

Public Roads Administration
Federal Works Agency
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Some Facts on Gasoline Taxes and Other Road-User Imposts and Their
Effects on Motor-Vehicle Use and Gasoline Consumption

F-2

December 5, 1946

Mr. Albert Bradley
Executive Vice President
General Motors Corporation
3044 West Grand Boulevard
Detroit, Michigan

Dear Mr. Bradley:

I am enclosing herewith material on the relation of gasoline tax rates and gasoline consumption and other relationships which I promised at New York we would prepare for you.

I hope you will find time to examine carefully the eight tables and brief explanatory text attached to each.

From this analysis, which I believe to be thoroughly sound, I conclude there is no basis for the fear that the market for gasoline and automotive products is adversely affected by road user taxes, either State or Federal, at their present or probable future rates. On the other hand, I see in the failure to raise funds sufficient for a reasonable further improvement of the highway system, especially within and near the cities, definite probabilities of depressive effect upon motor vehicle usage.

I shall be much interested to have your reaction when you have studied the facts presented.

Very truly yours,

/s/ Thos. H. MacDonald
Commissioner of Public Roads

SOME FACTS ON GASOLINE TAXES AND OTHER ROAD-USER IMPOSTS AND THEIR
EFFECTS ON MOTOR-VEHICLE USE AND GASOLINE CONSUMPTION

Gasoline Consumption and the Rates of Gasoline Taxes

Table 1 gives, at 5-year intervals from 1920 to 1945, a comparison between the weighted average rates of gasoline taxes and the amounts of gasoline consumed in motor vehicles on the highways. It is plainly evident in these figures that there has been a tremendous increase in the consumption of gasoline on the highways in the face of steadily mounting gasoline taxes. Between 1921 and 1941 the highway use of gasoline increased from 3.9 billion to more than 24 billion gallons, while the weighted average rate of State gasoline taxes was increasing from 0.14 cent to 4 cents per gallon; and to about 5-1/2 cents if the Federal tax is included. In only two years (1932 and 1933), during the depths of the depression, was there an interruption in the upward trend. During the years 1942 to 1944, as a result of wartime shortages and restrictions, gasoline consumption dropped far below the 1941 level. With the cessation of hostilities in 1945 there was a sharp upward urge in motor-vehicle travel and the consequent use of gasoline. Information thus far received in 1945 indicates that the total highway use of gasoline will slightly exceed that of 1941, although there are about two million fewer vehicles on the roads than in the earlier year.

There is nothing surprising in these facts. The adoption of the gasoline tax as a means of raising highway revenue made possible the progressive development of the rural systems, both State and local. This development, in turn, brought about the phenomenal increase in the numbers and use of automobiles, trucks, and busses in the last quarter century. Thus, gasoline taxes, within the moderate limits prevalent in the United States, have promoted rather than discouraged the use of gasoline.

During the same period the oil industry, by making remarkable improvements in the methods of extracting gasoline from crude oil, by the application of mass-production methods, and by research in the nature and quality of the product, made it possible for the motorist of 1941, in spite of the great increase in gasoline-tax rates, to purchase better gasoline at little or no increase over the price of the product marketed in 1920. The motor-vehicle industry has vastly improved and popularized the automobile; and through the medium of the used-car market, has pushed its ownership and use far down the income scale. The partnership of government, industry, and the motor-vehicle-using public has created the market for motor vehicles and gasoline.

Table 1. - Comparison of gasoline consumption with the rates of Gasoline taxes

Year	Weighted average rate of gasoline taxes		Highway use of gasoline	
	State taxes	State plus Federal	Total amount	Per registered motor vehicle
	Cents	Cents	Million gallons	Gallons
1921	^{1/} 0.14	0.14	^{2/} 3,935	373
1926	1.86	1.86	10,064	453
1 1931	3.47	3.47	15,457	594
1936	3.85	4.85	18,099	635
1941	3.99	5.49	24,192	696
1946	^{3/}	^{3/}	^{4/} 24,194	^{4/} 732

^{1/} Only 15 States had gasoline taxes in 1921. Weighted average is based on estimated Nation-wide consumption.

^{2/} Estimate.

^{3/} Not yet available.

^{4/} Preliminary estimate.

Comparisons Among States

The question may be raised whether or not existing gasoline-tax rates, varying among the States from 2 to 7.5 cents per gallon, have an observable effect on the volume of gasoline consumption, as measured in terms of gallons per registered motor vehicle. Table 2 gives, for the years 1940 and 1945, the average gallons per vehicle for groups of States having the same, or close to the same, rates of gasoline tax. In both years the three highest values of gallons per vehicle are found in the States having rates of 2 cents, 6 and 6.5 cents, and 7 and 7.5 cents per gallon. In 1940 Missouri, with a rate of 2 cents, had the highest value of gallons per vehicle. In 1945 its rate of consumption was exceeded by the States having tax rates of 6 or more cents per gallon. In 1940 the lowest value of gallons per vehicle occurred in the States having rates of 5 and 5.1 cents per gallon. In 1945 the States having rates of 4 cents per gallon had the lowest rate of consumption. No relationship between tax rate and gallons consumed per registered vehicle can be discerned in these comparisons.

For the year 1940 a similar comparison was made by individual States. There is an element of error in such a comparison, because of the fact that the total consumption of gasoline in a given State includes that purchased by vehicles from outside the State, and fails to include that purchased in other States by vehicles registered in the State. In the majority of States, however, there is sufficient balance between traffic from outside the State and the out-of-State travel of vehicles registered in the State to make the ratio of gallons per vehicle reasonably accurate.

In this 1940 comparison the 12 States having the highest values of gallons per registered vehicle were distributed according to tax rates as follows:

3 cents:	4 States
4 cents:	2 States
5 cents:	2 States
6 cents:	3 States
7 cents:	1 State

The 14 States lowest in this ratio all had tax rates of 3, 4 and 5 cents per gallon; but the significant fact is that all of them, with the exception of Kentucky, were found in the agricultural section of the Middle West and in the West. None of them were found in the East, in the South, or in the predominantly industrial part of the Middle West.

Table 2. - Comparison of gallons of gasoline consumed per registered motor vehicle in 1940 and 1945, in States grouped according to rate of tax

1940			1945		
Gasoline tax rate in cents per gallon	Number of States	Gallons per vehicle	Gasoline tax rate in cents per gallon	Number of States	Gallons per vehicle
2	1	717	2	1	644
3	10	684	3	8	610
4	18	669	4	19	598
5 and 5.1	10	635	5	9	606
6 and 6.5	6	713	6 and 6.5	7	702
7	3	678	7 and 7.5	4	655

In general it may be said that the value of gallons per registered vehicle tends to be relatively high in the industrial States of the East and Middle West and in the South; tends to be low in the predominantly agricultural States (other than the South), particularly in the grain States of the Great Plains; and is medium to low in the West. It is plain that the rate of State gasoline tax is not an influential factor in these variations.

Influence of Size of Place

Some light is thrown upon the factors which influence the consumption of gasoline by the figures given in table 3. This table, which is based upon State-wide highway planning studies in 45 States, gives, for unincorporated areas and for incorporated places arrayed in order of size of population, (1) the average annual consumption of gasoline per passenger car, and (2) the number of passenger cars per 1,000 population.

It is clear that rural residents make less use of their passenger cars than do the residents of urban places. The average consumption per passenger car in unincorporated places was 457 gallons per year. For incorporated places the average varied from 516 gallons in places of 1 to 2,500 population to 666 gallons in places of more than 500,000 population, the trend being rather steadily upward with size of place.

The other side of the picture is shown by the figures for passenger cars owned per 1,000 population. Although the density of automobile ownership is lowest in rural areas, there is a definite downward trend as cities become larger, beginning with those of 50,000 to 100,000 population. For example, the average for cities of 25,000 to 50,000 population is 260 cars per 1,000 persons, whereas in cities over 500,000 population the average is only 183, less than 10 percent above the average in unincorporated places.

This situation arises from two major causes: (1) large cities generally contain a considerable low-income population; and (2) automobile ownership is more expensive and less attractive in congested cities than in smaller places. A systematic program for the relief of urban traffic and housing congestion, including the provision of expressways and parking facilities and the orderly planning of residential, commercial, and industrial areas, would do much to make motor-vehicle ownership more desirable in large cities. If such developments were accompanied by a rise in the purchasing power of the working-class population, the result would be a very substantial boom to the automobile and gasoline markets.

Table 3. - Influence of size of place upon number of passenger cars owned per 1,000 population and upon average annual consumption of gasoline by owners of cars in each population group ^{1/}

Population group	Average annual consumption of gasoline per passenger car	Passenger cars per 1,000 population
Unincorporated areas	457	168
Incorporated places:		
1 to 2,500	516	264
2,501 to 5,000	563	258
5,001 to 10,000	578	248
10,001 to 25,000	607	246
25,001 to 50,000	608	260
50,001 to 100,000	626	236
100,001 to 250,000	622	228
250,001 to 500,000	653	230
500,001 and over	666	183

^{1/} Data are based on highway planning studies in 45 States. Cars per 1,000 population are adjusted to 1940 level. Gallons per vehicle are based on data for planning survey period 1935 to 1938, without adjustment to a later period.

Factors Affecting Gasoline Consumption in the Several Geographic Areas

The complexity of the factors which influence average annual travel and hence the consumption of gasoline is illustrated in table 4. In this table, for each of the eight major geographic areas as indicated, the values of gallons per motor vehicle registered in 1940 are compared with corresponding values of certain other factors, including weighted average State gasoline tax, percentage of urban population, population per square mile, income per capita, average annual mean temperature, average snowfall, and vehicles per 1,000 population.

It is clear that no influence of gasoline-tax rate is perceptible in this table. The extent of urbanization appears to have some influence, in that New England, the Middle Atlantic States, and the East Central States combine high percentages of urban population with relatively high values of gallons per vehicle; whereas in the West Central and Mountain States a comparatively low degree of urbanization is associated with low values of gallons per vehicle. In the comparison with population per square mile the Pacific States, which although heavily urbanized, have a low population density, fall into line, and only the Southern areas are inconsistent with the trend.

The influence of per capita income is apparently similar to that of percentage of urban population, in that gallons per vehicle and per capita income show parallel trends in the majority of areas, with the Pacific States and the Southern areas not following the trend.

The influence of the climatic factors is unmistakable. The two Southern areas, with mild temperatures and little snowfall, have relatively high gallons per vehicle, while the West Central and Mountain States, which have severe winters, also have low values of gallons per vehicle. In the New England, Middle Atlantic, and East Central States their urban and industrial character, the density of population, and high per capita incomes counterbalance the effect of severe winters and heavy snowfall. In the Pacific States no consistent relationship between gallons per vehicle and climatic conditions is displayed.

The most striking relationship is found when values of gallons per vehicle are compared with motor vehicles per 1,000 population. The four areas with the greatest number of vehicles per 1,000 population have the lowest values of gallons per vehicle. The Pacific States, which are inconsistent with the trend of most of the indices previously discussed, fall into line in this comparison with the highest value of vehicles per thousand population and the next lowest value of gallons per vehicle.

Public Roads Administration
Federal Works Agency

Table 4. - Influence of various economic and climatic factors on the consumption of gasoline in geographic areas of the United States in 1940.

Area	Gasoline consumption (per registered motor vehicle)	Weighted average State gasoline tax rate	Percent of urban population	Population per square mile	Income per capita	Average annual mean temperature	Average annual snowfall	Motor vehicles per 1,000 population	Gasoline consumption per capita
	Gallons	Cents	Percent	Number	Dollars	Degrees F.	Inches	Number	Gallons
New England	749	3.19	58.5	133.5	734	46.7	57.0	206	181
Middle Atlantic	709	3.81	73.2	235.8	759	53.4	27.4	188	155
Southeastern	709	5.97	32.0	58.0	343	62.0	5.9	137	119
East Central	670	3.30	61.2	78.0	602	49.6	32.8	242	197
West Central	550	3.85	35.4	14.4	405	47.2	27.0	258	173
South Central	685	4.58	39.8	30.3	374	64.7	3.4	175	154
Mountain	645	4.45	42.7	4.8	509	50.8	40.3	239	197
Pacific	623	3.49	65.3	30.4	761	54.9	8.8	334	242
All areas	678	3.96	56.5	44.2	579	-	-	208	167

- 1/ Department of Commerce, Bureau of the Census, Report of 16th Census, Population, Volume 1.
 2/ Department of Commerce, Bureau of Foreign and Domestic Commerce, Survey of Current Business, July 1942, Table 4, P. 22.
 3/ Department of Commerce, Bureau of the Census, Statistical Abstract of the United States, 1942, Table 162. Figures given are simple averages for weather stations listed.

This singular phenomenon is perhaps best interpreted by the statement that in the Middle Western and Western States more motor-vehicle transportation per capita is available, with the result that the required travel per vehicle is less. In the Eastern, and particularly the Southern, States, a low density of motor-vehicle ownership imposes a heavier requirement of mileage, and therefore gasoline consumption, per registered vehicle.

The significance of this relationship is further emphasized by the listing, in the last column of table 4, of gasoline consumption per capita. The regional relationships in this index are almost the reverse of those shown in gallons per vehicle. Gallons per capita varies from 119 in the Southeastern States to 242 (more than twice as much) in the Pacific States. In the West Central States, which have by far the lowest value of gallons per vehicle, gallons per capita is above the national average.

There is a lesson to be learned from these facts. If, during the post-war years, there should be a general elevation of income and standards of living in the Southern States, motor-vehicle ownership would be diffused throughout the population as it is in other areas, and there would be opportunity for vastly augmented sales of gasoline. There is also a hint that there is an untapped potential market for increased sales of motor vehicles and gasoline in the industrial States of the East. The mention of these possibilities is not meant to imply that all States can or should be brought up to the level of California in density of motor-vehicle ownership. The need for motor-vehicle transportation will always vary widely among the States. Nevertheless, the vast difference between Mississippi, with 90 vehicles per 1,000 population, and California, with 355, suggests that the possible market for motor vehicles and gasoline is far from saturation.

The Current Situation

The following tabulation illustrates the trends, during the months of 1946, in gasoline consumption and in rural road travel, as compared with the corresponding months of 1941. The values given are Nation-wide estimates, based on reports received from the individual States.

<u>Month of 1946</u>	<u>Percentage of corresponding month of 1941</u>	
	<u>Net gallons of gasoline taxed</u>	<u>Rural road traffic</u>
January	103	102
February	106	103
March	109	102
April	109	100
May	104	94
June	110	98
July	108	94
August	102	99
September	-	103

Although the predicted registration of motor vehicles in 1946 is nearly two million less than in 1941 it is evident in the above figures that 1946 gasoline consumption will exceed that of 1941, the previous peak year. Rural road traffic was greater than that of 1941 in five of the nine months reported. If the trend indicated in the data reported for August and September is continued to the end of the year, it is probable that the total volume of rural travel in 1946 will equal, and perhaps exceed, that of 1941.

In view of the facts given above it does not appear that the use of motor vehicles, and the consequent demand for gasoline, is adversely affected at the present time by existing taxes, whether State or Federal, on motor vehicles and gasoline. Nor does the present state of the motor-vehicle market indicate that prospective purchasers are deterred by the necessity of paying the Federal excise tax on new vehicles.

We are, of course, in an abnormal period. Although recent price rises have sharply curtailed purchasing power, the times are still lush, and the demand for motor-vehicles and automotive products exceeds the supply. It is natural that concern should be felt regarding the prospects for marketing such products if and when a slack period occurs. Past experience teaches us that the producers of durable goods, such as motor vehicles, have much more to fear from such a contingency than the producers of direct-consumption commodities such as gasoline, as the following comparison indicates.

The behavior of the market for new motor vehicles during the depression period of 1930 to 1933 is illustrated by the following data taken from "Automobile Facts and Figures":

	<u>Factory sales of passenger cars and trucks</u>	<u>Percentage of 1929 total</u>
1929	5,358,420	100.0
1930	3,355,986	62.6
1931	2,389,738	44.6
1932	1,370,678	25.6
1933	1,920,057	35.8

In contrast, the behaviour of the gasoline market, as evidenced by the statistics on highway use of gasoline, was as follows:

	<u>Highway use of gasoline (1,000 gallons)</u>	<u>Percentage of 1929 total</u>
1929	14,139,301	100.0
1930	14,753,911	104.3
1931	15,456,662	109.3
1932	14,339,151	101.4
1933	14,348,152	101.5

The market for new motor vehicles really took a beating during the depression years; but the consumption of gasoline continued to rise in 1930 and 1931; and never receded to a point below that of the boom year 1929. So also with the recovery period. Although motor-vehicle sales made a substantial come-back, they did not approach the 5-million mark of 1929 until 1941, and did not actually reach it in that year. The highway use of gasoline, on the other hand, continued upward, and reached, in 1941 a total of more than 24 billion gallons, 71 percent above its 1929 value. And this in face of the fact that the Federal excise tax on gasoline was imposed in 1932, during the depths of the depression.

It is the hope of all that the national economy will not again receive as severe a setback as that which it experienced in the years 1930 to 1933. Although there is much controversy regarding the steps which government, industry, and labor should take to avert such a calamity, there is fairly general agreement that a concerted effort to sustain purchasing power is the key to the problem; and there is reason to believe that, in the "recession" which is foreseen by many, neither employment nor

prices will drop as severely as they did in the earlier depression period. If such should prove to be the case, there is all the less reason to fear a disastrous drop in gasoline sales. As to the market for new vehicles, there is need for wise industrial statesmanship in guiding the production of motor vehicles during the period after the present shortage is overcome. It is unlikely that those upon whom this responsibility rests believe that a curtailment of highway expenditures - the inevitable consequence of a reduction in taxes for the support of highways - would act as a stimulus to the motor-vehicle market.

Parallel Growth of Motor-Vehicle Registrations, Motor-Vehicle Use, and Mileage of Surfaced Roads

Previous mention has been made of the inter-related effects of highway development and the development of the motor-vehicle and petroleum industries. This mutual dependence is strikingly illustrated by the figures listed in table 5, which gives, at 5-year intervals from 1921 to 1941, values of the numbers of motor vehicles registered, highway use of gasoline, total vehicle-miles of travel and miles of surfaced rural roads. Values are also given for the individual years 1942 to 1945.

Between 1921 and 1941 the number of registered motor vehicles in the United States was more than trebled. In the same period the average annual per-vehicle consumption of gasoline was nearly doubled (373 gallons in 1921, 694 in 1941). As a result the total amount of gasoline used for highway purposes increased from 3,935,000,000 gallons in 1921 to 24,192,000,000 gallons in 1941, an increase of 515 percent. The same trend is reflected in estimates of total vehicle-miles traveled, which indicate a rise from 55 billion vehicle-miles in 1921 to 333 billion in 1941.

This remarkable increase in the numbers and use of motor-vehicles could not have occurred without a corresponding development of improved roads to carry the ever-increasing volume of traffic. The mileage of surfaced rural roads increased from 387,000 miles in 1921 to 1,385,000 miles in 1941, and 1,450,000 miles in 1945. The mileage of high-type surfaces (bituminous penetration, bituminous concrete, portland cement concrete, brick, and block) increased from 36,000 to 194,000 in the same period; and there was a similar development in the surfacing and improvement of city streets.

Table 5. - Parallel growth of motor-vehicle registrations, gasoline consumption, highway travel, and mileage of surfaced roads in the years 1921 to 1945.

Year	Total motor vehicles registered	Highway use of gasoline		Estimated total vehicle-miles traveled	Existing mileage of surfaced rural roads	
		Total	Gallons per Vehicle		Total	High-type surfaces
	1,000 vehicles	Million gallons		Million vehicle-miles	1,000 miles	1,000 miles
1921	10,522	3,935	373	55	387	36
1926	22,235	10,064	453	141	550	83
1931	26,015	15,457	594	216	830	138
1936	28,503	18,099	635	262	1,157	160
1941	34,854	24,192	694	333	1,385	187
1942	33,033	19,940	604	267	1,406	188
1943	30,836	16,004	518	207	1,415	190
1944	30,479	16,450	541	212	1,430	194
1945	31,035	19,149	517	249	1/	1/

1/ Not yet available

Road-User Tax Payments

The part which road-user taxes have played in this development is brought out in table 6, in which the amounts of State and Federal imposts on the motor-vehicle user are given at 5-year intervals from 1921 to 1941, together with figures for the individual years 1941 to 1945. Most of these receipts, but not all, were used for highway purposes. For example, the amounts of State road-user revenues applied to nonhighway purposes were 7 million dollars in 1926, 24 million in 1931, 169 million in 1936, and 215 million in 1941, the latter figure being 14.6 percent of the total receipts. The relation of the Federal excise taxes to Federal highway expenditures is discussed in a subsequent section.

In State road-user taxes, table 6 shows that the average contribution of the motor-vehicle owner increased from \$12.18 in 1921 to \$42.60 in 1941, a rise of 250 percent. That much of this increase was the result of increased travel is shown by the fact that the road-user contribution, per mile of travel, was 25-hundredths of a cent in 1921 and 44-hundredths of a cent in 1941, an increase of only 91 percent. During the war the average payments per vehicle declined and the average payments per mile of travel rose, because of the fact that the volume of highway travel fell off more sharply than the road-user revenues of the States.

The Federal excise taxes, particularly the 1-1/2 cent gasoline tax and the wartime motor-vehicle use tax, have added materially to tax burden of the motor-vehicle owner. In terms of cost per mile of travel, however, the maximum pre-war rate of 61-hundredths of a cent in 1941 is not a very burdensome charge. For a passenger automobile the average would naturally be less than for motor vehicles as a whole; and is estimated at about 25-hundredths of a cent per mile in 1941. The average cost of owning and operating a passenger car in the years immediately preceding the war is generally estimated at about 4 cents per mile. At that rate the total contribution of the average motorist in road-user taxes amounted to less than 14 percent of his total costs of ownership. As this contribution has increased with the years he has received in return a steadily increasing mileage of surfaced roads and streets on which to operate his vehicle.

Because of increased construction and maintenance costs and increased demands for highway improvements to meet the demands of postwar traffic, there is evidence that numerous States will find the existing schedule of road-user taxes insufficient to support their highway requirements. In the last two years the following five States have increased their gasoline-tax rates:

Table 6.- Receipts from special taxes on motor-vehicle users by States and Federal Government, 1921 to 1945; average payments per vehicle and per mile of travel.

Year	Special taxes paid by highway users			Tax payments per registered vehicle		Tax payments per mile of travel	
	State 1/	Federal 2/	Total	State	State and Federal	State	State and Federal
	Million dollars	Million dollars	Million dollars			Cents	Cents
1921	128	107	235	\$12.18	\$22.40	0.23	0.43
1926	476	96	572	21.52	25.88	.34	.41
1931	882	-	882	34.14	34.14	.41	.41
1933	1,066	303	1,369	37.83	48.57	.43	.54
1941	1,469	579	2,048	42.60	59.41	.44	.61
1942	1,516	635	1,949	40.38	69.81	.49	.73
1943	1,109	459	1,568	36.36	51.39	.54	.75
1944	1,127	509	1,636	37.44	54.35	.53	.77
1945	1,261	623	1,874	40.84	61.19	.50	.75

1/ Includes State gasoline taxes, motor-vehicle registration fees and allied imposts, and motor-carrier taxes.

2/ Estimated road-user share of Federal taxes on gasoline, lubricating oil, crude petroleum processed, transportation of oil by pipeline, automobiles and motorcycles, trucks, automobiles for hire, tires, tubes, parts, and accessories, and motor-vehicle use, during the years when these various taxes were in effect.

1945

Idaho	5.1 to 6 cents
Iowa	3 to 4 cents
Oklahoma	5.5 to 7.5 cents

1946

Kansas	3 to 4 cents
Virginia	5 to 6 cents

What is the effect on the motorist's pocketbook of a one-cent increase in the gasoline tax? The passenger-car owner, traveling 9,000 miles at 15 miles per gallon, will pay an additional tax of \$6.00, or 67 cents per thousand miles of travel. A rise of \$100 in the average cost of new cars, with corresponding increases in used car prices, would have considerably more effect (although it must be conceded that such increases, at the moment, do not seem to impair the vigor of the automobile market). If the proceeds of the tax increase are used for highway improvements to relieve congestion and promote the safety of highway travel, the net result is likely to be increased use of the highways and increased demand for gasoline. This result, however, can be achieved only if the tax increase is enacted in response to a genuine need for highway improvements, and a demand on the part of motor-vehicle owners which is reflected in their willingness to pay the tax.

For a medium, weight truck, operating 10,000 miles per year at 9 miles per gallon, a one-cent increase in the gasoline tax would result in additional tax payments of \$11.11 or \$1.11 per thousand miles of travel. For a heavy truck or combination, operating 30,000 miles per year at 4 miles per gallon, the additional charge would be \$75, or \$2.50 per thousand miles of travel. Considering the magnitudes of costs involved in commercial operations it seems probable that the truck operator would be willing to undergo these increased charges, if in return the State would undertake to build road improvements which would facilitate the conduct of his business and widen the range of his operations.

The Federal Excise Taxes on Motor
Vehicles and their Use

Table 7 gives, at 5-year intervals, a comparison between the receipts from Federal excise taxes on motor vehicles, gasoline, etc., and Federal expenditures for highway purposes. The amounts tabulated as receipts from Federal excise taxes are the totals generally claimed by industry representatives as the "Amounts paid by highway users", except for a correction in the 1945 totals, made necessary by the fact that, beginning on July 1, 1944,

Table 7.- Comparison of Federal expenditures for highways, 1920 to 1945, with the receipts from Federal excise taxes on motor vehicles and their use.

(All figures in millions of dollars)

Year:	Receipts from Federal excise taxes on motor vehicles and their use	Federal expenditures for highways				
		Public Roads Administration and other non-relief agencies	Ratio to Federal excise tax receipts	WPA and other relief agencies	Total including relief agencies	
	Amount	Amount		Amount	Ratio to Federal excise tax receipts	
ACTUAL AMOUNTS						
1920	157	43	0.27	-	43	0.27
1925	145	102	.70	-	102	.70
1930	(1/	146	-	-	146	-
1935	262	352	1.34	202	554	2.11
1940	422	324	.53	527	751	1.78
1945	2/ 623	82	.13	-	82	.13
CUMULATIVE AMOUNTS TO END OF YEAR 3/						
1920	331	60	0.18	-	60	0.18
1925	999	509	.51	-	509	.51
1930	1,176	1,032	.88	-	1,032	.88
1935	1,992	2,368	1.19	593	2,962	1.49
1940	3,654	3,928	1.07	3,621	7,549	2.07
1945	2/ 6,457	4,687	.73	4,113	8,800	1.36

1/ There were no Federal excise taxes on motor vehicles and their use in 1929, 1930, and 1931.

2/ Beginning on July 1, 1944, Federal excise taxes were paid on Government purchases of gasoline, motor vehicles, and automotive supplies, including purchases for military use. In calculating the amount for 1945 and for the cumulative total including 1944 and 1945, the amounts of taxes paid on Federal government purchases were eliminated by approximation.

3/ Cumulative totals from the year 1918.

taxes were collected on gasoline, motor vehicles, and automotive supplies purchased by the Federal government, chiefly for military use.

In the upper part of the table the excise-tax receipts at 5-year intervals from 1930 to 1945 are compared with Federal expenditures for highways in the same years. In the lower part cumulative totals, from 1918 to the end of the given year, are compared.

The first comparison to be found in table 7 is that between the Federal excise tax receipts and the "regular" Federal expenditures, i.e., those made by the Public Roads Administration and other non-relief agencies. Chief among the latter are the Forest, National Park, and Indian services, and, from 1933 to 1941, the Public Works Administration. Since the Federal excise taxes on motor vehicles, etc., were first enacted as emergency revenue measures during and immediately after the first World War, at a time when Federal aid for highways was in its infancy, the receipts from these taxes exceeded Federal-aid expenditures during all years from 1918 through 1926. In the latter year Federal expenditures for highways were 95 million as against 96 million received from the motor-vehicle excise taxes. From 1927 through 1933 (including the three years - 1929, 1930, and 1931 - when there were no Federal excise taxes) Federal highway expenditures exceeded the receipts from excise taxes by substantial amounts. From 1933 through 1945 the excise-tax receipts exceeded the regular Federal expenditures for highways by increasingly large amounts. The large allotments made to the Public Roads Administration under the National Recovery Act and subsequent legislation were replaced, in the late 1930's, by reduced authorizations on the regular Federal-aid basis; and, with the entrance of the United States into the war, Federal highway expenditures were still further curtailed, being restricted to those essential to the war effort. During the same period existing Federal excise taxes were increased in rate, and the motor-vehicle use tax was added; with the result that the yield from these taxes was greatly increased and remained at a high level throughout the war period, reaching an all-time peak of 849 million (of which the highway-user share is estimated at 323 million) in 1945.

The cumulative receipts from motor-vehicle excise taxes exceeded the regular Federal expenditures for highways until the year 1931. Highway expenditures thereafter held the lead through the year 1940; since when they have progressively fallen off, relative to the excise tax receipts, because of the reduced wartime expenditures for highways.

Table 7 also gives annual and cumulative totals of all Federal expenditures for highways, including those of the Work Projects Administration and other emergency relief agencies. Work relief expenditures for highways, chiefly on secondary roads and city streets, amounted to more than 4 billion dollars in the years from 1933 to 1942. It is generally recognized that the amount of useful work done, per dollar spent, was far less in work-relief

construction than in regular Federal-aid work. Even so, in arriving at the total of Federal expenditures for highways, the work-relief activities cannot be ignored. The totals which include them were far greater than the motor-vehicle excise-tax receipts during the period 1934 to 1940. On a cumulative basis the total expenditures of 8.8 billion dollars at the end of 1945 may be compared with the cumulative Federal excise-tax receipts of 6.5 billion.

It is more important, perhaps, to consider what the relative levels of excise-tax receipts and highway expenditures may be in the immediate future. Current authorizations allow for an annual Federal expenditure for highways of more than 550 million dollars. If the excise taxes were continued at their wartime levels, their receipts would substantially exceed these authorizations. If the rates were reduced to those in effect in 1940, when the receipts chargeable as taxes on highway users were 432 million, Federal expenditures for highways and the receipts from Federal excise taxes on motor vehicles and their use would be somewhere near in balance.

There is considerable controversy over the question of whether the Federal excise taxes should be considered as road-user taxes, in the same sense as the State gasoline taxes, motor-vehicle registration fees, motor-carrier taxes, etc. We have seen that their cumulative receipts, through the year 1940, were effectively in balance with the regular Federal expenditures for highways. If the Federal government, through Congressional action, should definitely embark on a policy of associating Federal aid for highways with Federal imposts on the motor-vehicle user, a tax schedule could be adopted which would be expressive of the user interest in Nation-wide improvement and development of the highways. A tax on gasoline of 1 cent per gallon might well be the cornerstone of this tax schedule, supplemented by moderate excise taxes on motor vehicles, tires, and parts and accessories.

It is not unreasonable to contend that the Federal interest in highway development, with respect to the general welfare, promotion of commerce among the States, improvement of post roads, aid to agriculture, and military security, is, in part at least, independent of the road-user interest; and that it would be therefore unjust to tax the road user for the entire support of Federal aid. It is a fact, however, that strategic highways for military purposes are also strategic highways for the normal peacetime travel of the motorist and the commercial operator; that post roads are also automobile roads; and that the promotion of interstate commerce by means of Federal highway aid is the promotion of interstate movement of motor vehicles. To the extent that Federal authorizations fail to run parallel to the interests of the motor-vehicle user they should be supported by the general tax base rather than by road-user taxes. By the same token, the motor-vehicle user should be taxed for the support of Federal aid for highways in proportion to the benefits he received from the expenditure.

In the postwar period we are faced with the problem of modernizing our highways under the condition of a price level which, although it may be expected to recede from its present inflationary peak, will almost certainly remain above the prewar level. In other words, we are confronted in highway work with the two-fold problem of (1) increased unit costs and (2) higher standards of improvement to meet the demands of postwar traffic. To a large extent our principal rural roads were built to standards which are now obsolete, in terms of width, gradient, curvature, and sight distance. It will be necessary to build many miles of divided-lane highways, with controlled access and separated intersections. The urgent problem of urban congestion calls for the construction of expressways and distribution routes, the improvement of existing arterial streets, and the provision of offstreet parking facilities. The demand for postwar modernization of the highway comes, for the most part, from the motor-vehicle user; and he will not, in the long run, escape the responsibility for paying his share of the increased costs.

If the Federal excise taxes relating to motor vehicles and their use were repealed, there would arise a movement for the reduction, or even the abolition, of Federal aid for highways, on the ground that the motor-vehicle user, the chief beneficiary of highway expenditures, was no longer making a contribution to the Federal budget for highways. If this should occur, not only would the highway program suffer from the loss of the funds involved, but the unifying and coherent policy of Federal-State- and, more recently, of Federal-State-local - relations in the highway field would come to naught. Coordination of planning and programming would disappear, and it is probable that the resulting confusion, together with the reduction of highway expenditures, would react unfavorably on the market for motor vehicles and gasoline.

Another angle which deserves consideration is that of the shift in the incidence of taxation for the support of Federal expenditures for highways which would occur if the Federal automotive excise taxes were repealed. The figures given in table 8 throw some light on this subject.

The data given in this table should be regarded as indicative rather than highly accurate. Although the figures given purport to represent conditions in the year 1941, it was necessary to combine data for 1941 with data for previous years, because of the absence of complete information for a single year. The general relationships exhibited are believed to be reasonably accurate for purposes of illustration.

Columns 2 and 3 give the percentage distribution of the ownership of family passenger cars, by income groups. Column 2 gives the percentages owned by family units in each income group; column 3 gives the cumulative

Table 8.- Characteristic distribution of ownership of family cars by income groups, and approximate distribution by income groups of 1941 payments of Federal automotive excise taxes, all other Federal taxes, and individual income tax.

Annual income group (\$1,000)	Percentage distribution of ownership of family cars ^{1/}		Estimated percentage distribution of 1941 Federal tax payments made by families or single individuals in indicated income group.					
	Per- cent	Cumula- tive by groups	Federal motor- vehicle excise taxes	All other Federal taxes	Individual income			
(1)	(2)	(3)	Per- cent	Cumula- tive by groups	Per- cent	Cumula- tive by groups	Per- cent	Cumula- tive by groups
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Under 1	27.1	27.1	17.6	17.6	9.2	9.2	0.1	0.1
1-2	42.9	70.0	35.4	53.0	15.5	25.7	4.0	4.1
2-3	17.7	87.7	20.6	73.6	9.0	34.7	3.4	7.5
3-5	8.0	95.7	12.1	85.7	7.2	41.9	5.4	12.9
5-10	2.7	98.4	6.4	92.1	7.0	48.9	8.2	21.1
10-25	)	(	4.4	96.5	11.9	60.8	17.1	38.2
25-50	) 1.6	(100.0	1.9	98.4	11.8	72.6	18.2	56.4
50-100	)	(	.9	99.3	10.7	83.3	16.8	73.2
100 and over	)	(	.7	100.0	15.7	100.0	25.8	100.0

^{1/} Characteristic of the middle 1930's. A distribution for 1941 or a later year would show smaller percentages in the lower income groups and larger percentages in the higher income groups, because of the general rise in income levels.

percentages, so that a value tabulated in this column indicates the percentage of all family cars owned by family units having annual incomes less than the value indicated by the upper limit of the class interval. As explained in the footnote, this distribution is characteristic of the middle 1930's. If data were available for a later year they would show a similar distribution. However, because of the general rise in income levels, there would be a shift in percentage values away from the lower and toward the upper income groups. These two columns illustrate how deeply the ownership of passenger cars has penetrated into the lower income groups. For example, 27 percent of family passenger cars were owned by families having annual incomes less than \$1,000, and 88 percent by those having incomes less than \$3,000.

Column 4 gives the incidence of the 1941 payments of Federal excise taxes relating to motor vehicles and their use, in terms of the percentages of the total receipts which were paid by family units in the several income groups. Column 5 gives the cumulative percentages. In making the calculations these portions of the tax payments estimated as referable to family or personal ownership and use of passenger cars were allocated in proportion to consumer expenditures for automobile transportation in each income group. Those portions of the tax payments referable to business ownership and use of motor vehicles were allocated in proportion to consumer expenditures for goods and services other than automobile transportation. The consumer-expenditure data were obtained from the bulletin on the subject issued by the National Resources Committee.

As might be expected, the percentage payments of motor-vehicle excise taxes do not accumulate as rapidly as the percentage distribution of passenger-car ownership. Nevertheless, column 5 indicates that nearly 18 percent of the total payments were made by those having incomes of less than \$1,000; 53 percent by those having incomes less than \$2,000; and 86 percent by those having incomes less than \$5,000.

Columns 6 and 7 give, in similar terms, the estimated percentage distribution of the payments, in 1941, of all Federal taxes other than the automotive excise taxes; and therefore indicate the shift in incidence upon the several income groups which would occur if the burden of support of the Federal highway program were transferred from the automotive excise taxes to the general tax base of the Federal government. In making the calculations these taxes, such as customs, excise, amusement, and processing taxes, which are readily passed on to the consumer, were allocated in proportion to consumer expenditures. The individual income tax was used as a base for roughly approximating the incidence of those taxes which are not readily passed on. The resulting distribution shows much smaller percentage payments by the lower-income groups than is the case with the automotive excise taxes. For example, we find that, whereas 92 percent of the automotive excise-tax

receipts were paid by those having incomes less than \$10,000, only 49 percent of all other Federal tax payments came from these groups.

Columns 7 and 8 give the percentage payments, by income groups, of the individual income tax in 1941. The progressive character of the income tax is in great contrast to the pattern of the motor-vehicle excise tax payments. Only 0.12 percent of the payments of this tax were made by families or individuals having incomes less than \$1,000; and only 13 percent by those having incomes less than \$5,000. The relatively few families and individuals having incomes of \$100,000 or more supplied 27 percent of the individual income tax payments in 1941.

It should be pointed out that, if data were available regarding the distribution, by income groups, of individual income tax payments during the war years, there would be a marked difference from the 1941 pattern. Although the rates paid by those with medium and large incomes were substantially increased, exemptions were reduced and the basic rate was raised. A distribution of the wartime payments would undoubtedly show larger percentage payments by the lower income groups. It is probable, although not certain, that in the postwar period the income tax will continue to be imposed on a broader base than that which prevailed before the war.

If the motor-vehicle excise taxes are repealed, other revenues must be found to take their place. This might be done by an increase in the individual income tax or, more probably, by general absorption in the entire Federal tax structure. The first of these two alternatives would relieve the consumer, and the motor-vehicle user in particular, of a tax burden which is now borne more or less directly in proportion to motor-vehicle use; and that burden would be shifted heavily to the upper income groups. The second alternative would relieve the motor-vehicle user of the direct impact of the automotive excise taxes; but the shift to the upper income groups would be less drastic, because a large part of the burden would be borne by customs, excise, and other consumption taxes. In either case the direct relationship between motor-vehicle use and tax payments would disappear.

The figures given in table 8, although approximate at best, are strongly indicative of the changes in incidence of taxation which would occur if it should become necessary to find a substitute for the Federal excise taxes on motor vehicles and their use. Whether these changes are to be regarded as desirable or otherwise depends upon the point of view. It is at least a reasonable contention that the principle of taxation according to ability to pay is sufficiently cared for in the present structure of the Federal income tax. Retention of the motor-vehicle excise taxes, at a level commensurate with annual authorizations for highway purposes, would introduce definitely into Federal highway financing the concept of taxation according to benefit which underlies the imposition of road-user taxes by the States.

Another factor which deserves some attention is that of the effect upon the Federal budget of the proposed elimination of the excise taxes on motor vehicles and their use. The budget for the fiscal year 1947, as originally prepared, provided for net total expenditures of approximately 32 billion dollars. The single item of national defense accounted for 42.5 percent of the total; service of the public debt, 17.7 percent; veterans benefits, 16.1 percent; social security and retirement funds, 3.5 percent. All of these items, are fixed obligations of the Federal government and they account for 73.8 percent of the total budget. The regular operating functions of the government, including public works, must be financed out of a budget of 6.7 billion dollars. The amount budgeted for highways was 649 million, or 1.1 percent of the total; for other public works, 709 million, or 2.3 percent.

It is clear that, in financing the regular operations of the Federal Government, we are operating on a very narrow margin; and no substantial source of revenue should be relinquished lightly. In 1945 the receipts from Federal excise taxes on motor-vehicle, gasoline, and allied products were 623 million dollars. There is little doubt that the receipts in the fiscal year 1947 will approach 10 percent of the operating budget of 6.7 billion. There is demand by numerous interests for the reduction of other taxes, including the individual income tax. This situation raises a question of budgetary prudence with respect to the proposed repeal of all excise taxes relating to motor vehicles.