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TRAFFIC TRENDS AND HIGHWAY PLANNING

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In the romantic literature of the South there is frequent repetition of the story of a companionship between master and slave, lasting practically from the cradle to the grave. The infant heir of the manor romps through his play days in the gleeful company of a pickaninny shadow; attains an imperial adolescent sway over an awed but adoring follower; is served hand and foot in maturity by a willing anticipator of his every wish; and comes at last to his end, mourned and survived but a short time, by the white-haired servitor of his declining years.

Between the motor vehicle and the road there has been, is now, and - we may safely assume - will remain to the end a similar relationship - a relationship of mutual interadjustment and parallel growth at all stages of a practically simultaneous development. As often the slave in plantation days, the modern road was born shortly before its master, the motor vehicle. It has grown in service with the evolving and fast-multiplying vehicle; and it will continue in the future to spend itself for, and take its character from, the needs of the important and useful traffic, generated by the comings and goings of the motor vehicle in its tens of millions of units.

In their parallel evolution, these two - the road and the vehicle - have passed through two well-marked stages, in almost identical periods. In the appropriate terms of human experience we may call these two stages: First, the formative years; and second, the growing years.

For both the road and the vehicle, the formative years extended from the final decade of the last century to the middle of the second decade of the present century. In them there was no great increase in either the numbers of motor vehicles or in the mileage of improved roads. They were years filled with the efforts of the manufacturers of vehicles and the builders of roads, to create new forms; efforts of the manufacturers which at length transformed a rudimentary horseless carriage into a new type of vehicle, possessing all the elemental qualities of the modern automobile; and efforts of the roadbuilders which, by experiment and research, found a variety of surface types, ranging from sand-clay to concrete and bituminous concrete, as substitutes for the single inheritance from Mac Adam.

In the growing period, which began for both the road and the vehicle in the later years of the second decade of this century, motor vehicle manufacture was geared to mass production; and road-building, marking as its principal goal the creation of Federal-aid and State highway systems, employed its every means and shaped all its policies to the earliest possible closing of the last unsurfaced gap

in the designated systems. In the earlier years of this second period the energies of the two industries were available almost wholly for the generation of growth. Necessity for the replacement of vehicles and the reconstruction of roads at first absorbed only a small fraction of the available productive capacity. New owners took most of the cars as they came from the assembly lines, and nearly every mile of road built was a mile previously unimproved. As a result, vehicle registration doubled and redoubled in the space of a few years, and good roads increased in the same time with like rapidity. Later, as the vehicles and roads in use largely increased, replacement and reconstruction came to employ a larger and larger part of the productive capacity available; increases in vehicle registration and improved road mileage occurred at correspondingly reduced annual rates; and, recently, all signs have indicated approach to the inevitable third stage of development for both the vehicle and the road - the stage of maturity.

The course of development in each case is obviously following the characteristic pattern of all growth processes, a pattern that is represented graphically by the familiar S-curve. The development of the formative years is represented in such a curve by the slightly inclined lower section. The growing years are represented by the steeper climb of the middle section; and the approach to years of maturity is foretold by the second turning of the curve toward the slighter inclination of its upper section.

In all growth processes the turnings of the S-curves tracing their development denote the beginning of significant changes. Roadbuilding, motor vehicle production, and their common consequences in highway traffic are not exceptional. For vehicle manufacture the earlier upward turning mirrored the introduction of the assembly line and the beginning of mass production to supply a vigorous and largely unsatisfied demand. For roadbuilding it marked the inception of the drive for continuous improvement of newly designated primary highway systems.

For both industries the appearance of the second turning of the curve is equally significant; for both it heralds an approach to ultimate limits. For motor manufacture it spells a virtual filling of the reservoir of demand with an aggregate supply of new and used vehicles, and the simultaneous emergence of a "used car problem." To the motor manufacturer and dealer that problem presents the necessity of propelling a series of used cars downward through several resales at successively lower prices and the eventual decommissioning of an oldest vehicle in order to clear the demand for a single new vehicle at the top, new-vehicle price.

For roadbuilding appearance of the second turning of the S-curve signals a change from the rapid extension of a pioneer improvement to a program composed in the main of the reconstruction

and further improvement of roads already improved to some degree. In such a program the possibility of a further extension of improvement to new mileage is definitely limited, and selection of the new mileage to be improved calls for a nicer discrimination. Also, in such a program, temporary and partial construction, acceptable as expedients in the pioneer stage, find less appropriate employment, and standards of design and construction should anticipate as fully as possible the requirements of efficient usage during a substantial future period.

If, with these conceptions of the stages of motor-vehicle production and roadbuilding in mind, we review the trend of highway traffic through the same periods, we find that in the amount and character of the traffic developed at each stage there have been significant differences, expressive of different highway requirements, which have been reflected with marked fidelity in the plans and policies that have guided the contemporary highway programs. From such a review we will derive the correct impression that sound highway planning is by no means the recent attainment that current emphasis upon the highway planning surveys might suggest. On the contrary, it will be apparent, that there has been in the earlier stages of the development a remarkably prompt appreciation of the essential contemporary highway requirements and an equally prompt response in the formulation of consistent plans and policies. If, in these changing

plans and policies of successive periods, there is no marked evidence of prophetic quality, there is definite indication of a quality scarcely less rare - a timely perception of real current needs. And, if in later periods it has been necessary to revise some of the accomplishment of preceding stages, there is evidence, at least, that the need of revision was generally recognized as quickly as we can now see it could have been recognized.

Traffic and Planning in the Formative Years

Throughout the period that we have called the formative years the number of motor vehicles in use was small - 4 in 1895, less than 2-1/2 million in 1915. At no time was more than a small part of the small number owned outside of cities; and in the earlier years, operation was restricted, by the condition of rural roads and by the frailties of the vehicle itself, largely to city streets. Accordingly it is in the improvement of the city streets that we find the first recognition of the needs of the new vehicle - a recognition of the desirability of smoother surfaces that were promptly provided in place of the ancient cobbles and stone blocks.

Later, as the vehicle became more sturdy and reliable, it made its presence felt on the roads running outward from the towns, and at once created a problem. It began to destroy the only good roads there were by sucking out their dusty binder and blowing it away. It mired down hopelessly in the mud of unsurfaced roads.

So the highway problems of the formative period were very definitely physical problems. How to build roads that would first resist the ravages of the motor vehicle and, resisting, smooth its still somewhat venturesome way, were their sum and substance. It was these physical problems that called into existence the State highway departments and the Federal road agency. It was these new agencies that bred the highway engineer; and it was the engineer and the consultants he associated with him, who found the physical answers.

Where and what roads to build were questions that found a ready answer throughout most of the formative period. The motor vehicles were owned in the cities and towns. Their owners wanted to drive into the country - but not too far. Nearly all country roads were bad; so almost any road running out of almost any city or town was an eligible candidate for improvement. It was practically as simple as that.

In sum, then, the highway planning of the formative period was the planning of physical solutions of the only problems that had then presented themselves, which were physical problems; that, and the planning of the engineering organizations capable of dealing with such physical problems. If we still employ concrete and bituminous pavements, and mixturesof sand and clay, for the surfacing of our highways, and the stabilization of their foundations - as we do; and if the State highway departments are today our chief reliance for efficient highway administration - as they are; then we must concede

that the highway planning of the formative period was sound planning.

Highway Planning and Traffic in the Growing Years

The Federal Aid Road Act, passed after long debate in July 1916, set the capstone upon the highway planning of the formative period. It induced the creation of highway departments in all the States that had not previously created them. It threw the weight of the Federal Government into the scale for sound construction and assured maintenance. But, it specifically prohibited expenditure of the funds it appropriated on city streets; and it definitely permitted their expenditure on any rural road that carried or might carry the mails, which meant, in effect, almost any road. And, for a few years, it was literally "almost any road" that was actually chosen for improvement with the joint Federal and State funds.

When the Federal Aid Road Act was passed, the number of motor vehicles was already turning from the lower section of its S-curve into the steep upward slope of the growing years. Registration - less than 2-1/2 million in 1915 - increased to more than 9 million by 1920; and this 5-year interval, corresponding roughly with the unamended life of the Federal Aid Road Act, was approximately the time required for the general adjustment of highway planning to the changing demands of the vehicle.

Largely increased in numbers, and greatly improved in performance, motor vehicles, now coming into the possession of country as well as city dwellers, were found on many rural roads, but most numerously on roads joining the larger cities and towns. It was in these larger places that most of the vehicles were still owned and from, or to them that the greater part of rural road traffic proceeded. This was a new condition. Formerly the farm had been the origin or destination of nearly all country travel, and the amount of travel had varied from road to road with the amount of settlement along each road. Now, by the choice of the traffic itself, certain roads - generally those joining the larger cities and towns - were given an importance above the more numerous remainder as carriers of distinctly heavier traffic streams.

This new trend of highway traffic was recognized in some of the more populous States at least ten years before it was generally noted; and in some of these States the inter-city roads, formed into State highway systems, had been entirely removed from the control of county and other local authorities and made the exclusive responsibility of the State highway departments, to be improved and maintained by those departments. Thus recognized as roads of primary importance various financial means were placed at the disposal of the State departments to expedite the improvement of these systems in their entirety. Bonds were issued in some States in amounts designed to pay for a complete

improvement; and, generally, the sums collected by the State as motor vehicle license fees were dedicated to the same purpose, either by direct expenditure or by payment of the interest and retirement of the principal of bonds.

But though a number of States had thus earlier pointed the way, it was not until designation of the Federal-aid highway system was required by the Federal Highway Act of 1921 that trunk line systems were established in all States.

For the transfer of the selected main trunk highways from local to State and Federal control and for the preference they were given in expenditure of the road-user revenues and Federal appropriations, there were a number of sound and very practical reasons. First, because of their denser traffic, they were the roads that presented the most difficult technical problems of improvement, and they stood, therefore, in greatest need of the more expert care of the State and Federal agencies. Second, since mile-for-mile their traffic was greater than that of other roads, their improvement with motor vehicle revenues would benefit the greatest number of the payers of such revenues. Gathered into interconnected systems, joining city with city and State with State, they formed a mesh of thoroughfares, covering the entire land, the strands of which would lie closer to the more important points of origin and destination of travel than would the units of any other aggregate of roads of like extent. Hence there

was a third reason for their preferential improvement: That by such preference the greater part of all the longer trips would be facilitated and only the shortest and most local movements and some short beginnings and ends of longer trips would be unaided. And, finally, it was perceived that by no means other than a rigid confinement of principal effort to the improvement of these integrated systems of trunk highways would it be possible, with the limited revenues annually becoming available, to effect a generally useful improvement in any reasonable length of time.

This, then, was the basic plan that has guided road improvement of the growing years: A rigid concentration of principal effort, under direction of the State and Federal agencies, upon what were believed to be the most important rural roads. Meanwhile city street administration has remained for the most part entirely in the hands of municipal authorities and quite apart from any connection with what was going on outside the city limits. And, as for the large remainder of lesser rural roads, they have remained under the direction of a multitude of independent local authorities, of short official tenure, and lacking generally both the means and the incentives for cooperation among themselves or with the State and Federal agencies.

After the designation of the Federal-aid highway system, the registration of motor vehicles increased from less than 10 million in 1920 to 26-1/2 million in 1930, and, though we did not know it at

the time, the curve had probably then reached its upper turning. The next year, depression deepening, the registration dropped below 26 million and the drop continued to a low of 23,800,000 in 1933, since when it had recovered to 29-1/2 million by 1938 and was probably at that time back on a normal extension of the upper section of the S-curve stemming from 1930.

The progress of highway improvement has followed a similar course. Working steadily within the designated primary systems, the State and Federal Governments, armed with increasing revenues, in the decade of the twenties, had so improved these systems that by 1930 there were few unsurfaced gaps in the original integrated network of 200,000 miles, but this network had been increased to nearly 325,000 miles and was two-thirds surfaced. In the next seven years the extent of the rural primary system increased by only 2,000 miles and stood in 1937 at 327,000 miles, of which 286,000 miles were surfaced.

While this progress has been recorded in the improvement of the primary rural highways, city streets, well improved in 1920, have been maintained for the most part without substantial change in their condition; and we have today a total of 215,000 miles, practically all of which are adequately surfaced, but some of which - specifically, the arterial streets - are greatly lacking in capacity to serve their enormously increased volume of traffic.

On the local roads, of which there are approximately 2,700,000 miles, improvement, lagging during the twenties, has been greatly stimulated in recent years by aid of the Federal Government, extended through the Work Projects Administration and its predecessor agencies. Though such improvements have been arranged in only the most casual relation to the improvement of the primary highway, it is probable that there exists today a larger mileage of well improved local roads than there has ever been before.

But, the outstanding roadbuilding accomplishment of the last 20 years is that which resulted from the concentration of efforts of Federal and State Governments upon the primary rural highways. It is the important improvements thus effected that have contributed most to the development of a volume of highway transportation that now reaches the stupendous total of 250 billion vehicle-miles a year.

In the recent results of the highway planning surveys we have the evidence that the roads comprising the State and Federal-aid systems are actually, on the whole, the most important rural traffic arteries they were believed to be. This is shown by the fact that these roads which, with their extensions through the cities, form a little more than 11 percent of the total street and highway mileage, accommodate nearly 57 percent of the total vehicle-mileage served by all rural roads and all city streets. City streets, other than those included as connections in the trunk-line road system, make up about

6 percent of the total road and street mileage and serve about 30 percent of the total vehicle-mileage. Mile-for-mile these two groups of arteries - the trunk-line highways and the city streets exclusive of trunk connections - are approximate equals in point of traffic service as indicated by the fact that the ratio of the percentages of vehicle-mileage and mileage for each group is approximately 5 to 1.

The relative unimportance of the remainder of the rural roads from the standpoint of traffic service is also shown by the planning survey statistics. Compared with the trunk-line highways and city streets the mileage of these other rural roads is very great. They constitute nearly 83 percent of the total road and street mileage, in contrast with which they serve only a little more than 13 percent of the total vehicle-mileage. Compared with the 5-to-1 ratio of vehicle-mileage to mileage for the trunk highways and city streets, these other rural roads show a corresponding ratio of only 0.16 to 1.

At the beginning of the "growing years" of highway construction the city streets were well and, on the whole, adequately improved. Rural roads - the important and unimportant alike - were largely unimproved, and the more important roads were almost completely inadequate. It is apparent that the highway planning of these

"growing years," by placing greatest emphasis upon improvement of the primary highways, was sound planning, since it has resulted, within a score of years, in the creation of an improvement of comparative adequacy on that part of the whole street and highway system which was least adequate and which now accommodates more than half of the traffic served by all roads and streets together.

Consistent Development of All Highway Systems to be Sought in Future Planning

If, as there is reason to suspect, our highway system is now approaching the end of its "growing years" of development, we should be giving thought to the alterations of plan and policy that are sure to be desirable at such an important turning point in the progress of development. It is this that we are doing in the planning surveys - giving thought. Giving thought and also measuring; measuring the task completed and its worth, and also the task ahead and the values still to be gained, with a care and precision that has not hitherto been possible - or necessary. It will be from this thought giving and these measurements that there will surely emerge before long the basic plan and policy of the next score of years, comparable in its influence upon future action to the principle of preferential State and Federal concern for the trunk lines, that has ruled the action of the last two decades.

If I am not mistaken, this new ruling principle, that will emerge to govern the plans and policies of our highway transport maturity, will appear, superficially at least, to be the reverse of the sound principle that has guided the development of the "growing years." The condition that made it desirable to concentrate upon the improvement of the primary rural highways no longer exists. That part of our whole street and highway system, though still inadequately improved, is no longer the least adequate part of the system. Especially on the arterial routes through cities there are today conditions of inadequacy - the result of a lack of traffic capacity - that are relatively more serious in their obstruction of free transportation than those that existed on the muddy highways of a generation ago. And, though there is no evidence of a need to increase substantially the mileage of improved secondary and feeder roads on grounds of traffic service, there is evidence on the maps produced by the planning surveys that more roads of this class will merit improvement as a means of bringing good road service closer to the homes of a large percentage of the rural population. There is evidence, also, in the existing improvement of roads of this class, of a substantial lack of consistency with traffic requirements, resulting in both overimprovement and underimprovement of considerable mileages.

With all parts of our whole highway and street system improved to a large degree, but with inadequacy remaining still on all parts, it is becoming clear that the ruling principle of future highway planning should depart from the past emphasis upon improvement of the primary rural highways, and make, rather, for a consistent and balanced improvement of the whole street and highway system. From concentration upon a least adequate part we should now turn to the development of a consistently improved whole.

And, as in the physical sense, it has become desirable to deal with the entire street and highway system as a whole, so also there is a necessity that is becoming acute to regard the taxation of vehicles and the regulation of traffic as parts, with the construction and maintenance of roads and streets, of a similarly consistent whole undertaking, namely, the operation of an efficient system of highway transportation.

As, hitherto, it has been possible, even expedient, to deal separately with the improvement of parts of the whole street and highway system, yet have the assurance of substantial progress toward a common goal still somewhat removed; so it has been possible, and not without reason, to scale and employ the taxation, and order the regulation of motor vehicles and their traffic apart from the aims and the accomplishments of road improvement.

Thus, when motor vehicles were few and road improvement needs great, it was obviously impracticable to raise by taxation of the few vehicles a sum great enough to pay for the desired improvement. The attempt to do so would have prohibited the use and prevented the development of the vehicle. Under these conditions motor vehicle tax rates and their realized revenues could have little relation to the cost of highway improvement.

Similarly, when improvement needs were predominately greatest on the primary rural highways and the meeting of these needs was the prime requisite for a moderately efficient use of the motor vehicle, there was no lack of reason in the allotment of all of the motor vehicle-revenues to the main roads, though there were lesser needs to be met on the city streets and the local roads.

Nor was it practicable, while both the motor vehicles and the roads were in the earlier stages of their development, to effect an adjustment between the permitted loads, dimensions and speeds of the vehicles and the design and dimensions of the roads.

But as both highway transportation and the highways, in the progress of their development, now approach a state of maturity, it is becoming highly desirable to plan for the attainment of reasonable consistency in all these related functions and activities that enter into the operation of an efficient system of highway transportation.

At this time it is not difficult to explain and excuse the findings of the planning surveys which indicate the presence on our principal roads of numerous curves too sharp, and sight distances too short for the safety of traffic moving at present maximum speeds. These inadequacies we may attribute with reason to conditions unavoidably associated with the "growing period" of both the vehicles and the roads; namely, the impossibility of predicting, and the undesirability of limiting the future design and speed of the vehicle at that stage of its development, and the impracticability of anticipating problematical increase of speed in the generally provisional design of the roads at their similar stage of development.

When the planning surveys also reveal that the most heavily traveled sections of our principal highways are improved to lower standards than sections accommodating far less traffic, we can now explain that apparently topsy-turvy condition also. We can explain it by the knowledge that the more heavily traveled sections of road, earliest improved because of their greater importance, have lived after the vehicles and the traffic they were designed to accommodate and into a later stage of vehicle development, to the needs of which the standards of the less important and more recently constructed roads have been made to conform.

If we can thus explain such inconsistencies of design and performance between vehicles and roads when they originate in the "growing years," we shall find it far more difficult to excuse similar inconsistencies repeated in the mature stage of development that we are now

entering. But, if these discrepancies are to be avoided, there is no way except by a planned coordination of the standards of highway design and the requirements of vehicle and traffic regulation.

Rates of Motor Vehicle Taxation and Allocation of Revenues Should be Adjusted to Produce Balanced Highway Improvement

The need for a similar coordination of the design and costs of the roads and the rates and uses of motor vehicle taxation arises from the certainty that the costs of roads, and streets as well, must hereafter be met in large measure by revenues raised by such taxes. What part of these costs can and should be thus raised is a fundamental question that should shortly receive a definite and reasonable answer. But, when that answer is given, then the rates of special vehicle and gasoline taxation should be adjusted to produce the agreed part of the cost of a road and street system designed for the efficient service of the developed traffic, or, per contra, the design of the road and street system must be trimmed so that its pertinent cost will come within the limits of the revenues actually realizable from the vehicle tax rates adopted.

Until such a relation between the costs of a planned road program and the receipts of road-user taxes is thus realistically established, it will be difficult to find reasonable ground for the

diversion of such taxes to other public purposes. And, except on the basis of the actual percentages of total cost accruing on the various parts of the whole street and highway system, it will be difficult to apportion acceptably and efficiently the total of road-user revenue available.

The records of the planning surveys will show many instances of the apportionment of road-user revenue to counties for expenditure on roads of comparatively slight importance, in amounts relatively more generous than those reserved to meet the costs of the primary rural highways. This results from the apportionment of the revenue on the basis of percentages arbitrarily written into the law by legislatures predominantly responsive to rural interests and county suggestion. On the other hand, there will be found few instances in which the apportionment of vehicle revenue allots for expenditure in cities sums in excess of the needs of the more expensive improvements there required, though the cities have not been noticeably less vocal in presenting their claims.

A resigned and somewhat cynical acceptance is the customary attitude toward this sort of thing, and while such practices continue there can be no wholly rational expenditure of the motor vehicle revenues. But there is at least the possibility that such arbitrary percentage apportionment, defensible only upon the ground that no

fairer basis lies at hand, would give way to a more reasonable employment of the revenue, if a determination of the actual and relative costs of a balanced improvement of each part of the highway and street system were available as a guide.

Factual Data and Cooperative Effort Essential in Developing a Satisfactory Future Program

It will not be possible thus to determine the amount of motor vehicle revenue needed to meet the costs of a balanced improvement, or to apportion the revenue raised in such amounts as to effect such an improvement; nor will it be possible to decide upon regulations of the size, weight and speed of motor vehicles that will eventually accord with the physical conditions of the highways over which the vehicles so regulated will operate, unless it is possible to achieve the basic condition of a consistently improved total street and highway system.

The achievement of such a result implies, first, the availability of a complete knowledge of the existing condition of all parts of the whole system, and of the character and amount of the present and probable future traffic use of each part and every section of each part of the whole system. The attainment of this complete knowledge is the primary objective of the planning surveys, as they are being conducted in practically all of the States.

The next essential is the availability of standards for the measurement of the relative adequacy of existing improvements and determination of the need of further improvement. The development of such standards is the purpose of special studies of the traffic volume capacity of pavements of various widths and alignments, of the speed, passing practices and transverse placement of vehicles in traffic, and of the hill-climbing ability of motor trucks, that are being conducted by the Public Roads Administration in cooperation with a number of States. Important contributions to the same purpose have been made and are still being made by the researches conducted at the Iowa State College to determine the tractive resistance of road surfaces, the effect of gradients, and the effect of road surface type upon the cost of operation of motor vehicles. Numerous other contributions to the same end have been accumulated by physical researches conducted over a long period by many agencies. And all such information, from whatever source available, is being diligently compiled and used for the promulgation of recommended standards of design by the Special Committee on Administrative Design Policies of the American Association of State Highway Officials.

In these ways a very satisfactory progress is being made in supplying the first two essentials necessary for the eventual achievement of a consistent improvement of the street and highway system, i.e., a knowledge of the existing condition and usage of all parts of

the system, and acceptable standards against which to measure the present inadequacy of the various parts. But, with these essentials fully available there will still remain, for the achievement of the hoped for result, the most important necessity of developing at all levels of government, from national to local, an active will and provision to cooperate.

Effective practical means for accomplishing this further condition already exist in the long established cooperative relationship between the Public Roads Administration and the State highway departments. Extension of the availability of Federal aid to the improvement of city streets and secondary and feeder roads by recent amendments of Federal law increases the effectiveness of the Federal-State relationship for the influencing of action by the local authorities. The consolidation of all Federal agencies contributing to road and street improvement in the Federal Works Agency adds further to the potential effectiveness of the harmonizing influence of the Federal arm. A general amendment of State laws that would give the State highway departments supervision over the expenditure of all road-user revenues, and control, within limits, of the application of such revenues to the various parts of the whole street and highway system, would go far toward establishment of all the powers

necessary to assure the cooperation of all government agencies in a coordinated and consistent improvement program.

One example of the way in which the information amassed by the highway planning surveys could be used by the Public Roads Administration and the State highway departments to effect a completely coordinated program is afforded by what is now being done by these means in the designation of systems of Federal-aid secondary or feeder roads in all States. In this work a selection is being made of the roads in each county of every State, aggregating not more than 10 percent of the total highway mileage, that are to comprise the Federal-aid secondary system, which will be eligible for improvement with Federal funds. The roads are being chosen in the order of their determined importance, from several points of view, as feeders to the primary highway system, and when thus designated they will be improved as rapidly as available funds will permit according to standards determined by the Federal and State agencies.

Another example of what may be done is found in the very effective way in which the planning survey information is being used by the Federal Administration and the State highway departments first to select and then to determine the present condition and usage of roads approximating the lines of an interregional highway system of

more than 29,000 miles, and the simultaneous determination of the condition of more than 80,000 miles of roads of maximum importance from the standpoint of national defense. The latter undertaking joins in a close and effective cooperation the U. S. War Department, the Public Roads Administration, and the State highway departments.

Effective Use of Highway Planning Data

The interregional highway system mentioned as under investigation, was proposed as one element of what was described as the broad outline of a master plan for development of free highways in the report of the Public Roads Administration entitled TOLL ROADS AND FREE ROADS. This report was sent to Congress last spring by the President with his recommendation that it be considered "as a basis for needed action to solve our highway problems." It is, therefore, worthy of note that other elements of the proposed "master plan" were a general and consistent modernization of the existing primary highways, a continuance of Federal assistance in an improvement of secondary and feeder roads properly integrated with land-use programs, and the creation of new and adequate facilities to convey the interregional highway traffic into and around cities. In its discussion of the latter proposal the Administration drew attention to information obtained through the highway planning surveys which emphasizes

the need for adequate approaches to the interior of the cities, and runs counter to ideas previously entertained concerning the routing of major highways in, and in the vicinity of cities.

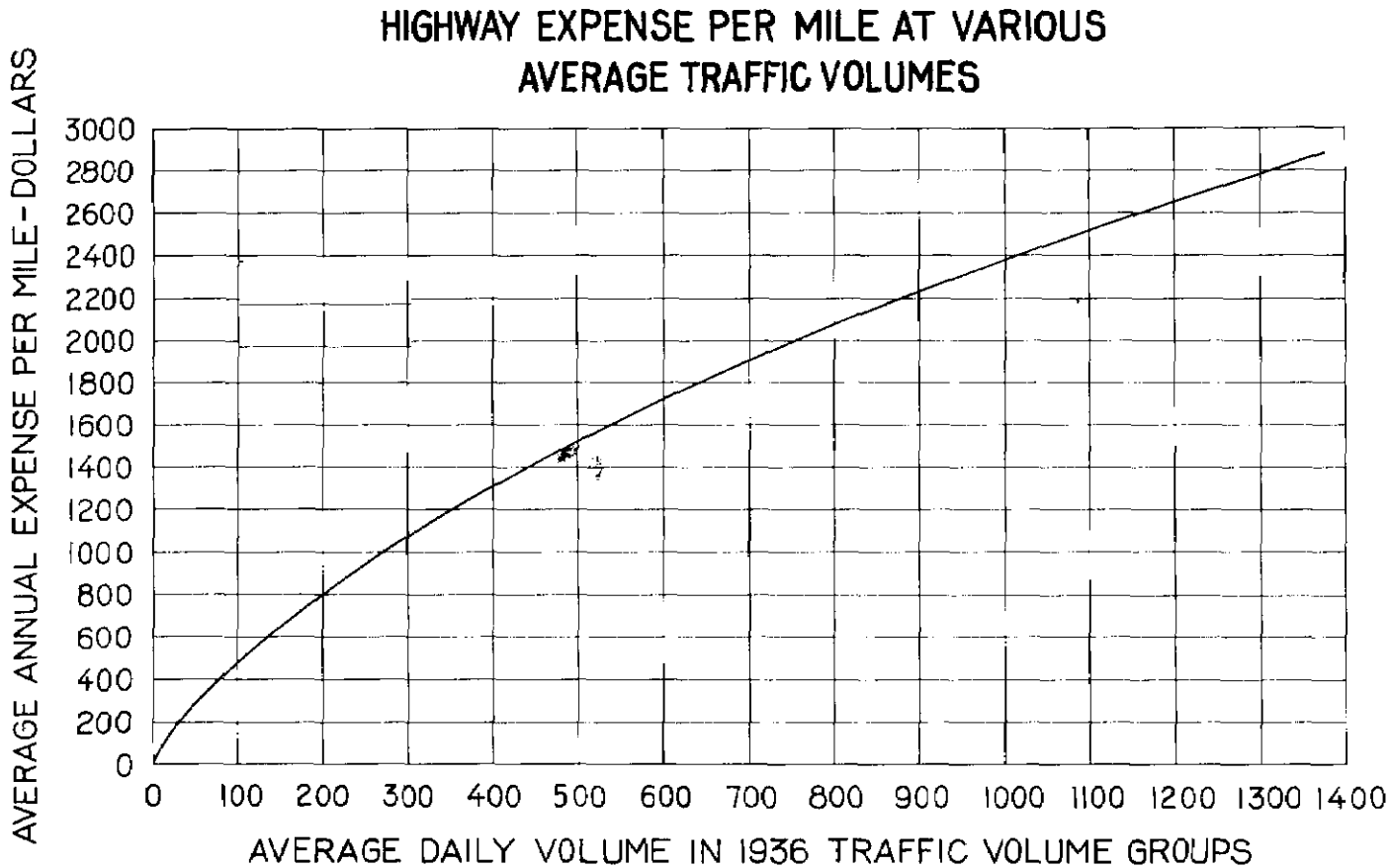
Though the essential provision for their employment is not yet accomplished, the fact that these potentially effective means exist and that they are proving their effectiveness in the trials by which they are being tested, lends encouragement to the hope of eventual achievement of a practically consistent improvement of the street and highway system as a whole. But, before such a hope can actually be realized and, especially, before the other desiderata of a consistently related regulation of vehicles and traffic and a similarly adjusted scale and utilization of motor vehicle taxation can also be achieved, the public must be made aware of the need and the advantages of the essential amendment of existing laws. The information necessary for the implied campaign of public education is available in the records of the State highway planning surveys. The task of presenting the available information rests primarily upon the State highway departments and the Public Roads Administration, but there are numerous other agencies that can render important and effective aid. Many such agencies have already demonstrated their interest in the objectives of the surveys and their willingness to serve in the popularization of useful ideas suggested by the information obtained.

Before the information can be adequately presented it must be thoroughly digested by the highway departments. It will be so digested only when there is an active interest in the surveys and their uses by the executive heads of the departments. Upon these individuals, therefore, rests the first responsibility for the development of such rational plans and policies as are here discussed.

The report on TOLL ROADS AND FREE ROADS exemplifies the effective use it is possible to make of the data available for the information of legislative bodies. Similarly effective use of the facts obtained has been made in reports of several of the State highway departments; and one such report has been adopted without modification by a legislative committee as the basis of a proposed future highway program.

It is not to be expected that the full benefit of the vast accumulation of information that has been gathered by the surveys can be realized in a short time. The data gathered will remain useful only if they are currently revised to reflect changing conditions. The making of such revisions calls for the creation of a fact-finding division as a permanent part of every State highway department. This action has been recommended by the Public Roads Administration and already taken by the highway departments of a number of States. There is no doubt that substantially all of the States will make similar arrangements in due course.

For the support of the continuing planning activity of such permanent organizations a recent amendment of the Federal Highway Act makes available not to exceed 1-1/2 percent of current and future Federal highway appropriations to be expended with or without matching State funds.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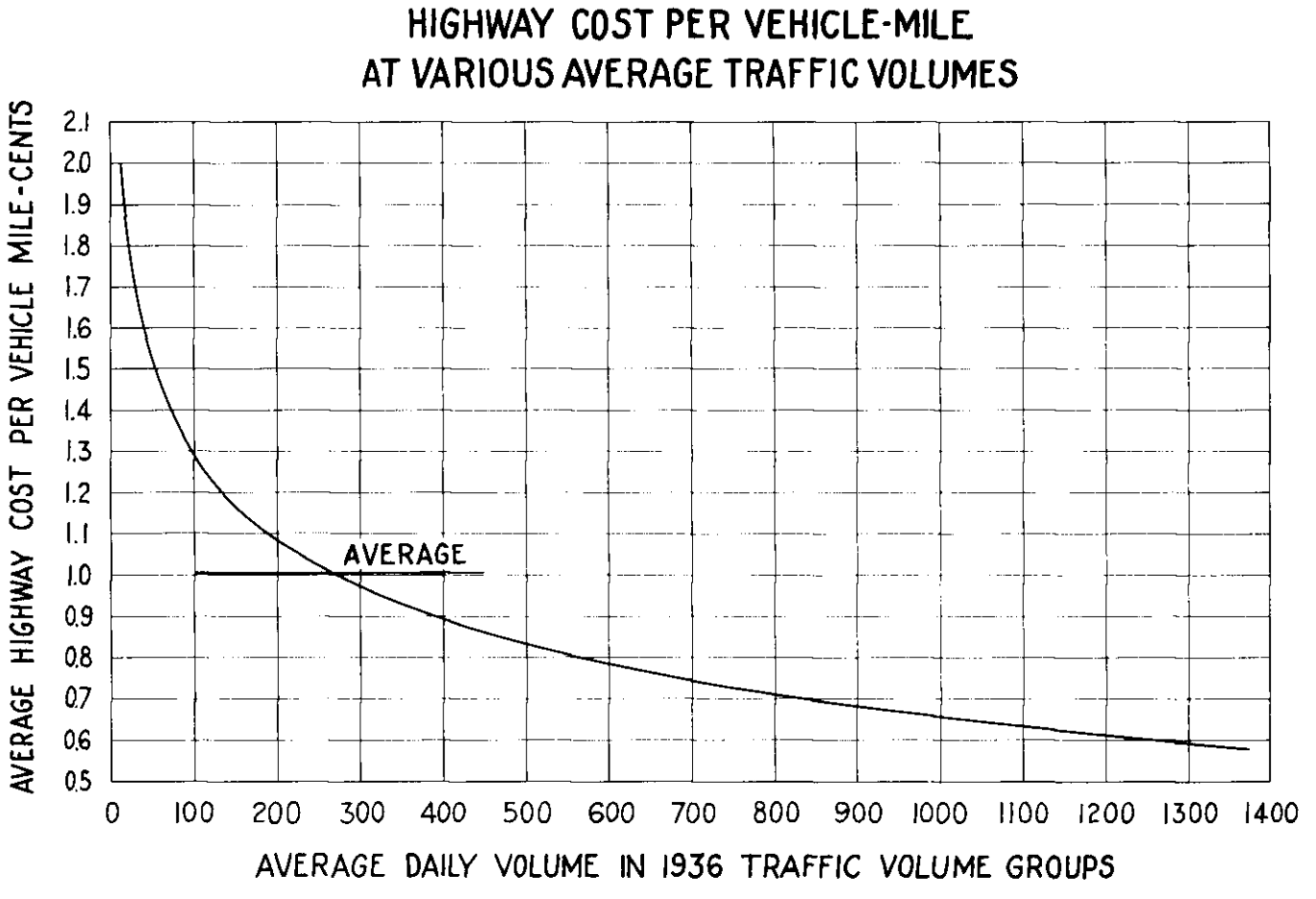
AVERAGE DAILY VOLUME IN 1936 TRAFFIC VOLUME GROUPS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1.9
1.8
1.7
1.6
1.5
1.4
1.3
1.2
1.1
1.0
0.9
0.8
0.7
0.6
0.5
AVERAGE
0
100
200
300
400
500
600
700
800
900
1000
1100
1200
1300
1400
AVERAGE DAILY VOLUME IN 1936 TRAFFIC VOLUME GROUPS