REPORT OF COMMITTEE ON HIGHWAY FINANCE

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The railroads and the highways may be said to constitute the two chief means of transportation in this country, not taking into account the passenger movements in our large cities, where mass transportation is furnished in the main by electric street railway lines. Of all the land transportation systems the highway is the oldest and was the chief means of transportation until the end of the first third of the last century. After that time railroads were rapidly developed and extended so that up to the end of the century the railroad was considered the primary transportation agency in facilitating movements of goods and passengers.

With the advent of the motor vehicle the highway once more assumed its former importance in the country's transportation system At the present time there are 257,425 miles of railroad in the United States, with a total trackage of 409,359 miles The most authoritative information as to the number of miles of highway in the United States is that based upon the information gathered by the Bureau of Public Roads relative to highway conditions and expenditures for the year 1921. In that year it was reported that, for the United States as a whole, there were 2,941,294 miles of all types of roads. This included the main-traveled highways with expensive surfacing and improvements, as well as the less frequently traveled roads leading from small rural settlements to the main and improved trunk highways This total mileage is supposed to include the legally laid out highways of the country. That part of this mileage which had been improved with some kind of surfacing amounted to 387,760 miles, or 13 2 per cent of the total mileage of the country The mileage of the so-called earth or dirt roads, without any surface improvements, was therefore 2,553,534 miles, or 86 8 per cent of the total

The miles of road per square mile of land area in the United States amount to 0 99 miles In other words, there is not quite one mile of highway for every square mile of land area If the 387,760 miles of surfaced roads found in 1921 were equally distributed over the 48 states, that would amount to only 13/100 of a mile for each square mile of land area, or be slightly more than 1 mile of surfaced road for every 8 square miles of land area

It is quite natural to find the smallest ratio between highway mileage and land area in those states where the population is the least dense. For example, Arizona has 0 119 miles per square mile of land area On the other hand, Connecticut, which ranks the highest, has 2.52 miles of road per square mile of land area. Massachusetts has 2 34 miles, Indiana, 2 12 miles, Ohio, 2 07 miles; Rhode Island, 2 13 miles.

The highway mileage in any section of the country tends to vary, so far as its relationship to land is concerned, with the number of people living within that given area. The demand for roads does not come from land area or from the number of square miles that happen to be in any particular state The demand for a road comes because there are people who have need for its use, so that the road mileage depends upon the number of people living within a given area who have need for the transportation of their persons or goods from one place to another It is also noted, in studying the development of highways and their improvements, that the highest percentage of surfaced roads is found in those states where the population is the densest The need for surfaced roads is again a function of their use The more people living in a given area, the more use they make of the highway and the more necessary it becomes to improve the highway through surfacing in order to keep down the maintenance and repair costs

In a rather general way it may be said that the railroads of the country are today of prime importance as freight carriers and that the highways are the great passenger carriers According to the report on the statistics of railways in the United States for 1922, published by the Interstate Commerce Commission, the railways of the United States carried in that year 35,469,961,582 passengers one mile, the railroads produced that many passenger miles There is no authentic way of determining the exact number of passengers carried in the United States by motor vehicles Considerable information and data have, however, been gathered, which give us a fairly accurate basis for estimating the amount of traffic of this kind over our highways. The traffic counts and traffic surveys which have been made in a number of states show the average number of passengers transported in the passenger-carrying vehicles The Connecticut traffic survey showed that in that state there was an average of 2 5 persons per vehicle for all types of passenger cars Using this as a basis, it would appear to be a conservative estimate to assume that the passenger-carrying motor vehicles of the United States averaged at least two passengers per car On July 1, 1924, there were registered 13,645,000 passenger cars in the United States If we assume that each one of these vehicles averaged 5,000 miles a year and carried on an average two passengers, we get a total passenger mileage of 136,450,000,000 No definite data have been presented as to the division between the mileage traveled by the average passenger car over city streets and on rural roads It is believed that an assumption of 50 per cent as rural mileage is a very conservative estimate We can, therefore, say that at least 68,225,000,000 passenger miles were produced by the motor vehicles on the rural roads This is still approximately twice the passenger mileage which the railroads of the country produced in 1922

The average journey per passenger by railroad compares very favorably with the average journey per passenger by motor vehicle In 1922 the average journey per passenger on the railroads of the country

amounted to 36 66 miles The results of the Connecticut traffic survey show that passenger cars averaged 45 1 miles per car for each trip.

In comparing these two types of transportation, certain similarities and differences are noted. The railroad transportation system of the country is wholly in private hands The roadbed and tracks and also the equipment are owned by organizations of private investors. When it comes to highway transportation,we find the situation quite different. The equipment, such as the motor vehicle, both passenger and motor truck, and storage houses and everything that pertains to the operation of the trucks is owned by individuals or by private organizations The roadbed itself is owned, constructed, and maintained by the public, except in a very few instances where toll roads and toll bridges still exist. In railroad transportation the rate which one pays for transporting passengers or freight is intended to cover the costs relating to the operation of the equipment and to the maintenance of the roadbed and track and also the interest on the value of the property

In highway transportation we find that the same costs are present which prevail with reference to railroad transportation The cost of the automobile or the motor truck and its operating costs have to be met, and also the cost of constructing and maintaining the highway has to be paid by someone Under the system which prevails at the present time the operator and owner of the motor vehicle bears its operating costs and the public, through state highway commissions or through local highway organizations, bears in the first place the costs of constructing and maintaining the highway. One of the main problems of highway finance is to apportion this highway cost among those who, on the one hand, make a direct use of the highway and benefit thereby, and among those members of the public, on the other hand, who are benefited indirectly through the development of our highway system. Leaving out of consideration the toll roads which used to be fairly numerous in bygone days where considerable highway traffic occurred, the public generally paid for the construction and maintenance of the highways and raised the funds necessary for this purpose from general property taxes or, in some cases, from assessments levied on land directly adjacent to, or close to, the improved highway. The advent of the automobile and the demand made through it for more extensive highway improvements, brought about a development of the policy that this type of user should stand a portion of the highway costs made necessary by him.

In the early days of the use of the automobile, the automobile was considered more or less as an incidental vehicle on the highways The horse and wagon, which had been used for this purpose for ages, was still predominant At the present time the use of the horse and wagon, particularly as it applies to the transportation of passengers, has become almost obsolete, and even in the hauling of commodities over our highways, the motor truck is rapidly superseding the former type. This holds true chiefly for the main-traveled roads and for the trunk high-

ways. There are still a great many miles of our total highway mileage which can not be regarded as motor highways and which will always be farm-service roads.

In considering this phase of highway finance, it is of prime importance to know definitely the amount of funds devoted to highway expenditures which are directly contributed by the motor vehicle. The motor vehicle revenues of the country, aside from general property taxes, are raised mainly through two methods. One deals with the licensing of the motor vehicle and the exaction of a special fee in connection therewith; and the other method, which has recently come into vogue, is the taxation of gasoline which provides revenues proportionate to the use made of the streets and roads by motor vehicles. Through the use of these two methods the automobile is called upon to bear directly a part of the total cost of highway construction and maintenance.

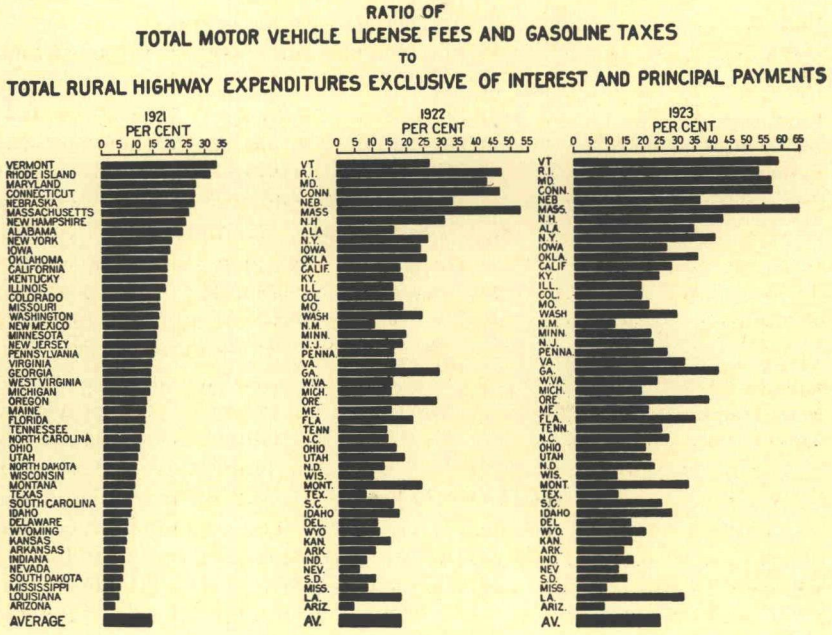

FIGURE 1.

TOTAL MOTOR VEHICLE REVENUES COMPARED WITH TOTAL HIGHWAY EXPENDITURES

In Tables I, II, and III, and in Figure 1, are shown by states for the years 1921, 1922 and 1923, the total highway expenditures for those respective years and the total revenues derived from motor vehicle license fees and from the gasoline taxes and also the ratios which these total motor vehicle revenues bore to the total highway expenditures. The highway expenditures as tabulated here for the year 1921 cover the items of construction and maintenance of roads and bridges, administration and engineering, and the purchase and repair of machinery and

TABLE I

1921	Total highway expenditures minus interest and principal payments	Total license fees and gasoline taxes	
		Amount	Per cent of total highway expenditures
Alabama	$ 4,881,701	$ 1,147,265	23 5
Arizona	9,804,812	283,897	2 9
Arkansas	19,353,806	1,026,543	5 8
California	36,614,695	6,834,089	18 7
Colorado	8,903,278	1,465,531	16 5
Connecticut	8,445,716	2,306,350	27 2
Delaware	5,570,049	375,469	6 7
Florida	8,541,667	1,018,712	11 8
Georgia	14,571,511	2,008,098	13 7
Idaho	10,786,437	841,212	7 8
Illinois	37,639,731	6,803,556	18 1
Indiana	44,142,148	2,422,227	5 5
Iowa	39,324,553	7,719,127	19 6
Kansas	22,054,780	1,400,000	6 4
Kentucky	11,683,078	2,183,825	18 7
Louisiana	11,838,160	453,276	3 8
Maine	8,259,725	1,004,750	12 1
Maryland	8,968,584	2,460,162	27 4
Massachusetts	18,634,337	4,717,389	25 3
Michigan	50,708,494	6,751,924	13 3
Minnesota	37,144,902	5,672,424	15 3
Mississippi	17,256,456	751,946	4 3
Missouri	15,240,889	2,505,353	16 4
Montana	9,276,916	823,319	8 9
Nebraska	10,361,131	2,824,811	27 0
Nevada	1,971,895	102,800	5 2
New Hampshire	3,598,921	876,322	24 4
New Jersey	26,334,950	3,974,063	15 0
New Mexico	3,369,464	531,920	15 8
New York	50,913,742	10,288,858	20 2
North Carolina	25,617,735	2,765,258	10 8
North Dakota	7,247,231	683,052	9 5
Ohio	65,777,680	6,894,159	10 2
Oklahoma	13,931,478	2,619,713	18 8
Oregon	26,476,121	3,270,057	12 4
Pennsylvania	69,580,813	10,305,499	14 8
Rhode Island	2,693,534	848,723	31 5
South Carolina	9,444,868	741,114	7 9
South Dakota	13,752,165	720,587	5 2
Tennessee	12,046,793	1,387,870	11 5
Texas	45,715,452	3,806,395	8 3
Utah	4,564,239	441,359	9 7
Vermont	2,150,484	668,288	33 1
Virginia	14,383,422	2,021,146	14 0
Washington	22,229,050	3,612,577	16 2
West Virginia	9,110,841	1,250,525	13 7
Wisconsin	40,774,180	3,671,645	9 0
Wyoming	4,329,212	288,121	6 6
	$946,021,826	$127,571,306	13 4

TABLE II

1922	Total highway expenditures minus interest and principal payments	Total license fees and gasoline taxes	
		Amount	Per cent of total highway expenditures
Alabama	$ 7,771,268	$ 1,262,800	16 2
Arizona	9,562,166	374,468	3 9
Arkansas	12,292,781	1,238,271	10 0
California	46,886,633	8,384,606	17 9
Colorado	10,334,618	1,636,542	15 9
Connecticut	9,118,682	4,256,991	46 6
Delaware	3,944,090	426,377	10 8
Florida	10,549,971	2,231,563	21 2
Georgia	8,878,320	2,569,235	29 0
Idaho	4,784,041	812,943	17 0
Illinois	50,496,350	7,882,482	15 6
Indiana	40,689,112	2,999,588	7 4
Iowa	33,401,849	7,923,388	23 7
Kansas	21,709,498	3,100,000	14 3
Kentucky	13,884,050	2,587,993	18 6
Louisiana	12,786,192	2,240,618	17 5
Maine	9,467,482	1,417,507	15 0
Maryland	7,497,713	3,220,387	43 0
Massachusetts	10,843,800	5,685,527	52 6
Michigan	55,516,403	8,305,022	15 0
Minnesota	33,644,891	6,543,685	19 5
Mississippi	18,078,341	1,444,542	8 0
Missouri	18,913,961	3,512,182	18 6
Montana	3,635,170	863,811	23 7
Nebraska	9,134,304	3,031,699	33 2
Nevada	2,240,623	120,937	5 4
New Hampshire	4,047,980	1,246,098	30 9
New Jersey	34,195,623	6,251,418	18 3
New Mexico	4,159,433	426,901	10 2
New York	48,952,729	12,736,364	26 0
North Carolina	24,949,161	3,493,827	14 0
North Dakota	5,417,705	698,931	12 9
Ohio	48,234,644	7,888,992	16 3
Oklahoma	10,721,964	2,729,169	25 5
Oregon	15,851,436	4,440,779	28 0
Pennsylvania	80,699,582	12,575,380	15 6
Rhode Island	2,414,704	1,139,742	47 2
South Carolina	9,810,758	1,501,888	15 3
South Dakota	12,116,778	1,232,232	10 2
Tennessee	11,659,311	1,592,230	13 7
Texas	56,022,344	4,261,488	7 6
Utah	3,909,295	729,455	18 7
Vermont	2,882,200	781,982	27 0
Virginia	15,143,391	2,467,346	16 2
Washington	17,564,039	4,245,500	24 1
West Virginia	12,546,208	1,936,079	15 4
Wisconsin	41,706,869	4,088,570	9 8
Wyoming	2,818,372	316,849	11 2
	$931,886,835	$160,854,384	17 2

TABLE III

1923	Total highway expenditures minus interest and principal payments	Total license fees and gasoline taxes	
		Amount	Per cent of total highway expenditures
Alabama	$ 7,771,268	$ 2,674,102	34 4
Arizona	9,562,166	755,793	7 9
Arkansas	12,292,781	1,654,288	13 5
California	46,886,633	13,127,437	28 0
Colorado	10,334,618	1,972,571	19 1
Connecticut	9,118,682	5,209,654	57 0
Delaware	3,944,090	604,788	15 3
Florida	10,549,971	3,604,107	34 1
Georgia	8,878,320	3,658,909	41 2
Idaho	4,784,041	1,310,501	27 4
Illinois	50,496,350	9,653,796	19 1
Indiana	40,689,112	6,600,143	16 2
Iowa	33,401,849	8,827,062	26 5
Kansas	21,709,498	3,435,606	15 8
Kentucky	13,884,050	3,359,167	24 2
Louisiana	12,786,192	3,945,677	30 9
Maine	9,467,482	1,946,344	20 8
Maryland	7,497,713	4,225,259	56 2
Massachusetts	10,843,800	6,989,633	64 5
Michigan	55,516,403	10,500,786	18 9
Minnesota	33,644,891	7,316,772	21 8
Mississippi	18,078,341	1,545,471	8 5
Missouri	18,913,961	4,016,383	21 2
Montana	3,635,170	1,170,870	32 2
Nebraska	9,134,304	3,353,175	36 6
Nevada	2,240,623	269,731	12 0
New Hampshire	4,047,980	1,734,390	42 9
New Jersey	34,195,623	7,653,780	22 4
New Mexico	4,159,433	460,000	11 1
New York	48,952,729	19,862,441	40 6
North Carolina	24,949,161	6,637,948	26 6
North Dakota	5,417,705	1,221,933	22 5
Ohio	48,234,644	9,662,370	20 0
Oklahoma	10,721,964	3,816,770	35 5
Oregon	15,851,436	6,027,750	38 2
Pennsylvania	80,699,582	21,335,825	26 4
Rhode Island	2,414,704	1,286,659	53 2
South Carolina	9,810,758	2,414,060	24 5
South Dakota	12,116,778	1,755,651	14 5
Tennessee	11,659,311	2,862,009	24 6
Texas	56,022,344	6,657,131	11 9
Utah	3,909,295	834,189	21 4
Vermont	2,882,200	1,107,032	58 8
Virginia	15,143,391	4,757,081	31 5
Washington	17,564,039	5,123,746	29 2
West Virginia	12,546,208	2,974,998	23 7
Wisconsin	41,706,869	4,958,933	11 8
Wyoming	2,818,372	554,257	19 7
	$931,886,835	$225,426,978	24 2

equipment and general and miscellaneous expenses. Payments made as interest and principal payments on highway bonds are excluded. For 1922 the total construction and maintenance items were obtained directly from state reports, and the item of purchase and repair of equipment and general and miscellaneous expense was estimated as bearing the same ratio to the construction and maintenance item as in the previous year. For 1923 no definite expenditure figures for the individual states are available The general information obtained as to the amount of expenditures indicated that the total 1923 expenditures were practically the same as the 1922 expenditures for the country as a whole, although there may have been variations for individual states which these estimates do not take into account The percentages show at least the trend of the ratio between motor vehicle revenues and highway expenditures. In Figure 1, the ratios which the motor vehicle revenues bear to the total highway expenditures for these three years are compared, the states being arranged in the order of the 1921 ratios

In 1921 the total highway expenditures of the country, exclusive of interest and principal payments, amounted to $946,021,826, and the total license fees and gasoline taxes were $127,571,306, which was 13 4 per cent of the total highway expenditures The total highway expenditures for 1922 were $931,886,835, in that year the total motor vehicle revenues amounted to $160,854,384, or 17 2 per cent of the highway expenditures Using the same expenditure figures for 1923 as for 1922, we find that the total motor vehicle revenues of $225,426,978 amounted to 24 2 per cent of the amount of money spent for highway construction and maintenance In 1924 it is believed that the total motor vehicle revenues from license fees and gasoline taxes will approximate $300,000,000, which will be about one-third of the total highway expenditures, assuming that the 1924 expenditures will not be greatly different from those of preceding years

During this four-year period the motor vehicle revenues have increased about 144 per cent, but the motor vehicle registration increased only 50 per cent This increase in the total motor vehicle revenues is due, in addition to the larger number of cars registered, to the raising of the license fees on passenger cars and the further increased fees on motor trucks, and to the added revenues produced by the gasoline tax

In 1923 there were five states—Massachusetts, Vermont, Connecticut, Maryland, and Rhode Island—in which the motor vehicle revenues were more than 50 per cent of the total h ghway expenditures for that year, in Massachusetts they amounted to 64 5 per cent In 1922 Massachusetts was the only state in which the ratio was over 50 per cent The five states which raised the smallest amount of the highway expenditures from motor vehicle revenues in 1923 were Arizona, Mississippi, New Mexico, Texas and Wisconsin, in which states the ratio between motor vehicle revenues and highway expenditures was less than 12 per cent It is observed that in 1923 there were 26 states in which motor vehicle

revenues were less than 25 per cent of the total highway expenditures, and 22 in which they were greater. In 1921 there were only 6 states—Connecticut, Maryland, Massachusetts, Nebraska, Rhode Island, and Vermont—in which the motor vehicle revenues equaled or exceeded 25 per cent of the highway expenditures. The trend during this three-year period is readily seen.

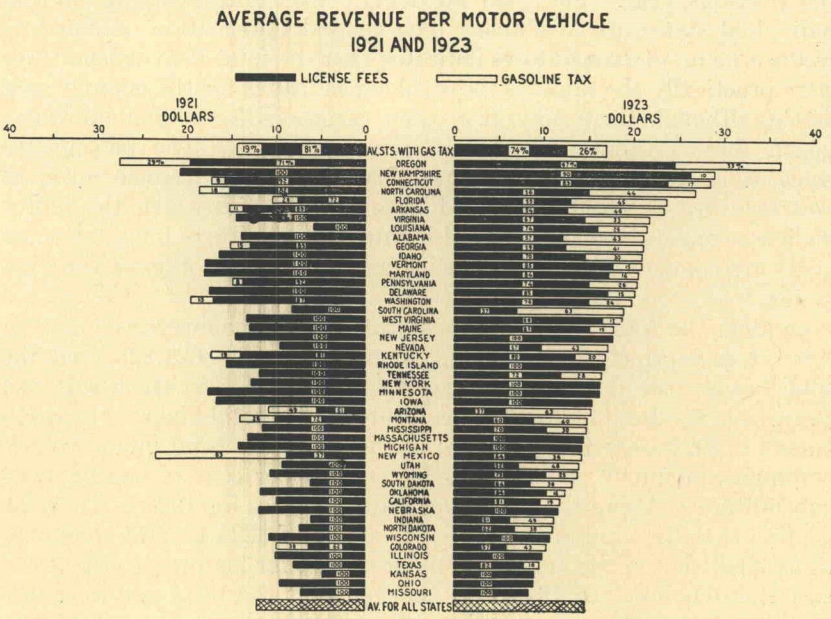

FIGURE 2.

COMPARISON OF AVERAGE MOTOR VEHICLE REVENUES PER VEHICLE DERIVED FROM LICENSE FEES AND FROM GASOLINE TAXES, 1921 AND 1923

The relationship between motor vehicle revenues and highway expenditures having been established, it now remains to be seen in what manner the motor vehicle revenues are raised. In Tables IV and V, and in Figure 2, there were shown for the years 1921 and 1923, respectively, the average motor vehicle revenues per vehicle and the division of these revenues between license fees and gasoline taxes. In 1921 the fees for licenses and permits collected by the several states amounted to $122,269,071, covering a total registration of 10,422,670 motor vehicles; this resulted in an average payment of $11.70 per vehicle. In that year 13 states collected $5,302,259 in gasoline taxes, which amounted to an average of 50 cents per motor vehicle for the country as a whole, or $2.74 per motor vehicle for those states in which the gasoline tax was in effect. If we divide the sum of all the license fees and the gasoline taxes by the total number of motor vehicles, we get an average of $12.20 paid by each vehicle. For those states which had the gasoline tax, the average motor vehicle revenues were $14.40 per vehicle. The highest average payment

TABLE IV

1921	Average motor vehicle revenues per vehicle	Average license fees per vehicle		Average gasoline tax per vehicle	
		Amount	Per cent of motor vehicle revenue	Amount	Per cent of motor vehicle revenue
Alabama	$13 90	$13 90	100		
Arizona	10 85	5 50	51	$ 5 35	49
Arkansas	15 20	12 70	89	2 50	11
California	10 00	10 00	100		
Colorado	10 00	6 20	62	3 80	38
Connecticut	17 21	15 90	92	1 31	8
Delaware	17 50	17 50	100		
Florida	10 40	7 50	72	2 90	28
Georgia	15 20	12 90	85	2 30	15
Idaho	16 40	16 40	100		
Illinois	10 20	10 20	100		
Indiana	6 10	6 10	100		
Iowa	16 70	16 70	100		
Kansas	4 85	4 85	100		
Kentucky	17 25	14 00	81	3 25	19
Louisiana	5 80	5 80	100		
Maine	12 90	12 90	100		
Maryland	18 10	18 10	100		
Massachusetts	13 10	13 10	100		
Michigan	14 20	14 20	100		
Minnesota	17 60	17 60	100		
Mississippi	11 50	11 50	100		
Missouri	7 20	7 20	100		
Montana	14 00	10 10	72	3 90	28
Nebraska	11 90	11 90	100		
Nevada	9 50	9 50	100		
New Hampshire	20 80	20 80	100		
New Jersey	14 50	14 50	100		
New Mexico	23 50	8 80	37	14 70	63
New York	12 70	12 70	100		
North Carolina	18 60	15 20	82	3 40	18
North Dakota	7 40	7 40	100		
Ohio	9 60	9 60	100		
Oklahoma	11 80	11 80	100		
Oregon	27 60	19 70	71	7 90	29
Pennsylvania	14 90	13 70	92	1 20	8
Rhode Island	15 50	15 50	100		
South Carolina	8 20	8 20	100		
South Dakota	6 10	6 10	100		
Tennessee	11 80	11 80	100		
Texas	8 10	8 10	100		
Utah	9 30	9 30	100		
Vermont	17 90	17 90	100		
Virginia	14 50	14 50	100		
Washington	19 50	17 00	87	2 50	13
West Virginia	13 30	13 30	100		
Wisconsin	10 80	10 80	100		
Wyoming	10 70	10 70	100		
Average[1]	$14 40	$11 70	81	$ 2 74	19
Ave all States	12 20	11 70	96	50	4

[1] For only those states having a gasoline tax

TABLE V

1923	Average motor vehicle revenues per vehicle	Average license fees per vehicle		Average gasoline tax per vehicle	
		Amount	Per cent of motor vehicle revenue	Amount	Per cent of motor vehicle revenue
Alabama	$21 12	$12 17	57	$ 8 95	43
Arizona	15 37	5 73	37	9 64	63
Arkansas	23 43	12 67	54	10 76	46
California	11 93	9 64	81	2 29	9
Colorado	10 44	5 96	57	4 48	43
Connecticut	28 66	23 82	83	4 84	17
Delaware	20 17	17 22	85	2 95	15
Florida	23 72	12 92	55	10 80	45
Georgia	21 04	12 40	59	8 64	41
Idaho	21 00	14 65	70	6 35	30
Illinois	9 94	9 94	100		
Indiana	11 31	6 33	56	4 98	44
Iowa	15 46	15 46	100		
Kansas	9 15	9 15	100		
Kentucky	16 93	13 50	80	3 43	20
Louisiana	21 56	16 04	74	5 52	26
Maine	17 92	15 29	85	2 63	15
Maryland	20 57	17 22	84	3 35	16
Massachusetts	14 53	14 53	100		
Michigan	14 37	14 37	100		
Minnesota	16 33	16 33	100		
Mississippi	14 82	10 33	70	4 49	30
Missouri	8 43	8 43	100		
Montana	14 86	9 88	60	5 98	40
Nebraska	11 72	11 72	100		
Nevada	17 18	9 80	57	7 38	43
New Hampshire	29 10	26 36	90	2 74	10
New Jersey	17 76	17 76	100		
New Mexico	14 36	9 21	64	5 15	36
New York	16 49	16 49	100		
North Carolina	26 89	15 10	56	11 79	44
North Dakota	11 18	6 96	62	4 22	38
Ohio	9 04	9 04	100		
Oklahoma	12 43	10 48	84	1 95	16
Oregon	36 32	24 52	67	11 80	33
Pennsylvania	20 44	15 18	74	5 26	26
Rhode Island	16 86	16 86	100		
South Carolina	18 94	7 08	37	11 86	63
South Dakota	13 33	8 59	64	4 74	36
Tennessee	16 51	11 82	72	4 69	28
Texas	9 68	7 91	82	1 77	18
Utah	14 02	7 23	52	6 79	48
Vermont	20 98	17 79	85	3 19	15
Virginia	21 73	14 62	67	7 11	33
Washington	19 84	15 10	76	4 74	24
West Virginia	18 84	16 52	88	2 32	12
Wisconsin	10 84	10 84	100		
Wyoming	13 92	10 40	75	3 52	25
Average[1]	$16 87	$12 55	74	$4 32	26
Ave all States	14 96	12 52	84	2 44	16

[1] For only those states having a gasoline tax

per motor vehicle was found n Oregon, where an average payment of $27 60 was divided on the basis of 71 per cent license fees and 29 per cent gasoline taxes Kansas collected the lowest average revenue, or $4.85 per vehicle, which was wholly in license fees In that year the average motor vehicle revenues exceeded $20 in but three states—New Hampshire, New Mexico, and Oregon, in 34 states the average revenues were between $10 and $19, and in 11 states they were less than $10

In 1923, the last year for which full and complete data are available, the total license fees and permits amounted to $188,970,992 for a registration of 15,092,177 motor vehicles, or an average of $12 52 per vehicle A gasoline tax was collected in 35 states, yielding a total of $36,813,939, which resulted in an average payment of $4 32, for those states in which the tax was in effect If the gasoline tax revenues are applied to the total registration of the country, the average payment per vehicle is reduced to $2 44 The total motor vehicle revenues of all the states represented an average of $14 96 per vehicle, if the 35 states which had in effect a gasoline tax are segregated, the motor vehicle revenues in those states averaged $16 87 per vehicle In this year there were 15 states in which the motor vehicle revenues averaged $20 and over per vehicle, in 28 states the average ranged between $10 and $19; and in 5 states the average was still less than $10 per vehicle.

The average motor vehicle revenues for 1921 and 1923 can be compared thus

	1921	1923
Average Revenues $20 and over	3 States	20 States
Average Revenues $10 to $19	34 States	28 States
Average Revenues $10 and less	11 States	5 States

For those states which had in effect a gasoline tax in 1923, California's gasoline tax receipts were only 9 per cent of the total motor vehicle revenues, and in Arizona and South Carolina they constituted 63 per cent of the total motor vehicle revenues It should be stated that the gasoline tax had not been in effect in California during the whole year In South Carolina is found the highest amount collected as gasoline taxes per vehicle, namely, $11 86, which was 63 per cent of the total collections, Oregon collected $11 80 in gasoline taxes from each motor vehicle owner, but this amounted to only 33 per cent of the total motor vehicle revenues This smaller percentage is due to the higher license fees in effect. In Oregon, as well as in a number of other states, the motor vehicle is not subject to the general property tax There were only five states in which the average amount collected as gasoline taxes exceeded $10 per vehicle.

GASOLINE TAX RATES IN EFFECT JULY 1, 1924

A map of the United States, referred to as Figure 3, indicates the states which are charging a gasoline tax and the rates in effect. One state is charging a 4-cent tax; nine charge a 3-cent tax, two charge a 2½-cent tax, fifteen charge a 2-cent tax, and eight charge a 1-cent tax There has been a tendency for states to start with the lower rate and later to increase it Of the fifteen states which are now charging a

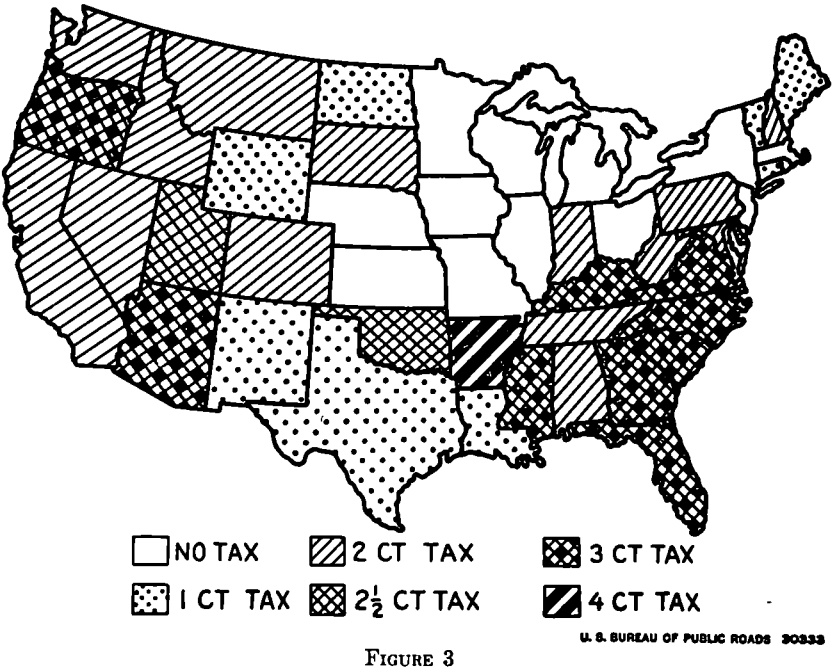

FIGURE 3
Gasoline Tax Rates in Effect July 1, 1924

2-cent tax, seven began with a 1-cent tax Oklahoma, which now charges 2½ cents, had at first a 1-cent tax Six of the states with a 3-cent tax began by collecting a 1-cent tax, and two of the states in the 3-cent group began with a 2-cent tax Arkansas, which now has a 4-cent tax, began with a 1-cent rate

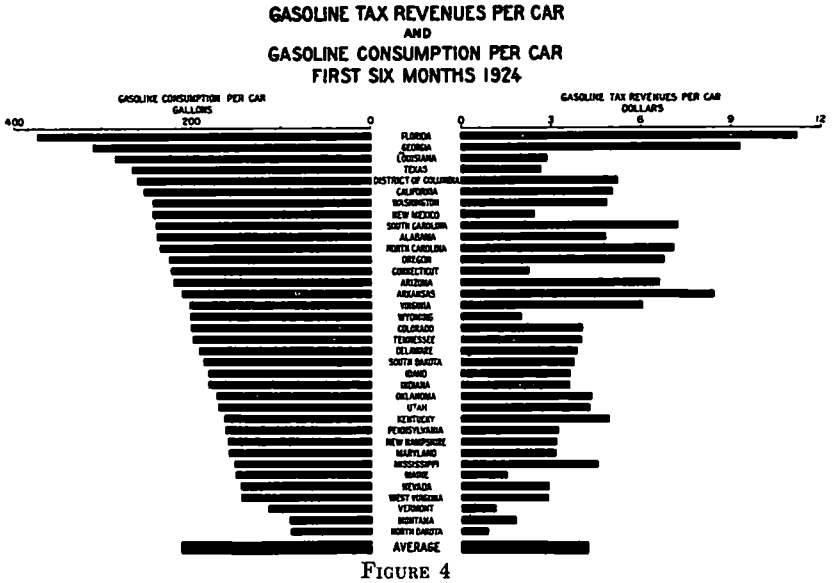

FIGURE 4

GASOLINE CONSUMPTION AND TAX RECEIPTS PER CAR FOR SIX MONTHS PERIOD—JANUARY 1, 1924 TO JULY 1, 1924

The gasoline tax collections amounted to $4.18 per car for those states which collected this tax for the first six months of 1924 (Table VI, Figure 4) The average consumption per car was 211 5 gallons It is estimated that the year's consumption will average more than twice this amount as there will be more automobile operation in the last

TABLE VI

GASOLINE CONSUMPTION AND GASOLINE TAX REVENUES PER CAR

First Six Months 1924

	Gasoline consumption per car	Gasoline tax revenues per car
	Gallons	
Alabama	239	$4 78
Arizona	220	6 60
Arkansas	210	8 40
California	253	5 06
Colorado	200	4 00
Connecticut	223	2 23
Delaware	192	3 84
District of Columbia	260	5 20
Florida	373	11 19
Georgia	310	9 30
Idaho	181	3 62
Indiana	181	3 62
Kentucky	163	4 89
Louisiana	285	2 85
Maine	150	1 50
Maryland	158	3 16
Mississippi	152	4 56
Montana	91	1 82
Nevada	145	2 90
New Hampshire	159	3 18
New Mexico	243	2 43
North Carolina	236	7 08
North Dakota	90	90
Oklahoma	172	4 30
Oregon	225	6 75
Pennsylvania	162	3 24
South Carolina	240	7 20
South Dakota	187	3 74
Tennessee	198	3 96
Texas	266	2 66
Utah	170	4 25
Vermont	114	1 14
Virginia	202	6 06
Washington	243	4 86
West Virginia	144	2 88
Wyoming	201	2 01
Average	211 5	$4 18

half of the year than in the first half because of road and weather conditions So far as can be ascertained, the increasing of the gasoline tax rates has had no retarding effect on gasoline sales and consumption per car. An exact comparison in the amount consumed per car per unit of time can not be made for all states because of the rate changes taking place at odd times or because of some irregularity in reporting. Florida and Georgia were both charging a 1-cent rate during the first six months of 1923, the average consumption of gasoline per car was 318 gallons for that period in Florida and 373 gallons for the first six months in 1924, when the rate was increased to 3 cents, likewise, there was an increase from 266 gallons per car to 310 in Georgia for those same periods when the tax rate was changed from 1 cent to 3 cents In Pennsylvania, South Dakota, and Washington the gasoline tax for the first six months of 1923 was 1 cent, and for the first six months of 1924 it was 2 cents The average consumption per car for these same periods increased from 155 gallons to 162 gallons in Pennsylvania, from 136 gallons to 187 gallons in South Dakota, and from 178 gallons to 243 gallons in Washington.

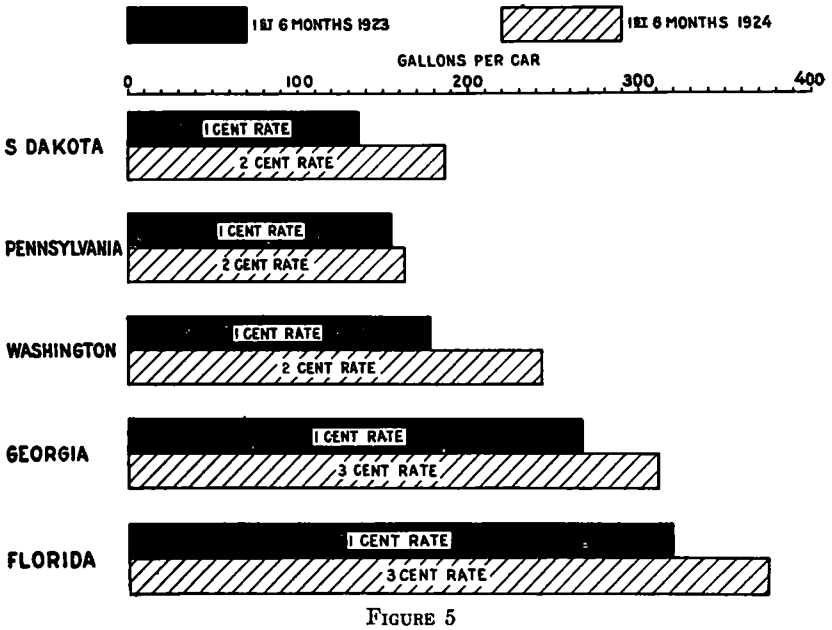

FIGURE 5

In Figure 5 is shown a comparison of the gasoline consumption per car under various gasoline tax rates The first six months of 1923 and the first six months of 1924 are compared in five states where the gasoline tax rate was advanced from 1 cent per gallon to 2 cents in three of the states, and to 3 cents in two of the states In every case it is

shown that the consumption of gasoline and the average use of the cars increased irrespective of the advance in the tax The price of gasoline is an element which should also be considered, but average retail prices of gasoline were not available when these comparisons were made.

AVERAGE PASSENGER CAR LICENSE FEES
COMPARED WITH AVERAGE MOTOR TRUCK FEES
FOR 28 STATES, FIRST SIX MONTHS 1924

This comparison could be made for only 28 states which reported separately the license fees derived from passenger cars and from motor trucks, as well as the separate registrations The average passenger license fee ranged from $3 17 in California to $28 20 in Idaho (Table VII, Figure 6). The average for these states was $10 70, though it should be noted that in 17 of the states the average fees were larger than the average license fee for the 28 states as a whole

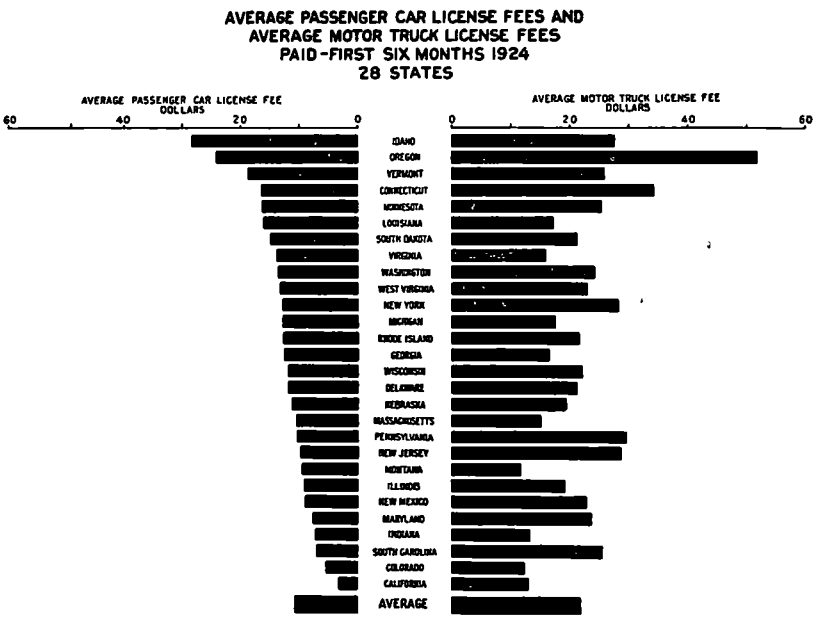

FIGURE 6

The average motor truck license fee for these same states was $21 90, or over twice as much as the average passenger car fee The lowest average is found in Montana, where the average motor truck was charged only $11.60 for a license, and the highest is in Oregon, where the average was $51 80 In this case the average was also the mean; 14 of the states charged a license fee greater than the average, and 14 charged less There is a marked tendency to charge higher license fees for motor trucks than for passenger cars even in those states where the average passenger car license fees are low In those 11 states where the passenger car license fees are less than the average, or less than

$10 70, the motor truck license fees are on the average 143 per cent higher, for those 18 states where the average passenger car license fees are above $10.70, the average motor truck fees are only 59 per cent higher.

TABLE VII

AVERAGE PASSENGER CAR AND MOTOR TRUCK LICENSE FEES FIRST SIX MONTHS 1924

	Average passenger car fee	Average motor truck fee
California	$3 17	$13 00
Colorado	5 31	12 35
Connecticut	16 45	34 30
Delaware	11 80	21 20
Georgia	12 25	16 60
Idaho	28 20	27 60
Illinois	8 90	19 25
Indiana	7 15	13 30
Louisiana	16 00	17 25
Maryland	7 55	23 70
Massachuetts	10 55	15 10
Michigan	12 85	17 70
Minnesota	16 20	25 30
Montana	9 48	11 60
Nebraska	11 15	19 50
New Jersey	9 80	28 65
New Mexico	8 80	22 80
New York	12 85	28 30
Oregon	24 10	51 80
Pennsylvania	10 40	29 70
Rhode Island	12 80	21 75
South Carolina	6 95	25 50
South Dakota	14 75	21 30
Vermont	18 70	25 90
Virginia	13 65	16 00
Washington	13 40	24 30
West Virginia	13 10	23 00
Wisconsin	11 80	22 10
Average	$10 70	$21 90

AMOUNT OF MOTOR VEHICLE FEES AND GASOLINE TAX RECEIPTS APPLICABLE TO HIGHWAY WORK BY OR UNDER SUPERVISION OF STATE HIGHWAY COMMISSIONS, 1923

In Tables VIII and IX, Figures 7 and 8, are shown the gross motor vehicle license fees and gasoline tax receipts and the amounts which the several states devote to highway work under the direction of state highway commissions, the tabulations cover the year 1923. Of the $188,613,054 collected as motor vehicle license fees, $153,226,618, or 81

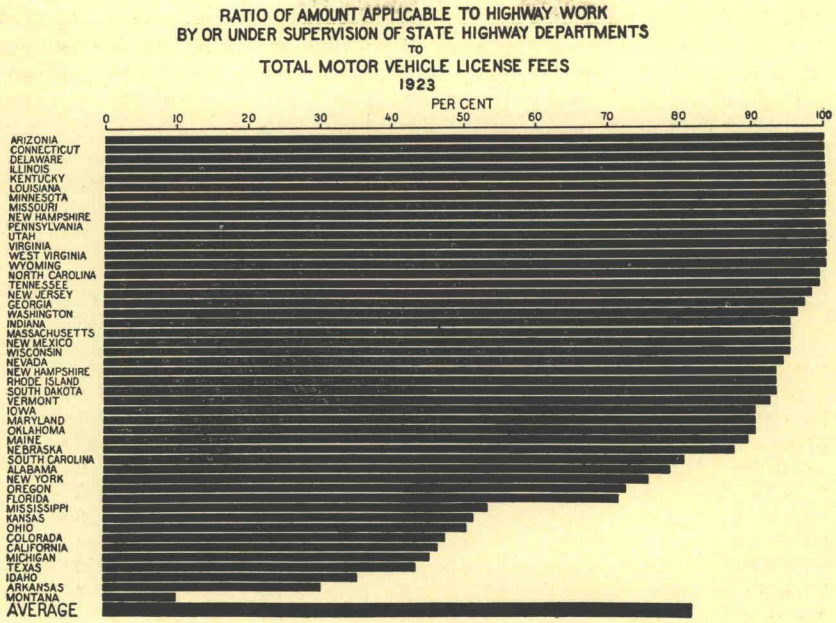

FIGURE 7.

per cent, was used for highway work by the state highway departments. In 14 of the states 100 per cent of the license fees are turned over to the state highway departments; in 17 states the state highway commissions

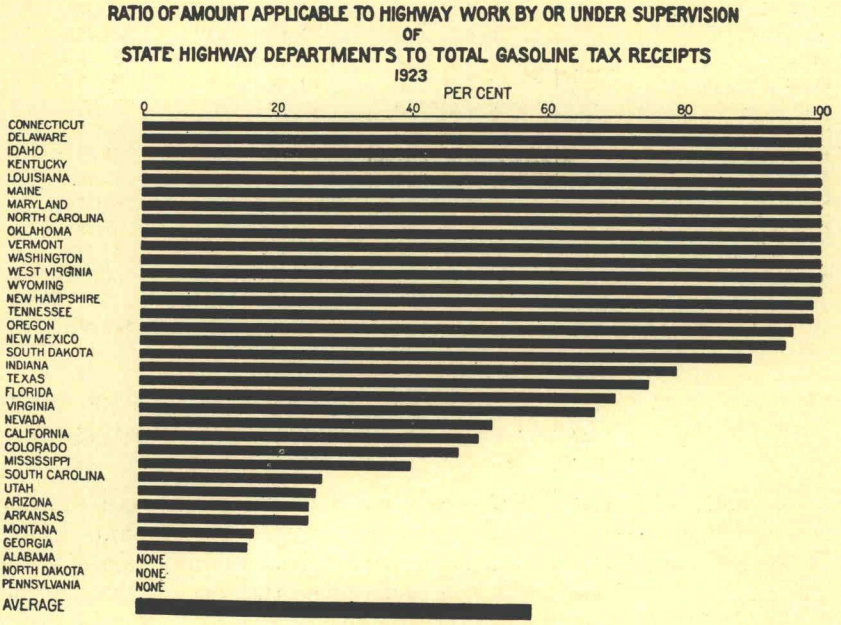

FIGURE 8.

TABLE VIII

1923	Total gross registration receipts	Applicable to highway work by or under supervision of state highway commissions	
		Amount	Per cent of receipts
Alabama	$ 1,541,017	$ 1,204,449	78
Arizona	281,670	281,670	100
Arkansas	1,435,090	430,527	30
California	10,608,544	4,906,015	46
Colorado	1,126,218	534,953	47
Connecticut	4,329,432	4,329,432	100
Delaware	516,209	516,209	100
Florida	1,963,065	1,394,528	71
Georgia	2,156,406	2,095,762	97
Idaho	914,014	229,840	25
Illinois	9,653,796	9,653,796	100
Indiana	3,693,715	3,492,498	95
Iowa	8,827,062	8,000,000	90
Kansas	3,435,606	1,750,000	51
Kentucky	2,678,732	2,678,732	100
Louisiana	2,191,240	2,191,240	100
Maine	1,660,268	1,474,383	89
Maryland	3,536,955	3,183,259	90
Massachusetts	6,989,633	6,639,155	95
Michigan	10,500,786	4,741,624	45
Minnesota	7,316,772	7,316,772	100
Mississippi	1,077,616	580,852	54
Missouri	4,016,383	4,016,383	100
Montana	729,621	73,325	10
Nebraska	3,353,175	2,932,242	87
Nevada	153,888	144,992	94
New Hampshire	1,571,326	1,464,096	93
New Jersey	7,653,780	7,515,116	98
New Mexico	295,000	280,250	95
New York	19,862,441	14,896,831	75
North Carolina	3,728,044	3,700,000	99
North Dakota	760,852	760,444	100
Ohio	9,662,370	4,832,962	50
Oklahoma	3,217,770	2,895,000	90
Oregon	4,069,609	2,924,707	72
Pennsylvania	15,844,303	15,844,303	100
Rhode Island	1,286,659	1,196,909	93
South Carolina	902,608	722,086	80
South Dakota	1,130,959	1,055,175	93
Tennessee	2,049,653	2,028,806	99
Texas	5,441,508	2,368,569	43
Utah	430,104	430,104	100
Vermont	938,860	860,803	92
Virginia	3,200,161	3,200,161	100
Washington	3,898,597	3,741,167	96
West Virginia	2,608,508	2,608,508	100
Wisconsin	4,958,933	4,693,887	95
Wyoming	414,096	414,096	100
	$188,613,054	$153,226,618	81

TABLE IX

1923	Total gross gasoline tax receipts	Applicable to highway work by or under supervision of state highway commissions	
		Amount	Per cent of receipts
Alabama	$ 1,133,085		
Arizona	474,123	$ 118,530	25
Arkansas	1,219,198	301,094	25
California	2,518,893	1,259,446	50
Colorado	846,353	402,017	47
Connecticut	880,222	880,222	100
Delaware	88,579	88,579	100
Florida	1,641,042	1,150,355	70
Georgia	1,502,503	247,666	16
Idaho	396,487	396,487	100
Indiana	2,906,428	2,514,755	86
Kentucky	680,435	680,435	100
Louisiana	754,437	754,437	100
Maine	286,076	285,839	100
Maryland	688,304	688,304	100
Mississippi	467,855	187,140	40
Montana	441,249	75,875	17
Nevada	115,843	60,000	52
New Hampshire	163,064	161,823	99
New Mexico	165,000	156,750	95
North Carolina	2,909,904	2,900,000	100
North Dakota	461,081		
Oklahoma	599,000	599,000	100
Oregon	1,958,141	1,885,421	96
Pennsylvania	5,491,522		
South Carolina	1,511,452	411,327	27
South Dakota	624,692	565,000	90
Tennessee	812,356	801,502	99
Texas	1,215,623	911,717	75
Utah	404,085	106,902	26
Vermont	168,172	168,172	100
Virginia	1,556,920	1,037,947	67
Washington	1,225,149	1,225,149	100
West Virginia	366,490	366,490	100
Wyoming	140,161	140,161	100
	$ 36,813,924	$ 21,528,542	58

direct the expenditure of 90 to 99 per cent of the motor vehicle license fees, in 10 states, between 50 and 89 per cent, and in 7 states the amount of motor vehicle license fees applicable to highway work or under supervision of state highway departments is between 10 and 49 per cent of the total collected in this manner.

The gasoline tax receipts for 1923 were $36,813,924; of this amount state highway departments directed the expenditure of $21,528,542, or only 58 per cent. In 13 states the state highway commissions control the expenditure of all the gasoline tax receipts, in 5 states they control 90 to 99 per cent, in 6 states, 50 to 89 per cent, and in 8 they control less than 15 per cent In 2 states, Alabama and North Dakota, the state highway commissions do not receive any part of the gasoline tax receipts, nor do they have any supervision of their expenditures.

Those revenues derived from the license fees and the gasoline tax, which are not turned over to state highway departments, are usually divided among the counties or are credited to the general fund, from which they are again appropriated for highway work or for the payment of interest and the retirement of highway bonds In only a few cases are the motor vehicle revenues diverted to uses wholly foreign to road work.

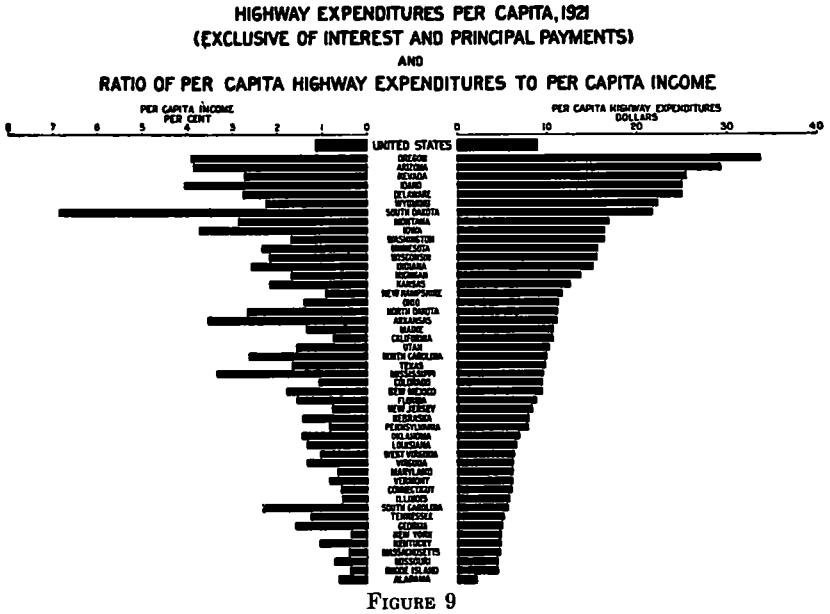

FIGURE 9

RELATION OF HIGHWAY EXPENDITURES TO INCOME

In discussing the subject of highway expenditures the question is often raised as to the amount of money which the people of a state or a community can afford to spend for the improvement of the roads. The relationship which exists between the highway expenditures and the income of the people reduced to a per capita basis furnishes one criterion which can be applied The data used in determining this are for 1921, in which year an all-inclusive survey of highway expenditures was made by the Bureau of Public Roads, and the latest estimates of the per capita income of the United States are also for that year.

In Table X, Figure 9, are set forth by states the per capita highway expenditures exclusive of interest and principal payments, and the

TABLE X

1921	Highway expenditures per capita	Ratio highway expenditures to income, per cent
Alabama	$2 10	61
Arizona	29 30	3 86
Arkansas	11 10	3 52
California	10 70	74
Colorado	9 50	1 08
Connecticut	6 10	59
Delaware	25 00	2 76
Florida	8 80	1 55
Georgia	5 00	1 58
Idaho	25 00	4 03
Illinois	5 80	57
Indiana	15 10	2 56
Iowa	16 40	3 71
Kansas	12 60	2 15
Kentucky	4 80	1 05
Louisiana	6 60	1 32
Maine	10 70	1 34
Maryland	6 20	66
Massachusetts	4 80	40
Michigan	13 80	1 69
Minnesota	15 60	2 33
Mississippi	9 60	3 34
Missouri	4 50	71
Montana	16 90	2 85
Nebraska	8 00	1 43
Nevada	25 50	2 71
New Hampshire	11 70	92
New Jersey	8 40	77
New Mexico	9 40	1 79
New York	4 90	34
North Carolina	10 00	2 61
North Dakota	11 20	2 65
Ohio	11 30	1 40
Oklahoma	6 90	1 44
Oregon	33 80	3 90
Pennsylvania	7 90	84
Rhode Island	4 50	37
South Carolina	5 60	2 34
South Dakota	21 70	6 84
Tennessee	5 20	1 25
Texas	9 80	1 66
Utah	10 20	1 55
Vermont	6 10	82
Virginia	6 20	1 32
Washington	16 40	1 68
West Virginia	6 30	1 03
Wisconsin	15 50	2 17
Wyoming	22 30	2 23
Average	$9 00	1 13

percentages which these highway expenditures bear to the per capita incomes of the several states In 13 of the states—Alabama, California, Connecticut, Illinois, Maryland, Massachusetts, Missouri, New Hampshire, New Jersey, New York, Pennsylvania, Rhode Island, Vermont—the per capita highway expenditures in 1921 amounted to less than 1 per cent of each person's income, in 17 of the states—Colorado, Florida, Georgia, Kentucky, Louisiana, Maine, Michigan, Nebraska, New Mexico, Ohio, Oklahoma, Tennessee, Texas, Utah, Virginia, Washington, West Virginia—the highway expenditures were between 1 and 2 per cent of the income, in 11 of the states—Delaware, Indiana, Kansas, Minnesota, Montana, Nevada, North Carolina, North Dakota, South Carolina, Wisconsin, Wyoming—the highway expenditures were between 2 and 3 per cent, and in 7 states—Arizona, Arkansas, Idaho, Iowa, Mississippi, Oregon, South Dakota—they were over 3 per cent In South Dakota the highest ratio was found, the highway expenditures amounting to 6 84 per cent of the people's income, in New York the lowest ratio was found, the highway expenditures being only 34 per cent of the income. In general, it may be said that where the per capita highway expenditures are large, there the ratio between such expenditures and the people's income tends to be high. In states where there are large cities, the per capita expenditures tend to be less and at the same time the per capita income is larger than in the states where the rural populations dominate In the New England and Middle Atlantic States, the per capita expenditures for highway work averaged 55 per cent of the per capita income in those states, in all of the other sections of the country they were over 1 per cent, and in the West North Central and the Mountain States they were over 2 per cent. These higher percentages are accounted for by small populations bearing the costs of extended highway improvements with relatively small incomes per capita

RECOMMENDATIONS CONCERNING FURTHER INVESTIGATIONS IN THE FIELD OF MOTOR VEHICLE TAXES FOR HIGHWAY PURPOSES

Up to the present time, the data which have been gathered relative to the whole subject of motor vehicle taxation are confined solely to the revenues obtained through license and registration fees and through the introduction of the gasoline tax In a great many states the motor vehicle owner has to pay additional taxes levied on his car. In the first place, the motor vehicle is, in most states, subject to the personal property tax the same as any other kind of property is, except in cases where state legislatures have provided specific exemption for the automobile from this kind of tax. So far as can be learned, there are now 13 states which do not levy a property tax on the motor vehicle—Delaware, Idaho, Iowa, Michigan, Minnesota, New Hampshire, New York, North Dakota, Oklahoma, Oregon, Pennsylvania, Tennessee, and Vermont In these states the license fees are collected in lieu of property taxes. No definite figures have as yet been ascertained as to the amount of the

general property taxes on automobiles for the country as a whole. The estimates which have been made show wide variations. It is frequently stated that even those states which tax the motor vehicle as property fail to a very considerable extent in collecting the taxes from all of the car owners In many instances, there does not appear to be any close relationship between the state motor vehicle registration office and the taxation authorities The hope of remedying this condition was the reason given for a number of states to increase the license fees and exempt the automobile from the general property tax To be able to show fully the extent to which the motorists contribute toward highway expenditures, it is necessary to make further inquiries into this subject of the taxation of the motor vehicle as property.

In the second place, motorists in many cities are obliged to pay special municipal license fees, sometimes known as "wheelage taxes" In some cases they amount to more than the state license fees It is therefore of importance to collect data as to the amount of revenues derived from the automobile in this manner and the use to which such funds are put.

Further investigations should also be made with reference to the distribution of license fees and gasoline taxes as between state highway authorities and local governmental units There is already an indication that municipalities in some instances claim a share of the gasoline taxes. In order to work out some fundamental principles regarding the allocation of such revenues, it is necessary to determine more fully than has yet been done the relative use which city-owned motor vehicles make of our rural highways as compared with the use made by rural cars, and further data should be collected that will show the proportion of the total motor vehicle mileage which occurs within city limits as compared with the rural highway mileage Such facts will be of use in the development of apportionment principles.

The effect which improved and hard-surfaced roads have on values of adjacent farm lands constitutes a problem of special interest to one studying this subject of the equitable apportionment of the highway finance burden There are now under way several research investigations inaugurated by the Bureau of Public Roads in cooperation with state bodies, which it is expected will give us certain fundamental data that will be of value in determining to what degree real property in the rural sections should contribute towards highway improvements

There is no doubt that many of the state legislatures will find it necessary in the next few years to revise and expand their highway laws and to provide more adequately for contemplated highway improvements In order that such legislative work may be done according to sound economic principles and in harmony with good public policy, it behooves those interested in these subjects to procure and interpret all the underlying facts of highway finance so that they shall be available to all who seek guidance and knowledge therefrom.

In discussing the report of the Committee on Finance, R. C. Marshall, of the Associated General Contractors of America, presented another

phase of highway finance—the necessity of scientific business research.

In his discussion the speaker said, "In years that have passed, I have heard statements made by responsible officials, of the low cost they were getting for the construction of their highways. Generally speaking, the low cost was decidedly uneconomical because these highways do not exist today."

An Analysis of Defaulted Highway Contracts by Frank Page, North Carolina State Highway Commission, was the next paper on the program. Mr. Page outlined the reasons for 34 defaulted projects in North Carolina and stated that a chief element contributing to the defaulting was the ease with which contractors could secure contract bonds. Mr Page's paper was printed in full in several magazines, one of them being the February issue of the Highway Builder.

T J Wasser of the Public Service Production Co , Newark, N. J., and H G Shirley of the Virginia State Highway Commission contributed an interesting discussion of Mr Page's paper. Both speakers presented facts that indicate a necessity for definite action in order to prevent future defaulting of contracts