

TRAFFIC SPEED REPORT

NO. 70

TRUCK WEIGHT-SPEED STUDY

SEPTEMBER 1960


NO. 16

Joint  
Highway  
Research  
Project

PURDUE UNIVERSITY  
LAFAYETTE INDIANA

by

D. F. PETTY



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Progress Report

TRAFFIC SPEED REPORT NO. 70  
TRUCK WEIGHT-SPEED STUDY

TO: K. B. Woods, Director  
Joint Highway Research Project  
September 21, 1960

FROM: H. L. Michael, Assistant Director  
Joint Highway Research Project  
File: 8-3-4  
Project: C-36-10D

Attached is Traffic Speed Report No. 70. This is a report of the 1960 Truck Weight-Speed Study. The Project has cooperated with the Highway Planning Survey Unit of the State Highway Department for a number of years in the conduct of this study. Project personnel obtain the speeds while State Highway Department personnel obtain the weights of trucks at selected stations during the month of August.

The Speed Study in 1960 was performed by Mr. Donald F. Petty, Research Assistant on our staff assisted by Mr. Forrest Miller, Graduate Assistant on our staff. Results of this year's study indicate a continuing increase in the speed of all classes of trucks and in the weight of single-unit trucks. A significant increase in the number of trucks exceeding the legal speed limit was also noted. This followed by one year the decrease which occurred last year following the increase in the legal speed limit for trucks on the highways in Indiana.

This report, as usual, will be distributed to the State Highway Department, Bureau of Public Roads, and the State Police. The report is submitted for the record and for release.

Respectfully submitted,

*Harold L. Michael*

Harold L. Michael, Secretary

HLK:kmc

Attachment

cc: F. L. Ashbaucher  
J. R. Cooper  
W. L. Dolch  
W. H. Goetz  
G. A. Hawkins (M. B. Scott)  
F. F. Havey  
G. A. Leardas  
J. F. McLaughlin  
R. D. Miles  
R. E. Mills  
C. E. Vogelgesang  
J. L. Waling  
J. E. Wilson  
E. J. Yoder

Progress Report

Traffic Speed Report No. 70  
Truck Weight-Speed Study

by

Donald F. Petty  
Research Assistant

Joint Highway Research Project  
Project: C-36-10D  
File: 8-3-4

Performed in Cooperation  
with  
The State Highway Planning Survey  
State Highway Department of Indiana

August 4, 10, 11, 12, 17, 22, 23, 24, 26, 1960

Purdue University  
Lafayette, Indiana

September 21, 1960

TRAFFIC SPEED REPORT NO. 70  
TRUCK WEIGHT-SPEED STUDY

INTRODUCTION

The Joint Highway Research Project of Purdue University cooperated with the Highway Planning Survey Unit of the State Highway Department of Indiana, in performing the annual truck weight-speed study during August 1960. This was the sixteenth year this particular study has been conducted.

Prior to 1944, these studies were limited to determining the truck weight distribution pattern at twenty stations. The first of the annual truck weight-speed studies was made in 1944, and they have been continued until the present except for 1945. When the truck weight-speed studies were initiated, speeds were taken at only four of the twenty weight stations. The number of stations increased until 1951, when twelve stations were used. The number of truck weight stations has been limited to nine for the last three years.

The speed observations for this study were made with a Streeter-Amet pneumatic speed meter. The tubes were anchored across the road eleven feet apart. The speeds are measured by the front wheels of a vehicle actuating a timer "on" at a first tube and "off" at a second tube. Since the tubes are always eleven feet apart, the meter is calibrated in miles-per-hour instead of seconds, and therefore speeds are taken directly from the meter. The observers concealed themselves as much as conditions permitted. However, the tubes across the road could not be completely concealed, and they probably affected the speed of a few vehicles whose drivers were wary of speed enforcement. The number

of drivers, however, slowing or braking because of the tube appeared to be lower than in 1959.

The meter and car speedometer were calibrated before the project started. The car was then used at least twice each day to check the speed meter accuracy and any necessary adjustments were made to the meter.

The speed and weight data were collected by the writer and Mr. Forrest Miller. Dr. Robert Crist substituted for Mr. Miller at two of the stations.

#### Observation Procedure

The stations used for the truck weight-speed study, which are geographically shown on the included map of Indiana (Figure 1), were located and operated as shown below:

| <u>Date</u> | <u>Station</u> | <u>Highway</u> | <u>Location</u>                                  | <u>No.<br/>Of Lanes</u> |
|-------------|----------------|----------------|--|-------------------------|
| Aug. 4      | 45B            | S.R. 67        | 1.00 miles S. W. of Muncie                       | 2                       |
| Aug. 10     | 5              | U.S. 30        | 1.30 miles E. of E. city limits of Bourbon       | 2                       |
| Aug. 11     | 4              | U.S. 31        | 1000' S. of Jct. of U.S. 6                       | 4                       |
| Aug. 12     | 2              | U.S. 20        | 1500' W. of Jct. of S.R. 2                       | 4                       |
| Aug. 17     | 14             | U.S. 41        | 0.50 miles S. of N. Jct. of S.R. 2               | 4                       |
| Aug. 22     | 42             | U.S. 52        | 600' S.E. of N. Jct. of S.R. 28                  | 4                       |
| Aug. 23     | 58B            | U.S. 31        | 1000' S. of Jct. of Co. Rd. to Southport         | 4                       |
| Aug. 24     | 75             | U.S. 41        | 0.25 miles S. of Jct. of U.S. 41, business route | 4                       |
| Aug. 26     | 81             | U.S. 150       | 0.50 miles E. of W. Jct. of S.R. 56              | 2                       |

The speed stations were selected on the basis of topography and distance from the weight station. A level tangent section of road was selected, if possible, from one to two miles from the weight station. In all cases the distance from the weight station was great enough to permit the trucks to regain their normal cruising speed.

The weighing crew, operating portable loadometer scales, stopped and weighed all trucks in one direction at a given weight station for a four hour period, and in the opposite direction for another four hour period. This eight hour period was from 8:00 AM to 4:00 PM C.D.T. at each station.

The speed stations were operated for the same time periods as the weight stations. The speeds were recorded to the nearest mile per hour.

To aid in the correlation of the speed and the weight data, the color, owner and type of vehicle were also recorded at each station. Because some trucks turned off between the speed and weight stations, data was only taken at one/<sup>station</sup>and therefore was not usable for this speed study. Traffic conditions also caused a few trucks to pass the speed station without data being taken.

#### Reporting Procedure

For the purpose of this report, all trucks were divided into two groups: single-unit trucks and multiple-unit trucks (mostly semi-trailers). The former group was further divided into two groups for some of the analysis: trucks under 5000 pounds gross weight and trucks over 5000 pounds gross weight. This was done to compare the speeds of

these trucks with the legal speed limits for each group. The present speed limits are 50 miles per hour and 55 miles per hour for trucks with a gross weight of over 5000 pounds on two lane and four lane divided highways respectively. The speed limit for trucks under 5000 pounds gross weight was 65 miles per hour on all highways selected for this study.

Table I provides the speed and weight data observed at each station for both classifications of single-unit trucks. Table II is similar to Table I except that it provides the data for multiple-unit trucks. The number and percentage of vehicles exceeding the legal and "enforcement" speed limits, by station is shown in Table III. All station speed accumulation curves for single-unit trucks and for multiple-unit trucks are shown in Figure 2. Similar curves are shown for two-lane and four-lane highways in Figures 3 and 4 respectively. A speed weight comparison is presented in graphical form in Figures 5 and 6, for single-unit trucks and multiple-unit trucks respectively.

Summary of Results

From tables I and II the following observations are made:

Single-unit trucks with a gross weight of less than 5000 pounds:

|                             |      |
|-----------------------------|------|
| Number of vehicles observed | 47   |
| Average speed               | 53.3 |
| Average weight              | 4100 |

Single-unit trucks with a gross weight of over 5000 pounds:

|                             |       |
|-----------------------------|-------|
| Number of vehicles observed | 377   |
| Average speed               | 48.6  |
| Average weight              | 13000 |



## All Single-unit trucks:

|                             |       |
|-----------------------------|-------|
| Number of vehicles observed | 424   |
| Average speed               | 49.1  |
| Average weight              | 12000 |

## Multiple-units (Semi-trailers)

|                             |       |
|-----------------------------|-------|
| Number of vehicles observed | 644   |
| Average speed               | 50.3  |
| Average weight              | 39300 |

Data for 1949 through 1960 are shown on a comparison basis in Table IV.

The data obtained during the 1960 study revealed that for the single-unit trucks weighing less than 5000 pounds, the average speed was 6.1 miles per hour higher and the average weight 280 pounds lighter than for similar trucks in the 1959 study.

For single-unit trucks weighing over 5000 pounds, the average speed was 3.7 miles per hour higher and the average weight 1900 pounds heavier than in 1959 for the same class of truck. Multiple-unit trucks indicated an average speed 1.7 miles per hour higher and an average weight 1000 pounds lower than was found for similar trucks in 1959.

It was observed that 8.5 per cent of the trucks weighing under 5000 pounds gross weight were exceeding the legal speed limit of 65 miles per hour and that 4.3 per cent were exceeding 70 miles per hour. For single-unit trucks weighing over 5000 pounds, 35.8 per cent were exceeding the legal speed limit of 50 miles per hour on two-lane roads and 55 miles per hour on four-lane roads which had a median strip twenty feet wide or more. In this particular class of trucks, 17.0 per cent were traveling more than 5 miles per hour over the speed limit. For multiple-unit

trucks, 30.6 per cent were exceeding the legal speed limit of 50 miles per hour on two-lane roads and 55 miles per hour on qualifying four-lane roads. Only 7.8 per cent of these trucks, however, were traveling more than 5 miles per hour above the legal speed limit.

The results of the speed limit violations part of this study are shown in Table III. As can be seen from the following table, there has been an increase in speed limit violations since 1959:

|   | <u>Per cent Exceeding<br/>Legal Speed by 5 MPH</u> |             | <u>Per cent Exceeding<br/>Legal Speed by 5 MPH</u> |             |
|---|--|-------------|--|-------------|
|   | <u>1959</u>  | <u>1960</u> | <u>1959</u>  | <u>1960</u> |
| Single-unit trucks<br>less than 5000 pounds | 2.3  | 8.5         | 0.0  | 4.3         |
| Single-unit trucks<br>over 5000 pounds      | 20.7   | 35.8        | 6.9  | 17.0        |
| Multiple-unit<br>trucks                     | 21.7   | 30.6        | 5.8  | 7.8         |

**TABLE I SINGLE UNIT TRUCK SPEEDS IN MILES PER HOUR**

|                | STATION 45B<br>AUG. 4, 1960 |               | STATION 5<br>AUG. 10, 1960 |               | STATION 4<br>AUG. 11, 1960 |               | STATION 2<br>AUG. 12, 1960 |               | STATION 14<br>AUG. 17, 1960 |               | STATION 42<br>AUG. 22, 1960 |               | STATION 58B<br>AUG. 23, 1960 |               | STATION 75<br>AUG. 24, 1960 |               | STATION 81<br>AUG. 26, 1960 |               | SUMMARY    |               | WEIGHT (KIPS)  |
|----------------|-----------------------------|---------------|----------------------------|---------------|----------------------------|---------------|----------------------------|---------------|-----------------------------|---------------|-----------------------------|---------------|------------------------------|---------------|-----------------------------|---------------|-----------------------------|---------------|------------|---------------|----------------|
|                | AVG. SPEED                  | NO. OF TRUCKS | AVG. SPEED                 | NO. OF TRUCKS | AVG. SPEED                 | NO. OF TRUCKS | AVG. SPEED                 | NO. OF TRUCKS | AVG. SPEED                  | NO. OF TRUCKS | AVG. SPEED                  | NO. OF TRUCKS | AVG. SPEED                   | NO. OF TRUCKS | AVG. SPEED                  | NO. OF TRUCKS | AVG. SPEED                  | NO. OF TRUCKS | AVG. SPEED | NO. OF TRUCKS |                |
| 0—4            | 52.0                        | 2             | 65.0                       | 1             | 55.6                       | 3             | 50.7                       | 3             |                             |               |                             |               |                              |               | 46.0                        | 3             |                             |               | 53.9       | 12            | 0—4            |
| 4—5            | 50.0                        | 3             | 56.0                       | 1             | 48.8                       | 5             |                            |               | 56.7                        | 3             |                             |               |                              |               | 56.0                        | 6             | 51.3                        | 17            | 53.1       | 35            | 4—5            |
| TOT. TRUCKS    | 5                           |               | 2                          |               | 8                          |               | 3                          |               | 3                           |               |                             |               |                              |               | 9                           |               | 17                          |               | 47         |               | TOT. TRUCKS    |
| AVG. WT. (LBS) | 4,100                       |               | 4,200                      |               | 4,100                      |               | 3,500                      |               | 4,300                       |               |                             |               |                              |               | 4,200                       |               | 4,300                       |               | 4,100      |               | AVG. WT. (LBS) |
| AVG. SPEED     | 51.0                        |               | 60.5                       |               | 52.2                       |               | 50.7                       |               | 56.7                        |               |                             |               |                              |               | 51.0                        |               | 51.3                        |               | 53.3       |               | AVG. SPEED     |
| 5—8            | 40.0                        | 2             | 56.9                       | 10            | 54.4                       | 18            | 50.8                       | 4             | 48.0                        | 4             | 46.2                        | 3             | 53.6                         | 14            | 48.8                        | 18            | 51.3                        | 9             | 50.0       | 84            | 5—8            |
| 6—12           | 52.0                        | 2             | 54.7                       | 7             | 53.0                       | 15            | 52.4                       | 12            | 55.7                        | 3             | 51.5                        | 13            | 52.7                         | 30            | 46.5                        | 21            | 46.7                        | 16            | 51.7       | 119           | 6—12           |
| 12—16          | 52.0                        | 3             | 52.1                       | 10            | 50.5                       | 13            | 52.8                       | 11            | 49.9                        | 10            | 53.0                        | 9             | 50.3                         | 9             | 45.0                        | 5             | 52.2                        | 12            | 50.9       | 82            | 12—16          |
| 16—20          | 40.0                        | 2             | 53.0                       | 1             | 52.1                       | 3             | 53.6                       | 7             | 42.0                        | 1             |                             |               | 46.4                         | 7             | 42.0                        | 3             | 50.2                        | 10            | 47.4       | 40            | 16—20          |
| 20—24          |                             |               | 49.0                       | 4             | 57.3                       | 3             | 47.0                       | 3             | 51.0                        | 1             | 51.3                        | 3             | 49.6                         | 7             | 45.0                        | 1             | 46.2                        | 4             | 49.6       | 26            | 20—24          |
| 24—28          |                             |               |                            |               |                            |               | 45.0                       | 1             |                             |               | 48.0                        | 1             | 51.0                         | 1             |                             |               | 48.0                        | 4             | 48.0       | 7             | 24—28          |
| 28—32          |                             |               |                            |               |                            |               | 45.0                       | 1             |                             |               |                             |               |                              |               |                             |               | 51.0                        | 1             | 48.0       | 2             | 28—32          |
| 32—36          |                             |               |                            |               | 54.0                       | 2             |                            |               | 62.0                        | 1             | 40.0                        | 1             |                              |               | 41.3                        | 3             | 54.0                        | 1             | 50.3       | 8             | 32—36          |
| 36—40          |                             |               |                            |               | 45.0                       | 1             |                            |               |                             |               | 45.0                        | 1             | 44.5                         | 2             | 41.0                        | 2             | 46.0                        | 1             | 44.3       | 7             | 36—40          |
| 40—44          |                             |               |                            |               | 52.5                       | 2             |                            |               |                             |               |                             |               |                              |               |                             |               |                             |               | 52.5       | 2             | 40—44          |
| TOT. TRUCKS    | 9                           |               | 32                         |               | 63                         |               | 39                         |               | 20                          |               | 33                          |               | 70                           |               | 53                          |               | 58                          |               | 377        |               | TOT. TRUCKS    |
| AVG. WT. (LBS) | 12,000                      |               | 11,600                     |               | 13,600                     |               | 13,600                     |               | 12,700                      |               | 13,600                      |               | 12,600                       |               | 12,200                      |               | 14,600                      |               | 13,000     |               | AVG. WT. (LBS) |
| AVG. SPEED     | 46.0                        |               | 53.1                       |               | 46.1                       |               | 49.5                       |               | 51.4                        |               | 47.9                        |               | 49.8                         |               | 44.2                        |               | 49.5                        |               | 48.6       |               | AVG. SPEED     |

TABLE II SEMI-TRAILERS (MULTIPLE UNITS) SPEEDS IN MILES PER HOUR

| WEIGHT (KIPS)    | STATION 45B<br>AUG. 8, 1960 |              | STATION 5<br>AUG. 10, 1960 |              | STATION 4<br>AUG. 11, 1960 |              | STATION 2<br>AUG. 12, 1960 |              | STATION 14<br>AUG. 17, 1960 |              | STATION 42<br>AUG. 22, 1960 |              | STATION 58B<br>AUG. 23, 1960 |              | STATION 75<br>AUG. 24, 1960 |              | STATION 81<br>AUG. 26, 1960 |              | SUMMARY    |              | WEIGHT (KIPS) |                  |
|------------------|-----------------------------|--------------|----------------------------|--------------|----------------------------|--------------|----------------------------|--------------|-----------------------------|--------------|-----------------------------|--------------|------------------------------|--------------|-----------------------------|--------------|-----------------------------|--------------|------------|--------------|---------------|------------------|
|                  | AVG. SPEED                  | NO. OF SEMIS | AVG. SPEED                 | NO. OF SEMIS | AVG. SPEED                 | NO. OF SEMIS | AVG. SPEED                 | NO. OF SEMIS | AVG. SPEED                  | NO. OF SEMIS | AVG. SPEED                  | NO. OF SEMIS | AVG. SPEED                   | NO. OF SEMIS | AVG. SPEED                  | NO. OF SEMIS | AVG. SPEED                  | NO. OF SEMIS | AVG. SPEED | NO. OF SEMIS |               |                  |
| 0-8              |                             |              |                            |              | 61.0                       | 1            |                            |              |                             |              |                             |              |                              |              |                             |              |                             |              |            | 61.0         | 1             | 0-8              |
| 8-12             |                             |              | 60.0                       | 2            |                            |              | 48.0                       | 1            |                             |              |                             |              | 55.5                         | 2            |                             |              |                             |              |            | 54.5         | 3             | 8-12             |
| 12-16            | 48.0                        | 1            | 62.0                       | 1            | 54.0                       | 2            |                            |              | 52.0                        | 1            |                             |              |                              |              |                             |              |                             |              |            | 54.0         | 5             | 12-16            |
| 16-20            |                             |              | 57.0                       | 2            | 53.0                       | 3            | 50.3                       | 3            | 50.4                        | 8            | 47.0                        | 5            | 49.0                         | 2            | 50.7                        | 4            | 52.0                        | 2            |            | 51.2         | 31            | 16-20            |
| 20-24            | 43.5                        | 4            | 51.7                       | 9            | 54.2                       | 4            | 51.8                       | 11           | 52.4                        | 7            | 50.7                        | 7            | 55.5                         | 13           | 48.9                        | 7            | 51.5                        | 2            |            | 51.1         | 54            | 20-24            |
| 24-28            | 41.2                        | 3            | 53.4                       | 11           | 53.4                       | 5            | 54.8                       | 10           | 55.4                        | 18           | 45.6                        | 23           | 52.5                         | 15           | 51.3                        | 14           | 55.5                        | 4            |            | 52.0         | 109           | 24-28            |
| 28-32            | 48.5                        | 4            | 49.5                       | 12           | 54.7                       | 7            | 52.7                       | 6            | 56.4                        | 12           | 49.4                        | 11           | 55.5                         | 12           | 51.3                        | 7            | 52.7                        | 4            |            | 52.3         | 64            | 28-32            |
| 32-36            | 43.5                        | 2            | 47.0                       | 3            | 54.0                       | 6            | 53.2                       | 4            | 54.0                        | 2            | 50.0                        | 6            | 51.7                         | 3            |                             |              | 50.7                        | 4            |            | 50.5         | 34            | 32-36            |
| 36-40            | 46.0                        | 1            | 51.6                       | 3            | 52.0                       | 3            | 52.6                       | 6            | 55.3                        | 3            | 49.7                        | 3            | 53.3                         | 6            | 50.0                        | 2            | 47.0                        | 1            |            | 50.9         | 30            | 36-40            |
| 40-44            | 34.0                        | 1            | 46.5                       | 2            | 49.7                       | 4            | 53.2                       | 5            | 57.2                        | 5            | 47.7                        | 11           | 55.4                         | 5            | 57.0                        | 1            |                             |              |            | 50.3         | 34            | 40-44            |
| 44-48            | 47.3                        | 3            | 54.0                       | 6            | 46.0                       | 1            | 48.6                       | 5            | 52.6                        | 5            | 42.0                        | 4            | 55.0                         | 2            | 52.2                        | 4            | 56.5                        | 2            |            | 50.6         | 32            | 44-48            |
| 48-52            |                             |              | 53.0                       | 6            | 54.3                       | 3            | 54.0                       | 7            | 53.6                        | 7            | 44.7                        | 4            | 47.5                         | 2            | 45.0                        | 2            |                             |              |            | 50.3         | 31            | 48-52            |
| 52-56            | 45.0                        | 2            | 47.9                       | 9            | 52.5                       | 2            | 50.4                       | 7            | 55.0                        | 11           | 46.2                        | 6            | 44.8                         | 6            | 51.0                        | 4            | 50.0                        | 1            |            | 48.3         | 48            | 52-56            |
| 56-60            | 44.0                        | 1            | 51.3                       | 10           | 54.0                       | 1            | 50.0                       | 5            | 57.5                        | 9            | 44.5                        | 6            | 47.7                         | 3            | 44.5                        | 8            | 46.0                        | 1            |            | 48.8         | 47            | 56-60            |
| 60-64            |                             |              | 50.6                       | 3            | 46.0                       | 1            | 50.0                       | 2            | 51.2                        | 3            | 40.7                        | 3            | 46.8                         | 5            | 54.5                        | 2            | 54.0                        | 1            |            | 43.2         | 24            | 60-64            |
| 64-68            | 46.0                        | 1            | 49.7                       | 2            |                            |              | 53.0                       | 1            | 51.0                        | 9            |                             |              | 49.0                         | 1            | 42.0                        | 2            |                             |              |            | 46.5         | 13            | 64-68            |
| 68-72            |                             |              | 53.7                       | 4            |                            |              | 51.3                       | 3            | 53.2                        | 4            | 44.5                        | 2            | 56.0                         | 1            | 49.0                        | 1            |                             |              |            | 51.4         | 13            | 68-72            |
| 72-76            |                             |              | 56.0                       | 1            | 52.5                       | 2            | 47.0                       | 5            | 55.3                        | 3            | 47.7                        | 3            | 46.3                         | 3            |                             |              | 50.0                        | 1            |            | 50.7         | 16            | 72-76            |
| 76-80            | 42.0                        | 1            | 50.0                       | 1            | 48.0                       | 1            | 47.0                       | 2            | 60.0                        | 1            | 46.0                        | 2            | 45.5                         | 2            | 47.0                        | 4            |                             |              |            | 46.2         | 13            | 76-80            |
| 80-84            |                             |              |                            |              | 54.5                       | 2            | 46.0                       | 1            |                             |              |                             |              |                              |              |                             |              | 55.0                        | 1            |            | 52.5         | 4             | 80-84            |
| 84-88            |                             |              | 58.1                       | 2            | 54.0                       | 1            |                            |              |                             |              |                             |              |                              |              |                             |              |                             |              |            | 53.5         | 3             | 84-88            |
| TOT. TRUCKS      | 50                          |              | 93                         |              | 33                         |              | 83                         |              | 104                         |              | 88                          |              | 95                           |              | 82                          |              | 24                          |              | 644        |              | TOT. TRUCKS   |                  |
| AVG. WT. (LBS)   | 34,900                      |              | 43,200                     |              | 38,000                     |              | 42,300                     |              | 41,900                      |              | 36,000                      |              | 37,700                       |              | 46,700                      |              | 37,400                      |              | 33,300     |              | 445,000       | AVG. WT. (LBS)   |
| AVG. SPEED (MPH) | 44.3                        |              | 50.9                       |              | 52.7                       |              | 50.9                       |              | 54.2                        |              | 46.4                        |              | 51.0                         |              | 43.2                        |              | 51.7                        |              | 50.3       |              | 50.3          | AVG. SPEED (MPH) |

TABLE III  
VEHICLES EXCEEDING SPEED LIMIT

| Station | TRUCKS WEIGHING UNDER 5000 LBS. |                     |                      | TRUCKS WEIGHING OVER 5000 LBS. |                     |                      | MULTIPLE UNITS |                     |                      |
|---------|---------------------------------|---------------------|----------------------|--------------------------------|---------------------|----------------------|----------------|---------------------|----------------------|
|         | No. Noted                       | % Exceeding 65 MPH* | % Exceeding 70 MPH** | No. Noted                      | % Exceeding 50 MPH* | % Exceeding 55 MPH** | No. Noted      | % Exceeding 50 MPH* | % Exceeding 55 MPH** |
| 45B     | 5                               | 0.0                 | 0.0                  | 9                              | 11.1                | 11.1                 | 30             | 10.0                | 0.0                  |
| 4       | 8                               | 12.5                | 12.5                 | 63                             | 63.5                | 36.5                 | 53             | 62.3                | 32.1                 |
| 5       | 2                               | 0.0                 | 0.0                  | 32                             | 65.7                | 43.8                 | 93             | 36.5                | 16.1                 |
| 8A      | 17                              | 5.9                 | 0.0                  | 58                             | 34.5                | 15.5                 | 24             | 58.3                | 33.3                 |
| 2       | 3                               | 0.0                 | 0.0                  | 39                             | 23.1                | 2.6                  | 83             | 16.9                | 0.0                  |
| 14      | 3                               | 33.3                | 33.3                 | 20                             | 25.0                | 15.0                 | 106            | 42.4                | 2.8                  |
| 42      | 0                               | 0.0                 | 0.0                  | 33                             | 21.2                | 9.1                  | 98             | 10.2                | 1.0                  |
| 58B     | 0                               | 0.0                 | 0.0                  | 70                             | 35.7                | 7.1                  | 95             | 32.7                | 3.2                  |
| 75      | 9                               | 11.1                | 0.0                  | 53                             | 13.2                | 9.4                  | 62             | 20.9                | 4.6                  |
| Summary | 47                              | 8.5                 | 4.3                  | 377                            | 35.8                | 17.0                 | 644            | 30.6                | 7.8                  |

\* Legal Speed Limit for the Various Classes of Highways and Vehicles

\*\* The Enforcement Speed is Considered to be the Legal Speed Limit Plus 5 M.P.H.

TABLE IV

TRUCK WEIGHT-SPEED DATA  
COMPARISON OF DATA FROM STUDIES IN VARIOUS YEARS

|                                     | 1949   | 1950   | 1951   | 1952   | 1953   | 1954   | 1955   | 1956   | 1957   | 1958   | 1959   | 1960   |
|-------------------------------------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| No. of Single-Unit Trucks           | 578    | 791    | 1242   | 1482   | 1239   | 905    | 762    | 952    | 1028   | 837    | 481    | 424    |
| Ave. Speed of Single-Unit Trucks    | 42.2   | 42.4   | 43.0   | 43.4   | 43.9   | 45.8   | 45.9   | 47.0   | 46.3   | 46.5   | 45.5   | 49.1   |
| Ave. Weight of Single-Unit Trucks   | 9,400  | 8,700  | 8,600  | 8,700  | 8,400  | 8,000  | 8,900  | 8,300  | 9,400  | 9,900  | 9,230  | 12,000 |
| No. of Multiple-Unit Trucks         | 581    | 879    | 1,402  | 1,354  | 1,507  | 1,064  | 1,120  | 1,033  | 1,161  | 1,130  | 604    | 644    |
| Ave. Speed of Multiple-Unit Trucks  | 43.2   | 42.7   | 43.5   | 44.1   | 43.1   | 43.6   | 43.5   | 44.4   | 42.5   | 46.1   | 48.6   | 50.3   |
| Ave. Weight of Multiple-Unit Trucks | 32,500 | 36,700 | 36,700 | 35,900 | 35,800 | 37,400 | 38,400 | 37,900 | 37,100 | 39,500 | 40,300 | 39,300 |

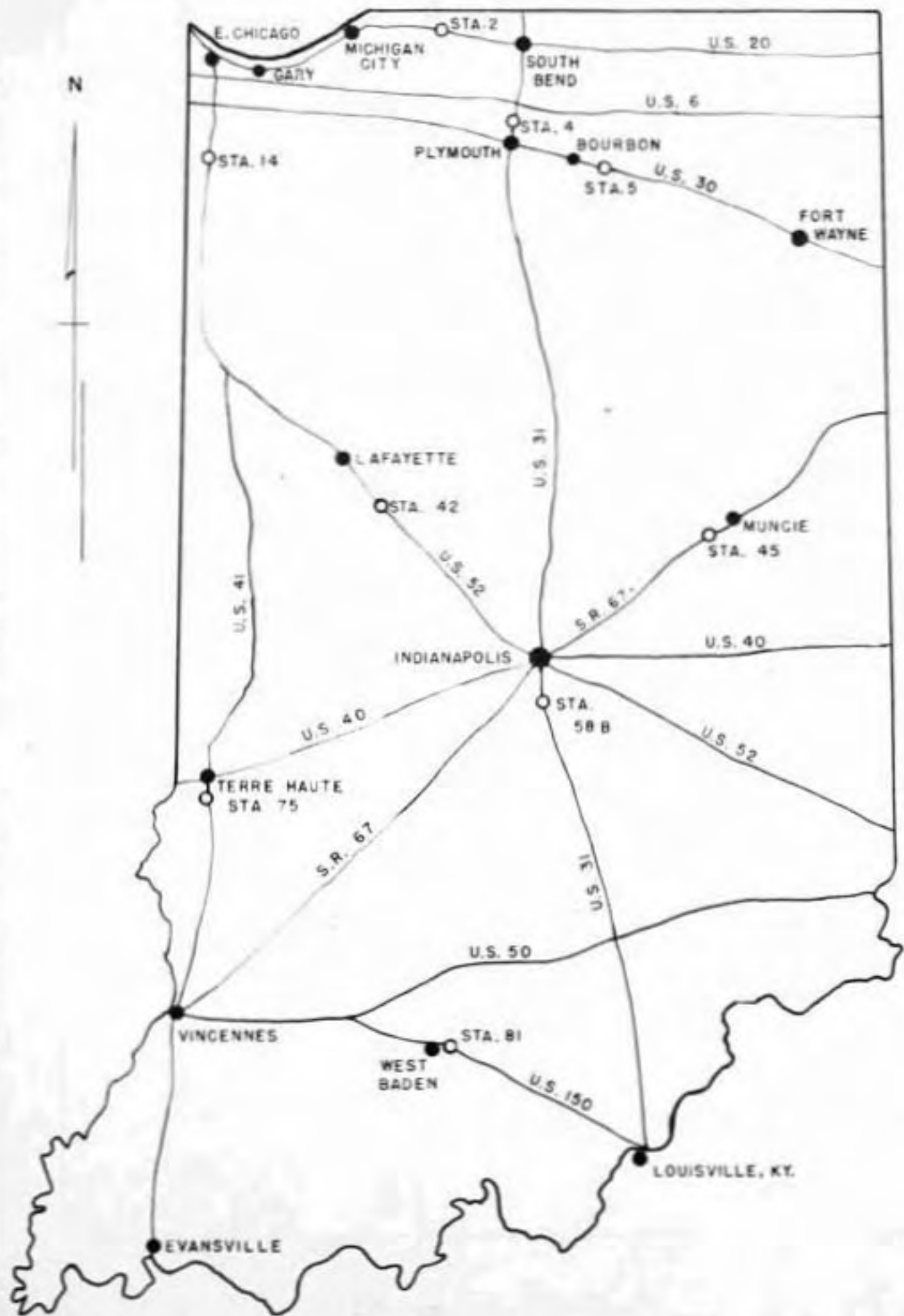
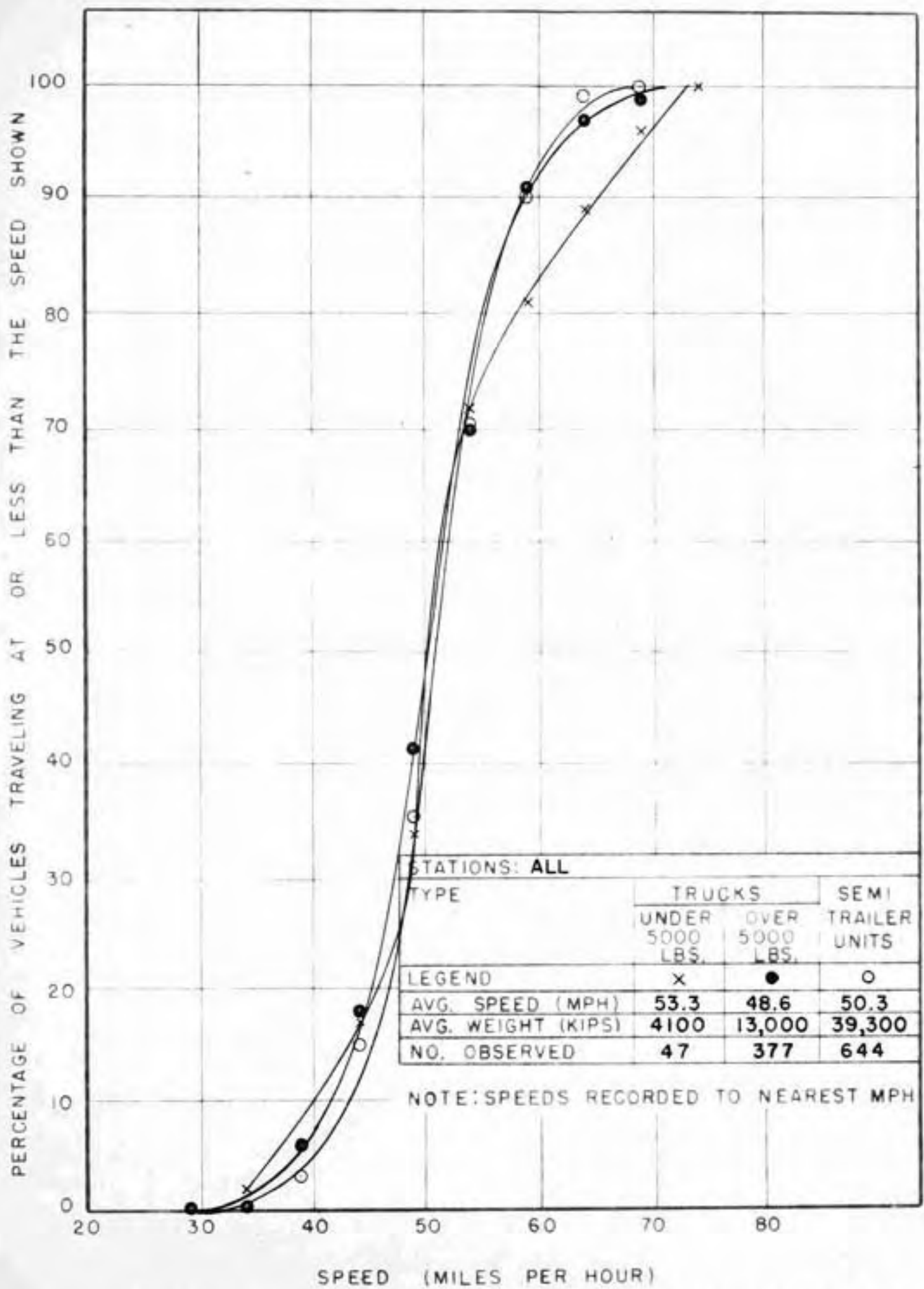


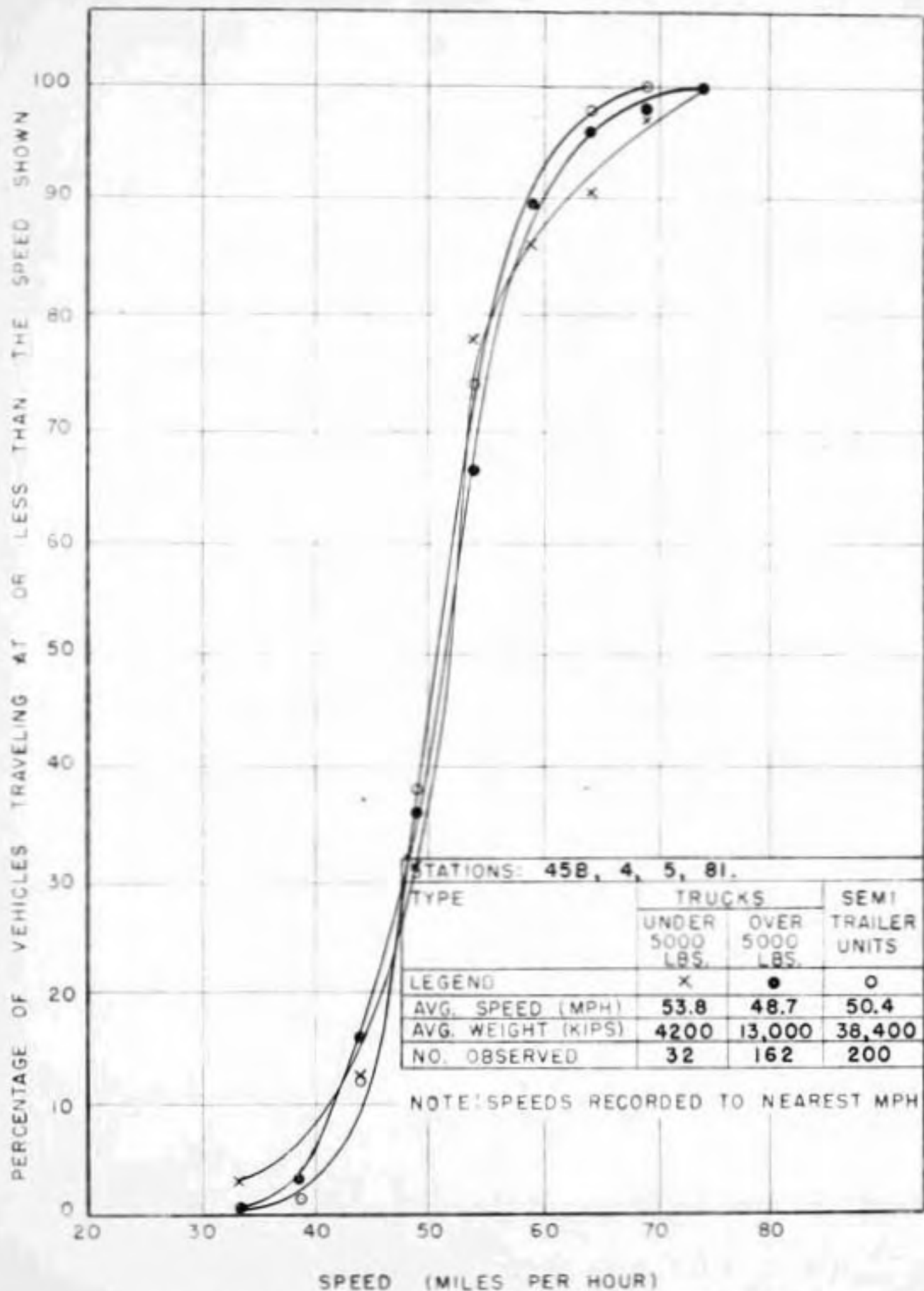
FIG. 1 LOCATIONS OF TRUCK WEIGHT - SPEED STATIONS



**SPEED ACCUMULATION CURVES FOR ALL HIGHWAYS**

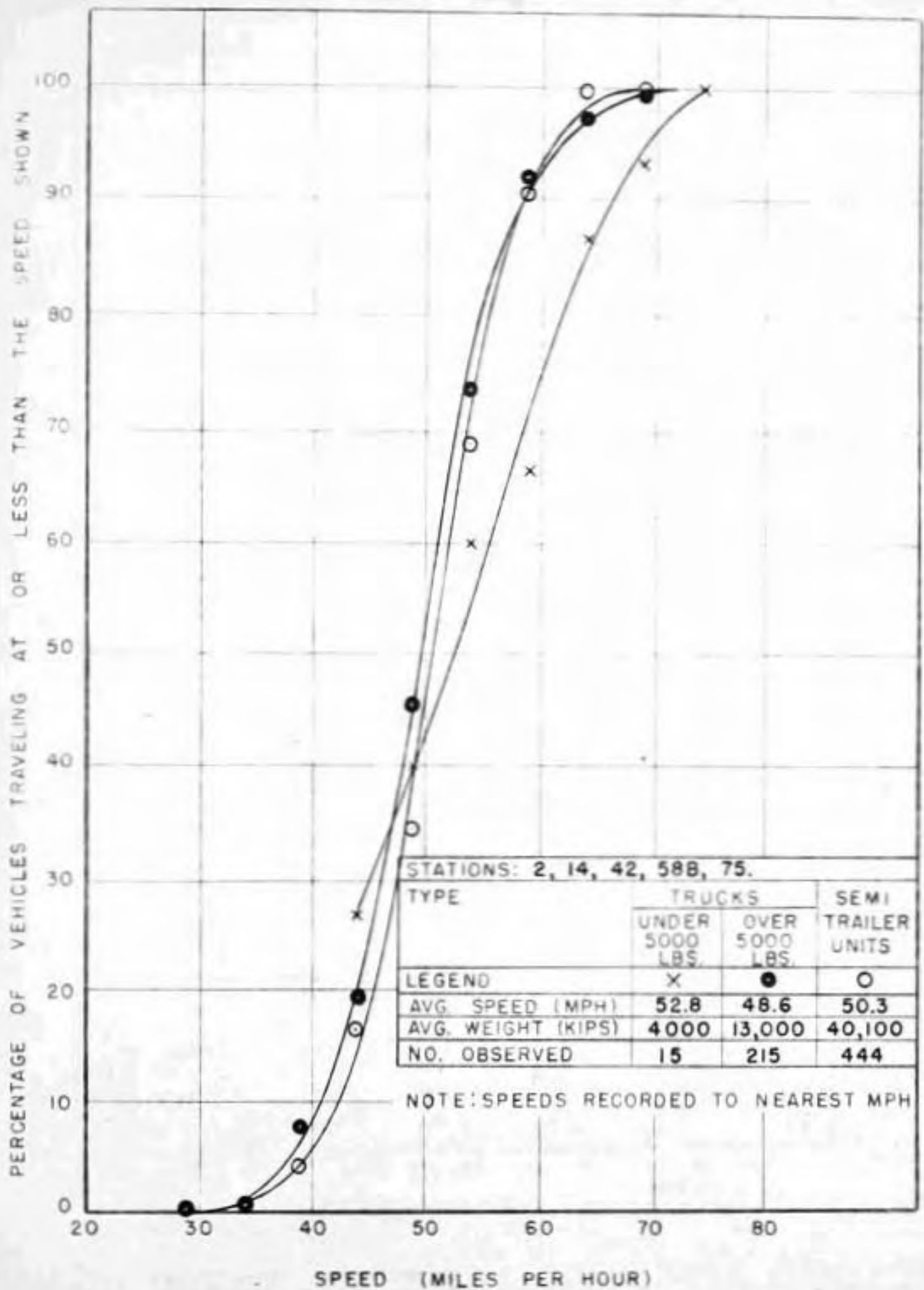
**FIG. 2**





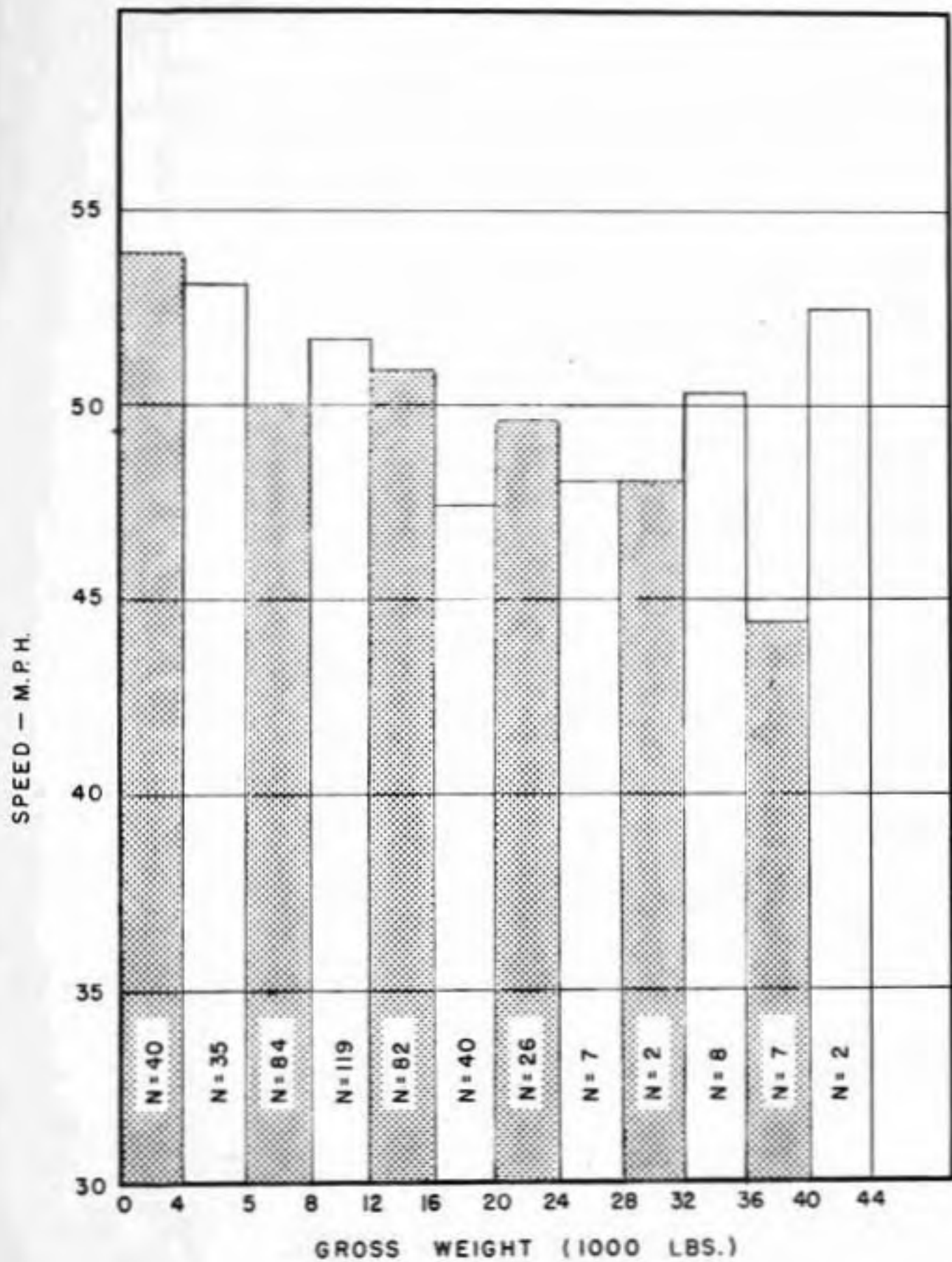
**SPEED ACCUMULATION CURVES FOR 2-LANE HIGHWAYS**

**FIG. 3**



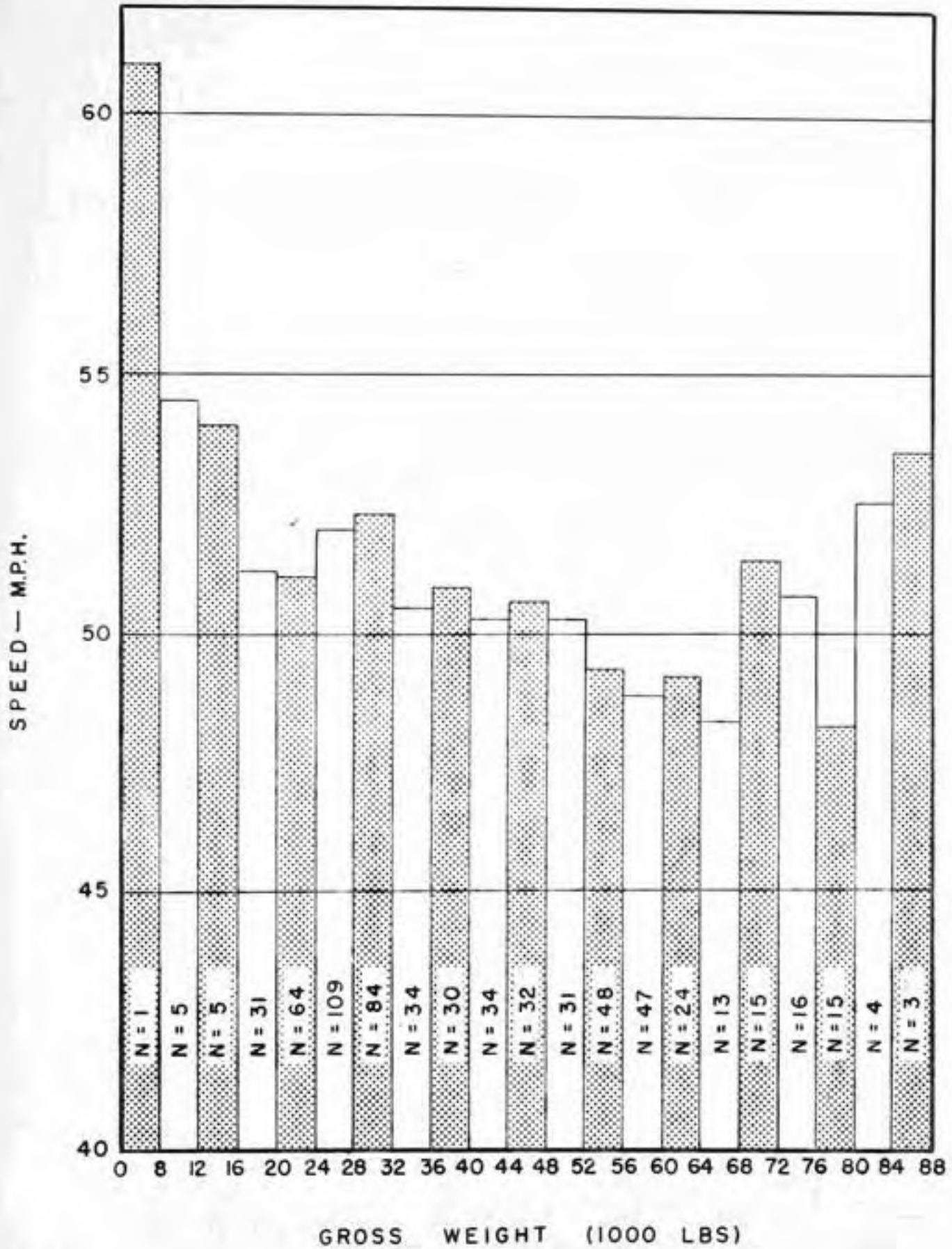
**SPEED ACCUMULATION CURVES FOR 4-LANE HIGHWAYS**

**FIG. 4**



AVERAGE SPEED VS. GROSS WEIGHT FOR SINGLE UNITS

FIG. 5



AVERAGE SPEED VS. GROSS WEIGHT FOR MULTIPLE UNITS

FIG. 6