

The Future of Transit in a Fiscally Constrained Political Environment  
(Draft)

By Wendell Cox  
Principal,  
Demographia  
St. Louis, MO-IL

Paper Prepared for the  
Florida State University Transit Symposium

May 15, 2012

## **Introduction**

The nation faces perhaps the least predictable economic prospects that have existed in the last three quarters of a century. In this environment, observations about the future of any industry will be fraught with difficulty. Transit is no exception.

## **Fiscal Challenges**

The United States, like much of the developed world, faces unprecedented fiscal challenges. Much of the problem has to do with liabilities to pay government employee pensions and other post-retirement benefits, as well as the rising cost of entitlements. Short of the resumption of robust economic growth, there are serious concerns about whether these obligations can be met without retarding the standard of living. These financial obligations could place restrictions on future transit appropriations.

## **Transit and Demographic Trends**

At the same time, transit faces significant demographic challenges. The United States has comparatively low density urban areas. This makes them particularly difficult for transit to serve.

Generally, the metropolitan areas in which transit is the strongest are losing population share to those where transit is less important. The long heralded "return" to the city did not materialize over the past census period and newer data indicates that domestic migration (while at a lower rate than before) continues to be largely to suburban and exurban areas, while central areas continue to lose domestic migration.

Nationally, urban areas (areas of continuous urban development) had an average urban population density is 2,343 per square mile (904 per square kilometer) in 2010. This is little different from urban density in 1980 and nearly 10 percent above the lowest urban density of

2,141 per square mile (827) recorded in the 1990 census.<sup>1</sup> Thus, in recent decades, formerly falling US urban densities have stabilized.<sup>2</sup>

Urban density in 2010 was approximately 27 percent below that of 1950, as many core municipalities lost population, while suburban and suburban populations expanded. This resulted in the substantial expansion of urban land area. While US urban population densities have fallen, household densities have remained steady. Average household size has fallen dramatically, as fewer children have been born and divorce rates have soared. New households have been formed at more than 1.5 times the rate of population growth. Thus, the 27 percent decline in urban density since 1950 was reflected in a more modest 3 percent decline in household density (Table 1).

Item	1950	2010	Change
Urban Land Area (square miles)	30,048	106,386	254%
Urban Population (millions)	96.5	249.3	158%
Population Density (per square mile)	3,210	2,343	-27%
Urban Households (millions)	27.9	96.2	245%
Household Density (per square mile)	928	905	-3%
Average Household Size	3.46	2.59	-25%

*Source:* Calculated from U.S. Census data. 1950 urban land area estimated from U.S. Department of Agriculture Economic Research Service data.

Similar trends have been evident around the world. Between the 1960s and 2000, nearly all of the growth in the major metropolitan regions of Western Europe, Canada and Japan has taken place in suburban areas, as these nation's urban areas have dispersed in a manner similar to that of the United States (while Western European market shares are higher than in the United States, the automobile carries most travel in all major urban areas).<sup>3</sup> Later data indicates virtually the same trend is continuing in the United States, the more developed world and the less developed world.<sup>4</sup>

Even as urban densities have reached a floor, Americans continue to move to areas of lower density and smaller populations. For example, the urban areas of more than 1 million population in 1990 attracted 48 percent of the nation's urban growth between 1990 and 2000. Between 2000 and 2010, these areas attracted a smaller 38 percent of urban growth. (Figure 1).

<sup>1</sup> There have been definitional changes in urban area definitions that require caution in comparisons over time.

<sup>2</sup> <http://www.demographia.com/db-1945uza.htm>

<sup>3</sup> <http://www.demographia.com/db-highmetro.htm> .

<sup>4</sup> <http://www.newgeography.com/category/story-topics/evolving-urban-form>

## Urban Growth: Larger & Smaller Areas

GROWTH:1990-2010 BY 1990 SIZE

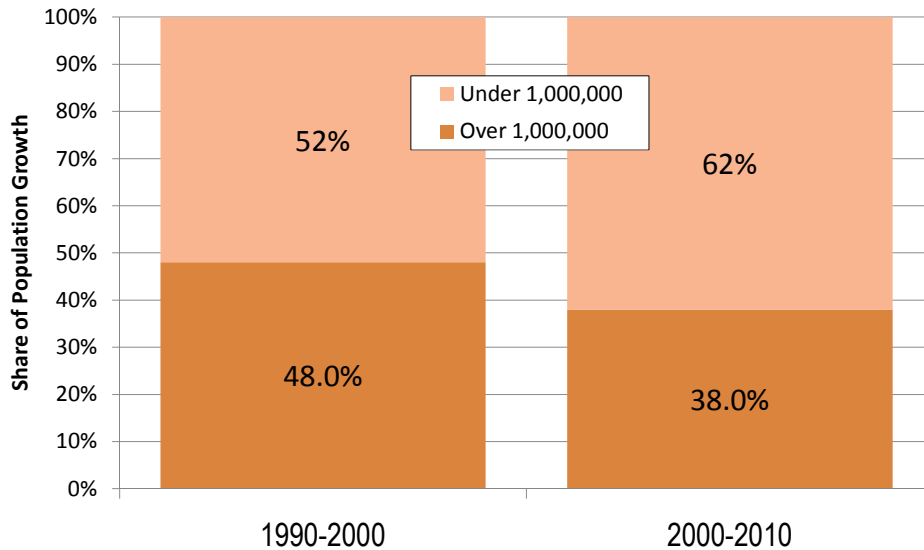


Figure 1

**Urban Area Population Trends: 2000-2010:** Transit seems unlikely to receive any substantial boost from demographic, social or environmental trends.

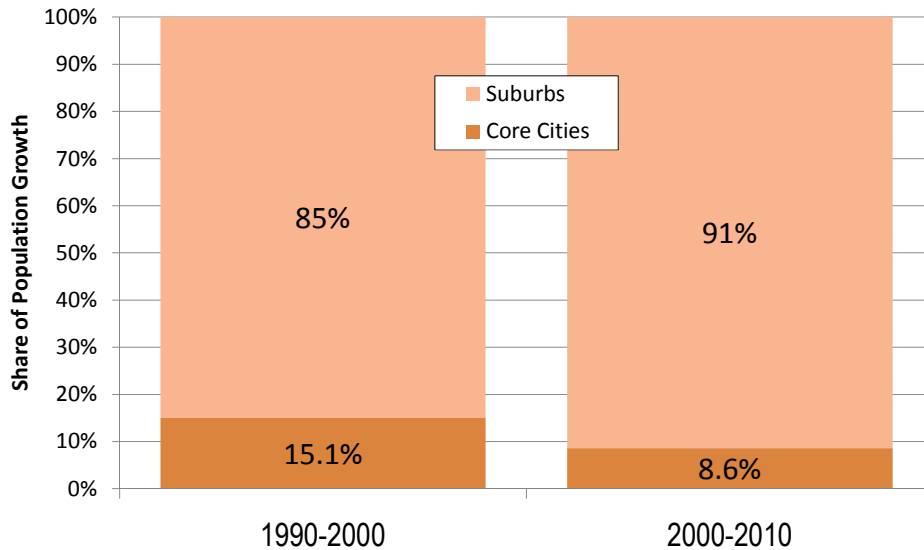
Americans continue to choose suburban living over core city living. Between 1990 and 2000, the historical core municipalities of the largest metropolitan areas attracted 15.1 percent of the population growth. Between 2000 and 2010, the historical core city growth dropped to 8.6 percent. Almost without exceptions, suburban and exurban areas grew more rapidly than the historic core municipalities (Figure 2).<sup>5</sup>

Even so, the historical core municipalities have maintained or increased their populations over the past two decades, in contrast with the 1950 to 1990 period.

<sup>5</sup> <http://www.city-journal.org/2011/eon0406jkwc.html>

## Major Metropolitan Growth: 1990s & 2000s

### HISTORICAL CORE CITIES & SUBURBS



**Figure 2**

It should be noted, however, that in many urban areas --- such as Houston, Los Angeles, Phoenix, Portland, Seattle and Orlando --- large parts of historic city (municipality) areas are suburban in their form, being dominated by detached homes and automobiles.<sup>6</sup>

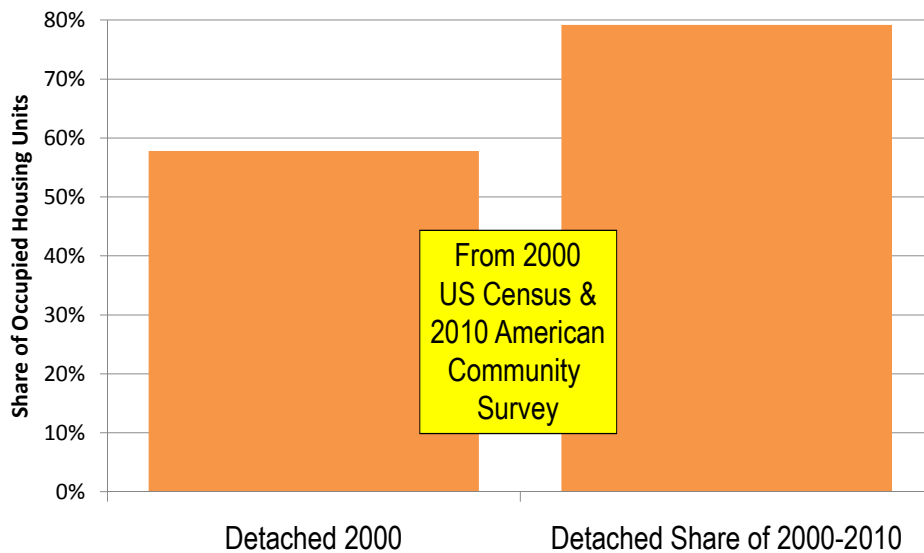
***Growth in Detached Housing:*** Further indication of the preference of households for lower density, suburban style living is provided by housing data over the previous decade. The 2010 American Community Survey indicates that households in the largest metropolitan areas continue to move in to detached housing. Detached housing attracted 79.2% of the new households in the 51 major metropolitan areas (over 1,000,000 population). This is well above the approximately 60 percent that detached housing represented of the housing stock in 2000 (Figure 3). This is despite claims on the part of some analysts that emerging demographic trends would reduce the demand for suburban-style, detached housing.

The move to detached housing was pervasive at the major metropolitan area level. Among the 51 largest metropolitan areas, the share of detached housing rose in 44 and declined in seven. The share of attached housing rose in 32 of the metropolitan areas, while declining in 19. Multi – unit housing experienced an increase in its market share in only three markets, while declining in 48.<sup>7</sup>

<sup>6</sup> <http://www.demographia.com/db-hcm.pdf>

<sup>7</sup> <http://www.newgeography.com/content/002506-more-americans-move-detached-houses>

## Detached Housing Change & Stock UNITED STATES 2000-2010 COMPARED TO 2000 STOCK



**Figure 3**

***Returning to the City?*** For much of the last decade (and even before) , the media and some analysts have heralded a “return” to the historical core cities. This idea is fundamentally incorrect since most suburbanites actually came not from core cities but smaller towns and rural areas.<sup>8</sup>

The census results show that these observations were largely anecdotal, although generally small inner city areas of some core cities (such as St. Louis, Chicago, Dallas, Seattle, San Diego and Portland) experienced uncharacteristic growth. But overall, as noted above, most of the growth was outside the historical core cities.

Analysts have also been predicting that younger people who have moved to the historical core municipalities will not move to the suburbs. Yet, an analysis of where 25- to 34-year-olds were living in 2000 compared to 2010, the same age group, now aged 35 to 44 indicates the opposite. In the past 10 years, this cohort’s presence grew 12% in suburban areas while dropping 22.7% in the historical core cities. Overall, this demographic expanded by roughly 1.8 million in the suburbs while losing 1.3 million in the core cities (Figure 4).<sup>9</sup>

Moreover, the metropolitan areas that had the largest gain of 25-34 years olds (2000) generally tend to *not* have dense cores and are relatively decentralized, such as Las Vegas, Raleigh, Riverside-San Bernardino and Charlotte. These are not strong transit metropolitan areas (Figure 5), nor are they strongly focused on large downtown areas, which are crucial to large transit market shares.

<sup>8</sup> <http://www.newgeography.com/content/00805-suburbs-and-cities-the-unexpected-truth>

<sup>9</sup> <http://www.newgeography.com/content/002349-why-america%E2%80%99s-young-and-restless-will-abandon-cities-for-suburbs>

There has also been an expectation that “empty nesters” might move as their children move off on their own. A review of residential locations of the 45-54 and 55-64 age cohorts in 2000 compared to 2010 provides no evidence of such a trend (Figures 6 & 7). Among both cohorts, there were huge historical core city losses, and modest suburban losses, with all of the growth going to areas with smaller populations. This trend indicates that dispersion continues beyond the borders of the major metropolitan areas.<sup>10</sup>

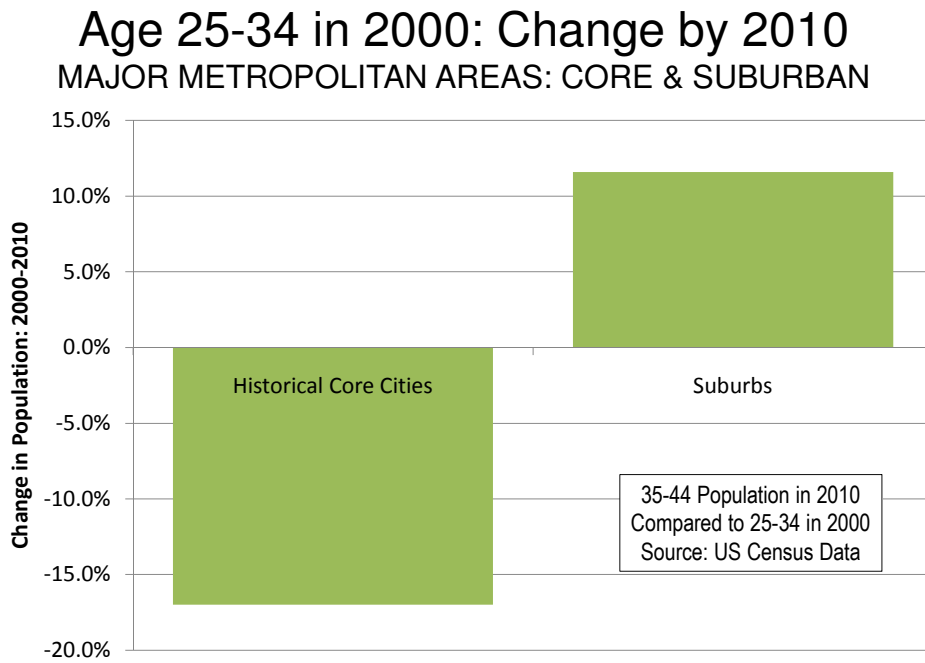


Figure 4

<sup>10</sup> <http://www.forbes.com/sites/joelkotkin/2011/08/12/biggest-boomer-towns/>

## Age 25-34 in 2000: Change by 2010 MAJOR METROPOLITAN AREAS: TOP TEN % GROWTH

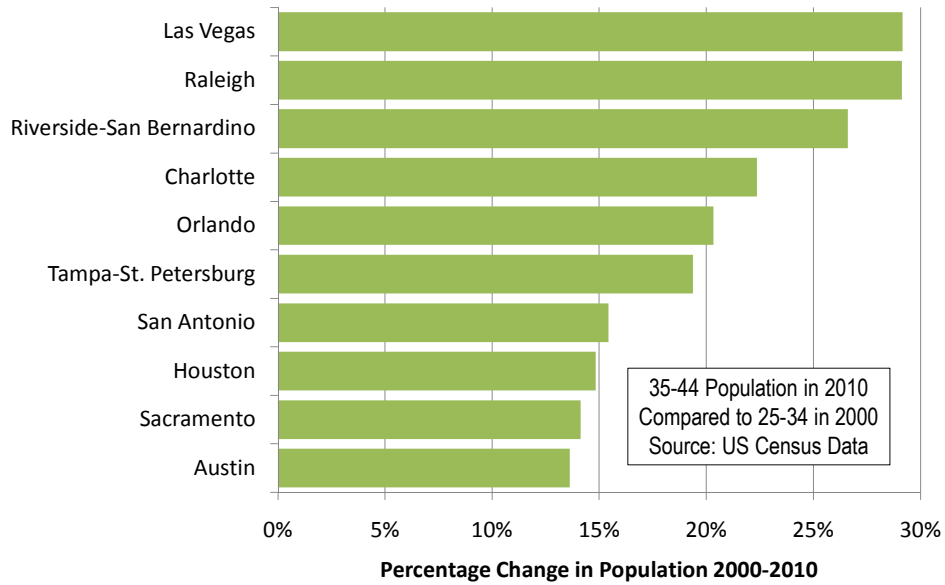


Figure 5

## Age 45-54 in 2000: Change by 2010 MAJOR METROPOLITAN & SMALLER AREAS

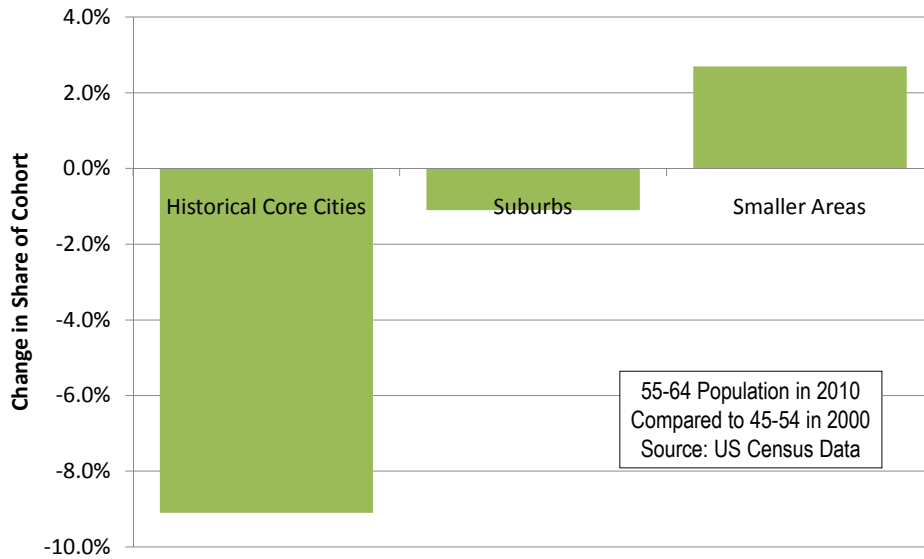
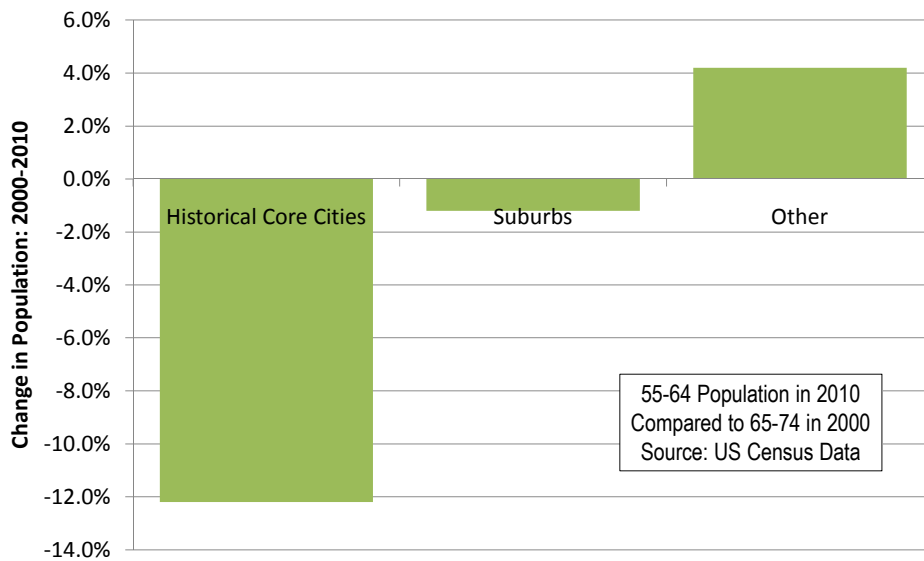


Figure 6

## Age 55-64 in 2000: Change by 2010

### MAJOR METROPOLITAN AREAS: CORE & SUBURBAN



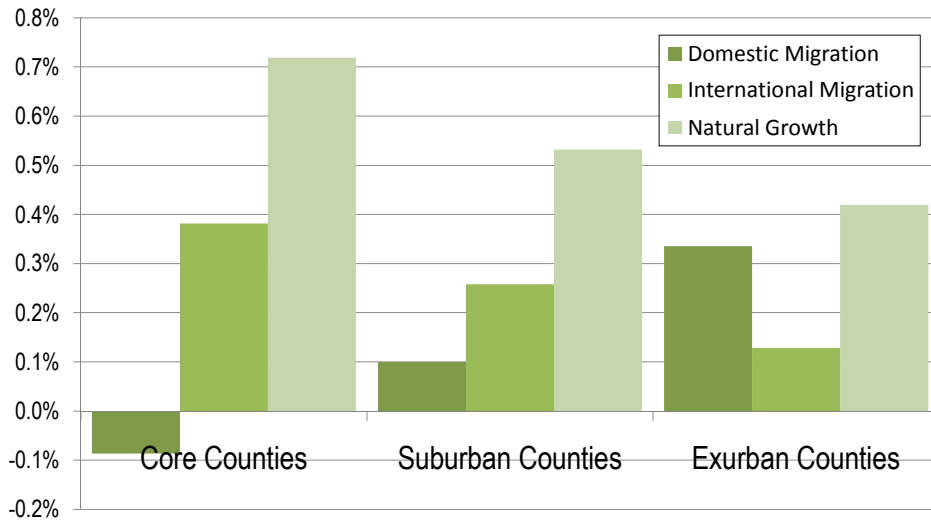
**Figure 7**

**2010-2011 Metropolitan Trends:** The continuing suburbanization that emerges from the 2000 to 2010 period may appear to be at odds with the recent Census Bureau 2011 metropolitan area population estimates, which were widely mischaracterized as indicating exurban (and suburban) losses and historical core municipality gains.

In fact, core counties lost domestic migrants, which means there could not be a movement from suburban, exurban or other areas to the cores. At the same time suburban and exurban counties gained domestic migrants (Figures 8 and 9). The better performance of the core counties resulted from higher rates of international migration, more births in relation to deaths and an economic malaise that has people staying in (counties are the lowest level at which migration data is reported). Suburban and exurban growth rates have declined, principally because domestic migration has dropped significantly, a dynamic that is to be expected in a period of steep recession and economic malaise. However, *all* net domestic migration increases were in the suburban and exurban counties (while the core counties and other areas of the nation lost domestic migration).

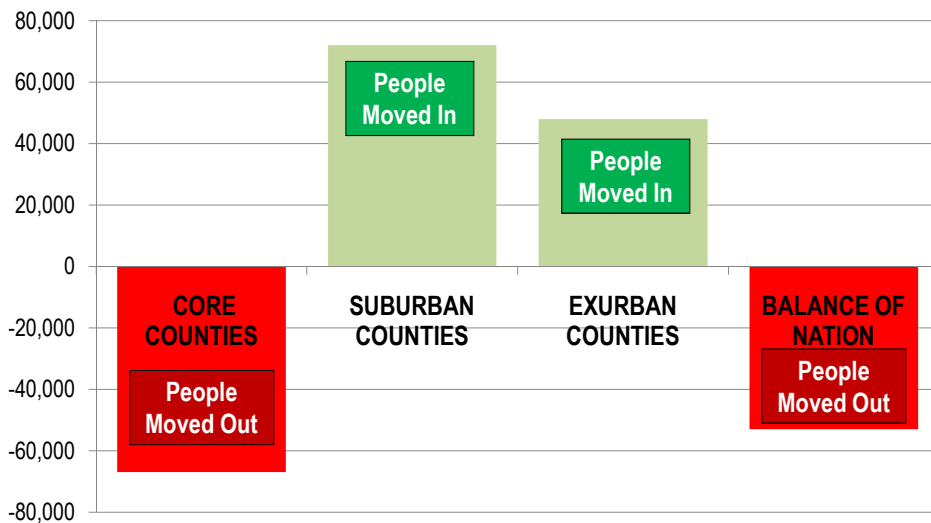


## Percentage Population Change by Sector 2010-2011 MAJOR METROPOLITAN AREAS



**Figure 8**

## Major Metropolitan Area Trends: 2010-2011 PEOPLE MOVING IN & OUT OF CORES, SUBURBS & EXURBS

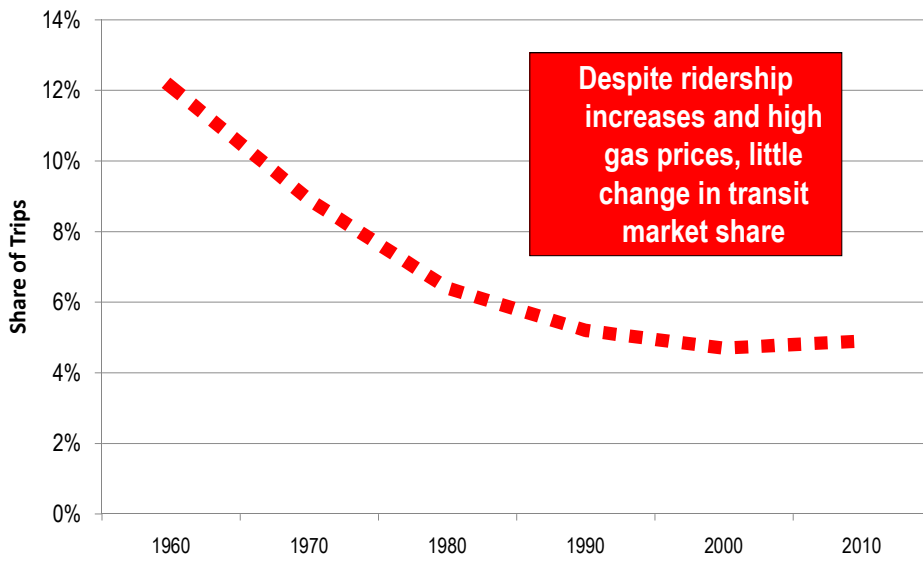


**Figure 9**

### Transit Trends

The 2000s were the best decade for transit since the 1940s, when ridership increased approximately 30 percent. After declining in the 1930s, World War II and its austerity strategies brought a huge increase with record ridership in the middle 1940s. During the 1950s, ridership fell nearly 50 percent, reaching its lowest point since before 1910. In each of the following four decades, the decennial census found that fewer people rode transit to work. That decline was reversed between 2000 and 2010, as transit commuting rose from 5.9 million to 6.7 million. Transit's share of work trips recovered, from its low of 4.6 percent in 2000 to 4.9 percent in 2010 (Figure 10).

## Transit Work Trip Market Share 1960-2010: UNITED STATES



**Figure 10**

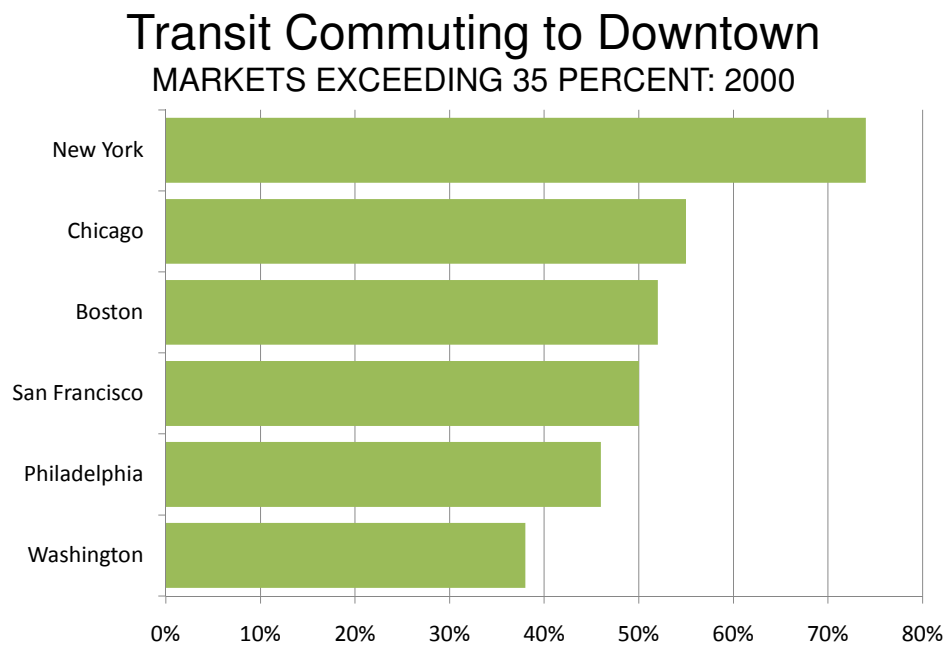
Transit's market share increase between 2000 and 2010 could be considered modest, especially in view of the large gasoline prices increases that occurred at the same time. Gasoline prices increased more than 80 percent (not inflation adjusted) in the decade. There were strong increases in commuting by transit in some metropolitan areas. As in the past, the national trends were defined by the New York metropolitan area, which represents nearly 40 percent of transit commuting and by itself accounted for more than one-half of the increase in commuting between 2000 and 2010. New York's transit work trip market share increased from 27.4 percent in 2000 to 30.7 percent in 2010.

Approximately 81 percent of the commuting increase was in transit's seven strongest metropolitan markets, including New York, Chicago, Washington, Los Angeles, San Francisco and Philadelphia. By 2010 these seven metropolitan areas made up approximately 70 percent of the nation's transit commuting.

However, these seven metropolitan areas accounted for only 10 percent of the nation's growth from 2000 to 2010. Thus, the remaining 90 percent of the population growth experienced only 19 percent of the increase in transit commuting.

Transit's great strength is the commute market to the nation's largest downtown employment centers. Nearly 75 percent of commuters to New York's central business district (south of 59th street) reached work by transit in 2000, while nearly 60 percent used transit to reach downtown Brooklyn,<sup>11</sup> the Chicago Loop and Boston's Hub use transit to get to work. More than 45 percent of commuters use transit to downtown San Francisco and to downtown Philadelphia, while 38 percent of commuters to downtown Washington used transit (Figure 11).<sup>12</sup>

However, transit market shares are far lower in other parts of metropolitan areas. This is illustrated by the fact that downtowns account for more than one-half of the transit commuting in the metropolitan areas (Figure 12) with five of the six largest downtown transit markets (all except Philadelphia). This is a substantially higher share of transit commuting than the 15 percent average employment share that these downtowns represent of their respective metropolitan employment markets.



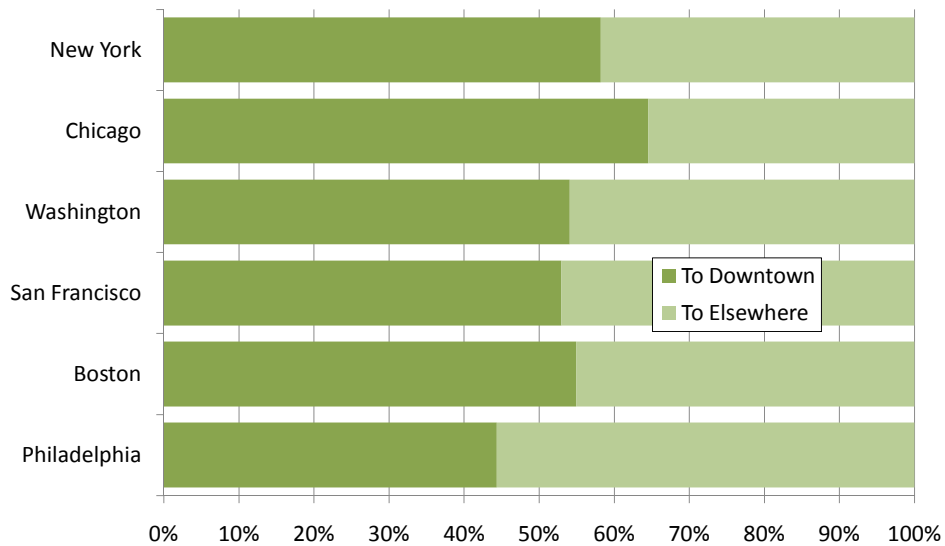
**Figure 11**

<sup>11</sup> [www.demographia.com/db-nyc-employ.pdf](http://www.demographia.com/db-nyc-employ.pdf)

<sup>12</sup> <http://www.demographia.com/db-cbd2000.pdf>

## Destination of Transit Commuters

### STRONGEST TRANSIT METROPOLITAN MARKETS: 2000



**Figure 12**

The extent to which transit is not available as an alternative to the automobile is illustrated by Brookings Institution research. Brookings provides an unprecedented glimpse into the potential or more accurately, the challenges that transit faces to make a more meaningful contribution to mobility in the nation's metropolitan areas. *Missed Opportunity: Transit and Jobs in Metropolitan America*, provides estimates of the percentage of jobs that can be accessed by transit in 45, 60 or 90 minutes, one-way, by residents of the 100 largest US metropolitan areas.<sup>13</sup> The report is unusual in analyzing what transit systems are, according to co-author Alan Berube characterized as Alan Berube put it, "what they are capable of."<sup>14</sup>

***Transit: Generally Not Accessible:*** Moreover, the Brookings access indicators go well beyond analyses that presume having a bus or rail stop nearby is enough, missing the point the availability of transit does not mean that it can take you where you need to go in a reasonable period of time. For example, in the seven largest transit markets, transit stops are accessible to 90 percent of the population, yet only 8 percent of the jobs are accessible in 45 minutes (Figure 13).

According to Brookings, only 5.6 percent of jobs in the nation's 29 metropolitan areas with more than 2,000,000 population can be reached by the average resident in 45 minutes, the 45 minute job access average was 5.6 percent, ranging from 12.6 percent in Boston to 1.3 percent in Riverside-San Bernardino. New York's 45 minute job access was 9.8 percent (Figure \$\$\$).

<sup>13</sup>

[http://www.brookings.edu/~media/Research/Files/Reports/2011/5/12%20jobs%20and%20transit/0512\\_jobs\\_transit.pdf](http://www.brookings.edu/~media/Research/Files/Reports/2011/5/12%20jobs%20and%20transit/0512_jobs_transit.pdf)

<sup>14</sup> [http://www.brookings.edu/events/2011/0512\\_transit\\_jobs.aspx](http://www.brookings.edu/events/2011/0512_transit_jobs.aspx)

The average one way work trip travel time in the United States is approximately 25 minutes. Approximately 68 percent of non-- transit commuters (principally driving alone, but also car pools, working at home, walking, bicycles, taxicabs and other modes) were able to reach work in less than 30 minutes. The overwhelming majority, 87 percent, were able to reach work in 45 minutes or less, many times the access by transit. Further, transit's average work trip travel time was nearly double that of driving alone in 2010.

## Transit Access in Major Metropolitan Areas

### ACCESS TO TRANSIT STOPS/ACCESS TO JOBS

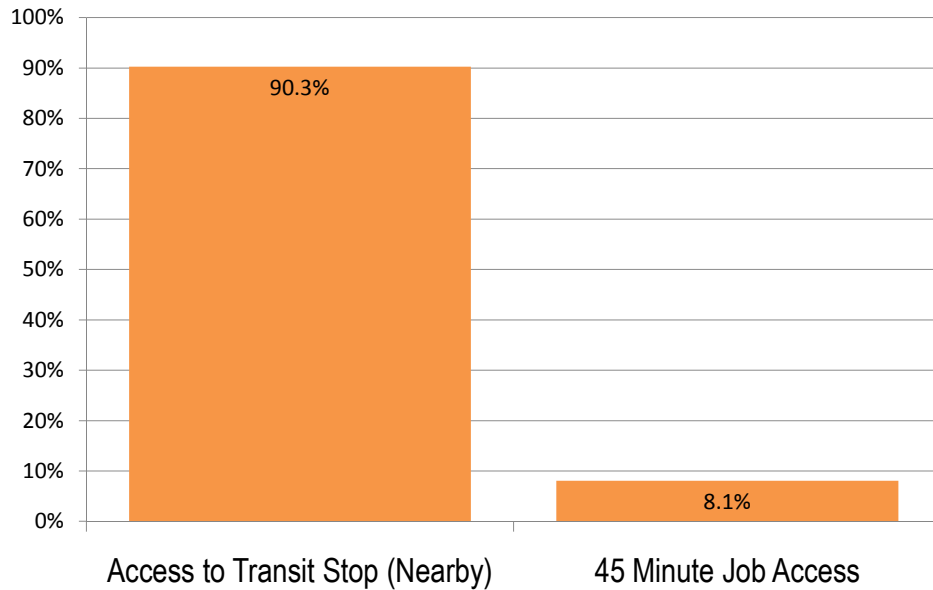
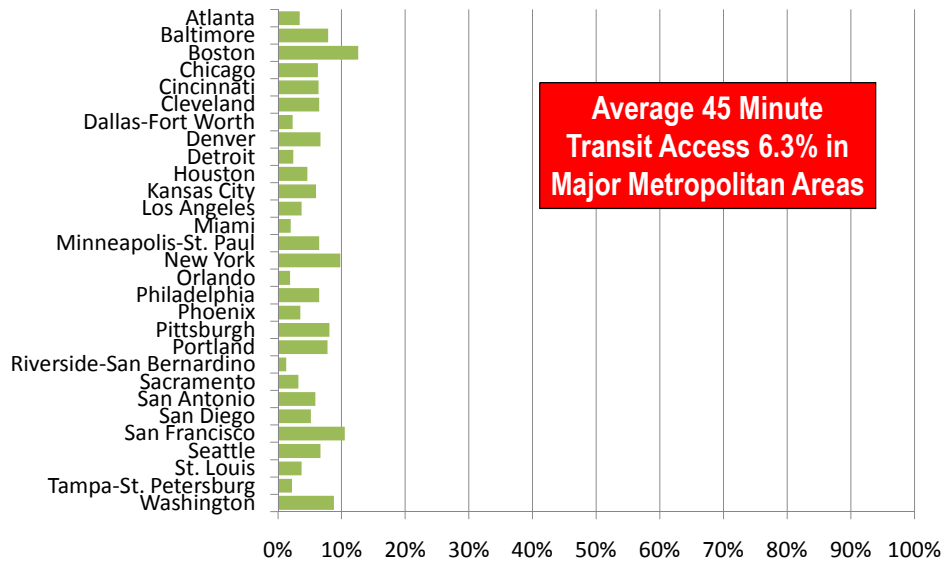


Figure 13

## Transit: 45 Minute Job Access

### METROPOLITAN AREAS OVER 2,000,000: 2008



**Figure 14**

**Low Income Commuting:** The extent to which the demographics of metropolitan areas have worked against transit is illustrated by the fact that low income workers principally rely on cars to get to work, like other workers.

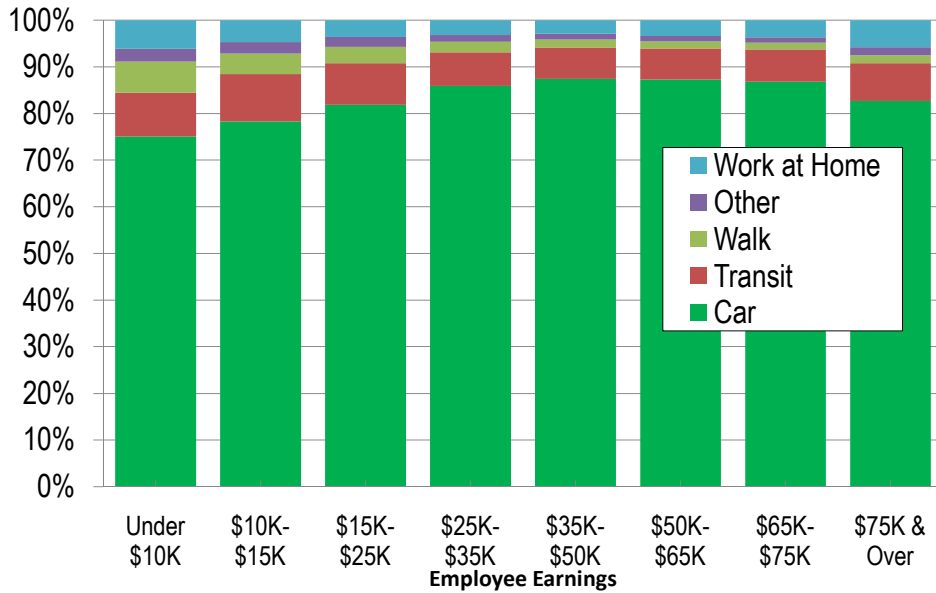
This is illustrated by a compilation of work trip data from the five – year American Community Survey for 2006 to 2010. In the nation's 51 major metropolitan area (more than 1,000,000) population, 76.3% of lower income employees use cars to get to work. By comparison, 83.3% of all employees use cars for the work trip. Overall, 8 times as many lower income citizens commuted by car as by transit. In this analysis, lower income citizens are defined as employees who earn less than \$15,000 per year, which is approximately one-half of the median earnings during the. (\$29,701).

Perhaps most surprising is the fact that only 9.6% of lower income citizens used to transit to get to work. This is somewhat higher than the 7.9% of all workers in the major metropolitan areas who use transit. Lower income employees also walked, used other means of transport and worked at home in greater frequency than all employees.

In fact, the automobile was the dominant provider of work trip mobility in all income categories. This includes the lowest category of income, under \$10,000, in which 75.1 percent of commuting was by car, three times that of all other modes combined and eight times that of transit (Figure 15).

## Work Trip Market Share by Income

US MAJOR METROPOLITAN AREAS: 2006-2010 (ACS)



**Figure 15**

### Transit Expenditures

Transit also faces challenges in delivering ridership increases that correspond to expenditure increases. Since 1982 (the year before federal gas tax funding began), transit expenditures have risen 138 percent, after adjustment for inflation. Passenger travel, in passenger miles, have increased 42 percent, less than one-third the increase in expenditures (Figure 16). There are various reasons for this, such as unit operating costs that are rising faster than inflation, the generally lesser productivity of expanded service (since the services with the most demand are already provided) and the expansion of more expensive modes (principally rail) in the mix of transit offerings.

Whatever the causes of these expenditure increases, the reality is that they mean that a new real increases in expenditures are not likely to result in corresponding increases in ridership.

One potential for improving the level of transit service provided within existing revenues is competitive tendering, which is discussed in more detail by other participants. The Appendix provides basic information about this alternative, with more detailed information on perhaps the most successful program so far implemented, at London Transport (Transport for London) between 1985 and 2001. Material progress on similar reforms has been very limited in the United States, with the most successful experiences having been in San Diego and Denver (a legislatively mandated program).

## Transit Ridership & Expenditure Trend 1982-2009

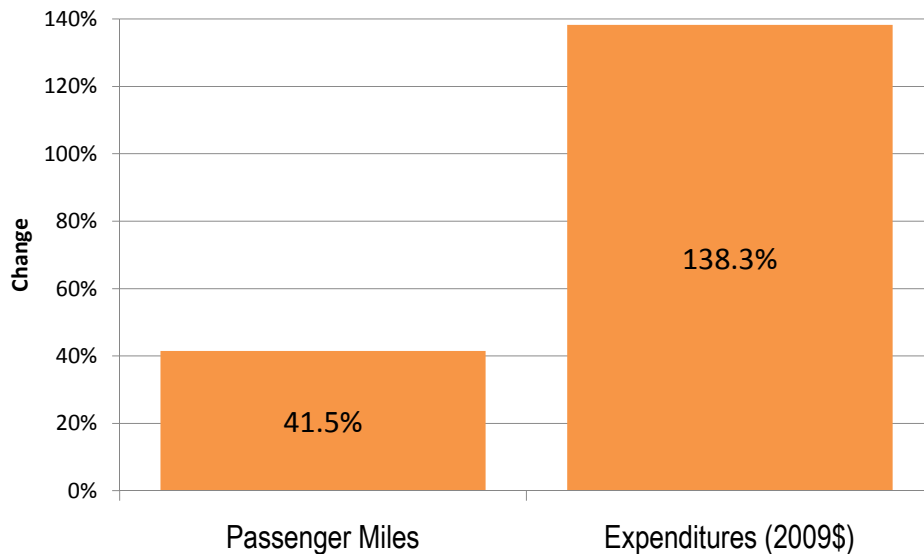


Figure 16

### The Future?

Transit thus faces a difficult future. Demographic trends continue to be unfavorable. The dispersed nature of employment in metropolitan areas makes it virtually impossible for transit to effectively compete in most market segments. Funding is likely to be restricted in the future. However, it is likely that even substantial amounts of any revenue increases in funding would not be accompanied by corresponding ridership increases.

At the same time, it is unlikely that transit will experience material real declines in expenditures. The experience on both sides of the Atlantic makes it clear that serious funding cuts make far better rhetoric than politics. It thus seems likely that transit will continue a role similar to that of the present and that, should significant progress occur, it will be the result of internal reforms, which have been prevented largely by politics up to this point.

### Appendix: Competitive Tendering

Transit service is increasingly being provided in the high-income world by private operators through competitive tendering. The principal reason for this development is achievement of market determined unit costs, which allows service to be maximized. In some metropolitan areas, private operators provide most transit service without subsidies (such as in Tokyo, Osaka-Kobe-Kyoto, Nagoya and Hong Kong). This section summarizes the practice, and provides information on the world's largest competitive tendering project, the London bus system.



As transit systems became more expensive, governments began experimenting with service provision forms incorporating competition. Competitive tendering has occurred in a number of urban areas in Europe, Australia, the United States and elsewhere.

**Summary:** Competitive tendering allows this policy control to continue, without the requirement for all services to be operated by the transit authority itself.

- The transit agency retains policy control of system and continues to make all policy decisions. The transit agency determines route alignments, establishes timetables, sets fares and determines vehicle and safety standards.
- Service is provided by operators that are selected through a competitive process that uses requests for proposals. A contract is executed for a specific period of time --- usually five years or less, with a new competitive process beginning late in the contract period.. Individual procurements may be for single routes, packages of routes, geographical sectors or even entire transit systems.
- The operators themselves may be private companies, or public operators selected through an objective evaluation process. Generally, contracts are awarded to the lowest cost operator demonstrating the financial and technical ability to provide the service.
- Fares remain the property of the transit agency. Fares are remitted to the transit agency, which pays the private operator the amount specified in the contract per hour or kilometer of service. As a result, it does not matter whether the competitively tendered routes are among the least or most productive in terms of fare recovery

Service quality is typically the same or higher than without competition. Moreover, ridership tends to rise, at least partially because the transit agency is able to afford to provide higher levels of service with the savings.

The result is a transit system provided competitively, at competitive costs and guaranteed by the transit agency. Passengers are generally not aware of the difference between competitively tendered service and service operated directly by the transit authority. Buses appear the same, whether operated by private companies or the transit authority. Fares are the same, and transfers from one route to another are unchanged.

The cost reductions are generally of two types.

- **Direct Savings:** Direct savings are the difference between the non-competitive cost of operating a service and the market based cost established through competitive tendering. Direct savings occur from services that are produced at market rates.
- **“Ripple Effect” Savings:** The “ripple effect” or “competitive effect” produces savings as transit agencies reduce the cost of their non-competitive services in response to competition.

**London:** Transport for London (formerly London Transport) manages the largest transit bus system in the world, with more than 6,000 vehicles (service area population: 7 million). From 1970 to 1985, bus costs per vehicle kilometer had risen 79 percent.<sup>15</sup> In response, the British parliament enacted legislation that lead to conversion of the entire bus system to competitive tendering. By 1999, the conversion had been virtually completed. The results are as follows: (Table #1):<sup>16</sup>

- Costs per vehicle kilometer were reduced 48 percent from 1985 to 2001 (inflation adjusted).
- Overall annual expenditures, capital and operating, dropped 26 percent.
- Despite the lower expenditures, the lower operating costs per kilometer permitted service to be expanded 26 percent.
- Productivity --- measured by the level of service produced per unit of currency rose 91 percent, or 4.1 percent annually.

Table #1 Competitive Tendering in London	
Period	1985-2001
Converted to Competition	100%
Total Expenditures	-26%
Change in Service Level	42%
Change in Unit Costs	-48%
Change in Productivity (Service/\$)	91%
Annual	4.1%

<sup>15</sup> Unless otherwise noted, all financial data is inflation adjusted.

<sup>16</sup> All information from or calculated from London Transport Annual Reports.