

## Some Effects of Highway Beautification

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Carrying out the Congressional request for an economic impact study of the Highway Beautification Act has resulted in an overall analysis of the effects of the Act based largely on 25 studies in various states. The impact of the Act was estimated using study and control area comparisons, before and after period comparisons, industry trend analysis, attitude surveys, case studies, a county input-output model, and by analogizing from known experience.

The overall impact of the Act should be fairly minor, though certain groups will experience a more pronounced effect. Outdoor advertising companies may experience some losses during the time of adjustment to the Act. Motorists will experience increased pleasure, comfort, convenience, and safety; very few motorists will experience problems in locating highway services. Highway-oriented businesses will in some cases lose trade and in others gain, since billboard controls should have little effect on total demand for gas, food, and lodging. Some landowners will experience land value increases (e.g., from sign or junkyard removal nearby), though some sign site owners will lose rental income. The effects of junkyard control will be felt primarily by owners of junkyards which need to be relocated; screening will have little effect, though some benefits may accrue to screened junkyards and property nearby. Scenic enhancement effects will be felt by motorists—in the form of increased driving pleasure—and by landowners who will realize some increases in property values near scenically enhanced highways.

•PUBLIC programs that are beneficial to society in general often have varying effects on individuals and groups within the society. The Highway Beautification Act of 1965 is such a program. The Act calls for the control of outdoor advertising and junkyards along the Federal-Aid Primary Highway System and provides for landscaping and rest and recreation areas along both the primary and secondary highway systems.

In passing the Highway Beautification Act of 1965, the Congress obviously felt that the benefits would outweigh the costs. However, the Congress also recognized the need for further study of both the beneficial and adverse effects of the highway beautification program and requested a "... comprehensive study of the economic impact ... on affected individuals and commercial and industrial enterprises ... and the public and private benefits realized thereby ..."

In order to carry out this Congressional mandate, 25 economic-impact studies were conducted in various states throughout the country. These are listed at the end of this paper. Findings from these studies were summarized by the Bureau of Public Roads in a staff report, "Economic Impact of the Highway Beautification Act," and a condensed version of this report was submitted to the Congress in early 1967. This paper describes

some of the methods and findings from the studies and from the Bureau's summary and analysis. The findings presented in this paper are generally predictive in nature. More precise estimates of the economic impact of the Act cannot be made until it has been in existence for some time and actual experience becomes available.

## STUDY METHODS

Evaluating the effects of the Highway Beautification Act required: (a) a determination of the types of individuals and groups affected, (b) an estimate of the nature of the effects, (c) development of a method for measuring those effects which could be quantified, and (d) the determination of a time period over which these effects would be considered.

Individuals and groups affected by the provisions of the Highway Beautification Act were determined primarily by reviewing the legislative hearings on the Act. Outdoor advertising companies, roadside businesses, motorists, landowners, and junkyard operators are among those expected to be affected most, e.g., by a gain or loss of income, increased driving pleasure, and change in land values. Estimating the impact involved analysis of past experience and the opinions and attitudes of the affected groups. Most of the studies were conducted on a local or statewide basis; a survey of the "standardized" outdoor advertising industry conducted by Memphis State University and Texas A&M University was done on a national scale.

The inventory of signs and junkyards on Federal-Aid Primary Highways and the estimate of the costs of complying with the Act—both accomplished by the state highway departments and the Bureau—also provided basic data for the estimate of economic impact. For example, the sign inventory provided useful information for an analysis of sign ownership and types of advertisers using outdoor advertising. A finding from this analysis is that only about one-fourth to one-third of all signs advertise goods and services which are needed by motorists (e.g., motels, restaurants, and service stations).

The time period over which economic impact estimates would be made had to be considered in analyzing the effect of the Act; that is, whether the estimates would be for a short run or for a longer period of time. At least one study (at West Virginia University) provided estimates of the impact on the outdoor advertising industry for both the short and the long run, though most studies considered the short run.

Another consideration was whether or not the research should take the form of a benefit-cost analysis which would provide an evaluation of the economic impact of the Act on an aggregate basis or a study of the impact on affected individuals and groups. The second approach was followed, primarily because Congress was apparently concerned with the impact on all individuals and groups which might be affected by the provisions of the Act, even though net benefits overall were expected to exceed costs of the program. Therefore, although most of the researchers were aware that the aggregate impact of the Highway Beautification Act on the national economy would be negligible, they considered it important to determine the redistribution effects on individuals and groups which would be affected.

The methodology used in the research included several of the techniques common to economic impact studies: "study and control" area comparisons, before and after comparisons, trend analysis of an affected industry, attitude sampling and analysis (including some fairly meticulous procedures to assure unbiased results) case studies, and a county input-output model which was developed at Pennsylvania State University. Study and control area comparisons included sections of highways with and without billboard control to determine what response motorists have to this difference and whether the absence of billboards causes any problems for motorists seeking highway service.

Some of the study methods have been adapted from analyses of other public projects, particularly from evaluations of water resources or other recreational facilities. There are some obvious similarities in the problem of evaluating effects from scenically enhanced highways and the effects of parks or open space. Such recreational benefits as those accruing to observers traveling past a park resemble the effects experienced by travelers on scenically enhanced highways. No really satisfactory method has been devised for evaluating cultural or aesthetic benefits, and monetary or economic values

provide only a rough and inexact measurement. Because of the problem of measuring intangible benefits, costs are described in terms that permit a fairly direct comparison with the benefits received.

## FINDINGS

The economic impact of the Highway Beautification Act should be fairly minor, at least on a national basis. The impact on certain affected groups will be more pronounced and can be described in terms of the provisions for outdoor advertising control, junkyard control, and scenic enhancement. There are, in addition, effects not directly related to the three main provisions of the Act which are here referred to as overall effects.

### Effects of Outdoor Advertising Control

The outdoor advertising provisions of the Highway Beautification Act affect several different groups. Those most directly affected are (a) outdoor advertising companies, (b) highway-oriented businesses, (c) motorists, and (d) sign site owners. The official information centers and right-of-way signs provided for in the Act should result in substantial benefits to both motorists while adequately serving the advertising needs of roadside businesses.

Outdoor Advertising Companies—The Act will affect the outdoor advertising industry by removing many of the signs presently being operated and by reducing future sign opportunities. This loss of signs could in turn have a detrimental effect on outdoor advertising company income, employment, and capital investment, at least in the short run.

There are several possible adjustments which could be made by the industry, such as sign relocation in permitted areas or erection of more profitable types of signs, such as painted bulletins. In fact, outdoor advertising companies may experience some measurable benefits which will offset some of their losses from sign control. The industry recognizes that a heavy concentration of signs reduces the value of each individual sign, and that fewer signs per mile increases the profit-making ability of each sign.

Roadside Business Establishments—There are currently more than a half million establishments engaged in what can be called a highway-oriented business industry (e.g., in providing gas, food, lodging, and similar goods and services). Many of these establishments make extensive use of outdoor advertising for attracting and informing customers.

To the highway-oriented business industry as a whole, the Act will probably be beneficial, since it should make highways more conducive to pleasure and vacation travel. However, some establishments will undoubtedly experience losses due to a redistribution of business, for example, away from those which previously relied on outdoor advertising to those which did not use this medium. Although there has been some concern that outdoor advertising controls will cause the small establishments to lose business and large ones to gain, this effect is not at all certain. The study conducted by the California Division of Highways indicated that small motels (8 to 18 units) did not use billboard advertising to as great an extent as larger motels (42 units and more). Therefore, with fewer billboards, these small motels in California may realize increased returns.

Managers and owners of highway-oriented business establishments vary considerably in their estimates of the effectiveness of outdoor advertising. Some owners and managers feel that other means of attracting customers are more effective (e.g., guidebooks).

Roadside business establishments can expect benefits from outdoor advertising control when this reduces advertising costs that result when establishments advertise only because their competitors do. A study by New Mexico State University, for example, found that several motel managers would be willing to remove their off-premise signs in order to save the amount spent on outdoor advertising provided their competitors did likewise.

Motorists—Surveys from several studies revealed that a majority of motorists were more interested in billboards advertising highway services than billboards advertising

other products. Motorists indicated they preferred or would be satisfied with official signs advertising highway services, but most motorists wanted specific brand names on official signs. Without billboards, motorists would turn to guidebooks or use personal inquiry to locate facilities.

Surveys show a wide range in the percentage of motorists using billboards for selecting highway services. For example, a University of Missouri research team asked 726 motorists why they selected the motel or restaurant of their choice. The responses showed the following:

Knew of the motel before	37 percent
Got tired at that point	13 percent
Liked the appearance	13 percent
Selected it on basis of outdoor advertising	10 percent
Liked the convenient location	9 percent
Selected it on basis of friend's recommendation	7 percent
Gave miscellaneous reasons	11 percent

This study also indicated that infrequent travelers were most dependent upon roadside advertising signs, whereas those who traveled most frequently were most strongly opposed to them.

A New Mexico State University study found that of 600 vacationing motorists interviewed the following reasons were given for selecting the motel of their choice:

Chain or association	30 percent
General appearance and attractiveness	18 percent
Repeat visit	17 percent
Credit cards	10 percent
Highway billboards	6 percent
National advertising	5 percent
Miscellaneous other	14 percent

Landowners—Some landowners will experience losses of income earned from the rental of sign sites. However, the removal of signs in many cases will allow the site to be used for other types of development which may serve to offset the loss of income resulting from removing signs. Also, some landowners in commercial and industrial areas where signs are permitted may find that their land is more valuable as a sign site and may receive an increase in rental income. This will result from the decreased supply of land for signs and the probability that this scarcity of land will result in signs of a higher quality in order to increase their effectiveness. With only a limited number of signs permitted, it would be uneconomical for an outdoor advertising company to maintain unsightly and ineffective signs. An indirect effect of the improvement in billboard quality will be to increase income to some landowners.

#### Official Information Centers and Right-of-Way Signs

The writers of the Highway Beautification Act of 1965 were fully cognizant of motorists' needs for information and provided for the erection of information centers and official right-of-way signs. Such centers will be beneficial to motorists, roadside businesses, local communities and even to outdoor advertising companies. Experience with information centers that have already been built with both private and public funds has been encouraging. Figure 1 provides an example of such an information center.

For a tourist-oriented business, information centers have several advantages over off-premise commercial signs. First, they are more effective in providing complete information for the traveler. The information center enables the businessman to "tell his full story" about the facilities he has to offer, rates, and even vacancies in some cases. Second, the cost of advertising is substantially less. For example, it costs \$12 initially plus \$24 per year for an advertiser to place a sign at the information center in Aspen, Colorado (Fig. 1). Costs for advertising using off-premise signs are generally



Figure 1. Information center, Aspen, Colorado.

higher than this. Third, the advertiser does not risk losing those customers who may be opposed to signs along a highway.

In addition to information centers, official signs on the right-of-way of Interstate highways may provide the tourist-oriented business with an opportunity to communicate with the motorist. A demonstration project conducted along I-95 in Virginia shows how such signs will benefit roadside businesses. Of 578 motorists interviewed who had used the signs, 97 percent of the gasoline customers, 89 percent of the food customers, and 93 percent of the lodging customers indicated that the signs met their needs. To test the effectiveness of the signs, the researchers observed gasoline sales with the signs exposed and with the signs covered. In almost all cases, daily sales by the stations listed on the information signs were higher when the signs were exposed than when they were covered. Figure 2 shows one of these signs.

Official information centers and right-of-way signs can provide alternative sources of income for outdoor advertising companies who will lose signs under outdoor advertising control. The manufacture, erection, and maintenance of signs and other materials at information centers, for example, can probably be accomplished best by the skills and business experience of established outdoor advertising companies. Several outdoor advertising companies have shown an interest or are already engaged in providing advertising services of this type. For example, an outdoor advertising company has recently erected a building in Iowa to provide the types of information needed by the traveler, including points of interest and health, emergency, and personal services (Fig. 3). Information of this type cannot be readily obtained from off-premise billboards as they now exist. The effectiveness of this information center has been studied in Iowa by Arthur D. Little, Inc., in cooperation with the Iowa State Highway Commission.

The uncertainty that exists in the outdoor advertising industry provides another reason why investment in information centers or right-of-way signs would be advantageous. This method of advertising seems to be well accepted by advertisers, local communities, and the traveling public. This has not been the case with off-premise signs and billboards. For many years, local and state governments have been enacting legislation to



Figure 2. Official right-of-way sign on I-95 in Virginia.

eliminate off-premise signs. Many garden clubs and other groups are opposed to this type of advertising and advertisers have been aware of this public reaction. By investing in a product which is desired and needed by the traveling public (i.e., information centers), the industry could find itself in a more stable environment.

#### Effects of Junkyard Control

There are over 20,000 junkyards of all types on Interstate and other primary highways, according to the inventory of signs and junkyards. A majority of these junkyards



Figure 3. Information center erected by an outdoor advertising company in Iowa.

will need to be screened or removed to comply with the provisions of the Highway Beautification Act. Several economic impact studies sought to learn the attitudes and opinions of junkyard operators as to the possible impact of the Act on their businesses.

Studies at Pennsylvania State University and Texas A&M University indicate that the effects of screening junkyards would be relatively minimal. In fact, the Pennsylvania State study found that several of the larger junkyard operators were generally in favor of the Highway Beautification Act because they felt that screening would result in better public relations.

Although junkyard operators anticipated few adverse effects from screening, they were more concerned about moving to another location. For example, nearly half of the automobile wreckers surveyed by Texas A&M University expected removal to another location to result in decreased sales. The automobile wreckers also anticipated a decrease in employment if forced to move. However, of eight automobile wreckers who had actual moving experience within the past five years, seven stated the move had little effect on sales. Because many junkyards are not full-time operations, the survival rate for the 3,500 junkyards that need to be removed may be as low as 35 percent.

Junkyard control provisions are expected to result in the general enhancement of property values and, therefore, tax rolls. Several qualified analysts believe screening will improve neighborhoods and land values near these screened yards. Relocated junkyards result in tax gains for some jurisdictions and losses for others. For example, a tax loss may result from a relocated junkyard unable to survive a move. However, the new uses appearing at the sites vacated by junkyards may be higher income producing uses and may yield more taxes than junkyard operations.

### Effects of Scenic Enhancement

Scenic highways result in benefits to at least two groups: highway users and nearby landowners. Aesthetic landscape design typically enhances the motorists' safety and enjoyment and stabilizes community desirability and property values. Roadside beautification is really just another way of striving for the "complete highway," a highway incorporating aesthetic factors of the highway and the abutting landscape corridor so as to contribute to highway safety, economy, utility, and to the aesthetic character of the corridor itself. When combined with rigorous engineering standards, highway beautification makes pleasure driving more enjoyable, but does not impair the highway's usefulness for commercial or other types of traffic.

Highway User Effects—Surveys of motorists' desires show that scenic or beautiful highways are preferred by nearly all highway users. Some motorists have such a strong preference for scenic routes that they will travel farther or longer in order to traverse a scenic highway.

In one survey, scenery was rated as more important than travel time and distance but less important than congestion. Scenery was rated highest for pleasure driving with no particular destination and for driving to vacation destinations. Apparently the more time a motorist has to spend on his trip, the more he is likely to select a scenic route (1).

Land Values—The pleasure which scenic highways or parkways are meant to generate is reflected at least in a general way in the development and the value of land near these facilities. Land values provide a fairly objective measure of the economic potential of a piece of property or of an area. Land values tend to be more objective than some indicators (e.g., opinion surveys) because land values avoid most problems of interpreting the real attitudes of respondents. Land values are based on verifiable contracts rather than statements or responses which may sometimes be self-serving or otherwise inaccurate.

Land values can be an indicator of "all the various direct and indirect impacts" (2). They ordinarily reflect changes affecting property, whether the influence is a school, a park, a parkway, or scenic highway or an adverse influence such as a noisy, dangerous traffic arterial or the presence of air pollution. While many of the effects may have been merely attracted rather than created by the parkway or other project, there is considerable agreement that well-conceived and well-located projects may be associated with land value gains (due to increased economies and efficiencies) that will not be offset by losses elsewhere (3).

While improved aesthetics or visual quality appears to be the primary purpose of scenic highways these facilities can result in economic benefits as well. This generalization can be made on the basis of analogous experience with parks and open space, on the strong preference which prudent real-estate investors have for pleasant surroundings, and on the persistent economic well-being which has been associated with parkways.

Parks, Open Space, and Parkways—There is general recognition of the beneficial influence of parks and open space on nearby areas. At least some of the benefits of parks and open space accrue to nonparticipants, to people passing by the parks, or to residents living near the park who may never make any direct use of the park. This park effect typically shows up in increased land values nearby. In Washington, D.C., parks have been credited with enhancing nearby property values to such an extent that the resulting increases in property taxes have far exceeded maintenance and operating costs of these parks (4).

Private developers make good use of the tendency which open space, parks, or park-like highways have for enhancing values of nearby land. In Los Angeles, where the Hollywood and Santa Ana freeways were constructed through areas covered by old buildings which had to be removed, plantings so improved the general tone of the neighborhoods that owners have been stimulated to renovate, reconstruct, and develop their properties (5). Many developers find that the income foregone by keeping certain areas untouched is more than recovered by the higher prices received for those properties which sell (6).

Experience Near Parkways—Parkways or scenic highways have some of the characteristics of parks and some of the characteristics of highways. A recent study in the Washington, D.C., area provides a comparison of land values near parkways and other highways. Although some of the growth near the Baltimore-Washington Parkway may result from such nonroad influences as greater economic development in the direction of Baltimore, the use of the so-called participation ratio generally adjusts for these; at least for those nonhighway influences which were present at the beginning of the study period in 1950 (7).

From 1950 to 1961, parkways generally outpaced nonparkways, both in land value changes adjusted for general price changes and in the share of Washington's development accounted for in areas near the parkways and the nonparkways. For example, the corridors along the George Washington Memorial Parkway experienced a 300 percent gain in average land values between 1950 and 1961, whereas the average increase in land value along Shirley Highway (a nonparkway) during the same time period was about 80 percent.

A comprehensive study of parkways and land values completed a number of years ago showed that parkways in the vicinity of New York, Boston, and Kansas City were economically sound. Land values in areas affected, taken to be "the measure of (the real-estate's) possible benefits to the available purchaser who can make the most profitable use of it," increased dramatically (8).

Experience Near Other Scenic Highways—An attitude survey in Chicago indicates how nearby residents feel about some of the newer highways where attention has been given to making these highways aesthetically pleasing. In response to the somewhat leading question, "Do you consider the expressway a thing of beauty?" the responses were "yes" from 70 percent along the Eden Expressway, 100 percent along the Kennedy Expressway, and 80 percent along the Eisenhower Expressway. Open cut areas of greenery were generally preferred over close neighbors, and the Eisenhower Expressway was considered a factor in revitalizing the slum area nearby. Some residents regarded the expressway as their park, to be enjoyed visually even though they did not physically enter the area (9).

Local Tax Base Effects—Scenic enhancement provisions should generally be beneficial to local tax bases, though some adverse effect may be experienced by local taxing jurisdictions where scenic easements retard development. Such restrictions to development may occasionally divert development to other taxing jurisdictions but ordinarily will only cause the development to be removed further from the highway. Some adverse effect may also result due to the removal of property from tax rolls because of acquisition of additional land for scenic strips. Both of these possible adverse effects should

be minor and more than offset by general enhancement of tax rolls because of the Act, but no concrete evidence of this is now available.

**Maintenance Benefits**—Good landscaping often eases maintenance problems and costs. In Ohio, "expenditures for roadside development, flattening and rounding slopes, seeding, landscaping, and erosion control have provided handsome returns in reduced maintenance expenses . . ." (10). Maintenance savings typically result from using plantings that are functional, for example, that save mowing, reduce headlight glare, hide litter, abate noise, guide drivers, screen undesirable views, and serve as snow fences. Living snow fences have saved up to \$500 per mile in maintenance costs (11).

It is obvious that some aspects of well-landscaped highways tend to raise as well as lower maintenance costs. Rest areas, for example, often create serious maintenance problems resulting from vandalism (12). At the same time, rest areas tend to lower costs for such important maintenance items as litter control. This is shown by the heavy use which is made of litter barrels at rest areas. Surveys of facilities used at rest areas and measures of litter collected at rest areas demonstrate how important it is to have these trash barrels easily accessible. For example, as many as 16 barrels of trash are collected each day from some rest areas.

While disposing of this volume is a major task, it is obviously much more economical to handle this rubbish when it is in barrels than to have it scattered along the roadsides. Even if the barrels are used for domestic garbage, it is still better to have the garbage there than in the ditch (13). Also, providing pleasant and neat roadsides with adequate rest areas equipped with trash receptacles should influence more motorists to help keep these landscaped highways neat by properly disposing of their litter.

### Some Overall Effects

In addition to the effects on specific individuals and groups, there will be some overall or general effects resulting from the Highway Beautification Act. These effects include (a) an increased consciousness of the need for preserving the Nation's scenic resources, (b) the beneficial effect the highway beautification program will have on the national economy, and especially on local economies, and (c) the benefits resulting because of the permanence of most highway beautification measures. These overall effects, especially the relationship between costs and benefits, can also be perceived by considering costs on a unit basis.

**Increased Interest in Scenic Resources**—The current interest in the quality of the environment in the United States is unmistakable. "More and more people are concerned with water pollution, air pollution . . . solid wastes, the preservation of areas for outdoor recreation and for open space, the design and arrangement of both the urban and rural landscape . . . Living in harmony with nature has become a matter of conscious attention and national policy . . ." (14). Clearly, "there are strong indications of an awakening public appreciation of the amenities and acceptance of responsibility for preservation of our vanishing resources, the Nation's landscape" (10).

The Highway Beautification Act of 1965 cannot properly be credited with creating the current interest in aesthetic highways or environmental quality in general, but the Act can be credited with intensifying this interest. The Act is focusing attention on what John T. Connor, former Secretary of Commerce, called "an often neglected aspect of highways." News stories have credited the highway beautification program with adding impetus to such developments as oil company efforts to design their service stations to blend with the scenery, and attempts to protect trees by barricades during construction. In July 1965, a writer in *Landscape Architecture* even associated an increase in subscriptions to that magazine with the beautification program.

**Local Economy Effects**—The economic stimulus which expenditures for highway beautification (e.g., landscaping and screening) provide is fairly obvious. While the effect on economic activity is generally less for highway expenditures than for other public expenditures where labor costs are more important, \$1 spent for highway beautification will ordinarily result in total expenditures of more than \$2 as estimated from a Pennsylvania State University input-output model.

Whether the expenditures for scenic enhancement and junkyard control will result in economic activity sufficient to offset the economic activity lost because of signboard removal is not entirely clear. If, as is anticipated, investment in landscaping or other comparable highway beautification projects encourages tourism, enhances land values, and eases driver tension, then the investment in highway beautification should result in economic gains greater than the losses following removal of some billboards.

Considerable insight as to whether gains resulting from investment in beautification will offset losses from removing billboards was provided by an input-output study of the economy of Clinton County, Pa. The input-output model has been used for several purposes, such as forecasting impact of highway construction and forecasting the effects of a strike at a local aircraft plant. The technique is considered fully operational for Clinton County.

The major finding from the study was that the county would experience a slight increase in economic activity as a result of the Act. In terms of relative change, the impact in Clinton County will be slight. Total economic activity for the county as a whole would increase very little—less than 0.1 percent. This would scarcely be felt in the economy, though there may be some dislocations evident due to the manner of income distribution within the community.

The burgeoning tourist industry has helped focus attention on the association between pleasant surroundings and economic progress. Increasingly, communities are emphasizing their pleasant scenery in an effort to attract tourists.

More and more, there appears to be agreement that cities need to "make a charming entrance" in order to "draw tourist dollars" (15).

The increased opportunities which scenic highways may offer for business activity are to some extent offset by losses in other areas. Highway beautification, whether along the highway or on private property bordering the highway may, therefore, not result in any substantial increase in revenue to the tourist industry on a national basis. However, to the extent that foreign travelers can be encouraged to travel in America or to the extent that Americans can be encouraged to travel more in this country than they would have traveled without scenic highways, this does represent a gain in revenue for the tourist industry.

The Permanence of Highway Beautification—The benefits which highways, especially limited-access highways, can yield as dividing lines or buffers between different land uses have been well established. Limited-access highways are especially effective for this purpose, apparently partly because of their permanence (their built-in resistance to obsolescence). Highway beautification enhances this feature of limited-access highways.

Highways do wear out over time or at least become inadequate for the required service. Even highway right-of-way must be regarded as having a definite life, though right-of-way does ordinarily have a longer life than surfaces or structures. Some benefits of highway beautification (e.g., well-landscaped open space) may extend beyond the economic life of the right-of-way, for example, beautification in areas where some benefits continue after highway abandonment.

While well-designed and well-located highways may have longer duration than the buildings or other manmade structures nearby (16), it is obviously possible to surround highways with an environment that will be long lasting.

The early parkways did this. In fact, the landscaping along some of these parkways has outlasted the roadway itself. This potential benefit of highway surroundings that protect the highway from undesirable encroachments has of course been recognized for some time. A 30-year-old report states that "Parkways will benefit future generations as well as the present. Parkways have great duration, though the surface may wear out several times" (8).

This permanence of highways with parklike surroundings apparently results primarily from the way in which time affects different elements of the highway and the highway environment. While pavement and buildings grow older and deteriorate over time, a landscape with a minimum of care regenerates itself by the process of nature (e.g., cycles of day and night and the seasons). This tendency for parklike landscaping along highways to continue to be aesthetically pleasing may even become more

pronounced in the future. Some of the current practices not only tend to simplify maintenance, but also foster this regenerative aspect of natural landscaping, e.g., no-mow ground covers, small plantings that may reseed themselves, and uneven rows or clumps of plantings so that replacements are not necessary (17, 18).

**Benefits Perceived Through Unit Costs**—As suggested previously, the benefits of such a program as highway beautification should exceed the costs. In the absence of precise information about benefits, costs can sometimes be described or restated in terms that permit decision-makers to compare benefits and costs in a meaningful way. For example, the costs of carrying out the provisions of the Highway Beautification Act were at one point estimated to be approximately \$1.17 per driver per year with total costs amortized over a 20-yr period at 6 percent interest compounded annually and divided among 99 million drivers (Fig. 4). Costs should actually be somewhat less than those shown since these unit costs are derived from the relatively expensive program which was

under consideration in early 1967, and since in the future there will be more than the present 99 million drivers to share these costs. Also unit costs would be substantially less if passengers as well as drivers were considered.

**Rest Area Benefits**—The benefits derived from rest areas are obviously substantial. Whether these benefits are as great as the cost must be considered. Under the highway beautification program, rest areas on the Interstate System will cost about \$150,000 each. Based on incomplete information, it appears that the 2,500 rest areas along the Interstate System may attract somewhere between 5 and 14 percent of the traffic passing these facilities. If the percentage of vehicles stopping is as low as 5 percent, costs would amount to less than 5 cents per car for each visit assuming a 20-yr life for the rest areas.

Some insight may be gained concerning the value visitors place on these stops by considering the amount of time visitors spend at rest areas. Very incomplete data indicate that rest area visitors typically spend about 15 minutes at each stop. Motoring for pleasure has sometimes been valued at around 36 cents per person per hour, a figure derived generally from the vehicle operating cost divided among the people in each vehicle traveling for pleasure (19). The 36 cents per hour estimate may understate the value motorists place on pleasure driving, since it was based on a lower traffic speed (around 25 mph) than that now existing, and it assumes more people (i.e., four) in each car than the 3 or less which current state and Bureau studies show to be typical for pleasure travel.

Assuming that people traveling for pleasure do value this activity at about 36 cents per hour, it appears that they may be at least implicitly placing considerable value on rest area stops. For example, a pleasure traveler is apparently foregoing (or at least postponing) travel which he may value at around 9 cents each time he stops for 15 minutes.

**Cost of Pleasure Driving**—Consideration of the cost of pleasure driving provides some perception of the benefits yielded by highway beautification. Motor vehicle use studies have shown that at least 12 percent of the automobile travel in the United States is for pleasure driving. This means that approximately 90 billion vehicle-miles were traveled for pleasure in a recent year (taking 12 percent of the 750 billion vehicle-miles traveled on all highway systems in 1966, when traffic volumes were considerably lower

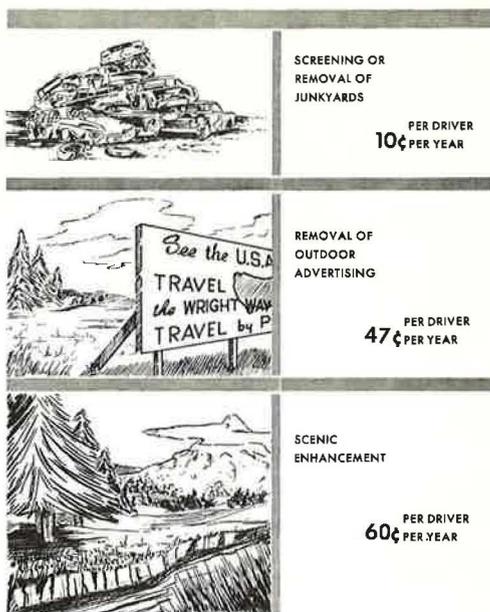


Figure 4. Highway beautification costs over a 20-yr period.

than at present). If each motorist is aware that his variable or operating costs are approximately 6 cents per mile traveled, it follows that motorists who traveled these 90 billion vehicle-miles for pleasure placed a value on this travel of at least \$5 billion. At least out-of-pocket costs of over \$5 billion were met in order to engage in this pleasure driving. It would be interesting to compare this yearly cost which motorists meet in order to drive for pleasure with the estimated yearly costs for beautifying the highways on which much of this pleasure driving takes place. A comparison between the \$5 billion spent yearly for pleasure driving and the yearly costs for highway beautification obviously would not provide any indication as to whether the amount planned for highway beautification is appropriate or proper. But the magnitude of the cost of this pleasure driving does provide a good indication of the resources motorists are willing to commit to pleasure driving.

### SUMMARY

The overall benefits of the highway beautification program are expected to exceed the costs. To learn more about this and to ascertain what impact the program may have on affected groups, the Congress requested a report of the program's costs and economic impact.

The economic impact report involved 25 studies conducted in various states. These beautification impact studies made use of several techniques used previously in economic impact analysis: study and control area comparisons; before and after period comparisons; industry trend analysis; attitude surveys; and case studies. Analysis of situations analogous to those expected after highway beautification becomes effective (e.g., absence of billboards, and presence of motorist information centers) has been helpful in estimating effects of highway beautification. Use of a county input-output model has also provided considerable insight on the impact of the program. Although these studies and the Bureau's summary study deal with estimates of future effects and with effects which are partly intangible, a few generalizations can be made.

1. The overall economic impact of the Highway Beautification Act should be fairly minor. There will be more pronounced effects on certain groups, including outdoor advertising companies, motorists, highway-oriented businesses, landowners, and junkyard operators.

2. State surveys have revealed that about one-third of the motorists contacted use billboards for selecting highway services. However, a majority of motorists indicate no difficulty in finding highway services where billboards have been restricted. Motorists are expected to realize substantial benefits in the form of increased pleasure, comfort, convenience, ease, and safety.

3. The total demand for food, gas, and lodging will not be influenced appreciably by billboard controls; the impact will tend to be a redistribution of sales among all highway-oriented businesses rather than a loss of sales.

4. Outdoor advertising controls may have the beneficial effect of reducing unnecessary advertising costs, for example, by roadside businesses now using outdoor advertising only because their competitors do.

5. Official information centers and right-of-way signs have been found to benefit motorists, roadside businesses and local communities. The need to provide advertising services at information centers offers significant economic opportunities for outdoor advertising companies.

6. Some landowners will experience land value increases with highway beautification (e.g., from sign or junkyard removal or scenic enhancement nearby). Some sign site owners will lose income from sign rentals.

7. The effects of junkyard control will be felt primarily by the owners of junkyards that will be relocated because screening is not feasible. For the 3,500 junkyards to be relocated or removed, many of which are not businesses or not full-time business, survival rates may be as low as 35 percent. Junkyard screening should have a generally beneficial effect.

8. Scenic enhancement effects will be felt by motorists and landowners, among others. Motorists clearly prefer scenic highways, though there is little or no evidence to show how much farther or longer motorists will travel to make use of a scenic highway. Land values have been found to increase near parkways more than near other highways of comparable design.

9. Some perspective may be gained by putting beautification costs in terms that can be easily understood and weighed against the benefits received, for example, over a 20-yr period. As an example, for rest areas along the Interstate, costs average 5 cents for each automobile visit at a rest area. There are indications that the value motorists place on a 15-min stop at a rest area may be about 9 cents.

10. The economic life of a highway can be prolonged by scenic enhancement. The enduring values associated with parkways, some of which are now several decades old, demonstrate the wisdom of surrounding highways with landscaping which will endure rather than man-made structures which may soon become obsolete.

The findings are obviously tentative, since they are estimates that will be affected by the beautification standards that come into being, by adjustments individuals and groups make to the beautification program, and by general economic conditions.

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