

directly adjacent to the city of Chicago. The need for betterments in the south-central and north-central sections is greater than in the north-west and south-west sections but far less than in the west, north-east, and south-east sections. The south-central section is increasing in population rapidly but its present density of population is low.

Assuming the rate of increase in the south-central section between 1910 and 1920 to continue, the present density of population in the south-eastern section would not be reached for almost 20 years, and almost 30 years would be required to reach the present density of the western section.

On the basis of past experience highway traffic may be expected to increase even more rapidly than population. The traffic is closely related to the number of traffic units as reflected in motor vehicle registration, and the registration is increasing more rapidly than the population. In 1914, 31,869 motor vehicles were registered in Chicago, or one vehicle for 75.7 persons. In 1924 the registration of motor vehicles was 305,143, one vehicle for 9.64 persons. The very rapid increase of motor vehicles as compared with the increase in population is indicated by the increase in motor vehicles from 1 for 75.7 persons to 1 for 9.64 persons in a 10-year period.

It is estimated that the registration in the city of Chicago in 1930 will be approximately 670,500 motor vehicles, and that this registration will be equivalent to 1 vehicle for 4.86 persons. This increase of over 100 per cent in motor vehicle registration by 1930 may be expected approximately to double the present traffic on the highways of the county. To provide highway service for this rapidly increasing volume of traffic, especially since the present highway system does not meet the demands of present traffic, the establishment of a comprehensive highway improvement program is essential. This improvement program must anticipate future highway needs and provide for future traffic as well as for present traffic a serviceable and efficient highway system.

## INTERSTATE TRAFFIC ON FEDERAL-AID HIGHWAYS

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To what extent is highway traffic an interstate as contrasted with a local movement? That motor vehicles have vastly widened the range of both passenger and freight transportation, is a fact of common knowledge, and cars displaying license plates from far-distant states attract only passing glances.

Surveys of highway utilization recently made by the United States Bureau of Public Roads in cooperation with the highway departments of several States give a basis for a reasonably accurate measure of inter-

state vehicle movement In the course of these surveys, detailed information has been obtained from the drivers of all vehicles passing designated points on the State highway systems during given periods of time

How important the interstate movement of vehicles has become is revealed in statistics gathered at Ohio traffic survey station 202, just west of Zanesville Here a random sampling of passenger cars during a single day each month from December, 1924, to September, 1925, showed 19 per cent of "foreign" cars (i e, those vehicles bearing licenses from outside the state) Of these, 60 per cent were from Pennsylvania, West Virginia, Kentucky, Indiana, Michigan, and New York, while the remaining 40 per cent represented other states from California to Maine, as well as the Dominion of Canada

A large part of the highway traffic crossing state boundaries, however, is only a local movement, and depends upon the relation of the marketing and social center to the areas on either side of the state line As an extreme example, the large number of Maryland and Virginia cars seen in the District of Columbia may be cited The fact is further evidenced by the large percentage of foreign cars found in the Bureau's surveys on the highways near the state line

TABLE I  
FOREIGN VEHICLE TRAFFIC AT INTERIOR POINTS IN PENNSYLVANIA

Location	Miles to State Line	Average passenger cars per 24-hour day	Foreign passenger cars		Average loaded motor trucks per 24-hour day	Foreign loaded motor trucks	
			Number	Per cent		Number	Per cent
6 Mi N of Scranton	42	2,739	482	17.6	221	8	3.6
Millerstown	68	773	98	12.7	45		
1½ Mi S of Salina	53	904	104	11.5	30		
¼ Mi W of Woreldorf	66	1,054	102	9.7	73	1	1.4
3½ Mi S of Sunbury	110	1,572	168	10.7	90	1	1.1
4 Mi N of Williamsport	61	997	167	16.8	48	2	4.2
1 Mi N of Harrisburg	47	2,879	274	9.5	213	1	0.5
1 Mi E of E McKeesport	47	2,696	297	11.0	163	3	1.8
Weighted Average				12.4			1.8

Almost half of the passenger cars and more than a third of the trucks recorded at a number of survey stations in Pennsylvania within 16 miles of the state line were of foreign registration, and the proportion was nearly as high at a number of Ohio stations similarly located with respect to the state borders. The local character of much of this traffic in Pennsylvania is clearly shown by the fact that when the foreign vehicles recorded are classified according to the distance they travel over the Pennsylvania highways, the percentage falls off rather sharply with increase in the mileage of Pennsylvania highways traversed.

The real measurement, therefore, of the foreign use of highways, is to be made at a considerable distance from state boundaries, where the

TABLE II  
FOREIGN VEHICLE TRAFFIC AT INTERIOR POINTS IN OHIO

Location	Miles to state Line	Average passenger cars per 10-hour day	Foreign passenger cars		Average motor trucks per 10-hour day	Foreign motor trucks	
			Number	Per cent		Number	Per cent
3½ M <sub>1</sub> W of Dalton	77	881	77	8.7	119	1	0.8
2½ M <sub>1</sub> N of Wooster	91	588	53	9.0	72	1	1.4
½ M <sub>1</sub> S W of Mt Vernon	120	940	88	9.4	68	2	2.9
1 M <sub>1</sub> E of Cambridge	48	843	253	30.0	82	7	8.5
1½ M <sub>1</sub> N of Sidney	41	502	102	20.3	42	3	7.1
5 M <sub>1</sub> N of Chillicothe	48	669	68	10.2	52	1	1.9
1 M <sub>1</sub> S W of Elyria	100	1,574	256	16.3	187	8	4.3
5 M <sub>1</sub> E of Zanesville	53	770	214	27.8	64	5	7.8
7 M <sub>1</sub> N of Findlay	42	1,242	244	19.6	85	7	8.2
2 M <sub>1</sub> E of Springfield	58	1,175	223	19.0	69	2	2.9
N E of Cleveland at Wickliffe	54	2,376	293	12.3	287	9	3.1
2 M <sub>1</sub> E of Bellevue	56	1,387	310	22.3	142	11	7.7
Weighted Average				16.8			4.5

purely local interstate movement does not dominate traffic. Tables I and II show for Pennsylvania and Ohio, respectively, the proportion of foreign vehicles found at distances ranging from 40 to 120 miles from the nearest state line. The percentage of foreign passenger car traffic at these points varies from a minimum of approximately 9 per cent to as high as 30 per cent on such a through route as the National Pike in Ohio.

Truck traffic, being largely a short-haul movement, becomes of far less importance at such distances from the state boundaries. In Pennsylvania at the traffic survey stations shown in the tables, there were in no case more than 4 per cent of foreign trucks recorded. In Ohio it is surprising to discover a percentage of between 7 and 8.5 at certain points.

In the summer months, as might be predicted, interstate travel assumes its highest proportions. At the 12 Ohio stations listed in Table II, during the months of July, August, and September, the percentage of foreign passenger cars was 22.2.

Taking the traffic at the survey stations distributed over the state as a whole, we have the proportions shown in Table III. Ohio appears to have a slightly higher proportion of foreign passenger car traffic and a slightly lower percentage of truck traffic, despite the high percentage of the latter on a few of the principal routes.

TABLE III  
AVERAGE PERCENTAGE OF FOREIGN VEHICLES IN PENNSYLVANIA  
AND OHIO

Distribution	Pennsylvania 94 Stations 24-hour day	Ohio 36 Stations 10-hour day
Total daily passenger cars	147,466	32,577
Total daily foreign passenger cars	26,137	6,054
Total daily motor trucks	9,954*	3,321
Total daily foreign motor trucks	815*	247
Percentage of foreign passenger cars	17.7	18.6
Percentage of foreign motor trucks	8.2*	7.4

\* Loaded Motor trucks only

Similar studies resulting from a survey in Connecticut showed 21.1 per cent of the passenger cars and 10.9 per cent of the motor trucks to be of foreign registration. That these foreign vehicles tend to make greater use of the highways in proportion to their numbers is indicated by the fact that the 21.1 per cent of foreign passenger cars accounted for 43.4 per cent of the passenger car-miles on the state highways, and

provided transportation to the extent of 43.7 per cent of the passenger-miles. Similarly, the 10.9 per cent of foreign motor trucks are responsible for 32.8 per cent of the total gross ton-miles of traffic on the state highways.

These analyses show clearly that highways are no longer neighborhood affairs, to be discussed in town meeting and to be maintained by local organizations. It is some time since their care became properly a function of the state. Now motor vehicles have given them decided interstate importance. The indiscriminate use by the average automobile owner of the highways of several states, suggests the logic of enlarging the political unit which plans and builds the primary highway system, and enlarging also the taxable area which pays for such development. Federal aid is national recognition of this altered situation.

## DISCUSSION OF REPORT OF COMMITTEE ON HIGHWAY TRAFFIC ANALYSIS

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### THE THREE-LANE TWO-WAY ROADWAY

Considering the "two-way roadway" the Committee report points to the question of relative amounts and character of traffic.

An illustration of the variation to be observed at different points along a given road is taken from the records of the Pennsylvania traffic count of 1923, shown in Table I. The road indicated is the Lincoln Highway between Pittsburgh and Philadelphia.

The traffic is found to vary greatly with the distance from the larger centers of population. Figure 1 shows a range of about 700 per cent in average daily traffic. The range in number of trucks is about 800 per

TABLE I

Vicinity	Population	Average daily traffic	Number of trucks	Number of loads over 21,000 lbs
5 miles from Philadelphia	2,000,000	6,852	778	86
90 miles from Philadelphia (close to York)	47,512	3,042	466	18
200 miles from Philadelphia (close to Bedford)	2,330	995	94	4
68 miles from Bedford (close to Greensburg)	15,033	2,281	200	14
Just outside Pittsburgh	600,000	3,204	295	23