

The Future of Transportation in Society: Forces of Change

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Overview

- Transportation as an integral part of society
- Customer satisfaction
- Societal issues
- Historical trends
- Forecasts
- Forces of change and transportation implications
- Needs of customers
- Questions for new transportation systems

Roles of Transportation in Society

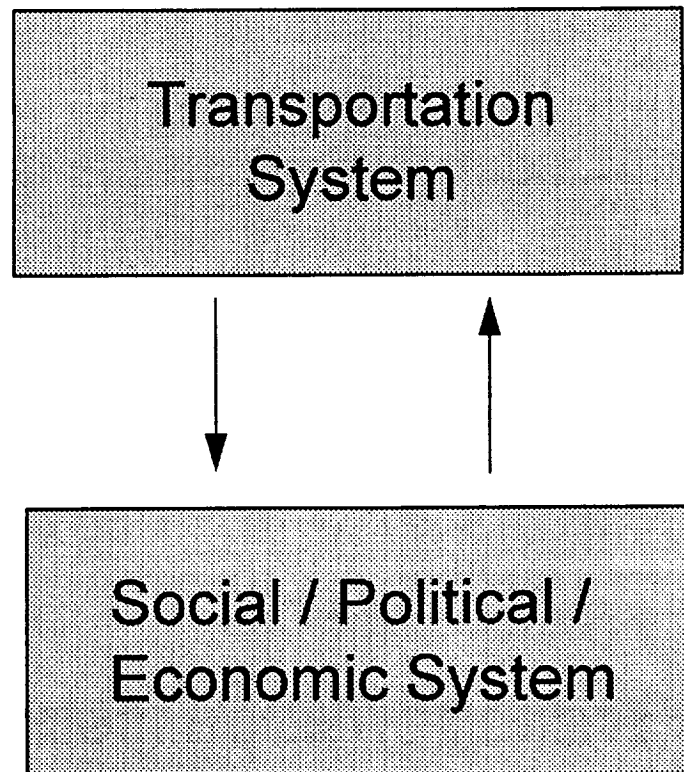
- To provide access for people to life's activities
- To move goods

Vehicle Miles of Travel in the U.S. 1991 (millions)

Highways		2,174,786
Auto	1,542,846	
Truck	623,625	
Bus	8,315	
Local Transit		3,348
Rail		25,941
Amtrak	313	
Freight	25,628	
Air		8,364
Water		1
Domestic Transp.		2,212,440

Source: USDOT: National Transportation Statistics (1993)

Interaction of the Transportation System and the Social / Political / Economic System



Societal Factors Relating to Transportation Systems

- Access
- Demographics / family structure
- Distribution effects
- Economic
- Isolation
- Land use
- Organizational
- Safety and security
- Traffic effects
- Transportation issues
- User acceptability
- Users / non-users of systems

Factors Affecting Transportation Use

Regulation
Litigation
Legislation



Technology
Push

Transportation
Use

Market
Pull

Market Pull

Defined by needs, desires, and characteristics of actors in the market place.

CUSTOMER SATISFACTION

Customers for Transportation

- Women
- Men
- Youth
- Aged
- Sick
- Wealthy
- Poor
- Healthy
- Handicapped
- Single
- Married
- Urbanites
- Ruralites
- Suburbanites

Population Growth WWII to Present

U.S. Total 56.1%

Metropolitan Areas 76.1%
($\geq 50,000$ population)

Central Cities 49.9%

Suburban Areas 200.0%

Source: Rosenbloom, Sandra. A Vision of Emerging Transportation Service Requirements Twenty Years in the Future. Final Draft. Tucson: Drachman Institute for Travel and Regional Development Studies. February 1995, p.37.

Immigrants to U.S. by Region of Birth (Thousands)

	1971-1980	1981-1990
Europe	801.3	705.6
Asia	1,633.8	2,817.4
North America	1,645.0	3,125.0
South America	284.4	455.9
Africa	91.5	192.3

Source: U.S. Bureau of Census. Statistical Abstract of the United States 1994 (114th Edition) Washington, D.C. Table 8.

Residence as % of Population - 1988

Central Cities	33%
Suburbia	46%

Poverty Rate - All Families - 1991

Central City Families	17.2%
Suburban Families	7.2%

Distribution of Poor - 1980

Central Ghettos	24 Million
	(8.9% of all poor in U.S.)
Black	67%
Hispanic	33%

% of Population in Central Cities in Extreme Poverty

1970	5.2%
1990	10.7%

Source: Rosenbloom. February 1995, pp. 38-40.

Changes in Marital Status and Living Arrangements

	<u>1970</u>	<u>1991</u>
% of adults who are married	72	61
% of children living with 2 parents	85	72

Source: Saluter, Arlene F. Marital Status and Living Arrangements:
March 1991. Current Population Reports, Population Characteristics.
Series P-20, No.461. U.S. Bureau of the Census.

Living Arrangements of the Elderly, 1991 Age 65 and Over (Non-institutional Residents)

<u>Living</u>	<u>%</u>
Alone	31.2
With spouse	54.1
With other relatives	12.5
With non-relatives only	<u>2.2</u>
 Total: 30,093,000	 100.0

Source: Saluter, Arlene F. Marital Status and Living Arrangements: March 1991. Washington, D.C.: U.S. Bureau of the Census. Current Population Reports. Series P-20, No. 461.

% of Married Women Employed

1960	30
1990	60

% of the Work Force Who Are Women

1950	35
1990	42

% of Women 35 - 44 Working Outside the Home

1960	40
1992	77

% of Married Women With Children Under 6 Working Outside the Home

1960	18
1970	30
1994	60

Source: Rosenbloom. February 1995.

**“Forecasting is difficult,
especially when it
involves predicting the
future.”**

Yogi Berra

U.S. Population 2015

(Thousands)

	<u>1995</u>	<u>2015</u>
Men 25 - 64	66,624	75,277
Men over 64	13,699	20,453
Women 25 - 64	68,690	81,651
Women over 64	19,951	26,274

Source: U.S. Bureau of the Census. Statistical Abstract of the United States. 1994 (114th Edition). Washington, D.C. Table 11.

U.S. Population Projections by Age, Race, and Hispanic Origin (Thousands)

	1990	2015	% Increase
White	209,150	247,544	+18
Black	30,620	42,817	+40
American Indian, Eskimo, Aleut	2,075	2,905	+40
Asian and Pacific Islander	7,570	19,922	+163
Hispanic	22,554	45,871	+103

Source: Day, Jennifer Cheeseman. Age, Population Projections of the U.S. by Sex, Race, and Hispanic Origin: 1993 - 2050. Current Population Reports, P.25-1104. U.S. Bureau of the Census.

Forces of Change and Their Transportation Implications

Lower Residential Density

- Longer trips to more dispersed destinations
- More personal car use
- More likely to be alone in car
- More trips
- More elderly in suburbs

Household Changes

- Increased travel demand with increased number of households
- Increased travel demand with decreased number of adults per household

Forces of Change and Their Transportation Implications (continued)

Movement of Jobs to Suburbs

- Increased suburb-to-suburb commute
- Increased central city-to-suburb commute
- Diminished reliance on transit
- Increased use of personal vehicles

Increase in Working Mothers

- Increased need for linked trips
- Decreased ability to use inflexible and time-consuming modes

Forces of Change and Their Transportation Implications (continued)

Increase in Elderly Population

- Increased need for transportation usable by elderly
- Needs not met by public transportation
- Increased use of personal vehicles
- Need for vehicles to meet ergonomic requirements

Forces of Change and Their Transportation Implications (continued)

Increase in Immigrant Population

- Different ergonomic, experiential, and language backgrounds need to be addressed in transportation system

Increase in Poverty in Inner Cities

- Transportation from inner city to suburban job locations

Some Needs of Customers

Working Mothers	Ease of linked trips
Aged	Independence, easy-to-use transportation
Youth	Access to school, after school activities
Immigrants	Easy to understand instructions
Urban	Quick travel in congested areas; reverse commuting
Rural	Access to centers of activity

Some Needs of Customers (continued)

Suburban	Access to centers of activity
Poor	Access to jobs, education, health care ...
Handicapped	Access to jobs, education, health care ...
All People	Social interaction, access

Will New Transportation Systems ...

- Enable inner city residents to access suburban jobs?
- Be affordable to all potential users?
- Equitably address social priorities?
- Be usable by handicapped people?
- Enable elderly people to live independently longer?
- Be understandable, usable, and affordable by immigrants?

Will New Transportation Systems ... (continued)

- Be usable by youngsters without adult supervision?
- Meet the ergonomic needs of the potential users?
- Contribute to human interaction and diminish society's sense of isolation?
- Afford access to the elderly who have "aged in place" in the suburbs?
- Have "seamless interfaces" between available modes?

Will New Transportation Systems ... (continued)

- Be safe and user friendly?
- Users be secure?
- Users' privacy be violated?
- Be acceptable in the marketplace?
- Harm society in any way?
- Contribute to the social good?

