



LUSK BRIEF RESEARCH

COMMUTING TRENDS IN U.S. CITIES IN THE 1990s

By Harry W. Richardson, Peter Gordon, and Bumsoo Lee

In the U.S., people have been moving from the cities to the suburbs for decades. Some analysts have argued that suburbanization has occurred at the cost of efficient travel patterns, in no small part because almost all roads and highways are unpriced. But evidence has accumulated over the years that suburbanization is as much a traffic "solution" as it is a problem. The reason is that many employers have actually followed workers into the suburbs, so most commuting is now suburb-to-suburb. In economists' terms, the inefficiencies in transportation have been partially remedied by the efficient functioning of flexible land markets. As a result, average commuting times (and their distributions) have been relatively stable for some thirty years. Suburbanization, therefore, has been seen as a "traffic safety valve."

The Nationwide Personal Transportation Study (NPTS) showed that average journey-to-work travel speeds (for all privately operated vehicles) *increased* steadily from 1983 to 1995. This occurred while both average trip lengths and trip times increased, but at different rates. Setting the 1983 values at 1.00, the 1995 values for travel time were 1.14, for trip length 1.33 and for trip speed 1.17. Examining the four NPTS surveys from 1977 to 1995, Hafeez (2000) concluded that: "the survey year is not a statistically significant meaningful effect in predicting work trip travel time, travel distance and travel speed" (p. xxxiii). In other words, over a period of substantial growth and change, these distributions had changed only marginally." But commuting data from the 2000 Census and 2001 National Household Travel Survey (NHTS) indicate that a significant change occurred in the late 1990s. For the first time in decades, Census data displayed a significant increase in average commute times. The national average

(only available for all modes) rose to 25.5 minutes in 2000 from 22.4 minutes in 1990, a 14.1 percent increase. Census data on distributions show a decline in the proportion of workers with short commutes (less than 20 minutes) and an increase in the proportions in most other trip time intervals. Nevertheless, 64 percent of commutes fell within the range of 5 to 24 minutes (Table 1). Given the trend (an increase in the share of commutes longer than 25 minutes), it is unclear what happened to the locational adjustments and the flexible land markets that had worked so well before.

More detail about what occurred in recent years is found in the NHTS results and those of its predecessor, the Nationwide Personal Transportation Study (NPTS). For example, Tables 2a and b show that for both all modes and for the most widely used travel mode, privately operated vehicles (POVs), the steepest rise in commuting trip times occurred in the latest period, 1995-2001. Similarly, travel speeds increased between 1983 and 1995, but fell thereafter to levels below those of 1990. Census data generally support these findings.

Table 3 reports the changes in travel times by area type between 1995 and 2001. It shows that travel times increased and travel speeds declined across the board. However, the largest increases in POV travel times occurred in the more urban areas, the more densely settled locations in metropolitan areas (and in the non-metropolitan areas). The trends also show that, whereas all areas experienced similar declines in POV travel speeds, the more suburban areas with their improved physical job access experienced shorter trip lengths, moderating the effects of increasing travel time. Hence, safety-valve adjustments via job dispersion were continuing. (Although we do not report data on public transit, because the

sample size is so small, it is interesting to note that travel time in that category increased much more over the period than in the POV category.)

The top three panels of Table 4 compare aggregates for the three NPTS/NHTS survey years. Population growth was slightly higher in the first five years (1990-95), but population shifted towards the suburbs in each period. In the second period (1995-2001), only suburban-based trips increased, with nonwork trips expanding more than worktrips.

These aggregate changes help explain changes in individual trip statistics shown in the lower half of Table 4. Trip times increased in each period, but especially in the later period. On the other hand, suburban trip times for all trips fell in the first period, as has been the norm for several decades.

Table 1: National distributions of travel times to work, 1990 and 2000		
	1990	2000
	Percent	Percent
Total Workers (excluding those who work at home)	100.0	100.0
Less than 5 minutes	3.9	3.4
5 to 9 minutes	12.5	11.0
10 to 14 minutes	16.1	15.0
15 to 19 minutes	17.0	15.8
20 to 24 minutes	14.5	14.5
25 to 29 minutes	5.5	5.8
30 to 34 minutes	12.8	13.2
35 to 39 minutes	2.4	2.6
40 to 44 minutes	2.8	3.3
45 to 59 minutes	6.4	7.4
60 to 89 minutes	4.5	5.2
90 or more minutes	1.6	2.8
Note: Total workers (excluding those work at home) 1990 = 111,664,249 ; 2000 = 124,095,004		

Table 2a: Average commute data and percent changes from NPTS/NHTS, 1983-2001
 (a) Average commute distance, time, and speed

	All modes				POV			
National	1983	1990	1995	2001	1983	1990	1995	2001
length (miles)	8.5	10.7	11.6	12.1	8.9	11.0	11.8	12.1
time (minutes) ¹⁾	18.2	19.6	20.6	23.6	17.6	19.1	20.1	22.5
speed (MPH) ²⁾	28.3	33.4	34.7	32.3	30.2	34.7	35.2	32.3
MSA								
length (miles)	8.5	10.6	11.7	11.9	8.8	10.9	11.9	11.8
time (minutes)	18.8	20.2	21.5	24.2	17.9	19.5	20.8	22.9
speed (MPH)	27.2	32.3	33.7	31.1	29.3	33.6	34.2	31.0
Not in MSA								
length (miles)	8.6	11.0	11.2	13.0	9.2	11.4	11.6	13.3
time (minutes)	16.1	17.2	17.2	20.8	16.6	17.3	17.4	20.8
speed (MPH)	32.2	37.8	38.9	37.7	33.4	39.1	39.5	38.2

Sources: Calculated by authors from 1983, 1990 and 1995 NPTS, and 2001 NHTS.
 (1) Average commute time does not include time spent waiting for transportation.
 (2) Average commute speed is calculated using non-segmented trips only for 1990, 1995, and 2001.

In response to increased trip times (costs), travel frequencies rose in the first period but declined in the second period. The economic explanation is obvious: demand increases, pushing up price and, as a result, quantities demanded per person fall. Nevertheless, the shift to fewer trips is somewhat surprising, given that vehicle miles traveled (VMT) increased rapidly (by 80 percent from 1980 to 2000).

Despite the increase in commuting times, average total trip costs (trip times x trip frequencies) fell in the later period for worktrips, both for central city and suburban residents. Telecommuting opportunities may be part of the explanation, as Internet options are probably more substitutable for worktrips than for other trips. This explanation needs further investigation.

A companion Research Brief (Gordon, Lee and Richardson, 2004) tries to answer some of these questions via a cross-sectional analysis of all Urbanized Areas in MSAs/CMSAs with populations

greater than 500,000 in 2000. This sample includes 60 percent of the metropolitan area population, obviously including the cities with the most severe traffic problems. The average one-way commute in these Urbanized Areas in the last three Census years (for all modes) was 20.44 minutes in 1980, 20.85 minutes in 1990 and 23.62 minutes in 2000. The travel time change was much greater in the 1990s and in the 1980s, a 13 percent compared to only a 2 percent increase.

The change is not explained by more people using the much slower public transit modes because transit's share of commuting fell in each decade. The forthcoming Research Brief addresses several hypotheses. Larger populations are likely to result in more congestion so urban growth might be expected to result in longer commutes. Tougher development controls and NIMBY opposition to nearby commercial developments may have inhibited the flexible spatial adjustments of the past. Higher incomes may be

associated with more vehicle miles traveled and hence longer travel times (constant dollar per capita disposable income increased by 13.9 percent in the late 1990s compared with only 3.7 percent in the first half of the decade). Multiple worker households may reduce *average* travel times as one worker (usually female) chooses a shorter commute while the presence of children may lengthen commuting times as some families may tolerate longer commutes in order to locate in good school districts. More highway capacity should reduce commuting times. Density may have an ambivalent effect depending upon the balance between the congestion effects of crowding and the proximity of homes and jobs.

REFERENCES

Gordon, P., B. Lee and H.W. Richardson (2004), "The Commuting Conundrum of the 1990s," *Lusk Center Research Brief Winter*.

Hafeez, B (2000), *Journey-to-work Travel Trends in the U.S., 1977-1995*. PhD Dissertation, Department of Civil Engineering, University of Illinois at Chicago.

Table 2b: Average commute data and percent changes from NPTS/NHTS, 1983-2001								
(b) Annual Change (%)								
	All modes					P OV		
National	90-01	83-90	90-95	95-01	90-01	83-90	90-95	95-01
length (miles)	1.2	3.2	1.8	0.7	0.8	3.2	1.4	0.4
time (minutes) 1)	1.7	1.1	1.0	2.2	1.5	1.1	1.1	1.9
speed (MPH) 2)	-0.3	2.4	0.8	-1.2	-0.6	2.0	0.3	-1.4
MSA								
length (miles)	1.1	3.1	2.1	0.2	0.7	3.2	1.8	-0.2
time (minutes)	1.6	1.0	1.3	2.0	1.5	1.2	1.3	1.6
speed (MPH)	-0.4	2.5	0.9	-1.4	-0.7	2.0	0.3	-1.6
Not in MSA								
length (miles)	1.6	3.5	0.4	2.6	1.4	3.2	0.2	2.4
time (minutes)	1.8	0.9	0.0	3.3	1.7	0.6	0.1	3.1
speed (MPH)	0.0	2.3	0.6	-0.5	-0.2	2.2	0.2	-0.6
Sources: Calculated by authors from 1983, 1990 and 1995 NPTS, and 2001 NHTS. (1) Average commute time does not include time spent waiting for transportation. (2) Average commute speed is calculated using non-segmented trips only for 1990, 1995, and 2001.								

COMMUTING TRENDS IN U.S. CITIES IN THE 1990s

	1995		2001		% Change (1995-2001)	
	All	POV	All	POV	All	POV
Commute distance (miles)						
All	11.6	11.8	12.1	12.1	4.1%	2.2%
not in MSA	11.2	11.5	13.0	13.3	16.5%	15.3%
MSA	11.7	11.9	11.9	11.8	1.2%	-1.1%
Urban	9.6	10.0	9.4	10.1	-1.3%	1.4%
Second city	9.5	9.8	9.8	10.1	3.2%	2.4%
Suburban	11.7	11.5	12.0	11.3	3.0%	-1.6%
Town	14.6	14.7	14.2	13.7	-2.6%	-6.3%
Rural	15.0	15.1	15.7	15.5	4.5%	2.8%
Commute time (minutes) 1)						
All	20.6	20.1	23.6	22.5	14.2%	11.9%
not in MSA	17.2	17.4	20.8	20.8	21.3%	19.8%
MSA	21.5	20.8	24.2	22.9	12.4%	9.9%
Urban	23.6	21.4	28.1	24.7	18.9%	15.2%
Second city	18.0	17.7	20.6	19.9	14.5%	12.6%
Suburban	21.3	20.7	24.4	23.0	14.3%	11.3%
Town	23.0	22.9	23.9	23.7	4.2%	3.5%
Rural	22.9	22.6	24.3	24.1	6.3%	6.6%
Commute speed (mph) 2)						
All	34.7	35.2	32.3	32.3	-6.9%	-8.2%
not in MSA	38.9	39.5	37.7	38.2	-3.1%	-3.4%
MSA	33.7	34.2	31.1	31.0	-7.9%	-9.4%
Urban	26.7	28.0	24.3	25.6	-9.1%	-8.5%
Second city	32.4	33.3	29.5	30.0	-9.2%	-9.9%
Suburban	33.1	32.9	29.8	29.4	-10.0%	-10.7%
Town	38.3	38.3	35.8	34.6	-6.5%	-9.6%
Rural	40.1	40.2	38.8	38.3	-3.3%	-4.7%

Sources: Calculated by the authors from the 1995 NPTS and 2001 NHTS.
 (1) Average commute time does not include time spent waiting for transportation.
 (2) Segmented trips are excluded in commute speed calculation
 (3) The classification, Census Tract level urban/rural continuum code (HTHUR) developed by Claritas, Inc., is mainly based on "contextual density" (see the NPTS user's guide for details).

Table 4: Aggregate and average travel demand, trip times, frequencies, and costs

	1990 adj.1)	1995	2001	1995-1990	2001-1995
Census Population	249,973,000	263,082,000	285,094,000	1.052	1.084
NPTS/ NHTS Population	239,416,000	259,994,000	277,203,235	1.086	1.066
NPTS/NHTS Population (5+)2)	222,100,829	241,657,001	257,576,297	1.088	1.066
Central city pop2)	80,030,407	70,082,669	62,804,604	0.876	0.896
Central city workers2)	43,061,216	38,117,073	36,169,587	0.885	0.949
Central city trips2)	107,830,409,862	109,669,646,857	91,847,740,334	1.017	0.838
Central city worktrips2)	18,121,431,884	19,360,476,625	15,155,047,225	1.068	0.783
Suburbs pop2)	91,608,048	118,710,713	142,104,041	1.296	1.197
Suburbs workers2)	50,733,423	66,061,378	80,781,403	1.302	1.223
Suburbs trips2)	128,253,178,242	185,022,341,880	215,470,693,121	1.443	1.165
Suburbs worktrips2)	21,641,108,724	32,760,131,888	33,585,413,455	1.514	1.025
Privately Operated Vehicles (average mins)2)					
Central city all trips	15.28	16.02	18.70	1.048	1.167
Central city work trips	17.69	18.66	21.31	1.055	1.142
Suburbs all trips	17.10	16.73	19.18	0.978	1.146
Suburban work trips	20.88	22.00	23.53	1.054	1.070
Privately Operated Vehicles (average freq)2)					
Central city all trips	3.07	3.47	3.15	1.131	0.908
Central city work trips	0.53	0.65	0.55	1.217	0.852
Suburbs all trips	3.46	3.76	3.67	0.085	0.978
Suburban work trips	0.61	0.70	0.61	1.146	0.878
Privately Operated Vehicles (average total costs)					
Central city all trips	46.90	55.60	58.91	1.186	1.059
Central city work trips	9.38	12.04	11.72	1.284	0.973
Suburbs all trips	59.22	62.87	70.46	0.062	1.121
Suburban work trips	12.75	15.40	14.46	1.208	0.939

(1)1990 data are adjusted to reflect survey method changes implemented since the 1995 surveys. Adjustment methods and factors are explained in Appendix 2 in Hu, P. S. and J. R. Young (1999), *Summary of Travel Trends: 1995 NPTS*, US DOT Federal Highway Administration.

(2)Trips by persons ages 0 to 4 are excluded here, since only persons of 5 years old and up were interviewed in 1995 and earlier surveys.