TRAFFIC SPEED REPORT
NO. 69

JUNE 1960
NO. 12

Joint
Highway
Research
Project

PURDUE UNIVERSITY
LAFAYETTE INDIANA

by

N. JOUZY

Progress Report

TRAFFIC SPEED REPORT NO. 69

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

June 8, 1960

FROM: H. L. Michael, Assistant Director
Joint Highway Research Project

File: 8-3-3

"Traffic Speed Report No. 69" authored by Neddy Joumy, Graduate Research Assistant on our staff is attached. This progress report on the continuing study of speed trends has been conducted under the supervision of Professor H. L. Michael.

The results of this study indicate that speeds of both passenger cars and trucks were slightly less during the period of the study than they were in August 1959.

Copies of this report after acceptance by the Board will in addition to the normal distribution also be forwarded to the Indiana State Police, Office of Traffic Safety, the Traffic Engineering Department of the State Highway Department, and the Bureau of Public Roads.

The report is submitted for the record and for release for distribution.

Respectfully submitted,

Harold L. Michael

Harold L. Michael, Secretary

HLM:kmc

Attachment

cc: F. L. Ashbaucher
J. R. Cooper
W. L. Dolch
W. H. Gots
G. A. Hawkins (M. B. Scott)
F. F. Havey
G. A. Leonard

J. F. McLaughlin
R. D. Miles
R. E. Mills
C. E. Vogelgesang
J. L. Waling
J. E. Wilson
E. J. Yoder

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Progress Report

Traffic Speed Report No. 69

by

Neddy Jouny
Graduate Research Assistant

Joint Highway Research Project

File: 8-3-3

Project: C-36-100

Purdue University
Lafayette, Indiana

June 8, 1960

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TRAFFIC SPEED REPORT NO. 69

This report covers spot speed observations made during the months of March and April 1960. All observations were made of free moving vehicles on level tangent sections of rural highways. The locations of the spot stations were the same as for previous studies and are as follows:

1. U. S. 52 - 1.0 mile south of south junction of S. R. 28 -
(Dual Lanes)
2. U. S. 52 - 1.0 mile west of Klondike (Dual Lanes)
3. U. S. 52 - 2.2 miles northwest of Templeton (2 lanes)
4. U. S. 31 - 7.2 miles north of Perrysburg (2 lanes)
5. S. R. 25 - 0.7 mile south of Americus (2 lanes)
6. U. S. 41 - 1.0 mile north of Boswell (2 lanes)

An Electromatic Radar Speed Meter was used to collect the data for this study. The meter was concealed as part of a rural mailbox and placed close by to the edge of the pavement. It was directed along the highway at a small angle with respect to the direction of traffic so that it was not necessary to make an angle correction to the readings.

The observers concealed themselves from traffic as much as local conditions permitted and it is thus believed that the speeds of the observed vehicles were not influenced by the observer or the equipment.

The radar equipment used will not operate properly if the voltage varies more than minus 1/2 volt or plus 1 volt from the optimum twelve volts. The voltage was therefore checked periodically in the field and maintained within the desired range. Also, correct calibration was maintained by periodically checking it with a 60 mile per hour tuning fork.

A summary of the results of this study, as well as of the last seven studies, is given in Table I. Indiana State law limits the speed of passenger cars and trucks under 5,000 pounds (GVW) to 65 miles per hour. The speed limit of trucks over 5,000 pounds (GVW) is 50 miles per hour on all highways except that on four-lane highways, which have a median strip of at least twenty feet in width, the speed limit is 55 miles per hour. This new speed limit for trucks has been in effect since about May 1959. However, some, but not all, truck speed limit signs have been posted along the state highways to reflect this change. It can be assumed though, that by now a large portion of the truck drivers are aware of this speed limit change.

Truck speeds are shown in the tables for three groups: light trucks, heavy trucks, and all trucks. Also, it is noted whether the highway is 2-lane or 4-lane. All 4-lane observation stations were on highways with a median of greater than twenty feet. Since weights were not taken in this study, light trucks (less than 5,000 pounds) were considered to be only panel trucks and pick-up trucks. All other types of trucks were classified as heavy (over 5,000 pounds).

The passenger car data were also classified into three groups: Indiana, out of state, and all passenger cars. The classification was determined by observing the license plate on each passenger car passing the observation station.

So that an easy comparison can be made between the results of the present study and the last previous study, the results from each speed station for both studies are tabulated in Tables II through VII.

Average and 85th percentile speeds were computed for each vehicle group from the sample of vehicles taken at each study site. A comparison

is then made with the speeds of the last study in July and August of 1959, and the differences in speeds are briefly discussed.

The average speed for all passenger cars decreased by 1.4 miles per hour since the last study (August 1959) while average speeds for all trucks decreased 1.1 miles per hour. Indiana passenger cars decreased their average speed on 2-lane highways by 2.3 miles per hour while their average speed on 4-lane highways decreased by 0.3 miles per hour. Out of state passenger cars decreased their average speed on 2-lane highways by 0.5 miles per hour while their average speed on 4-lane highways decreased by 0.9 miles per hour.

The average speed for light trucks decreased by 1.2 miles per hour on 2-lane highways and increased 2.4 miles per hour on 4-lane highways.

For heavy trucks the average speed decreased 0.8 miles per hour on 2-lane highways and decreased 5.8 miles per hour on 4-lane highways.

The 85th percentile speed for all passenger cars decreased by 0.5 miles per hour.

Trend information on the average speed of passenger cars and trucks is shown in Table 1 and Figure 7 and 8. Table 1 is a summary of Spot Speed Observations on Indiana Highways for the last eight studies since February 1956. This summary of Spot Speed lists the observations for Two-lane Highways, Four-lane Highways and All Highways for both passenger cars and trucks.

Figure 7 is a graph showing rural speed trends from 1942-1960. The speed trends shown are for passenger cars, light trucks and heavy trucks.

Figure 8 is a graph showing trends in percentile speeds and speed differential from 1949 - 1960. The percentile speeds shown are for both

passenger cars and heavy trucks. The speed differential is the difference between the 85th percentile of passenger cars and 15th percentile of heavy trucks.

TABLE I

SUMMARY OF SPOT SPEED OBSERVATIONS
ON INDIANA HIGHWAYS

(Free-Moving Vehicles on Level, Tangent Sections)

		Passenger Cars				Trucks		
		Ind Mean	Non-Ind Mean	All Mean	All 85 per	Light Mean	Heavy Mean	All Mean
Two-Lane Highways	Feb. '56	54.9	58.0	55.9	63.2	47.1	43.2	44.4
	Aug. '56	55.0	56.3	55.5	63.4	50.6	45.5	46.6
	May '57	55.6	59.1	56.9	64.0	50.2	44.8	46.1
	Aug. '57	55.5	56.7	55.9	62.1	51.7	45.8	47.3
	Aug. '58	54.3	56.3	55.0	61.7	53.0	46.3	47.8
	Mar. '59	55.5	57.7	56.1	61.9	50.4	45.4	46.3
	Aug. '59	55.6	55.3	55.9	63.2	49.7	46.7	48.0
	Mar. '60	53.27	54.8	53.7	61.2	48.5	45.9	46.6
Four-lane Highways	Feb. '56	58.1	60.1	58.7	65.7	47.8	45.2	45.8
	Aug. '56	57.4	58.8	58.2	66.8	49.6	46.0	47.4
	May '57	59.9	63.6	61.0	69.0	52.2	46.0	47.9
	Aug. '57	57.5	59.9	58.5	64.8	52.0	46.6	47.6
	Aug. '58	58.0	59.6	58.7	65.0	54.3	49.0	50.0
	Mar. '59	58.2	61.7	59.0	64.9	53.6	47.0	48.4
	Aug. '59	58.4	60.1	59.1	64.5	50.0	53.1	49.5
	Mar. '60	58.1	59.2	58.4	65.0	52.4	47.3	48.4
All Highways	Feb. '56	56.0	58.6	56.8	63.8	47.3	44.0	44.9
	Aug. '56	55.7	57.3	56.4	64.5	50.2	45.6	46.9
	May '57	57.2	60.3	58.3	66.0	50.9	45.2	46.6
	Aug. '57	56.2	58.3	56.9	63.2	51.8	46.1	47.4
	Aug. '58	55.7	57.9	56.5	63.1	53.4	47.5	48.7
	Mar. '59	56.6	59.0	57.2	63.1	51.5	45.9	47.0
	Aug. '59	56.5	58.4	57.4	63.5	50.6	47.8	48.6
	Mar. '60	55.6	57.1	56.0	63.0	50.2	46.6	47.5

TABLE

II

SPEED DATA

Station 1 Mile south of south junction of US 52 & SR 28

Surface 4 lane divided - 24' bituminous concrete

Weather Cloudy - windy

This Observation

Last Previous Observation (Speed Report No. 67)

Date April 3; April 6; April 8, 1960

Date Aug. 3, 1959

Time 2:15 - 2:55 PM; 1:35 - 3:30 PM; 2:45 - 4 PM Time 8:50 - 10:50 AM

OBSERVATION	PASSENGER CARS						TRUCKS						BUSES					
	All			Indiana			Non-Indiana			All			Less than 5000 pounds		5000 pounds or more		All	
	Last	Present		Last	Present		Last	Present		Last	Present		Last	Present		Last	Present	
No. of Vehicles Obs.	455	524		218	339		237	185		82	159		12	33		70	126	
Ave. Speed (m.p.h.)	60.4	60.3		59.7	60.2		61.1	60.5		50.4	48.8		55.1	53.6		49.6	47.5	
45 m.p.h.	—	—		—	—		—	—		86.6	68.0		91.7	79		85.7	65.0	
50 m.p.h.	96.3	96.0		93.6	95.5		98.7	96.0		54.8	50.0		83.3	70		55.7	44.0	
55 m.p.h.	85.3	84.0		80.1	81.4		89.5	88.0		20.7	16.0		66.7	36		12.9	11.0	
60 m.p.h.	61.3	61.0		57.3	59.0		65.0	65.0		6.1	7.0		25.0	30		2.9	1.0	
65 m.p.h.	24.8	19.0		22.0	20.0		27.4	18.0		0.0	3.0		0.0	15		0.0	0.0	
70 m.p.h.	5.3	6.0		5.0	7.0		5.5	4.0		0.0	2.5		0.0	12		0.0	0.0	
75 m.p.h.	1.3	2.0		1.4	2.0		1.3	2.0		0.0	0.0		0.0	0.0		0.0	0.0	
No. of Vehicles Obs.	239	319		110	216		129	103		44	80		5	23		39	57	
Ave. Speed (m.p.h.)	60.7	60.2		59.4	60.0		61.9	60.5		49.7	50.7		59.6	55.6		48.4	48.7	
Max. Speed (m.p.h.)	—	—		73	84		76	80		—	—		64	74		58	60	
State or Type	—	—		—	—		—	—		—	—		—	—		—	—	
Min. Speed (m.p.h.)	—	—		40	40		43	40		—	—		53	30		39	33	
State or Type	—	—		—	—		—	—		—	—		—	—		—	—	
No. of Vehicles Obs.	216	205		108	123		108	82		38	79		7	10		31	69	
Ave. Speed (m.p.h.)	60.1	60.5		59.9	60.4		60.3	60.5		51.3	46.9		51.9	49.2		51.1	46.5	
Max. Speed (m.p.h.)	—	—		83	80		76	72		—	—		58	72		60	56	
State or Type	—	—		—	—		—	—		—	—		—	—		—	—	
Min. Speed (m.p.h.)	—	—		34	44		42	38		—	—		36	36		38	34	
State or Type	—	—		—	—		—	—		—	—		—	—		—	—	

TABLE IV
SPEED DATA

Station 2.0 Miles northwest Templeton on US 52

Surface 2 Lane 22' Bituminous

This Observation

Weather Cloudy

Last Previous Observation (Speed Report No. 67)

Date March 25, 1960

Date July 17, 1959

Time 3:30 - 5:00 PM

Time 3:00 - 4:30 PM

[illegible]

TABLE
SPEED DATA

A

Station 7.8 Miles N. of Perrysburg on US 31

Surface 2 Lane 22' Bituminous

Weather Cloudy

This Observation

Last Previous Observation (Speed Report No. 67)

Date March 29, 1960

Date	
Aug. 10, 1959	

Time 12:45 - 4:15 PM

10:10 AM - 12:40 PM

OBSERVATION	PASSENGER CARS						TRUCKS						BUSES			
	All			Indiana		Non-Indiana		All			Less than 5000 pounds		5000 pounds or more		All	
	Last	Present		Last	Present	Last	Present	Last	Present		Last	Present	Last	Present	Last	Present
No. of Vehicles Obs.	330	299		250	246	80	53	86	102	27	26	59	76			
Ave. Speed (m.p.h.)	56.0	52.8		56.1	52.5	55.7	54.3	48.8	47.0	48.9	50.2	48.8	45.9			
45 m.p.h.	—	—		—	—	—	—	74.4	59.8	49.3	96.0	81.4	92.0			
50 m.p.h.	83.0	71.0		83.2	66.5	82.5	81.4	48.8	40.2	44.4	73.0	50.8	55.0			
55 m.p.h.	61.2	41.0		63.2	40.7	55.0	37.2	15.1	8.8	22.2	62.0	11.9	33.0			
60 m.p.h.	33.0	23.0		33.2	23.0	32.5	9.3	5.8	3.0	11.1	27.0	3.4	3.0			
65 m.p.h.	9.1	5.0		9.6	6.4	7.5	2.3	3.5	0.0	7.4	8.0	1.7	1.0			
70 m.p.h.	3.3	2.0		3.2	2.5	3.8	0.0	0.0	0.0	7.4	0.0	0.0	0.0			
75 m.p.h.	1.2	0.0		1.2	0.0	0.0	0.0	0.0	0.0	3.7	0.0	0.0	0.0			
No. of Vehicles Obs.	162	156		130	128	32	28	47	54	17	14	30	40			
Ave. Speed (m.p.h.)	57.7	54.8		57.1	54.7	56.9	55.4	50.3	49.3	50.7	51.9	50.2	48.4			
Max. Speed (m.p.h.)	—	—		90	72	72	66	—	—	76	58	62	56			
State or Type	—	—		—	—	—	—	—	—	—	—	—	—			
Min. Speed (m.p.h.)	—	—		32	34	48	40	—	—	33	40	38	42			
State or Type	—	—		—	—	—	—	—	—	—	—	—	—			
No. of Vehicles Obs.	168	143		120	118	48	25	39	48	10	12	29	36			
Ave. Speed (m.p.h.)	54.9	50.6		55.0	50.1	54.9	53.0	47.2	44.4	45.8	48.2	47.6	43.2			
Max. Speed (m.p.h.)	—	—		78	70	80	64	—	—	54	60	66	60			
State or Type	—	—		—	—	—	—	—	—	—	—	—	—			
Min. Speed (m.p.h.)	—	—		31	30	34	36	—	—	38	32	32	26			
State or Type	—	—		—	—	—	—	—	—	—	—	—	—			

TABLE
SPEED DATA

VI

Station 0.7 miles W. Americus on S. R. 25

Surface	2 lane	22' Bituminous
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Weather Fair and Sunny

This Observation

Last Previous Observation (Speed Report No. 67)

Date April 1, 1960

Date July 16, 1960

Time 2:45 - 4:20 PM

Time 2:35 - 5:05 PM

[illegible]

TABLE 1
SPEED DATA

VII

Station 1.0 mile north of Boswell on US 41

Surface 22' Portland Cement Concrete 2-lane

Weather Warm and Sunny

This Observation

Last Previous Observation (Speed Report No. 67)

Date April 12, 1960

Date Sept. 1, 1959

Time 2:45 - 5:00 PM

Time 9:00 - 11:45 AM

[illegible]

FIGURE 1

FIGURE 2

FIGURE 3

FIGURE 4

FIGURE 5

FIGURE 6

INDIANA RURAL SPEED TRENDS 1942-1960

FIG. 8