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# **The Future of Transportation in Society: Forces of Change**

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# Overview

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- 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**

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

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

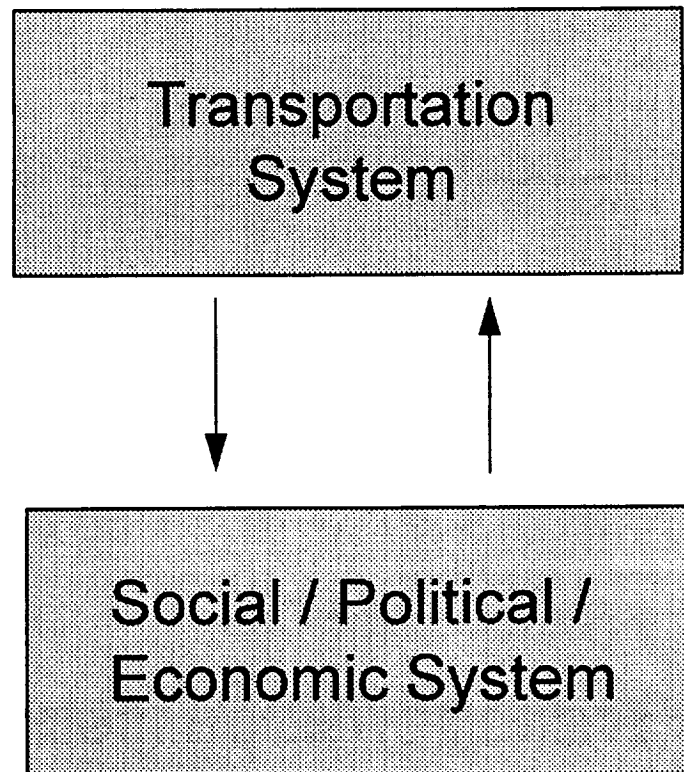
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Highways		2,174,786
Auto	1,542,846	
Truck	623,625	
Bus	8,315	
Local Transit		3,348
Rail		25,941
Amtrak	313	
Freight	25,628	
Air		8,364
Water		1
Domestic Transp.		2,212,440

Source: USDOT: National Transportation Statistics (1993)

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

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# **Societal Factors Relating to Transportation Systems**

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- 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

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Regulation  
Litigation  
Legislation



# **Market Pull**

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

**CUSTOMER SATISFACTION**



# Customers for Transportation

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

# Population Growth WWII to Present

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U.S. Total	56.1%
Metropolitan Areas ( $\geq 50,000$ population)	76.1%
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)

	<b>1971-1980</b>	<b>1981-1990</b>
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**

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	<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)**

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<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.”**

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**Yogi Berra**



# **U.S. Population 2015**

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**(Thousands)**

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

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)

	<b>1990</b>	<b>2015</b>	<b>% Increase</b>
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**

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## **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)**

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## **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)**

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## **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)**

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## **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)**

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



# Will New Transportation Systems ...

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- 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)**

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- 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)**

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- 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?

