port have declined from $4 billion in 1945, to only $1.6 billion in 1966, in constant dollars (see Table 3).

In relative terms, consumers have been spending consistently less of each transportation dollar on mass transit. As indicated in Table 4, almost 58 cents of every transport dollar went toward local mass transit in 1929, whereas only 30 cents was spent that year on automobile travel. By 1966, the situation was completely reversed, and automobile expenditures consumed more than 70 cents of every transport dollar, while mass transit accounted for less than 15 cents.

Revenues and Expenditures

Despite the decline in patronage, however, transit revenues generally have not suffered in proportion. The main reason has been the substantial rise in fares. The average fare per revenue passenger in 1945 was only 7 cents compared to about 20 cents in 1966. Transit expenditures, however, have increased more rapidly than revenues since the mid-1950's. Operating income, or net revenue after taxes, has accordingly shown successive declines, with deficits appearing in 1965. The ratio of operating expense to operating revenues, while only about 77 percent in 1945, rose to more than 96 percent in 1964. Table 5 presents financial data on the industry beginning with 1945.

Many transit companies have been burdened with a variety of locally determined fees and charges. The most frequently imposed levy has been the franchise tax. In the past, the franchise tax has accounted for about 25 percent of all taxes paid by the industry. The tax has been levied on gross revenues, with rates varying from 2 percent to 5 percent, regardless of the net financial position of the company. Some localities have also imposed levies of various types for snow removal, street cleaning, the

---

Some caveats about the financial data are in order. The data are based on company financial reports which are not always uniform, and which often exclude items that later have to be estimated. The totals reported also represent only 85 percent of the industry. Finally, the aggregates presented are influenced by the larger transit operations in major cities, and in fact, the industry "deficits" since 1964 are substantially the result of financial difficulties of public transit in one of the larger urban centers.

---

Table 4

Percentage Distribution of Consumer Transportation Expenditures
Selected Calendar Years, 1929-1966
(Billions of 1958 dollars)

<table>
<thead>
<tr>
<th>Year</th>
<th>Total</th>
<th>Automobile</th>
<th>Local public transportation</th>
<th>Intercity transportation</th>
</tr>
</thead>
<tbody>
<tr>
<td>1929</td>
<td>100.0%</td>
<td>29.8%</td>
<td>57.5%</td>
<td>12.8%</td>
</tr>
<tr>
<td>1939</td>
<td>100.0</td>
<td>37.2%</td>
<td>48.8%</td>
<td>14.0%</td>
</tr>
<tr>
<td>1949</td>
<td>100.0</td>
<td>48.8%</td>
<td>38.4%</td>
<td>12.8%</td>
</tr>
<tr>
<td>1959</td>
<td>100.0</td>
<td>68.0%</td>
<td>19.6%</td>
<td>12.4%</td>
</tr>
<tr>
<td>1965</td>
<td>100.0</td>
<td>71.2%</td>
<td>14.4%</td>
<td>14.4%</td>
</tr>
<tr>
<td>1966</td>
<td>100.0</td>
<td>71.0%</td>
<td>14.0%</td>
<td>15.0%</td>
</tr>
</tbody>
</table>

Source: Computed from data published by U.S. Department of Commerce, Office of Business Economics.
### Table 5
Transit Finances of Public and Private Companies in the United States

**Selected Calendar Years, 1945-1966**

(Dollar figures in millions)

<table>
<thead>
<tr>
<th>Year</th>
<th>Operating revenues</th>
<th>Operating expenses</th>
<th>Net revenues before taxes</th>
<th>All taxes</th>
<th>Operating income</th>
<th>Operating expenses</th>
<th>Percent of operating revenues</th>
</tr>
</thead>
<tbody>
<tr>
<td>1945</td>
<td>$1,380.4</td>
<td>$1,067.1</td>
<td>$313.3</td>
<td>$164.5</td>
<td>$148.7</td>
<td>10.8%</td>
<td>77.3%</td>
</tr>
<tr>
<td>1950</td>
<td>1,452.1</td>
<td>1,296.7</td>
<td>155.4</td>
<td>89.0</td>
<td>66.4</td>
<td>4.6</td>
<td>89.3</td>
</tr>
<tr>
<td>1955</td>
<td>1,426.4</td>
<td>1,277.4</td>
<td>149.0</td>
<td>93.3</td>
<td>55.7</td>
<td>3.9</td>
<td>89.5</td>
</tr>
<tr>
<td>1960</td>
<td>1,407.2</td>
<td>1,289.9</td>
<td>117.4</td>
<td>86.7</td>
<td>30.7</td>
<td>2.2</td>
<td>91.7</td>
</tr>
<tr>
<td>1964</td>
<td>1,408.1</td>
<td>1,342.6</td>
<td>65.5</td>
<td>77.9</td>
<td>(12.4)(e)</td>
<td>—</td>
<td>95.4</td>
</tr>
<tr>
<td>1965</td>
<td>1,443.8</td>
<td>1,373.8</td>
<td>70.0</td>
<td>80.7</td>
<td>(10.6)(e)</td>
<td>—</td>
<td>95.2</td>
</tr>
<tr>
<td>1966</td>
<td>1,478.5</td>
<td>1,423.8</td>
<td>54.7</td>
<td>91.8</td>
<td>(37.1)(e)</td>
<td>—</td>
<td>96.3</td>
</tr>
</tbody>
</table>

**Notes:**
- a. Based on financial and statistical reports from 85 percent of the transit industry as defined on page 12.
- b. Includes depreciation which is generally valued on original cost.
- c. Includes Federal and state income taxes, and a variety of local taxes including, primarily, the franchise tax.
- d. Net revenue after taxes.
- e. Deficit.

**Source:** American Transit Association.

---

Support of local police and fire services, and the financing of construction and maintenance of various public facilities.

To supplement “fare-box” revenues, many transit companies have offered special services at separate rates. Two of the most common, among bus companies, have been school-service contracts and charter-bus services. In the latter case, operators with I.C.C. (interstate) licenses have been able to charter buses for long-distance trips. Special services have also been available on rapid transit; one example has been the subway ride for 75 cents to Aqueduct race track in New York City. New York has also considered the feasibility of using the subways to deliver freight and supplement intra-city mail service. Advertising and concession rentals in subway stations have also brought in significant revenues, though insufficient to change the overall financial picture.

**Ownership and Financing Methods**

Local intra-urban mass transit is provided by about 80 publicly owned and/or operated systems, and some 1,060 private companies. The governmental systems include rapid transit and bus services in the largest cities: New York, Chicago, Los Angeles, San Francisco, Cleveland, Boston, Detroit, San Antonio, and Miami. The private firms, usually small bus companies, operate in both small and large urban centers.

Most of the public systems are municipally owned and operated. About one-third are public corporations, while the rest are proprietary agencies or departments. Some systems are leased by

---

10. Based on data provided by the American Transit Association.
the municipalities from private companies and then leased back to the owners for daily operation. The “lease-back” contract may include subsidies for the owners in return for policy controls over services and fares. Some municipal systems are leased for private operation directly.

Methods of financing the governmental systems vary. In some cases, municipalities provide most or all of the capital financing. In others, only operating subsidies are provided; and in yet others, both current operations and the construction of new facilities are municipally subsidized. In New York City, for example, capital financing has, in the past, been entirely subsidized with tax-supported borrowing; moreover, selected operating subsidies, to cover reduced school fares and some power and transit police costs, are also provided by the city. In recent years, debt-service on New York transit bonds has run as high as $114 million.11

As in the case of government systems, the financial arrangements of privately owned companies also vary. Some of the larger private corporations issue common stocks. Frequently, the larger corporations have subsidiary operations in numerous cities and towns. Many smaller firms are controlled centrally through a holding company. Private firms in financial difficulty have received local assistance through tax relief and other measures.

Gross investment in facilities in 1966 totaled $4.4 billion. This total, only slightly higher than the amount reported in 1944, reflected the substantial reduction in street-railway plant after World War II as the industry shifted from streetcars to motorbuses. Data on annual investment in facilities are not readily available. Some estimates have placed recent amounts at $100 million annually.12

Other Economic Factors

There seems to be some significance in the relationship between population density and the financial success of transit operations. Cities with high population densities seem to have financially troubled transit systems; those with low densities seem to benefit from successful transit operations. Among cities with populations exceeding 10,000 persons per square mile, many have transit operations that are either in financial trouble, or have been converted to governmental ownership — New York, Chicago, Detroit, Boston, San Francisco, Pittsburgh, and Milwaukee. On the other hand, some cities with fewer than 8,000 persons per square mile seem to have prosperous transit operations — Denver, Cincinnati, Kansas City, and El Paso.13

Where substantial investments in fixed facilities have been required in larger and more densely populated urban centers, a good deal of flexibility has been lost in adapting to changing urban patterns. Rapid transit tunnels and subway cars have not been able to follow the “flight to the suburbs,” and adding motorbus facilities to complement rapid transit has not always been practical. In other circumstances, older cities which have had a history of low transit fares have not had the necessary resources to finance more modern and efficient facilities.

TRANSIT'S PROBLEMS

The financial uncertainty faced by the transit industry reflects a series of problems that have relentlessly plagued the industry. The fact that many have remained unsolved suggests that they will persist and will therefore influence spending by one or another level of government.

Deficiencies as They Have Developed

Mass transit has come to suffer from a combination of low average speed, inconvenience, discomfort, and obsolete equipment. Urban subways during rush-hour periods are significantly overcrowded; the "sardine can" is an often used simile to describe the discomfort experienced by commuters during these periods. Unattractive and unprotected way stations and terminals, as well as protracted periods of standing and waiting for service, are added disadvantages of urban transit travel. Air conditioning, one of the more important improvements in inter-city rail and bus transport, is seen less frequently on mass transit vehicles.

Low-average speed during the rush hour is a particularly vexing problem on bus transit, given the frequency of stops and traffic congestion on urban streets. The problem is usually associated with rush-hour travel. The result is frustration and inconvenience for the commuter, and increased fuel and maintenance costs for the transit operator. Moreover, despite the heavy congestion on urban highways during rush-hour travel, the average speed of the automobile will often exceed that of buses.

Substantial parts of mass transit plant and equipment are quite old and depreciated. World War II and earlier vintage cars are not uncommon sights on rapid transit systems. In a transit survey published in 1965, almost 30 percent of all subway cars in use in 8 major cities pre-dated 1945. Even among systems where substantial numbers of subway vehicles were relatively new, antiquated subway cars still operated in regular service.14

The problem of aging equipment has been compounded by the lag in building new or expanded facilities. Private financing of new facilities has not been generally available for over four decades. New construction is now normally financed with public funds, either revenue bonds or tax-supported debt. Generally, substantial risk is attached to private investment in urban transportation. Poor earnings among many transit firms are aggravated by an uneven and incomplete use of plant and equipment.

The Peak-Service Problem

The peaking of demand for mass transit services distorts the use of equipment and labor resources by employing them in quantity for only short periods during the working day. Combined with a general decline in patronage, the transit industry has been faced with the prospect of additional expenses for peak service resources (wages, accelerated maintenance, and depreciation of equipment) as against the uncertainty of continuing passenger revenue volumes.

Substantial parts of mass transit plant and equipment are quite old and depreciated. World War II and earlier vintage cars are not uncommon sights on rapid transit systems. In a transit survey published in 1965, almost 30 percent of all subway cars in use in 8 major cities pre-dated 1945. Even among systems where substantial numbers of subway vehicles were relatively new, antiquated subway cars still operated in regular service.14

The peak of demand for mass transit services distorts the use of equipment and labor resources by employing them in quantity for only short periods during the working day. Combined with a general decline in patronage, the transit industry has been faced with the prospect of additional expenses for peak service resources (wages, accelerated maintenance, and depreciation of equipment) as against the uncertainty of continuing passenger revenue volumes.

The peak of demand for mass transit services distorts the use of equipment and labor resources by employing them in quantity for only short periods during the working day. Combined with a general decline in patronage, the transit industry has been faced with the prospect of additional expenses for peak service resources (wages, accelerated maintenance, and depreciation of equipment) as against the uncertainty of continuing passenger revenue volumes.

The peak of demand for mass transit services distorts the use of equipment and labor resources by employing them in quantity for only short periods during the working day. Combined with a general decline in patronage, the transit industry has been faced with the prospect of additional expenses for peak service resources (wages, accelerated maintenance, and depreciation of equipment) as against the uncertainty of continuing passenger revenue volumes.

The peak of demand for mass transit services distorts the use of equipment and labor resources by employing them in quantity for only short periods during the working day. Combined with a general decline in patronage, the transit industry has been faced with the prospect of additional expenses for peak service resources (wages, accelerated maintenance, and depreciation of equipment) as against the uncertainty of continuing passenger revenue volumes.
still meet the high manpower and equipment requirements dictated by the needs encountered in the peak hours — generally two hours in the morning and two hours at the end of the working day — despite the overall reduction in the number of passengers accommodated throughout the day. Much of this equipment is idle during the off-peak period, and the working force that must be employed for a few hours to handle the peak must be paid for a full day.

This pattern of transit traffic poses the double threat of bankruptcy for the industry and prolonged deterioration of service for the customer. For the decline in transit patronage has not permitted parallel reductions in cost, and emergency measures designed to bring costs more in line with revenues have resulted only in reducing the attractiveness of the service. The effect has been to create an even greater incentive for car owners to desert rail and bus transportation for their automobiles.\(^\text{15}\)

Peak service problems are not unique to the transit industry. Other public utilities, like the gas, electric and telephone industries, also have to contend with the problems and costs of peak-use services. However, these industries (with customers connected by physical attachments) have greater flexibility in co-ordinating a variety and quantity of services with a schedule of rates to cover the range of costs involved. These industries, moreover, are not subject to the competition of substitute alternatives. Messenger service, or face-to-face communication, is by no means so close an alternative to telephone service as the private automobile is to mass transit.

Part of the seriousness of the peak problem for transit operators is the degree to which labor costs, as well as capital costs, are affected by the peak. Transit labor for a full day must generally be large enough to meet the needs of the diurnal pattern of service; for other public utilities, however, staffing for the peak is a much less serious problem.

**Short-run Economic Incentives**

The tendency in the transit industry has been to maximize short-term opportunities at the expense of longer-term difficulty. Fare increases, for example, normally produce increased revenues initially. Since transit operators are faced with the chronic need for more revenues they are likely to increase fares frequently at the expense of aggravating the long-term decline in passenger volume. The same kind of reasoning motivates some transit operators to limit services or abandon them entirely; there is little doubt that restricted services or the elimination of unprofitable routes saves money in the short run.

Transit operators are also unlikely to enter new areas in developing neighborhoods. A new neighborhood is unlikely to provide the initial patronage levels necessary to cover the costs of introducing extended or expanded transit services. If the transit company waits until the neighborhood is more developed, transport patterns of automobile use have become more firmly established, and mass transit finds it difficult, if not impossible, to introduce competitive services.

Even the fact that establishing motorbus operations requires relatively small capital presents problems. In the short run, with high fares and substantial revenues, profits can be very attractive. Investors, with the prospect of quick returns, can establish motorbus operations with only limited capital resources.

\(^{15}\) Owen, op. cit., pp. 81, 83.
When, over the longer term, passenger volumes decline, bankruptcies and abandoned services result. Long-run instability frequently occurs as new investors, ready to impose higher fares, seek the same short-term benefits that motivated previous investors.

Public Apathy

In many respects, municipalities, until recently, have tended to be unsympathetic to the needs of mass transit. Many localities impose a variety of fees and charges, as well as franchise taxes, which weigh heavily on the finances of local mass transit. The franchise tax on gross revenues has been levied without regard to financial condition. In some instances, transit revenues have been taxed to provide local facilities such as parks, playgrounds, and schools.

Other levels of government have also pursued policies which have not always been consistent with a viable development of public mass transportation. At the Federal level, long-standing highway-aid programs financed by user taxes promoted road solutions to transportation problems while indirectly excluding other alternatives. An urban highway program that met certain requirements established for the interstate system of highways was eligible for Federal assistance for 90 percent of construction costs. Urban highways that did not meet national standards could still be eligible for 50 percent Federal aid under other programs. In contrast, and until very recently, Federal assistance for mass transit was non-existent. As a result, cities faced with increasing congestion problems had strong incentives to adopt highway solutions to their problems, and ignore mass transit approaches. Moreover, in the highway solutions adopted, transit operations were often unable even to share in the benefits. For example, in some cases buses are specifically excluded from expressways; and some bus routes have actually been made more circuitous through the blocking off of streets. Even where buses are permitted on expressways, there is sometimes rather little net advantage because of the need of providing intermediate pick-up points.

At the state and local levels, opposing interests among urban versus rural groups often inhibited programs to solve the transit problems of large cities. The traditional strength of rural interests in state legislatures made the question of urban transit development a dormant issue in state government. Recently, however, the spate of reapportionment decisions have given promise of reversing this inaction by increasing the leverage of urban interests in the state legislative chambers.

Mass transit development has also been hampered by the infrequency of regional cooperation and planning. The problems of local transit have not always respected municipal or even state political boundaries. Yet, regional approaches to mass transit have remained few.

The Pricing Problem

Transit, in the recent past, has frequently resorted to fare increases in an attempt to bolster insufficient revenues. Prior to the Second World War, fares generally were fixed at about 5 cents or 10 cents. With the end of the war, a series of increases began, and since then, fares have been rising, in average terms, on an annual basis. In 1924, aver-

---

16. New Federal legislation in support of urban mass transportation is discussed in the next section.
Average revenues per passenger amounted to approximately 7 cents. By 1947, this average fare, after some moderate fluctuation in the intervening period, was still the same. By 1957, however, average fares had more than doubled to around 15 cents; presently they average about 20 cents per passenger (see Table 6).

Fare increases have contributed to the decline in transit patronage since the end of the Second World War. The extent of the impact is difficult to gauge, however, since fare increases have occurred during a period when war restrictions on driving and auto production have been eliminated, when population has dispersed to suburban areas away from normal mass transit routes, and when rising incomes have offered greater opportunities for individual choice among transportation alternatives.

The industry rule-of-thumb on fare increases generally states that for any given percentage increase in fares, transit patronage can be expected to decline by one-third that percentage. The impact of the fare increase is usually more severe on off-peak patronage than on rush-hour volumes.17

Given the widespread existence of "flat" fares, which make no distinction between short and long trips, frequent fare increases have served only to aggravate the plight of the short-haul rider. Many of these riders have turned to alternative transport modes which make more equitable distinctions among distances traveled. Although a five-cent charge for a one-mile trip on a mass transit vehicle would attract numerous short-haul riders, a 20- or 25-cent fare for the same trip would alienate many of them. Under the latter conditions, walking or using an automobile would offer more favorable alternatives. The loss of short-haul riders, however, would mean a corresponding increase in the average trip length per passenger. With a flat-fare system, the result would be a drop in average revenues per passenger mile.

Short-haul riders may frequently be off-peak riders. One result of encouraging short-haul riding might be to add chiefly off-peak riders who would contribute rather little to crowding or costs.

In terms of public finance, fares on governmentally operated transit systems are classed as revenue sources based on a benefit. Much must be said in favor of the principle of using benefit-based revenue sources where possible. "High" transit fares are sometimes criticized, however, as being more regressive than most other revenue sources.

---

### Table 6

**Average Mass Transit Fares**

<table>
<thead>
<tr>
<th>Year</th>
<th>Average revenue per passenger</th>
</tr>
</thead>
<tbody>
<tr>
<td>1924</td>
<td>7.05</td>
</tr>
<tr>
<td>1930</td>
<td>7.18</td>
</tr>
<tr>
<td>1935</td>
<td>6.57</td>
</tr>
<tr>
<td>1940</td>
<td>6.68</td>
</tr>
<tr>
<td>1945</td>
<td>6.92</td>
</tr>
<tr>
<td>1947</td>
<td>7.24</td>
</tr>
<tr>
<td>1949</td>
<td>9.31</td>
</tr>
<tr>
<td>1951</td>
<td>10.96</td>
</tr>
<tr>
<td>1953</td>
<td>13.13</td>
</tr>
<tr>
<td>1955</td>
<td>14.78</td>
</tr>
<tr>
<td>1957</td>
<td>15.82</td>
</tr>
<tr>
<td>1959</td>
<td>17.10</td>
</tr>
<tr>
<td>1961</td>
<td>18.24</td>
</tr>
<tr>
<td>1963</td>
<td>19.04</td>
</tr>
<tr>
<td>1965</td>
<td>19.71</td>
</tr>
<tr>
<td>1966</td>
<td>20.76</td>
</tr>
</tbody>
</table>

*Source: American Transit Association.*

---

17. Based on information provided by the American Transit Association.
Suggested Solutions

For the organizational problems of mass transit, a variety of approaches have been suggested including greater state coordination, the formation of regional public authorities, and, of course, increased Federal direction and support. Some of the suggestions include, as a natural by-product, potential solutions to transit’s chronic financial problems. Public authorities, for example, finance their operations on the basis of user charges and revenue bond issues. Special districts, more comprehensive and governmental in nature, have the additional power to levy taxes. Either approach has been successful, in financial terms, in numerous applications.18

In the case of technical problems, the number and variety of suggestions have been bountiful. Some have been adopted in selected cases, others still remaining on the “drawing boards.” They include:

1. A “zone” fare which would schedule trip charges according to the distance traveled.

2. Automated signal devices, controlled by computers, which would permit more frequent, regular, and reliable service as well as increased capacity, without expanding existing facilities.

3. Scheduling devices to further increase capacity (such as “stop-skip” sequences whereby a succession of subway trains on given routes would alternate station stops).

4. Extension of subway platforms to permit longer trains; modification of commuter passageways to improve the flow between entrances and exits.

5. Specialized services such as special trains to sporting events and beaches, or deluxe trains featuring airconditioning, less crowded seating and no standing, and offering food and drink — provided at higher charges.

Technical improvements for bus transit have also been suggested, including better seating and wider aisles, improved signs to indicate destinations and stops, and reserved lanes on arterial streets and highways for the exclusive use of public surface transit. Economic and legal feasibility must of course be considered.

As yet, in fact, many of the technical suggestions have not received widespread endorsement because of actual or alleged impracticalities. Excessive and additional costs which would not be matched or exceeded by increased revenues have been an often cited disadvantage. In general, for whatever reason, implementation of new techniques has been a slow process, not least because of very real financial difficulties.

Skepticism has also greeted many of the proposals to improve the organization, recruit and train more men with specialized managerial skills, and bolster the finances, of mass transit systems. These proposals, however, are sometimes more sensitive than the technical ones, since they involve political questions of where responsibility and control will ultimately rest once any of the organizational schemes are adopted.

18. The general alternatives in an urban transit program are discussed in detail in Section V.
MASS TRANSIT AND THE AUTOMOBILE

Mass transit uses space more intensively than the automobile, and is thereby less costly of space requirements in densely populated urban use. Generally, an automobile which travels at 20 m.p.h. uses 6 to 45 times the land space per person that a transit bus uses; and compared to a multiple unit rail car, automobiles consume 10 to 90 times more land space per person. Although the wide range of the figures must suggest differences in view about the best bases of estimation, the general conclusion of appreciably greater intensity of use by mass transit has great significance for public policy.

For travel between centers of low density, or for movement of a highly irregular character, the automobile is unbeatable in efficiency and convenience. For mass movement, however, automobiles are inefficient users of space when consideration is given to their average passenger load, and to the parking space required at the end of the trip to work. . . . The mass movement of people to a common destination can be most efficiently performed by a public transit vehicle that uses space more intensively than does an automobile, and that can thus move many more people in a given amount of travel space.19

A comparison of the costs of using an automobile with the costs of using a transit mode raises several problems, for some of which no one answer will be accurate. Much will depend on whether one considers only the costs borne by the user himself, or whether, in addition, one includes the costs shifted to others.20 Looking at the first alternative, the costs borne by the user only, two important distinctions must be made. If use of an automobile involves acquisition and ownership for this use purpose, the concept of “full costs” is appropriate. However, if the use envisaged is supplemental—the car would be owned in any case—the appropriate cost concept is “out-of-pocket,” “marginal,” or incremental. The latter, out-of-pocket, is defined to include expenditures on gasoline, oil, maintenance, and tires—all of which vary with the amount of use of the car. Full cost includes, in addition to out-of-pocket costs, those of ownership such as interest and depreciation, license fees, and insurance.

In attempting to predict the extent to which individuals will use private automobiles rather than transit, it is the costs to the user that are relevant. Where use of an automobile is supplemental, then on the basis of the typical range of marginal costs per passenger mile, an automobile with two or three passengers generally provides a less expensive trip than a mass transit mode under the usual range of fares. If, however, the cost of having the automobile available cannot be charged off to other uses, then on the basis of the typical range of full costs per passenger mile, mass transit will be less expensive (unless, indeed, the car can be loaded with four or five passengers).21 Moreover, if the costs of parking are included, the cost advantage shifts even more favorably toward mass transit.

The analysis must, however, shift to the broader perspective if wisest public decisions are to be reached. Under certain circumstances—for example, “park

20. The value of differences in rider time is not considered here.
21. Regular use of car pools with as many as five or four members will likely involve loss of some of the flexibility and convenience of use of the private auto.
and ride” situations — the cost of maintaining a car, and even parking charges, may be involved in the use of commuter or rapid transit service. Invariably, too, the costs involved must be weighed against differences in comfort, convenience, and the value of time. Account must be taken of total costs, including all those which involve the over-all community. Then the cost comparison can be quite decisive and particularly with respect to rush-hour travel. For example, if additional lanes of expressway are required to accommodate rush-hour auto-
mobile commuters, the cost per car-mile can easily range from 5 cents to 25 cents. This cost can be compared with an average — for gasoline and other taxes — of less than 1 cent per car-mile on existing highways. The cost of accommodating peak mass transit service is also much higher than for service as a whole, but the difference is not nearly so extreme. One reason is that on an over-all average basis the peak riders are already charged with most of the special peak costs — there is relatively little off-peak traffic to share in bearing these costs.

Suburban Rail Transportation

Many cities have suburban rail commuter services on a regular basis, but only five are of any significance; these are New York, Chicago, Philadelphia, Boston and San Francisco. (One-way trips on commuter lines for all cities are estimated at more than 800,000 for an average weekday, and of that total amount, New York accounts for about one-third).

Suburban commuter services, which date to the middle of the 19th century, came about as a by-product of main-line services. Commuter lines complemented the main-line services by helping to fill empty seats on main-line runs, by providing return loads for express and mail trains, and by helping to reinforce real-estate development. As suburban communities were formed around core cities, many main-line railroads provided express and mail trains to serve most of the new communities. Trains would leave in the morning and return in the evening, analogous to the present peak-load services during rush hour periods.

The horse car, at the turn of this century, and later the electric streetcar, intro-
duced important competition to the commuter lines. Many streetcar lines connected the core cities with suburban rail stations. In some cases, suburban transit companies developed streetcar lines that went beyond the railway stations, helping to spread new community development away from established commuter lines.

The most severe competitive blow came from the automobile, however. The railroads, which once exercised great political influence in the area of transportation, were now being displaced by the increasingly powerful highway and automobile interests; motor license and motor fuel taxes provided funds which, being related to highway use, helped justify expansion of the highway network. The Federal government, starting in 1916, began to spend substantial sums to develop highways. Communities were formed near, and around, the new and more promising roadways, but often away from the established railway corridors. Land-use patterns were determined by the new means of transport; planning in urban and surrounding areas became highway oriented.
The new trends in support use weighed heavily on suburban railway finances. In fact, regardless of intent, governmental actions—chiefly spending on highways and state-local taxation—accentuated the difficulties of the railroads. Deficits became common, and only the larger mainline railroads were able to absorb the net expenditures with revenues from freight operations and at the expense of stockholders and creditors. Prestige, once a motivating factor in suburban operations, had become a poor excuse for continuing deficits.

**Federal Transit Aid**

A combination of uncertain industry finances and insufficient local government action presented opportunities for Federal legislative intervention in the early 1960’s. The transit industry was faced with a series of economic and technological problems that were becoming increasingly difficult to resolve, such as a chronic decline in passenger volumes, plant and facilities in need of modernization, etc. States and localities, underwriting new responsibilities in expanded areas of the public interest and general welfare, were hesitant to take all the measures that might have been appropriate to modernize local mass transit and give it the vital place in urban life which new conditions warrant. Regional cooperation, in administration and finances, was the exception rather than the rule in transit planning. Some local government activities were still weighing heavily on the finances of local transit companies. Under these circumstances the time appeared ripe for Federal initiative, and in 1961, the Federal government inaugurated a new mass transit aid program.
The Federal Role

The role of the Federal government in support of urban mass transportation began in 1961 with amendments to existing housing legislation. In 1962, the Congress made specific provisions that future highway funds for urban areas be consistent with comprehensive urban planning by the states and localities. Direct Federal aid for urban transit’s substantial capital needs was initiated with mass transit legislation in 1964. Other Federal provisions came in 1965 and 1966.

THE HOUSING ACT OF 1961

Amendments to three then existing housing acts comprise what has generally become known as the “Housing Act of 1961.” The first element of this transit legislation, an amendment of the Housing Act of 1949,1 provided Federal aid for transit demonstration programs.

... The Administrator may ... contract to make grants aggregating not to exceed $25,000,000 for mass transportation demonstration projects which he determines will assist in carrying out urban transportation plans and research, including but not limited to the development of data and information of general applicability on the reduction of urban transportation needs, the improvement of mass transportation service, and the contribution of such service toward meeting total urban transportation needs at minimum cost. Such grants shall not be used for major long-term capital improvements; shall not exceed two-thirds of the cost, as determined or estimated by the Administrator, of the project for which the grant is made; and shall be subject to such other terms and conditions as he may prescribe.2

The next element of the 1961 legislation, included as an amendment to the Housing Act of 1954,4 required mass transit to be a fundamental part of “comprehensive urban transportation surveys, studies, and plans.”

... to facilitate comprehensive planning for urban development, including coordinated transportation systems, on a continuing basis ... and to ... establish and improve planning staffs, the Administrator is authorized to make planning grants ...

Planning which may be assisted ... includes the preparation of comprehensive urban transportation surveys, studies, and plans to aid in solving problems of traffic congestion, facilitating the circulation of people and goods in metropolitan and other urban areas and reducing transportation needs.6

The final part of the 1961 transit legislation, which modified the Housing Amendments of 1955,7 provided for loans for the capital investment needs of mass transit. The difficulties of public agencies and local communities in ac-

2. The Housing and Home Finance Administrator.
5. See footnote 42.
quiring low-cost loans to support transit development were also recognized.

The Congress finds that in many instances municipalities, or other political subdivisions of States, which seek to provide essential public works or facilities (including mass transportation facilities and equipment), are unable to raise the necessary funds at reasonable interest rates. The Congress finds that in many instances municipalities, or other political subdivisions of States, which seek to provide essential public works or facilities (including mass transportation facilities and equipment), are unable to raise the necessary funds at reasonable interest rates.8

The Housing and Home Finance Administrator is authorized . . . to make loans . . . to finance the acquisition, construction, and improvement of facilities and equipment for use, by operation or lease or otherwise, in mass transportation service in urban areas, and for use in co-ordinating highway, bus, surface rail, underground parking and other transportation facilities in such areas.

No loans may be made for transportation facilities or equipment . . . unless the Administrator determines (1) that there is being actively developed (or has been developed), for urban or other metropolitan area served by the applicant, a program, meeting criteria established by him, for the development of a comprehensive and coordi-
nated mass transportation system; (2) that the proposed facilities or equipment can reasonably be expected to be required for such a system; and (3) if such has not been completed, that there is an urgent need for the provision of the facilities or equipment to be commenced prior too the time that the program could reasonably be expected to be completed. . .9

In summary, then, the “Housing Act of 1961” provided Federal mass transport aid under the following categories:

1. Demonstration grants for experimentation and research-in-amounts not to exceed two-thirds of the total project cost.

2. Loans for facilities and equipment bearing low interest rates.

In addition mass transit had to be an integral part of urban planning generally. Funds distributed under the 1961 legislation were to be channeled through government agencies. The Congressional appropriation to carry forth the purposes of this legislation amounted to about $43 million.10

The Federal-Aid Highway Act of 1962

Although no funds were made available for mass transit under the Highway Act of 1962,11 recognition was given both for the need of coordinating all aspects of urban transportation and the desirability of spending highway funds only within the context of a comprehensive urban transport plan.

It is declared to be in the national interest to encourage and promote the development of transportation systems, embracing various modes of transport, in a manner that will serve the States and local communities efficiently and effectively. To accomplish this objective the Secretary shall coop-

The recognition of a comprehensive urban transport plan, which included highway aid programs, would insure that consideration would be given to the possibility of more useful mass transit applications and that they would not be summarily abandoned in favor of alternative highway construction. The impact of all transport modes on an urban area was finally recognized.

**The Urban Mass Transportation Act**

Passed in 1964 and amended in 1966, *The Urban Mass Transportation Act*\(^{13}\) is the most recent climax in the development of Federal aid to urban mass transportation. The purposes of the Act include (1) coordinated assistance, between the Federal government and public and private transport companies, to help develop mass transit, (2) planning and establishment of regional transit systems, and (3) assistance to States and localities in their support of transit finances and needs.\(^{14}\)

The 1964 legislation continues the program of demonstration grants and loans initiated by the "1961 Housing Act," and goes beyond it by authorizing a new program of grants for capital equipment.

In accordance with the provisions of this Act, the Administrator\(^ {15}\) is authorized to make grants . . . to assist States and local public bodies and agencies thereof in financing the acquisition, construction, reconstruction, and improvement of facilities and equipment for use, by operation or lease otherwise, in mass transportation service in urban areas. . . Eligible facilities and equipment may include land (but not public highways), buses and other rolling stock, and other real or personal property needed for an efficient and coordinated mass transportation system.\(^ {16}\)

Federal capital grants cannot exceed two-thirds of the net cost of a transport project. Net cost is defined as that portion of the total project cost which cannot be readily financed from transit revenues. These revenues also cannot be used for matching funds on the local level. All Federal funds dispersed must be channeled through public agencies only.

As in the Housing Act of 1961, the 1964 legislation also calls for coordination and planning in the development of transportation in urban areas. Eligibility for Federal aid is, in fact, based on the existence of an urban transport plan. Where no such plan exists, emergency aid is available, but with only one-half, instead of two-thirds, in Federal funds. In general, grant funds for each state are limited to \(12\frac{1}{2}\) percent of the national total.\(^ {17}\)

The 1964 legislation authorized expenditures of \$375 million for demonstration and capital grants through fiscal 1967. In 1966, an amendment to the original act authorized continued grant expenditures through fiscal 1969 at the annual rate of \$150 million. Also included in the renewed grant authorization were sums for planning, engineering

---

14. Public Law 88-365, Sec. 2b.
15. The Housing and Home Finance Administrator.
and design work; management training fellowships; and research grants to colleges and universities. Table 7 presents data on authorizations, appropriations, and expenditures for recent Federal mass transit legislation.

IMPLEMENTING THE FEDERAL PROGRAM

Numerous demonstrations examining different aspects of mass transit operations have been carried out under the auspices of the 1961 and 1964 transit legislation. Most of the demonstration programs have included experiments in three general areas of transit operations: service, pricing and technology. In Detroit, Michigan, for example, experiments were performed on improving local bus services. In Philadelphia, Pennsylvania, and Westchester and Putnam Counties in New York, various experiments were undertaken to analyze and appraise rail commuter services. Several experiments, in a number of cities, were directed toward improving local bus services particularly among the smaller bus companies.

Pricing experiments were carried out in Massachusetts and Washington, D.C. In the latter case, a shuttle service incorporating small buses and featuring

<table>
<thead>
<tr>
<th>Table 7</th>
<th>Mass Transportation Aid by Legislative Act</th>
<th>Fiscal Years, 1964-1969</th>
<th>(Thousands)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Urban Mass Transportation Act (1964) (a)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Authorizations (b)</td>
<td>$ -</td>
<td>$75,000</td>
<td>$150,000</td>
</tr>
<tr>
<td>Appropriations</td>
<td>195</td>
<td>65,300</td>
<td>135,455</td>
</tr>
<tr>
<td>Grants</td>
<td>-</td>
<td>60,000</td>
<td>130,000</td>
</tr>
<tr>
<td>Loans</td>
<td>-</td>
<td>5,000</td>
<td>5,000</td>
</tr>
<tr>
<td>Administrative expenses</td>
<td>195</td>
<td>300</td>
<td>455</td>
</tr>
<tr>
<td>Expenditures</td>
<td>195</td>
<td>11,068</td>
<td>18,660</td>
</tr>
<tr>
<td>High Speed Ground Transportation Study (1965) (c)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Authorizations</td>
<td>-</td>
<td>-</td>
<td>20,000</td>
</tr>
<tr>
<td>Appropriations</td>
<td>-</td>
<td>-</td>
<td>18,250</td>
</tr>
<tr>
<td>Expenditures</td>
<td>-</td>
<td>-</td>
<td>2,351</td>
</tr>
<tr>
<td>National Capital Transportation Act (1965) (d)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Authorizations</td>
<td>-</td>
<td>-</td>
<td>150,000</td>
</tr>
<tr>
<td>Appropriations</td>
<td>-</td>
<td>-</td>
<td>4,104</td>
</tr>
<tr>
<td>Expenditures</td>
<td>-</td>
<td>-</td>
<td>1,988</td>
</tr>
</tbody>
</table>

a. 49 U.S.C. 1601 et seq.
b. For capital and demonstration grants only.
d. 40 U.S.C. 851 et seq. $60 million in loan appropriations is also provided.
Source: U.S. Bureau of the Budget.
reduced fares was inaugurated. A contractual-fare bus service was demonstrated in Peoria, Illinois.

Technological demonstrations to test new ideas on the control and propulsion of mass transit systems were demonstrated in several places. Alternating current, as a means of transit propulsion, was tested on specially constructed track in San Francisco, California. (San Francisco also received several grants to experiment with various engineering aspects of train control and design for the city's proposed new rapid transit network). Automated fare collection systems at two stations of the Long Island Railroad in New York were tested and analyzed. A medium capacity rapid transit system was demonstrated in Pittsburgh, Pennsylvania. Various computer applications were attempted, including computerized bus schedules, manpower and equipment utilization, in experiments carried out at the Kansas State and West Virginia Universities.

The results of the demonstration grants have been as varied as the experiments. The general impression has been gleaned, however, that the plight of mass transit is not hopeless. With regard to reversing the downward trend in patronage levels, several experiments have demonstrated the significance of improved service in helping to attract commuters back into the mass transit fold.

[An] experiment in the greater Boston Region was conducted recently through contracts with two commuter railroads serving Boston, the Metropolitan Transportation Authority, and 10 private bus companies. The object of these experiments was to measure rider responses to a variety of fare and service levels at both peak and off-peak times, over a long enough period of time to establish trends.

Among the major findings of this report were:

1. The decline in public transportation ridership is not inevitable; it can be halted and the trend reversed.

2. In increasing passenger volume on public transportation, frequency of service is a more important factor than lower fares.

3. Selected improvements in frequency of service can be made self-sustaining.19

Capital grants under the 1964 legislation have been directed mainly to the purchase of new equipment and the maintenance of transit plant and facilities. Many of the grants have gone to small bus companies to enable them to purchase new buses and construct adequate maintenance and supporting facilities. Rapid transit in many areas has also been upgraded, and in New York City, the purchase of 400 new subway cars was partly financed with Federal grant funds.

The loan program, inaugurated in the 1961 legislation and extended in 1964, has not stimulated a great deal of interest among transit system operators. Only three loans were transacted through the end of 1965, including 12 commuter rail cars for Philadelphia, Pennsylvania, 180 rapid transit cars for Chicago, Illinois, and the purchase of a bus company in Providence, Rhode Island.20