Urban Mass Transportation In Perspective

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Foreword

In the recent past, many new Federal programs have been inaugurated to deal with a variety of domestic civilian problems. One such program on urban transportation, inaugurated in 1961, involves the Federal government in the problems of mass transit. The congestion and inefficiency which has characterized many urban transit systems in recent years has evoked public and private concern for the revitalization of mass transportation.

The purpose of this study is to define the problems which have plagued the transit industry, survey the efforts of the Federal government to provide some answers, and indicate the alternatives, both Federal and non-Federal, which a viable urban transit program of the future might pursue.

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The Tax Foundation is a private, non-profit organization founded in 1937 to engage in non-partisan research and public education on the fiscal and management aspects of government. It serves as a national information agency for individuals and organizations concerned with government fiscal problems.

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Introduction

Governments at all three levels have long used revenues from taxation to provide part of the country's total of transportation facilities. This total consists of many different elements – fixed portions, such as roadways and airports; the vehicles, barges, and planes which move on them; and so forth. One part of the total consists of urban mass transit. The terms "transit" or "mass transportation" are generally synonymous and include surface street car, bus, or trolley bus in local urban service as well as rail rapid transit operating on exclusive rights-of-way, generally subway or elevated. The term "public transportation" includes privately owned and financed facilities as well as governmentally owned or subsidized facilities. To date, Federal participation in financing or controlling urban mass transportation has not been substantial, but with recent legislation, the Federal role has expanded.

Federal nondefense expenditures have been rising rapidly. In part this is due to initiation of many new programs, whose cost is already substantial. Outlays on *new* programs in the early years give little indication of the cost later. Estimates made in the initial decision stages also prove unreliable as guides to actual outlays. A long record of experience must lead to the conclusion that expenditures on these programs will rise greatly. More thorough and detailed study, however, ought to provide a better basis for estimating the costs which may be ahead.

Interest in these new programs ought not to be limited to their probable dollar cost. Many have another feature which warrants special attention. They take Federal government activity into new aspects of life. Precedents cannot, therefore, serve as a basis for either confident judgment of the effects to be expected from the new programs or guidance in making programs operate well.

Federal Aid to Highways

Until recently, the Federal role in urban transportation was limited to highway aid. Until enactment of the *Federal-Aid Highway Act of 1944*[1] legislation specifically prohibited highway aid to urban areas with populations of 2,500 or more.[2] The Act, however, recognized urban areas with 5,000 population or more as appropriate recipients of aid amounting to $125 million in annual expenditures.[3] The *Federal-Aid Highway Act of 1956*[4] went further by authorizing matching funds on a 90 percent Federal government, 10 percent state and local government, basis for urban and intercity highways that qualified as part of a designated national interstate highway system.

1. Public Law 78-521, 78th Congress, 2nd. Sess. (S2105), December 20, 1944.
2. Exceptions were made along roads where the distance between houses averaged 200 feet or more. See the Acts of 1916 (39 Stat. 355) and 1921 (42 Stat. 218).
3. See Footnote 1.
4. Public Law 84-627, 84th Congress, 2nd. Sess. (H.R. 10660), June 29, 1956.

The Basis for Federal Aid

In contrast to Federal highway programs, started more than half a century ago and now involving more than $4 billion in annual expenditures,[5] Federal assistance to mass transit has developed only recently. Previously, a city looking at the alternatives open to it in meeting its transportation problems found that so far as concerned Federal aid, the choice was between relatively massive help for a highway "solution" (based to a large degree on "user" taxes) and none at all for one emphasizing mass transit.

> When State or local governments begin searching for an answer to a particular traffic problem, they are faced with the overwhelming powerful economic fact that in most cases they need put only 10% of the cost for a highway solution, whereas they must contemplate bearing 100% of the cost of a transit solution, whether it involves improving a rail line, buying a new fleet of buses, providing fringe area parking, establishing a downtown distributor system or whatever.[6]

Such imbalance could hardly survive the forceful and persistent criticism it evoked. "Correction" did not seem to lie in modification of the highway program. Response, therefore, consisted of establishing a new Federal program for mass transit. Inherently, by its very nature, urban transit is local. Each city is to a considerable extent unique. The rationale for national government action can be questioned. Is there a true national interest in apparently local problems? If so, to what extent? What aspect or portion of each particular city's case, is national?

It is not possible here to summarize and attempt to evaluate all considerations. Nevertheless, the extent of Federal Government financial involvement in the future will hinge to some extent upon the ideas which win acceptance. The reasons given in favor of a Federal role in dealing with urban transit include the following:

1. The massive Federal investment in highways cannot be most productive if interstate and defense traffic are hampered appreciably by congestion in and around cities and towns. In other words, the maximum benefit from the great highway program can be obtained only if urban portions of the street-highway complex are appropriately developed. Similarly, in any practical sense airport use includes getting to and from airports; better mass transit may play a role in getting greater benefit from the Federal investment in airports.
2. State and local initiative in dealing with urban transport congestion can be accelerated by a program which provides matching funds. This argument has two aspects. Both (a) state-local provision of funds and (b) the quality of planning and implementation can be increased and improved by a program of Federal grants.
3. Transit problems often cut across municipal, county, and state boundaries. Often a highly effective way, and sometimes the only way, to foster cooperation toward a common objective will be through Federal assistance, coordination, and even more forceful direction and leadership from Washington.

5. U. S. Bureau of the Census, *Governmental Finances in 1964-65*, Series GF-No. 6 (Washington, D.C.: Government Printing Office, 1966), p. 17.

6. *Urban Mass Transportation, 1962*, 87th Congress, 2nd Sess., Hearings before a Subcommittee of the Committee on Banking and Currency, U.S. Senate (Washington, D. C.: Government Printing Office, April 24-27, 1962), p. 56.

4. The problems call for new ideas, techniques, equipment, approaches; they need innovative, imaginative, experimentation. No one city can possibly try every promising suggestion, especially if some are inconsistent. Private industry cannot be expected to develop the most effective types of new equipment unless integration with other phases of the problem is also provided. National government aid in planning and financing of at least part of the experimental aspects of the problem, it is said, seems not only economically sound but also indispensable for anything like optimum exploitation of potentialities.

5. States and localities, it is argued, will not be financially able to meet the costs of urban transportation needs.[7] Private financing will not, apparently, deal with all the problem. The amount inevitably remaining for government will often be larger than can be financed out of municipal budgets already strained grievously, a condition which will most probably appear in very large cities.

6. An argument which seems persuasive to many is somewhat vague and hard to express in quantitative terms or to relate to cost. Federally aided mass transit development is in the national interest, the argument runs, even when the outlays might appear to benefit only urban centers while being paid for by taxpayers in all areas. Urban centers help generate income and affect the division of labor and the quantity and productivity of labor in all communities. To the extent that urban places are strangled in a morass of traffic congestion and delay, the national economy as well as the cities will suffer. In the words of a Senator from New Jersey:

> The basic justification for Federal financial assistance for local urban mass transportation systems (and indeed for the highway facilities utilized largely by private transportation) is that the general welfare and productivity of our nation's urban areas are vitally important to the welfare and productivity of the country as a whole; the welfare of the citizens in towns and cities is essential to the welfare of all citizens regardless of where they themselves live. The farmer from Alabama or Illinois, or the cattleman from Wyoming, are directly dependent upon the commerce and industry of our cities. If those cities are caught up in too many traffic jams, it is going to raise the cost of the goods and services which the city dwellers provide for the rural areas.[8]

7. Closely related to the prior point is the argument that urban areas as such, in and of themselves, present pressing problems of national interest. Transit forms a key element of urban life.

The Case For Local Initiative

Arguments for relying *entirely* on local initiative in all areas have apparently been made obsolete by events. Issues of emphasis, however – the relative roles

7. This point is debatable in light of a Tax Foundation study on the projected fiscal resources of states and localities, *Fiscal Outlook for State and Local Government to 1975* (New York: Tax Foundation, Inc., 1966). The projections show general revenues exceeding general expenditures in 1975—for all states and localities combined. Clearly, however, some individual states, cities, and towns will be in better financial positions than others. At least some large urban areas where transportation problems are most difficult also seem likely to encounter the greatest difficulties in meeting expenditure pressures from available revenue sources. And in some cases more intensive use of the property tax or other source of local revenue, it is argued, can lead to exceptionally bad results.

8. Senator Harrison Williams speaking before the U.S. Senate: *Congressional Record*, 88th Congress, 1st Sess., Vol. 109 (January 14, 1963), p. 200.

of the Federal and the state-local governments, and of government compared with private action – will call for continuing attention. They will, of course, influence the total of Federal expenditure; they involve more than dollars, however, because at any level of dollar outlay, the amount and the nature of Federal influence on local performance can differ considerably. The following points are usually cited:

1. In any true sense of the concept of national interest, the mass transit of any urban area will hardly be of great enough national concern to justify the use of more than incidental amounts of revenues collected in taxes from all over the country. Benefits will be predominantly local in the sense that the portion accruing to local users will be vastly greater than the benefits for taxpayers in other areas. Wide differences in conditions from one urban area to another make impossible any reasonably equitable distribution of funds.

2. Superimposing Federal administration on what is primarily a local problem must add to cost. Delay can be expected. Moreover, when grant or loan funds are limited, the delays and disappointments which inevitably result will burden some applicants appreciably. Central direction involves another risk or virtual certainty; pressures from the top will sometimes lead to avoidable errors because general rules cannot as a practical matter be adapted to local circumstances.

3. Qualified leadership and initiative, it is argued, will generally be available on the local level. At least, no increase in total supply would seem a normal result of Federal assumption of responsibility. To the extent that today's problems grow out of shortage of competent personnel, no relief can be expected in the short run from adding new administrative requirements. There is no conclusive evidence, this argument holds, that mass transit cannot be handled at the state-local level. Efforts to revitalize mass transport with Federal assistance are relatively recent; by no means all the possible alternatives for local solutions have yet been tested and certainly not exhausted.[9]

4. Any Federal grant program can lead localities to allocate some of their limited funds to programs which are not of the highest priority. While mass transit may be highly pressing in some localities, the needs may be relatively slight in others.

5. Federal financing brings Federal control. Even relatively small amounts of grant funds can exert tremendous influence. There is no basis *a priori* for evaluating such control "in general," either praising or deploring it. But any proposal for new extension should take care to make full allowance, with "all eyes open," of what *can* happen and of what experience and logic suggest is likely. Local freedom in itself, the argument continues, has value in our society.

6. Urban transit finances, it is suggested, are likely to depend heavily upon the user charges exacted from local residents. Therefore, the appropriate scope of Federal influence will be smaller than it is in programs which are not primarily self-support-

9. The general alternatives in an urban transit program are discussed in Section 5.

ing over the long run. This point, like some of the others, involves chiefly matters of emphasis. The issue of the extent of control would persist.

7. The experimentation, exploration, inquiry, and testing of new possibilities which localities cannot do efficiently will not, in all probability, cost amounts which are more than incidental compared with carrying them out. Granting that the Federal government can appropriately perform a highly useful function in *developing new ideas* (and in passing on information to help localities avoid mistakes), the dollar cost will be small. No big expenditure is called for; conceivably, a successful program of research would largely end the need for its own existence.

8. Mass transit is only one of several functions for which better coordination among local governments is highly desirable. The difficulties of getting some state and local governments to cooperate for solving mass transit problems will be real in some cases, but are there enough cases to warrant setting up an entire program of nationwide scope?

Purpose and Scope of the Study

Federal participation in developing transit programs is now a matter of fact. This study will survey the history to help in understanding how and why the problems have developed. The nature of the issues to be dealt with can be appreciated better with such background information. Evaluation of the alternatives can be wiser when made with insight into the causes of what is a complex set of problems.

There are several elements in the composite of urban transportation which help place the Federal aid program in proper perspective. Included in this study are the relationships of a continuing Federal role to the requirements of mass transit in the foreseeable future and to the general alternatives in a viable urban transportation program. Recent legislative history which brought the Federal program into existence is also summarized; and, as a means of crystalizing the purposes of Federal intervention, the growth, finances, and problems of the urban transit industry are developed. No attempt is made to be exhaustive; rather only those aspects and issues in urban transportation are chosen which bring into clearer focus the reasons for, and the possible future course of, Federal financing.

II.

The Urban Mass Transit Industry

The mass transportation industry, as defined by the American Transit Association, comprises all locally organized, private or publicly owned, passenger transport companies, except taxicabs, sight-seeing buses, and school buses. Included are bus lines, trolley-bus and street railway lines, rapid transit lines (subways and elevated), and inter-urban commuter railway.[1]

The transit industry has evolved from a booming and very profitable private enterprise operation, at the beginning of the 20th century, to a financially troubled industry whose major elements in the decade of the 1960's are either owned or supported governmentally. The erosion in the patronage and profits of the industry has few counterparts in the experiences of other industries.

Mass Transit History in Brief[2]

The earliest form of mass transit goes back to 1827 when Abraham Brower, in conjunction with the coach-making firm of Wade and Leverich, built a horse-drawn vehicle which seated 12. Brower operated his vehicle up and down Broadway, in New York City, charging a flat fare of one "shilling" per passenger regardless of the distance traveled.

As incomes began to rise, and more people began to use the horsecars to get to distant jobs and residential locations, the fledgling industry began to thrive. More and more transit companies were established, and a wave of sharp competition was inaugurated. In response to this wasteful competition, municipalities established franchises of exclusive routes in return for policy leverage in matters concerning fares and equipment. The outcome was an industry whose capital was provided by private enterprise, and whose policies were strongly influenced by the public interest as vested in the local government.

Through much of the 19th century, the industry went through a technological evolution, including the introduction of cable lines, and attempts to use steam and compressed air as substitutes for the horse in providing motive power for the transit vehicle. In 1888, however, the electric motor was introduced as the method of propulsion and a new, and even more profitable era of electric street railways began. From this time until the early 1930's, when the motor bus became a frequent sight, the urban mass transit industry was largely identified with the trolley car.

During the early part of the 20th century, patronage of electric street cars in-

1. The American Transit Association, *Transit Fact Book*, Annual (Washington, D.C.: 1965), preface.
2. Based on the account by Lewis M. Schneider, *Marketing Urban Mass Transit: A Comparative Study of Management Strategies* (Boston: Graduate School of Business, Harvard University Press, 1965), pp. 12-18.

creased substantially. People in great numbers moved to "suburban" areas along new trolley routes. The large department store made its appearance in the "downtown" area, or central business district, as trolleys facilitated mass movement of shoppers within a limited area.

The increase in activity introduced the problems of congestion in the downtown area. To overcome the congestion of streetcars, horses, wagons, pedestrians and shoppers within the core area, elevated and subway lines were constructed in cities like New York, Boston, and Chicago. The elevated and subway lines were expected not only to minimize congestion, but also to provide yet another investment opportunity of great potential for private capital. However, warnings were sounded of the high costs of construction, the long rides, on the average, at low fixed fares, the concentration of destinations in the downtown area, the peaking of traffic, and the expectation that population shifts to outlying areas would not be consistent with existing transit routes. These warnings, pronounced in a Census Bureau document of 1902, are indicative of many of the problems that have plagued mass transit ever since.

> The chief difficulty which stands in the way of a rapid development of subway systems . . . is the heavy cost of construction. . . . In New York . . . the present subway and tracks, exclusive of power houses and equipment, and of damages to abutting property, will cost . . . $1,750,000 per mile. . . . From the standpoint of profits, both elevated and subway railways intended for fast traffic are confronted by the facts that most of their passengers ride long distances, that a majority must be carried to a single business center and that a very large proportion of the traffic is during the rush hours. As population aided by the facilities offered, extends further from the center of the city, these peculiarities will become more marked. Nevertheless, there is every reason to believe that, either through private or public enterprise, additional subways will gradually be constructed in New York and other cities.[3]

In the first decade of this century, optimism in mass transit was running high. In 1905, passenger volume was 5 billion riders, and by 1926 and 1927, the total had climbed to almost 14 billion revenue passengers. At the beginning of World War I, the appearance of the automobile was dismissed as a rich man's "toy." By the end of the war, as cars invaded the streets, that attitude had changed markedly.

The depression era took a severe toll of the transit industry. By then automobiles were a more frequent sight, and transit patronage had declined to about 9 billion revenue passengers in 1933. Attempts at modernizing antiquated equipment and facilities were now largely impractical. Traction company stocks, which were once considered sound investments had become worthless as many transit companies fell into bankruptcy.

Proceedings to convert bankrupt or failing lines to public ownership became common. Large properties, such as the New York City System (1932, 1940) and the Cleveland System (1942), joined other large-scale operations already under municipal ownership – San Francisco (1912), Seattle (1919) and Detroit (1922).

The Second World War brought a resurgence in transit patronage. War restrictions weighed heavily on automo-

3. U. S. Bureau of the Census, "Special Reports—Street and Electric Railways 1902" (1905), p. 38, as quoted in Schneider, *op. cit.*, p. 13.

bile production, and as fewer cars were added to those already on the roads and highways, more and more people found the buses and subways indispensable in getting to and from their jobs. In 1946, the all-time peak year in transit patronage, 19.2 billion revenue passengers used mass transit services.

Since 1946, however, the mass transit industry has suffered a secular decline in patronage. In 1956, revenue passengers were fewer than in the depression year of 1933. By 1966, they had declined to only 6.7 billion. More large properties were converted to governmental ownership, including the systems in Chicago and Boston in 1947.[4]

In addition to the continuous decline in patronage, the post-war era saw a major replacement of streetcar and trolley coaches by motor buses. This technological change brought with it many advantages.

> The abandonment of streetcars prevented financial collapse of the industry. Almost overnight, an industry with high fixed costs of maintenance of way, generation of power, and, in some cases, engineering and construction of rolling stock, found itself buying standardized products from a limited group of manufacturers, as well as relieved of the problem of maintenance of right of way. The motor bus brought other significant savings. In many cities, two-man streetcars were replaced with one-man buses. Routes were no longer tied to the inflexibility of the steel rail, and could follow the population growth into suburbia. Energies once devoted to keeping the "steel pipeline" filled with streetcars were turned to exploiting the flexibility of the bus in express service.
>
> Properties which had formerly maintained buses, trolley coaches, and streetcars, could standardize and reduce their parts inventory. Buses were freed to "deadhead"[5] to garages unrestricted by trolley overhead. Thus many companies badly in need of new maintenance facilities were able to close down unneeded depots, sell excess real estate, and construct one large modern depot to service most, if not all, of the system. These large depots, in turn, resulted in consolidated rosters and more efficient use of manpower.[6]

However, the savings from substituting motorbuses for streetcars were soon offset by rising labor costs and a continuing decline in passenger volume. As the industry faced the decade of the 1960's, it was beset with financial uncertainty and a substantial drop in the demand for its product.

Transit Industry Trends

There are many economic factors which affect the transit industry. They help explain different facets of the industry, and contribute to an understanding of some of the industry's present difficulties. Some of the more important elements of the economics of the industry are examined in the discussion which follows.

Trends in Patronage

As noted earlier, the decline in patronage of the transit industry has been continuous since the end of the Second World War. Between 1945 and 1966, the relative decline exceeded 64 percent. In contrast, the relative changes in such things as Gross National Product, population, employment, consumer transpor-

4. These systems became "public authorities" in 1947. Authorities are quasi-governmental units that serve specific constituencies and operate on the basis of user charges, and revenue bonds for the construction of new facilities. The New York City system was reorganized into a public authority in 1953. See Robert G. Smith, *Public Authorities, Special Districts, and Local Government* (Washington, D. C.: National Association of Counties, 1964).
5. Without passengers.
6. Schneider, *op. cit.*, p. 17.

Table 1

Growth Indices of Transportation and Selected Economic Factors

Selected Calendar Years, 1945-1966[a]

Index Numbers, 1945 = 100

Year	Gross national product(b)	Total population(c)	Urban population(d)	Non-agricultural employment(e)	Consumer transport expenditures(b)	Private automobile registration	Transit revenue passengers
1945	100.0	100.0	100.0	100.0	100.0	100.0	100.0
1950	100.1	108.9	108.1	118.1	110.4	156.4	72.8
1955	123.4	118.6	120.6	127.0	115.6	202.3	48.4
1960	137.4	129.2	134.4	137.8	131.2	238.9	39.4
1961	140.0	131.4	137.4	138.6	126.0	245.5	37.9
1962	149.2	133.4	140.4	141.6	128.6	256.1	37.4
1963	155.2	135.4	143.5	144.4	133.8	267.4	36.3
1964	163.3	137.3	146.6	148.2	136.4	279.0	35.9
1965	173.0	139.1	149.8	152.8	142.8	291.8	35.7
1966	182.4	140.1	153.0	158.1	148.9	303.5(f)	35.1

a. Unless noted otherwise all data include Alaska and Hawaii beginning with 1960.
b. In 1958 dollars.
c. Data for the armed forces overseas are included beginning 1945, and for Alaska and Hawaii beginning 1960.
d. Years between decennial censuses are derived using compound interest tables.
e. Data are not uniformly comparable, and new definitions of employment were applied beginning with 1947.
f. Preliminary. Private auto registration includes public and private vehicles.
Source: *Economic Report of the President, 1967;* U. S. Department of Commerce, Bureau of the Census and Office of Business Economics; Automobile Manufacturers Association; and American Transit Association.

Table 2

Percentage Changes in Transit Ridership by Mode and Population Group[a]

Selected Periods, 1945-1966

Mode and population group	1945-1950	1950-1955	1955-1960	1960-1966
Rapid transit(b)	–17.3	–17.6	– 4.1	– 5.1
Surface lines				
500,000 and over	–25.3	–33.2	–13.8	– 5.0
250,000 – 500,000	–31.3	–35.9	–29.2	–17.8
100,000 – 250,000	–32.8	–39.9	–27.5	–25.0
50,000 – 100,000	–30.3	–40.6	–29.5	–21.3
Less than 50,000(c)	–29.4	–41.3	–26.1	– 8.6
Total, all modes	–27.1	–33.6	–18.2	–11.3

a. "Ridership" is measured by revenue passengers.
b. In the largest cities, with populations of more than 500,000.
c. Includes suburban areas.
Source: American Transit Association.

Table 3

Consumer Expenditures on Transportation

Selected Calendar Years, 1945-1966

(Billions of 1958 dollars)

Year	Total	Automobile	Local public transportation	Intercity transportation
1945	$ 7.7	$ 2.1	$ 4.0	$ 1.6
1950	8.5	4.5	3.0	1.0
1955	8.9	5.6	2.2	1.2
1960	10.1	7.0	1.9	1.2
1965	11.0	7.9	1.6	1.6
1966	11.4	8.1	1.6	1.7

Source: U. S. Department of Commerce, Office of Business Economics.

tation expenditures and automobile registrations, was in the opposite direction. G.N.P., for example, increased more than 82 percent between 1945 and 1966. For the same period, total population increased around 40 percent, urban population about 53 percent, non-agricultural employment about 58 percent, consumer transport expenditures around 49 percent, and private automobile registrations increased to more than 3 times the 1945 level (see Table 1).[7]

The trend away from mass transit has been reflected in small and large urban areas alike. A glance at Table 2 indicates the nature of the decline, which has been leveling off somewhat in the recent period. The smaller cities, however, seem to have abandoned mass transit much more rapidly than the larger urban centers. Apparently, in the large urban areas where the problems of congestion have been the most severe, and the alternatives much fewer, the decline in rapid transit and bus use has been much more moderate. Small urban areas, on the other hand, have been able to adapt more easily to the space and planning needs of the automobile, and have, therefore, changed more readily to this travel mode. On a national basis, transit patronage declined almost 34 percent between 1950 and 1955, some 18 percent between 1955 and 1960, and about 11 percent from 1960 to 1966.

The decline in patronage has also been apparent in the amounts consumers spend on transportation. The preference for automobile transportation has been clearly established. By 1966, expenditures on automobiles, including maintenance, exceeded $8 billion in 1958 dollars. This amount represented more than 70 percent of total expenditures on all types of transportation in 1966. Consumer expenditures on local mass trans-

7. The choice of a base year is always less than perfect. For this study the use of 1940 was also considered, but 1945 seemed better. Its use highlights the unprecedented post World War II decline of mass transit. To make a more remote date the base for comparison seemed less relevant for attempting the most constructive analyses of current problems and opportunities.