Americans in Transit

A Profile of Public Transit Passengers

American Public Transit Association
December 1992

APTA

Americans in Transit
A Profile of Public Transit Passengers

published by
American Public Transit Association
December 1992

produced by
Technical Services Department
Frank J. Cihak, Chief Engineer and Deputy Executive Vice President - Technical Services

Research & Statistics Division
Larry H. Pham, Ph.D., Director

prepared by
Jim Linsalata, Manager-Research

Summary

During the past two decades, public transit has experienced a marked revitalization as shown by the ridership trend in Figure 1. In 1990 alone Americans took *8.8 billion* transit trips and, on any average weekday, over *7.5 million* people will ride on public transit vehicles.

This report explores the socio-economic characteristics of the transit-riding population; it describes the gender, age, race, ethnicity, income and trip purpose of the average public transit rider and searches for future trends. Briefly, the findings are:

- The majority of riders are female;
- 30.8 percent are black;
- 17.9 percent are Hispanic;
- 6.9 percent are senior citizens;
- 10.3 percent are age 18 or under;
- 1.2 percent are people with disabilities (this increases to 2.5 percent excluding New York City);
- 27.5 percent have annual family incomes below $15,000 (38.2 percent excluding New York City);
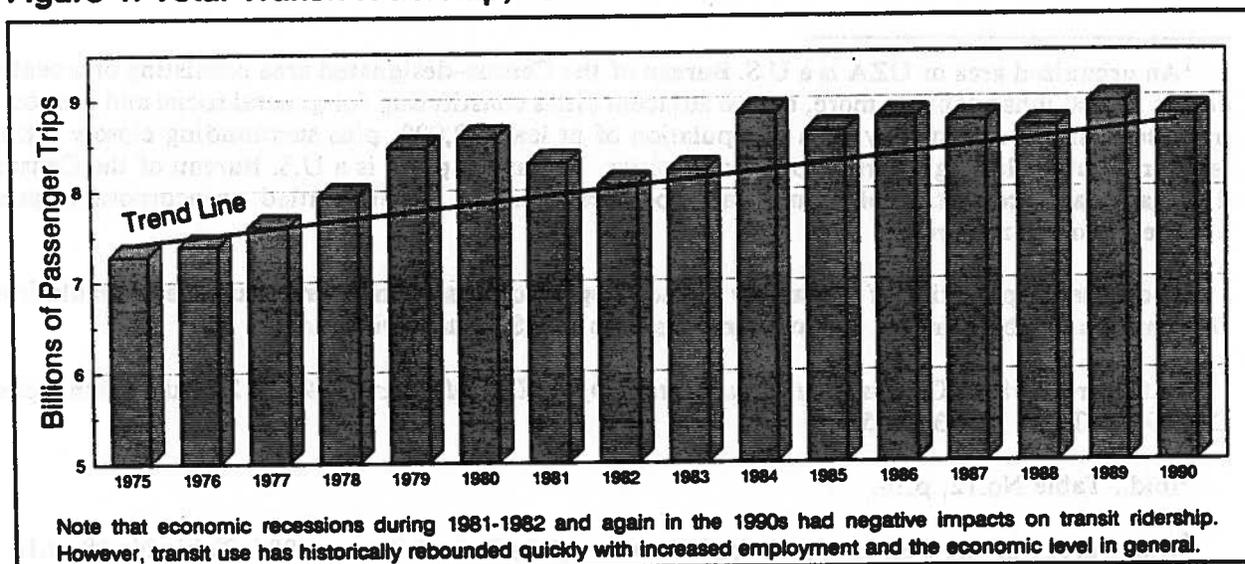- work trips comprise 54.4 percent of all transit trips while medical and school trips comprise 5.5 and 14.6 percent respectively, and;
- over 16 million work trips are taken by transit passengers on an average weekday.

However, there are wide variations within this description. Specifically, small communities have much different transit use patterns than do large cities.

The national transit ridership profile, compared with current and projected Census information, imparts three major conclusions:

1. **Public transit disproportionately serves low income workers and minorities.**

2. **Transit performs a critical economic function in the journey-to-work.**

3. **The trend of increasing public transportation usage is expected to continue well into the 21st century.**

Figure 1. Total Transit Ridership, 1975-1990

Note that economic recessions during 1981-1982 and again in the 1990s had negative impacts on transit ridership. However, transit use has historically rebounded quickly with increased employment and the economic level in general.

Background

The ridership profiles in this report were collected from a survey of 136 U.S. transit systems in May, 1992. These systems ranged from New York's Metropolitan Transit Authority, which serves almost 27 percent of the U.S. transit market, to the Kings Area Rural Transit, which provides about 600 passenger trips daily in remote Hanford, California. This large and extremely diverse sample accounts for nearly 60 percent of the total U.S. public transit ridership. The national means were calculated with a weighted average formula and the transit systems' average weekday ridership is used as the weight for each observation. Thus, the national statistics are strongly influenced by the responses of the larger systems which carry the majority of riders.

In order to understand the ridership profile of transit systems serving less populous areas, the analysis includes survey responses grouped according to the population of the system's urbanized area or urban place.[1] This permits analysis and comparison of transit use patterns by community size. Again, the population group means were calculated with the weighted average formula.[2]

Gender of Transit Riders

The U.S. Bureau of the Census reports that 48.8 percent of the U.S. population is male and 51.2 percent is female.[3] Likewise, the national transit statistics reveal that 48.1 percent of all passengers are male and 51.9 percent are female. In **smaller cities and towns, however, a distinct majority of riders are female.** Figure 2 gives a breakdown of ridership by gender according to population group. It shows that about 60 percent of transit riders are female, in places below one million population. In fact, many rural transit systems report that over 75 percent of their riders are female.

Age of Transit Riders

The American population has been gradually aging from a median of 28.0 years in 1970 to 33.1 years in 1991.[4] Furthermore, the number of persons age 65 and over is projected to increase 9.9 percent[5] to 34.9

---

[1]An urbanized area or UZA is a U.S. Bureau of the Census-designated area consisting of a central city of 50,000 inhabitants or more, or two adjacent cities constituting for general social and economic purposes a single community with a population of at least 50,000, plus surrounding closely settled territory, but excluding the rural portion of cities. An urban place is a U.S. Bureau of the Census-designated area consisting of incorporated political units or closely settled unincorporated areas outside an urbanized area.

[2]A detailed explanation of the survey methodology and the statistical procedures is available from the American Public Transit Association, Research and Statistics Division.

[3]U.S. Bureau of the Census, *Statistical Abstract of the United States: 1992*, 112th ed., (Washington, DC: 1992), Table No.13, p.15.

[4]Ibid., Table No.12, p.14.

[5]U.S. Bureau of the Census, *Statistical Abstract of the United States: 1991*, Table No.18, p.16.

Figure 2. Gender of Riders by Population Group
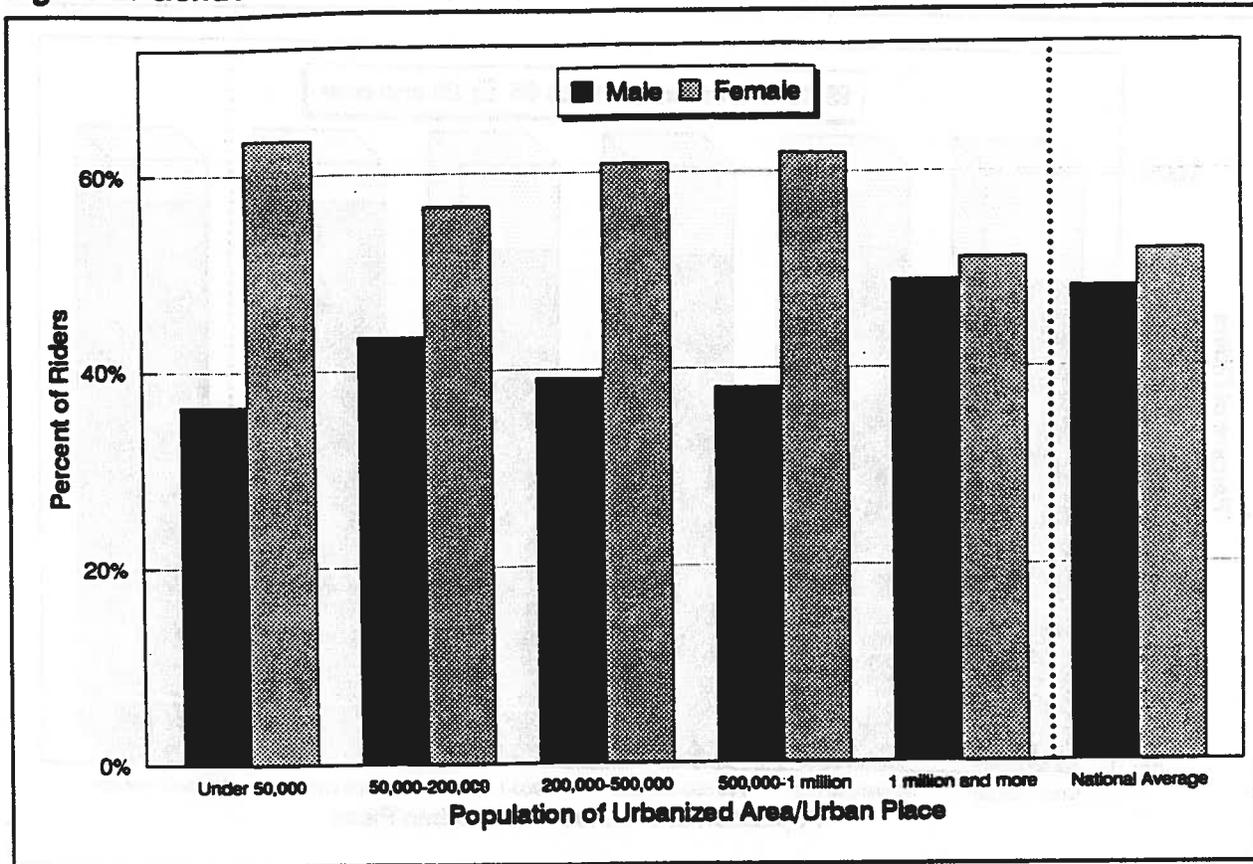
million people by year 2000. This population phenomenon has been referred to as the "graying of America" and it will strain all services for the elderly, including public transit.
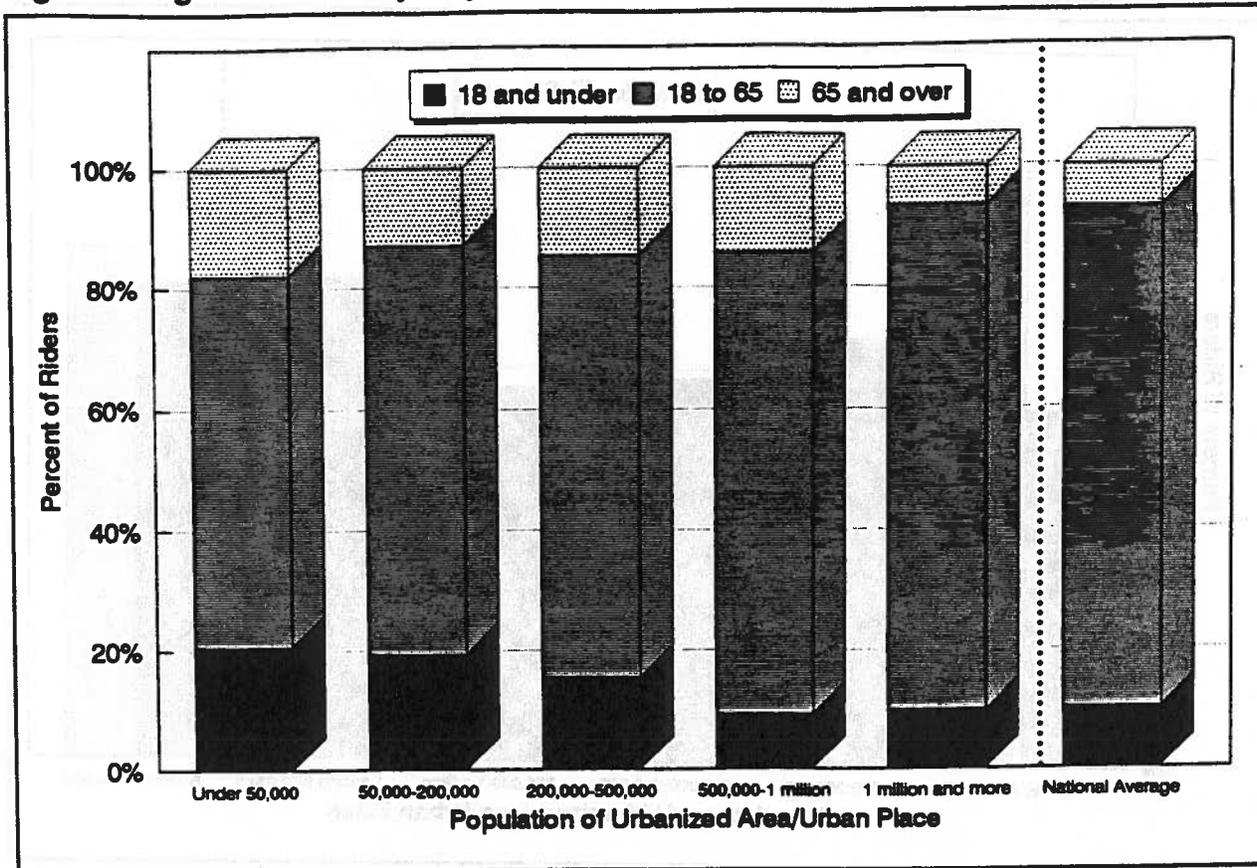
In Figure 3 one can see that at the national level almost seven percent of all transit riders are senior citizens. As with the comparison by gender, small cities and rural areas have a greater percentage of elderly riders. In communities of less than 50,000 population, 18 percent of passengers are 65 years old or older. This high rate of usage by senior citizens implies that transit performs a indispensable service for their medical, shopping, recreational and other non-work travel needs; it is not uncommon to find that many

seniors in rural areas rely exclusively on public transit for transportation.

Ridership by Ethnicity/Race

Ethnic and racial minorities are another large and important segment of the U.S. transit market. In places with population of 1 million or more, 48.7 percent of riders are black or Hispanic. In contrast, transit systems operating in areas below 50,000 population report that only 6.2 percent of riders are black and 9 percent are Hispanic. Nationally, 45.1 percent of riders are white, 30.8 percent are black, 17.9 percent are Hispanic and 6.2 percent are other. Clearly, minorities are transit users, disproportionate to their population

-3-

Figure 3. Age of Riders by Population Group

Legend: ■ 18 and under ■ 18 to 65 ▦ 65 and over

Y-axis: Percent of Riders (0% to 100%)

X-axis categories: Under 50,000 | 50,000-200,000 | 200,000-500,000 | 500,000-1 million | 1 million and more | National Average

X-axis label: Population of Urbanized Area/Urban Place

shares.

A graph of the ethnic/racial composition of riders by population group (Figure 4) demonstrates that blacks, Hispanics and other minorities make up a larger percentage of transit riders in the more populous areas. The proportion of white riders drops from 82 percent in places under 50,000 to 47.6 percent in UZAs from 200,000-500,000 population to only 44.7 percent in UZAs of 1 million or more population. What is also interesting is that many systems serving small UZAs and rural places report a relatively high percentage of Hispanics.

The U.S. Bureau of the Census projects the non-white population to expand to 17.4 percent of the total U.S. population by year 2000.[6] Similarly, the Hispanic population, which has the highest birthrate,[7] is expected to increase to 9.4 percent of the U.S. total by year 2000.[8] Again, these Census projections give strong evidence of increased future de-

---

[6]Ibid., Table No.16, p.15.

[7]U.S. Bureau of the Census, *Statistical Abstract of the United States: 1992*, Table No.92, p.70.

[8]U.S. Bureau of the Census, *Statistical Abstract of the United States: 1991*, Table No.15, p.14.

Figure 4. Ethnicity and Race of Riders by Population Group

Legend: ☒ White ■ Black ▦ Hispanic ⬚ Other

Y-axis: Percent of Riders (0% to 100%)

X-axis: Population of Urbanized Area/Urban Place
Under 50,000 | 50,000-200,000 | 200,000-500,000 | 500,000-1 million | 1 million and more | National Average
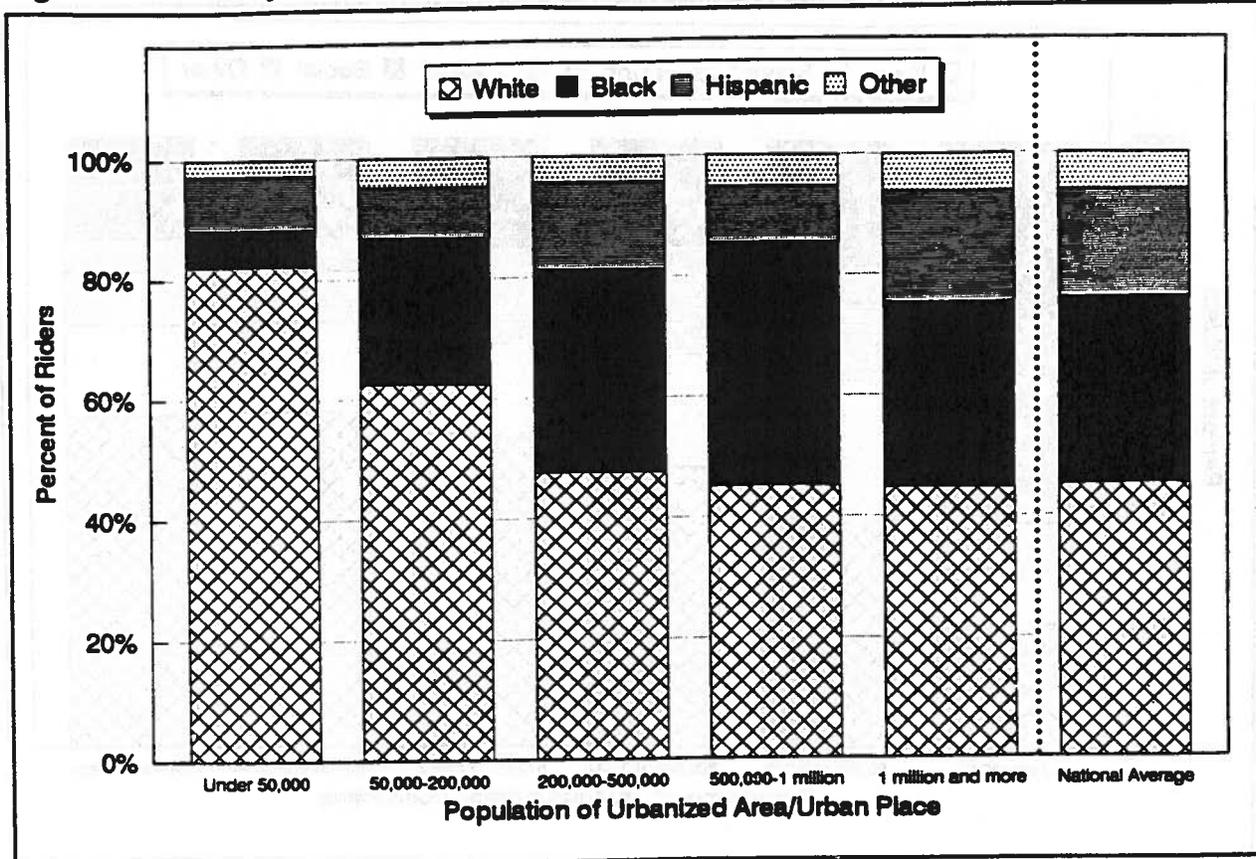
mand for public transit services.

Riders with Disabilities

The Americans with Disabilities Act makes it illegal to discriminate against anyone who has a physical or mental disability in the areas of employment, public services, public accommodations and telecommunications. Regarding transit, the ADA is a very important and far-reaching law because it is expected to dramatically increase the number of persons with disabilities who have access to public transportation.

At the national level, 1.2 percent of all transit riders have disabilities. However, if one excludes the New York City Transit Authority, the national average jumps to 2.5 percent. Table 1 shows that the percentage of riders with disabilities increases rapidly as community size decreases; it is

Table 1. Riders with Disabilities

Population of Urbanized Area/Urban Place	Percent with Disabilities
National Average	1.2%
1 million and more	1.1%
500,000-1 million	1.4%
200,000-500,000	2.5%
50,000-200,000	6.0%
Under 50,000	5.2%

Figure 5. Purpose of Transit Trips by Population Group

Figure 5. Purpose of Transit Trips by Population Group
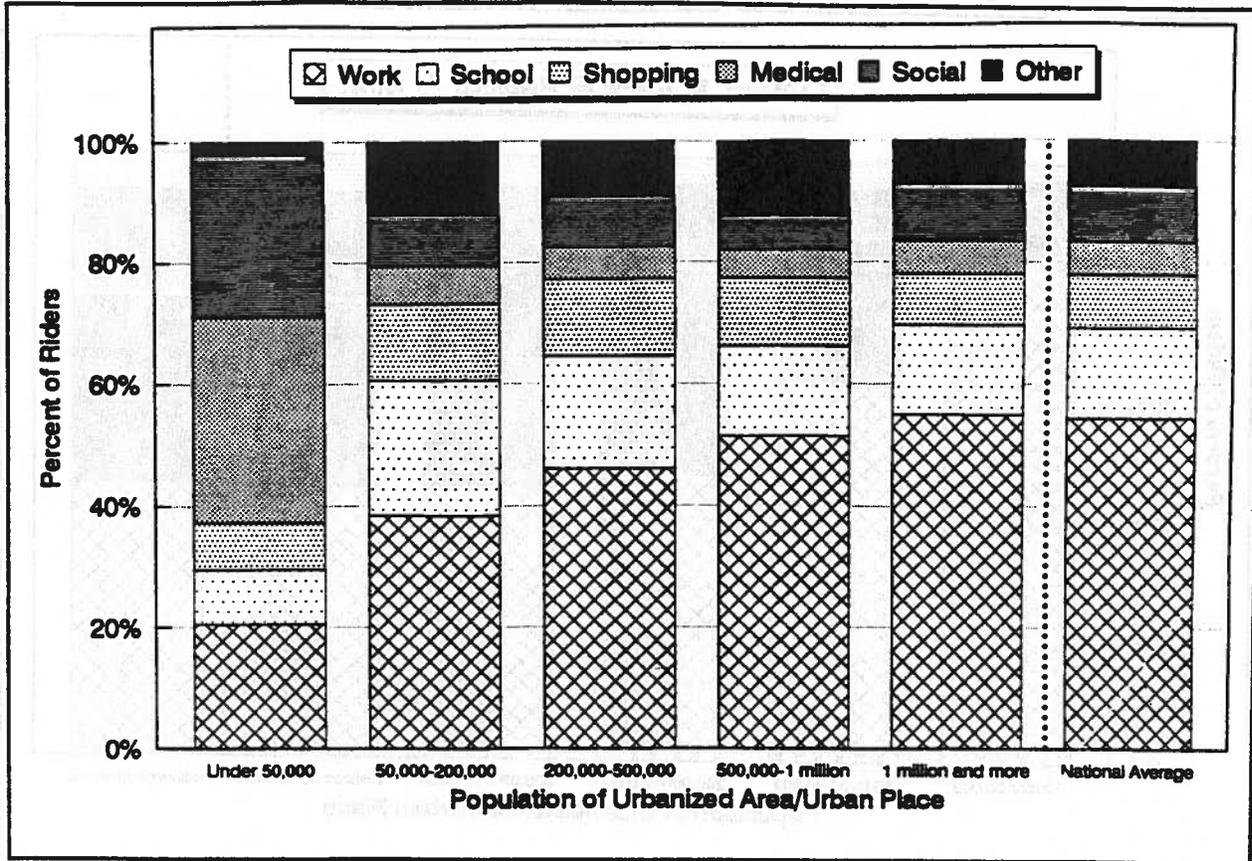
not uncommon for 10 to 15 percent of riders in smaller places to have disabilities. As with the elderly, many people with disabilities rely entirely on public transit for basic transportation.

Trip Purpose

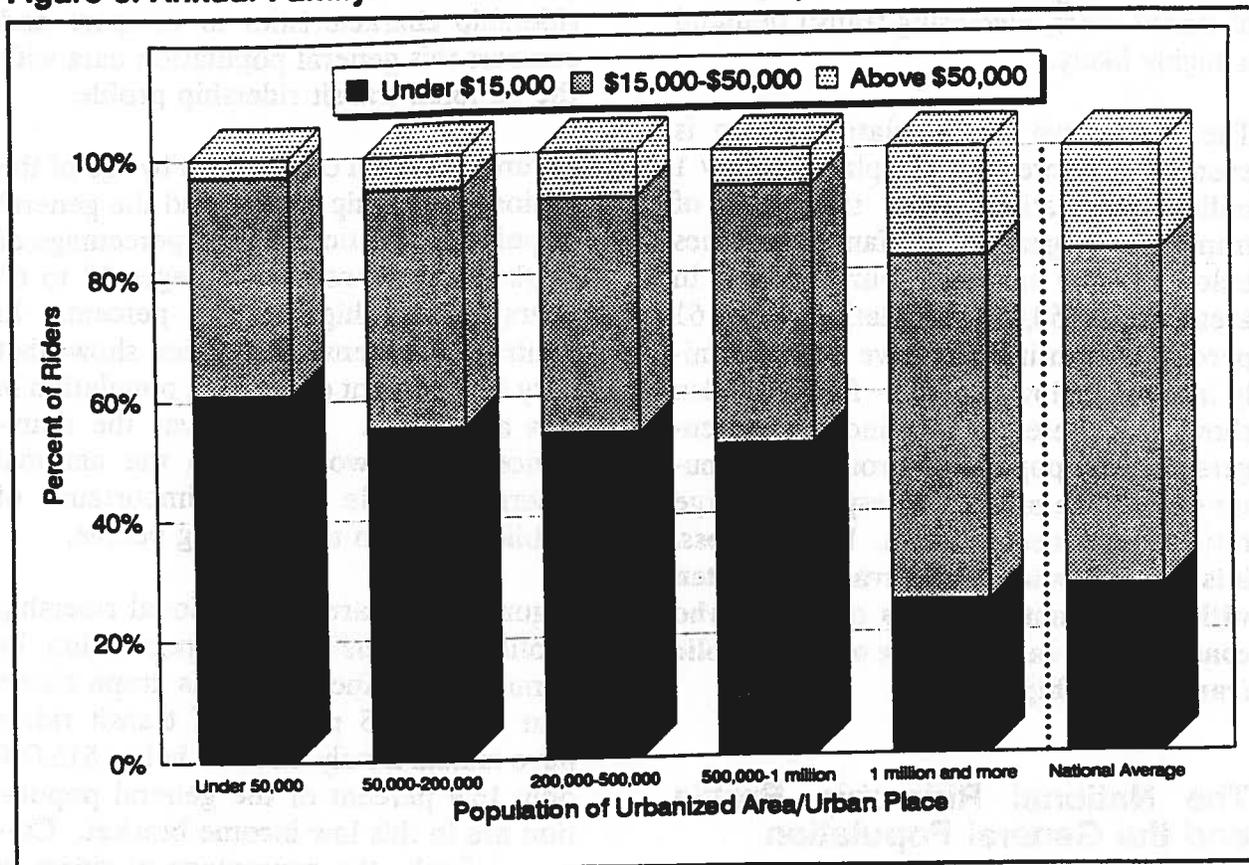**Across America more than half of all transit trips are made to and from work.** Another 14.6 percent are for school purposes and the remainder are trips taken for a variety of shopping, medical, social and recreational purposes. The variations in trip purpose are significant, however, when one looks at the transit use patterns in communities of different size.

Figure 5 presents a breakdown of transit trips by population group according to trip purpose. In areas of less than 50,000 population, 60.5 percent of trips are taken for medical and social/recreational purposes, while 20.5 percent of transit trips are for work. On the other hand, in areas of 1 million or more only 14.7 percent are medical and social/recreational trips, while almost 55 percent are work trips. The implications are unambiguous. The importance of transit in populous areas of the country, where 70 percent of total transit use supports business and educational activities, is predominantly economic. In smaller areas, the significance of transit may be most profound in a social rather than economic sense. In any case, both purposes (economic and social) are

Figure 6. Annual Family Income of Transit Riders by Population Group

Legend: ■ Under $15,000 ▨ $15,000-$50,000 ▦ Above $50,000

Y-axis: Percent of Riders (0% to 100%)

X-axis: Population of Urbanized Area/Urban Place
(Under 50,000 | 50,000-200,000 | 200,000-500,000 | 500,000-1 million | 1 million and more | National Average)

served in virtually every area where public transit service is provided.

Income Characteristics

Regarding the national ridership statistics, the income data in Figure 6 show that 27.5 percent of transit riders have an annual family income below $15,000. If one excludes the New York City Transit Authority, then the percentage increases dramatically to 38 percent. This is nearly *three times* the 14.2 percent of Americans below the Census Bureau's poverty level

of $13,924 for a family of four.[9]

Transportation economists believe that income and public transit use are inversely related, so that transit demand increases as income decreases. Accordingly, increasing poverty will result in an increase in transit use. The Census Bureau reports that in 1991 the number of Americans below the poverty line increased to 35.7 million–the highest number since 1964.[10] Furthermore, many economists believe that the U.S. economy is moving from an industrial orientation to a service sector orientation, where wages are generally

---

[9]U.S. Bureau of the Census, *Poverty in the United States: 1991*, (Washington: 1991), P-60, No. 181.

[10]Ibid.

lower. Thus, given the low income profile of transit users, increasing transit demand is highly likely.

The breakdown by population group is even more interesting. In places below 1 million population, more than half of transit passengers report family incomes below $15,000 per year. Furthermore, in areas below 50,000 population, over 61 percent of transit riders have annual family incomes below $15,000. Figure 6 also shows that there are high income passengers in every population group. Commuter' rail service exhibits an especially large ratio of high income riders. **Nevertheless, it is the economically disadvantaged—often without alternative means of travel—who constitute the largest share of total public transit ridership.**

The National Ridership Profile and the General Population

The 1990 census provides a wealth of information on U.S. demographics. It is essential to the understanding of transit ridership characteristics to compare and contrast this general population data with the national transit ridership profile.

Figure 7 shows a comparison by age of the national ridership profile and the general population. Notice that the percentage of working-age transit riders (ages 18 to 65 years) is very high at 82.8 percent. In contrast the census statistics show that only 60.3 percent of the U.S. population in this age group. This reflects the dominance of the work trip in the national ridership profile and the importance of public transit to the working people.

Figure 8 compares the national ridership profile with the general population by annual family income. This graph shows that while 27.5 percent of transit riders have annual family incomes below $15,000 only 16.9 percent of the general population are in this low income bracket. Correspondingly, the percentage of riders in the high income bracket is almost half that of the general population. This illustrates

Figure 7. Age: National Ridership Profile and the General Population

-8-
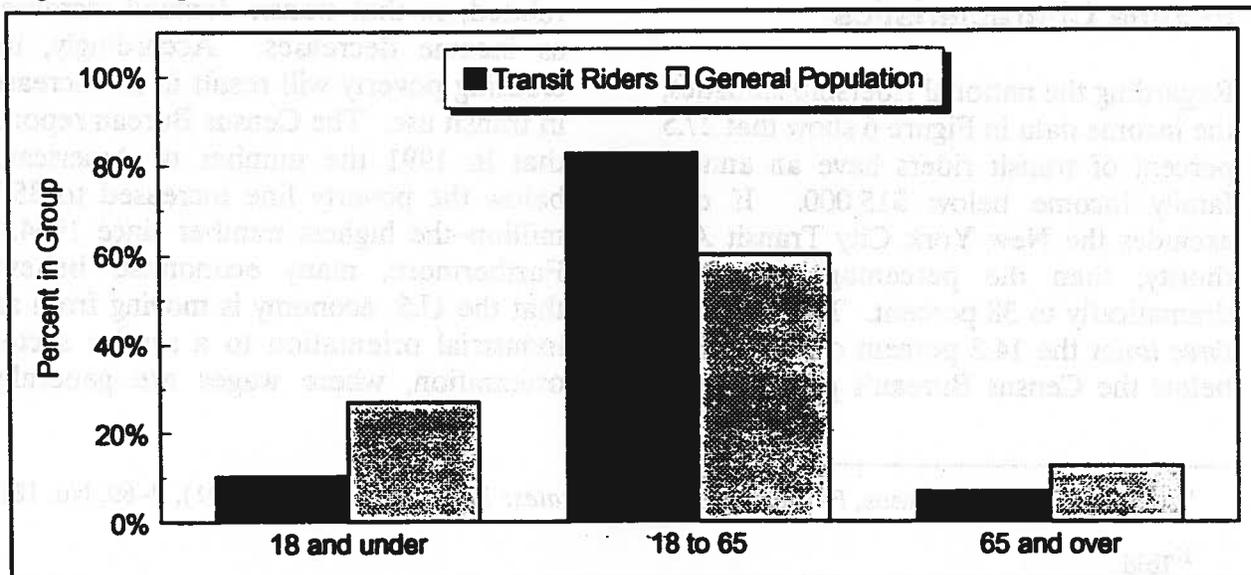
Figure 8. Family Income: National Ridership Profile and the General Population

Legend: ■ Transit Riders □ General Population

Y-axis: Percent in Group (0% to 60%)

X-axis categories: Under $15,000 | $15,000 to $50,000 | Over $50,000
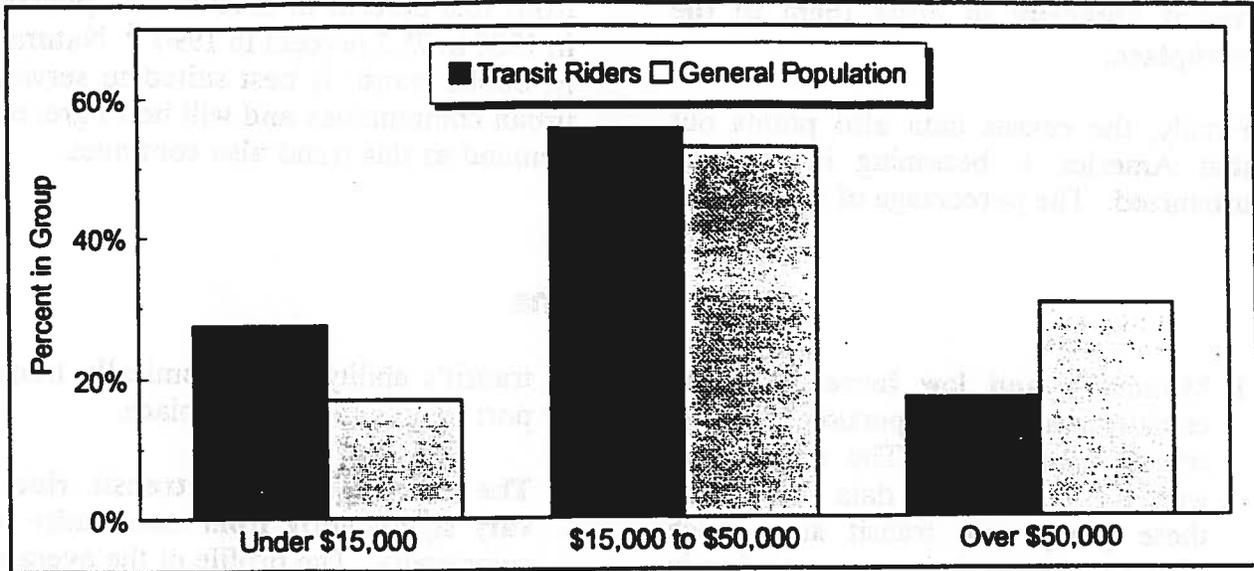
Figure 9. Ethnicity/Race: National Ridership Profile and the General Population

Legend: ■ Transit Riders □ General Population

Y-axis: Percent in Group (0% to 80%)

X-axis categories: White | Black | Hispanic | Other
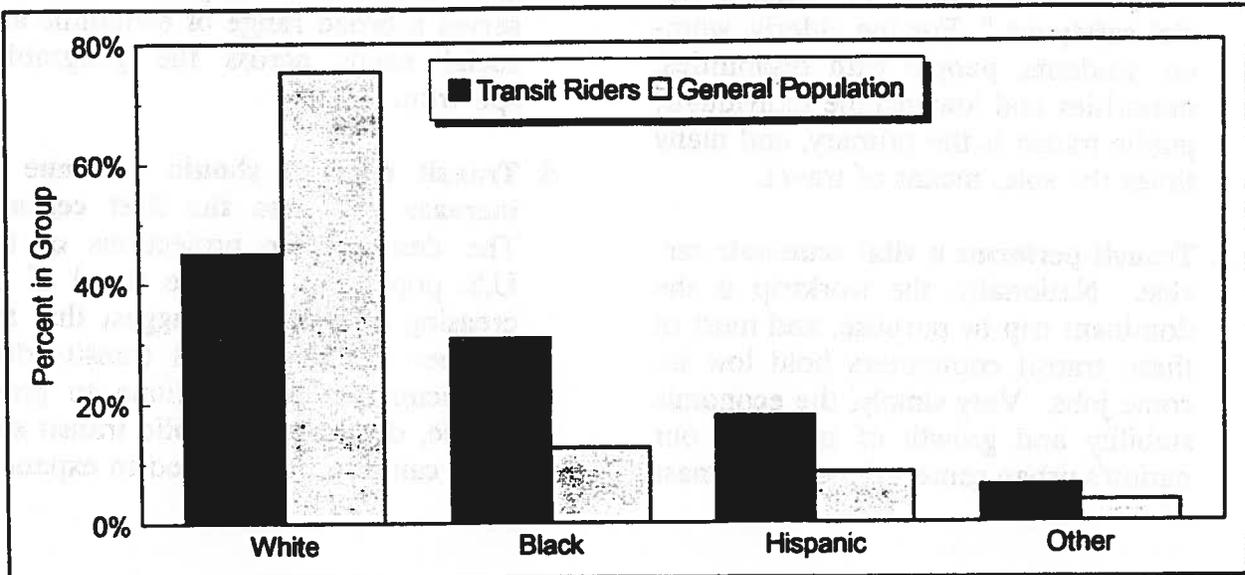
the relative importance of transit to lower and lower-middle class individuals.

Figure 9 charts the ethnic/racial composition of transit riders against the general population. Notice that the total percentage of black and Hispanic riders at 48.7 percent is over twice the total percentage

of blacks and Hispanics in the general population at 21 percent. Of course, this shows the relative value of public transit to minority groups.

Combined, the three graphs easily lead to this deduction: **public transit is disproportionately used by minority workers in low**

income jobs who depend on the local transit authority to bring them to the workplace.

Finally, the census data also points out that America is becoming increasingly urbanized. The percentage of the population in urban areas has steadily expanded from 73.6 percent in 1970 to 73.7 percent in 1980 to 75.2 percent in 1990.[11] Naturally, public transit is best suited to serving urban communities and will be in greater demand as this trend also continues.

Conclusions

1. **Minorities and low income workers constitute a large proportion of public transit passengers.** The comparison with the U.S. census data shows that these groups use transit at a much higher rate than their representation in the general population.

2. **Public transit is part our nation's "social safety net."** For the elderly, women, students, people with disabilities, minorities and low income individuals, public transit is the primary, and many times the sole, means of travel.

3. **Transit performs a vital economic service.** Nationally, the worktrip is the dominant trip by purpose, and most of these transit commuters hold low income jobs. Very simply, the economic stability and growth of many of our nation's urban centers depends on mass transit's ability to economically transport people to the workplace.

4. **The characteristics of transit riders vary significantly from community to community.** The profile of the average rider in large urban areas is much different from that in rural areas. This lends credence to the point that transit serves a broad range of economic and social needs across the geographic spectrum.

5. **Transit demand should continue to increase well into the 21st century.** The demographic projections of the U.S. population and the trend of increasing urbanization suggest that the number of people with transit-riding characteristics will continue to grow. Hence, demand for public transit services can also be expected to expand.

---

[11]U.S. Bureau of the Census, *Statistical Abstract of the United States: 1992*, Table No.28, p.27.

Statistical Tables

Table 2. Total Transit Ridership in Billions of Passenger Trips, 1975-1990

Calendar Year	Total Passenger Trips	Calendar Year	Total Passenger Trips
1975	7.284	1983	8.203
1976	7.393	1984	8.829
1977	7.603	1985	8.636
1978	7.935	1986	8.777
1979	8.461	1987	8.735
1980	8.567	1988	8.666
1981	8.284	1989	8.931
1982	8.052	1990	8.799

Table 3. Gender of Transit Riders by Population Group

Population of Urbanized Area/Urban Place	Male	Female
Under 50,000	36.47%	63.53%
50,000 to 200,000	43.36%	56.64%
200,000 to 500,000	39.14%	60.86%
500,000 to 1 million	38.08%	61.92%
1 million and more	48.87%	51.13%
National Average	48.13%	51.87%

Table 4. Age of Transit Riders by Population Group

Population of Urbanized Area/Urban Place	18 and under	18 to 65	65 and over
Under 50,000	20.73%	61.35%	17.92%
50,000 to 200,000	19.47%	67.50%	13.03%
200,000 to 500,000	15.60%	69.72%	14.68%
500,000 to 1 million	9.27%	76.51%	14.22%
1 million and more	9.96%	83.56%	6.48%
National Average	10.27%	82.80%	6.93%

Table 5. Ethnicity and Race of Transit Riders by Population Group

Population of Urbanized Area/Urban Place	White	Black	Hispanic	Other
Under 50,000	82.13%	6.17%	8.97%	2.73%
50,000 to 200,000	62.43%	24.41%	8.27%	4.89%
200,000 to 500,000	47.56%	33.62%	14.48%	4.34%
500,000 to 1 million	45.09%	40.36%	9.29%	5.26%
1 million and more	44.72%	30.54%	18.44%	6.30%
National Average	45.09%	30.85%	17.86%	6.20%

Table 6. Purpose of Transit Trips by Population Group

Population of Urbanized Area/Urban Place	Work	School	Shop-ping	Medical	Social	Other
Under 50,000	20.46%	9.01%	7.83%	33.66%	26.86%	2.18%
50,000 to 200,000	38.45%	22.10%	12.44%	6.33%	8.49%	12.19%
200,000 to 500,000	46.06%	18.41%	12.66%	5.32%	8.31%	9.22%
500,000 to 1 million	51.39%	14.60%	11.19%	4.73%	5.56%	12.53%
1 million and more	54.96%	14.46%	8.56%	5.42%	9.28%	7.33%
National Average	54.36%	14.65%	8.78%	5.46%	9.16%	7.59%

Table 7. Annual Family Income of Transit Riders by Population Group

Population of Urbanized Area/Urban Place	Under $15,000	$15,000-50,000	Above $50,000
Under 50,000	61.03%	35.97%	3.00%
50,000 to 200,000	55.38%	39.03%	5.59%
200,000 to 500,000	53.97%	38.32%	7.71%
500,000 to 1 million	51.59%	42.51%	5.90%
1 million and more	25.21%	56.74%	18.05%
National Average	27.48%	55.43%	17.10%

Table 8. National Average Ridership Profile and the General Population

	National Average Ridership Profile				U.S. General Population			
Gender	**Male** 48.1%		**Female** 51.9%		**Male** 48.8%		**Female** 51.2%	
Ethnicity/Race	**White** 45.1%	**Black** 30.8%	**Hispanic** 17.9%	**Other** 6.2%	**White** 75.4%	**Black** 12.6%	**Hispanic** 8.4%	**Other** 3.6%
Age	**18 and under** 10.3%	**18 to 65** 82.8%		**65 and over** 6.9%	**18 and under** 27.1%	**18 to 65** 60.3%		**65 and over** 12.6%
Family Income	**Under $15,000** 27.5%	**$15,000-50,000** 55.4%		**Over $50,000** 17.1%	**Under $15,000** 16.9%	**$15,000-50,000** 52.7%		**Over $50,000** 30.5%

Sources of U.S. general population data are as follows.
Gender: U.S. Bureau of the Census, *Statistical Abstract of the United States: 1992*, Table No. 12, p.14.
Ethnicity: John Pucher and Fred Williams, "Socioeconomic Characteristics of Urban Travelers: Evidence from the 1990-91 NPTS", *Transportation Quarterly*, XLVI (October 1992), 561-581.
Age: U.S. Bureau of the Census, *Statistical Abstract of the United States: 1992*, Table No.13, p.15.
Family Income: Ibid., Table No.707, p.451.

Transit Systems Responding to Profile Survey

Population Group 1: UZAs of 1 million and more

New York City Transit Authority, Brooklyn, N.Y.
Chicago Transit Authority, Chicago, Ill.
Southern California Rapid Transit District, Los Angeles, Calif.
New Jersey Transit Corporation, Newark, N.J.
Metro Atlanta Regional Transportation Authority, Atlanta, Ga.
Port Authority of Allegheny County, Pittsburgh, Pa.
San Francisco Bay Area Rapid Transit District, Oakland, Calif.
Metro-Dade Transit Agency, Miami, Fla.
Greater Cleveland Regional Transit Authority, Cleveland, Ohio
Metropolitan Transit Commission, Minneapolis, Minn.
Milwaukee County Transit System, Milwaukee, Wis.
Port Authority of New York and New Jersey, New York, N.Y.
Tri-County Metropolitan Transportation District of Oregon, Portland, Ore.
Regional Transportation District, Denver, Colo.
Dallas Area Rapid Transit, Dallas, Texas
Santa Clara County Transportation Agency, San Jose, Calif.
VIA Metropolitan Transit, San Antonio, Texas
Orange County Transportation Authority, Garden Grove, Calif.
Bi-State Development Agency, St. Louis, Mo.
PACE Suburban Bus Division of RTA, Chicago, Ill.
City of Phoenix Transit System, Phoenix, Ariz.
Westchester County Transit, White Plains, N.Y.
Metropolitan Suburban Bus Authority, Garden City, N.Y.
Sacramento Regional Transit District, Sacramento, Calif.
San Mateo County Transit District, San Carlos, Calif.
Santa Monica Municipal Bus Lines, Santa Monica, Calif.
Kansas City Area Transportation Authority, Kansas City, Mo.
San Diego Trolley, San Diego, Calif.
North San Diego County Transit District, Oceanside, Calif.
Pinellas Suncoast Transit Authority, Clearwater, Fla.
Suburban Mobility Authority for Regional Transportation, Detroit, Mich.
Montebello Municipal Bus Lines, Montebello, Calif.
Peninsula Transportation District Commission, Norfolk, Va.
Caltrans, Sacramento, Calif.
OMNITRANS, San Bernardino, Calif.
Riverside Transit Agency, Riverside, Calif.
Central Contra Costa Transit Authority, Concord, Calif.
Culver City Municipal Bus Lines, Culver City, Calif.
Transit Authority of Northern Kentucky, Fort Wright, Ky.
Clark County Public Transportation Benefit Area Authority, Vancouver, Wash.
San Diego Metropolitan Transit Development Board, San Diego, Calif.
Tri-County Commuter Rail Authority, Fort Lauderdale, Fla.
Alexandria Transit Company, Alexandria, Va.
Waukesha Transit System Utility, Waukesha, Wis.
LAKETRAN, Grand River, Ohio
Westmoreland County Transit Authority, Greensburg, Pa.

Population Group 2: UZAs of 500,000 to 1 million

Capital Metropolitan Transportation Authority, Austin, Texas
Transit Authority of River City, Louisville, Ky.
Central Ohio Transit Authority, Columbus, Ohio
Connecticut Transit - Hartford Division, Hartford, Conn.
Memphis Area Transit Authority, Memphis, Tenn.
Capital District Transportation Authority, Albany, N.Y.
Miami Valley Regional Transit Authority, Dayton, Ohio
El Paso Mass Transit Department (Sun Metro), El Paso, Texas
Indianapolis Public Transportation Corporation, Indianapolis, Ind.
Jacksonville Transportation Authority, Jacksonville, Fla.
Tri-County Transit, Orlando, Fla.
Birmingham-Jefferson County Transit Authority, Birmingham, Ala.
Central Oklahoma Transit and Parking Authority, Oklahoma City, Okla.

Population Group 3: UZAs of 200,000 to 500,000

Charlotte Transit System, Charlotte, N.C.
Madison Metro Transit System, Madison, Wis.
Connecticut Transit - New Haven Division, New Haven, Conn.
Fresno Area Express, Fresno, Calif.
Spokane Transit Authority, Spokane, Wash.
Regional Transportation Commission (Citifare), Reno, Nev.
Sun Tran of Albuquerque, Albuquerque, N.M.
Delaware Administration for Regional Transit, Wilmington, Del.
Golden Empire Transit District, Bakersfield, Calif.
Corpus Christi Regional Transportation Authority, Corpus Christi, Texas
Lehigh & Northampton Transportation Authority, Allentown, Pa.
Cumberland-Dauphin-Harrisburg Transit Authority, Harrisburg, Pa.
Ann Arbor Transportation Authority, Ann Arbor, Mich.
Grand Rapids Area Transit Authority, Grand Rapids, Mich.
City of Charleston Downtown Area Shuttle, Charleston, S.C.
Mass Transportation Authority, Flint, Mich.
Anchorage Public Transit, Anchorage, Alaska
Stockton Metropolitan Transit District, Stockton, Calif.
South Bend Public Transportation Corporation, South Bend, Ind.
Central Arkansas Transit Authority, Little Rock, Ark.
Metropolitan Tulsa Transit Authority, Tulsa, Okla
Volusia Transit Management, Inc., Daytona Beach, Fla.
South Coast Area Transit, Oxnard, Calif.
Luzerne County Transportation Authority, Scranton, Pa.
Western Reserve Transit Authority, Youngstown, Ohio
Rock Island County Metropolitan Mass Transit District, Davenport, Iowa
Jackson Transit, Jackson, Miss.
Canton Regional Transit Authority, Canton, Ohio
Sarasota County Area Transit, Sarasota, Fla.
Space Coast Area Transit, Melbourne, Fla.
Delaware Administration for Specialized Transit, Wilmington & Dover, Del.

Population Group 4: UZAs of 50,000 to 200,000

Champaign-Urbana Mass Transit District, Urbana, Ill.
Santa Cruz Metropolitan Transit District, Santa Cruz, Calif.
Citibus, Lubbock, Texas
Boise Urban Stages, Boise, Idaho
Salem Area Mass Transit District, Salem, Ore.
Intercity Transit, Olympia, Wash.
TALTRAN - City of Tallahassee, Tallahassee, Fla.
Red Rose Transit Authority, Lancaster, Pa.
Sunline Transit Agency, Thousand Palms, Calif.
Connecticut Transit - Stamford Division, Stamford, Conn.
City Utilities of Springfield, MO., Springfield, Mo.
StarTran, Lincoln, Neb.
Kitsap Transit, Bremerton, Wash.
Iowa City Transit, Iowa City, Iowa
Greensboro Transit Authority, Greensboro, N.C.
Yakima Transit, Yakima, Wash.
City of Appleton/Valley Transit, Appleton, Wis.
Berks Area Reading Transportation Authority, Reading, Pa.
Kalamazoo Department of Transportation - Metro Transit System, Kalamazoo, Mich.
Monroe Transit System, Monroe, La.
Muncie Indiana Transit System, Muncie, Ind.
Williamsport Bureau of Transportation, Williamsport, Pa.
Greenville Transit Authority, Greenville, S.C.
Community Transit, Inc., York, Pa.
San Luis Transit, San Luis Obispo, Calif.
City of Sioux Falls Transit System, Sioux Falls, S.D.
Visalia City Coach, Visalia, Calif.
Dutchess County Loop Bus System, Poughkeepsie, N.Y.
Logan Transit District, Logan, Utah
Muskegon Area Transit System, North Muskegon, Mich.
St. Joseph Express, St. Joseph, Mo.
Jackson Transit Authority, Jackson, Tenn.
Cape Code Regional Transit District, Hyannis, Mass.

Population Group 5: Places under 50,000

LINK, Wenatchee, Wash.
Endless Mountains Transportation Authority, Inc., Athens, Pa.
Ames Transit Agency, Ames, Iowa
Roaring Fork Transit Agency, Aspen, Colo.
Oneonta Public Transit, Oneonta, N.Y.
Fond du Lac Area Transit, Fond du Lac, Wis.
Wilson Transit System, Wilson, N.C.
Muskingum Authority of Public Transit, Zanesville, Ohio
Crawford Area Transportation Authority, Meadville, Pa.
Kings Area Rural Transit, Hanford, Calif.
Butler Township-City Joint Municipal Transit Authority, Butler, Pa.
New Castle Community Transit, New Castle, Ind.
County of Lebanon Transit Authority, Lebanon, Pa.

Methodology

Sampling Procedure

The *Ridership Profile Survey* was sent to 406 APTA-member transit systems on March 12, 1992. A copy of this survey and the cover letter is shown at the end of this chapter. The transit agencies returned 143 surveys of which 137 had usable responses,[12] five were unusable and one was a duplicate. This gives a relatively high response rate of 33.7 percent. More importantly, the responding systems had a total 1990 ridership of 5.007 billion unlinked passenger trips, which is 57 percent of the 1990 national total of 8.799 billion unlinked passenger trips. Therefore, the general U.S. transit-riding population is well represented by this sample. The survey results were compiled and computerized using a IBM-standard personal computer and the Quattro Pro spreadsheet program.

Survey Verification

Each of the surveys were analyzed to determine if the responses were adequate and correct. The most common error was that the percentages in one or more of the categories did not sum to 100 percent. In these cases, the person reporting was telephoned and asked to supply the correct figures. When adequate responses could not be obtained the offending category was disregarded.

Calculating the Weighted National Mean and Population Group Means

The national mean for each survey item was calculated by a weighted average formula using the transit systems' average weekday ridership as the weight for each observation. The formula for this calculation is given in Equation 1.

$$\bar{x}_w = \frac{\sum wx}{\sum w} \tag{1}$$

where

$\bar{x}_w$ = the national weighted mean for the item
x = the transit system's response for the item x
w = the transit system's average weekday ridership
$\sum$ = summation across all responses for item x

---

[12]The Port Authority of New York and New Jersey returned two surveys-one for the PATH commuter rail and one for the Hoboken Ferry.

In order to study the effects of community size, each system was assigned to a group according to the population of the urbanized area or urban place served by the system. Admittedly, the five population groupings are somewhat arbitrary, but they are based on divisions used in previous ridership profile studies. Moreover, the "1 million and more" group is certainly representative of large cities. Likewise, the "under 50,000" group is representative of non-urban areas. In any case, the data items appeared to show contiguous trends by population and similar results would have been obtained with any reasonable grouping.

The weighted average formula using the average weekday ridership weights was also used to obtain the population group means. The formula is shown in Equation 2.

$$\bar{y}_w = \frac{\Sigma wy}{\Sigma w} \qquad (2)$$

where

$\bar{y}_w$ = the population group weighted mean for the item

y = the transit system's response for the item y

w = the transit system's average weekday ridership

Σ = summation across all responses in the population group for item y

In several instances the responses of the New York City Transit Authority, which reported 2.2 billion unlinked passenger trips in 1990, overwhelmed the weighted mean. In these cases, the weighted mean excluding NYCTA's response was also given.

Age and School Status Adjustments

The *Ridership Profile Survey* asked for a breakdown of riders by school status. During the initial analysis it became apparent that this organization was deficient for comparison with census data of the general population and with other transportation profile studies. Therefore, it was decided to combine the school status categories into the three age groups. The responses for "Pre-school children" and "Elementary and secondary school children" were summed into the "18 and under" age category. Likewise, the "University and college students" and the "Non-student adults below age 65" categories were combined into the "18 to 65" age group. Of course, the "Senior citizens" group became the "65 and over" age group. The incongruity of this re-grouping is that some 18, 19 and 20 year old high school students in the original "Elementary and secondary school" group were placed into the new "18 and under" age group. Also, some under 18 non-students were placed into the new "18 to 65" age group. However, the overall effect of this on the national and population group ridership profiles is probably very minimal.

Race/Ethnicity Adjustments

The U.S. Bureau of the Census collects and publishes racial statistics according to five categories: American Indian or Alaska Native, Asian or Pacific Islander, black, white and other race. The Census Bureau identifies Hispanic origin as an ethnicity and not as a separate racial group. Furthermore, although persons of Hispanic origin may be of any race, it seems that most Hispanics are identified as white within these strict racial categories. That is, the 1990 census estimate of 22,354,000 Hispanics[13] is so large that only the white race estimate is sufficient to contain it.

The *Ridership Profile Survey* was initially designed to correspond roughly with the Census Bureau's racial categories. However, the *Ridership Profile Survey* had only three racial categories: white, black and other, with "other" being reserved for American Indian or Asian people. As with the Census Bureau's questionnaire, Hispanic heritage was a completely separate question from race. Unfortunately, most reporters included Hispanic heritage in the race question, so that the sum of the percentage for white, black, other and Hispanic totalled 100 percent. Many other reporters erroneously included Hispanics in the "other" racial category. Further research and telephone conversations with the reporters confirmed that transit system ridership data files generally consider Hispanic origin as a racial category.

At this point, it was decided to summarize the ridership profile according to four racial/ethnic categories: 1) white, non-Hispanic, 2) black, non-Hispanic, 3) Hispanic, and 4) other (American Indian or Alaska Native, Asian or Pacific Islander). This organization was comparable to the transit systems' data and also corresponded with data reported from the 1990-91 Nationwide Personal Transportation Study.

The final step was to adjust the surveys to reflect the new racial classifications. For those surveys which were correctly completed, the Hispanic heritage percentage was subtracted from the white percentage. For those surveys in which Hispanics were included in the other race category, the Hispanic heritage percentage was subtracted from the other percentage. The end result of the adjustments was to give a better representation of minority riders, since Hispanics were now a distinct group. On the other hand, the ridership racial profile is not directly comparable with the Census Bureau's biological-stock racial classifications.

Annual Family Income Adjustments

The family income section of the *Ridership Profile Survey* permitted each respondent to define low, middle and high income ranges. This was done because there was some apprehension that using pre-defined income-group dollar amounts would result in a preponderance of blanks for this item. The consequential problem was how to reconcile all the different income ranges into just three income categories.

---

[13]U.S. Bureau of the Census, *Statistical Abstract of the United States: 1992* Table No.16, p.17.

As expected, the respondents gave a very broad range of income amounts. For example the lowest low income was less than $5,000 while the highest high income was greater than $150,000. An analysis of the frequency distribution revealed that the most common low income value was $15,000 and that the most common high income value was $50,000. Hence, in order to minimize the number of adjustments, the low income range was set at $0-15,000, the middle income range at $15,000-50,000 and the high income range at greater than $50,000.

The low income percentages for each transit system were adjusted according to the difference between the survey's low income value and $15,000. That is, the low income ridership percentages were adjusted upward if the survey's low value was less than $15,000 and downward if the low income value was greater than $15,000. Assuming a normal distribution, this would give an adjusted estimate of the percentage of riders below the $15,000 family income level. The formula used to calculate the percentage of riders below $15,000 income is shown in Equation 3.

$$Newlow\% = Low\% + \left(\frac{Middle\%}{(High\$ - Low\$)} \times (15000 - Low\$) \right) \tag{3}$$

where
  $Newlow\%$ = the adjusted percentage of riders below $15,000 annual family income
  $Low\%$ = the percentage of riders in the original low income range
  $Middle\%$ = the percentage of riders in the original middle income range
  $Low\$$ = the original low income value in dollars
  $High\$$ = the original high income value in dollars

Example: 30% of riders less than $20,000, 50% from $20,000 to $40,000, 20% above $40,000
Solution: 20% of riders below $15,000 annual family income.

Similarly, the high income ridership percentages for each transit system were adjusted according to the difference between the survey's high income value and $50,000. The high income ridership percentages were adjusted downward if the survey's high income value was less than $50,000 and upward if the high income value was greater than $50,000. The formula used to calculate the percentage of riders above $50,000 income is shown in Equation 4.

$$Newhi\% = High\% \times \left(\frac{5000}{|(50000 - High\$)|} \right)^{\frac{|(50000 - High\$)|}{(50000 - High\$)}} \tag{4}$$

where
  $Newhi\%$ = the adjusted percentage of riders above $50,000 annual family income
  $High\$$ = the original high income value in dollars
  $High\%$ = the percentage of riders in the original high income range

Example: 30% of riders less than $20,000, 50% from $20,000 to $40,000, 20% above $40,000
Solution: 10% of riders above $50,000 annual family income

There were exceptions this formula. Three systems listed high income values of $75,000 or greater and their income responses were discarded as outliers. The total 1990 ridership of these three systems was 71.9 million unlinked trips, which is less than 1.5 percent of the total sample of 5.007 billion unlinked trips. Therefore, the effect of this action on the national and population group means is very minimal.

After adjusting the low and high income ridership percentages for each system, the national and population group low and high income ridership means were calculated with the weighted average formula. The national and population group means for <u>middle income</u> <u>ridership percentages</u> (riders with family income from $15,000 to $50,000) were then calculated for by subtracting the sum of the low and high income means from 100 percent.

Validation

We believe that the ridership profile presented herein accurately describes the U.S. transit market. The survey sample is large and diverse enough to state that the transit systems that did not respond to the *Ridership Profile Survey* are **not significantly different from the systems which did respond.**

As a further validation, the reader is directed to the *1990-91 Nationwide Personal Transportation Study.*[14] This study used a completely different methodology and data source, yet the results are very similar to our findings.

---

[14]John Pucher and Fred Williams, "Socioeconomic Characteristics of Urban Travelers: Evidence from the 1990-91 NPTS", *Transportation Quarterly*, XLVI (October 1992), 561-581.

TO:	All Transit System Members
FROM:	Executive Vice President
DATE:	March 12, 1992
SUBJECT:	"TRANSIT RIDERSHIP REPORT" SURVEY FORMS FOR 1992; SPECIAL RIDERSHIP SURVEY FOR 1992 TRANSIT FACT BOOK

Enclosed are four ridership data reporting forms, one for each quarter of calendar year 1992. Please route them promptly to the person charged with completing them. <u>The first quarter form is due on May 20, 1992.</u>Please send all forms and address any questions on them to Ms. Sree Varanasi, Statistical Analyst, at (202) 898-4025.

The information you provide will be used to prepare the APTA Quarterly Transit Ridership Report. This report contains the most up-to-date information on transit patronage and is used widely by transit managers as well as researchers.

To preserve the timeliness, each report must be published before the end of the following quarter. Thus, your cooperation in meeting the deadline is important and is greatly appreciated.

<u>Also enclosed is a special survey due on May 1, 1992</u> to obtain data on frequently-asked ridership questions. APTA hopes to develop national estimates from your responses for the **Transit Fact Book**. Please send the survey form and address any questions on it to Mr. Terry Bronson, APTA Manager of Statistics, at (202) 898-4129.

Thank you for your cooperation.
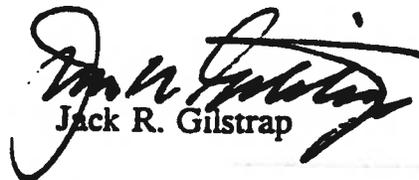
Jack R. Gilstrap

JRG:tlb

Enclosures

American Public Transit Association
1201 New York Avenue, NW, Suite 400
Washington, DC 20005

Contact: Terry L. Bronson
Manager - Statistics
Telephone: (202) 898-4129

SPECIAL RIDERSHIP SURVEY FOR APTA TRANSIT FACT BOOK

(Please complete and return by May 1, 1992. Estimate if you do not have the data.
If you are unable to estimate some items, leave them blank.)

Transit System _____

Person Reporting_____ Phone (____) -_____

APTA would like to include in its **1992 Transit Fact Book** the answers to some frequently-asked transit ridership questions. Please estimate as best you can the answers to these questions. Thank you.

Transit system is defined to include all service operated directly by you plus any service operated by an organization or individual under contract to you.

1.   Who rides your transit system?   Percent of Total

    By Sex (must add to 100%)
    Male   _____%
    Female   _____%

    By Age and School Status (must add to 100%)
    Pre-school children   _____%
    Elementary and secondary school children   _____%
    University and college students   _____%
    Non-student adults below age 65   _____%
    Senior citizens (age 65 and over)   _____%

    By Race (must add to 100%)
    White   _____%
    Black   _____%
    Other   _____%

    By Hispanic Heritage (Hispanics may be of any race)   _____%

    With Visible Disability   _____%

(continued on reverse)

By Annual Family Income (your definition) (must add to 100%)

Low income: less than $_____/year   _____%

Middle income: from $_____ to $_____/year   _____%

High income: above $_____/year   _____%

By Trip Purpose (must add to 100%)

Work   _____%

School   _____%

Shopping   _____%

Medical   _____%

Social and recreational   _____%

Other   _____%

2.   How many people ride your transit system on an average   **Number of**
     weekday?   **People**

     Total   _____
        Trips do not involve transfer to or from another system   _____
        Trips start on your system and end on another system   _____
        Trips start on another system and end on your system   _____

3.   Please attach any additional information and reports on the characteristics of your
     transit users.