more recently. Not coincidentally, New Jersey's per-capita VMT is the sixth-lowest in the country as of 2005;[27] only residents of New York, Hawaii, Alaska, Rhode Island and Illinois drive less. It also has the second-highest rate of transit commuting, after New York, as of the 2000 Census. Within New Jersey, per-capita VMT is four times as high in Hunterdon County, which is characterized by low building densities, single-use zoning and a dearth of transit options, as in Hudson County, which has a well-connected public transit network and a high-density, mixed-use development pattern that facilitates walking and biking. In fact, there is a generally inverse relationship between population density and per-capita miles driven at the county level. **(See Figure 13.)**

If New Jersey wants to reduce its greenhouse-gas emissions, it must start steering its job growth back to places with good transit and pedestrian connections, so that more commuters can leave their cars at home. Experience has shown that if good transit service is available, people will use it; NJ Transit has repeatedly set new ridership records through the 2000s.

Clearly, building in a way that reduces the distances between destinations and broadens the options for traveling among them can substantially alleviate the need to drive. Promoting job growth in places where people can live within walking distance or ride public transportation has the potential to diminish solo car commuting, thereby reducing per-capita energy consumption and greenhouse-gas emissions. For example, unpublished research by the Voorhees Transportation Center at Rutgers found that the average commuter to the office parks of Parsippany-Troy Hills consumed 57 percent more energy than the average commuter to downtown Newark, mainly because of

Newark commuters' much higher rate of public transportation use and also because trips to Parsippany tended to be longer, distance-wise.[28]

Building in a way that reduces the distances between destinations – and broadens the options for traveling among them – can substantially alleviate the need to drive.

Because so many of New Jersey's municipalities with the best transit accessibility also happen to be former job centers that have fallen on hard times in recent decades, the recentralization of employment could also serve as a powerful urban revitalization tool. An influx of jobs back into Newark, Trenton, Camden or even Clifton, Linden or Rahway, would provide employment opportunities where they are most needed. It would also shore up these municipalities' commercial tax bases, generating revenues that could be used to improve local services.

The Need for Transit Hubs within New Jersey

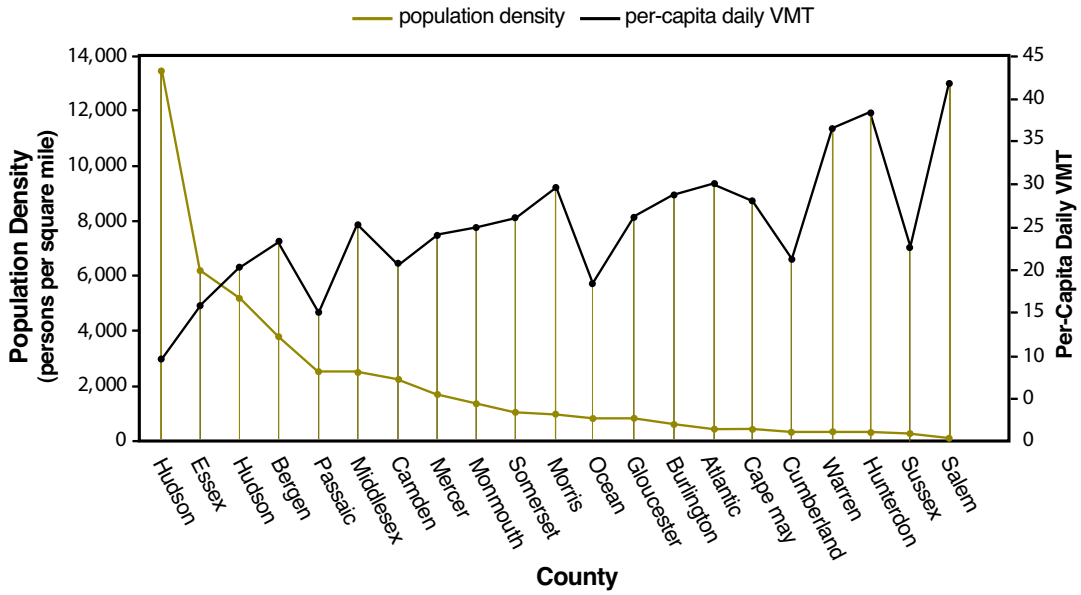
In any effort to redirect employment growth into transit- and pedestrian-accessible centers, New York City would seem the most obvious place to start. Fortunately, New York City is currently attracting new people and jobs at a healthy pace on its own. What New Jersey can do – and is doing – is add to the capacity of its own transit network so that efforts to generate more New York-bound transit riders aren't stymied by a lack of space on trains and buses. Right now, the New York-centric network is essentially operating at capacity, experiencing the transit analog to the vehicular congestion plaguing the arterial roads feeding into the city. NJ Transit is already squeezing as many trains as it can (23 per hour) through the existing rail tunnels under the Hudson River; it was recently able to add some new capacity through the introduction of bi-level passenger cars, but train volume is ultimately a limiting factor. The exclusive bus lane operated by the Port Authority of New York and New Jersey through the Lincoln Tunnel between 6:30 and 10 a.m. is also nearing its practical capacity, with an estimated 1,650 buses using the lane on a typical weekday, including 675 in the peak hour.[29] This translates to approximately one bus every 5.3 seconds in the peak hour and one every 7.6 seconds overall. The good news is that new capacity is in the works, with a planned new rail tunnel under the Hudson that will open up a whole host of new transit possibilities.

Southern New Jersey's counterpart city, Philadelphia, has not fared so well as an employment center, losing more than 100,000 jobs since 1980. While New Jersey residents could certainly benefit from a revitalized Philadelphia, in the same way New York provides a livelihood to many people in northern and central New Jersey, there is little New Jersey can do to encourage job growth in a neighboring state's city. There are steps New Jersey could take, however, to encourage greater transit use among South Jersey residents already working in Philadelphia. For instance, a new branch of the PATCO high-speed line into Gloucester County, currently being contemplated, would bring rail transit service to the fastest-growing parts of southern New Jersey. Another improvement being considered is a transfer station between the River LINE and NJ Transit's Atlantic City line where they cross in the Delair section of Pennsauken. Such a transfer would open up access to employment centers in Philadelphia's University City neighborhood to River LINE riders who would otherwise have to transfer to PATCO in Camden and then to the Philadelphia subway (because of the particular route the Atlantic City line takes, inbound trains actually stop at 30th St. Station in University City before swinging back east into Center City Philadelphia). It would also make Atlantic City more accessible, as both a recreational and an employment destination, for residents of River LINE towns.

Despite the economic powerhouse of New York City looming just across the Hudson, and its smaller cousin Philadelphia across the Delaware, it remains true that the vast majority of employed New Jersey residents (88 percent) work within New Jersey. Even in Hudson County, with its plentiful transit connections to New York, nearly half (46 percent) of employed residents work within the county, and more (27 percent) work in other counties in New Jersey than work in Manhattan (22 percent). And in South Jersey, Burlington, Camden and Gloucester counties each supply more total workers to the other two than to Philadelphia. Are there ways of reconfiguring all of this intra-New Jersey commuting so that more of it can happen by means other than solo driving? It would certainly seem that the answer should be yes, given that NJ Transit

Figure 13. Population Density vs. Per-Capita Daily Vehicle-Miles Traveled (VMT) for New Jersey Counties, 2002

Generally, counties with high population density tend to have low per-capita car travel; density puts destinations in closer proximity, shortening car trips and enabling some trips to be taken on foot or via public transportation. Conversely, in low-density counties the greater distances among destinations require longer trips and inhibit travel by non-automobile means.



Data sources: NJ Dept. of Transportation (VMT); U.S. Census Bureau (population)

estimates that about 30 percent of New Jersey's population lives within half a mile of a rail transit station. With so many residences already close to transit, the creation of more transit-accessible employment centers might be able to tap into a latent market for transit ridership.

The potential for intra-New Jersey transit ridership growth certainly exists. An analysis by NJ Transit of 2000 Census commuting data, tabulated by municipality of employment rather than municipality of residence, indicates that only five percent of people who work in New Jersey use transit to get to work; this is no better than the national rate of transit commuting. Most of the transit commuting being done by New Jerseyans – more than half, in fact – is focused on the state's two large external employment centers, Manhattan and Philadelphia. Manhattan is the destination for 49 percent of the employed New Jersey residents who commute by transit, with Philadelphia accounting for another 4.7 percent. With an extensive transit network, and a population already more inclined to ride transit than in most of the rest of the country, New Jersey ought to be able to boost its intra-state transit commuting rate. All it would take is steering more jobs into transit-accessible locations.

Imagine if the thousands of jobs currently housed in automobile-oriented office parks in Parsippany, Edison and Mount Laurel were instead located in transit-accessible locations in, say, Newark, New Brunswick or Camden. State government could help job growth favor these transit-friendly options by adjusting its employer recruiting practices and by getting involved in regional-scale land-use decisions. If jobs migrate to – instead of away from – transit-friendly locations, recent ridership trends indicate that plenty of commuters can be induced to leave their cars at home

Not every place on the highway network is equally desirable to potential employers seeking to attract car commuters from multiple origins, and neither is every place on the transit network necessarily equally suited to serving as a transit-oriented employment hub. Just as intersections of major highways are the prized locations for office parks, transit-based job centers would probably best be cultivated at spots where multiple transit lines

converge, or around stations located along particularly busy lines where the surrounding development pattern is already geared toward pedestrians. Fortunately, New Jersey has numerous candidates. The task is to identify the most promising among them, and then marshal the powers of state government to help them realize their potential to create a new wave of transit commuters.

The vast majority of employed New Jersey residents – 88 percent – work within New Jersey. Only five percent of people who work in New Jersey commute by transit, no better than the national rate. With an extensive transit network, and a population already more inclined to ride transit than in most of the rest of the country, New Jersey ought to be able to boost its intra-state transit commuting rate.

Recommendations

New Jersey should adopt the overall goal of encouraging job growth in places accessible to transit – and making those places pedestrian-friendly, so as to actually encourage ridership – thereby reducing the rate of commuting by single-occupancy vehicle. This is particularly true for office jobs, which don't take up as much land per worker as manufacturing jobs, thus lending themselves to spatial clustering, and which tend to draw workers from a larger geographic radius than retail jobs, thus promising greater congestion-saving benefits.

1) Identify potential transit hubs

Any strategy aimed at steering more jobs to transit-oriented employment hubs should involve identifying the most promising candidates to serve as those hubs, those having the most strategic locations with respect to the existing transit system. (This actually raises a larger question about devising a typology for transit stations – see sidebar, page 24.) Given that decisions about transportation investment can create a whole host of land-use and environmental ripple effects (and vice versa), the Office of Smart Growth might be a natural choice for coordinator, since it is already charged with reconciling the sometimes competing goals of DEP, DCA and DOT.

Several groups of municipalities and transit stations suggest themselves as good candidates for employment hubs **(See Figure 14), including:**

a) Major terminals that serve as endpoints for multiple rail transit lines.

• **Newark** is served directly by nearly all of NJ Transit's northern New Jersey lines. The Northeast Corridor, North Jersey Coast line and Raritan Valley line all pass through Newark Penn Station, and the Morris & Essex lines and the Montclair-Boonton line stop at Broad St. Station. And now, thanks to the new surface light-rail extension of the Newark subway connecting Newark Penn and Newark Broad, all of downtown Newark is accessible from any of the above lines. In addition, the Newark subway offers connections to other neighborhoods in the city, and PATH offers a direct connection to lower Manhattan. Adding even more connectivity, Newark is served by an extensive array of local and express bus routes. Newark, which has been steadily losing jobs for decades, is a prime candidate for a reinvigorated employment hub, thanks to the many rail transit and bus lines that already converge there.

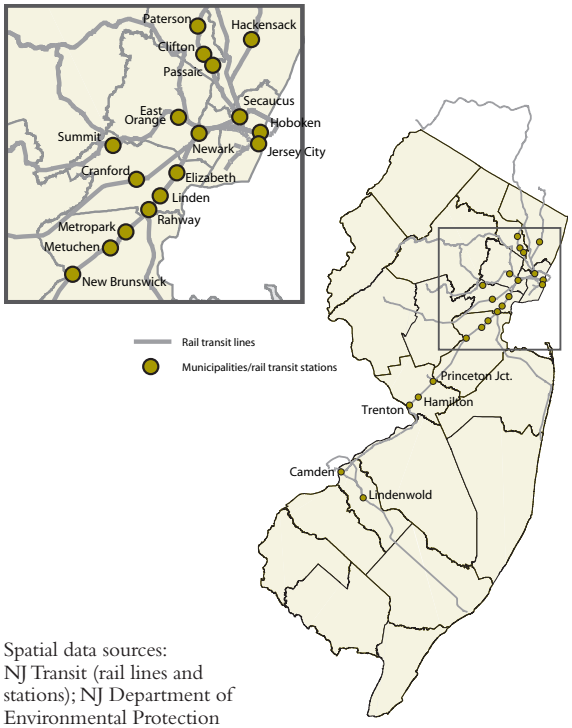
• **Trenton** is a terminus for both NJ Transit and SEPTA (Philadelphia's commuter rail system), and since 2004 is also the northern endpoint of the new River LINE light-rail service. Trenton, too, has been losing jobs in recent decades.

• **Camden** is the southern terminus of the River LINE and is also served by the PATCO high-speed line, a heavy-rail system similar to PATH and focused on Philadelphia. It is also the hub of an express bus network serving five counties. Like Newark and Trenton, Camden is a struggling older job center that has experienced sustained job loss. In all three, an influx of jobs would serve not only a transportation purpose, but also an urban revitalization purpose.

• **Hoboken** is the terminus for the Main/Bergen/Port Jervis and Pascack Valley commuter rail lines and also hosts some terminating trains from the M&E Gladstone branch and the Montclair-Boonton line. Aside from NJ Transit, Hoboken is also served by both PATH and Hudson-Bergen Light Rail (HBLR).

• **Secaucus Junction,** newly constructed and opened in 2003, is now a stop on all of NJ Transit's northern New Jersey routes (except the Raritan Valley line, which terminates in Newark and requires changing trains to reach

Figure 14. Municipalities/Rail Transit Stations Recommended for Consideration as Transit-Oriented Employment Hubs



Spatial data sources: NJ Transit (rail lines and stations); NJ Department of Environmental Protection (county boundaries)

more northerly points). This is where the lines that terminate in New York intersect the lines that terminate in Hoboken. It is arguably the most well-connected station stop on the entire NJ Transit system; not even New York Penn Station enjoys the same level of connectivity relative to New Jersey, since it cannot presently be accessed directly from the Main/Bergen and Pascack Valley lines.

b) Non-terminal stations served by multiple rail lines (accessible from more than two directions).

- **Elizabeth, Linden** and **Rahway,** which are served by both the Northeast Corridor and the Coast Line.
- **Jersey City**, which is served by both PATH and HBLR, which in turn intersect the NJ Transit rail network in Newark and Hoboken. PATH and HBLR meet each other at Exchange Place. Jersey City is also the hub of a major network of express buses. Jersey City essentially enjoys the same level of access from the entire NJ Transit rail system that midtown Manhattan does, with HBLR or PATH substituting for the New York City Subway as the final leg of the commute.
- **Lindenwold**, which hosts stops on both PATCO and NJ Transit's Atlantic City line.

c) Other stations on the busy Northeast Corridor. Also meriting consideration are certain "outlying" stations on the busy Northeast Corridor. The Northeast Corridor is unique among NJ Transit's commuter rail lines in being a true corridor line with connections at both ends, rather than a dead-end branch line, thus giving its stations the potential to draw riders from large population centers in either direction. As a through-route, it experiences higher traffic volumes than any of NJ Transit's other lines (not even counting its Amtrak traffic), and its station stops consistently dominate the system-wide list of stations with the largest ridership figures.

- **New Brunswick** and **Metuchen** do not currently draw large shares of their workforces via transit, but both already have a transit-oriented downtown with a centrally located rail station and good pedestrian (and bus) connections to the surrounding neighborhoods
- **Metropark, Princeton Junction** and **Hamilton** have large surface parking lots surrounding their stations that could be retrofitted with new transit-oriented job clusters. (At Metropark, an easy first step would be adding pedestrian connections to the office buildings that are already within walking distance of the station.) Of course, at these predominantly park-and-ride stations, an effort to create a new employment hub on the site of existing surface parking lots would be in natural conflict with the goal of capturing transit riders from outlying areas not accessible on foot to the station. Demand for parking at Princeton Junction and Hamilton bears witness to these stations' ability to attract transit riders bound for the urban core (NYC, Newark, the Hudson waterfront) from a wide catchment area. This is a valuable function that would need to be considered in any station area redevelopment plan.

d) Stations that lend themselves to inter-branch trips.

The improved connectivity offered by the Secaucus Transfer might now make some of the closer-in but non-terminal stations on individual commuter rail branches viable as transit hubs. This is because the Secaucus Transfer has given rise to an increase in "interbranch trips" (trips that originate at an outlying stop on one branch and terminate at an outlying stop on another) – such trips have more than doubled since the opening of the Secaucus Junction station and now represent 1 percent of all rail ridership.[30] This type of movement could be more

Transit Station Typology:

Not all transit stations are created equal. It stands to reason that not all should be expected to serve the same set of functions. Stations with particularly central locations on the transit network, accessible from multiple branches and thus able to draw riders from potentially large catchment areas, more naturally suggest themselves as candidates for development into employment hubs. Others may be located in primarily residential areas, surrounded by mostly local roads, and hence may make sense as classic "bedroom communities," with residential and retail uses clustered near the station but where it is assumed transit riders are primarily working at employment centers outside the community. Some may be located near key highway interchanges and are thus strategically positioned to intercept car commuters headed for a closer-in destination and divert them onto transit. Stations near the extremities of their branches might also be logical candidates for park-and-ride facilities, recognizing the importance of capturing transit riders who live beyond the outer ends of the transit system but who work at a transit-accessible location.

The recognition that different stations may be suited to different roles perhaps suggests the need for a typology that could be used in categorizing transit stations, based in part on what kind of development is already present in the station area and also on what kind of development would be desirable in the future from a strategic, system-wide perspective. NJ Transit has, in fact, already created a system for classifying stations, on page 8 of its Planning for Transit-Friendly Land Use*, though the typology is presented chiefly as a way to help municipal officials think about their own future vision of the station area. While input from host municipalities is important, state agencies also need to start using – and perhaps further refining – the typology in a proactive way. A coordinated state-level vision of future station-area land use would allow state agencies to prioritize infrastructure investments (including parking), reconfigure incentive programs and induce local officials to make concomitant zoning changes in the area of each station according to the role the station is envisioned to play in the larger system. This would be an improvement over the current situation, in which NJ Transit is limited to playing a reactive role, waiting for developers or municipal leaders to take interest in a train station area and responding to whatever developments they propose. Public-sector leadership in articulating a holistic vision for the transit system would also send valuable signals to the private sector in terms of what sorts of land uses are most desirable (and likely to receive favorable consideration from state agencies) around which stations.

** The six categories enumerated in the handbook are: urban center; regional hub; traditional town, village, or hamlet; single-use district or neighborhood; suburban multi-use area; and park-and-ride site.*

actively encouraged, creating a market for reverse commutes that could take advantage of unused capacity in the non-peak direction. Municipalities near the inner end of their respective rail lines and also hosting large numbers of jobs (10,000 or more) include:

- **Cranford** on the Raritan Valley line;
- **East Orange** and **Summit** on the Morris & Essex;
- **Passaic, Clifton** and **Paterson,** on the Main/Bergen/Port Jervis line; and
- **Hackensack** on the Pascack Valley line.

2) Incentivize development in candidate municipalities

After candidates for transit-oriented employment hubs have been identified, state agencies must examine conditions in these municipalities to see what obstacles might prevent them from realizing their full potential as job centers. Agencies should also create incentives to proactively encourage development in these centers. What tools or support might these municipalities need to help them get ready to absorb new growth?

- **Environmental remediation.** Some of these municipalities may have environmental cleanup issues in the areas around their stations; these needs should be prioritized by the Department of Environmental Protection.
- **Infrastructure improvements.** Fixing infrastructure in state-targeted transit hubs should take priority over most other locations. Targeted hubs should get preferential treatment for capital funds from the Department of Transportation. They should receive priority ranking and the best interest rates for loans from the Environmental Infrastructure Trust (NJEIT), which provides funding for repair or expansion of water, sewer and stormwater systems.[31] Similarly, targeted centers should also get priority treatment from DEP, both in facilitating the permits necessary to prepare their infrastructure to absorb new growth, as well as obtaining allocations for water and wastewater capacity.
- **Enhancement of public services.** In its report Cities in Transition,[32] which lays out the difficulties faced by older communities, the Housing and Community Development Network of New Jersey cites public safety and the perception (and sometimes reality) of high crime rates as a barrier to redevelopment. In order for a strategy of reconcentrating employment near transit to succeed, some of the potential hubs may need state assistance to improve the quality of their public services (such

things as police protection, code enforcement or trash collection) to a point where employees – both present and future – feel safe working in the city. Happily, evidence suggests that such concerns can be overcome; New York City, Hoboken, Jersey City and New Brunswick are, to varying degrees, examples of urban municipalities where redevelopment efforts have successfully attracted new jobs, and with them new cultural and retail activities that are helping to revitalize their downtowns.

• **Transit Village program status.** NJDOT's Transit Village program should expand its focus to include strategies for locating employment clusters at selected transit locations. State efforts to encourage "transit-oriented development" (TOD) have thus far focused primarily on placing higher-density residential uses near transit stations, but employment-related uses are at least as critical to transit's success. The location of employment hubs is particularly important in encouraging transit use, since people can drive their own car to the train station or other fixed transit facility (or even a bus park-and-ride lot) from their home but must be able to get to their job conveniently by some other means (walking, biking, employer-operated shuttle, etc.) when they get off the train or bus at the work end of the trip.

• **Bike/pedestrian connections.** NJDOT should give priority treatment to potential transit hub municipalities in terms of funding bicycle and pedestrian amenities and efforts to improve the connectivity of the local street network.

3) Promote transit-supportive land use

In some locations, one of the biggest barriers to higher-density development around transit stations is municipal zoning. In the state's most urbanized areas, many of which are located strategically on the transit network, density is treated as a fact of life. But this is not the case in some of the municipalities hosting the more outlying transit stations. In these places, proposed higher densities near transit are often treated as a threat and are resisted by means of restrictive zoning. Such resistance should not be allowed to preclude state government from acting on behalf of the larger public in maximizing the utility of the state's transit facilities.

Municipal leaders can alleviate resistance among residents and help generate support for TOD projects by initiating a public outreach effort early in the development process, encouraging residents to participate throughout the process and allowing them to articulate their desires and concerns about the fiscal, design, traffic, and other impacts of the project. This can serve to head off objections that might otherwise be raised if residents were instead only engaged mid-stream, in which case they may feel as if they are being asked to comment retroactively on development outcomes that have already been pre-formulated.

NJDOT's Transit Village program should expand its focus to include strategies for locating employment clusters at selected transit locations. The location of employment hubs is key to encouraging transit use, since commuters are unlikely to use transit if they can't easily access their jobs when they get off the train or bus at the work end of the trip.

State government should provide resources to municipalities to encourage them to foster higher-intensity development around their transit stations and to help them ensure that new TOD projects will strengthen their communities. Toward this end, New Jersey Future is promoting a program called "Smart Housing Zones" whereby financial and regulatory incentives would be offered to municipalities that zone for greater housing variety, higher densities and a mix of residential and commercial land uses, both around their transit stations and in other appropriate locations.[33] State officials can also improve a TOD project's odds of success by taking a proactive role in educating existing residents and local leaders about the importance, and benefits, of transit-oriented development from both the local and regional perspectives.

It may be advisable in rare instances for the state to actively assert its interest in maximizing its investment in the transit system over the objections of local officials. The state could, for example, designate the areas within a half-mile radius of certain rail transit stations as areas of priority state interest, conditioning municipal aid on the host towns' willingness to allow higher-density, transit-supportive development in the station area.

4) Reorient employer recruitment programs

State agencies whose mission involves recruitment and retention of large employers – in particular the Economic Development Authority and the Governor's Office of Economic Growth – should refocus their efforts on encouraging large employers to locate near transit stations, perhaps in cooperation with NJDOT's Transit Village staff. Other jurisdictions around the country have successfully implemented such strategies, notably Arlington, Virginia, and Montgomery County, Maryland. And in 2006, Illinois passed the Business Location Efficiency Incentive Act,[34] becoming the first state to intentionally use economic development subsidies to link jobs with public transit and/or affordable housing. (The question of whether tax breaks and subsidies are cost-effective recruitment tools is a topic for further discussion, but to the extent that the state uses them, they should be targeted toward transit-accessible locations.)

State agencies whose mission involves recruitment and retention of large employers should refocus their efforts on encouraging those employers to locate near transit stations.

The New Jersey Legislature recently took a step in the right direction, passing the Urban Transit Hub Tax Credit Act,[35] with the goal of encouraging concentrations of employment in certain transit-accessible cities by offering tax incentives to companies considering relocation. The targeted cities are Camden, East Orange, Elizabeth, Hoboken, Jersey City, Newark, New Brunswick, Paterson and Trenton. All of these make sense, particularly considering the depleted tax bases that characterize most of them. But many of the same arguments in favor of these nine cities also apply to plenty of other municipalities that could be targeted for preferential treatment as transit-friendly employment hubs.

5) Expand and improve the public transportation system

One obvious way New Jersey can encourage greater transit ridership is by making transit service available to more people. This should involve improving service along the existing transit network but also taking advantage of opportunities to extend the system itself. Additions to the system should be chosen carefully, with preference given to options that create the greatest gains in connectivity or that have the best potential to influence land-use patterns over the longer term.

a) Prioritize transit system extensions that take advantage of – and reinforce – transit-oriented development patterns.

Transit-supportive land use is key to improving demand for transit and keeping cars off the road. Projects that attract new riders to transit via park-and-ride lots allow commuters to leave their cars at the train station and use transit for the main stem of the commute trip, but even better are projects that allow riders to leave their cars at home altogether. As such, preferential treatment should be given to new fixed-guideway transit routes that either pass through already-developed areas with good pedestrian connectivity to proposed station locations or traverse undeveloped land that would permit the construction of new transit-oriented development in the area surrounding the proposed stations. For example, among the options being considered for a new PATCO line into Gloucester County (and potentially even farther south) are two routes that would follow the median strips of existing highways, severely limiting their ability to attract riders by non-automobile means or to influence future development patterns in station areas. Another route, however, would follow an existing rail right-of-way that passes through the compact, walkable downtowns of several municipalities, creating the opportunity for stations to serve as centers of activity for their surrounding communities.[36]

b) Prioritize transit system extensions that allow access to multiple nodes.

In contemplating the construction of new fixed-guideway transit routes, the state should give priority to routes that would add the most connectivity to the existing system, i.e. those that would facilitate travel to multiple employment hubs. For example, the discussion of the three proposed routes for the MOM line (Monmouth-Ocean-Middlesex) should consider the fact that the route through Middlesex County, connecting to the Northeast Corridor at Monmouth Junction, might make several major Northeast Corridor stations (particularly New Brunswick and Metropark[37]) more viable as potential

transit-friendly employment hubs by opening them up to more direct access from Monmouth and Ocean counties. (Middlesex County is a more significant employment destination than Manhattan for residents of Monmouth and Ocean counties, even if at present many of them are working in such Middlesex locations as Piscataway or Edison's Raritan Center that are not transit-accessible.) In contrast, the other two proposed routes would essentially be extensions of the Coast Line, which doesn't meet up with the Northeast Corridor until Rahway. These routes would conform to the existing model that presumes that New York and Newark are the only important desired destinations of Monmouth and Ocean county rail commuters; workers destined for Middlesex County would still have to travel north into Union County and then double back south.

c) Find new and creative ways to add connectivity to the existing transit network.

NJ Transit has already demonstrated considerable ingenuity in squeezing further efficiencies from the existing transit system, with such projects as the Montclair Connection and the Secaucus Transfer. Even in the absence of any new routes, NJ Transit should continue these efforts at enhancing the current network. A station connecting the River LINE and the Atlantic City line where they cross in Delair, for example, might serve as a smaller-scale, South Jersey analog to the Secaucus Transfer, facilitating movement among branches without having to travel all the way into the central hub of Philadelphia.

d) Continue creating Transit Villages.

NJDOT's Transit Village program should continue to foster new transit villages throughout New Jersey's transit network, even if many are primarily residential, so as to create new generations of transit riders. Having a transit-accessible job may be more of a determining factor in inducing commuters to ride transit than living in a transit-accessible neighborhood, but not every transit station necessarily makes sense as a job center. For people whose jobs are within walking distance of a transit stop at the other end of the commute, living in a residential transit village offers them the opportunity to have an entirely car-free commute. And since a transit-friendly neighborhood is a pedestrian-friendly neighborhood, transit villages can reduce the need for a car for non-work trips as well.

Many transit system extensions – particularly those that are likely to generate significant numbers of new New York-bound riders – are presently on hold because the existing system is so close to capacity in bringing commuters into New York. Once the planned new rail tunnel under the Hudson opens up badly needed transit capacity into New York, New Jersey will certainly want to maximize the return on its investment in the tunnel by attracting more New York-bound commuters to transit. But NJ Transit should also pursue the above strategies in ways that encourage intra-New Jersey transit ridership, a market that is presently underserved.

6) Level the playing field between transit and driving

Transit must actually be competitive with driving to get people out of their cars, even when good transit service is available. Part of the equation is ensuring good-quality transit service, but an equally important part is eliminating the hidden subsidies and incentives for automobile use that conspire to make driving the default choice for anyone who has a choice.

Transit must actually be competitive with driving to get people out of their cars, even when good transit service is available. An important part of the equation is eliminating the hidden subsidies and incentives for automobile use that conspire to make driving the default choice.

A host of state and local government policies make it artificially cheap to drive. New Jersey has the fourth-lowest gasoline tax in the country – only Alaska, Georgia and Wyoming are lower – and the tax hasn't been raised since 1988. In contrast, NJ Transit has raised fares six times since then. If transit riders are expected to see their share of the bill keep pace with inflation, the same ought to be expected of highway users; otherwise, the net effect is that transit riders are effectively subsidizing drivers.

Besides gas, another commodity whose artificially low price encourages people to drive is parking. Parking is certainly not free for a developer or tenant to provide; developers would prefer, all other things being equal, to use more land for productive uses and less for storage of vehicles. But they are often constrained by zoning reg-

ulations that require a certain number of parking spaces – usually surface parking spaces – for a given number of square feet of floor space. Such requirements may be unavoidable for locations with no access to public transportation, but in places with good transit connections, plentiful free parking creates a disincentive for people to actually use transit, defeating the public purposes behind steering growth into transit-accessible locations. Jersey City has been a leader in this area, substantially reducing parking requirements in areas with easy transit access, and in some cases abandoning minimum parking requirements in favor of enforcing a maximum on the amount of parking that can be provided. More transit-accessible municipalities should consider this same approach.

Structured parking is particularly critical around transit stations. Parking decks allow more station-area land to be devoted to residential, retail or employment uses – and to pedestrian amenities that support them – and less to vehicle storage.

State government could do several things to discourage the creation of surface parking. For one thing, it could discourage the oversupply of parking in general by initiating a per-space tax on non-residential parking spaces. (Of course, this should probably come in conjunction with a state effort to bar municipal governments from setting unreasonably high minimum parking requirements; otherwise the tax would merely punish developers and tenants for the failings of municipal zoning.) Such a tax would encourage sharing of parking spaces among multiple users at different times of day, and it may also encourage building owners and tenants to begin passing on the costs of "free" parking to their employees and customers, thereby reducing demand for car travel and increasing the relative attractiveness of public transportation. It would also create more pressure in favor of structured parking, as developers and property owners sought to minimize the share of a project's footprint taken up by a land use that not only generates no revenue (while taking up space that could otherwise be occupied by revenue-generating uses), but now would create recurring costs. As a bonus, the revenue from the parking tax could be dedicated to the Transportation Trust Fund.

To further encourage structured rather than surface parking, state government could begin treating parking decks as infrastructure, offering low-interest loans for their construction, possibly via the Environmental Infrastructure Trust. Like water and sewer infrastructure, structured parking encourages higher-density development than would otherwise take place, and thus should be viewed as a public good.

Structured parking is particularly critical around transit stations, if the transit station is envisioned as a current or potential hub of economic activity. In order to maximize the number of residents or jobs within easy walking distance of a transit facility, it is necessary to minimize the amount of land within the same walking radius that is consumed by parking. Parking decks allow more of the land near the transit station to be devoted to residential, retail or employment uses – and to pedestrian amenities that support them – and less to vehicle storage.

7) Make the reduction of vehicle miles traveled (VMT) – and the expansion of transit ridership – explicit goals of state efforts to curb greenhouse-gas emissions

Because the transportation sector accounts for such a large share of the state's energy consumption and greenhouse-gas emissions, and because land use is such a powerful factor in determining travel behavior, both the Board of Public Utilities and the Department of Environmental Protection should explicitly adopt the goal of reducing per-capita VMT in the final versions of, respectively, the Energy Master Plan and the recommendations for meeting the targets of the Global Warming Response Act. National publications, including Time magazine[38] and the Wall Street Journal,[39] have recently noted the importance of land development patterns in affecting greenhouse-gas emissions; New Jersey's official climate change strategy should make this link, as well.

Because public transportation offers an alternative to the automobile, and because VMT-reduction goals may not be realistic without an explicit focus on improving and funding transit, the state's strategy for addressing climate change should also include a goal of increasing transit ridership. Though there are many ways of reducing the distances that people need to drive, improving the viability of public transportation is worthy of special attention.

The establishment of per-capita VMT reduction and increased transit ridership as specific goals in the effort to reduce energy consumption and greenhouse-gas emissions would provide a rationale for state government to play a more active role in guiding land development patterns. To this end, the statement of the goals should be explicit about the link between transportation and land use, so as to make clear that the goals are to be attained by reducing the need to drive, rather than solely through measures designed to increase the cost of driving without providing an alternative. State agencies should aim to preserve the current level of benefit offered by the transportation system, in terms of the accessibility of desired destinations; the reduction in miles traveled should be accomplished by putting destinations closer together and increasing the share of trips that can be taken by means other than the automobile, rather than by decreasing the number of destinations visited.

NOTES

1 Total employment – private-sector plus government – is not available at the municipal level from the New Jersey Department of Labor for 1980 or 1990, so to maintain comparability over time, third-quarter private-sector employment, which is available from NJDOL for the entire study period, will be used throughout the report. Unless otherwise indicated, further references to job "totals" in the text refer only to private-sector employment.

2 This cutoff comes from the fact that about 12 percent of jobs in New Jersey are in government and 88 percent are in the private sector. Thus a threshold of at least one job per employed resident, the simplest definition of a "job center," translates into at least 0.88 private-sector jobs per employed resident, because there are 0.88 private-sector jobs per total job.

3 Note that not every municipality that ranks near the top of the list in terms of total number of jobs necessarily qualifies as a "job center" in terms of the ratio of jobs to employed residents. In addition to the earlier example of Jersey City, other municipalities containing large number of jobs but failing to meet the 0.88 threshold in 2003 include Elizabeth, Toms River [a.k.a. Dover Twp. in Ocean County], Paterson, Clifton, Trenton, Hamilton Twp. [Mercer], East Brunswick, North Bergen, Passaic, West Orange, North Brunswick, Brick Twp., Egg Harbor Twp., Ewing, Kearny, Middletown and Freehold Twp.

4 For a defense of the dispersed employment model, see Gordon, P., and Harry W. Richardson, "Beyond Polycentricity: The Dispersed Metropolis, Los Angeles, 1970-1990," Journal of the American Planning Association, Vol. 62, 1996.

5 These commute mode-share statistics pertain to people who work in Manhattan or Philadelphia and live in New Jersey, rather than to the residents of these cities, so they actually speak to how people are getting to the jobs located in the cities. These statistics were prepared by NJ Transit and are different from the journey-to-work statistics available on the Census Bureau website, which are tabulated by municipality of residence rather than municipality of employment.

6 See, for example, the Rutgers Regional Report "*The Beginning of the End of Sprawl?*" by James W. Hughes and Joseph J. Seneca, available online at http://www.policy.rutgers.edu/reports/rrr/rrrmay04.pdf. According to the report, in 1980 northern and central New Jersey had 25 million square feet of commercial rental office space; by 2000, the amount had increased nearly by a factor of seven, to 170 million square feet.

7 These transit ridership and carpooling figures were computed by NJ Transit from 2000 Census data and pertain to people who work in the municipalities in question, not to people who live in these municipalities and commute to work somewhere else.

8 Statistics for walking do pertain to residents of the municipality in question. Presumably, a high proportion of employed residents walking to work is an indicator of a municipality having a good pedestrian environment, so in this case the tabulations by municipality of residence are satisfactory. Furthermore, walkers are not uniquely identifiable in NJ Transit's tabulations by municipality of employment because they are combined with "other" modes.

9 Net residential density (in persons per square mile) is computed by dividing the number of residents in the municipality by the number of square miles of land that are actually in residential use. This is a better indicator of development patterns than simple gross density (total population divided by total square miles) because it excludes undeveloped land from the analysis. It also excludes land developed for non-residential uses, so it is not always a reliable measure of overall building density. But it is generally a good indicator of pedestrian accessibility and of land-use intensity.

10 Research by the Philadelphia branch of the Federal Reserve indicates the same trend has played out nationally, dating back to 1950, with faster employment growth in less dense areas. This includes not only the shift of employment from older, denser metropolitan areas to newer, more spread-out ones, but also intra-metropolitan shifts from dense, older job centers to newer, lower-density suburban clusters. See Carlino, Gerald, "*From Centralization to Deconcentration: People and Jobs Spread Out*," Business Review, Federal Reserve Bank of Philadelphia, November/December 2000, available online at http://www.philadelphiafed.org/files/br/brnd00jc.pdf

11 According to Bureau of Labor Statistics data, New York City's total non-farm employment grew by 4.3 percent between 1990 and 2000. And despite a downturn in the early 2000s, as of 2007 citywide employment is now back up above 2000 levels. In fact, New York City employment today is about the same as it was in 1970 – about 3.75 million, and about 13 percent higher than it was in 1980.

12 The opening of NJ Transit's Hudson-Bergen Light Rail system, which serves new employment centers on the Jersey City waterfront, certainly contributed to the increase in transit ridership between 2000 and 2006. The HBLR system was not yet open for business on the date of the 2000 Census but now boasts nearly 40,000 average weekday trips; hence its entire ridership constitutes a net addition to the number of transit riders above and beyond what was measured in the Census.

13 Carpooling rates in 1980 were likely abnormally high because gasoline prices were near their all-time high (adjusted for inflation) at the time of the 1980 Census. Only in the last year or two have gas prices climbed anywhere near the historic highs following the 1979 oil crisis. Thus the dropoff in carpooling since 1980 may not appear as dramatic if gasoline prices were to be corrected for. Continued declines in carpooling between 1990 and 2000, however, confirm that the decline is due to more than fluctuations in gas prices.

14 Nationally, 5.7 percent of workers walked to work in 1980, 4.0 percent did so in 1990, and 3.0 percent in 2000.

15 The breakout of commute time by transit vs. non-transit was a new data item for 2000 and does not exist for 1990 or 1980, hence no historical comparisons are possible.

16 In the 2006 American Community

Survey, New Jersey is tied with Georgia for the second-longest average car commute, while New York is in a tie for 11th place.

17 In the 2006 American Community Survey, Maryland and New Jersey continue to hold the top two spots in terms of the percent of workers commuting by car, truck or van who have commutes of an hour or more, while New York drops to eighth place.

18 The table showing trends in annual delay per traveler is online at http://mobility.tamu.edu/ums/congestion_data/tables/national/table_4.pdf ; the report's homepage is http://mobility.tamu.edu/ums/.

19 The 20 largest job-gaining municipalities were Parsippany-Troy Hills, Mount Laurel, Edison, Jersey City, Bridgewater, Atlantic City, Franklin Twp. in Somerset County, Evesham Twp., Dover Twp. in Ocean County, Secaucus, Lakewood, Morristown, South Brunswick Twp., West Windsor Twp., Woodbridge Twp., Cranbury, Plainsboro, Fort Lee, Hackensack and Cherry Hill. The 20 largest job-losing municipalities were Newark, Paterson, Elizabeth, Linden, Kearny, East Orange, Camden, Clifton, Bloomfield, Perth Amboy, Irvington, Bayonne, Saddle Brook, Harrison, Plainfield, Millville, Pennsville Twp., Hoboken, Orange and Belleville.

20 Atlantic City, another rare success story with a high rate of transit use, also helps inflate the statistics of the job gainers, though its influence isn't as profound as Jersey City's due to its much smaller size. And unlike Jersey City, Atlantic City has actually been losing jobs in more recent years.

21 For more on the importance of the mismatch between jobs and lower-income residents, see Spencer, "Why Spatial Mismatch Still Matters," Critical Planning, Spring 2000, at http://www.spa.ucla.edu/critplan/past/volume007/006%20Spencer.pdf.

22 Available online at http://www.brookings.edu/reports/2007/05metropolitanpolicy_vey.aspx

23 Southern Burlington County NAACP v. Mt. Laurel Township 92 N.J. 158, 211; 456 A.2d 390 (1983)

24 See New Jersey Future's 2003 report "*Realistic Opportunity? The Distribution of Affordable Housing and Jobs in New Jersey,*" at http://www.njfuture.org/index.cfm?fuseaction=user.item&ThisItem=52&ContentCat=3&ContentSubCat1=14&ContentSubCat2=3.

25 For more, see "*Build It…And They Will Ride*" from New Jersey Future's Summer 2007 newsletter, at http://www.njfuture.org

26 Some transit commuters are people who don't own cars at all, in which case it's debatable whether they represent a car taken off the road. Certainly, some of these people would opt to purchase a car for commuting purposes if transit service weren't available, though others may seek to change the location of either their job or their residence so as to put themselves within walking distance of work.

27 Total VMT from U.S. Department of Transportation, Federal Highway Administration, Highway Statistics 2005, available at http://www.fhwa.dot.gov/policy/ohim/hs05/roadway_extent.htm; population estimates from the Bureau of the Census.

28 The research is summarized in an October 1, 2006 *New York Times* op-ed by several of the researchers, "The Eleven Million-Gallon Solution."

29 See the Port Authority of New York and New Jersey's March 2005 "Lincoln Tunnel Exclusive Bus Lane Enhancement Study" at http://www.panynj.gov/CommutingTravel/tunnels/pdfs/01_09_XBL-II_nwslttr_285fri.pdf for more.

30 Source: New Jersey Transit, Quarterly Ridership Trends Report.

31 Note that the NJEIT already provides its lowest "smart growth" interest rate for projects in NJDOT-designated Transit Villages. This should be expanded to other targeted transit hubs.

32 The report is available online at http://www.hcdnnj.org/Cities%20In%20Transition%20NJ%20Urban%20Paradox%20Final.pdf; see pp. 24-25 for policy implications.

33 See New Jersey Future's website at http://www.njfuture.org/Media/Docs/Smart%20Housing%20Zones%20report%20052208.pdf for a description of the Smart Housing Zones program.

34 See press release on Illinois state government website: http://www.illinois.gov/PressReleases/ShowPressRelease.cfm?RecNum=5034&SubjectID=98

35 NJ Commerce Commission press release available at http://www.nj.gov/commerce/news/releases_2008/urban%20hub%20tax%20credit.BRRAG%20final.pdf; text of the act available at http://www.njleg.state.nj.us/2006/Bills/S3500/3043_R1.HTM.

36 John Hasse, of the Geospatial Research Laboratory at Rowan University, has studied the proposed PATCO routes and compared their ability to attract riders and influence land use-patterns. The study is available at http://users.rowan.edu/~hasse/glocorail .

37 Access to more southerly points on the Northeast Corridor, such as Princeton Junction or Trenton, would still require riding north to New Brunswick and transferring to an outbound train, since no transfer facility is planned at Monmouth Junction itself. Such a move would be only slightly less inconvenient than doing a similar switch at Rahway, as required under the current system.

38 Walsh, Bryan, "How Green Is Your Neighborhood?", December 19, 2007, at http://www.time.com/time/health/article/0,8599,1696857,00.html

39 White, Joseph B., "Next Car Debate: Total Miles Driven," February 5, 2008, at http://online.wsj.com/public/article_print/SB120190455899936509.html

Table 1. Absolute Job-Center Municipalities Comprising 50 Percent of Statewide Private-Sector Employment, 1980 and 2003

municipality	county	2003	rank	1980	rank	change, 1980-2003
Newark city	Essex	108,938	1	130,589	1	-21,651
Jersey City city	Hudson	78,500	2	57,875	2	20,625
Edison township	Middlesex	68,673	3	45,415	4	23,258
Atlantic City city	Atlantic	54,801	4	36,406	7	18,395
Parsippany-Troy Hills township	Morris	48,915	5	17,516	30	31,399
Cherry Hill township	Camden	47,435	6	37,738	6	9,697
Woodbridge township	Middlesex	46,114	7	35,094	9	11,020
Hackensack city	Bergen	40,015	8	30,311	12	9,704
Paramus borough	Bergen	40,008	9	32,960	10	7,048
Elizabeth city	Union	36,025	10	47,098	3	-11,073
Union township	Union	35,149	11	32,499	11	2,650
Secaucus town	Hudson	35,103	12	22,127	18	12,976
Dover township	Ocean	33,579	13	17,708	29	15,871
Wayne township	Passaic	33,351	14	30,110	13	3,241
Mount Laurel township	Burlington	31,550	15	5,072	133	26,478
Piscataway township	Middlesex	31,193	16	23,942	17	7,251

municipality	county	2003	rank	1980	rank	change, 1980-2003
Morristown town	Morris	30,857	17	19,250	23	11,607
Bridgewater township	Somerset	30,748	18	11,065	56	19,683
New Brunswick city	Middlesex	29,716	19	21,341	20	8,375
Clifton city	Passaic	29,196	20	35,210	8	-6,014
Franklin township	Somerset	28,670	21	10,718	59	17,952
Paterson city	Passaic	27,842	22	40,595	5	-12,753
Vineland city	Cumberland	24,951	23	20,823	21	4,128
Trenton city	Mercer	23,955	24	26,558	16	-2,603
Hamilton township	Mercer	23,477	25	18,969	25	4,508
Moorestown township	Burlington	23,378	26	14,281	39	9,097
Fairfield township	Essex	22,812	27	18,167	27	4,645
Lakewood township	Ocean	22,451	28	10,111	65	12,340
Livingston township	Essex	22,009	29	16,772	31	5,237
Evesham township	Burlington	21,584	30	4,303	151	17,281
Camden city	Camden	21,422	31	27,957	15	-6,535
Lawrence township	Mercer	21,223	32	15,760	34	5,463
Pennsauken township	Camden	21,170	33	19,547	22	1,623
Princeton borough	Mercer	20,273	34	14,188	40	6,085
East Brunswick township	Middlesex	19,293	35	13,681	41	5,612
South Brunswick township	Middlesex	18,916	36	7,431	91	11,485
Linden city	Union	18,464	37	28,366	14	-9,902
South Plainfield borough	Middlesex	18,326	38	15,408	36	2,918
North Bergen township	Hudson	17,689	39	19,246	24	-1,557
Fort Lee borough	Bergen	17,243	40	7,425	92	9,818
West Windsor township	Mercer	17,229	41	5,856	111	11,373
Passaic city	Passaic	16,756	42	18,485	26	-1,729
Voorhees township	Camden	16,143	43	7,282	94	8,861
North Brunswick township	Middlesex	16,076	44	10,957	57	5,119
West Orange township	Essex	16,037	45	13,062	42	2,975
Brick township	Ocean	15,981	46	6,757	99	9,224
Hanover township	Morris	15,558	47	12,877	45	2,681
Red Bank borough	Monmouth	15,050	48	8,249	79	6,801
Egg Harbor township	Atlantic	14,509	49	5,091	130	9,418
East Hanover township	Morris	14,296	50	8,139	81	6,157
Ewing township	Mercer	14,095	51	12,803	46	1,292
Englewood city	Bergen	13,586	52	12,406	47	1,180
Cranbury township	Middlesex	13,547	53	3,273	187	10,274
Millburn township	Essex	13,522	54	9,152	72	4,370
Summit city	Union	13,393	55	11,499	51	1,894
Kearny town	Hudson	13,274	56	21,598	19	-8,324
Middletown township	Monmouth	13,254	57	6,232	107	7,022
Florham Park borough	Morris	13,236	58	9,731	69	3,505
Carlstadt borough	Bergen	12,993	59	14,780	37	-1,787
Freehold township	Monmouth	12,989	60	6,504	102	6,485
Rahway city	Union	12,724	63	12,949	44	-225
Hoboken city	Hudson	12,525	64	15,489	35	-2,964
Bayonne city	Hudson	11,753	70	15,996	33	-4,243
Bloomfield township	Essex	11,345	71	16,646	32	-5,301
East Orange city	Essex	10,744	75	18,131	28	-7,387
Nutley township	Essex	9,778	88	11,610	50	-1,832
Perth Amboy city	Middlesex	9,746	90	14,367	38	-4,621
Saddle Brook township	Bergen	9,285	96	13,012	43	-3,727
Millville city	Cumberland	8,999	99	12,239	48	-3,240
Irvington township	Essex	7,404	125	11,868	49	-4,464

gray = in top 50 percent in 1980 but not in 2003 **green** = in top 50 percent in 2003 but not in 1980

The table lists all municipalities whose private-sector employment was large enough to place them in the group of municipalities comprising 50 percent of statewide employment in either 1980 or 2003, along with their actual employment and statewide ranking in both years, and their change in employment over the period. Municipalities are sorted by 2003 employment.

In 1980, half of New Jersey's total private-sector jobs were concentrated in 51 absolute job-center municipalities (places hosting large numbers of jobs). By 2003, it took 60 municipalities to reach 50 percent of the state total, as jobs spread out over a greater number of places. Meanwhile, many of the older job-center municipalities that had appeared in the top 50 percent in 1980 actually lost substantial numbers of jobs between 1980 and 2003.

Data source: NJ Department of Labor

Table 2. Top 20 Job-Gaining and Job-Losing Municipalities, 1980-2003

Largest job gains:	private-sector employment:			
municipality	**county**	**1980**	**2003**	**change, 1980-2003**
Parsippany-Troy Hills township	Morris	17,516	48,915	31,399
Mount Laurel township	Burlington	5,072	31,550	26,478
Edison township	Middlesex	45,415	68,673	23,258
Jersey City city	Hudson	57,875	78,500	20,625
Bridgewater township	Somerset	11,065	30,748	19,683
Atlantic City city	Atlantic	36,406	54,801	18,395
Franklin township	Somerset	10,718	28,670	17,952
Evesham township	Burlington	4,303	21,584	17,281
Dover township	Ocean	17,708	33,579	15,871
Secaucus town	Hudson	22,127	35,103	12,976
Lakewood township	Ocean	10,111	22,451	12,340
Morristown town	Morris	19,250	30,857	11,607
South Brunswick township	Middlesex	7,431	18,916	11,485
West Windsor township	Mercer	5,856	17,229	11,373
Woodbridge township	Middlesex	35,094	46,114	11,020
Cranbury township	Middlesex	3,273	13,547	10,274
Plainsboro township	Middlesex	1,713	11,778	10,065
Fort Lee borough	Bergen	7,425	17,243	9,818
Hackensack city	Bergen	30,311	40,015	9,704
Cherry Hill township	Camden	37,738	47,435	9,697

Largest job losses:	private-sector employment:			
municipality	**county**	**1980**	**2003**	**change, 1980-2003**
Newark city	Essex	130,589	108,938	-21,651
Paterson city	Passaic	40,595	27,842	-12,753
Elizabeth city	Union	47,098	36,025	-11,073
Linden city	Union	28,366	18,464	-9,902
Kearny town	Hudson	21,598	13,274	-8,324
East Orange city	Essex	18,131	10,744	-7,387
Camden city	Camden	27,957	21,422	-6,535
Clifton city	Passaic	35,210	29,196	-6,014
Bloomfield township	Essex	16,646	11,345	-5,301
Perth Amboy city	Middlesex	14,367	9,746	-4,621
Irvington township	Essex	11,868	7,404	-4,464
Bayonne city	Hudson	15,996	11,753	-4,243
Saddle Brook township	Bergen	13,012	9,285	-3,727
Harrison town	Hudson	6,490	2,867	-3,623
Plainfield city	Union	10,701	7,352	-3,349
Millville city	Cumberland	12,239	8,999	-3,240
Pennsville township	Salem	6,694	3,477	-3,217
Hoboken city	Hudson	15,489	12,525	-2,964
City of Orange township	Essex	8,401	5,559	-2,842
Belleville township	Essex	10,359	7,639	-2,720

Data source: NJ Department of Labor

NEW JERSEY FUTURE

About New Jersey Future

New Jersey Future is a nonprofit, nonpartisan, statewide organization that employs research, analysis and advocacy to drive policies and build coalitions that help revitalize cities and towns, protect natural lands and farm fields, provide transportation and housing choices, generate new jobs and improve opportunities for the impoverished.

Founded in 1987 to support the creation and implementation of the State Development and Redevelopment Plan, New Jersey Future brings together concerned citizens and leaders in government, the community, law and planning, business and education to promote policies that secure economic opportunity, community vitality and quality of life for all citizens of the state by promoting both sustainable growth and environmental preservation.

Tim Evans, *Research Director,*
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About the Author

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