

**TESTIMONY BEFORE  
THE  
US HOUSE OF REPRESENTATIVES  
COMMITTEE ON APPROPRIATIONS  
SUBCOMMITTEE ON  
TRANSPORTATION, HOUSING AND URBAN  
DEVELOPMENT, AND RELATED AGENCIES**

**TRANSPORTATION AND HOUSING LINKAGES  
PAST AND FUTURE**

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Mr. Chairman; Mr. Ranking Member and Distinguished Members, I am delighted to be here today to participate in this discussion about housing and transportation linkages in America today. My testimony addresses the fundamental causes of the important trends in commuting and other urban travel and how they interact with the question of housing location and costs. Much of it will be based on my research for the National Academy of Sciences Transportation Research Board in *Commuting in America III*. All members of Congress have received copies courtesy of AASHTO. As I have talked to the press a great deal since the latest publication in the *Commuting in America* series, I can tell you that housing is frequently as important in their questions as are congestion and other commuting issues. They see that they are very closely linked.

While I have been studying the work trip and work related travel for 40 years I must say that it is critical to recognize that the work trip today is a small and declining share of travel activity. We sometimes tend to focus perhaps too much on the commute trip as the source of all of our problems and the focus of our policy concerns. (see appendix table 1) So my immediate recommendation is the necessity to recognize all travel, freight as well as passenger, and the myriad other trip purposes in daily travel which are growing much faster than work travel, that must be considered in any comprehensive treatment of the subject. Having said that, the home and the work place are the two anchors for many of those other non-work trips that now claim increasing prominence—trips to the gym and market, drop-offs/pick-ups, etc.— they are as likely to start from work as home in many households. Therefore, for the majority of adults who work (and these constitute the majority of the adult traveling public), the workplace location is a major force in the stimulus for travel, the direction, location, and time of travel and the mode of travel as well.

As I have studied the subject over the years it is apparent that it has become increasingly complex. A brief summary of past trends is in order and then an identification of the key factors that will define the policy issues of the future in transportation but also in many respects in housing as well. I will close with some observations regarding the future.

## **A brief summary of past trends – Demography is truly Destiny<sup>1</sup>**

The Commuting in America III series, spanning more than 30 years, in effect serves as a history of the baby boom generation's working years. As that generation now moves from the working scene in the next few years it will generate the most important demographic challenge to the nation since the great immigrations of the 1900's . All of our working lives have been dramatically impacted by the realities of the baby-boom working years. The three dominant commuting patterns generated in that period are:

- An explosion in workers as the baby-boomers reached working age; and additionally a dramatically increased proportion of women joined the labor force;
- An explosion in auto ownership as vehicles became more affordable and women obtained expanded access to licenses and vehicles;
- The shift to today's dominant pattern of the suburb to suburb commute, replacing the suburb to center city flow as the iconic pattern, as first workers and their families, and then retail services and finally all job sectors followed them to the suburbs. (Figures 1-4 describe these patterns)

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<sup>1</sup> All data used here are from the decennial census series of the U.S. Bureau of the Census unless otherwise noted.

Figure 1 Workers added per Decade

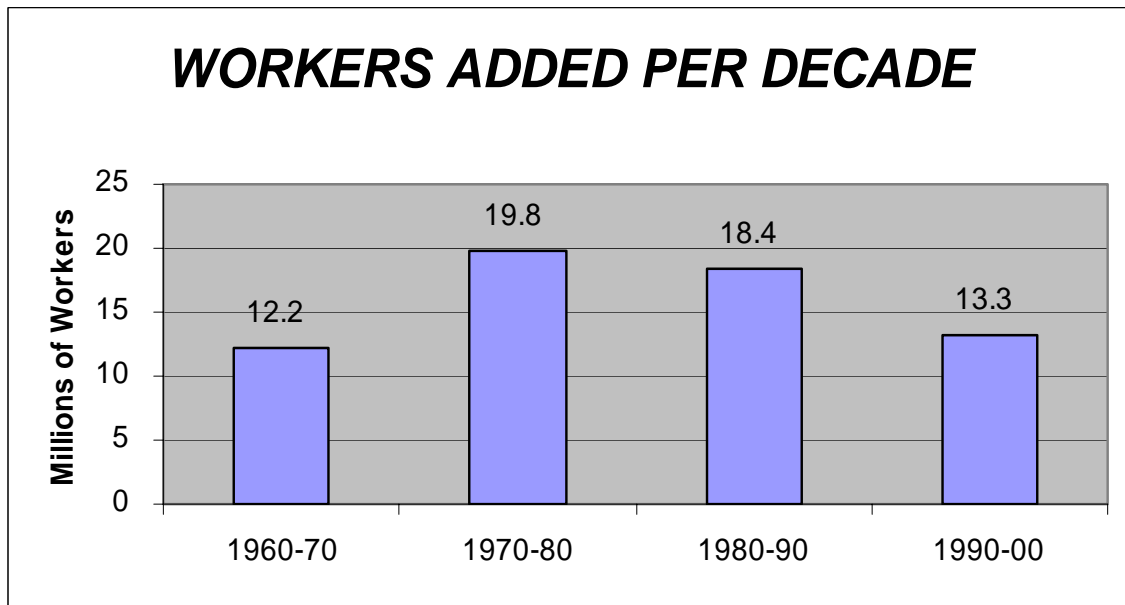


Figure 2 Vehicles owned by decade

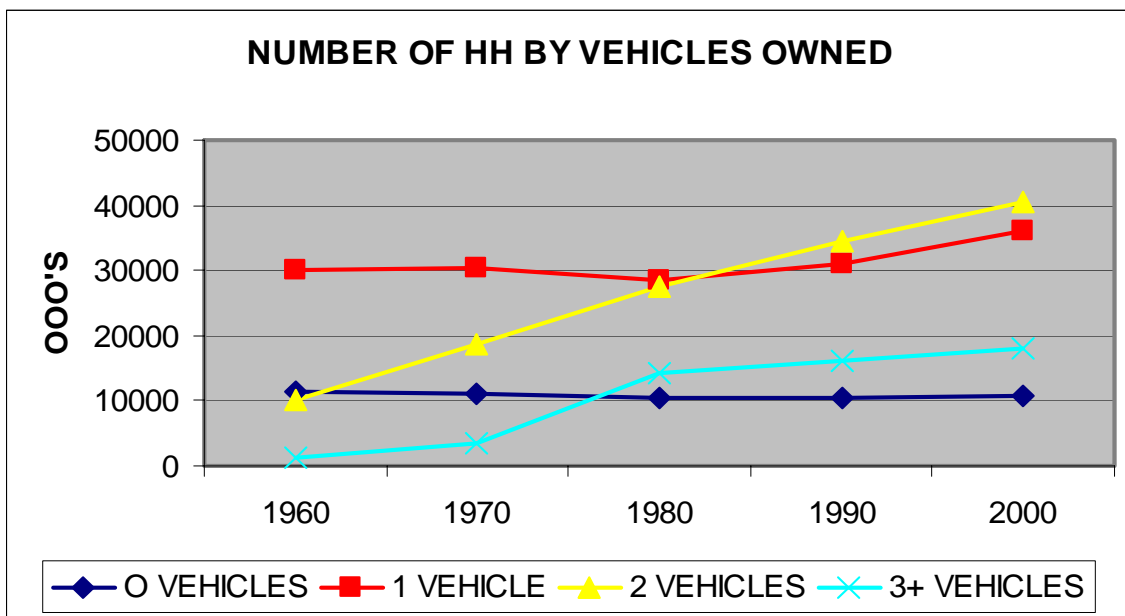


Figure 3 Metropolitan Flows

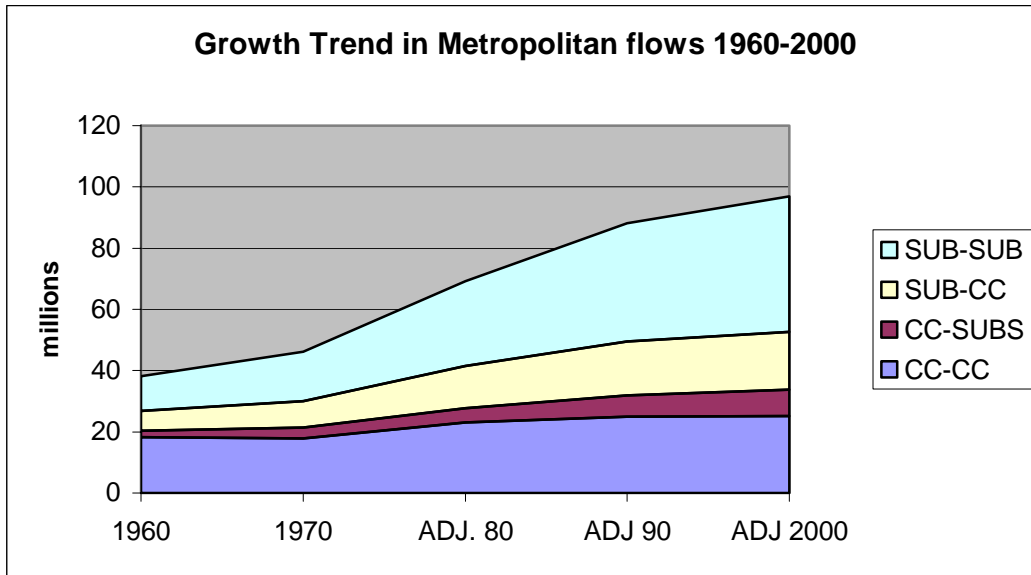
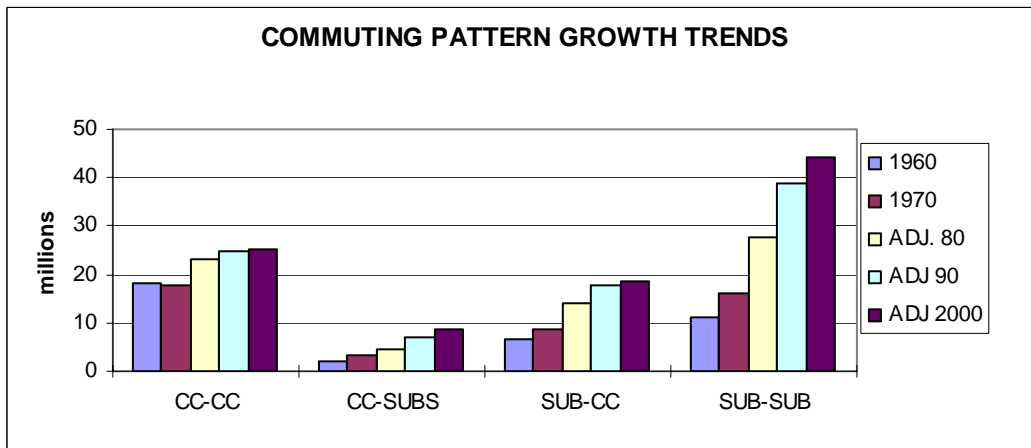


Figure 4 Metropolitan Flows Growth Trends



These nation-changing trends produced some critical new realities that need recognition. These realities help explain why some of the simplistic solutions often advanced regarding metropolitan location, travel and congestion just don't address the contemporary world. 100 years ago, perhaps, there was a time when workers lived outside the factory gate. At 7 am the whistle blew and the workers walked inside and went to work – great commute – five minutes tops. Some new realities intrude:

- Most workers are working in much smaller groupings today in services not manufacturing.
- Most workers (70%) live in a household with other workers – whose factory gate would they live next to?
- Most workers change jobs much more frequently these days – should they move to a new factory gate every time?

- Today a wealthier society has far greater choices as to what kinds of housing it enjoys and where that home might be located.
- Housing location is rarely defined by the job for these reasons -- other values schools, safety, attractiveness, cost dominate consideration.

While living outside the factory gate might have made some sense when incomes and mobility were far lower and when the work trip was dominant at about 40% of all trips. Today, at less than 20% of travel, the choice of a home is governed not by work location but by education needs, attractive surroundings, safety, space, amenities and costs. Who can possibly object to a society in which more and more people are free to live where they want and work where they want? As incomes rise we see that workers' trip lengths increase suggesting that there is a great value to that increased distance that they adopt as income permits. The American Housing survey indicates that only about 20% of movers cite being closer to work as a goal in changing homes.

As more and more jobs followed the workers to the suburbs, most notably following the skilled workers, important changes occurred.

- The job shifts to the suburbs permitted workers to leap frog high cost inner suburbs and go even farther out. Shifting one's home farther out has two key benefits – lower housing costs and faster commutes.<sup>2</sup>
- The shift in jobs to the suburbs has had another effect, increasingly true today, of permitting rural workers to begin to compete for those jobs. A major job center like Dulles Airport, for example, can attract people from West Virginia with a commute not especially different in time or cost from that of a worker from the District of Columbia commuting outward to compete for the same job.
- Rural workers are often tied to their local housing given family histories or relative costs so the long commute to metro fringe jobs is their only alternative.
- The shift of high-paying auto plant jobs to the South has generated extraordinary work trip lengths.
- As suburbs of adjacent metropolitan areas grew toward each other commutes began to cross between metropolitan areas. These are among the fastest growing patterns today.
- A new phenomena is developing as the very large baby boom generation approaches retirement with many pre-retirement workers moving to their intended retirement homes on the rural fringe accepting the long commuting distances back to their jobs for the few remaining years of work.

One of the keys to understanding current patterns is to recognize the immense importance of time in our very busy society. Transportation is all about time and distance. In many

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<sup>2</sup> It must be recognized that the last 10 or so minutes of a commute are the highest pay-off minutes in terms of miles covered and the increased access to affordable land and housing. Each additional minute buys more than the previous. The willingness to go a little farther is strongly rewarded.

ways the US has overcome the tyranny of distance which has challenged our vast country and so it is the trade-off between travel costs and travel times that is critical.

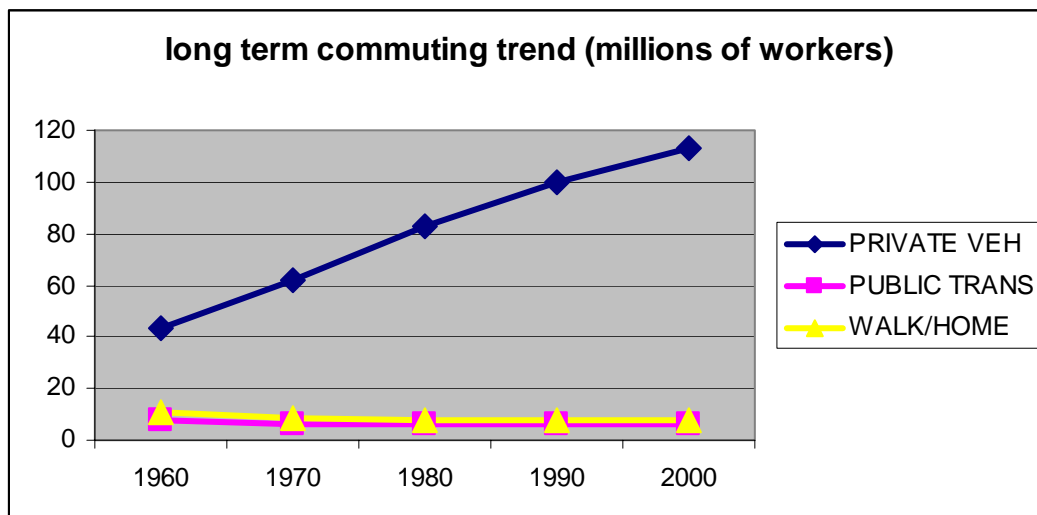
Particularly, among working women, juggling home, job and family obligations, time pressures are central to their decisions. As women's jobs have become more like men's their work trips have also – farther from home, longer in length and time, more peak-period oriented, more oriented to the personal vehicle. A phenomenon we call the trip chain has grown in significance in which many life-style activities take place on the way to and from work – drop off kids, laundry, videotapes, etc.; a very time-saving, fuel efficient activity but one which makes the car pool and transit use almost impossible.

I consider today's work trip mode use patterns, as shown in Table 1 and in Figure 5 to be largely a product of time pressures, the affordability of the personal vehicle, as well as the new dominant trip patterns.

Table 1 TOTAL MODAL USAGE (thousands)

	1980		1990		2000		20 yr CHG
	NUMBER	PERCENT	NUMBER	PERCENT	NUMBER	PERCENT	
TOTAL WORKERS	96617	100.00%	115070	100.00%	128279	100.00%	31662
DRIVE ALONE	62193	64.37%	84215	73.19%	97102	75.70%	34909
CARPPOOL	19065	19.73%	15378	13.36%	15634	12.19%	-3431
TRANSIT	6008	6.22%	5889	5.12%	5869	4.58%	-139
TAXI	167	0.17%	179	0.16%	200	0.16%	33
MOTORCYCLE	419	0.43%	237	0.21%	142	0.11%	-277
BICYCLE	468	0.48%	467	0.41%	488	0.38%	20
OTHER	703	0.73%	809	0.70%	901	0.70%	198
WALKED ONLY	5413	5.60%	4489	3.90%	3759	2.93%	-1654
WORK AT HOME	2180	2.25%	3406	2.96%	4184	3.26%	2004

Figure 5 Long Term Mode Usage Trend

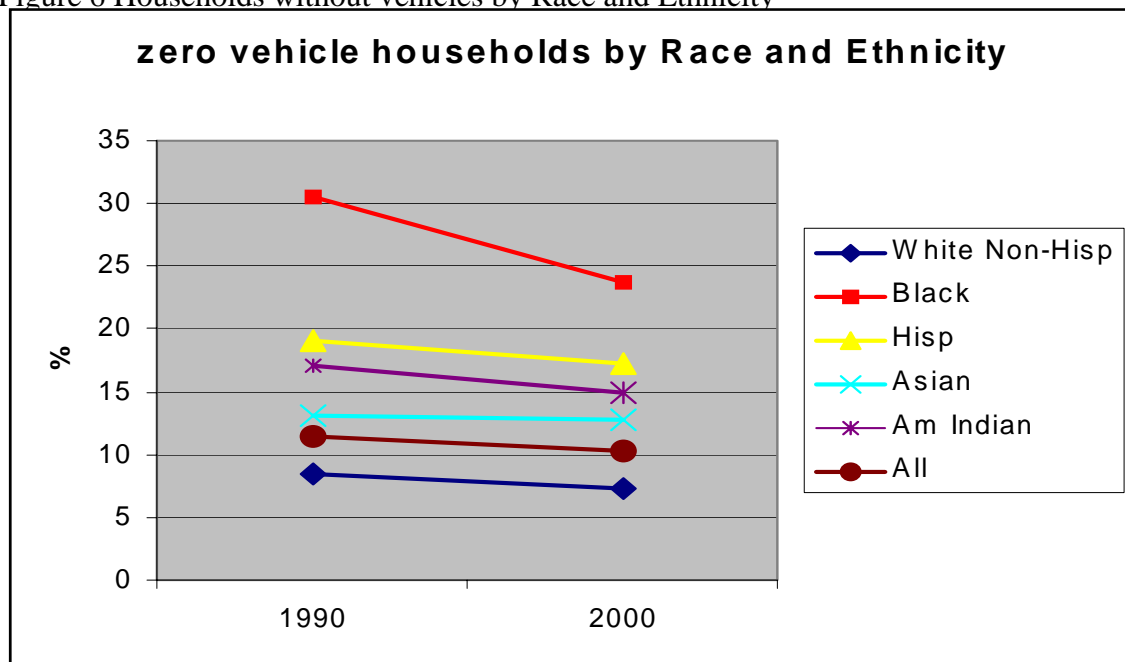


Despite massive investments in transit facilities, the share of transit in the work trip now hovers below 5% nation-wide and below 2% for all trip purposes. There have been recent transit successes particularly in western metropolitan areas which have traditionally had limited transit utilization. Again, the decline is largely attributable to the pressures of time in most households where the need to have personal control of mobility is key and the relative affordability of the personal vehicle. The highly dispersed patterns of jobs and households is also a factor – all transit systems are radially-oriented, focused on the center, like spokes on a wheel, but most work and other travel patterns are circumferential in nature and go nowhere near the center. Transit tends to serve best those trip patterns that are not today’s growing patterns.

The decline of the carpool is also worth discussing. In 1980 the carpool accounted for about 19 million commuters, almost 20% of commuting. Recent data (2005) indicate that it has shrunk to 10%. The advent in the average household of the second and the third vehicle had a great deal to do with that but just as significant were the disparate times and locations of work trips – much less uniform than the past – so the prospect of having someone going where you’re going, when you’re going is very slim. Most of the losses in carpools were in the larger 3 plus pools. The two person pool is now largely a fam-pool where household members have the opportunity to travel together. Only the advent of Hispanic immigrant workers, with their heavy orientation to pooling, has saved carpooling from further declines.

Figure 2 above documents the strong growth in second and third vehicles. This makes the point that perhaps the most significant technological change in transportation in recent decades has been the longevity of the vehicle fleet. The average vehicle age now exceeds nine years. This means that very serviceable vehicles can be had by lower income households at low cost giving them access to more job opportunities and to the broader high mobility society. While minorities have not caught up with the majority population yet in vehicle ownership they are gaining rapidly. As their incomes rise their auto ownership and their orientation to suburban development will as well. Figure 6 shows the trend in households without vehicles; these trends continue into this decade.

Figure 6 Households without vehicles by Race and Ethnicity



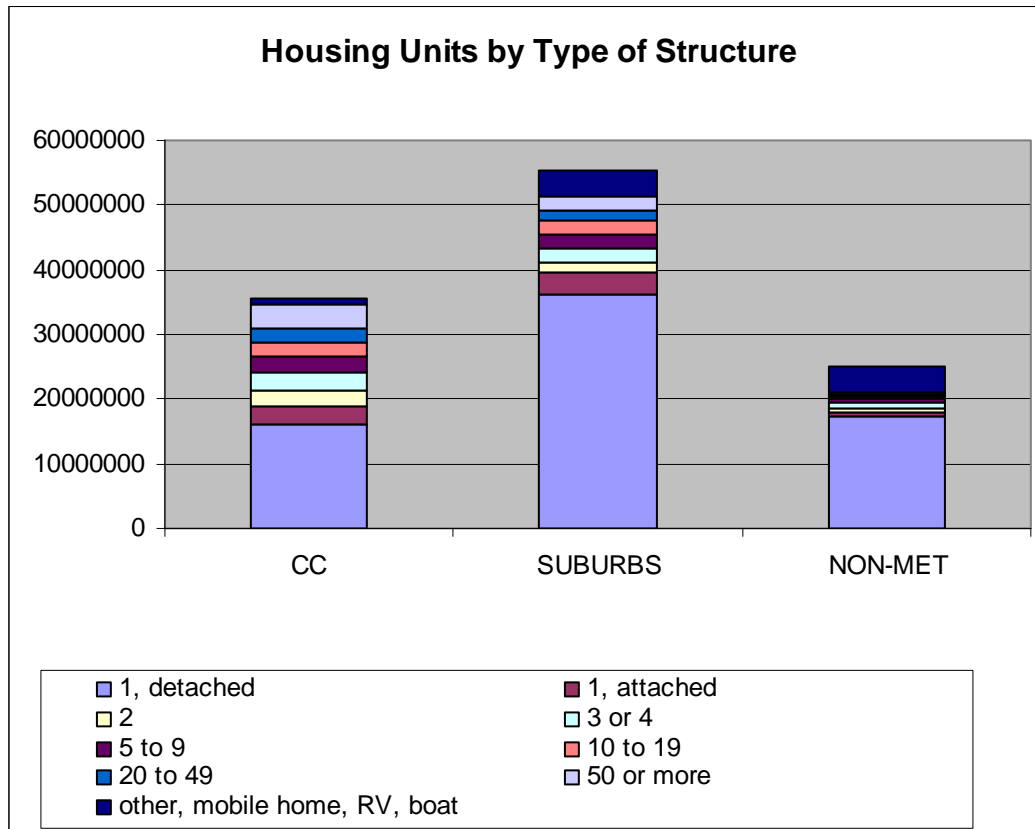


## Housing, Households and Vehicles

At the 1940 census home ownership was at its lowest level as a result of the depression (43.6%), by 1960 it had reached 60% and has climbed slowly ever since. Of the 105.5 million households in America at the 2000 census, two-thirds lived in their own homes, approximately 70 million households, accounting for roughly 75% of the population.

The distribution of housing units is shown in Figure 7. One of the key points in the figure is the strong emphasis on single family units. About 70 million among the 116 million housing units in the nation are single family detached units, i.e. a stand alone home on its own lot, and another 6.5 million are single family attached units, generally two units sharing a common wall. Even in central cities they are the majority. Another point worth noting is that just the single family units in America's suburbs outnumber all the housing units in central cities. An extraordinary fact is that the number of persons living in mobile homes exceeds the number living in 50 unit or larger apartments.

Figure 7. Housing Units by Type



There are strong linkages between housing ownership, structure type, vehicle ownership and workers that can only be sketched here. Figure 8 shows the relationship between vehicle ownership and housing tenure. The largest share of households without vehicles are renters, and their share declines with increasing vehicles per household. Finally, Figure 9 shows the relationship between workers per household and housing tenure with

sharp reductions in shares of rental households with increasing numbers of workers per household.

Figure 8 Vehicle Ownership and Housing Tenure

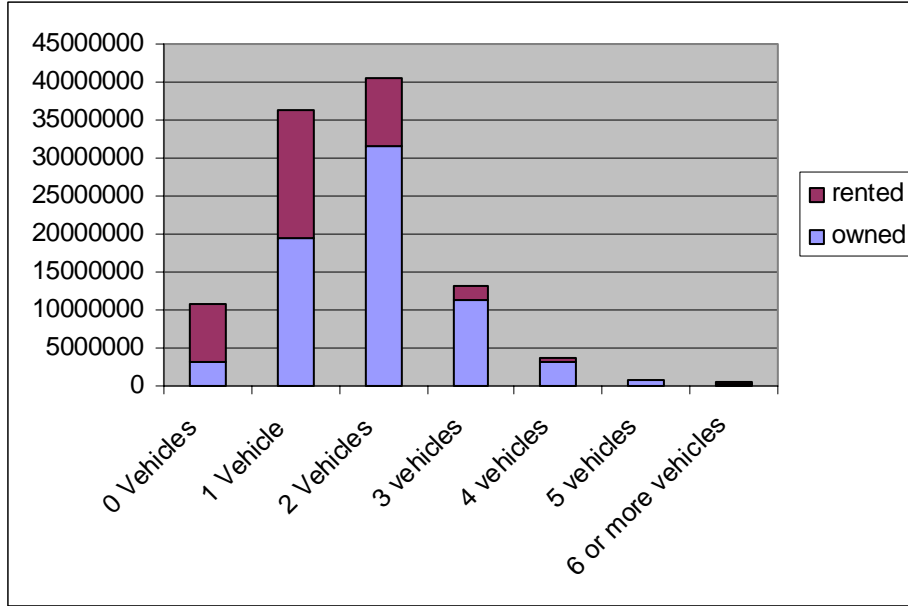
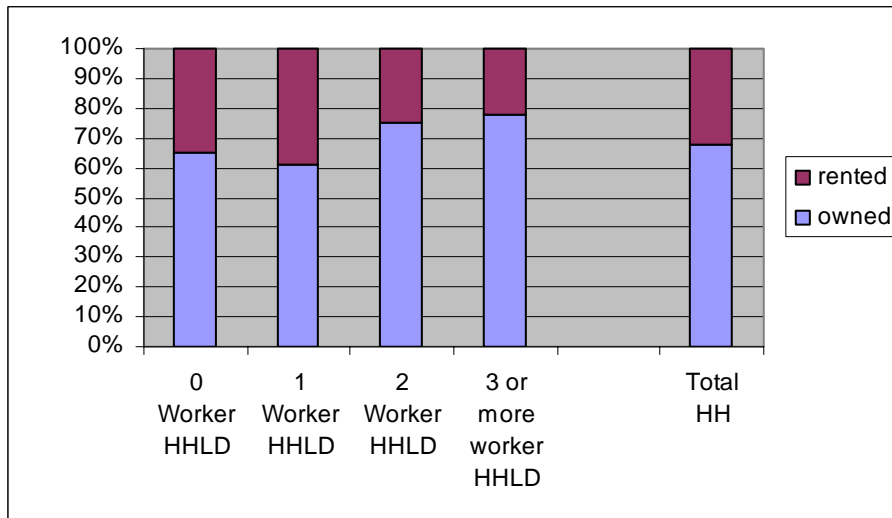


Figure 9 Number of Workers per household by Housing Tenure



## Housing Patterns and the Extreme Commute

There are three interrelated patterns observed in Commuting in America III that are closely linked to housing attributes. These three, addressed below, are:

1. **Extreme Commutes** –there has been an extraordinary rise in commuters traveling more than 60 minutes and more than 90 minutes;
2. **Early Departures** – a related trend in workers leaving home before 6 am;
3. **Workers leaving their home counties to work** – recent years have seen strong increases in the export of workers from their home counties.

Part of the pressures generating early morning commutes that are long is the congestion in the peak periods. This pushes travelers that want to avoid that congestion to the “shoulders” of the periods. These shoulders have been expanding wherein the numbers traveling before 6 am has grown dramatically. The peak period which had 69% of commuters in 1990 is now down to 64%.

About 10 million commuters are now commuting more than an hour and about a third of those more than 90 minutes, according to census figures. The plus 60 minute commute grew twice as fast as commuting in general and the 90 plus minute commute grew at five times overall commuting. Examining these patterns suggests that half of those commuting over 60 minutes may be victims of congestion, particularly in the largest metropolitan areas, but the other half are trading that commute time for something they value – being in a nice area, lower housing costs, being near something else that they value – the sea shore perhaps.

More than 94 million commuters in 2000 worked within their county of residence, but that leaves more than 34 million who are exported each day from their home county to a work site, compared to an estimated 20 million in 1980, an 85% increase in that period, and more than 3 and a half times the number in 1960.

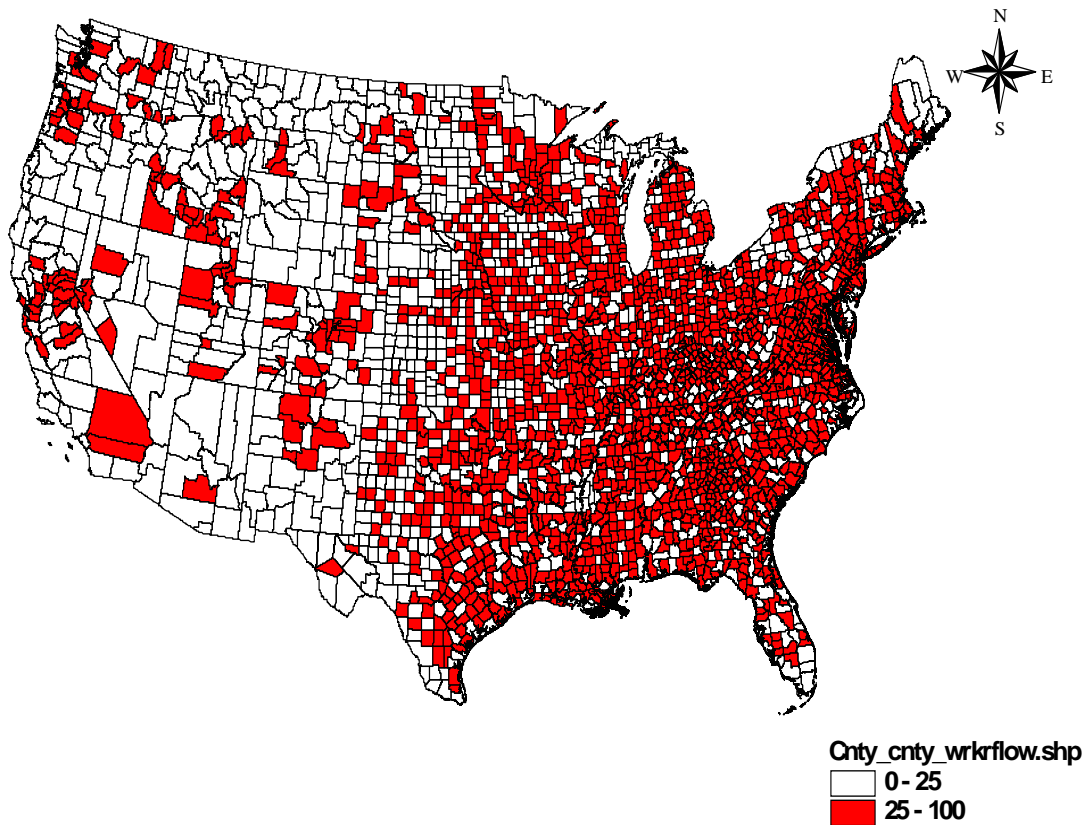
The 90's witnessed dramatic increases in the numbers of workers leaving their home county to work. That share has risen from under 24% to almost 27% in 10 years. Of the new workers added in the decade, about 51% worked outside their home county, an extraordinary change continuing into this decade. At the state level no state had a decrease in share of workers leaving their residence county to work. Some had prodigious increases; several more than doubled the percentage of those leaving. States that doubled their shares of workers leaving their home county to work were: New Hampshire and Delaware. West Virginia, Rhode Island and Kansas were close to doubling. In all, eleven states have more than a third of their workers leaving their residence county to work. Virginia, has more than half ; and Maryland and New Jersey are close to that.

The tendency to work within one's home county declines as the size of the metropolitan area increases; from small towns to the mega-metropolitan centers. The percentage of commuters leaving their home county roughly doubling between areas below 100,000 and areas over a million. This matters greatly because crossing county boundaries at least permits the inference that such trips are longer than trips wholly inside the county borders. Given that average work trip lengths in miles have been rising steadily over the years would bear this out.

The map shows the counties with more than 25% commuting outside the county in 2000. The growth in the number of such counties, even in the west where counties are much larger, are quite significant and growing rapidly.

Map 1 Counties with more than 25% commuting outside the county

### County-to-County Worker Flow Percentage: 2000

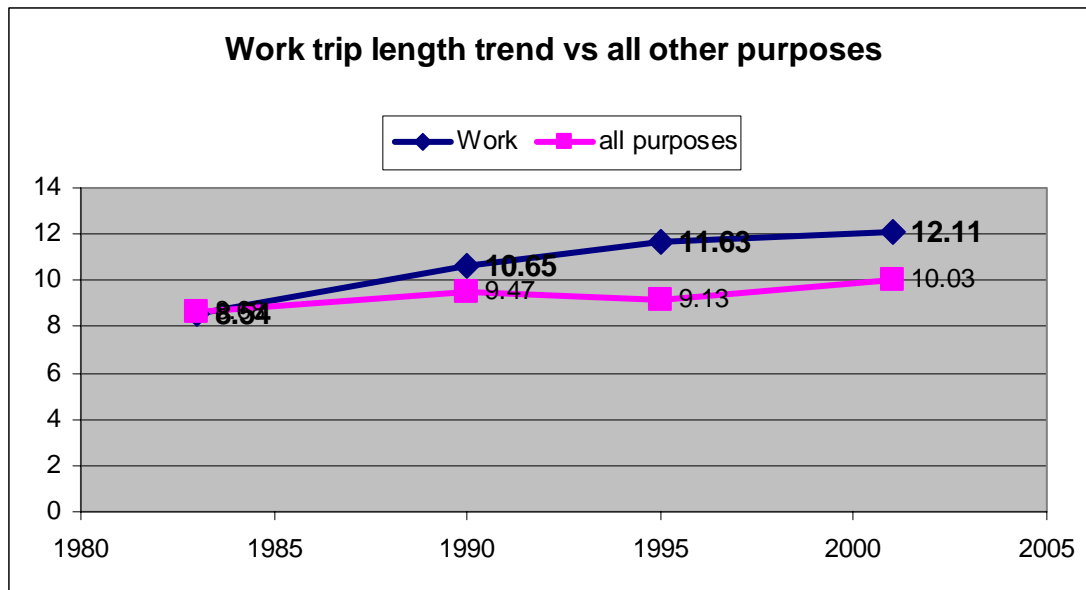


Some see the heavy flow of workers as a product of a lack of balance between jobs and workers at the county level. The sense is that if we could bring the jobs and workers closer together in numbers workers would be closer to their jobs and commutes would shrink. While in the ideal this may be a possibility actual experience gives little support. Actually, the gaps between workers and jobs in the suburbs and jobs and workers in the central cities have been shrinking at the same time as the new commute trends were emerging. The critical factor is the match of job skills between workers and jobs. Increasing specialization of the labor force makes this “balance” almost impossible – nor it is clear that it is particularly desirable.

**Homes Work and Trip Length**

One of the obvious ways in which the relationship between home and workplace is elucidated is in work trip length. Figures 10 shows that work trip lengths have increased over time, roughly by almost 14% from 1990 to 2000.<sup>3</sup> Note that trips for other purposes have also increased in length but not as much as work trips.

Figure.10 Trip Length Trend for Work Trips and Trips of All Purposes

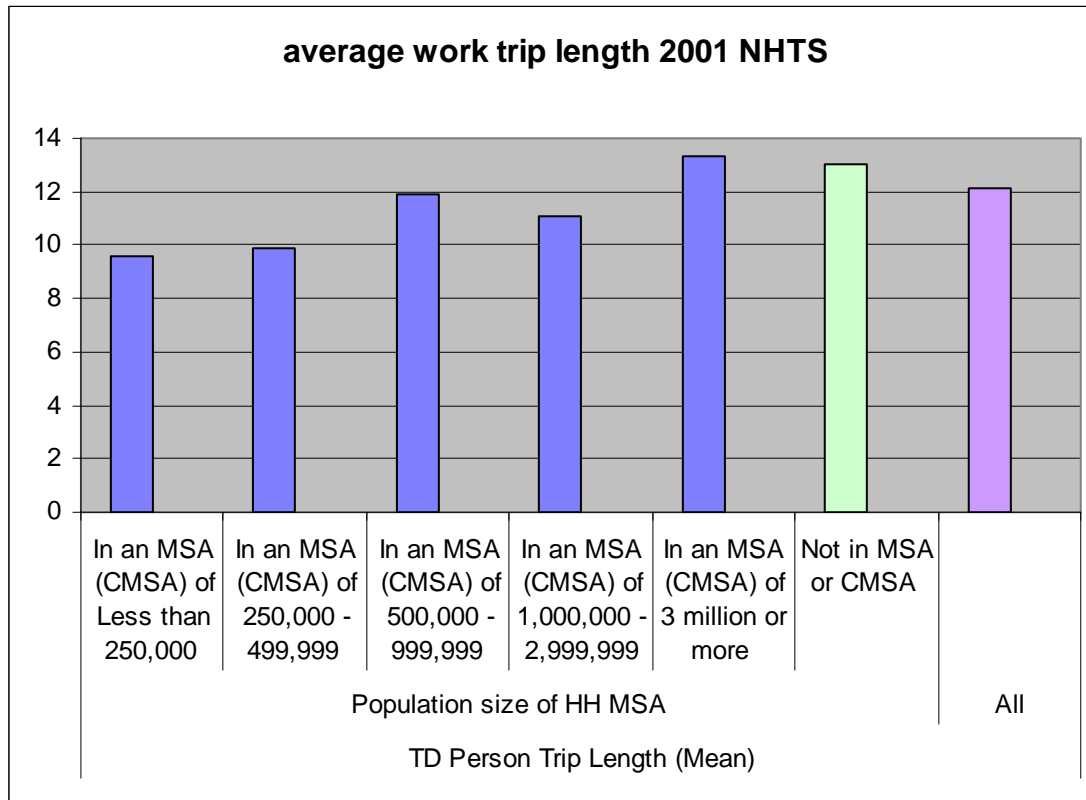


Source: 2001 National Household Transportation Survey (NHTS)

Also, Fig. 11 presents the trip length patterns by area size. It confirms that work trip length increases with the size of the metropolitan area. Both of these NHTS charts tend to confirm the inference drawn from the flows and county data of the census regarding the patterns in work trip length increases.

<sup>3</sup> The NHTS has, in fact, three ways of measuring work trips, each has grown by roughly the same amount.

Figure 11. Average Work Trip Length by Metro Size



Source: 2001 National Household Transportation Survey (NHTS)

### **Housing and Transportation as a Shared Cost**

It is clear that those who move out to the fringes of our metropolitan areas frequently end up spending more on transportation than they might have living closer in. But the long term trend suggests that the trade-off might well be to their advantage financially, especially given that they are getting something that they voluntarily prefer. Figure 12 shows that rural populations spend far more than central city populations on transportation, \$8,150 to \$6935, more than \$1000 per year higher, especially remarkable in that rural dwellers incomes are sharply lower than those in central cities as indicated by spending of \$38,486 vs \$41,688 in total annual consumer expenditures. Therefore, they also spend more on transportation as a share of spending – 21.2% of rural spending vs 16.6% of central city spending, so there is a 4.5 percentage point spread.

But if housing and transportation are looked at as a joint cost the rural population comes out ahead. Their total housing expenditure is about \$10,800 per year in contrast to \$14,200 per year for city dwellers. As the Figure displays the sum of housing and transportation spending for rural dwellers is less in total -- under \$19,000 to over

\$21,000 for central city residents and an average of almost \$24,000 for all urban dwellers.

More importantly, Figure 13 indicates that as a share of consumer expenditures rural dwellers do better with housing expenditures at only 28% of spending contrasted to 34% by central city dwellers. As a result as shown in Figures 14 rural dwellers expend a smaller share of their incomes on housing plus transportation than others. It appears that the trade-off works. Having said that, it is clear that as travel times get worse and gas prices increase the trade-off calculus changes and some may very well find that their trade-off no longer buys them enough to make the arrangement as acceptable as it had been.

Figure 12 Consumer Expenditures for Housing and Transportation

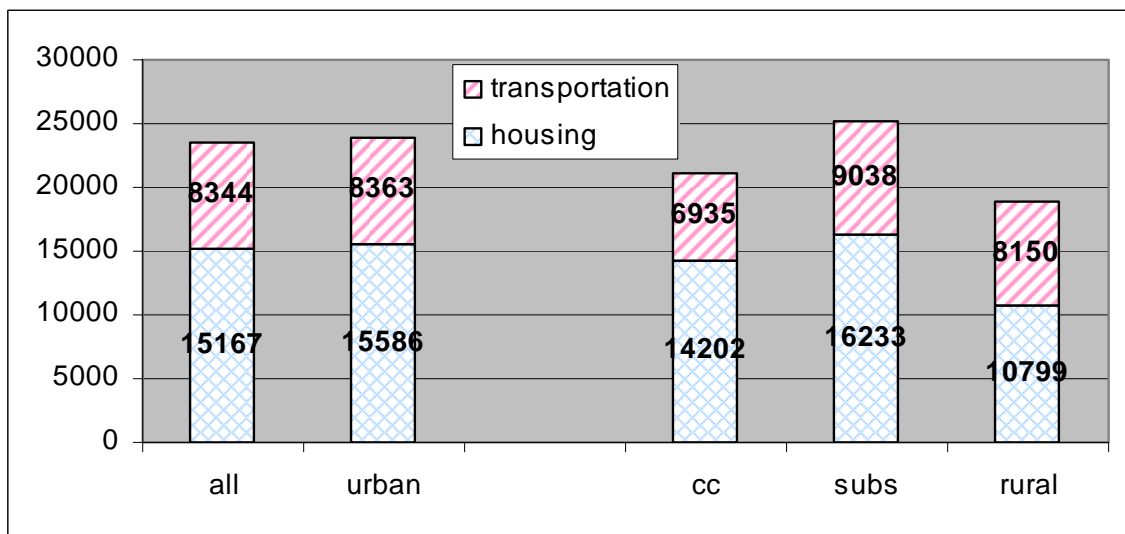


Figure 13 Consumer Expenditure Shares for Housing and Transportation

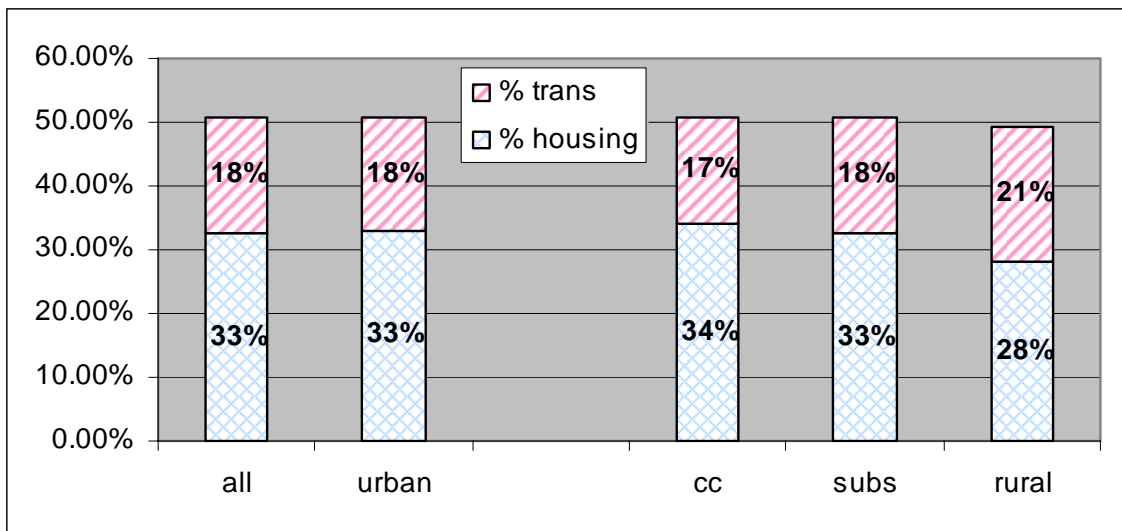
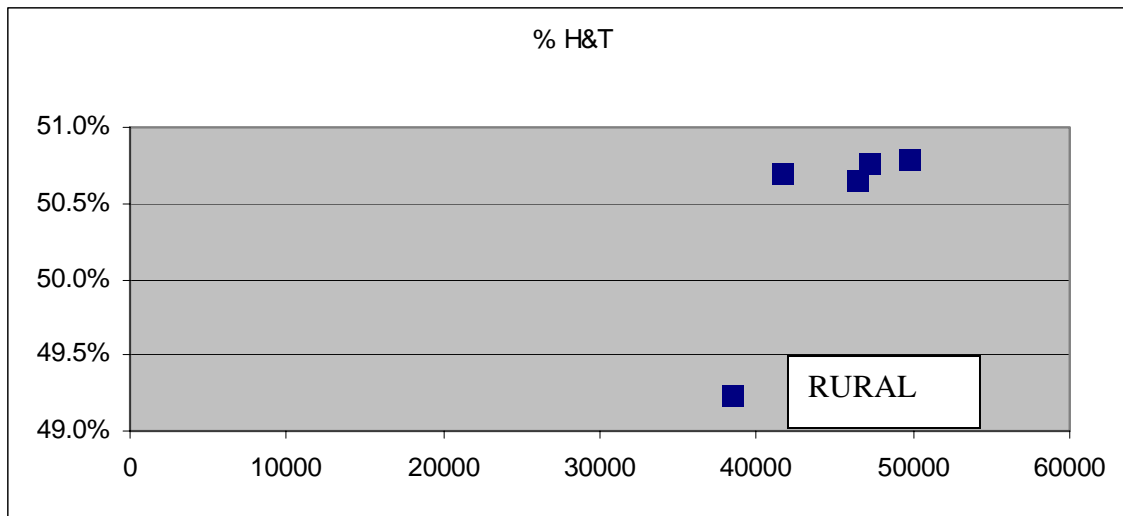


Figure 14 The Rural Advantage in Housing plus Transportation as a share of all Consumer Spending.



Some further analytical points:

- The housing transportation trade-off may not be an available trade-off for many. For older workers with significant equity in their homes there may be a choice between more travel and a higher mortgage in which they can opt for living in a more expensive area closer to work. But for the younger worker, often a first-time home buyer, with a new family to consider, trading his or her travel time for a lower mortgage payment may be the only option available. In effect paying for the house with a contribution of travel time. The home might otherwise not be feasible.
- One of the effects of rising fuel prices; and/or increased travel times, then is that it reduces the range of homes that are affordable and feasible when viewed as a joint cost of housing and transportation. **In effect, congestion and fuel prices reduce home affordability.**
- A key point in congestion then is not just that it causes people to arrive home a few minutes later but that it reduces the number of affordable homes available within a half-hour or an hours commute, and conversely, reduces the number of workers available potentially within a given travel time limit to an employer. This will be critical for the future.

### **Housing Affordability and Transportation Effects**

One of the unintended consequences of transportation trends has been the dramatically rising housing costs in some areas. While a variety of factors are involved in many of the major metropolitan areas of the country, where congestion is critical, in many cases where local governments have sought to control metropolitan expansion by controlling



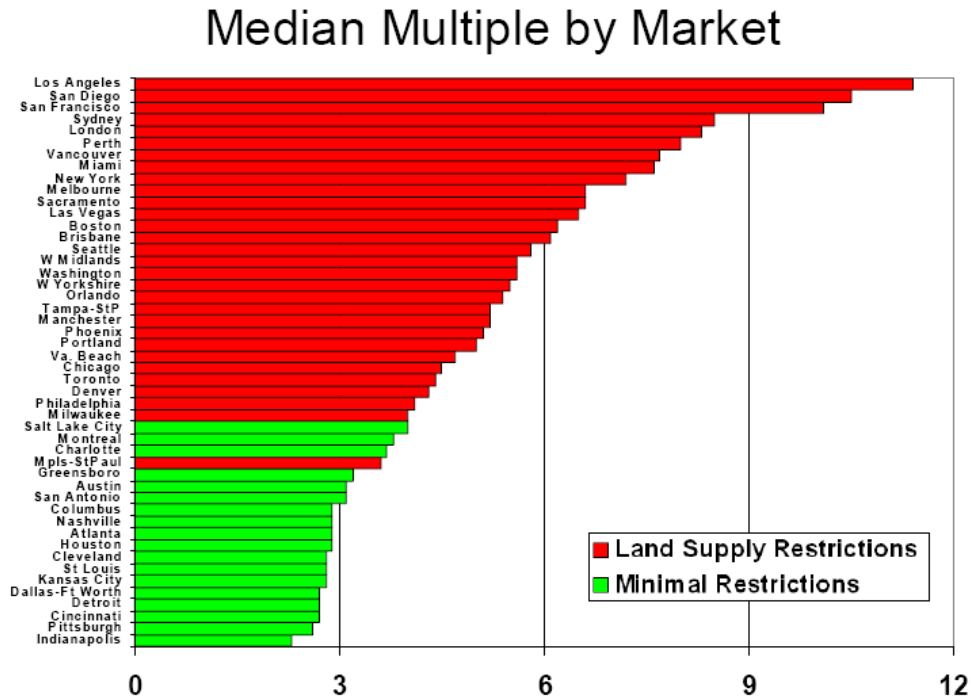
land for housing by zoning or other restrictions and avoided responsive transportation infrastructure solutions, the effect has been alarming increases in housing costs. Using an index of housing affordability, expressed as the ratio of the median house price in an area divided by the median household income, my colleague Wendell Cox in his third annual world survey of housing affordability has calculated the relative costs of homes around the country. Some of the significant values are shown in Table 2 below and the world wide patterns are shown in Figure 15 below. While many arguments can be made about affordable housing such as that it is typical in areas of low growth – granted Pittsburg and Buffalo have excellent affordability – it cannot be said that areas such as Houston, Dallas Ft.Worth, or Atlanta are slow growth areas. They are among the fastest growing large metropolitan complexes in America and the world and yet have managed to maintain excellent levels of affordability. The Governor’s Business Council in Texas has just released a transportation report that has recognized the maintaining of housing affordability as one of the goals of the recommended transportation plan.

Table 2 America’s Most and Least Affordable Housing – Selected Major Markets

<b>AFFORDABLE</b>	<b>RATING</b>
Dallas Ft Worth	2.7
St. Louis	2.8
Houston	2.9
Atlanta	2.9
Nashville	2.9
<b>UNAFFORDABLE</b>	
Miami-West Palm	7.6
San Jose	8.4
San Francisco	10.1
San Diego	10.5
Los Angeles- Orange Co	11.4

Source: Demographia.com; Wendell Cox Consultancy

Figure 15



Source: Demographia.com; Wendell Cox Consultancy

### The Future and the Housing Transportation Trade-off

In recent testimony in the Highway and Transit Subcommittee of the House Committee on Transportation and Infrastructure I emphasized the increasingly immense scale of many of our metropolitan areas today and their expected further expansion in the future. We have one-third of our population living in areas over 5 million. All of these areas are vast in scale, with diameters 50 and 100 miles across, encompassing dozens of counties. (e.g. Atlanta 33 counties; Washington-Balt. and Dallas Ft.Worth 16 –all on the order of 10,000 square miles). Certainly one of the factors in work trip length is just the fact that it is possible to live and work in a metro area and have a 50 mile commute.

Such areas are America’s economic engines representing massive labor force aggregations that are needed today to meet present and future needs for specialized skills. As the demand for highly skilled labor force grows the need for employers to be able to draw from such large labor markets will expand. This means that the typical commuter shed around a major job center could number in the millions of potential workers and thousands of square miles. It will not be surprising then that workers commutes may traverse multiple counties and dozens of miles.

If the skills needed for a particular job are relatively ubiquitous the jobs probably can be filled from a commuter shed of a few miles. As they become more specialized the prospect of finding suitable staff close by grows increasingly limited. In terms of national productivity it will be imperative to assure that access to increasing numbers of

workers is maintained. This discussion is couched in terms of job access but similar arguments can be sustained for a myriad of other cases.

- Access to more specialized cultural and recreational activities and even exotic restaurants which require large potential market-sheds of customers also will be significantly affected. An activity such as a concert hall generally must draw from a large area with extensive population. If that population cannot reach the concert hall in a reasonable travel time the services will suffer as will the public.
- A more serious consideration might be a highly specialized medical facility which must draw from a client population in the millions. When medicine was less specialized households often depended on the family physician who might have lived in walking distance, but today families will have many specialists on which they must call for assistance.
- All of these facts indicate the power and the utility of large metropolitan areas for both international competitiveness as well as a healthy and happy society; all of which is lost if mobility inhibits access.

Many communities have based their planning on the hope that by improving the balance of jobs and workers more workers will be close to their jobs and large parts of the transportation problem will be solved. Thinking again of Atlanta and its 33 counties – if everyone worked in their home county wouldn't Atlanta simply become an aggregation of 33 small hamlets close together rather than an integrated economic force? Isn't the greatness of our metropolitan areas just in that connectivity among its parts and ability to function as a single unit. Without that a very important economic and social empowerment would be lost.

As boomers leave the work place over the coming years the need to replace them will be a critical national priority. Metropolitan areas will seek to attract workers with attractive climates, life styles and other amenities. Affordable Housing and high levels of personal mobility will be among the most important of such amenities.

I would like to thank the Sub-Committee for this opportunity to appear before it and will be happy to pursue any of these matters further in questions now or later.

*APPENDIX 1*

**A TYPOLOGY OF TRAVEL**

Alan E. Pisarski

- **COMMUTING**
- **OTHER RESIDENT TRAVEL**
  - SCHOOL
  - WORK CONNECTED BUSINESS
  - PERSONAL BUSINESS
  - SHOPPING
  - VISIT FRIENDS AND RELATIVES
  - SOCIAL/RECREATIONAL
  - MEDICAL DENTAL
  - OTHER
- **TOURISM**
  - OVERNIGHT VISITORS
  - SAME DAY VISITORS
  - BUSINESS TRAVEL
- **SERVICES**
  - TELEPHONE
  - GAS
  - ELECTRIC
  - CABLE TV
- **PUBLIC VEHICLES**
  - GOVERNMENT/MILITARY
  - POLICE
  - FIRE
  - AMBULANCE/EMERGENCY
  - REFUSE
  - ROAD CONSTRUCTION/MAINT.
- **URBAN GOODS MOVEMENT**
  - COURIERS
  - STORE DELIVERY
  - HOME DELIVERY
  - OFFICE DELIVERY
  - FACTORY DELIVERY
  - SERVICES/REPAIR
  - CONSTRUCTION
- **THRU PASSENGER TRAVEL**
  - BUSINESS
  - SOCIAL RECREATIONAL
  - VISIT FRIENDS/RELATIVES
- **THRU FREIGHT TRAVEL**
  - AGRICULTURE
  - CONSTRUCTION/MANUFACTURING
  - WHOLESALE/RETAIL
  - IMPORT/EXPORT