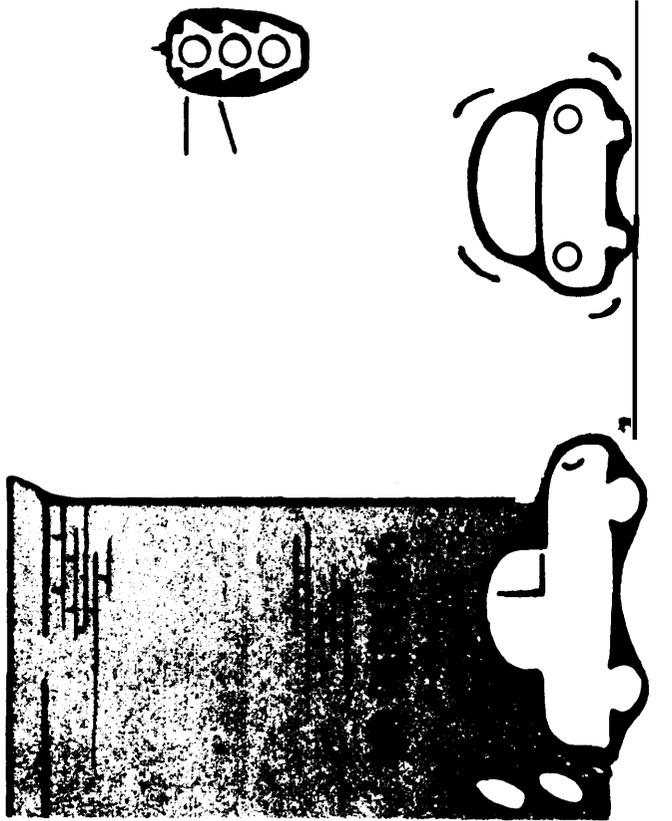


Appendixes

BROCHURE/QUESTIONNAIRE

THE AUTOMOBILE It's Driving Us To Think



Dear Citizen:

The future use and characteristics of the automobile transportation system is the topic of a study being conducted by the Office of Technology Assessment (OTA), and the topic of this booklet. As a research arm of the United States Congress, OTA is responsible for examining a variety of technologies and their impact on society to help our legislative representatives determine the appropriate role for the Federal Government in technology development and usage. It is the purpose of this brochure to briefly discuss the issues being examined in the automobile study.

Sincerely,

Russell W. Peterson
 Director
 Office of Technology Assessment

DIVIDED HIGHWAY BEGINS

The automobile has become increasingly important in our lives since the turn of the century when it first began to make its way over the globe. Few people at the time could have foreseen that it would ever successfully compete with the railroads. The greatest objections raised against the newfangled motor car were that its commotion frightened the horses, and it kicked up dust around the farmlands.

Most assumed that its emissions could not possibly be worse than the daily sanitation problems and assault to the eyes and nose presented by horses on the city streets. In New York City alone in the late 1800's, about 2.4 million pounds of manure and 60,000 gallons of urine fell on the streets every day. In the midst of all this, about 15,000 horses dropped dead each year, aggravating the unhealthy situation and clogging the streets.

The automobile brought welcome relief from horse and buggy transportation, and offered a host of new benefits as well. The automobile provides speed, comfort, privacy, door-to-door service-mobility whenever and to wherever we wish. These conveniences proved so attractive that, by 1928, there were more cars than telephones in the United States, and after World War II, almost every family in the expanded American middle class owned at least one car. Greater personal mobility became so common it was taken for granted by most of us. Then, the suburbs began to grow. Stores, churches, recreation areas, and employment centers followed residential development and spread far beyond the city boundaries.

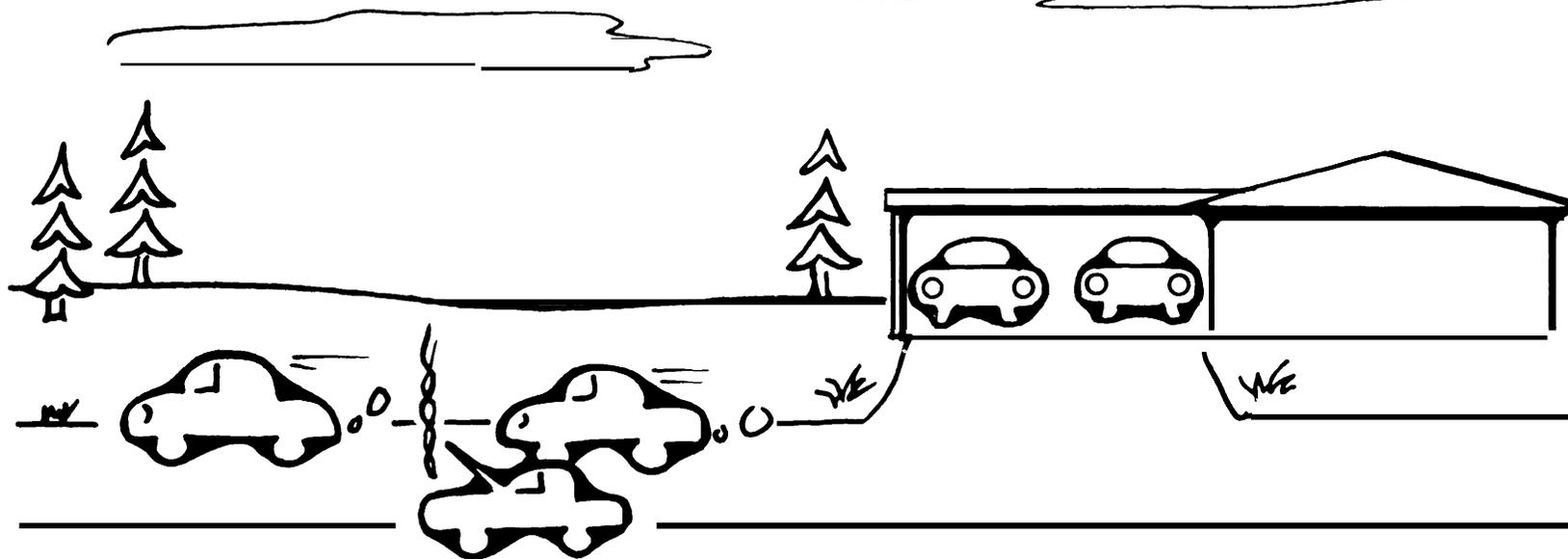
Because of the popularity of the automobile, rising car ownership rates, and sprawling low-density development, transit service dwindled. Owning a car gradually became a necessity. The profusion of automobiles and changing American lifestyles (such as the 9-to-5 workday and 5-day workweek) combined to produce several adverse impacts (traffic congestion and air pollution, for example).

In the 1950's, alarmed by increasing smog caused partially by automobile exhaust, citizens in Los Angeles, Calif., demanded corrective action. Emission control technology was available to automobile manufacturers at the time, but for a variety of reasons, the industry balked at the utilization of such technology. The State of California responded by legislating emission control. The Federal Government eventually followed suit and instituted measures to improve air quality in cities all over the country by controlling sources of pollution, including automobile exhaust.

Public concern regarding the automobile covers more than air pollution, however. For instance, the price of fuel is rising and is likely to continue to do so. Each year the United States imports more foreign oil. The number of traffic deaths and injuries is staggering. As old cars are scrapped, their bodies and parts create a solid waste disposal problem. Because the automobile has permitted homes, offices, shops, and necessary services to be located far apart, those who cannot drive are at a disadvantage. One major alternative, public transit, in many places does not exist, costs too much, or is inconvenient.

CHECKING UNDER THE 11000

The Office of Technology Assessment (OTA), a research arm of the United States Congress, is designed to act as an early warning system for Congress by providing assessments on various technologies, their potential or actual impacts, alternative technologies, and relevant Government policy options. Generalists and specialists from the professions and the public pool their efforts to develop broad, accurate, in-depth assessments. At the request of Congress, OTA is studying the future of the automobile transportation system to determine the short- and long-range impacts on society and the appropriate role for the Federal Government. OTA's preliminary assessment of the automobile identified five issue areas for study: mobility, environment, energy, safety, and cost and capital.



MOBILITY: Two-car barrage

In 1892, when the automobile was introduced in this country, we were an agricultural Nation, close to the land and close to our homes. Individual mobility was limited, and travel minimal. Now, however, travel is crucial to our economy and to our daily lives, and the car provides most of our mobility.

Currently, the American automobile transportation system contains about 100 million cars (the national population totals about 200 million people) which are driven on 3.8 million miles of roads, streets, and highways

throughout the United States. About one million miles of this roadway are built or maintained by Federal funds and carry about three-fourths of all vehicular travel.

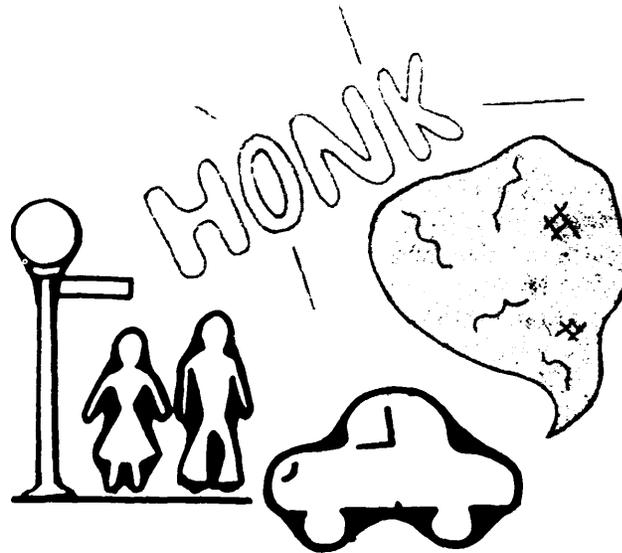
Despite the high auto ownership figures, only 60 percent of our population drives. The other 40 percent of us who do not drive—because we are too young, too old, too disabled, or too poor to afford a car—must depend on others to drive us to our various destinations, or rely on alternative modes which offer fewer advantages than the automobile in terms of convenience, comfort, and speed.

Basically, there are three ways society can improve mobility. First, facilitate the physical movement of people from place to place. Second, improve accessibility by moving people and activities closer together. Third, reduce the need for travel by developing and utilizing technological substitutes (telecommunications), or by changing attitudes and lifestyles (voluntary simplicity, perhaps).

The Federal Government has concentrated on facilitating physical movement. It has funded, in varying degrees, projects such as roadway construction, special transportation services, and mass transportation. Generally, the Government's position has been financially supportive of the growth of the automobile industry. Although its actions have affected land use extensively, the Federal Government has shied away from direct land use management.

ENVIRONMENT: Caught in a clutch

One of the greatest environmental concerns associated with the automobile is atmospheric pollution. The Nation's Capital, a city with little industrial activity, still finds itself periodically strangled by air pollution, especially in the hot summer months when high humidity adds to the problem. Over 90 percent of the carbon monoxide comes from cars driven into, out of, and around the city. Hydrocarbons and nitrogen oxides emitted by automobiles contribute to the contamination as well.



While experts disagree about the severity of health hazards these air pollutants may pose, most agree that the continued pollution of the atmosphere will cause severe damage in the long run. Whether from the automobile or other sources, air pollutants appear to be at least partially responsible for increases in cancer and other diseases, interference with normal weather patterns, and damage to plant and animal life. As a result of federally mandated technological changes, emissions from new automobiles have been greatly reduced and will be reduced further as requirements of the Clean Air Act are met.

Additional environmental impacts associated with the automobile transportation system are noise, water pollution, *solid* waste disposal, and sometimes disruptive consumption of land, particularly in residential areas. Within the past 20 years, the Federal Government has become concerned enough to enact legislation in defense of the environment. Emission control spread nationwide with the passage of the Clean Air Act of 1963 and subsequent amendments. The National Environmental Policy Act was passed in 1969. In 1972, the Noise Control Act became law, and the Federal Water Pollution Control Act was also passed. From this spate of legislative activity emerged the President's Council on Environmental Quality and the U.S. Environmental Protection Agency.

ENERGY: Fill'er up

Since the automobile was first introduced in the United States, trillions of dollars have been spent structuring the Nation and our lifestyles around the car. Cheap, plentiful petroleum encouraged the dominance of the automobile in our transportation system. Today, although the United States comprises only 6 percent of the world's population, it operates more than half the world's cars, trucks, and buses.



Each year we import more oil due to:

- Our voracious appetite for fuel (automobiles consume about 30 percent of our petroleum supply);
- Dwindling domestic supplies; and
- Our energy-dependent economy.

By becoming more dependent upon foreign sources for oil, we may be risking our national security. Another oil embargo could seriously hurt the economy of this country. Transition to alternate energy sources (synthetic fuels from coal, shale oil, or alcohol, for example) will take time, 15 to 25 years perhaps. Implementation of conservation measures will take time, too, but may provide some short-term relief from increasing oil import pressures.

Federal concern about the gravity of the energy situation prompted the establishment of the nationwide 55 mph speed limit in 1974, the creation of the U.S. Department of Energy in 1977, and the current high-priority Presidential effort to obtain legislative support for a national energy plan.

SAFETY: Proceed with caution

This country annually suffers thousands of deaths, millions of injuries, and billions of dollars in property damage due to traffic accidents. Forty-six thousand lives were lost **and** 4 million people were injured in highway accidents in 1976. These astonishing figures

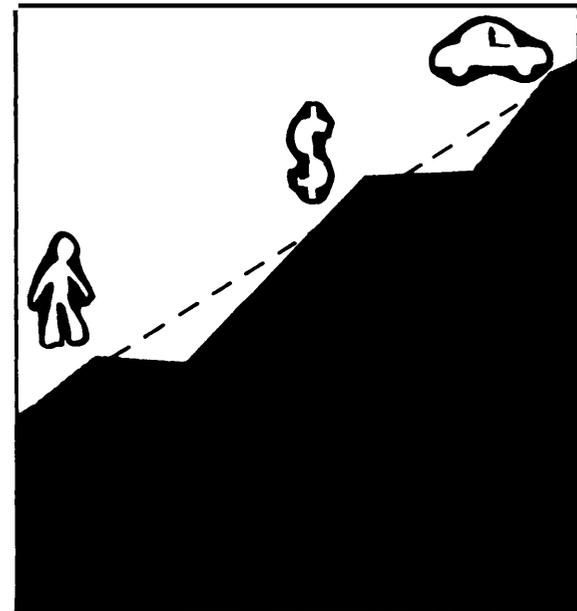


believe the fact that the United States has the lowest rate, based on vehicle miles of travel, of traffic deaths and injuries in the developed world. Be that as it may, car accidents are our leading cause of injury, with 50 percent of those accidents suspected to be related to alcohol abuse.

Traffic safety is a complex matter involving vehicles, roadways, users, and the various support systems. It has long been a concern of the Federal Government as evidenced by laws passed in the early 1800's in an attempt to reduce casualties resulting from poor stagecoach operations. To protect the riders, one law required lamps at night, and another mandated fines for drunk drivers. It was not until 1966, however, that the Federal Government became heavily involved in highway safety legislation, enacting the National Traffic and Motor Vehicle Safety Act and the Highway Safety Act. Under the National Traffic and Motor Vehicle Safety Act, new motor vehicles and vehicle components must meet certain safety requirements before they can be sold to the public. The Highway Safety Act administers 18 safety programs in areas such as driver education, traffic law enforcement, roadside design, and school transportation safety.

COST AND CAPITAL: Stops And Bonds

Transportation takes a hefty chunk out of the average American household budget. Generally, only housing and food expenses are greater—and often not by much—than automobile expenditures. These costs include purchase price, maintenance and repair charges, fuel bills, parking fees, and insurance premiums. Many Americans have turned to smaller cars in response. Often



cheaper to purchase and operate than domestic models, foreign cars comprised about 20 percent of the new-car market in the United States between 1976 and 1977. Spurred by this foreign competition and by Federal legislation, Detroit reacted by creating smaller, more fuel-efficient models of its own.

Much of the economy of this country depends in some way on the car. One out of every six jobs derives from it, either directly through the automobile industry (assembly line workers, for example) or indirectly through auto-related services (garage mechanics and tire manufacturers, for example). Our transportation system accounts for about 20 percent of the gross national product, and the automobile accounts for about half of that.

Federal financial involvement in the automobile transportation system began early and gradually broadened in its application. Federal funds have provided subsidies for the materials and energy industries which supply and serve the auto industry; financed road construction projects throughout the country; supported research, development, and demonstration programs; funded some planning efforts at the State level; promoted regional transportation coordination; and more.

THE CLOVERLEAF: Interrelationships

Environmental concerns about the automobile are often depicted as contrary to U.S. economic and energy goals. The business sector of the country is reluctant to spend its money on research and technology geared toward improving the environment because it is feared that environmentally safe automobiles will then be too expensive for the American consumer. Decreased sales would cause the industry to suffer, possibly resulting in plant closings and layoffs that would affect the economic health of the entire Nation. On the other hand, a fundamental change in the economic base of this country, stimulated by protective environmental legislation or energy constraints or some other cause may be beneficial to the labor market. For instance, the President's Council on Environmental Quality found in 1975 that, while there were some job losses resulting from environmental legislation, the emerging environmental industry had produced an even larger number of new jobs, for a net gain in the overall labor market.

Like the other auto issues, implementation of safety improvements affects cost and capital concerns. The technology exists to substantially reduce traffic mortality. However, utilizing that technology would be very costly. We have found, for example, that interstate highways and freeways are the safest roads, but it would take huge sums of money to reconstruct all the roads in this country to meet interstate standards. Safety

devices in automobiles also tend to increase the cost of cars. Unsure of the public's willingness to pay for the improved safety of its vehicles, the auto industry remains reluctant to risk installation of these devices for fear of a decline in sales and profits.

Additionally, some individuals resist mandated safety equipment as an infringement of civil rights. As more Americans purchase smaller and lighter cars—for energy, environmental, and/or cost reasons—safety may decrease. This is because occupant protection is a function of crash distance and relative vehicle weights.

Alternatives to automobile transportation do exist in many areas throughout the country. Efforts to constrain auto usage in these areas, because of energy, environmental, or congestion problems, are often resisted by citizens who view the constraints as limitations on mobility. In considering alternatives, OTA is examining new automotive technologies as well as alternatives to the automobile in toto as a mode of personal transportation.

AUTO ASSESSMENT: Merging traffic

These, then, are the issues and some of the interrelationships which OTA is currently examining in its study of the automobile. Because public participation is so important for the operation of our democratic government, OTA invites your comments on the issues, transportation alternatives (including the automobile), and policy options for Government action.

Send your comments to:

Transportation Program
Attn: Public Participation
Office of Technology Assessment
United States Congress
Washington, D.C. 20510

QUESTIONNAIRE

The Future of the Automobile With You in the Driver's Seat

Actions taken by the Federal Government in the near future could drastically change the automobile transportation system as we now know it, or Increase our dependence on the automobile by the year 2000. Your answers to the following questions will help Government officials decide what course of action to follow in the future of the automobile.

1. What are the major advantages and disadvantages of the automobile for you?

2. What actions could you take to reduce these disadvantages. or increase the advantages?

3. What actions Could the Federal Government take to reduce the disadvantages, or Increase the advantages?

4. Should the automobile be the major means of transportation for *your area* in 2000? if not, what alternatives would you suggest?

5. Describe the transportation system of 2000 as you would like it to be.

6. What do you perceive the Federal Government's role to be in transportation now? in the year 2000?

7. if you have other comments about the automobile as it relates to transportation, please note these below, or include them on a separate sheet(s) and mail them to us along with this questionnaire.

8. if you belong to an organization which would have an interest in the auto assessment, please indicate.

Organization: _____

Address: _____

Street

City State Zip

President: _____

9. if you would like to be kept informed about this assessment, please indicate:

Name: _____

Address: _____

Street

City State Zip