DEMOGRAPHIA

NEW URBAN RAIL AND TRAFFIC CONGESTION

In the last 30 years, a number of new rail systems have been built in metropolitan areas around the nation (Table 1). In virtually every case, a principal reason for building the system was to reduce traffic congestion.

Table 1
New Urban Rail Systems Since 1970

Atlanta	New metro (subway)
Baltimore	New metro and light rail
Buffalo	New light rail
Dallas-Fort Worth	New light rail and commuter rail.
Denver	New light rail
Los Angeles	New metro, light rail and commuter rail.
Miami	New metro and commuter rail
Portland	New light rail
Sacramento	New light rail
Salt Lake City	New light rail
San Diego	New light rail and commuter rail
San Francisco	New metro
San Jose	New light rail
St. Louis	New light rail
Washington	New metro and commuter rail

Journey to Work: Traffic in the morning and evening peak periods is most congested principally because work trip travel is concentrated during those time periods. Thus, journey to work travel trends are an effective measure of transit's performance in reducing traffic congestion.

In fact, automobile (private vehicle) demand has generally increased since before new rail systems have been built. The average increase has been 2.5 percent (Table 2). The largest increase was in Washington (7.0 percent), where the by far the most extensive and expensive new rail transit system was built.[1] The automobile market share also rose strongly in the metropolitan area that built the second longest metro system, San Francisco (3.4 percent increase). Automobile market shares have declined slightly in Los Angeles and Denver.

[1] Washington's Metro rail system was nearly 100 miles long in 2000 and cost more than $10 billion (not inflation adjusted).

Table 2
Automobile Journey to Work Market Share in New Rail Metropolitan Areas

Metropolitan Area	Pre-Rail Base Census Year	Automobile Market Share: Base Census Year	Automobile Market Share: 2000	Change
Atlanta	1980	88.1%	90.6%	2.9%
Baltimore	1980	81.9%	87.0%	6.1%
Buffalo	1980	85.3%	91.1%	6.8%
Dallas-Fort Worth	1990	92.5%	92.7%	0.2%
Denver	1990	87.4%	86.9%	-0.6%
Los Angeles	1990	87.8%	87.6%	-0.2%
Miami	1980	88.5%	90.1%	1.7%
Portland	1980	84.3%	84.6%	0.4%
Sacramento	1980	86.7%	89.7%	3.6%
Salt Lake City	1990	90.3%	90.3%	0.0%
San Diego	1980	81.2%	86.9%	7.0%
San Francisco	1970	73.1%	75.6%	3.4%
San Jose	1980	89.1%	89.5%	0.5%
St. Louis	1990	91.8%	92.5%	0.8%
Washington	1970	73.9%	79.3%	7.3%
Average		85.5%	87.6%	2.5%

Calculated from US Census Data

San Francisco and San Jose, which are in the same consolidated metropolitan area, are separated because the two new rail systems serve only the respective primary metropolitan statistical areas.

Automobiles (personal vehicles) attracted nearly 90 percent of the additional automobile and transit work trips from the base census year to 2000. Automobile commuting rose more than 5,700,000 in the new rail metropolitan areas, compared to a 211,000 increase in transit commuting. Most of the increase (87 percent) was in Washington and San Francisco, where the most extensive new metro systems were built, and where automobile commute shares also rose strongly..

Meanwhile, transit's work trip market share in new rail metropolitan areas has declined 10.7 percent since before the new systems were opened (Table 3). The largest losses were in Atlanta (-54 percent), Buffalo (-49 percent), Baltimore (-43 percent and Washington (-31 percent). Portland, with its strong policies emphasizing transit improvements and "smart growth," experienced a loss of 22 percent. Denver experienced the strongest transit work trip market share gain, at nearly 10 percent. But Denver's transit work trip market share remains below five percent.

Table 3 Transit Work Trip Market Share: Pre-Rail and 2000				
Metropolitan Area	Base Census Year	Transit Share: Base Census Year	Transit Share: 2000 Census	Change
Atlanta	1980	7.6%	3.5%	-54.2%
Baltimore	1980	10.2%	5.9%	-42.7%
Buffalo	1980	6.6%	3.3%	-49.1%
Dallas-Fort Worth	1990	2.3%	1.7%	-22.8%
Denver	1990	4.2%	4.6%	9.5%
Los Angeles	1990	4.5%	4.6%	1.7%
Miami	1980	4.9%	3.8%	-23.2%
Portland	1980	8.4%	6.6%	-21.6%
Sacramento	1980	3.5%	2.9%	-16.2%
Salt Lake City	1990	3.0%	3.0%	0.1%
San Diego	1980	3.3%	3.3%	0.3%
San Francisco	1970	14.6%	13.8%	-5.9%
San Jose	1980	3.1%	3.5%	12.0%
St. Louis	1990	2.8%	2.3%	-18.4%
Washington	1970	15.4%	10.7%	-30.9%
Average		5.9%	5.3%	-10.7%
Calculated from US Census Bureau data				

Overall Urban Travel: Overall, roadway market share has remained constant since before the new rail systems have been opened (Table 4). Small increases occurred in four urban areas, from 0.1 percent to 1.2 percent. Small reductions were experienced in ten urban areas, from –0.1 percent to –0.6 percent. However, in each of the urban areas, overall roadway traffic increased in every new rail urban area. The greatest increases were in Atlanta, Portland, San Diego and Washington. The smallest increase occurred in Salt Lake City, where traffic increased only one percent in the year since the light rail system opened. However, later Federal Highway Administration data indicates that roadway travel increased more than six percent from 2000 to 2001.[2]

[2] Calculated from data in *Highway Statistics.*

Table 4
Estimated Roadway and Transit Market Share: Pre-Rail to 2000
(Share of Passenger Miles)

Urban Area	Years Since Rail Opening	Change in Roadway Traffic	Roadway Market Share: Pre-Rail	Roadway Market Share: 2000	Change in Roadway Market Share
Atlanta	Note	218%	97.5%	98.7%	1.2%
Baltimore	16	67%	97.6%	97.7%	0.1%
Buffalo	14	49%	98.7%	99.3%	0.6%
Dallas-Fort Worth	4	13%	99.5%	99.5%	-0.1%
Denver	6	25%	98.9%	98.7%	-0.2%
Los Angeles	9	11%	99.0%	98.6%	-0.4%
Miami	16	68%	98.8%	98.7%	-0.1%
Portland	13	94%	98.1%	97.9%	-0.2%
Sacramento	13	50%	99.2%	99.1%	-0.1%
Salt Lake City	1	1%	99.1%	99.0%	-0.2%
San Diego	18	88%	99.1%	98.5%	-0.6%
San Jose	12	25%	99.2%	99.0%	-0.2%
St. Louis	7	23%	99.3%	99.2%	-0.1%
Washington	Note	85%	95.9%	96.3%	0.5%
Average		58%	98.6%	98.6%	0.0%

Earliest roadway traffic data is 1982. The Atlanta and Washington metro systems opened before 1983, but expanded significantly after that date (150 percent in Washington and nearly 200 percent in Atlanta). Change is measured from 1982. Assumes 1.6 vehicle occupancy.[3] The San Diego light rail system opened before 1983, but has expanded 200 percent since that time. San Francisco's metro system is not included in this analysis because it has undergone less expansion since 1982. Estimated from Texas Transportation Institute data and National Transit Database. Base transit ridership uses average of three years before rail opening.

At the same time, there has been a slight overall market share loss in the new rail metropolitan areas (Table 5). San Diego and Los Angeles experienced strong gains of 62 percent and 41 percent respectively, but after the increases, their overall market shares are 1.5 percent or less. Greater than 40 percent declines were registered in Atlanta and Buffalo.

[3] This is the national urban average occupancy figure for automobiles.

Table 5 Transit Market Share: Pre-Rail and 2000				
Urban Area	Years Since Rail Opening	Base Year	2000	Change
Atlanta	Note	2.5%	1.3%	-45.7%
Baltimore	16	2.4%	2.3%	-4.7%
Buffalo	14	1.3%	0.7%	-46.2%
Dallas-Fort Worth	4	0.5%	0.5%	14.6%
Denver	6	1.1%	1.3%	14.5%
Los Angeles	9	1.0%	1.4%	40.7%
Miami	16	1.2%	1.3%	9.3%
Portland	13	1.9%	2.1%	8.3%
Sacramento	13	0.8%	0.9%	10.5%
Salt Lake City	1	0.9%	1.0%	19.5%
San Diego	18	0.9%	1.5%	62.1%
San Jose	12	0.8%	1.0%	20.0%
St. Louis	7	0.7%	0.8%	14.8%
Washington	Note	4.1%	3.7%	-10.5%
Average		1.4%	1.4%	-1.2%
Earliest roadway traffic data is 1982. The Atlanta and Washington metro systems opened before 1983, but expanded significantly after that date (150 percent in Washington and nearly 200 percent in Atlanta). Change is measured from 1982. Assumes 1.6 vehicle occupancy.[4] The San Diego light rail system opened before 1983, but has expanded 200 percent since that time. San Francisco's metro system is not included in this analysis because it has undergone little expansion during since 1982. Estimated from Texas Transportation Institute data and National Transit Database. Base transit ridership uses average of three years before rail opening.				

Comparison to Non-Rail Urban Areas: The new rail urban areas have experienced an average 1.38 percent increase in per capita roadway usage (vehicle miles) since before the rail systems were opened. By comparison, the 16 urban areas of more than 1,000,000 that have do not have urban rail have had an average annual increase in roadway use of 1.04 percent over the last ten years (Figure 7c).

[4] This is the national urban average occupancy figure for automobiles.

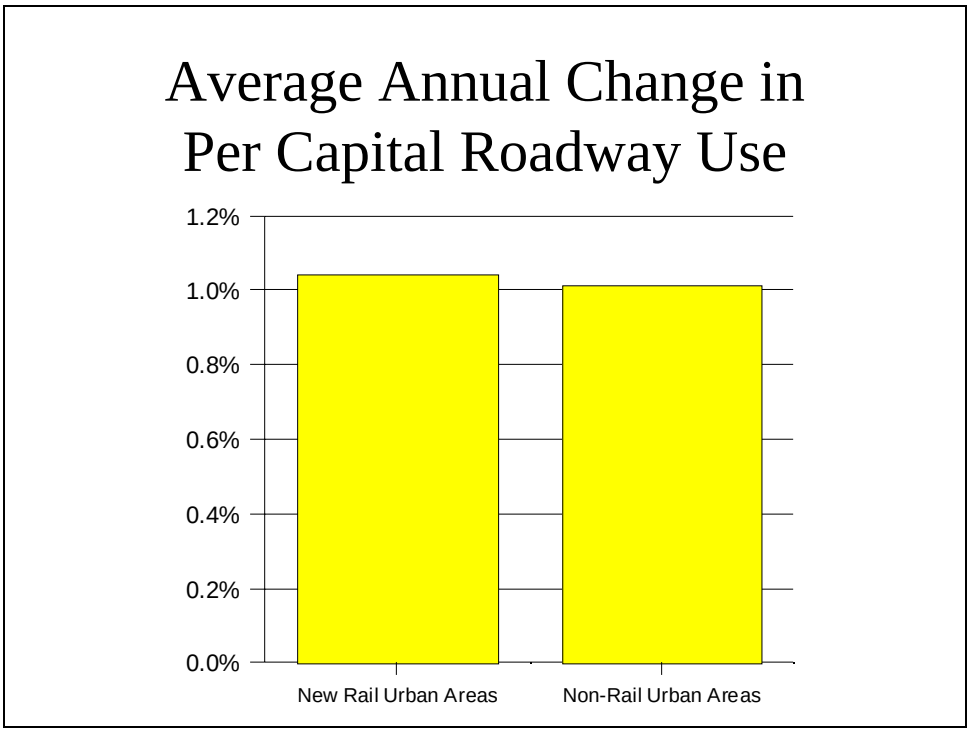

Figure 1

Conclusion: New Rail Has Little Impact on Traffic Congestion: The experience generally supports the conclusion that new rail systems have do not reduce traffic congestion. Transit work trip market shares have dropped in urban areas that have built new rail systems., while automobile shares have increased. Overall transit market shares have declined slightly, while automobile shares have remained constant. In both cases, overall traffic levels have increased, with the bulk of the new demand being accommodated by personal vehicles rather than transit. Finally, new rail urban areas have done no better than non-rail urban areas in controlling the increase in per capita automobile use.