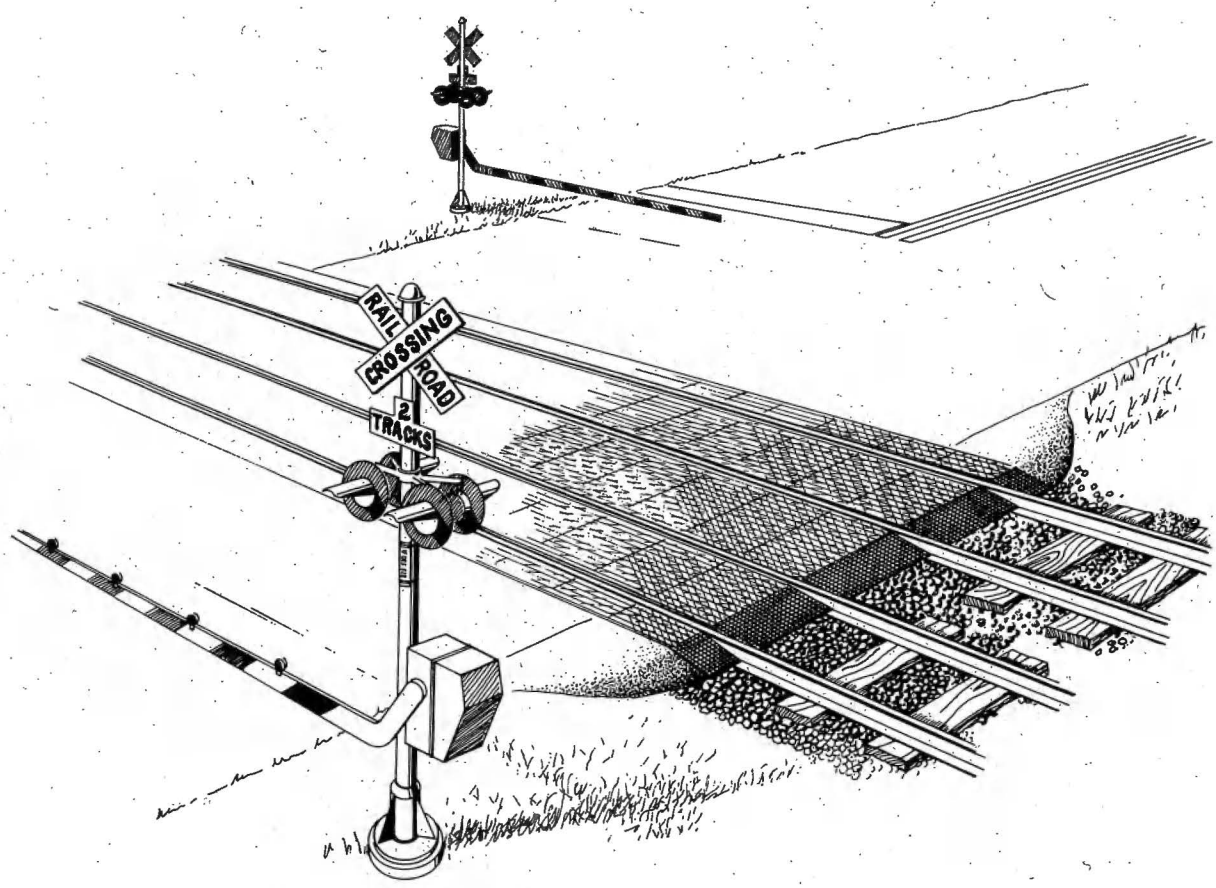
RAIL-HIGHWAY CROSSING ACCIDENT/INCIDENT AND INVENTORY BULLETIN

No. 1 Calendar Year 1978



U.S. DEPARTMENT OF TRANSPORTATION
Federal Railroad Administration
Office of Safety

October 1979

The Federal Railroad Administration's Office of Safety wishes to solicit the opinions of the recipients of its annual Rail-Highway Crossing Accident/Incident and Inventory Bulletin as to how this publication can be improved. Please complete the following questionnaire and return it as soon as possible. By doing so you will greatly contribute to the ongoing effort to improve the FRA's information reporting services.

Your Name:_____ Title:_____

Business:_____ Phone No.:_____

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1. Do you feel that the Bulletin in its present form is generally satisfactory and requires no major modifications or improvement?

☐ Yes ☐ No

2. If your answer to Question 1 is No, please check which of the following statements represent your views on the Bulletin (you may check more than one box).

☐ a. The Bulletin often contains inaccurate, misleading and/or inconsistent data.

☐ b. The Bulletin's data tables are poorly designed and difficult to read and interpret.

☐ c. Important categories of accident/incident data are not reported in the Bulletin.

☐ d. Additional interpretation and analysis of data is needed (e.g. trends, risks, projections).

☐ e. The publication cycle of the Bulletin is such that the information it contains is not sufficiently current.

☐ f. The Bulletin would be greatly improved through the use of histograms, pie charts and other graphical displays.

3. Please check which of the following terms most accurately describes the level of use within your organization of the Bulletin:

☐ Rarely Used ☐ Occasionally Used ☐ Often Used ☐ Heavily Used

4. If you have recommendations for improving and upgrading the Bulletin, please use this space to state them. Be as specific as possible.

_____

_____

_____

(If additional space is needed, use reverse side.)

5. Would you be willing to participate in a telephone interview during which your views on the Bulletin would be more thoroughly discussed:

☐ Yes ☐ No

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INTRODUCTION

This is the first annual statistical report on rail-highway crossing safety based on comprehensive analyses of information contained in the FRA Railroad Accident/Incident Reporting System (RAIRS) and the National Rail-Highway Crossing Inventory. The RAIRS contains the accident/incident reports filed monthly by all railroads to the FRA Office of Safety in accordance with 49 CFR 225. The National Rail-Highway Crossing Inventory contains information on the characteristics of all rail-highway crossings in the United States.

Railroads file accident/incident reports with the FRA to carry out the intent of Congress expressed in the Federal Railroad Safety Act of 1970 (PL 91-458) and the Accident Reports Act, as amended (45 USC 38-43); namely the disclosure of hazards arising in providing carrier transportation by rail. Development of the National Rail-Highway Crossing Inventory was also in response to the Federal Railroad Safety Act of 1970 and the Federal Highway Safety Acts of 1970 and 1973, which required the Secretary of Transportation to take appropriate measures for improving crossing safety.

The purpose of this expanded report is to provide comprehensive statistical information on rail-highway crossing accidents/incidents, casualties and inventory characteristics. This information supports the overall Department of Transportation program to promote the safety of both rail and highway traffic at crossings by assisting in the identification of contributing factors, severity, and causes of such accidents/incidents.

The report presents accident/incident information on public rail-highway crossings only. Tables 1, 3, 9, 10, and 14, and Figures 1 and 3 pertain to public rail-highway crossing accidents/incidents of all kinds and all other tables pertain to situations where only motor vehicles were involved.

Due to major revisions in reporting requirements effective January 1, 1975, a direct comparison of data collected during or after 1975 with previous data is not feasible. (See Appendix A.) These changes have resulted in a substantial increase in reported rail-highway crossing accidents/incidents and, to a lesser degree, the number of resultant casualties.

This report has been expanded and restructured over previous editions. Accident/incident statistics in the former reports are included in Part 1.0 of this report. To assist users in correlating information from prior reports to this report, a "Reference Table" is provided in Appendix C.

Part 1.0 of this report presents rail-highway crossing accident/incident and casualty statistics. The data used for Part 1.0 was obtained from the rail-highway crossing accident/incident file and the railroad casualty file.

Part 2.0 of this report presents accident/incident rate statistics showing relationships between various categories of rail-highway crossing characteristics and accident/incident frequency. This information was developed by analysis of data in the rail-highway grade crossing accident/incident file and the National Rail-Highway Crossing Inventory.

Part 3.0 of this report (except Tables 34 and 35) presents physical and operational characteristic statistics for all public at grade rail-highway crossings in the United States as described by the National Inventory in June 1979. More detailed information is available in the DOT publication "Summary Statistics of the National Railroad-Highway Crossing Inventory for Public At Grade Crossings" (Accession Number PB 293070/AS, September 1978) available from the National Technical Information Services, Springfield, Virginia 22161.

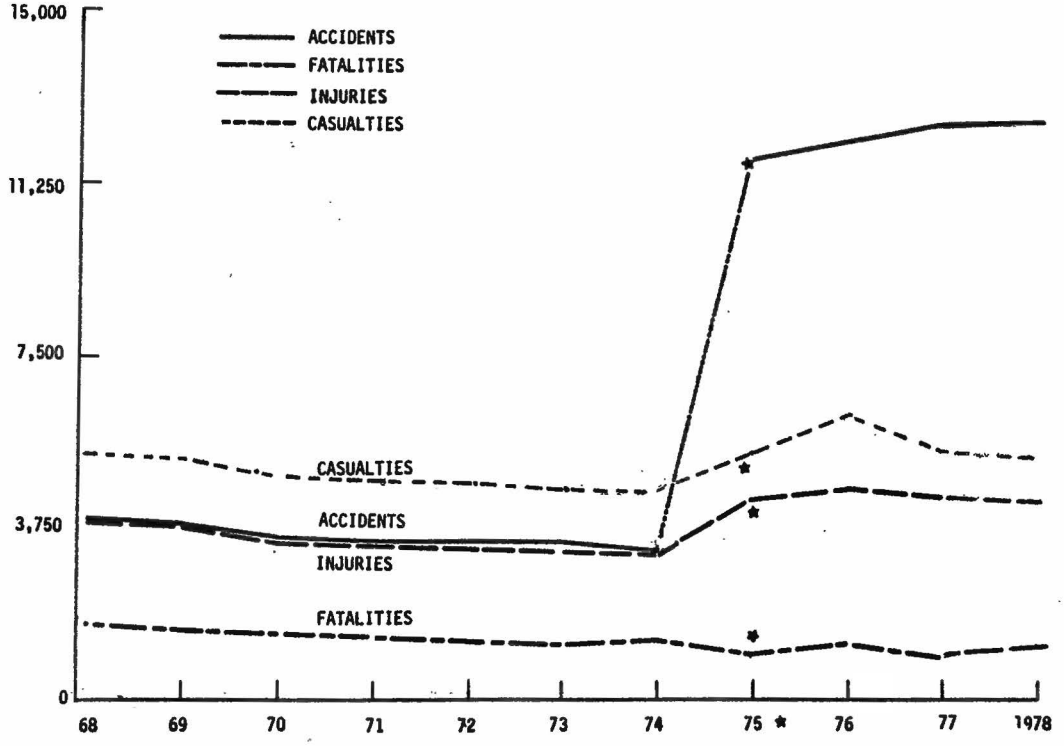
It should be noted that this section simply reports the contents of the inventory. While the Federal Railroad Administration is continuously editing and updating the inventory, some inconsistencies are reflected in the statistics. For example, there are minor differences in the total number of crossings listed due to the omission of data or the insertion of incorrect data when filling out the DOT-AAR Inventory Form.

1.0 RAIL-HIGHWAY CROSSING ACCIDENTS/INCIDENTS

1.1 NATIONAL, STATE, AND RAILROAD DATA

TABLE 1. SUMMARY OF ACCIDENTS/INCIDENTS AND CASUALTIES AT GRADE CROSSINGS, 1968-1978

YEAR	NUMBER OF ACCIDENTS	TOTAL			CASUALTIES PER ACCIDENT
		KILLED	INJURED	CASUALTIES	
1968	3,816	1,546	3,774	5,320	1.39
1969	3,774	1,490	3,669	5,159	1.37
1970	3,559	1,440	3,336	4,776	1.34
1971	3,392	1,356	3,332	4,688	1.38
1972	3,379	1,260	3,285	4,545	1.35
1973	3,379	1,185	3,283	4,468	1.32
1974	3,268	1,220	3,249	4,469	1.37
1975*	11,354	978	4,168	5,146	0.45
1976	12,114	1,114	4,831	5,945	0.49
1977	12,299	944	4,649	5,593	0.45
1978	12,435	1,021	4,256	5,277	0.42



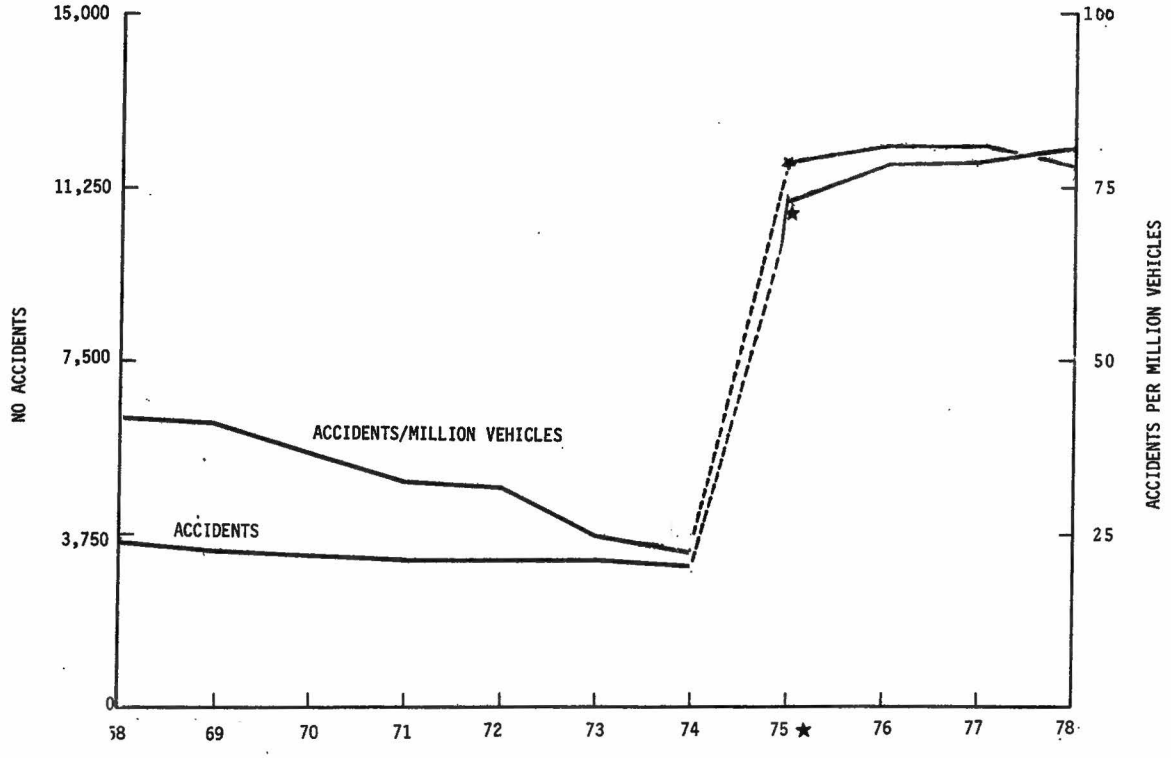
*Data after 1974 calendar year may not be directly comparable to previous data due to major revisions in reporting requirements.

FIGURE 1. SUMMARY OF ACCIDENTS/INCIDENTS AND CASUALTIES AT GRADE CROSSINGS, 1968-1978

TABLE 2. SUMMARY OF ACCIDENTS/INCIDENTS AND ACCIDENT RATES AT GRADE CROSSINGS INVOLVING MOTOR VEHICLES, 1968-1978

YEAR	ACCIDENTS	MOTOR VEHICLES REGISTERED (000) †	ACCIDENTS PER MILLION VEHICLES
1968	3,603	85,799	41.99
1969	3,572	88,815	40.22
1970	3,377	92,124	36.66
1971	3,224	96,097	33.55
1972	3,222	100,595	32.03
1973	3,174	129,511	24.51
1974	3,079	135,720	22.69
1975★	10,925	137,918	79.21
1976	11,700	143,538	81.51
1977	11,849	147,718	80.21
1978	11,999	154,206	77.81

† Estimated figures supplied by Federal Highway Administration.



* Data after 1974 calendar year may not be directly comparable to previous data due to major revisions in reporting requirements.

FIGURE 2. SUMMARY OF ACCIDENTS/INCIDENTS AND ACCIDENT RATES AT GRADE CROSSINGS INVOLVING MOTOR VEHICLES, 1968-1978

TABLE 3. SUMMARY OF ACCIDENTS/INCIDENTS AND CASUALTIES AT GRADE CROSSINGS BY STATE, 1978

STATE	TOTAL ACC/INC	TOTAL KILLED No.	%	TOTAL INJURED No.	%	TOTAL CASUALTIES No.	%
ALABAMA	371	24	2.35	113	2.66	137	2.60
ALASKA	38	0	0.00	11	0.26	11	0.21
ARIZONA	74	11	1.08	31	0.73	42	0.80
ARKANSAS	252	17	1.67	126	2.96	143	2.71
CALIFORNIA	641	54	5.29	182	4.28	236	4.47
COLORADO	150	14	1.37	61	1.43	75	1.42
CONNECTICUT	28	0	0.00	4	0.09	4	0.08
DELAWARE	15	1	0.10	4	0.09	5	0.09
DIST. COLUMBIA	1	0	0.00	0	0.00	0	0.00
FLORIDA	345	33	3.23	112	2.63	145	2.75
GEORGIA	458	35	3.43	136	3.20	171	3.24
HAWAII	0	0	0.00	0	0.00	0	0.00
IDAHO	97	9	0.88	41	0.96	50	0.95
ILLINOIS	820	88	8.62	288	6.77	376	7.13
INDIANA	751	63	6.17	254	5.97	317	6.01
IOWA	332	21	2.06	92	2.16	113	2.14
KANSAS	254	24	2.35	113	2.66	137	2.60
KENTUCKY	223	10	0.98	47	1.10	57	1.08
LOUISIANA	452	30	2.94	175	4.11	205	3.88
MAINE	38	3	0.29	10	0.23	13	0.25
MARYLAND	52	3	0.29	14	0.33	17	0.32
MASSACHUSETTS	51	3	0.29	17	0.40	20	0.38
MICHIGAN	567	31	3.04	202	4.75	233	4.42
MINNESOTA	375	32	3.13	95	2.23	127	2.41
MISSISSIPPI	282	19	1.86	125	2.94	144	2.73
MISSOURI	319	30	2.94	123	2.89	153	2.90
MONTANA	56	2	0.20	8	0.19	10	0.19
NEBRASKA	211	20	1.96	63	1.48	83	1.57
NEVADA	27	3	0.29	6	0.14	9	0.17
NEW HAMPSHIRE	15	1	0.10	5	0.12	6	0.11
NEW JERSEY	103	7	0.69	14	0.33	21	0.40
NEW MEXICO	33	10	0.98	19	0.45	29	0.55
NEW YORK	164	19	1.86	42	0.99	61	1.16
NORTH CAROLINA	370	40	3.92	168	3.95	208	3.94
NORTH DAKOTA	93	13	1.27	18	0.42	31	0.59
OHIO	864	78	7.64	309	7.26	387	7.33
OKLAHOMA	283	29	2.84	94	2.21	123	2.33
OREGON	172	9	0.88	43	1.01	52	0.99
PENNSYLVANIA	251	20	1.96	72	1.69	92	1.74
RHODE ISLAND	7	2	0.20	0	0.00	2	0.04
SOUTH CAROLINA	239	19	1.86	96	2.26	115	2.18
SOUTH DAKOTA	40	1	0.10	11	0.26	12	0.23
TENNESSEE	294	33	3.23	95	2.23	128	2.43
TEXAS	1177	86	8.42	503	11.82	589	11.16
UTAH	82	5	0.49	28	0.66	33	0.63
VERMONT	16	5	0.49	10	0.23	15	0.28
VIRGINIA	138	7	0.69	46	1.08	53	1.00
WASHINGTON	236	16	1.57	57	1.34	73	1.38
WEST VIRGINIA	124	8	0.78	43	1.01	51	0.97
WISCONSIN	425	31	3.04	128	3.01	159	3.01
WYOMING	29	2	0.20	2	0.05	4	0.08
TOTAL	12435	1021	100.00	4256	100.00	5277	100.00

TABLE 4. ACCIDENTS/INCIDENTS AND CASUALTY RATES AT GRADE CROSSINGS INVOLVING MOTOR VEHICLES BY STATE, 1978

STATE	TOTAL ACC/INC	TOTAL KILLED	TOTAL INJURED	TOTAL CASUALTIES	VEH. REG.[1] (000)	CASUALTIES PER 10,000 REGISTRATION KILLED	INJURED	TOTAL
ALABAMA	357	21	111	132	2861	0.07	0.39	0.46
ALASKA	29	0	11	11	294	0.00	0.37	0.37
ARIZONA	69	8	30	38	1693	0.05	0.18	0.22
ARKANSAS	243	17	122	139	1530	0.11	0.80	0.91
CALIFORNIA	603	40	173	213	16197	0.02	0.11	0.13
COLORADO	148	14	59	73	2413	0.06	0.24	0.30
CONNECTICUT	28	0	4	4	2205	0.00	0.02	0.02
DELAWARE	14	1	4	5	393	0.03	0.10	0.13
DIST. COLUMBIA	1	0	0	0	265	0.00	0.00	0.00
FLORIDA	334	31	110	141	6529	0.05	0.17	0.22
GEORGIA	442	28	132	160	3767	0.07	0.35	0.42
HAWAII	0	0	0	0	551	0.00	0.00	0.00
IDAHO	95	8	41	49	809	0.10	0.51	0.61
ILLINOIS	782	76	279	355	7376	0.10	0.38	0.48
INDIANA	720	59	242	301	3876	0.15	0.62	0.78
IOWA	318	18	89	107	2471	0.07	0.36	0.43
KANSAS	240	22	108	130	2064	0.11	0.52	0.63
KENTUCKY	217	9	44	53	2611	0.03	0.17	0.20
LOUISIANA	442	29	171	200	2576	0.11	0.66	0.78
MAINE	37	3	9	12	786	0.04	0.11	0.15
MARYLAND	52	3	14	17	2743	0.01	0.05	0.06
MASSACHUSETTS	50	2	17	19	3709	0.01	0.05	0.05
MICHIGAN	550	30	196	226	6510	0.05	0.30	0.35
MINNESOTA	367	29	86	115	3051	0.10	0.28	0.38
MISSISSIPPI	277	19	122	141	1571	0.12	0.78	0.90
MISSOURI	306	26	118	144	3217	0.08	0.37	0.45
MONTANA	56	2	8	10	811	0.02	0.10	0.12
NEBRASKA	197	17	60	77	1298	0.13	0.46	0.59
NEVADA	27	3	6	9	605	0.05	0.10	0.15
NEW HAMPSHIRE	15	1	5	6	628	0.02	0.08	0.10
NEW JERSEY	100	7	12	19	4629	0.02	0.03	0.04
NEW MEXICO	30	10	18	28	987	0.10	0.18	0.28
NEW YORK	155	15	40	55	7993	0.02	0.05	0.07
NORTH CARCLINA	361	38	166	204	4379	0.09	0.38	0.47
NORTH DAKOTA	82	9	17	26	622	0.14	0.27	0.42
OHIO	842	77	296	373	8025	0.10	0.37	0.46
OKLAHOMA	268	29	93	122	2475	0.12	0.38	0.49
OREGON	164	8	40	48	1935	0.04	0.21	0.25
PENNSYLVANIA	247	17	71	88	8428	0.02	0.08	0.10
RHODE ISLAND	7	2	0	2	717	0.03	0.00	0.03
SOUTH CARCLINA	232	18	94	112	1983	0.09	0.47	0.56
SOUTH DAKOTA	38	1	11	12	615	0.02	0.18	0.20
TENNESSEE	290	31	94	125	3261	0.10	0.29	0.38
TEXAS	1145	83	492	575	10311	0.08	0.48	0.56
UTAH	78	3	27	30	996	0.03	0.27	0.30
VERMONT	16	5	10	15	355	0.14	0.28	0.42
VIRGINIA	138	7	46	53	3404	0.02	0.14	0.16
WASHINGTON	232	16	57	73	3165	0.05	0.18	0.23
WEST VIRGINIA	122	8	43	51	1227	0.07	0.35	0.42
WISCONSIN	409	28	122	150	2877	0.10	0.42	0.52
WYOMING	27	1	0	1	412	0.02	0.00	0.02
TOTAL	11999	929	4120	5049	154206	0.06	0.27	0.33

[1] Estimated figures supplied by Federal Highway Administration.

VEH REG = Vehicles Registered

TABLE 5. ACCIDENTS/INCIDENTS AND CASUALTIES AT GRADE CROSSINGS INVOLVING MOTOR VEHICLES BY STATE AND TYPE OF MOTOR VEHICLE, 1978

	TYPE OF MOTOR VEHICLE																	
	AUTOMOBILE*			******TRUCK******			TRUCK *****TRAILER*****			*******BUS*******			SCHOOL *******BUS*******			***MOTORCYCLE****		
STATE	ACC/INC	KLD	INJ	ACC/INC	KLD	INJ	ACC/INC	KLD	INJ	ACC/INC	KLD	INJ	ACC/INC	KLD	INJ	ACC/INC	KLD	INJ
ALABAMA	234	11	77	77	9	24	45	1	9	0	0	0	0	0	0	1	0	1
ALASKA	22	0	6	5	0	5	2	0	0	0	0	0	0	0	0	0	0	0
ARIZONA	48	3	23	17	3	7	3	0	0	0	0	0	0	0	0	1	2	0
ARKANSAS	168	12	86	51	5	28	21	0	7	1	0	0	0	0	0	2	0	1
CALIFORNIA	426	29	130	117	8	35	56	0	8	0	0	0	0	0	0	4	3	0
COLORADO	90	6	39	45	7	19	13	1	1	0	0	0	0	0	0	0	0	0
CONNECTICUT	24	0	3	3	0	1	1	0	0	0	0	0	0	0	0	0	0	0
DELAWARE	7	1	3	5	0	1	2	0	0	0	0	0	0	0	0	0	0	0
DIST. COLUMBIA	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0
FLORIDA	227	20	55	71	7	36	28	2	15	0	0	0	0	0	0	8	2	4
GEORGIA	307	17	82	83	9	21	50	2	18	1	0	10	1	0	1	0	0	0
HAWAII	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
IDAHO	47	6	20	34	2	21	14	0	0	0	0	0	0	0	0	0	0	0
ILLINOIS	604	48	198	135	27	48	38	1	12	2	0	0	1	0	20	2	0	1
INDIANA	523	36	171	140	19	52	49	4	13	0	0	0	1	0	1	7	0	5
IOWA	209	10	61	74	5	19	29	1	8	1	0	0	0	0	0	5	2	1
KANSAS	149	10	79	69	10	23	18	0	4	0	0	0	0	0	0	4	2	2
KENTUCKY	159	7	30	46	2	10	12	0	4	0	0	0	0	0	0	0	0	0
LOUISIANA	298	15	115	96	7	31	45	7	24	0	0	0	1	0	0	2	0	1
MAINE	24	3	5	9	0	3	2	0	0	0	0	0	1	0	1	1	0	0
MARYLAND	25	1	9	21	2	3	6	0	2	0	0	0	0	0	0	0	0	0
MASSACHUSETTS	39	2	14	10	0	3	1	0	0	0	0	0	0	0	0	0	0	0
MICHIGAN	424	23	140	97	5	47	27	0	8	0	0	0	0	0	0	2	2	1
MINNESOTA	247	22	60	87	6	18	27	1	4	0	0	0	0	0	0	6	0	4
MISSISSIPPI	213	12	95	48	6	17	15	1	10	0	0	0	0	0	0	1	0	0
MISSOURI	199	17	81	77	9	30	28	0	7	0	0	0	1	0	0	1	0	0
MONTANA	29	0	6	24	1	2	3	1	0	0	0	0	0	0	0	0	0	0
NEBRASKA	121	12	39	60	5	19	15	0	2	0	0	0	0	0	0	1	0	0
NEVADA	15	2	3	4	1	2	6	0	1	2	0	0	0	0	0	0	0	0
NEW HAMPSHIRE	11	1	4	4	0	1	0	0	0	0	0	0	0	0	0	0	0	0
NEW JERSEY	73	5	12	21	2	0	5	0	0	0	0	0	0	0	0	1	0	0
NEW MEXICO	20	7	12	9	3	5	1	0	1	0	0	0	0	0	0	0	0	0
NEW YORK	125	15	31	20	0	5	9	0	4	1	0	0	0	0	0	0	0	0
NORTH CAROLINA	267	27	132	59	6	24	29	2	8	0	0	0	1	0	0	5	3	2
NORTH DAKOTA	42	3	11	34	6	6	6	0	0	0	0	0	0	0	0	0	0	0
OHIO	640	66	227	141	9	48	58	1	18	0	0	0	1	0	3	2	1	0
OKLAHOMA	187	15	71	60	12	15	16	1	5	0	0	0	2	0	0	3	1	2
OREGON	110	5	29	34	3	6	19	0	4	0	0	0	0	0	0	1	0	1
PENNSYLVANIA	185	9	56	41	7	8	19	0	7	0	0	0	0	0	0	2	1	0
RHODE ISLAND	5	2	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0
SOUTH CARCLINA	161	13	58	42	3	10	28	2	26	0	0	0	0	0	0	1	0	0
SOUTH DAKOTA	35	1	11	1	0	0	2	0	0	0	0	0	0	0	0	0	0	0
TENNESSEE	211	22	71	56	9	18	20	0	3	0	0	0	0	0	0	3	0	2
TEXAS	785	59	344	249	20	101	103	3	29	2	0	16	0	0	0	6	1	2
UTAH	46	1	21	27	2	2	4	0	3	0	0	0	0	0	0	1	0	1
VERMONT	11	5	9	3	0	1	0	0	0	1	0	0	0	0	0	1	0	0
VIRGINIA	98	6	31	36	1	14	4	0	1	0	0	0	0	0	0	0	0	0
WASHINGTON	143	7	39	68	9	15	19	0	2	1	0	0	0	0	0	1	0	1
WEST VIRGINIA	84	6	31	29	2	10	7	0	1	0	0	0	0	0	0	2	0	1
WISCONSIN	303	23	93	84	4	26	18	0	2	0	0	0	1	0	1	3	1	0
WYOMING	14	0	0	13	1	0	0	0	0	0	0	0	0	0	0	0	0	0
TOTAL	8434	623	2923	2538	254	840	924	31	271	12	0	26	11	0	27	80	21	33

KLD = KILLED
INJ = INJURED

TABLE 6. ACCIDENTS/INCIDENTS AND CASUALTIES AT GRADE CROSSINGS INVOLVING MOTOR VEHICLES BY STATE AND TYPE OF TRAIN, 1978

	TYPE OF TRAIN											
	*****FREIGHT*****			****PASSENGER****			YARD/ ****SWITCHING****			******OTHER[1]******		
STATE	ACC/INC	KLD	INJ	ACC/INC	KLD	INJ	ACC/INC	KLD	INJ	ACC/INC	KLD	INJ
ALABAMA	259	17	86	5	1	7	57	2	9	36	1	9
ALASKA	16	0	9	1	0	0	9	0	2	3	0	0
ARIZONA	31	5	12	0	0	0	25	3	7	13	0	11
ARKANSAS	187	16	108	5	1	0	37	0	11	14	0	3
CALIFORNIA	384	30	127	20	4	8	127	3	15	72	3	23
COLORADO	107	9	45	1	0	0	29	3	13	11	2	1
CONNECTICUT	14	0	1	14	0	3	0	0	0	0	0	0
DELAWARE	11	1	4	0	0	0	1	0	0	2	0	0
DIST. COLUMBIA	1	0	0	0	0	0	0	0	0	0	0	0
FLORIDA	229	22	85	34	7	8	32	0	3	39	2	14
GEORGIA	324	27	94	6	0	6	69	1	11	43	0	21
HAWAII	0	0	0	0	0	0	0	0	0	0	0	0
IDAHO	69	8	36	0	0	0	13	0	2	13	0	3
ILLINOIS	487	54	170	94	12	41	111	2	28	90	8	40
INDIANA	549	49	195	53	9	21	55	0	5	63	1	21
IOWA	210	18	69	2	0	0	72	0	12	34	0	8
KANSAS	190	18	92	4	3	2	33	1	9	13	0	5
KENTUCKY	165	7	34	3	2	0	21	0	4	28	0	6
LOUISIANA	298	27	133	6	1	4	93	0	23	45	1	11
MAINE	26	2	8	0	0	0	6	0	0	5	1	1
MARYLAND	31	2	11	2	1	0	9	0	0	10	0	3
MASSACHUSETTS	29	0	9	18	2	5	2	0	3	1	0	0
MICHIGAN	368	28	150	12	1	2	111	1	28	59	0	16
MINNESOTA	260	28	72	8	1	3	63	0	6	36	0	5
MISSISSIPPI	191	17	85	5	2	1	48	0	14	33	0	22
MISSOURI	216	24	99	3	1	2	54	1	9	33	0	8
MONTANA	37	2	4	1	0	0	10	0	2	8	0	2
NEBRASKA	139	15	44	2	0	0	38	0	14	18	2	2
NEVADA	23	3	5	0	0	0	2	0	1	2	0	0
NEW HAMPSHIRE	11	1	5	0	0	0	3	0	0	1	0	0
NEW JERSEY	60	4	7	25	3	3	10	0	1	5	0	1
NEW MEXICO	27	9	18	1	1	0	2	0	0	0	0	0
NEW YORK	96	8	22	19	4	9	19	1	2	21	2	7
NORTH CAROLINA	272	27	132	11	7	9	50	2	19	28	2	6
NORTH DAKOTA	54	4	14	3	5	0	16	0	3	9	0	0
OHIO	633	59	227	27	10	3	100	5	30	82	3	36
OKLAHOMA	194	27	80	1	0	0	50	1	4	23	1	9
OREGON	93	5	24	7	1	1	42	1	8	22	1	7
PENNSYLVANIA	172	15	49	34	1	13	16	0	3	25	1	6
RHODE ISLAND	3	0	0	4	2	0	0	0	0	0	0	0
SOUTH CARCLINA	177	12	64	15	3	19	24	3	8	16	0	3
SOUTH DAKOTA	29	1	9	0	0	0	6	0	0	3	0	2
TENNESSEE	212	30	73	0	0	0	50	1	14	28	0	7
TEXAS	708	57	343	14	6	23	258	8	64	165	12	62
UTAH	65	3	20	0	0	0	7	0	3	6	0	4
VERMONT	14	5	10	0	0	0	0	0	0	2	0	0
VIRGINIA	82	6	31	2	0	0	26	0	8	28	1	7
WASHINGTON	145	10	49	6	5	0	59	1	4	22	0	4
WEST VIRGINIA	87	8	33	2	0	0	11	0	5	22	0	5
WISCONSIN	262	27	99	0	0	0	102	1	16	45	0	7
WYOMING	20	1	0	0	0	0	5	0	0	2	0	0
TOTAL	8267	748	3096	470	96	193	1983	41	423	1279	44	408

KLD = KILLED
INJ = INJURED

[1]Includes mixed trains, work trains, and light locomotives.

TABLE 7. ACCIDENTS/INCIDENTS AT GRADE CROSSINGS INVOLVING MOTOR VEHICLES BY RAILROAD AND HIGHEST WARNING DEVICE, 1978

RAILROAD	GATES	CANTILEVERED FLASHING LIGHTS	STANDARD FLASHING LIGHTS	HWY. SIG. WIGWAGS BELLS	HIGHEST WARNING DEVICE[4] SPECIAL[1]	CROSSBUCKS	STOP SIGNS	OTHER SIGNS	NO SIGNS OR SIGNALS	TOTAL
LINE HAUL RAILROAD										
ALABAMA GREAT SOUTHERN RAILROAD	1	6	6	6	1	24	1	0	0	45
AMTRAK[2]	50	8	56	9	2	94	3	2	0	224
ATCHISON, TOPEKA & SANTA FE	93	76	153	27	10	246	3	2	2	612
BALTIMORE & OHIO RAILWAY	12	11	128	4	11	204	2	2	7	381
BESSEMER & LAKE ERIE RAILROAD	0	0	2	0	0	8	0	0	0	10
BOSTON & MAINE CORPORATION	17	0	17	1	3	5	1	0	2	46
BURLINGTON NORTHERN	45	23	153	31	6	417	14	0	20	709
CENTRAL OF GEORGIA RAILROAD	1	0	20	2	10	49	0	0	2	84
CHESAPEAKE & OHIO RAILWAY	32	24	98	4	5	176	2	0	6	347
CHICAGO & NORTH WESTERN	66	25	132	50	14	207	3	3	13	513
CHICAGO, MILWAUKEE, ST. PAUL & PACIFIC	24	17	108	27	17	175	1	0	7	376
CHICAGO, ROCK ISLAND & PACIFIC	30	11	60	14	5	126	0	1	3	250
CINN., NEW ORLEANS & TEXAS PACIFIC	4	0	7	3	0	11	0	0	1	26
CLINCHFIELD RAILROAD	2	0	0	1	0	3	0	0	0	6
COLORADO & SOUTHERN RAILWAY	0	1	4	3	0	24	0	0	1	33
CONSOLIDATED RAIL CORPORATION	203	30	487	31	36	538	18	11	11	1365
THE ESTATES[3]	0	0	0	0	0	0	0	0	0	0
DELAWARE & HUDSON RAILWAY	0	0	7	0	0	3	0	0	1	11
DENVER & RIO GRANDE WESTERN	2	6	12	0	0	25	0	1	0	46
DETROIT, TOLEDO & IRONTON	2	0	15	0	1	25	2	0	5	50
DULUTH, MISSABE & IRON RANGE	0	0	1	0	0	5	0	0	0	6
ELGIN, JOLIET & EASTERN	3	1	11	0	1	5	0	0	0	21
FLORIDA EAST COAST RAILWAY	30	0	16	0	3	7	0	0	0	56
FORT WORTH & DENVER RAILWAY	1	6	33	0	0	24	0	0	0	64
GRAND TRUNK WESTERN	27	9	31	1	3	46	1	0	2	120
ILLINOIS CENTRAL GULF RAILROAD	33	36	123	12	15	260	26	8	11	524
KANSAS CITY SOUTHERN RAILWAY	1	6	25	0	9	44	0	0	3	88
LONG ISLAND RAIL ROAD	17	0	2	0	1	0	0	0	0	20
LOUISIANA & ARKANSAS RAILWAY COMPANY	0	22	25	0	1	32	0	0	0	80
LOUISVILLE & NASHVILLE	49	18	160	54	20	250	16	3	18	588
MISSOURI-KANSAS-TEXAS RAILROAD	6	20	49	8	7	78	0	0	2	170
MISSOURI PACIFIC RAILROAD	45	40	226	11	20	391	0	6	20	759
NORFOLK & WESTERN RAILWAY	52	19	178	21	4	219	1	2	5	501
PITTSBURGH & LAKE ERIE RAILROAD	0	0	1	0	0	3	0	0	0	4
ST. LOUIS-SAN FRANCISCO RAILWAY	15	10	92	5	15	178	1	1	6	323
ST. LOUIS SOUTHWESTERN RAILWAY	10	5	27	16	3	45	1	2	5	114
SEABOARD COAST LINE RAILROAD	55	35	132	11	19	495	4	0	5	756
SOO LINE	16	17	58	7	1	73	0	0	1	173
SOUTHERN PACIFIC TRANSPORTATION COMPANY	155	25	134	138	28	259	29	0	10	778
SOUTHERN RAILWAY	39	27	141	42	31	268	1	0	24	573
UNION PACIFIC RAILROAD	37	25	72	15	14	223	7	0	13	406
WESTERN MARYLAND RAILWAY	0	1	4	1	1	7	0	0	0	14
WESTERN PACIFIC	12	4	23	12	2	50	3	0	0	106

TABLE 7. (CONT.)

RAILROAD	GATES	CANTI-LEVERED FLASHING LIGHTS	STANDARD FLASHING LIGHTS	HWY. SIG. WIGWAGS BELLS	HIGHEST WARNING DEVICE[4] SPECIAL[1]	CROSS-BUCKS	STOP SIGNS	OTHER SIGNS	NO SIGNS OR SIGNALS	TOTAL
SWITCHING & TERMINAL RAILROAD										
UNION RAILROAD COMPANY (PITTSBURGH)	0	0	0	0	0	0	1	0	0	1
RECAPITULATION										
TOTAL CLASS I - LINE HAUL	1144	556	2980	558	317	5228	137	43	206	11169
TOTAL CLASS I - SWITCHING & TERMINAL	0	0	0	0	0	0	1	0	0	1
CLASS II & III RAILROADS	89	36	207	41	37	363	11	9	36	829
TOTAL	1233	592	3187	599	354	5591	149	52	242	11999

1 Special warning device not train activated, e.g. crossing flagged by train crew.

2 Amtrak and Autotrain accidents have been excluded in all other tables. These accidents are reported by Amtrak and Autotrain and by the operating carrier, In this table they are included in the detail lines but excluded in the recapitulation.

3 Crossings on lines not merged into Consolidated Rail Corporation or not yet identified as belonging to Consolidated Rail Corporation.

4 See Appendix A for definition of highest warning device.

TABLE 8. ACCIDENTS/INCIDENTS AT GRADE CROSSINGS INVOLVING MOTOR VEHICLES BY STATE AND HIGHEST WARNING DEVICE, 1978

STATE	HIGHEST WARNING DEVICE[2]								
	GATES	FLASHING LIGHTS	HWY SIGS. WIGWAGS BELLS	SPECIAL[1]	CROSS-BUCKS	STOP SIGNS	OTHER SIGNS	NO SIGNS OR SIGNALS	TOTAL
ALABAMA	8	76	43	23	194	9	1	3	357
ALASKA	1	5	1	1	21	0	0	0	29
ARIZONA	8	40	3	2	14	0	1	1	69
ARKANSAS	18	71	10	20	121	0	1	2	243
CALIFORNIA	166	124	99	19	174	17	0	4	603
COLORADO	10	49	8	1	75	3	1	1	148
CONNECTICUT	4	13	2	0	8	0	1	0	28
DELAWARE	5	4	0	3	2	0	0	0	14
DIST. COLUMBIA	0	0	0	0	1	0	0	0	1
FLORIDA	57	97	5	10	160	2	1	2	334
GEORGIA	35	98	23	17	258	1	0	10	442
HAWAII	0	0	0	0	0	0	0	0	0
IDAHO	3	18	4	3	64	1	0	2	95
ILLINOIS	221	289	26	14	206	1	4	21	782
INDIANA	106	252	19	9	312	8	3	11	720
IOWA	14	86	25	6	177	2	0	8	318
KANSAS	14	51	8	3	159	1	0	4	240
KENTUCKY	18	90	17	1	79	2	2	8	217
LOUISIANA	23	149	18	12	211	12	2	15	442
MAINE	2	16	0	1	14	0	1	3	37
MARYLAND	5	11	2	4	29	0	0	1	52
MASSACHUSETTS	15	22	0	3	7	1	0	2	50
MICHIGAN	86	212	5	11	221	5	0	10	550
MINNESOTA	10	110	12	7	221	2	1	4	367
MISSISSIPPI	3	72	14	12	136	22	9	9	277
MISSOURI	12	99	7	5	176	1	1	5	306
MONTANA	2	10	5	0	39	0	0	0	56
NEBRASKA	19	60	8	2	103	2	0	3	197
NEVADA	8	8	3	0	4	4	0	0	27
NEW HAMPSHIRE	2	7	1	1	2	2	0	0	15
NEW JERSEY	26	36	5	7	23	0	0	3	100
NEW MEXICO	4	9	0	4	13	0	0	0	30
NEW YORK	37	59	6	5	40	4	1	3	155
NORTH CAROLINA	15	79	4	18	233	0	1	11	361
NORTH DAKOTA	3	16	8	0	54	0	0	1	82
OHIO	54	308	15	13	433	9	3	7	842
OKLAHOMA	10	74	9	8	160	0	0	7	268
OREGON	12	14	19	4	96	17	1	1	164
PENNSYLVANIA	22	93	6	17	100	1	6	2	247
RHODE ISLAND	2	4	0	0	1	0	0	0	7
SOUTH CAROLINA	15	47	4	10	152	2	0	2	232
SOUTH DAKOTA	0	5	1	1	31	0	0	0	38
TENNESSEE	18	82	21	15	124	4	6	20	290
TEXAS	80	481	71	31	448	3	3	28	1145
UTAH	3	27	1	2	42	0	0	3	78
VERMONT	0	5	1	0	8	1	0	1	16
VIRGINIA	21	41	7	6	60	0	2	1	138
WASHINGTON	3	55	10	10	132	6	0	16	232
WEST VIRGINIA	4	54	2	1	57	1	0	3	122
WISCONSIN	28	143	39	12	183	2	0	2	409
WYOMING	1	8	2	0	13	1	0	2	27
TOTAL	1233	3779	599	354	5591	149	52	242	11999

[1] Special warning device not train activated, e.g. crossing flagged by crew.

[2] See Appendix A for definition of highest warning device.

1.2 HAZARDOUS MATERIALS DATA

TABLE 9. ACCIDENT/INCIDENT CASUALTIES AT GRADE CROSSINGS INVOLVING HIGHWAY USERS TRANSPORTING HAZARDOUS MATERIALS BY CAUSE, 1978

CAUSE	ACCIDENTS/ INCIDENTS[1]	CASUALTIES[2]					
		HIGHWAY USERS		RAILROAD EMPLOYEES ON DUTY		TOTAL	
		Killed	Injured	Killed	Injured	Killed	Injured
IMPACT	21	6	19	0	10	6	29
RELEASE OF HAZARDOUS MATERIALS	3	4	0	0	9	4	9
TOTAL:	24	10	19	0	19	10	38

1 A total of 72 accidents/incidents were reported in which the highway user was transporting hazardous materials. There were 48 Accidents/Incidents having no casualties, and 24 with casualties.

2 Casualty figures are computed by matching Rail-Highway Grade Crossing Accident/Incident Reports with corresponding Railroad Injury and Illness Summary Reports.

1.3 HIGHWAY USER AND VEHICLE DATA

TABLE 10. ACCIDENTS/INCIDENTS AND CASUALTIES AT GRADE CROSSINGS BY TYPE OF HIGHWAY USER, 1978

TRAINS STRIKING OR BEING STRUCK BY:	**ACC/INC*** No.	%	***KILLED*** No.	%	**INJURED*** No.	%
AUTOMOBILE	8434	67.82	623	61.02	2923	68.68
TRUCK	2538	20.41	254	24.88	840	19.74
TRUCK TRAILER	924	7.43	31	3.04	271	6.37
BUS	12	0.10	0	0.00	26	0.61
SCHOOL BUS	11	0.09	0	0.00	27	0.63
MOTORCYCLE	80	0.64	21	2.06	33	0.78
PEDESTRIAN	102	0.82	68	6.66	31	0.73
OTHER	334	2.69	24	2.35	105	2.47
TOTAL	12435	100.00	1021	100.00	4256	100.00

TABLE 11. ACCIDENTS/INCIDENTS AND CASUALTIES AT GRADE CROSSINGS INVOLVING MOTOR VEHICLES BY CIRCUMSTANCE, 1978

CIRCUMSTANCE	**ACC/INC*** No.	%	***KILLED*** No.	%	**INJURED*** No.	%
MOTOR VEHICLE STRUCK BY TRAIN	8559	71.33	706	76.00	2794	67.82
MOTOR VEHICLE RAN INTO TRAIN	3440	28.67	223	24.00	1326	32.18
TOTAL	11999	100.00	929	100.00	4120	100.00

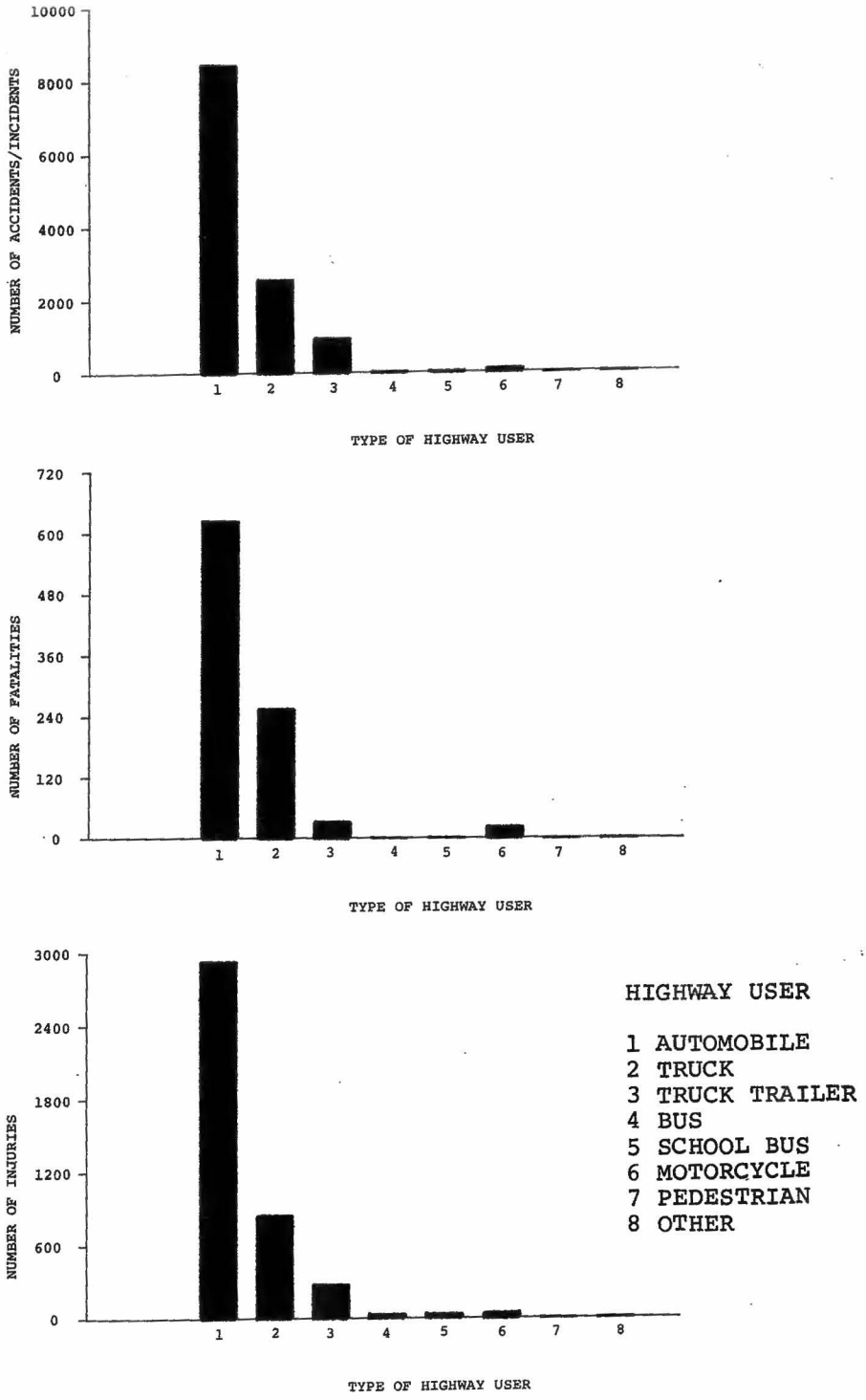


FIGURE 3. ACCIDENTS/INCIDENTS AND CASUALTIES AT GRADE CROSSINGS BY TYPE OF HIGHWAY USER, 1978

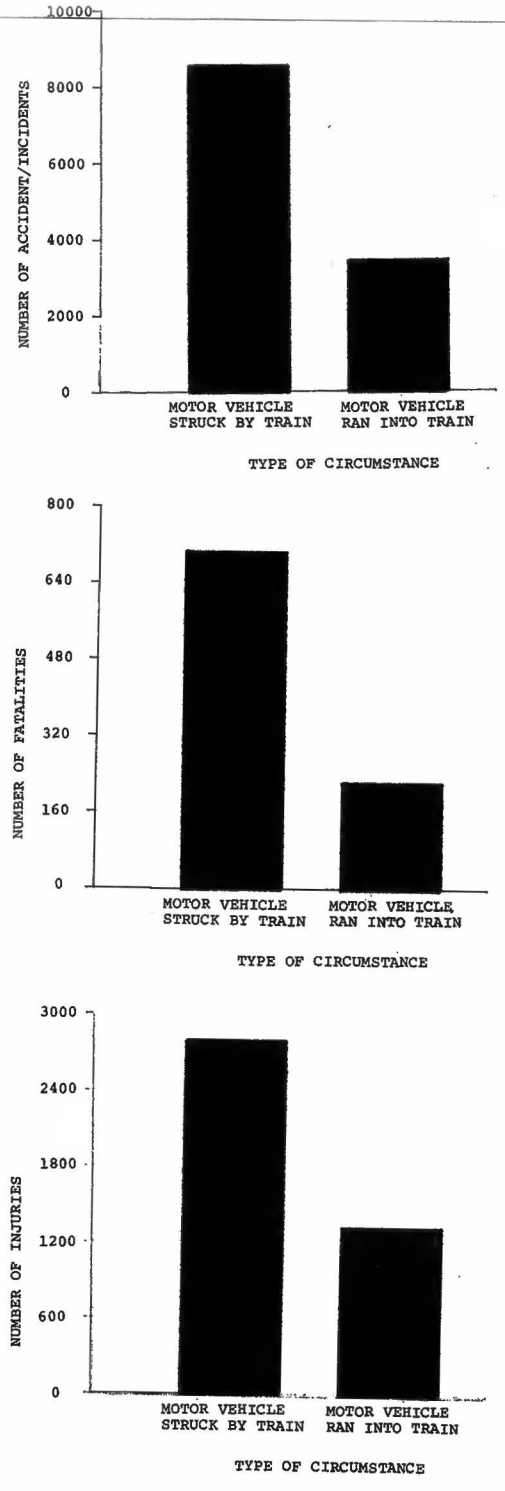


FIGURE 4. ACCIDENTS/INCIDENTS AND CASUALTIES AT GRADE CROSSINGS INVOLVING MOTOR VEHICLES BY CIRCUMSTANCE, 1978

TABLE 12. ACCIDENTS/INCIDENTS AND CASUALTIES AT GRADE CROSSINGS INVOLVING MOTOR VEHICLES BY TYPE OF VEHICLE, NUMBER OF OCCUPANTS, CASUALTY RATES, DAMAGE RATES, AND ACCIDENT RATES, 1978

TYPE OF VEHICLE	NUMBER OF ACC/INC	AVERAGE OCCUPANTS PER ACC/INC	VEHICLE OCCUPANTS KILLED PER ACC/INC	AVERAGE HIGHWAY OCCUPANTS INJURED PER ACC/INC	PROPERTY DAMAGE PER ACC/INC($)	VEHICLES REG (000) [1]	ACCIDENTS PER MILLION VEHICLES
AUTOMOBILE	8434	1.48	0.08	0.38	1402.18	117147	71.99
MOTOR TRUCKS	3462	1.27	0.09	0.35	3807.49	31416	110.20
MOTOR BUSES	23	11.14	0.00	2.52	6730.37	505	45.55
MOTORCYCLE	80	1.13	0.29	0.46	719.75	5138	15.57
TOTAL	11999	1.44	0.08	0.38	2103.73	154206	77.81

[1] Estimated figures supplied by Federal Highway Administration.

REG = Registered

TABLE 13. ACCIDENTS/INCIDENTS AND CASUALTIES AT GRADE CROSSINGS INVOLVING MOTOR VEHICLES BY TYPE OF VEHICLE, CIRCUMSTANCE, AND VISIBILITY, 1978

	VISIBILITY											
	******DAWN*******			*******DAY*******			******DUSK*******			******DARK*******		
TYPE OF VEHICLE	ACC/INC	KLD	INJ	ACC/INC	KLD	INJ	ACC/INC	KLD	INJ	ACC/INC	KLD	INJ
STRUCK BY TRAIN												
AUTOMOBILE	173	12	55	3301	287	1175	246	35	88	2215	161	656
TRUCK	59	4	14	1209	139	369	46	4	19	479	41	152
TRUCK TRAILER	22	4	13	614	16	157	25	0	1	128	2	36
BUS	0	0	0	6	0	26	1	0	0	2	0	0
SCHOOL BUS	2	0	0	6	0	25	0	0	0	0	0	0
MOTORCYCLE	1	1	0	18	0	6	2	0	0	4	0	2
TOTAL	257	21	82	5154	442	1758	320	39	108	2828	204	846
RAN INTO TRAIN												
AUTOMOBILE	65	4	20	985	39	340	74	1	25	1375	84	564
TRUCK	25	7	18	409	29	140	19	1	8	292	29	120
TRUCK TRAILER	4	0	2	98	7	50	1	0	0	32	2	12
BUS	1	0	0	0	0	0	0	0	0	2	0	0
SCHOOL BUS	0	0	0	2	0	2	1	0	0	0	0	0
MOTORCYCLE	1	1	0	25	6	11	5	3	3	24	10	11
TOTAL	96	12	40	1519	81	543	100	5	36	1725	125	707

TABLE 13. (CONT.)

TYPE OF VEHICLE	VISIBILITY ******DAWN******* ACC/INC	KLD	INJ	*******DAY******* ACC/INC	KLD	INJ	******DUSK******* ACC/INC	KLD	INJ	******DARK******* ACC/INC	KLD	INJ
G R A N D T O T A L												
AUTOMOBILE	238	16	75	4286	326	1515	320	36	113	3590	245	1220
TRUCK	84	11	32	1618	168	509	65	5	27	771	70	272
TRUCK TRAILER	26	4	15	712	23	207	26	0	1	160	4	48
BUS	1	0	0	6	0	26	1	0	0	4	0	0
SCHOOL BUS	2	0	0	8	0	27	1	0	0	0	0	0
MOTORCYCLE	2	2	0	43	6	17	7	3	3	28	10	13
TOTAL	353	33	122	6673	523	2301	420	44	144	4553	329	1553

KLD = KILLED
INJ = INJURED

TABLE 14. CASUALTIES AT GRADE CROSSINGS BY TYPE OF PERSON INVOLVED, TYPE OF HIGHWAY USER, AND CIRCUMSTANCE, 1978

TYPE OF HIGHWAY USER	TYPE OF PERSON ****EOD*** KLD	INJ	***ENOD*** KLD	INJ	***PSGR*** KLD	INJ	***NONT*** KLD	INJ	***TRES*** KLD	INJ	***CONT*** KLD	INJ	**TOTAL*** KLD	INJ	TOTAL ACCI-DENTS
STRUCK BY TRAIN															
AUTOMOBILE	0	23	2	0	0	0	447	1833	46	118	0	0	495	1974	5935
TRUCK	1	41	0	1	0	1	177	498	10	13	0	0	188	554	1793
TRUCK TRAILER	1	74	0	1	0	12	21	116	0	4	0	0	22	207	789
BUS	0	0	0	0	0	0	0	26	0	0	0	0	0	26	9
SCHOOL BUS	0	0	0	0	0	0	0	25	0	0	0	0	0	25	8
MOTORCYCLE	0	0	0	0	0	0	0	7	1	1	0	0	1	8	25
PEDESTRIAN	0	0	0	0	0	0	49	13	16	11	0	1	65	25	91
OTHER	0	4	0	0	0	0	19	62	2	5	0	0	21	71	262
TOTAL	2	142	2	2	0	13	713	2580	75	152	0	1	792	2890	8912
RAN INTO TRAIN															
AUTOMOBILE	0	12	0	1	0	1	120	887	8	48	0	0	128	949	2499
TRUCK	0	16	0	0	0	1	63	262	3	7	0	0	66	286	745
TRUCK TRAILER	0	9	0	0	0	3	9	50	0	2	0	0	9	64	135
BUS	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3
SCHOOL BUS	0	0	0	0	0	0	0	2	0	0	0	0	0	2	3
MOTORCYCLE	0	0	0	0	0	0	20	23	0	2	0	0	20	25	55
PEDESTRIAN	0	1	0	0	0	0	3	4	0	1	0	0	3	6	11
OTHER	0	0	0	0	0	0	2	32	1	2	0	0	3	34	72
TOTAL	0	38	0	1	0	5	217	1260	12	62	0	0	229	1366	3523

TABLE 14. (CONT.)

TYPE OF HIGHWAY USER	TYPE OF PERSON ****EOD*** KLD	INJ	***ENOD*** KLD	INJ	***PSGR*** KLD	INJ	***NONT*** KLD	INJ	***TRES*** KLD	INJ	***CONT*** KLD	INJ	**TOTAL*** KLD	INJ	TOTAL ACCI-DENTS
G R A N D T O T A L															
AUTOMOBILE	0	35	2	1	0	1	567	2720	54	166	0	0	623	2923	8434
TRUCK	1	57	0	1	0	2	240	760	13	20	0	0	254	840	2538
TRUCK TRAILER	1	83	0	1	0	15	30	166	0	6	0	0	31	271	924
BUS	0	0	0	0	0	0	0	26	0	0	0	0	0	26	12
SCHOOL BUS	0	0	0	0	0	0	0	27	0	0	0	0	0	27	11
MOTORCYCLE	0	0	0	0	0	0	20	30	1	3	0	0	21	33	80
PEDESTRIAN	0	1	0	0	0	0	52	17	16	12	0	1	68	31	102
OTHER	0	4	0	0	0	0	21	94	3	7	0	0	24	105	334
TOTAL	2	180	2	3	0	18	930	3840	87	214	0	1	1021	4256	12435

EOD = RR EMPLOYEE ON DUTY
ENOD = RR EMPLOYEE NOT ON DUTY
PSGR = PASSENGERS ON TRAIN
NONT = NON TRESSPASSERS
TRES = TRESSPASSERS
CONT = CONTRACTOR EMPLOYEES
KLD = KILLED
INJ = INJURED

TABLE 15. ACCIDENTS/INCIDENTS AND CASUALTIES AT GRADE CROSSINGS INVOLVING MOTOR VEHICLES BY SPEED OF VEHICLE, CIRCUMSTANCE, AND VISIBILITY, 1978

CIRCUMSTANCE AND VEHICLE SPEED (MPH)	VISIBILITY ******DAWN*******			*******DAY*******			******DUSK*******			******DARK*******			******TOTAL******		
	ACC/INC	KLD	INJ	ACC/INC	KLD	INJ	ACC/INC	KLD	INJ	ACC/INC	KLD	INJ	ACC/INC	KLD	INJ
STRUCK BY TRAIN															
STANDING	56	1	8	1199	35	226	75	2	13	684	12	93	2014	50	340
1-9	49	6	16	979	76	280	52	3	12	525	35	154	1605	120	462
10-19	39	4	16	841	109	361	48	11	24	435	34	202	1363	158	603
20-29	32	6	18	553	64	255	39	8	11	273	29	110	897	107	394
30-39	9	0	5	254	46	148	14	1	13	176	20	88	453	67	254
40-49	5	2	1	108	17	63	8	4	4	65	13	41	186	36	109
50-59	3	1	0	58	16	29	6	5	5	18	6	9	85	28	43
60 AND OVER	0	0	0	10	4	4	2	2	0	5	1	0	17	7	4
UNKNOWN	64	1	18	1152	75	392	76	3	26	647	54	149	1939	133	585
TOTAL	257	21	82	5154	442	1758	320	39	108	2828	204	846	8559	706	2794
RAN INTO TRAIN															
STANDING	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1-9	17	0	3	324	2	49	23	0	4	300	5	61	664	7	117
10-19	12	1	5	295	3	62	20	1	4	314	7	95	641	12	166
20-29	19	0	11	239	7	86	18	2	9	242	5	90	518	14	196
30-39	7	2	3	182	10	96	13	0	7	206	23	91	408	35	197
40-49	13	7	6	98	13	57	4	0	5	103	17	80	218	37	148
50-59	4	1	1	64	15	49	1	0	1	75	27	69	144	43	120
60 AND OVER	0	0	0	19	15	22	0	0	0	37	12	22	56	27	44
UNKNOWN	24	1	11	298	16	122	21	2	6	448	29	199	791	48	338
TOTAL	96	12	40	1519	81	543	100	5	36	1725	125	707	3440	223	1326

TABLE 15. (CONT.)

CIRCUMSTANCE AND VEHICLE SPEED (MPH)	VISIBILITY ******DAWN******* ACC/INC	KLD	INJ	*******DAY******* ACC/INC	KLD	INJ	******DUSK******* ACC/INC	KLD	INJ	******DARK******* ACC/INC	KLD	INJ	******TOTAL****** ACC/INC	KLD	INJ
G R A N D T O T A L															
STANDING	56	1	8	1199	35	226	75	2	13	684	12	93	2014	50	340
1-9	66	6	19	1303	78	329	75	3	16	825	40	215	2269	127	579
10-19	51	5	21	1136	112	423	68	12	28	749	41	297	2004	170	769
20-29	51	6	29	792	71	341	57	10	20	515	34	200	1415	121	590
30-39	16	2	8	436	56	244	27	1	20	382	43	179	861	102	451
40-49	18	9	7	206	30	120	12	4	9	168	30	121	404	73	257
50-59	7	2	1	122	31	78	7	5	6	93	33	78	229	71	163
60 AND OVER	0	0	0	29	19	26	2	2	0	42	13	22	73	34	48
UNKNOWN	88	2	29	1450	91	514	97	5	32	1095	83	348	2730	181	923
TOTAL	353	33	122	6673	523	2301	420	44	144	4553	329	1553	11999	929	4120

KLD = KILLED
INJ = INJURED

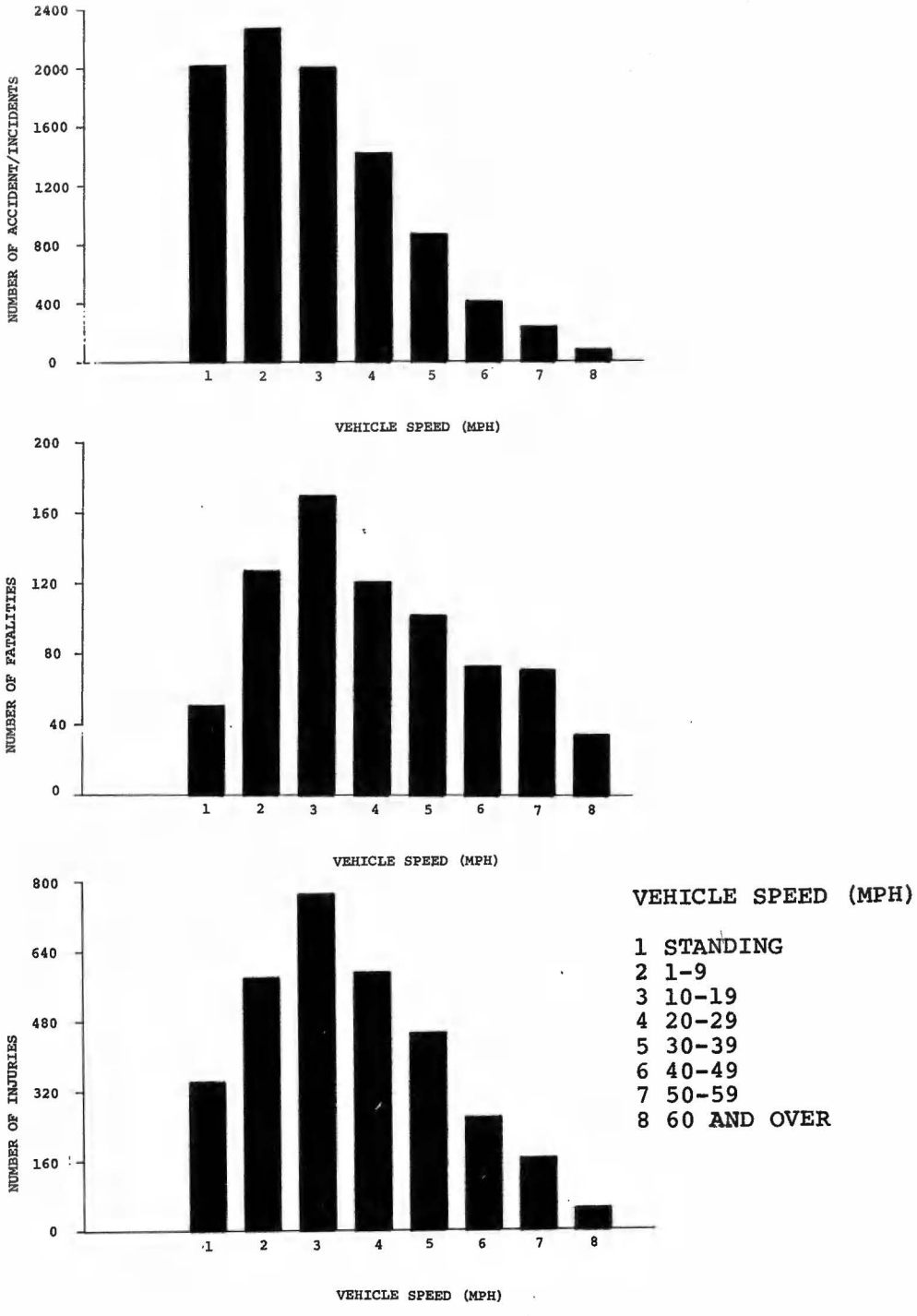


FIGURE 5. ACCIDENTS/INCIDENTS AND CASUALTIES AT GRADE CROSSINGS INVOLVING MOTOR VEHICLES BY VEHICLE SPEED, 1978

TABLE 16. ACCIDENTS/INCIDENTS AND CASUALTIES AT GRADE CROSSINGS INVOLVING MOTOR VEHICLES BY POSITION AND TYPE OF VEHICLE, 1978

TYPE OF VEHICLE	POSITION OF HIGHWAY VEHICLE								
	STALLED ON ****CROSSING*****			STOPPED ON ****CROSSING*****			MOVING OVER ****CROSSING*****		
	ACC/INC	KLD	INJ	ACC/INC	KLD	INJ	ACC/INC	KLD	INJ
AUTOMOBILE	981	19	119	1147	41	266	6306	563	2538
TRUCK	226	7	27	287	7	35	2025	240	778
TRUCK TRAILER	56	1	8	118	0	18	750	30	245
BUS	0	0	0	1	0	0	11	0	26
SCHOOL BUS	2	0	0	2	0	1	7	0	26
MOTORCYCLE	2	0	0	5	0	0	73	21	33
TOTAL	1267	27	154	1560	48	320	9172	854	3646

KLD = KILLED
INJ = INJURED

1.4 TRAIN AND TRACK DATA

TABLE 17. ACCIDENTS/INCIDENTS AND CASUALTIES AT GRADE CROSSINGS INVOLVING MOTOR VEHICLES BY SPEED OF TRAIN, CIRCUMSTANCE, AND VISIBILITY, 1978

CIRCUMSTANCE AND TRAIN SPEED (MPH)	VISIBILITY ******DAWN******* ACC/INC	KLD	INJ	*******DAY******* ACC/INC	KLD	INJ	******DUSK******* ACC/INC	KLD	INJ	******DARK******* ACC/INC	KLD	INJ	******TOTAL****** ACC/INC	KLD	INJ
STRUCK BY TRAIN															
STANDING	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1-9	57	0	11	1463	3	148	95	0	8	972	4	178	2587	7	345
10-19	54	1	18	1025	13	295	60	0	12	575	24	203	1714	38	528
20-29	44	6	17	1051	59	474	59	6	33	461	35	198	1615	106	722
30-39	44	7	18	799	125	415	45	13	24	362	43	135	1250	188	592
40-49	35	5	12	521	129	270	37	17	22	293	61	92	886	212	396
50-59	15	1	3	192	77	86	12	1	7	95	22	26	314	101	122
60-69	3	1	1	45	11	19	8	0	1	26	9	5	82	21	26
70-79	2	0	1	33	20	25	1	2	0	20	6	3	56	28	29
80-89	0	0	0	1	3	0	0	0	0	1	0	0	2	3	0
90 AND OVER	0	0	0	2	1	0	0	0	0	0	0	0	2	1	0
UNKNOWN	3	0	1	22	1	26	3	0	1	23	0	6	51	1	34
TOTAL	257	21	82	5154	442	1758	320	39	108	2828	204	846	8559	706	2794
RAN INTO TRAIN															
STANDING	6	0	2	39	0	15	6	0	1	223	18	107	274	18	125
1-9	28	1	10	458	5	100	29	0	3	722	31	238	1237	37	351
10-19	19	7	7	343	9	116	27	0	9	328	25	139	717	41	271
20-29	19	1	9	290	15	117	16	0	11	157	12	68	482	28	205
30-39	13	3	5	185	24	89	13	3	5	121	15	55	332	45	154
40-49	6	0	5	135	14	65	5	1	5	74	13	61	220	28	136
50-59	2	0	1	44	11	15	2	1	1	20	7	8	68	19	25
60-69	0	0	0	8	1	14	1	0	1	4	2	2	13	3	17
70-79	0	0	0	2	2	6	0	0	0	4	0	3	6	2	9
80-89	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
90 AND OVER	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
UNKNOWN	3	0	1	15	0	6	1	0	0	72	2	26	91	2	33
TOTAL	96	12	40	1519	81	543	100	5	36	1725	125	707	3440	223	1326

TABLE 17. (CONT.)

VISIBILITY

CIRCUMSTANCE AND TRAIN SPEED (MPH)	******DAWN*******			*******DAY*******			******DUSK*******			******DARK*******			******TOTAL******		
	ACC/INC	KLD	INJ	ACC/INC	KLD	INJ	ACC/INC	KLD	INJ	ACC/INC	KLD	INJ	ACC/INC	KLD	INJ
G R A N D T O T A L															
STANDING	6	0	2	39	0	15	6	0	1	223	18	107	274	18	125
1-9	85	1	21	1921	8	248	124	0	11	1694	35	416	3824	44	696
10-19	73	8	25	1368	22	411	87	0	21	903	49	342	2431	79	799
20-29	63	7	26	1341	74	591	75	6	44	618	47	266	2097	134	927
30-39	57	10	23	984	149	504	58	16	29	483	58	190	1582	233	746
40-49	41	5	17	656	143	335	42	18	27	367	74	153	1106	240	532
50-59	17	1	4	236	88	101	14	2	8	115	29	34	382	120	147
60-69	3	1	1	53	12	33	9	0	2	30	11	7	95	24	43
70-79	2	0	1	35	22	31	1	2	0	24	6	6	62	30	38
80-89	0	0	0	1	3	0	0	0	0	1	0	0	2	3	0
90 AND OVER	0	0	0	2	1	0	0	0	0	0	0	0	2	1	0
UNKNOWN	6	0	2	37	1	32	4	0	1	95	2	32	142	3	67
TOTAL	353	33	122	6673	523	2301	420	44	144	4553	329	1553	11999	929	4120

KLD = KILLED
INJ = INJURED

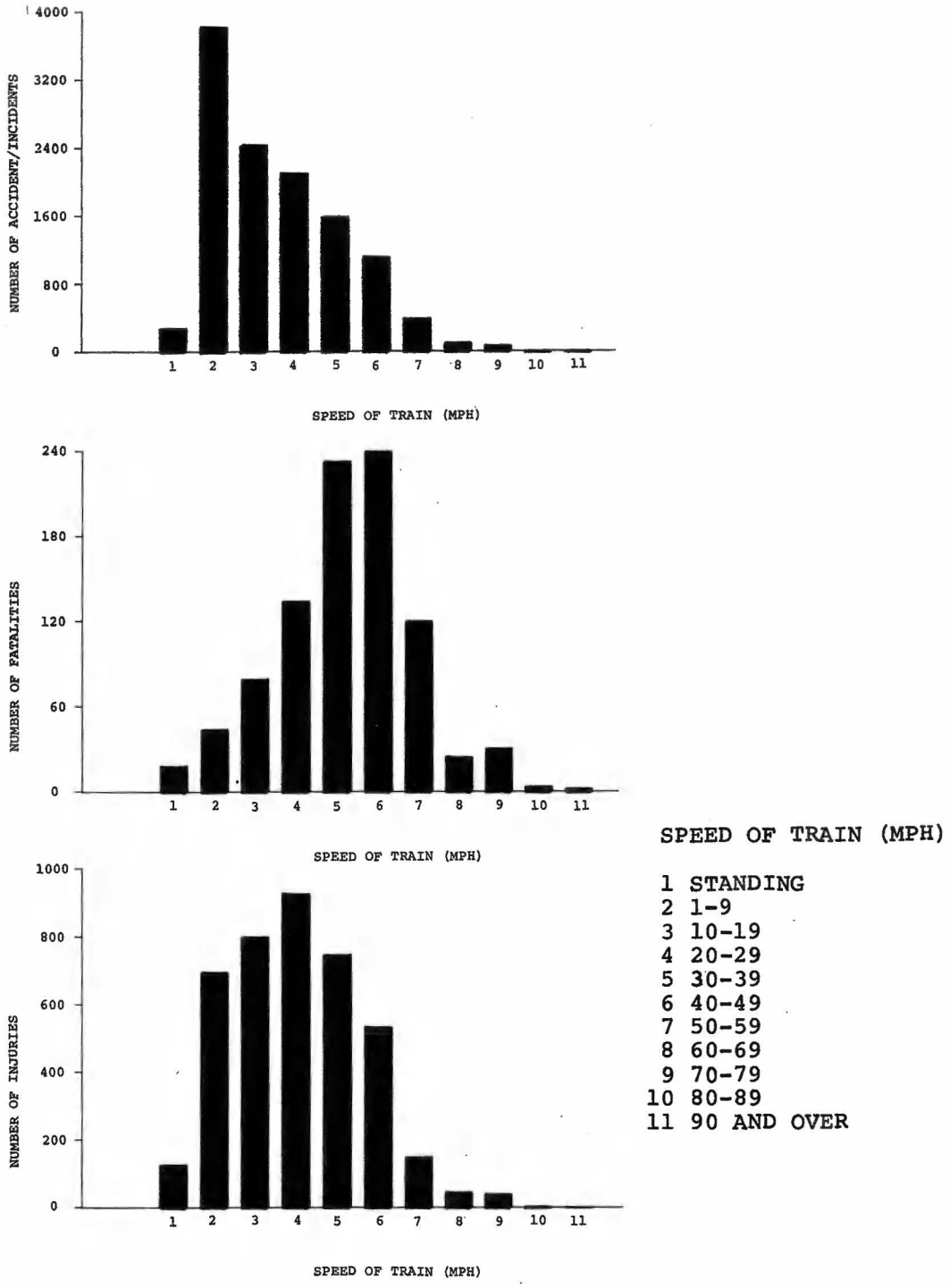


FIGURE 6. ACCIDENTS/INCIDENTS AND CASUALTIES AT GRADE CROSSINGS INVOLVING MOTOR VEHICLES BY SPEED OF TRAIN, 1978

TABLE 18. ACCIDENTS/INCIDENTS AT GRADE CROSSINGS INVOLVING MOTOR VEHICLES BY RAILROAD EQUIPMENT INVOLVED, PART OF TRAIN STRUCK, CIRCUMSTANCE, AND VISIBILITY, 1978

RAILROAD EQUIPMENT INVOLVED	***CIRCUMSTANCE*** CONSIST STRUCK VEHICLE ACC/INC	VEHICLE STRUCK CONSIST ACC/INC	*******PART OF TRAIN STRUCK****** LOCO(S)[1]	----QUARTER---- 1	2	3	4	UNKNOWN	******VISIBILITY****** DAWN	DAY	DUSK	DARK
TRAIN (UNITS PULLING)	6969	2380	1610	175	184	117	156	138	293	5403	316	3337
TRAIN (UNITS PUSHING)	623	289	46	117	48	30	33	15	22	430	41	419
TRAIN (STANDING)	1	252	61	30	52	41	50	18	3	32	5	213
CARS (MOVING)	115	95	0	0	3	0	10	82	3	95	6	106
CARS (STANDING)	0	39	0	4	1	0	4	30	1	3	0	35
LIGHT LOCOS[1] (MOVING)	731	265	211	0	0	0	0	54	25	526	41	404
LIGHT LOCOS[1] (STANDING)	0	26	20	0	0	0	0	6	2	7	1	16
OTHER	120	94	31	2	1	3	21	36	4	177	10	23
TOTAL	8559	3440	1979	328	289	191	274	379	353	6673	420	4553

[1] LOCOMOTIVES

TABLE 19. ACCIDENTS/INCIDENTS AND CASUALTIES AT GRADE CROSSINGS INVOLVING MOTOR VEHICLES BY TRAIN SPEED AND TYPE OF TRAIN, 1978

TRAIN SPEED (MPH)	*****FREIGHT*****			****PASSENGER****			YARD/ ****SWITCHING****			[1] ******OTHER******			******TOTAL******		
	ACC/INC	KLD	INJ	ACC/INC	KLD	INJ	ACC/INC	KLD	INJ	ACC/INC	KLD	INJ	ACC/INC	KLD	INJ
STANDING	158	12	73	1	0	0	83	3	36	32	3	16	274	18	125
1-9	1654	17	307	35	0	2	1476	24	267	659	3	120	3824	44	696
10-19	1746	65	606	65	0	13	323	8	78	297	6	102	2431	79	799
20-29	1858	120	818	52	5	20	57	2	28	130	7	61	2097	134	927
30-39	1410	204	659	87	18	40	10	0	4	75	11	43	1582	233	746
40-49	990	214	479	63	12	28	3	3	0	50	11	25	1106	240	532
50-59	308	97	105	60	20	28	1	0	0	13	3	14	382	120	147
60-69	50	13	17	45	11	26	0	0	0	0	0	0	95	24	43
70-79	6	4	3	56	26	35	0	0	0	0	0	0	62	30	38
80-89	0	0	0	2	3	0	0	0	0	0	0	0	2	3	0
90 AND OVER	0	0	0	2	1	0	0	0	0	0	0	0	2	1	0
UNKNOWN	87	2	29	2	0	1	30	1	10	23	0	27	142	3	67
TOTAL	8267	748	3096	470	96	193	1983	41	423	1279	44	408	11999	929	4120

KLD = KILLED
INJ = INJURED

[1] Includes mixed trains, work trains, and light locomotives.

TABLE 20. ACCIDENTS/INCIDENTS AND CASUALTIES AT GRADE CROSSINGS INVOLVING MOTOR VEHICLES BY NUMBER OF CARS IN TRAIN AND TYPE OF TRAIN, 1978

NUMBER OF CARS IN TRAIN	*****FREIGHT*****			****PASSENGER****			YARD/ ****SWITCHING****			1 ******OTHER******			******TOTAL******		
	ACC/INC	KLD	INJ	ACC/INC	KLD	INJ	ACC/INC	KLD	INJ	ACC/INC	KLD	INJ	ACC/INC	KLD	INJ
LOCOMOTIVES ONLY	99	3	34	37	4	20	167	1	31	708	20	207	1011	28	292
1-9	1589	107	595	305	52	139	1068	13	212	315	11	97	3277	183	1043
10-19	914	70	336	105	39	30	405	15	76	44	3	17	1468	127	459
20-29	644	57	233	5	0	1	142	6	48	24	2	6	815	65	288
30-39	532	50	201	4	0	0	80	4	27	12	2	7	628	56	235
40-49	539	62	171	9	1	1	34	0	7	15	0	4	597	63	183
50-59	518	54	196	0	0	0	17	0	6	7	1	3	542	55	205
60-69	536	74	203	0	0	0	12	1	1	6	0	2	554	75	206
70-79	585	69	209	1	0	0	10	1	2	5	0	0	601	70	211
80-89	541	55	203	0	0	0	2	0	0	3	0	4	546	55	207
90-99	503	44	202	0	0	0	6	0	2	4	1	2	513	45	206
100-109	428	37	156	1	0	0	3	0	0	3	1	1	435	38	157
110-119	312	27	119	0	0	0	0	0	0	4	0	1	316	27	120
120-129	209	16	87	0	0	0	0	0	0	1	0	1	210	16	88
130-139	99	9	43	0	0	0	0	0	0	0	0	0	99	9	43
140-149	73	3	50	0	0	0	0	0	0	0	0	0	73	3	50
150 AND OVER	90	7	43	0	0	0	0	0	0	0	0	0	90	7	43
UNKNOWN	56	4	15	3	0	2	37	0	11	128	3	56	224	7	84
TOTAL	8267	748	3096	470	96	193	1983	41	423	1279	44	408	11999	929	4120

KLD = KILLED
INJ = INJURED

[1]Includes mixed trains, work trains, and light locomotives.

TABLE 21. ACCIDENTS/INCIDENTS AND CASUALTIES AT GRADE CROSSINGS INVOLVING MOTOR VEHICLES BY NUMBER OF CARS IN TRAIN, CIRCUMSTANCE, AND VISIBILITY, 1978

NUMBER OF CARS IN TRAIN	VISIBILITY: ******DAWN******* ACC/INC	KLD	INJ	******DAY******* ACC/INC	KLD	INJ	******DUSK******* ACC/INC	KLD	INJ	******DARK******* ACC/INC	KLD	INJ	******TOTAL****** ACC/INC	KLD	INJ
STRUCK BY TRAIN															
LOCOMOTIVES ONLY	18	1	4	400	9	104	31	0	7	279	11	67	728	21	182
1-9	63	1	23	1488	104	444	92	8	32	654	31	198	2297	144	697
10-19	27	0	10	684	66	213	36	6	10	323	29	77	1070	101	310
20-29	17	2	5	317	21	119	19	4	9	180	11	49	533	38	182
30-39	11	1	4	259	28	87	11	0	2	152	7	53	433	36	146
40-49	16	5	9	229	25	61	12	2	4	166	14	49	423	46	123
50-59	11	3	2	225	19	84	17	4	7	139	18	44	392	44	137
60-69	18	1	1	241	43	88	16	4	5	142	14	53	417	62	147
70-79	16	3	6	259	29	101	16	4	7	148	19	45	439	55	159
80-89	18	2	6	246	34	88	10	1	1	143	10	54	417	47	149
90-99	12	0	1	225	14	95	21	2	11	126	13	43	384	29	150
100-109	13	1	4	162	16	70	13	2	4	113	11	39	301	30	117
110-119	5	0	2	121	13	50	9	2	7	102	5	26	237	20	85
120-129	3	0	2	100	8	45	3	0	1	46	4	10	152	12	58
130-139	1	0	0	42	5	26	2	0	0	26	4	9	71	9	35
140-149	1	0	1	27	1	18	2	0	1	18	0	8	48	1	28
150 AND OVER	4	1	2	35	3	24	2	0	0	23	0	4	64	4	30
UNKNOWN	3	0	0	94	4	41	8	0	0	48	3	18	153	7	59
TOTAL	257	21	82	5154	442	1758	320	39	108	2828	204	846	8559	706	2794
RAN INTO TRAIN															
LOCOMOTIVES ONLY	11	1	4	126	0	41	8	0	2	138	6	63	283	7	110
1-9	18	0	8	517	15	186	30	0	10	415	24	142	980	39	346
10-19	4	0	1	194	10	72	9	0	3	191	16	73	398	26	149
20-29	7	0	5	110	14	30	9	0	1	156	13	70	282	27	106
30-39	7	2	3	86	6	29	4	0	1	98	12	56	195	20	89
40-49	6	6	3	65	6	20	3	0	1	100	5	36	174	17	60
50-59	4	0	0	60	4	29	3	0	0	83	7	39	150	11	68
60-69	9	1	4	51	9	29	2	0	0	75	3	26	137	13	59
70-79	7	1	5	69	8	21	7	0	2	79	6	24	162	15	52
80-89	4	1	0	42	0	12	4	0	5	79	7	41	129	8	58
90-99	4	0	2	47	5	23	2	2	0	76	9	31	129	16	56
100-109	6	0	1	43	1	16	7	2	1	78	5	22	134	8	40
110-119	3	0	0	29	1	7	1	1	0	46	5	28	79	7	35
120-129	1	0	0	19	0	4	1	0	1	37	4	25	58	4	30
130-139	0	0	0	9	0	1	1	0	0	18	0	7	28	0	8
140-149	2	0	2	8	1	10	3	0	2	12	1	8	25	2	22
150 AND OVER	0	0	0	5	1	4	1	0	0	20	2	9	26	3	13
UNKNOWN	3	0	2	39	0	9	5	0	7	24	0	7	71	0	25
TOTAL	96	12	40	1519	81	543	100	5	36	1725	125	707	3440	223	1326

TABLE 21. (CONT.)

VISIBILITY

NUMBER OF CARS IN TRAIN	******DAWN*******			*******DAY*******			******DUSK*******			******DARK*******			******TOTAL******		
	ACC/INC	KLD	INJ	ACC/INC	KLD	INJ	ACC/INC	KLD	INJ	ACC/INC	KLD	INJ	ACC/INC	KLD	INJ
GRAND TOTAL															
LOCOMOTIVES ONLY	29	2	8	526	9	145	39	0	9	417	17	130	1011	28	292
1-9	81	1	31	2005	119	630	122	8	42	1069	55	340	3277	183	1043
10-19	31	0	11	878	76	285	45	6	13	514	45	150	1468	127	459
20-29	24	2	10	427	35	149	28	4	10	336	24	119	815	65	288
30-39	18	3	7	345	34	116	15	0	3	250	19	109	628	56	235
40-49	22	11	12	294	31	81	15	2	5	266	19	85	597	63	183
50-59	15	3	2	285	23	113	20	4	7	222	25	83	542	55	205
60-69	27	2	5	292	52	117	18	4	5	217	17	79	554	75	206
70-79	23	4	11	328	37	122	23	4	9	227	25	69	601	70	211
80-89	22	3	6	288	34	100	14	1	6	222	17	95	546	55	207
90-99	16	0	3	272	19	118	23	4	11	202	22	74	513	45	206
100-109	19	1	5	205	17	86	20	4	5	191	16	61	435	38	157
110-119	8	0	2	150	14	57	10	3	7	148	10	54	316	27	120
120-129	4	0	2	119	8	49	4	0	2	83	8	35	210	16	88
130-139	1	0	0	51	5	27	3	0	0	44	4	16	99	9	43
140-149	3	0	3	35	2	28	5	0	3	30	1	16	73	3	50
150 AND OVER	4	1	2	40	4	28	3	0	0	43	2	13	90	7	43
UNKNOWN	6	0	2	133	4	50	13	0	7	72	3	25	224	7	84
TOTAL	353	33	122	6673	523	2301	420	44	144	4553	329	1553	11999	929	4120

KLD = KILLED
INJ = INJURED

TABLE 22. ACCIDENTS/INCIDENTS AND CASUALTIES AT GRADE CROSSINGS INVOLVING MOTOR VEHICLES BY TRACK TYPE AND TRACK CLASS, 1978

	TRACK TYPE																	
TRACK CLASS	******MAIN*******			******YARD*******			*****SIDING******			****INDUSTRY*****			*****UNKNOWN*****			******TOTAL******		
	ACC/INC	KLD	INJ	ACC/INC	KLD	INJ	ACC/INC	KLD	INJ	ACC/INC	KLD	INJ	ACC/INC	KLD	INJ	ACC/INC	KLD	INJ
1	1439	33	356	721	14	137	134	1	30	423	7	88	5	0	0	2722	55	611
2	2491	104	819	179	5	56	33	1	9	81	1	16	9	0	1	2793	111	901
3	3117	326	1265	43	3	13	13	0	1	20	0	6	8	0	3	3201	329	1288
4	2672	369	1110	25	0	4	14	0	5	25	1	9	1	0	0	2737	370	1128
5	258	49	112	0	0	0	0	0	0	0	0	0	0	0	0	258	49	112
6	17	6	11	0	0	0	0	0	0	0	0	0	0	0	0	17	6	11
UNKNOWN	120	4	30	94	4	28	16	0	1	38	1	9	3	0	1	271	9	69
TOTAL	10114	891	3703	1062	26	238	210	2	46	587	10	128	26	0	5	11999	929	4120

KLD = KILLED
INJ = INJURED

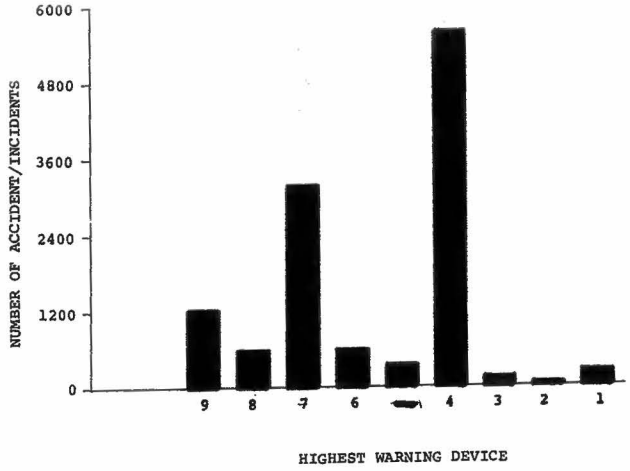
1.5 WARNING DEVICE DATA

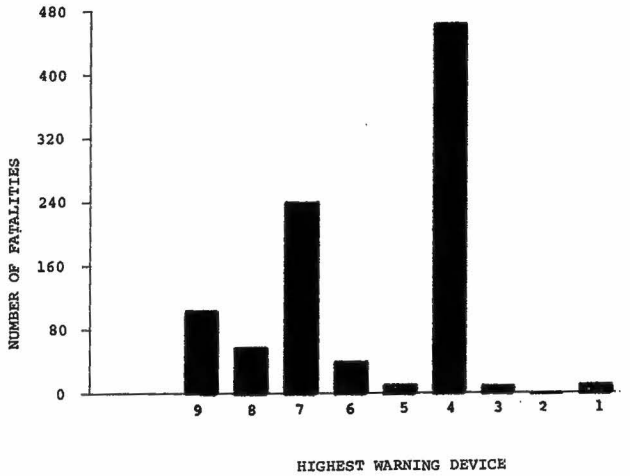
TABLE 23. ACCIDENTS/INCIDENTS AND CASUALTIES AT GRADE CROSSINGS INVOLVING MOTOR VEHICLES BY HIGHEST WARNING DEVICE AND MOTORIST ACTION, 1978

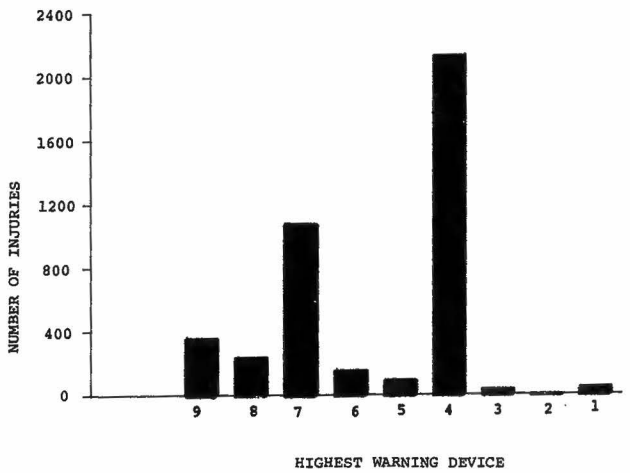
HIGHEST WARNING DEVICE [1]	DROVE AROUND OR **THRU GATE**			STOPPED AND THEN **PROCEEDED**			DID NOT ****STOP*****			****OTHER****			***UNKNOWN***			****TOTAL****		
	ACC/INC	KLD	INJ	ACC/INC	KLD	INJ	ACC/INC	KLD	INJ	ACC/INC	KLD	INJ	ACC/INC	KLD	INJ	ACC/INC	KLD	INJ
GATES	596	71	201	36	1	5	153	14	89	339	12	44	109	5	17	1233	103	356
CANTILEVERED FLASHING LIGHTS	0	0	0	28	7	11	381	42	188	142	5	20	41	3	20	592	57	239
STANDARD FLASHING LIGHTS	0	0	0	270	18	71	2019	191	857	746	20	112	152	10	35	3187	239	1075
HIGHWAY SIGNALS WIGWAGS OR BELLS	0	0	0	41	5	12	353	29	100	102	0	16	103	5	24	599	39	152
SPECIAL WARNING DEVICES	0	0	0	34	0	4	241	8	79	54	2	8	25	0	1	354	10	92
CROSSBUCKS	0	0	0	268	25	97	3665	373	1622	1280	40	274	378	25	138	5591	463	2131
STOP SIGNS	0	0	0	6	0	1	75	8	13	31	0	2	37	0	12	149	8	28
OTHER SIGNS	0	0	0	0	0	0	30	0	3	16	0	0	6	0	0	52	0	3
NO SIGNS OR SIGNALS	0	0	0	14	0	5	126	8	20	82	1	15	20	1	4	242	10	44
TOTAL	596	71	201	697	56	206	7043	673	2971	2792	80	491	871	49	251	11999	929	4120

KLD = KILLED
INJ = INJURED

1 See Appendix A for definition of highest warning device.







HIGHEST WARNING DEVICE [1]

9 GATES
8 CANTILEVERED FLASHING LIGHTS
7 STANDARD FLASHING LIGHTS
6 HIGHWAY SIGNALS, WIGWAGS, OR BELLS
5 SPECIAL WARNING DEVICES
4 CROSSBUCKS
3 STOP SIGNS
2 OTHER SIGNS
1 NO SIGNS OR SIGNALS

[1] See Appendix A for definition of highest warning device.

FIGURE 7. ACCIDENTS/INCIDENTS AND CASUALTIES AT GRADE CROSSINGS INVOLVING MOTOR VEHICLES BY HIGHEST WARNING DEVICE, 1978

TABLE 24. ACCIDENTS/INCIDENTS AT GRADE CROSSINGS INVOLVING MOTOR VEHICLES BY TYPE AND OPERATIONAL STATUS OF WARNING DEVICE, CIRCUMSTANCE, AND VISIBILITY, 1978

HIGHEST WARNING DEVICE [1]	*DEVICES OPERATING* YES	NO	NOT REPORTED	********CIRCUMSTANCE******** ----STRUCK BY TRAIN---- DAWN	DAY	DUSK	DARK	-----RAN INTO TRAIN----- DAWN	DAY	DUSK	DARK
GATES	1173	31	29	39	459	35	430	11	85	6	168
FLASHING LIGHTS	3688	37	54	80	1601	92	874	33	537	31	531
HIGHWAY SIGNALS WIGWAGS OR BELLS	498	19	82	10	263	17	134	6	72	7	90
SPECIAL WARNING DEVICES	0	0	354	5	78	11	95	1	40	5	119
CROSSBUCKS	0	0	5591	117	2517	153	1194	44	751	44	771
STOP SIGNS	0	0	149	2	78	5	23	1	14	2	24
OTHER SIGNS	0	0	52	1	28	1	13	0	3	0	6
NO SIGNS OR SIGNALS	0	0	242	3	130	6	65	0	17	5	16
TOTAL	5359	87	6553	257	5154	320	2828	96	1519	100	1725

[1] See Appendix A for definition of highest warning device.

TABLE 25. ACCIDENTS/INCIDENTS AND CASUALTIES AT GRADE CROSSINGS INVOLVING MOTOR VEHICLES DURING DUSK AND DARK HOURS BY ILLUMINATION OF CROSSING AND CIRCUMSTANCE, 1978

CROSSING ILLUMINATION	CIRCUMSTANCE								
	STRUCK BY TRAIN			***RAN INTO TRAIN**			*******TOTAL*******		
	ACC/INC	KLD	INJ	ACC/INC	KLD	INJ	ACC/INC	KLD	INJ
LIGHTED	1148	92	325	659	38	236	1807	130	561
NOT LIGHTED	1291	100	401	767	66	329	2058	166	730
NOT REPORTED	709	51	228	399	26	178	1108	77	406
TOTAL	3148	243	954	1825	130	743	4973	373	1697

KLD = KILLED
INJ = INJURED

TABLE 26. ACCIDENTS/INCIDENTS AT GRADE CROSSINGS INVOLVING MOTOR VEHICLES BY LOCATION AND TYPE OF WARNING DEVICE, CIRCUMSTANCE, AND VISIBILITY, 1978

LOCATION AND TYPE OF WARNING DEVICE AND CIRCUMSTANCE	VISIBILITY														
	******DAWN*******			*******DAY*******			******DUSK*******			******DARK*******			******TOTAL******		
	ACC/INC	KLD	INJ	ACC/INC	KLD	INJ	ACC/INC	KLD	INJ	ACC/INC	KLD	INJ	ACC/INC	KLD	INJ
S T R U C K B Y T R A I N															
AUTOMATIC,[1] BOTH SIDES	122	11	35	2197	175	671	135	11	43	1377	120	430	3831	317	1179
AUTOMATIC, SIDE OF APPROACH	6	0	2	93	3	23	8	0	2	48	2	9	155	5	36
AUTOMATIC, OPPOSITE SIDE	0	0	0	26	0	8	0	0	0	10	0	2	36	0	10
AUTOMATIC, SIDE NOT REPORTED	1	0	0	7	0	2	1	0	0	3	0	0	12	0	2
MANUAL,[1] BOTH SIDES	5	0	0	30	1	5	3	0	1	42	1	9	80	2	15
MANUAL, SIDE OF APPROACH	0	0	0	37	0	3	6	0	1	42	0	9	85	0	13
MANUAL, OPPOSITE SIDE	0	0	0	6	0	1	0	0	0	3	0	0	9	0	1
MANUAL, SIDE NOT REPORTED	0	0	0	5	0	0	2	0	0	8	0	0	15	0	0
OTHER,[1] BOTH SIDES	89	9	30	1988	185	774	121	18	40	977	65	311	3175	277	1155
OTHER, SIDE OF APPROACH	26	1	12	478	54	183	29	9	11	200	11	48	733	75	254
OTHER, OPPOSITE SIDE	3	0	2	138	19	55	7	1	9	45	1	18	193	21	84
OTHER, SIDE NOT REPORTED	2	0	0	19	0	5	2	0	1	8	0	3	31	0	9
NO SIGNS OR SIGNALS	3	0	1	130	5	28	6	0	0	65	4	7	204	9	36
TOTAL	257	21	82	5154	442	1758	320	39	108	2828	204	846	8559	706	2794
R A N I N T O T R A I N															
AUTOMATIC, BOTH SIDES	45	3	20	644	41	235	43	4	15	740	63	293	1472	111	563
AUTOMATIC, SIDE OF APPROACH	5	0	0	39	1	11	1	0	1	41	4	13	86	5	25
AUTOMATIC, OPPOSITE SIDE	0	0	0	9	0	4	0	0	0	6	0	1	15	0	5
AUTOMATIC, SIDE NOT REPORTED	0	0	0	2	0	1	0	0	0	2	0	1	4	0	2
MANUAL, BOTH SIDES	0	0	0	9	0	2	2	0	0	41	5	24	52	5	26
MANUAL, SIDE OF APPROACH	1	0	1	24	0	7	3	0	1	63	2	27	91	2	36
MANUAL, OPPOSITE SIDE	0	0	0	3	0	0	0	0	0	9	1	1	12	1	1
MANUAL, SIDE NOT REPORTED	0	0	0	4	0	0	0	0	0	6	0	0	10	0	0
OTHER, BOTH SIDES	39	8	17	603	32	215	39	1	17	658	37	273	1339	78	522
OTHER, SIDE OF APPROACH	5	1	1	135	7	57	7	0	2	116	4	62	263	12	122
OTHER, OPPOSITE SIDE	0	0	0	26	0	6	0	0	0	25	8	5	51	8	11
OTHER, SIDE NOT REPORTED	1	0	1	4	0	2	0	0	0	2	0	2	7	0	5
NO SIGNS OR SIGNALS	0	0	0	17	0	3	5	0	0	16	1	5	38	1	8
TOTAL	96	12	40	1519	81	543	100	5	36	1725	125	707	3440	223	1326

TABLE 26. (CONT.)

LOCATION AND TYPE OF WARNING DEVICE AND CIRCUMSTANCE	VISIBILITY														
	******DAWN*******			*******DAY*******			******DUSK*******			******DARK*******			******TOTAL******		
	ACC/INC	KLD	INJ	ACC/INC	KLD	INJ	ACC/INC	KLD	INJ	ACC/INC	KLD	INJ	ACC/INC	KLD	INJ
G R A N D T O T A L															
AUTOMATIC, BOTH SIDES	167	14	55	2841	216	906	178	15	58	2117	183	723	5303	428	1742
AUTOMATIC, SIDE OF APPROACH	11	0	2	132	4	34	9	0	3	89	6	22	241	10	61
AUTOMATIC, OPPOSITE SIDE	0	0	0	35	0	12	0	0	0	16	0	3	51	0	15
AUTOMATIC, SIDE NOT REPORTED	1	0	0	9	0	3	1	0	0	5	0	1	16	0	4
MANUAL, BOTH SIDES	5	0	0	39	1	7	5	0	1	83	6	33	132	7	41
MANUAL, SIDE OF APPROACH	1	0	1	61	0	10	9	0	2	105	2	36	176	2	49
MANUAL, OPPOSITE SIDE	0	0	0	9	0	1	0	0	0	12	1	1	21	1	2
MANUAL, SIDE NOT REPORTED	0	0	0	9	0	0	2	0	0	14	0	0	25	0	0
OTHER, BOTH SIDES	128	17	47	2591	217	989	160	19	57	1635	102	584	4514	355	1677
OTHER, SIDE OF APPROACH	31	2	13	613	61	240	36	9	13	316	15	110	996	87	376
OTHER, OPPOSITE SIDE	3	0	2	164	19	61	7	1	9	70	9	23	244	29	95
OTHER, SIDE NOT REPORTED	3	0	1	23	0	7	2	0	1	10	0	5	38	0	14
NO SIGNS OR SIGNALS	3	0	1	147	5	31	11	0	0	81	5	12	242	10	44
TOTAL	353	33	122	6673	523	2301	420	44	144	4553	329	1553	11999	929	4120

1
Automatic devices include gates, flashing lights, highway signals, wigwags, and bells which are train activated.
Manual devices include "watchman" and "flagged by crew."
Other devices include crossbucks, stop signs, etc.

KLD = KILLED
INJ = INJURED

1.6 TIME, DAY, AND WEATHER DATA

TABLE 27. ACCIDENTS/INCIDENTS AND CASUALTIES AT GRADE CROSSINGS INVOLVING MOTOR VEHICLES BY VISIBILITY AND CIRCUMSTANCE, 1978

	CIRCUMSTANCE								
	STRUCK BY TRAIN			***RAN INTO TRAIN**			*******TOTAL*******		
VISIBILITY	ACC/INC	KLD	INJ	ACC/INC	KLD	INJ	ACC/INC	KLD	INJ
DAWN	257	21	82	96	12	40	353	33	122
DAY	5154	442	1758	1519	81	543	6673	523	2301
DUSK	320	39	108	100	5	36	420	44	144
DARK	2828	204	846	1725	125	707	4553	329	1553
TOTAL	8559	706	2794	3440	223	1326	11999	929	4120

KLD = KILLED
INJ = INJURED

TABLE 28. ACCIDENTS/INCIDENTS AND CASUALTIES AT GRADE CROSSINGS INVOLVING MOTOR VEHICLES BY TIME OF DAY AND CIRCUMSTANCE, 1978

HOUR	CIRCUMSTANCE								
	STRUCK BY TRAIN			***RAN INTO TRAIN**			*******TOTAL*******		
	ACC/INC	KLD	INJ	ACC/INC	KLD	INJ	ACC/INC	KLD	INJ
MIDNIGHT TO 12:59 AM	257	20	79	185	17	87	442	37	166
1 TO 1:59 AM	216	14	61	180	22	81	396	36	142
2 TO 2:59 AM	188	12	42	194	11	96	382	23	138
3 TO 3:59 AM	107	4	17	108	8	55	215	12	72
4 TO 4:59 AM	98	9	17	56	4	24	154	13	41
5 TO 5:59 AM	123	10	37	78	13	26	201	23	63
6 TO 6:59 AM	251	18	76	109	3	36	360	21	112
7 TO 7:59 AM	376	37	148	112	6	51	488	43	199
8 TO 8:59 AM	370	37	115	123	6	40	493	43	155
9 TO 9:59 AM	424	32	126	138	6	49	562	38	175
10 TO 10:59 AM	399	47	155	137	2	47	536	49	202
11 TO 11:59 AM	476	47	154	129	9	40	605	56	194
NOON TO 12:59 PM	447	30	177	135	4	54	582	34	231
1 TO 1:59 PM	457	39	175	121	8	35	578	47	210
2 TO 2:59 PM	511	45	173	144	8	35	655	53	208
3 TO 3:59 PM	578	38	195	160	11	60	738	49	255
4 TO 4:59 PM	549	41	153	140	3	42	689	44	195
5 TO 5:59 PM	542	40	166	148	7	76	690	47	242
6 TO 6:59 PM	478	37	174	190	14	76	668	51	250
7 TO 7:59 PM	392	40	136	192	9	66	584	49	202
8 TO 8:59 PM	351	26	107	149	16	51	500	42	158
9 TO 9:59 PM	374	40	131	179	12	75	553	52	206
10 TO 10:59 PM	319	19	92	155	10	56	474	29	148
11 TO 11:59 PM	276	24	88	178	14	68	454	38	156
TOTAL	8559	706	2794	3440	223	1326	11999	929	4120

KLD = KILLED
INJ = INJURED

TABLE 29. ACCIDENTS/INCIDENTS AND CASUALTIES AT GRADE CROSSINGS INVOLVING MOTOR VEHICLES BY DAY OF WEEK AND CIRCUMSTANCE, 1978

	CIRCUMSTANCE								
	STRUCK BY TRAIN			***RAN INTO TRAIN**			*******TOTAL*******		
DAY	ACC/INC	KLD	INJ	ACC/INC	KLD	INJ	ACC/INC	KLD	INJ
SUNDAY	723	83	289	315	28	162	1038	111	451
MONDAY	1263	91	404	425	24	158	1688	115	562
TUESDAY	1278	98	387	516	36	194	1794	134	581
WEDNESDAY	1354	89	442	516	30	180	1870	119	622
THURSDAY	1324	95	377	558	28	174	1882	123	551
FRIDAY	1452	102	433	615	37	236	2067	139	669
SATURDAY	1165	148	462	495	40	222	1660	188	684
TOTAL	8559	706	2794	3440	223	1326	11999	929	4120

KLD = KILLED
INJ = INJURED

TABLE 30. ACCIDENTS/INCIDENTS AND CASUALTIES AT GRADE CROSSINGS INVOLVING MOTOR VEHICLES BY MONTH AND CIRCUMSTANCE, 1978

MONTH	CIRCUMSTANCE **STRUCK BY TRAIN** ACC/INC	KLD	INJ	***RAN INTO TRAIN** ACC/INC	KLD	INJ	*******TOTAL******* ACC/INC	KLD	INJ
JANUARY	949	77	287	408	14	138	1357	91	425
FEBRUARY	817	55	276	331	20	96	1148	75	372
MARCH	675	65	226	276	12	114	951	77	340
APRIL	574	41	193	221	14	84	795	55	277
MAY	614	56	201	211	10	112	825	66	313
JUNE	598	55	226	224	24	76	822	79	302
JULY	590	46	199	241	26	91	831	72	290
AUGUST	649	48	178	235	24	97	884	72	275
SEPTEMBER	582	48	175	221	14	87	803	62	262
OCTOBER	792	78	266	316	24	139	1108	102	405
NOVEMBER	778	69	242	317	15	109	1095	84	351
DECEMBER	941	68	325	439	26	183	1380	94	508
TOTAL	8559	706	2794	3440	223	1326	11999	929	4120

KLD = KILLED

INJ = INJURED

TABLE 31. ACCIDENTS/INCIDENTS AT GRADE CROSSINGS INVOLVING MOTOR VEHICLES BY WEATHER CONDITIONS, CIRCUMSTANCE, AND VISIBILITY, 1978

	CIRCUMSTANCE								
	STRUCK BY TRAIN*				****RAN INTO TRAIN****				TOTAL
WEATHER	DAWN	DAY	DUSK	DARK	DAWN	DAY	DUSK	DARK	ACC/INC
CLEAR	137	3579	188	1680	50	1003	64	1041	7742
CLOUDY	65	1067	73	618	23	304	18	355	2523
RAIN	12	306	36	311	10	118	12	158	963
FOG	21	40	8	58	7	20	0	68	222
SLEET	3	7	1	13	2	4	0	10	40
SNOW	19	148	14	134	4	68	6	89	482
NOT REPORTED	0	7	0	14	0	2	0	4	27
TOTAL	257	5154	320	2828	96	1519	100	1725	11999

1.7 MOTORIST ACTION DATA

TABLE 32. ACCIDENTS/INCIDENTS AT GRADE CROSSINGS INVOLVING MOTOR VEHICLES BY MOTORIST ACTION (OBSTRUCTION OF VIEW), CIRCUMSTANCE, AND VISIBILITY, 1978

OBSTRUCTION OF VIEW	CIRCUMSTANCE: ***STRUCK BY TRAIN****				****RAN INTO TRAIN****				********TOTAL*********			
	DAWN	DAY	DUSK	DARK	DAWN	DAY	DUSK	DARK	DAWN	DAY	DUSK	DARK
PERMANENT STRUCTURE	11	242	15	80	4	56	2	39	15	298	17	119
STANDING RR EQUIPMENT	1	65	5	14	3	10	1	10	4	75	6	24
PASSING TRAIN	2	23	3	14	1	1	0	5	3	24	3	19
TOPOGRAPHY	0	75	3	10	0	14	1	15	0	89	4	25
VEGETATION	3	151	6	28	1	74	3	11	4	225	9	39
HIGHWAY VEHICLE	0	29	1	2	0	11	0	4	0	40	1	6
OTHER	4	51	3	27	4	19	0	13	8	70	3	40
NOT OBSTRUCTED	236	4508	284	2650	83	1329	93	1625	319	5837	377	4275
UNKNOWN	0	10	0	3	0	5	0	3	0	15	0	6
TOTAL	257	5154	320	2828	96	1519	100	1725	353	6673	420	4553

TABLE 33. ACCIDENTS/INCIDENTS AT GRADE CROSSINGS INVOLVING MOTOR VEHICLES BY MOTORIST ACTION (STRUCK BY SECOND TRAIN OR PASSED STANDING HIGHWAY VEHICLE) AND TYPE OF VEHICLE, 1978

TYPE OF VEHICLE	MOTORIST ACTION: STRUCK BY SECOND TRAIN			MOTORIST ACTION: PASSED STANDING VEHCILE		
	YES	NO	UNKNOWN	YES	NO	UNKNOWN
AUTOMOBILE	154	8135	145	261	7234	939
TRUCK	41	2446	51	62	2247	229
TRUCK TRAILER	20	891	13	24	827	73
BUS	1	10	1	0	11	1
SCHOOL BUS	1	10	0	0	11	0
MOTORCYCLE	1	77	2	2	65	13
TOTAL	218	11569	212	349	10395	1255

2.0 RAIL-HIGHWAY CROSSING ACCIDENT RATES

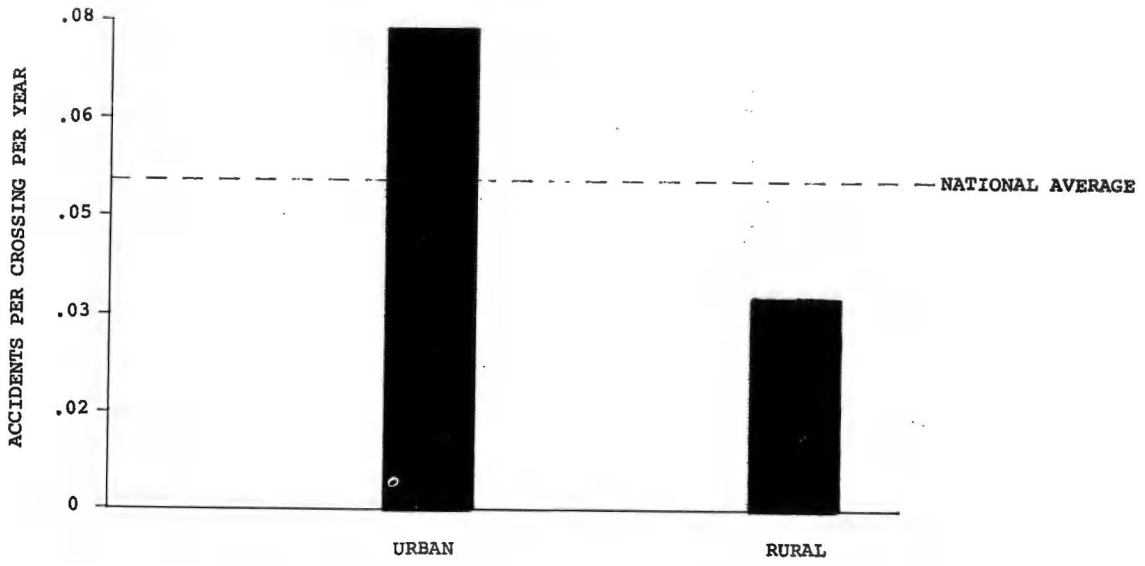


FIGURE 8. CROSSING ACCIDENT RATE BY LOCATION (URBAN/RURAL), 1978

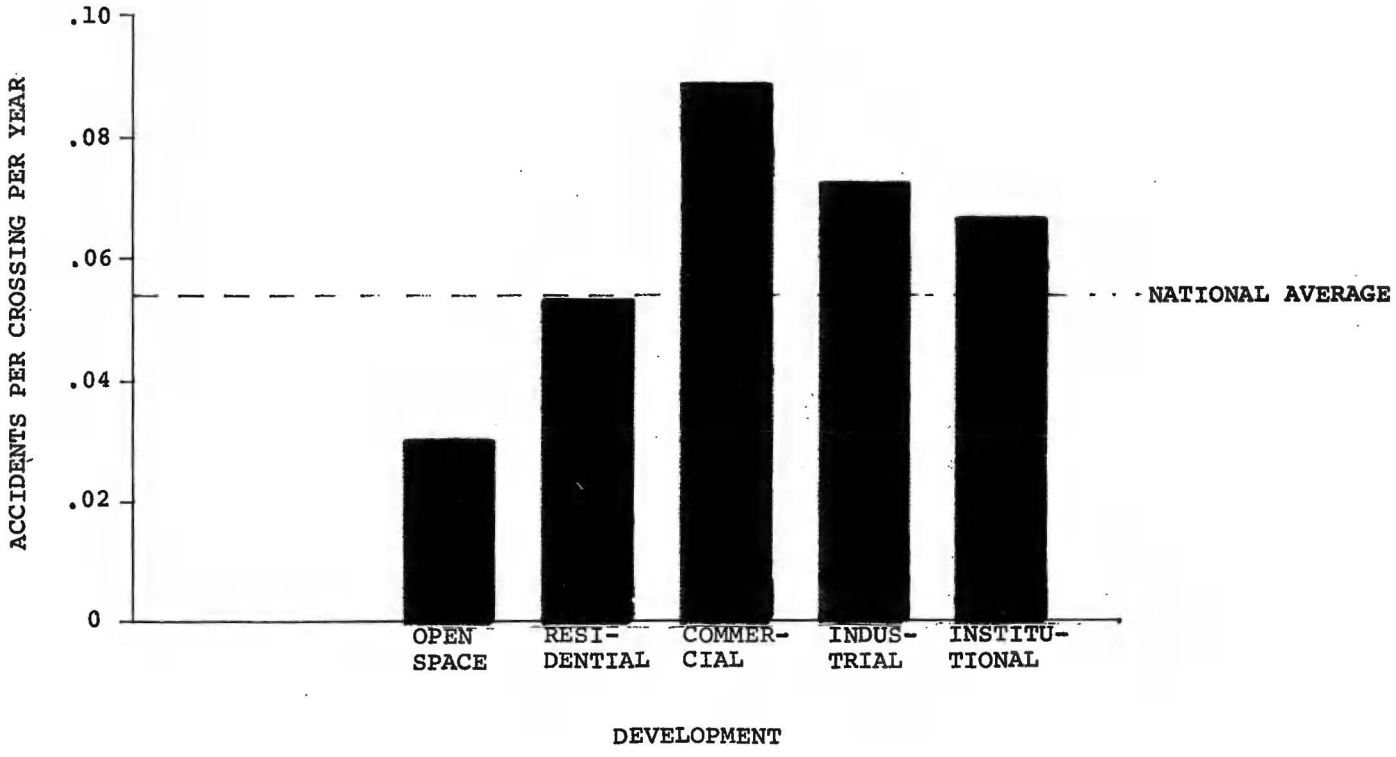


FIGURE 9. CROSSING ACCIDENT RATE BY TYPE OF DEVELOPMENT, 1978

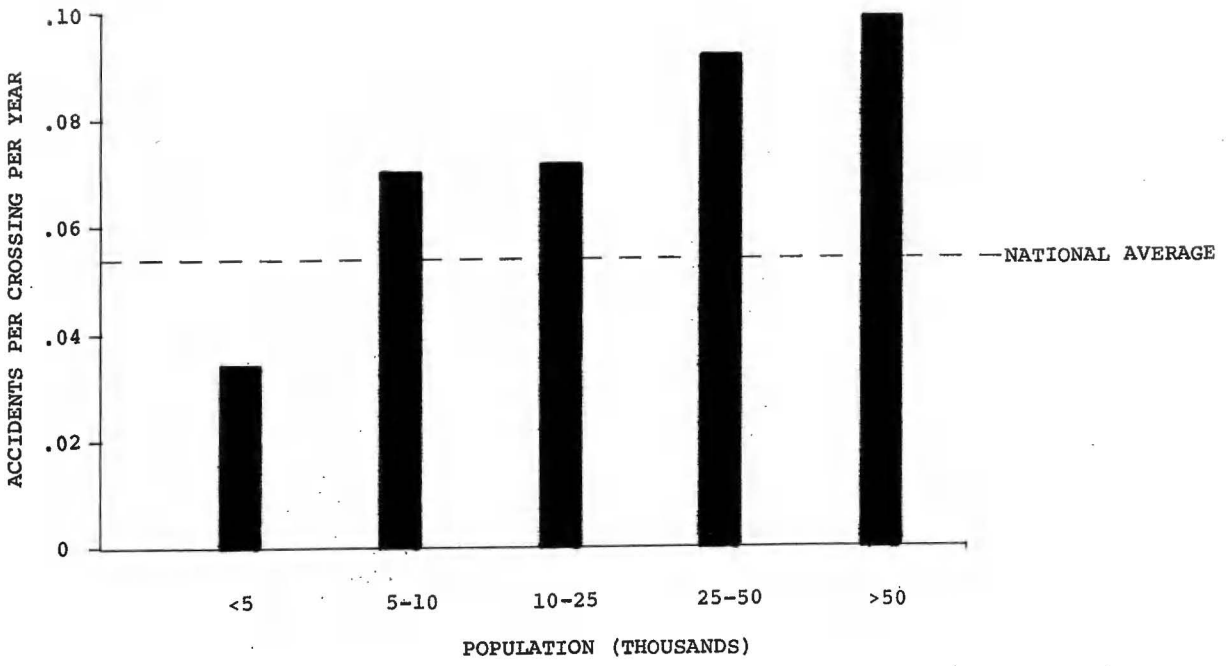


FIGURE 10. CROSSING ACCIDENT RATE BY POPULATION, 1978

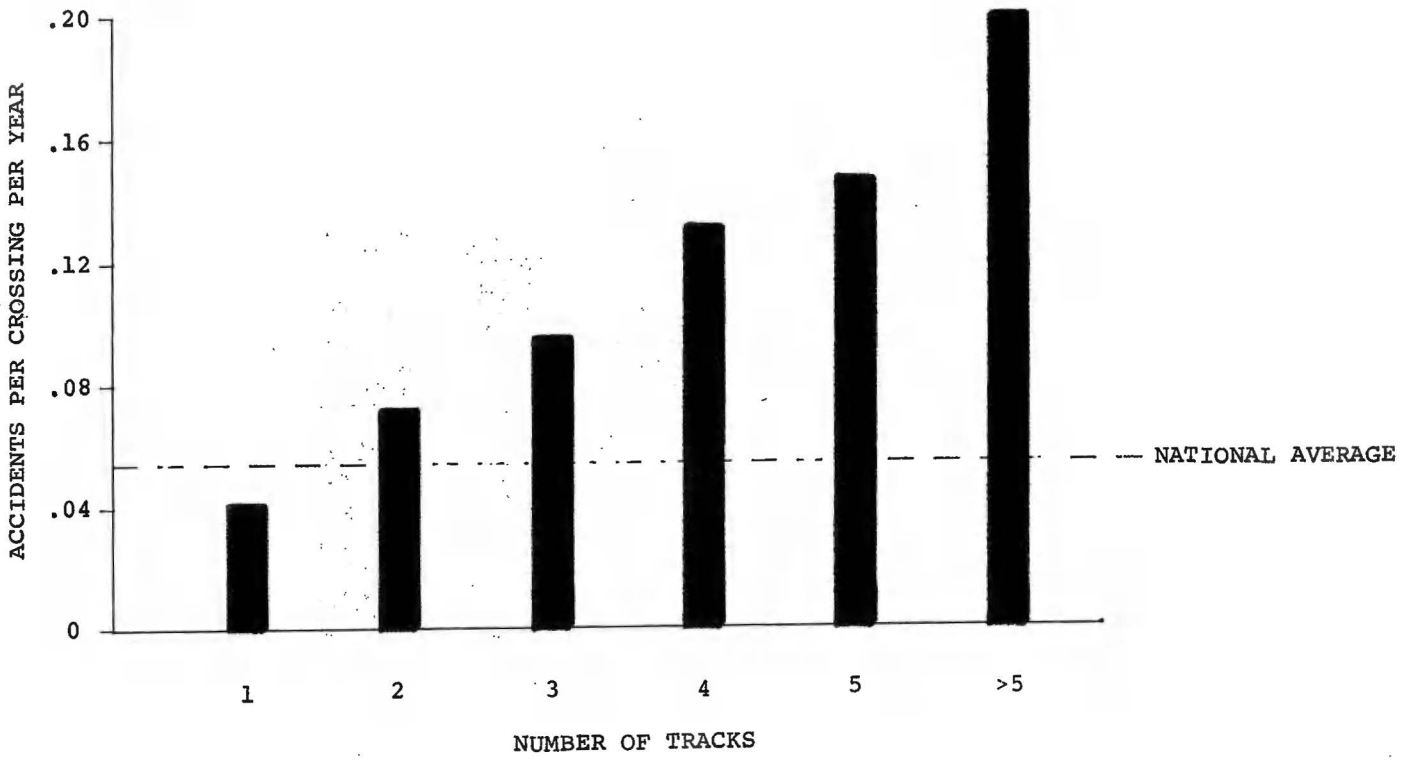


FIGURE 11. CROSSING ACCIDENT RATE BY NUMBER OF TRACKS, 1978

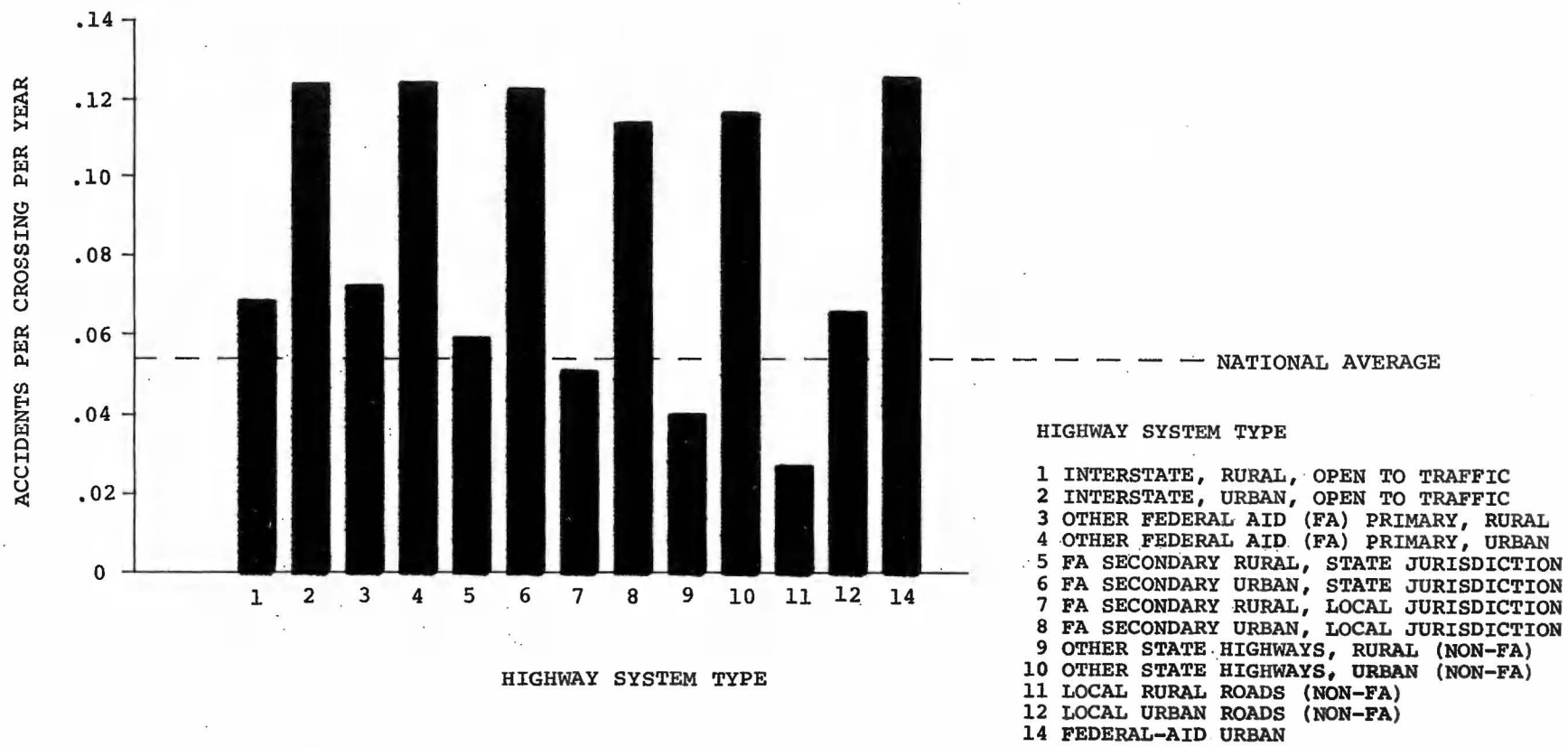


FIGURE 12. CROSSING ACCIDENT RATE BY HIGHWAY SYSTEM, 1978

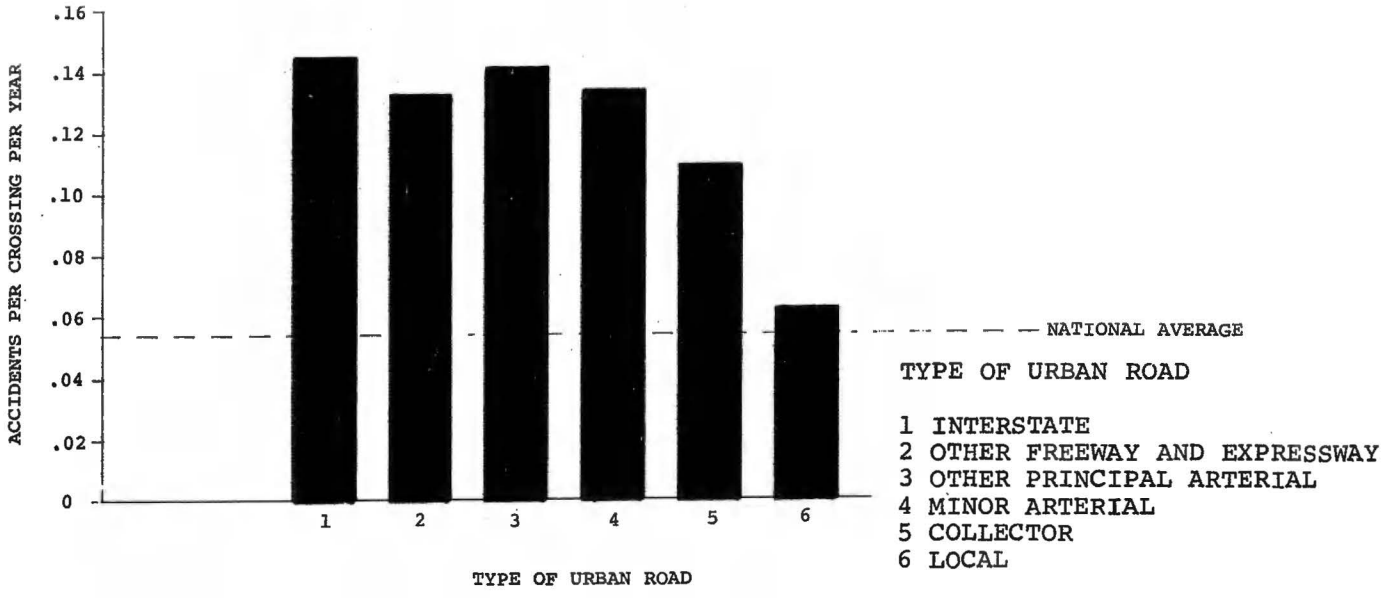


FIGURE 13. CROSSING ACCIDENT RATE BY TYPE OF URBAN ROAD, 1978

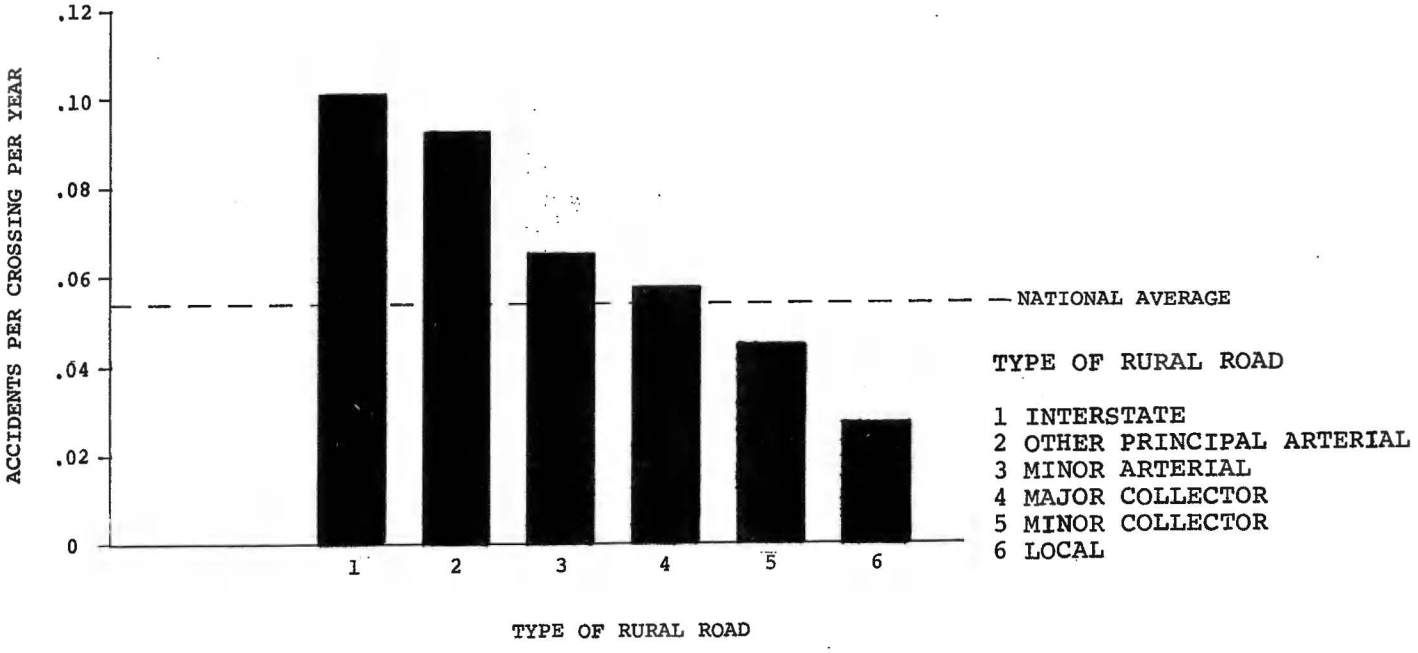


FIGURE 14. CROSSING ACCIDENT RATE BY TYPE OF RURAL ROAD, 1978

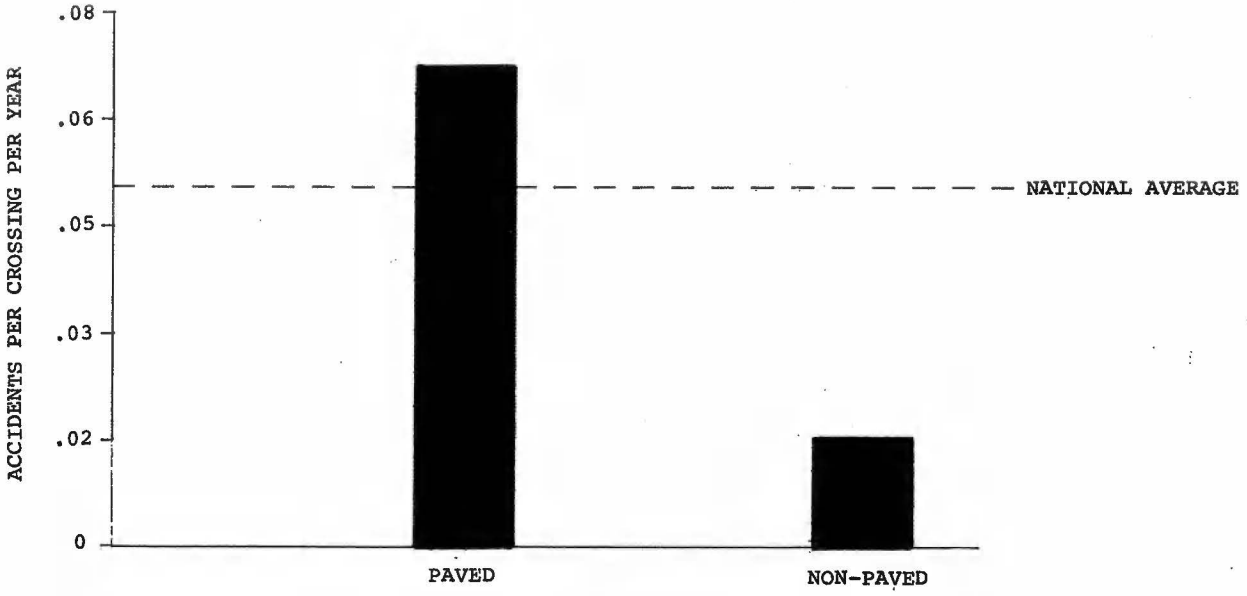


FIGURE 15. CROSSING ACCIDENT RATE BY PAVED OR NON-PAVED ROAD SURFACE, 1978

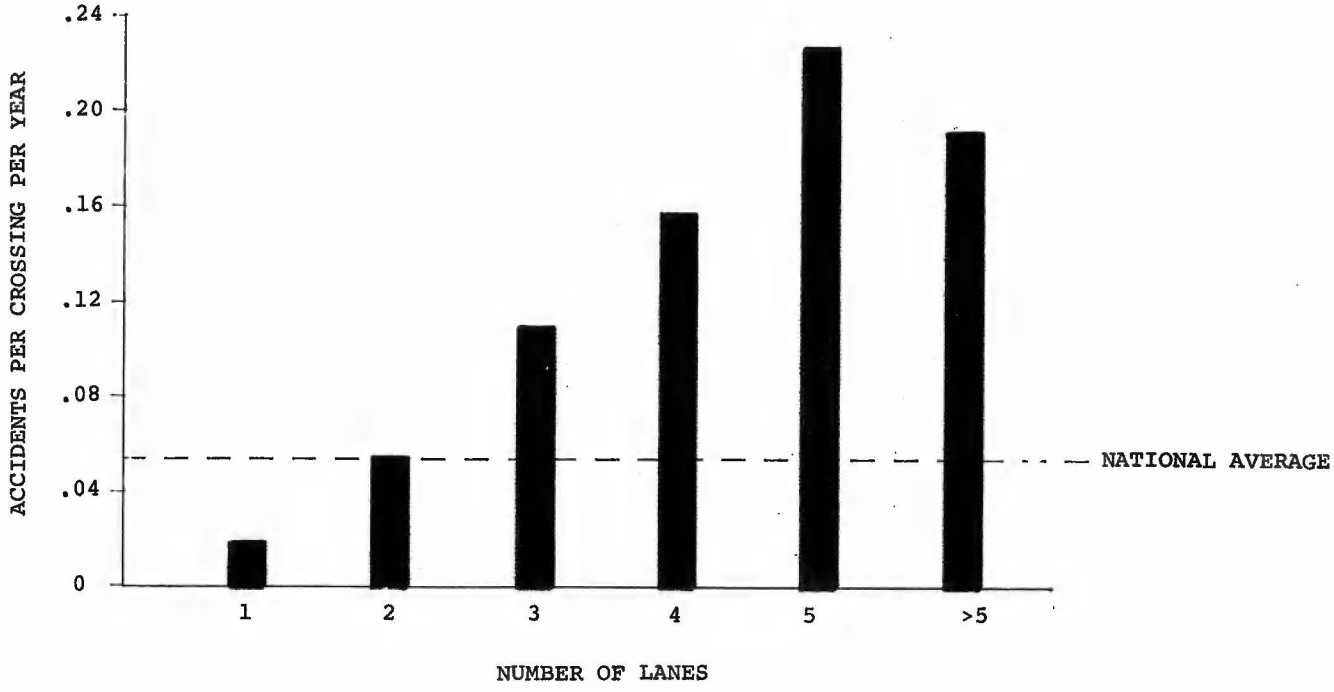


FIGURE 16. CROSSING ACCIDENT RATE BY NUMBER OF TRAFFIC LANES, 1978

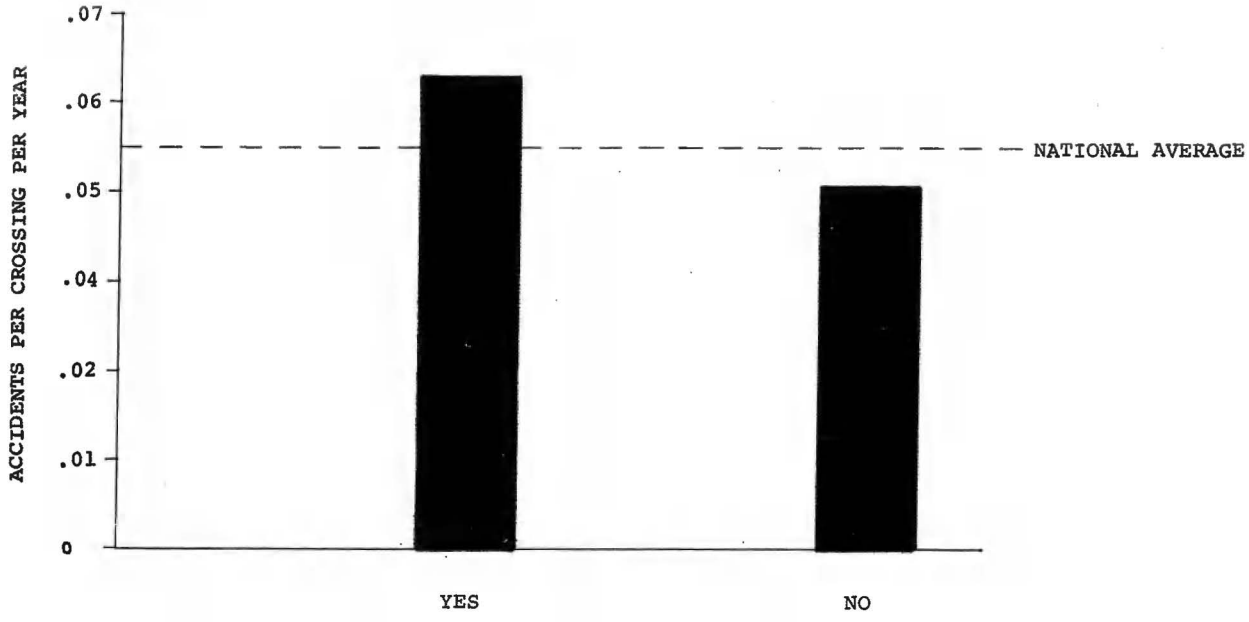


FIGURE 17. CROSSING ACCIDENT RATE BY NEARBY INTERSECTING HIGHWAY, 1978

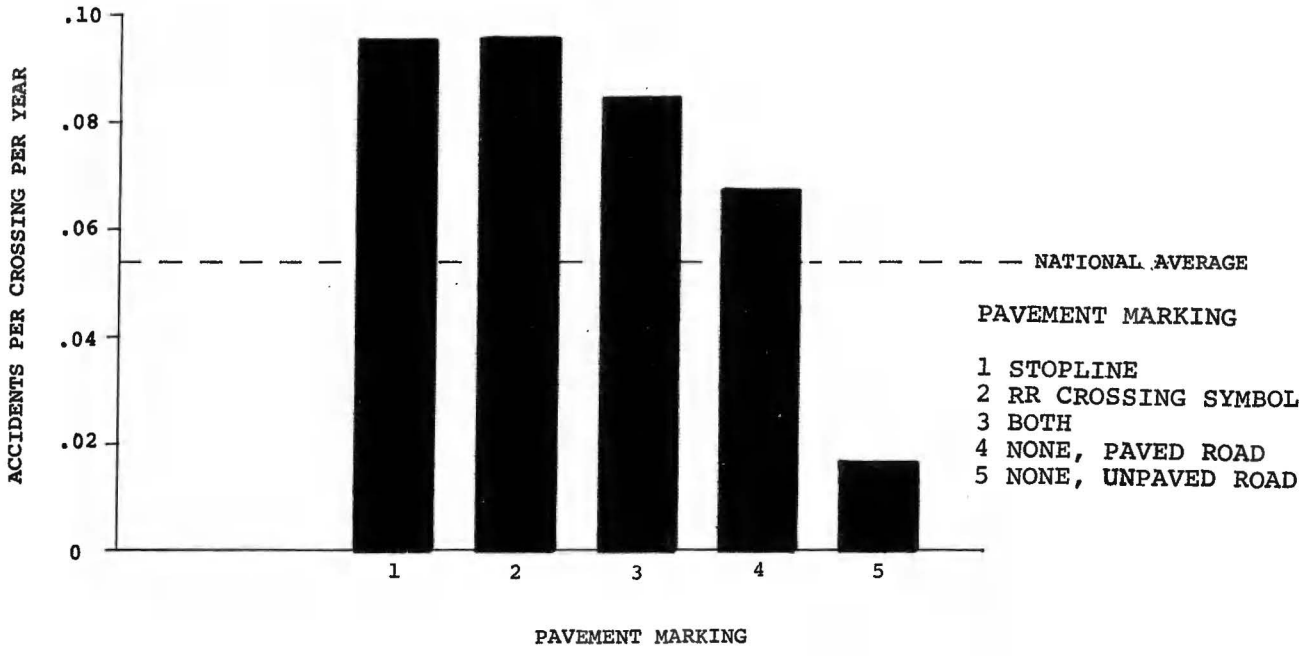


FIGURE 18. CROSSING ACCIDENT RATE BY PAVEMENT MARKINGS, 1978

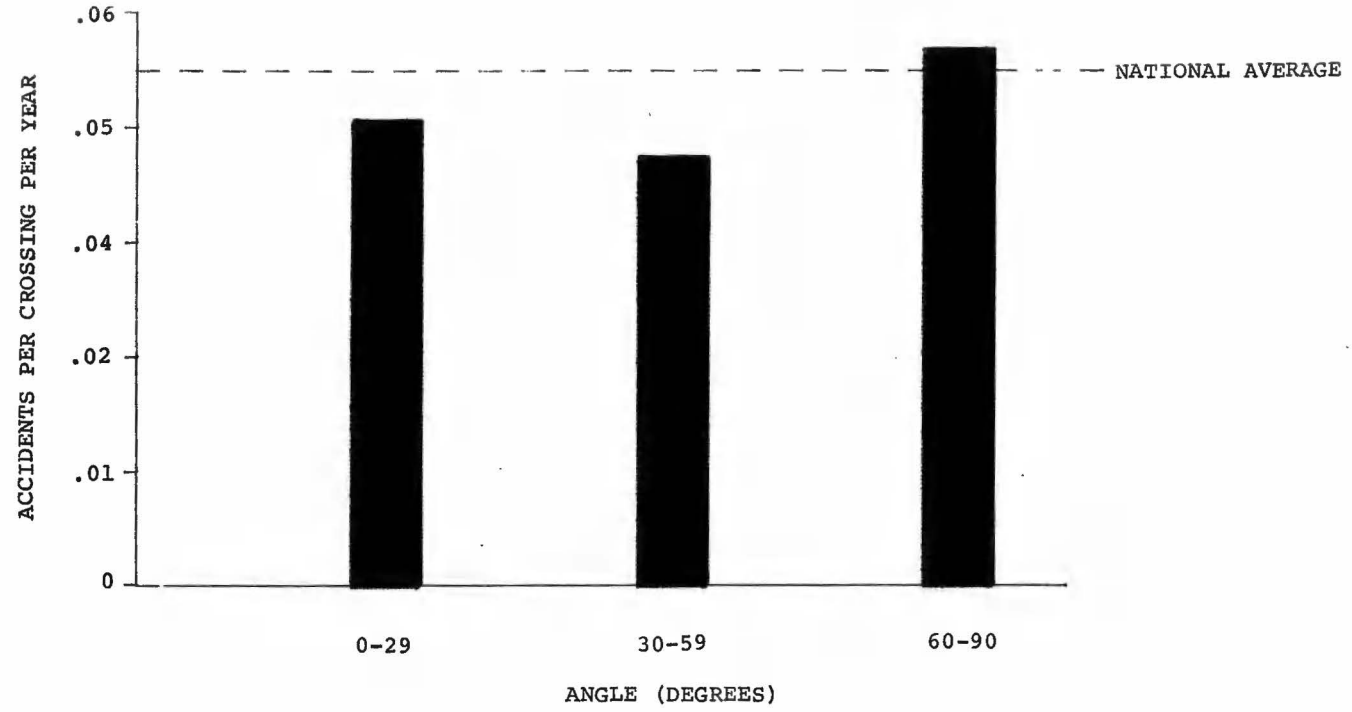


FIGURE 19. CROSSING ACCIDENT RATE BY SMALLEST CROSSING ANGLE, 1978

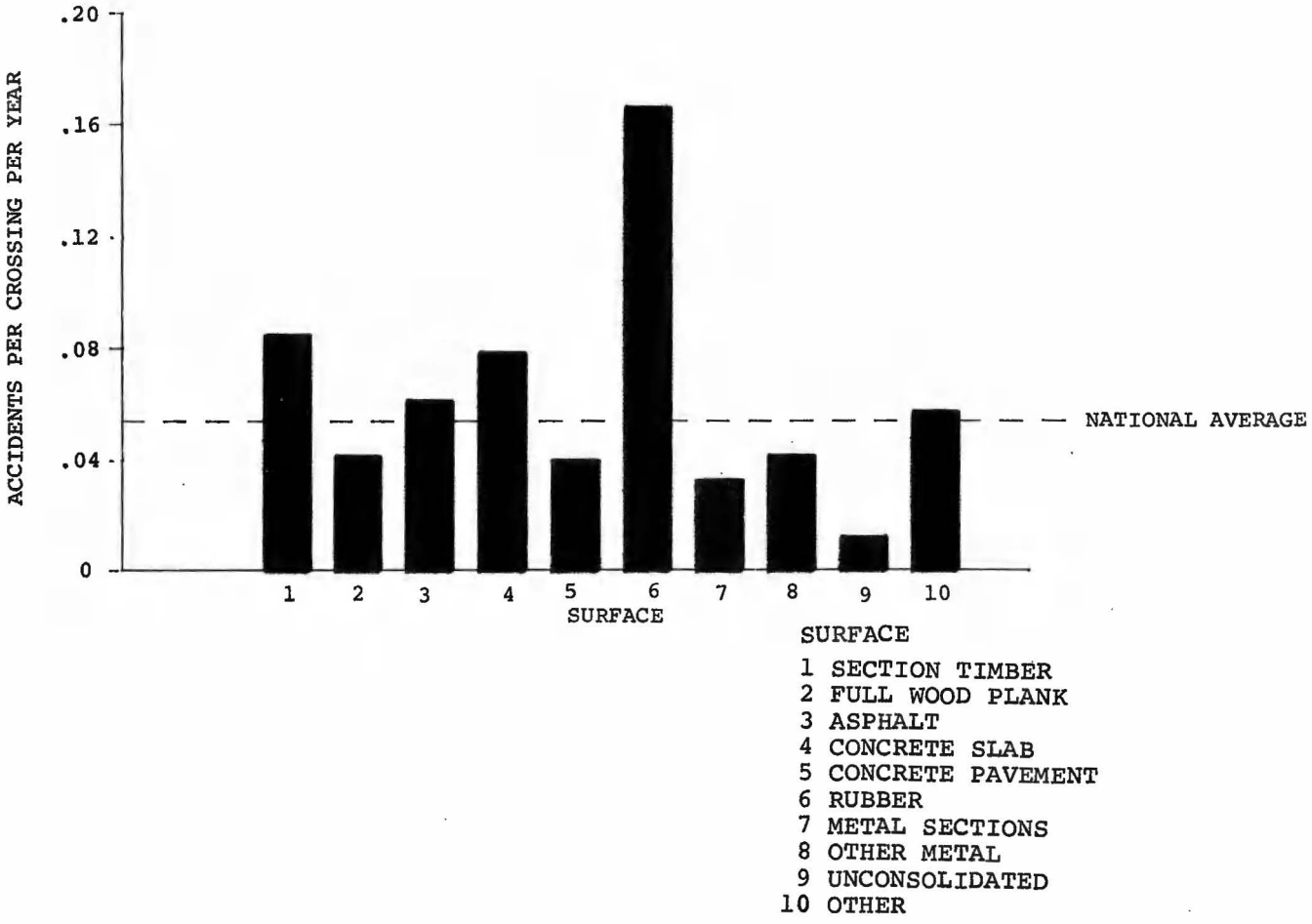


FIGURE 20. CROSSING ACCIDENT RATE BY CROSSING SURFACE, 1978

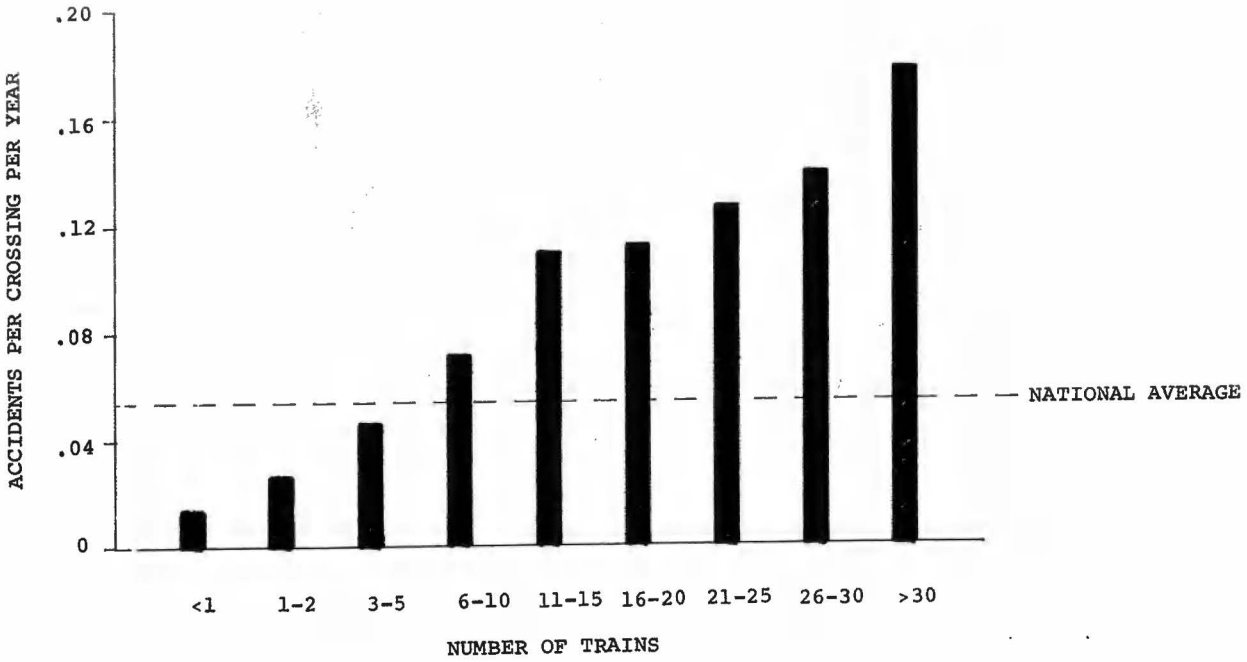


FIGURE 21. CROSSING ACCIDENT RATE BY NUMBER OF TRAINS PER DAY, 1978

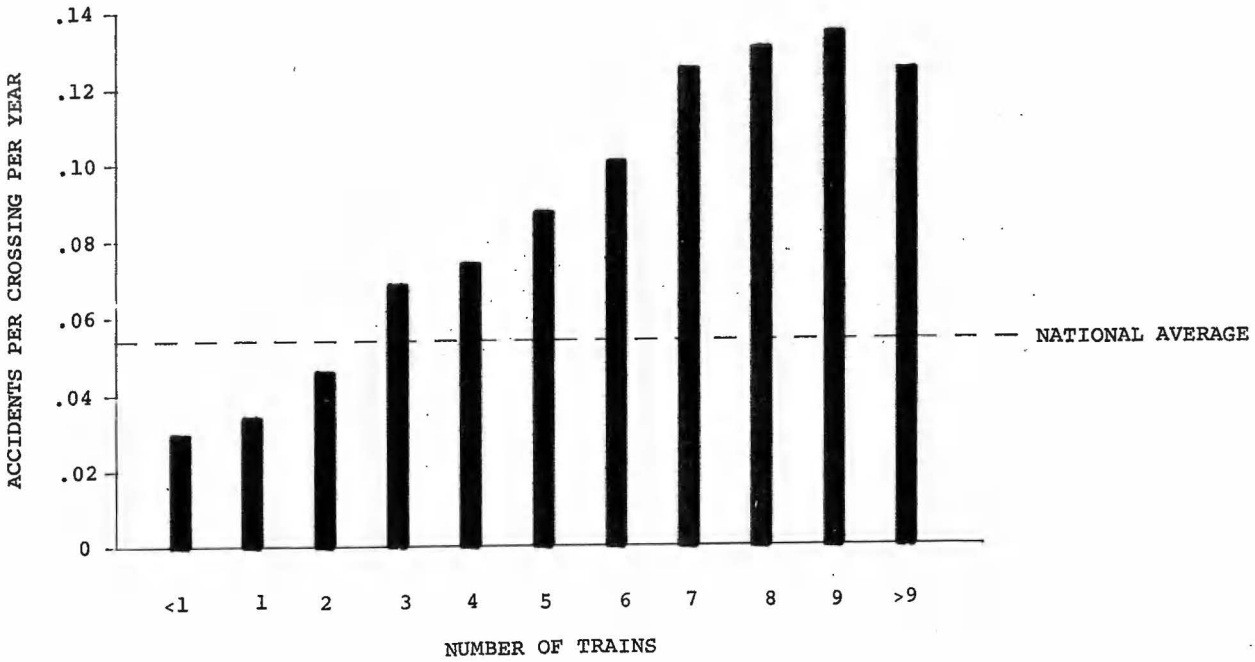


FIGURE 22. CROSSING ACCIDENT RATE BY NUMBER OF THRU TRAINS DURING DAYLIGHT HOURS (6AM-6PM), 1978

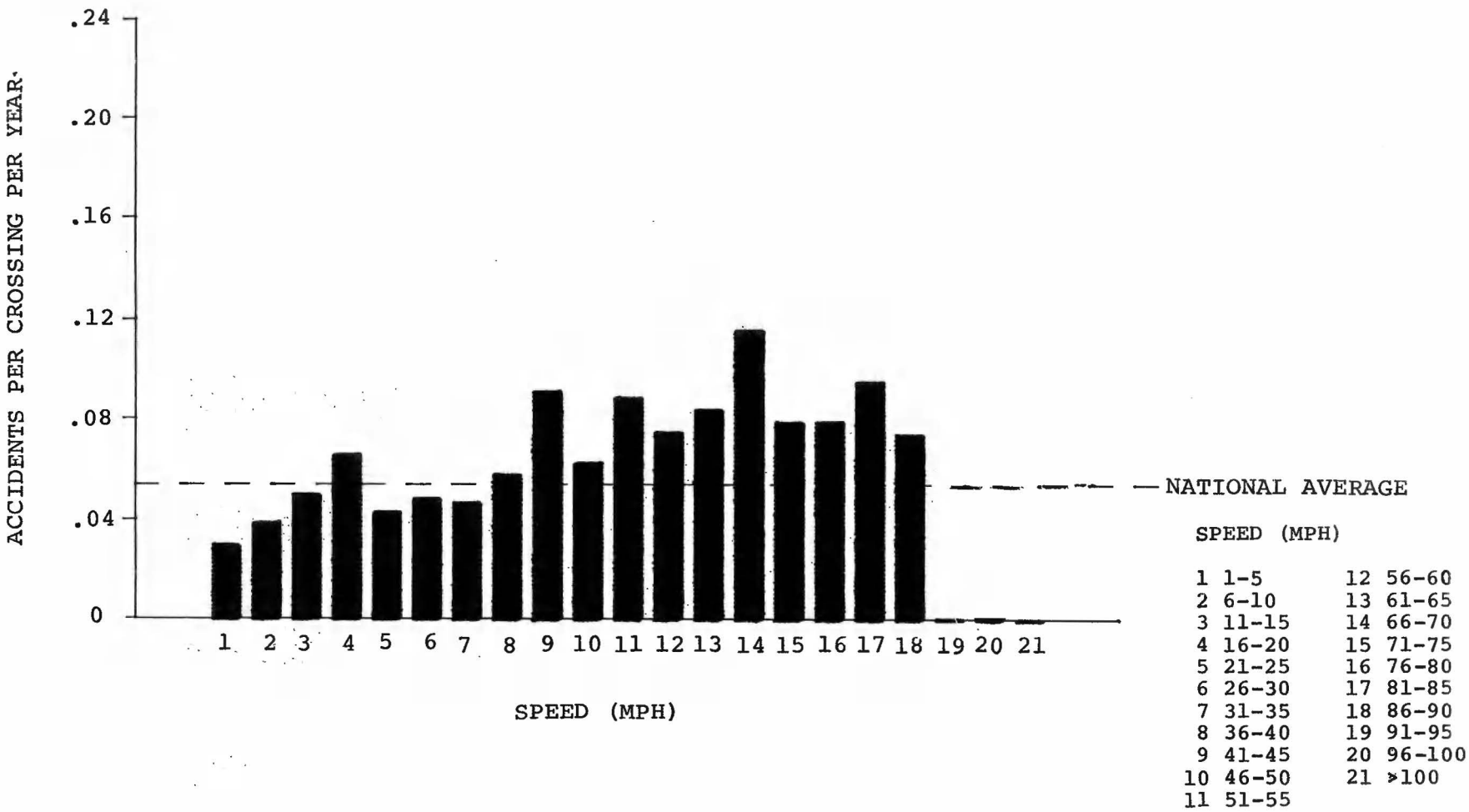


FIGURE 23. CROSSING ACCIDENT RATE BY MAXIMUM TIMETABLE SPEED, 1978

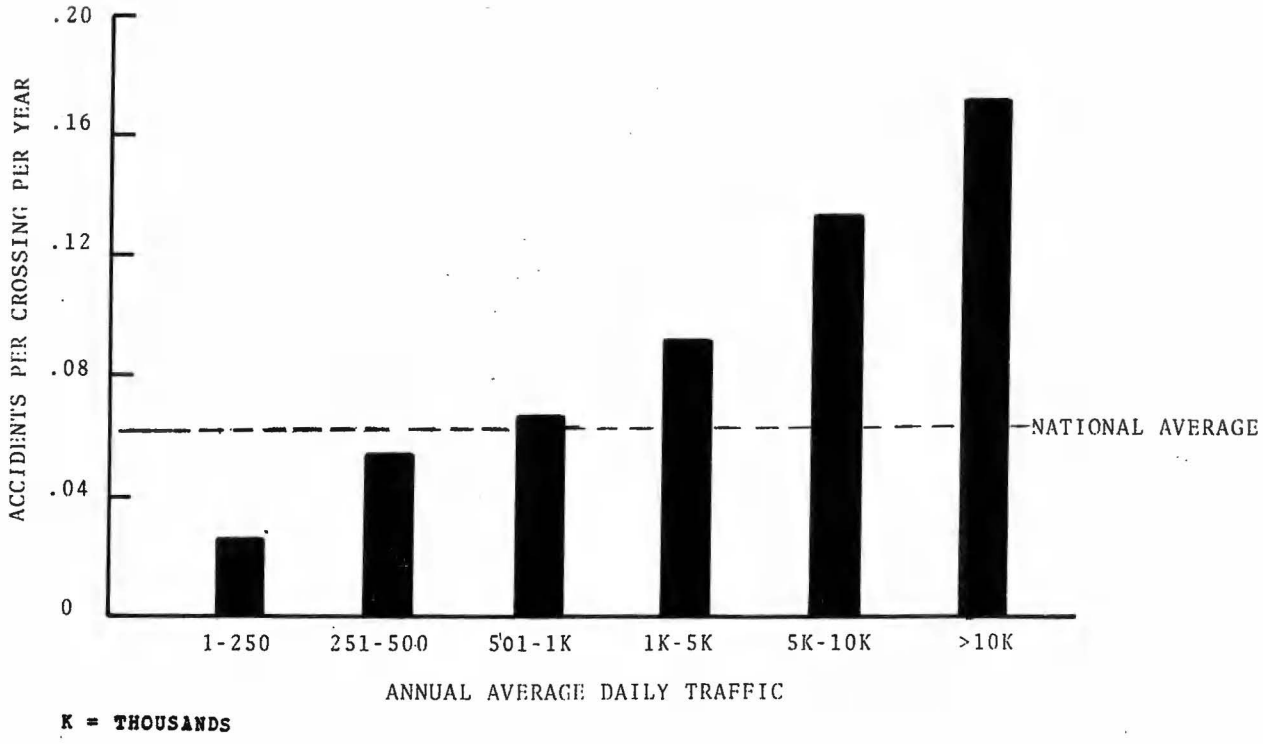


FIGURE 24. CROSSING ACCIDENT RATE BY ANNUAL AVERAGE DAILY TRAFFIC, 1978

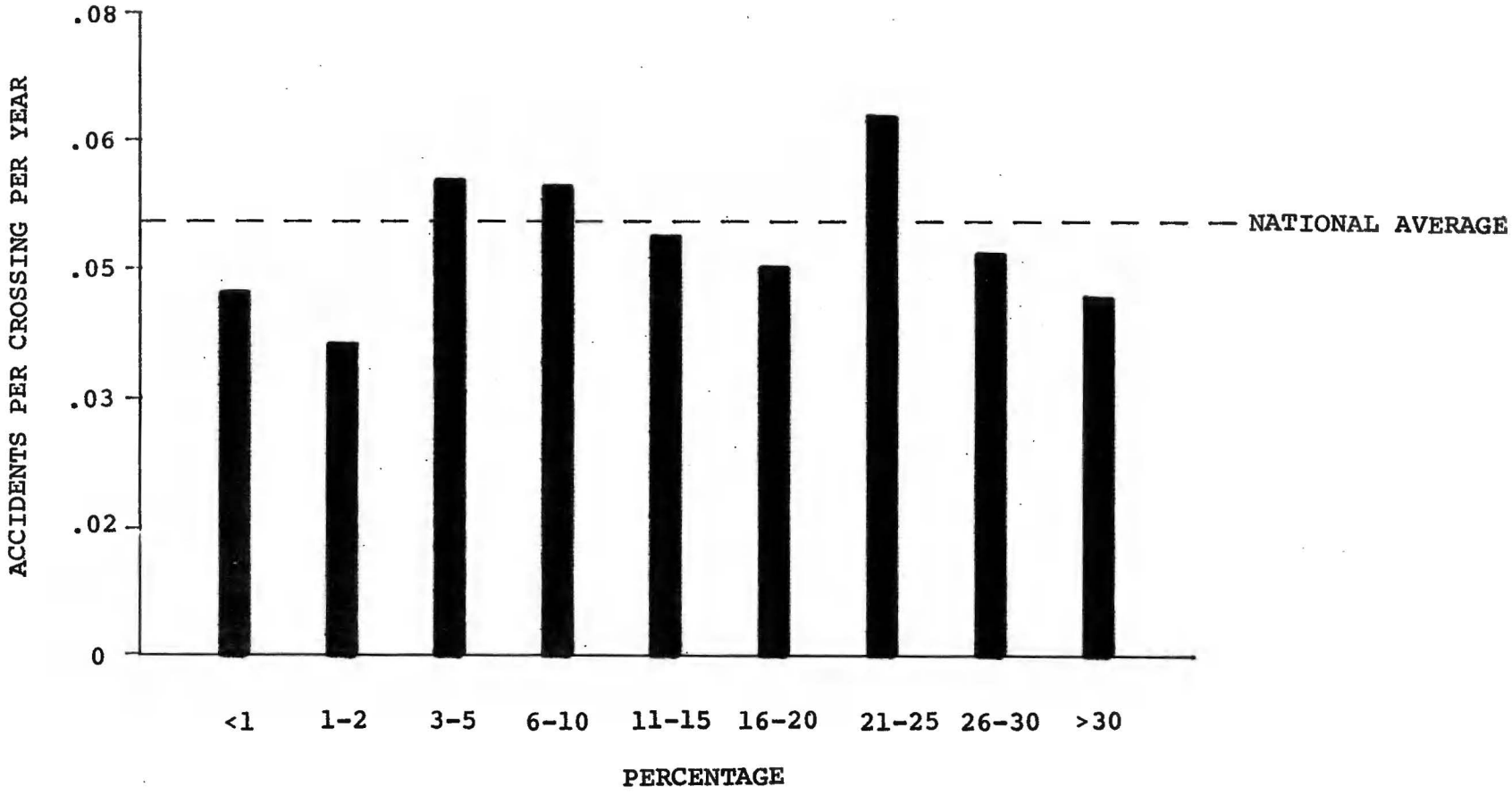


FIGURE 25. CROSSING ACCIDENT RATE BY TRUCKS AS PERCENT OF ANNUAL AVERAGE DAILY TRAFFIC, 1978

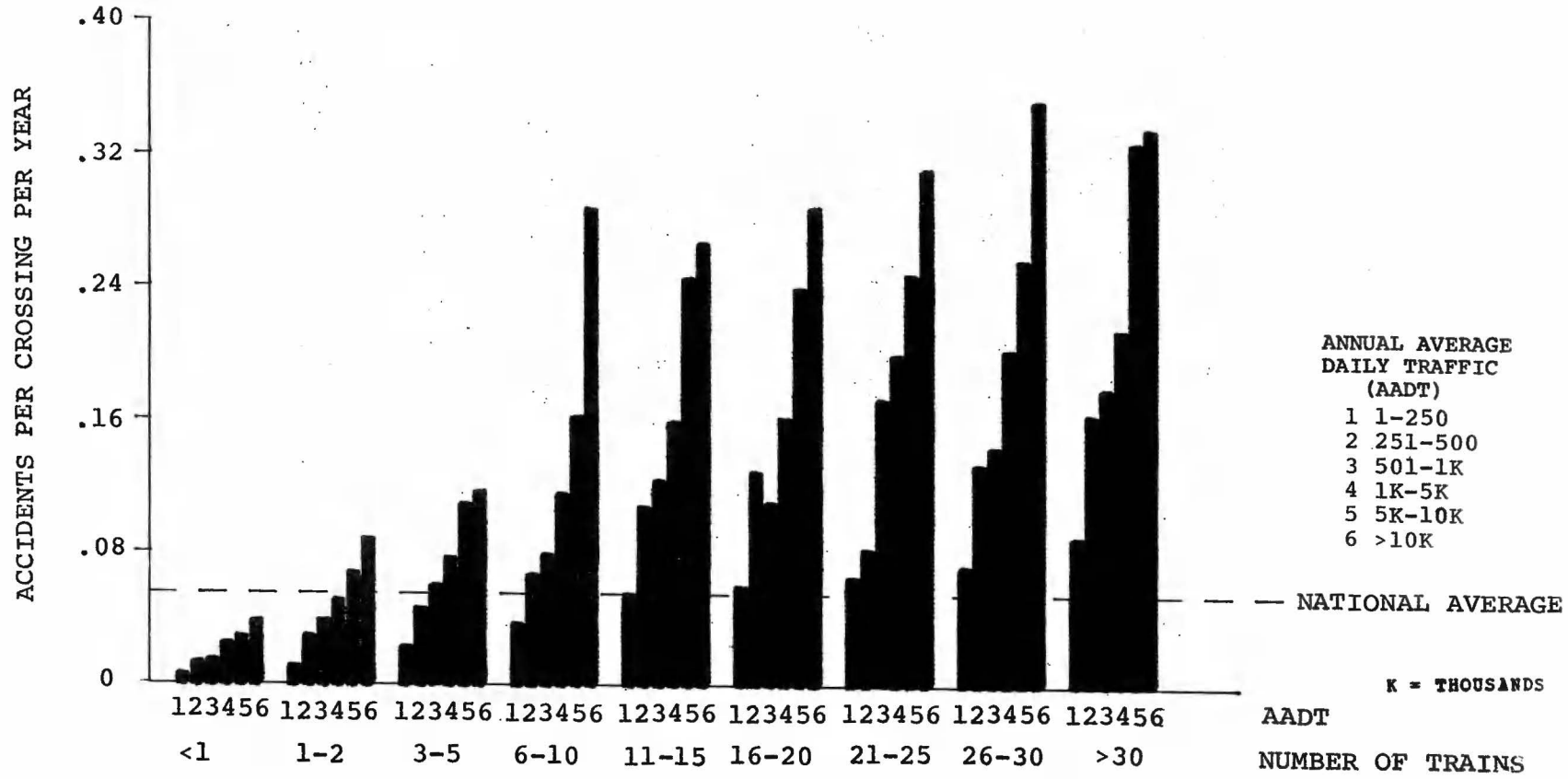
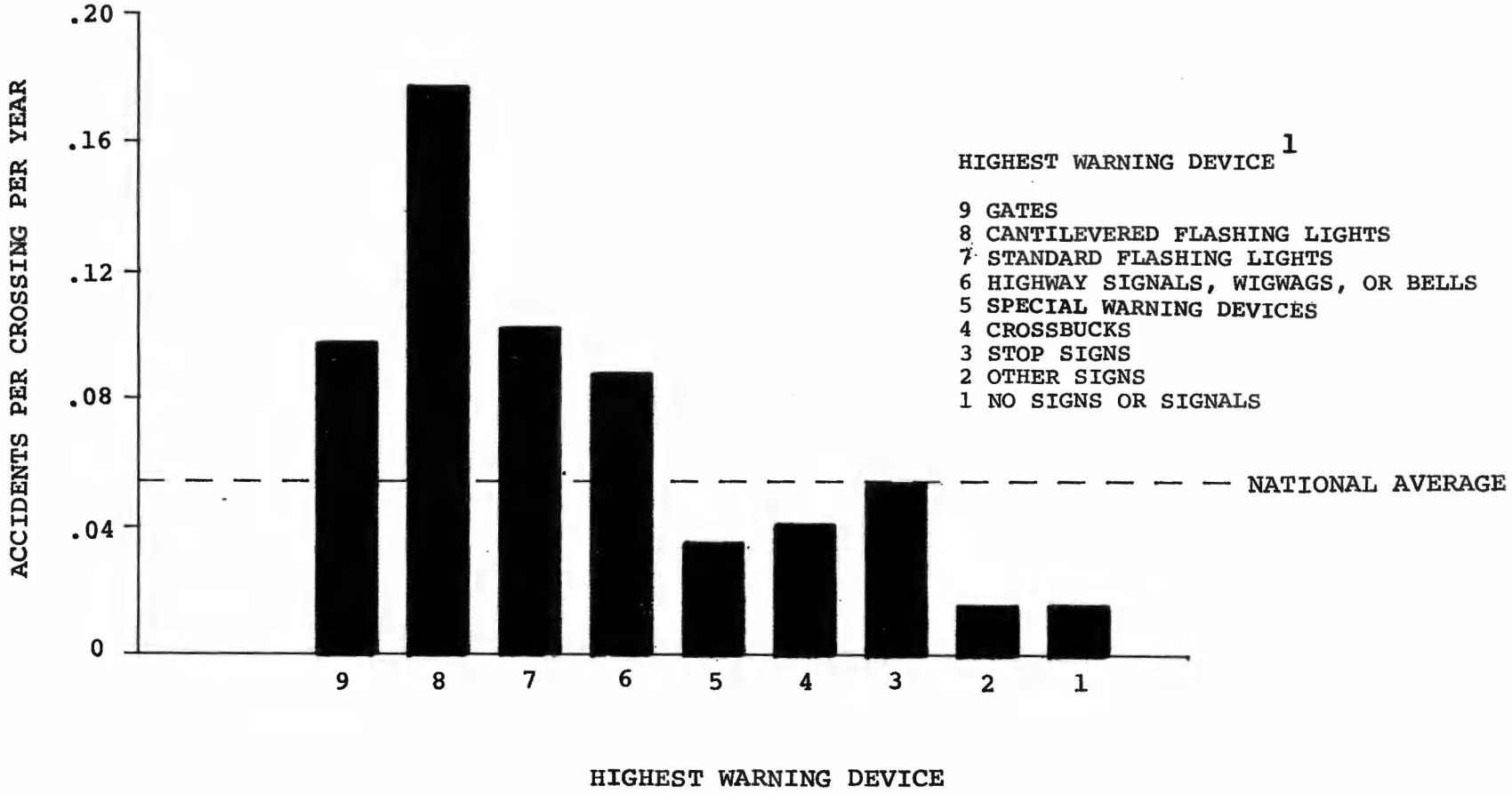


FIGURE 26. CROSSING ACCIDENT RATE BY NUMBER OF TRAINS PER DAY AND ANNUAL AVERAGE DAILY TRAFFIC, 1978



1 See Appendix A for definition of highest warning device.

FIGURE 27. CROSSING ACCIDENT RATE BY HIGHEST WARNING DEVICE, 1978

3.0 RAIL-HIGHWAY CROSSING INVENTORY

3.1 PHYSICAL CHARACTERISTICS

3.1.1 LOCATION DATA

TABLE 34. TOTAL PUBLIC AND PRIVATE CROSSINGS BY STATE AND TYPE, 1978

STATE	PUBLIC AT GRADE	PUBLIC GRADE SEPARATION RR UNDER	RR OVER	PRIVATE	PEDESTRIAN	TOTAL
ALABAMA	4,773	500	190	2,590	28	8,081
ALASKA	225	9	1	74	000	309
ARIZONA	1,042	71	66	731	6	1,918
ARKANSAS	3,996	179	131	1,918	16	6,240
CALIFORNIA	9,392	895	556	5,728	244	16,815
COLORADO	2,371	191	99	1,611	10	4,282
CONNECTICUT	528	328	263	484	55	1,658
DELAWARE	263	42	53	170	6	534
DISTRICT OF COLUMBIA	70	30	38	16	13	167
FLORIDA	5,809	239	55	2,403	81	8,587
GEORGIA	6,948	577	253	3,114	41	10,933
HAWAII	6	000	000	000	000	6
IDAHO	2,190	96	71	1,864	8	4,229
ILLINOIS	13,604	1,014	2,032	7,966	427	25,043
INDIANA	10,108	552	653	4,185	121	15,619
IOWA	8,787	624	470	6,141	63	16,085
KANSAS	9,665	356	233	4,957	33	15,244
KENTUCKY	3,653	465	481	3,777	114	8,490
LOUISIANA	4,863	211	129	4,140	45	9,388
MAINE	1,117	124	81	1,067	13	2,402
MARYLAND	1,121	320	219	902	27	2,589
MASSACHUSETTS	1,230	805	449	602	99	3,185
MICHIGAN	8,316	350	430	3,721	103	12,920
MINNESOTA	7,808	546	453	5,185	85	14,077
MISSISSIPPI	3,590	236	115	2,768	21	6,730
MISSOURI	6,556	733	470	4,962	102	12,823
MONTANA	2,224	155	110	3,278	23	5,790
NEBRASKA	5,549	241	168	4,049	24	10,031
NEVADA	362	47	38	320	2	769
NEW HAMPSHIRE	719	172	75	565	19	1,550
NEW JERSEY	2,215	554	742	780	130	4,421
NEW MEXICO	843	65	80	608	4	1,600
NEW YORK	4,448	1,450	1,200	4,050	305	11,453
NORTH CAROLINA	5,510	525	301	4,411	77	10,824
NORTH DAKOTA	5,769	82	91	2,794	34	8,770
OHIO	9,966	1,258	1,234	6,022	113	18,593
OKLAHOMA	5,728	261	224	2,461	20	8,694
OREGON	2,928	268	177	3,369	98	6,860
PENNSYLVANIA	6,713	1,697	2,024	4,234	344	15,012
RHODE ISLAND	139	98	41	81	4	363
SOUTH CAROLINA	4,405	406	130	1,855	19	6,815
SOUTH DAKOTA	3,275	106	66	2,112	8	5,567
TENNESSEE	4,160	514	503	2,426	37	7,640
TEXAS	14,614	781	786	7,549	47	23,777
UTAH	1,375	119	53	907	6	2,460
VERMONT	594	76	86	799	51	1,606
VIRGINIA	2,851	644	481	3,926	68	7,970
WASHINGTON	4,290	412	395	4,423	116	9,636
WEST VIRGINIA	2,464	287	376	2,929	110	6,166
WISCONSIN	7,212	474	395	4,667	181	12,929
WYOMING	629	83	47	960	8	1,727
PUERTO RICO	55	000	000	-2	000	57
TOTAL	217,068	20,288	17,816	140,653	3,609	399,434

TABLE 35. TOTAL PUBLIC AND PRIVATE CROSSINGS BY CLASS I RAILROAD AND TYPE, 1978

RAILROAD	PUBLIC AT	PUBLIC GRADE SEPARATION		PRIVATE	PEDESTRIAN	TOTAL
LINE HAUL RAILROAD	GRADE	RR UNDER	RR OVER			
ALABAMA GREAT SOUTHERN RAILROAD[1]	0	0	0	0	0	0
AMTRAK	61	227	281	26	40	635
ATCHISON, TOPEKA AND SANTA FE	11,796	642	640	7,128	91	20,297
BALTIMORE AND OHIO RAILROAD	5,470	824	842	3,756	134	10,888
BESSEMER AND LAKE ERIE RAILROAD	147	33	49	96	2	327
BOSTON AND MAINE CORPORATION	1,254	519	247	712	62	2,794
BURLINGTON NORTHERN	20,582	1,209	1,067	16,088	295	39,241
CENTRAL OF GEORGIA RAILROAD[1]	0	0	0	0	0	0
CHESAPEAKE & OHIO RAILWAY	4,585	385	470	4,182	147	9,769
CHICAGO & NORTH WESTERN	10,833	666	844	7,062	211	19,616
CHICAGO, MILWAUKEE, ST. PAUL & PACIFIC	8,922	634	587	6,541	134	16,888
CHICAGO, ROCK ISLAND & PACIFIC	6,760	493	445	3,931	28	11,657
CINN, NEW ORLEANS, & TEXAS PACIFIC [1]	0	0	0	0	0	0
CLINCHFIELD RAILROAD	143	52	66	232	4	497
COLORADO & SOUTHERN RAILWAY	422	39	21	320	3	805
CONSOLIDATED RAIL CORPORATION	16,380	61	32	8,407	165	25,045
THE ESTATES [2]	8,809	4,716	4,749	4,947	549	23,770
DELAWARE & HUDSON RAILWAY	537	98	107	690	28	1,460
DENVER & RIO GRANDE WESTERN	1,111	128	63	624	4	1,930
DETROIT, TOLEDO & IRONTON	530	23	43	477	6	1,079
DULUTH, MISSABE & IRON RANGE	226	27	34	168	8	463
ELGIN, JOLIET & EASTERN	250	32	28	102	0	412
FLORIDA EAST COAST RAILWAY	823	37	2	115	13	990
FORTH WORTH & DENVER RAILWAY	939	38	16	457	0	1,450
GRAND TRUNK WESTERN	1,386	92	148	655	19	2,300
ILLINOIS CENTRAL GULF RAILROAD	10,058	831	764	6,814	202	18,669
KANSAS CITY SOUTHERN RAILWAY	1,004	85	76	468	3	1,636
LONG ISLAND RAIL ROAD	314	294	102	82	88	880
LOUISIANA & ARKANSAS RAILWAY COMPANY	719	57	33	662	4	1,375
LOUISVILLE & NASHVILLE	7,910	773	575	4,921	199	14,378
MISSOURI-KANSAS TEXAS RAILROAD	2,206	152	134	1,216	7	3,715
MISSOURI PACIFIC RAILROAD	12,327	658	495	7,783	112	21,375
NORFOLK & WESTERN RAILWAY	7,765	750	1,007	6,005	114	15,641
PITTSBURGH & LAKE ERIE RAILROAD	112	46	27	105	18	308
ST. LOUIS-SAN FRANCISCO RAILWAY	5,401	293	230	2,796	41	8,761
ST. LOUIS-SOUTHWESTERN RAILWAY	1,424	60	41	509	0	2,034
SEABOARD COAST LINE RAILROAD	11,848	856	287	5,626	132	18,749
SOO LINE	4,362	143	163	2,769	45	7,482
SOUTHERN PACIFIC TRANSPORTATION COMPANY	11,781	960	652	7,972	243	21,608
SOUTHERN RAILWAY	13,081	1,349	765	8,089	74	23,358
UNION PACIFIC RAILROAD	7,821	578	276	6,298	54	15,027
WESTERN MARYLAND RAILWAY	495	76	66	498	10	1,145
WESTERN PACIFIC	630	77	56	370	10	1,143
SWITCHING AND TERMINAL RAILROAD						
UNION RAILROAD CO. (PENNSYLVANIA)	17	21	33	67	16	154
RECAPITULATION						
TOTAL CLASS I - LINE HAUL	201,294	19,013	16,392	129,599	3,299	369,597
TOTAL CLASS I - SWITCHING AND TERMINAL	17	21	33	67	16	154
CLASS II & III RAILROADS	15,757	1,254	1,391	10,987	294	29,683
TOTAL	217,068	20,288	17,816	140,653	3,609	399,434

[1]Crossings on these lines are included under Southern Railway

[2]Crossings on lines not merged into Consolidated Rail Corporation or are not yet identified as belonging to Consolidated Rail Corporation.

TABLE 36. TOTAL CROSSINGS BY STATE AND LOCATION (URBAN/RURAL), 1978

STATE	LOCATION URBAN	RURAL	TOTAL
ALABAMA	2375	2398	4773
ALASKA	88	137	225
ARIZONA	556	486	1042
ARKANSAS	1950	2046	3996
CALIFORNIA	6680	2712	9392
COLORADO	1055	1316	2371
CONNECTICUT	410	118	528
DELAWARE	87	176	263
DIST. COLUMBIA	70	0	70
FLORIDA	3046	2763	5809
GEORGIA	3579	3369	6948
HAWAII	4	2	6
IDAHO	733	1457	2190
ILLINOIS	6239	7365	13604
INDIANA	4571	5537	10108
IOWA	3172	5615	8787
KANSAS	2857	6808	9665
KENTUCKY	1149	2504	3653
LOUISIANA	2568	2295	4863
MAINE	493	624	1117
MARYLAND	496	625	1121
MASSACHUSETTS	867	363	1230
MICHIGAN	3792	4524	8316
MINNESOTA	3159	4649	7808
MISSISSIPPI	1557	2033	3590
MISSOURI	2020	4536	6556
MONTANA	360	1864	2224
NEBRASKA	1628	3921	5549
NEVADA	120	242	362
NEW HAMPSHIRE	417	302	719
NEW JERSEY	1575	640	2215
NEW MEXICO	309	534	843
NEW YORK	1909	2539	4448
NORTH CARCLINA	2651	2859	5510
NORTH DAKOTA	831	4938	5769
OHIO	3799	6167	9966
OKLAHOMA	1871	3857	5728
OREGON	1564	1364	2928
PENNSYLVANIA	3253	3460	6713
RHODE ISLAND	128	11	139
SOUTH CAROLINA	1798	2607	4405
SOUTH DAKOTA	794	2481	3275
TENNESSEE	2166	1994	4160
TEXAS	8271	6343	14614
UTAH	714	661	1375
VERMONT	116	478	594
VIRGINIA	1286	1565	2851
WASHINGTON	2145	2145	4290
WEST VIRGINIA	769	1695	2464
WISCONSIN	3580	3632	7212
WYOMING	164	465	629
PUERTO RICO	14	41	55
TOTAL	95805	121263	217068

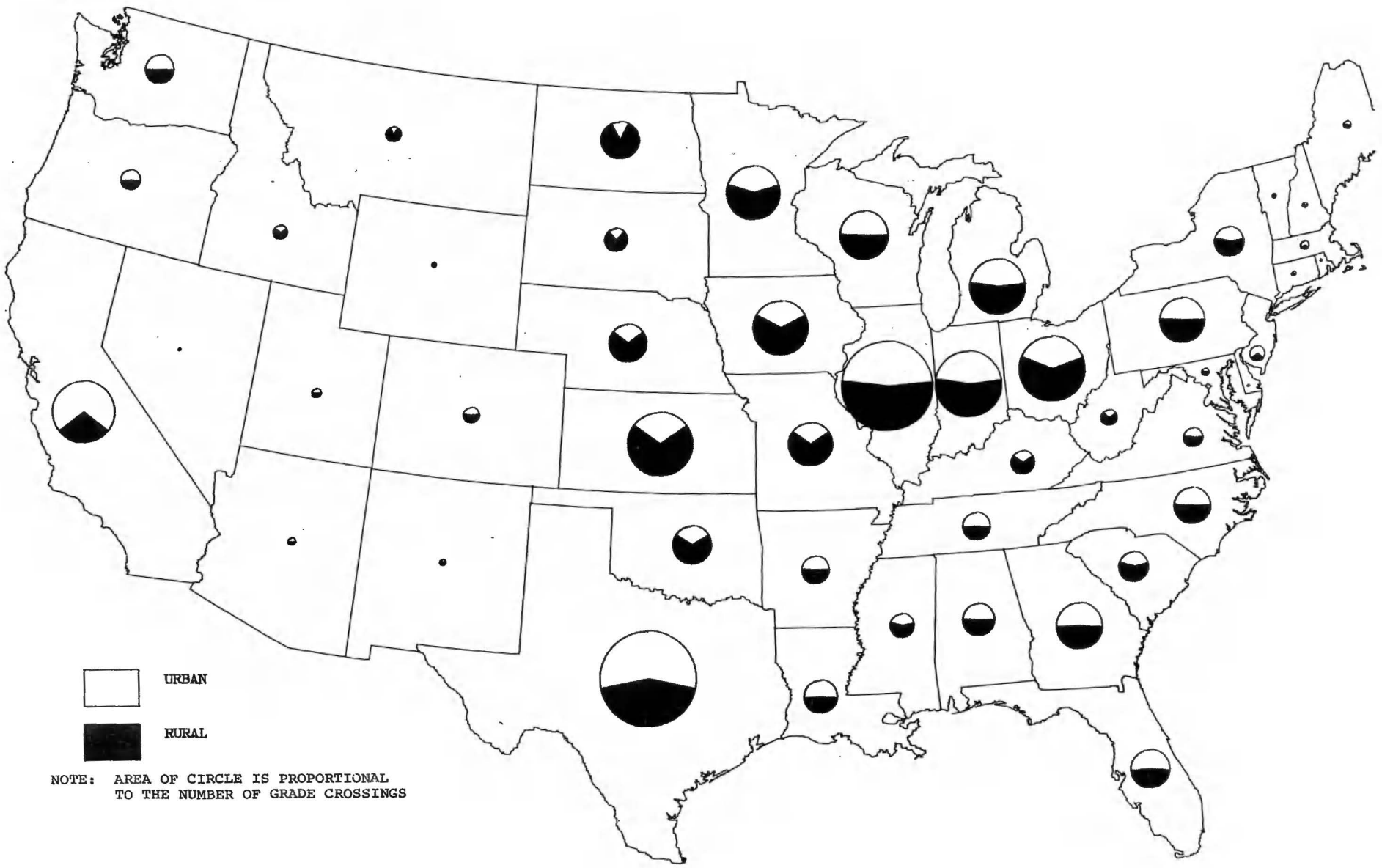


FIGURE 28. CROSSINGS BY STATE AND LOCATION (URBAN/RURAL), 1978

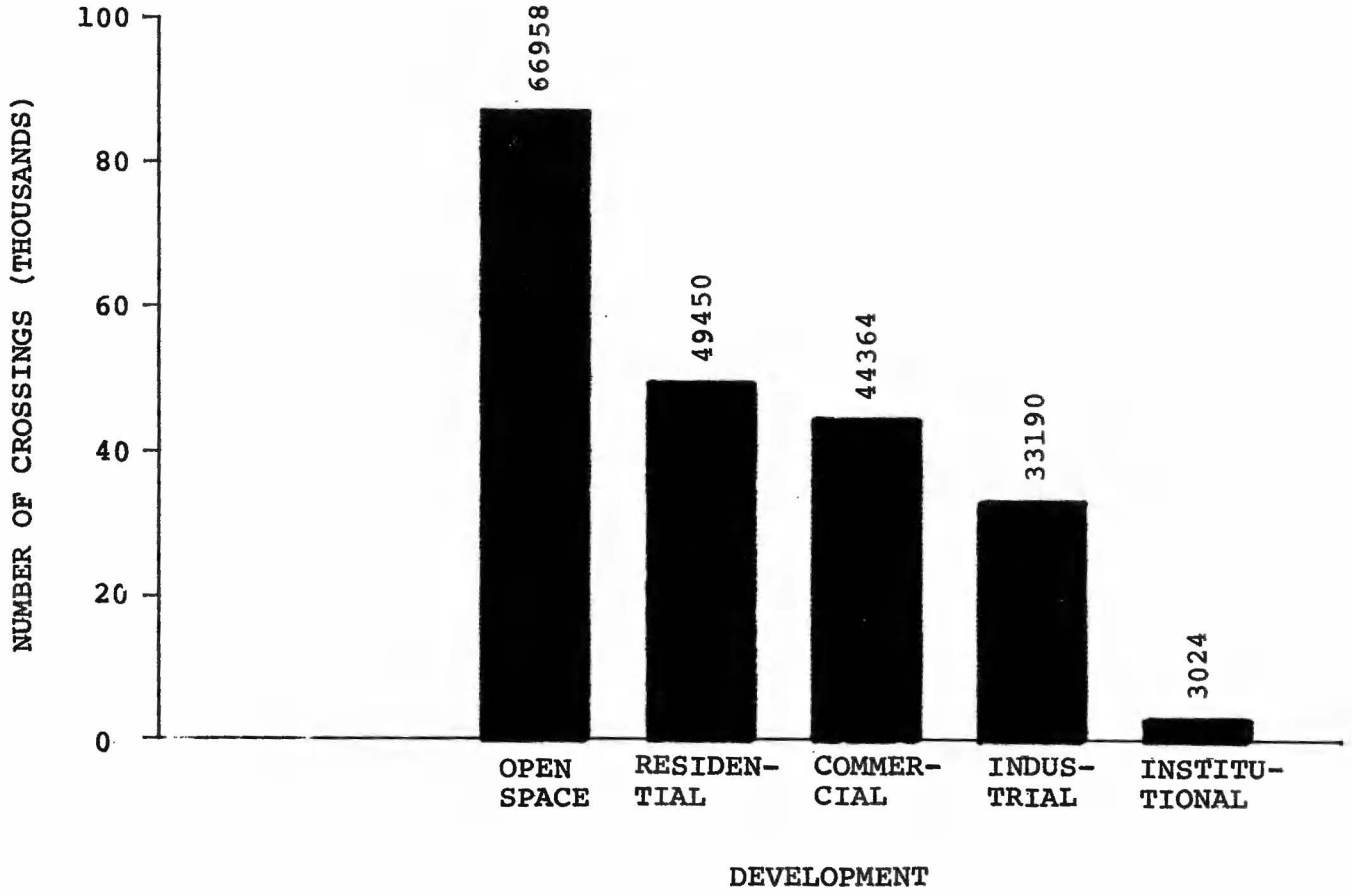


FIGURE 29. CROSSINGS BY TYPE OF DEVELOPMENT, 1978

3.1.2 TRACK DATA

TABLE 37. TOTAL CROSSINGS BY NUMBER OF MAIN AND OTHER TRACKS, 1978

NUMBER OF OTHER TRACKS	NUMBER OF MAIN TRACKS 0	1	2	3	4	5	>5	TOTAL
0	375*	128342	10287	333	87	11	3	139438
1	23895	26620	2878	95	19	2	1	53510
2	5485	9276	1303	41	13	1	0	16119
3	1689	2795	446	23	7	0	0	4960
4	474	965	215	14	8	0	0	1676
5	178	376	112	6	1	0	0	673
>5	195	370	115	2	7	3	0	692
TOTAL	32291	168744	15356	514	142	17	4	217068

*Crossings for which data was not reported in inventory.

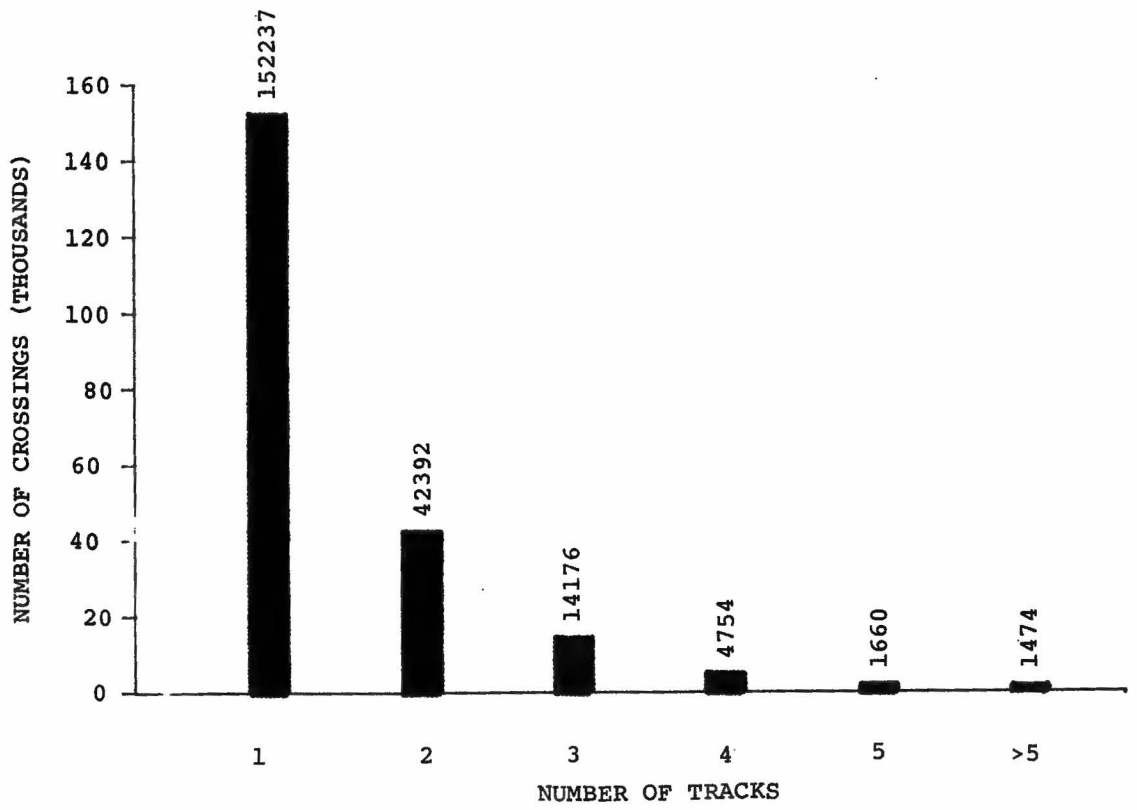


FIGURE 30. CROSSINGS BY NUMBER OF TRACKS (MAIN AND OTHER TRACK), 1978

TABLE 38. TOTAL CROSSINGS BY NUMBER OF TRACKS AND HIGHEST WARNING DEVICE, 1978

HIGHEST WARNING DEVICE[1]	NUMBER OF TRACKS 1	2	3	4	5	>5	TOTAL
GATES	4510	5476	2335	963	344	356	13984
FLASHING LIGHTS	21392	7771	3145	1145	426	366	34245
HWY. SIGNALS, WIGWAGS, BELLS	1915	783	338	122	56	26	3240
SPECIAL WARNING DEVICES	5309	1366	493	183	72	83	7506
CROSSBUCKS	104625	23695	6898	2033	660	530	138441
STOP SIGNS	2470	685	238	87	23	24	3527
OTHER SIGNS	793	173	38	18	13	8	1043
NO SIGNS OR SIGNALS	11223	2443	691	203	66	81	14707
TOTAL	152237	42392	14176	4754	1660	1474	216693

[1] See Appendix A for definition of highest warning device.

TABLE 39. TOTAL CROSSINGS BY NUMBER OF TRACKS AND TRAFFIC LANES, 1978

NUMBER OF TRAFFIC LANES	NUMBER OF TRACKS 1	2	3	4	5	>5	TOTAL
1	30170	5866	1217	330	85	80	37748
2	114083	33716	11847	3994	1411	1247	166298
3	736	294	113	42	12	13	1210
4	6348	2282	924	358	143	127	10182
5	314	83	27	12	4	1	441
>5	518	124	40	15	3	6	706
TOTAL	152169	42365	14168	4751	1658	1474	216585

TABLE 40. TOTAL CROSSINGS BY NUMBER OF TRACKS AND STATE, 1978

STATE	NUMBER OF TRACKS 1	2	3	4	5	>5	TOTAL
ALABAMA	3477	826	311	86	37	35	4772
ALASKA	182	34	6	1	1	1	225
ARIZONA	749	187	67	24	6	7	1040
ARKANSAS	2797	811	258	75	32	20	3993
CALIFORNIA	6573	1730	641	221	114	102	9381
COLORADO	1633	454	159	49	31	32	2358
CONNECTICUT	399	93	24	8	4	0	528
DELAWARE	213	32	10	4	4	0	263
DIST. COLUMBIA	54	12	4	0	0	0	70
FLORIDA	3896	1290	389	116	44	26	5761
GEORGIA	5118	1215	373	144	39	41	6930
HAWAII	6	0	0	0	0	0	6
IDAHO	1535	380	149	62	22	20	2168
ILLINOIS	8357	3521	1106	366	124	108	13582
INDIANA	6693	2406	631	234	82	52	10098
IOWA	6171	1578	646	222	75	71	8763
KANSAS	7068	1544	676	232	78	66	9664
KENTUCKY	2447	863	229	73	15	23	3650
LOUISIANA	3489	900	284	96	33	36	4838
MAINE	861	188	47	16	3	1	1116
MARYLAND	798	218	69	22	4	8	1119
MASSACHUSETTS	952	209	42	15	7	4	1229
MICHIGAN	5933	1619	472	164	62	61	8311
MINNESOTA	5576	1416	529	165	49	66	7801
MISSISSIPPI	2419	756	248	103	33	30	3589
MISSOURI	4429	1285	559	170	53	56	6552
MONTANA	1618	383	155	33	14	19	2222
NEBRASKA	3982	984	376	113	42	49	5546
NEVADA	238	85	22	6	3	4	358
NEW HAMPSHIRE	611	88	13	3	4	0	719
NEW JERSEY	1577	464	129	22	12	9	2213
NEW MEXICO	594	161	54	20	4	10	843
NEW YORK	3202	911	229	69	17	19	4447
NORTH CAROLINA	4000	1005	316	116	35	31	5503
NORTH DAKOTA	4630	734	260	62	21	5	5712
OHIO	5814	2766	861	340	114	64	9959
OKLAHOMA	4305	804	382	135	45	52	5723
OREGON	2134	505	202	57	15	12	2925
PENNSYLVANIA	4469	1540	430	161	46	45	6691
RHODE ISLAND	88	42	7	2	0	0	139
SOUTH CAROLINA	3321	759	227	52	26	16	4401
SOUTH DAKOTA	2662	393	143	45	17	13	3273
TENNESSEE	2848	887	273	86	30	35	4159
TEXAS	10448	2654	934	338	119	116	14609
UTAH	967	264	84	22	20	10	1367
VERMONT	482	77	25	4	1	5	594
VIRGINIA	1884	639	209	76	22	14	2844
WASHINGTON	3027	777	304	119	30	30	4287
WEST VIRGINIA	1748	511	156	32	6	10	2463
WISCONSIN	5268	1279	409	152	58	39	7205
WYOMING	442	111	47	21	7	1	629
PUERTO RICO	53	2	0	0	0	0	55
TOTAL	152237	42392	14176	4754	1660	1474	216693

3.1.3 HIGHWAY SYSTEM DATA

TABLE 41. TOTAL CROSSINGS BY HIGHWAY SYSTEM TYPE AND STATE, 1978

	HIGHWAY SYSTEM TYPE													
STATE	01	02	03	04	05	06	07	08	09	10	11	12	14	TOTAL
ALABAMA	0	0	76	288	92	44	383	70	8	6	1838	1941	26	4772
ALASKA	0	0	19	6	15	17	10	3	19	0	74	55	7	225
ARIZONA	2	6	19	23	11	2	56	30	3	3	393	378	114	1040
ARKANSAS	0	4	77	84	316	75	106	22	62	19	1485	1592	154	3996
CALIFORNIA	2	3	86	1122	105	62	314	271	18	4	2187	4356	862	9392
COLORADO	6	5	48	44	120	16	1	0	10	3	1131	837	125	2346
CONNECTICUT	0	0	7	19	17	17	4	1	11	14	79	294	62	525
DELAWARE	0	0	22	16	77	46	0	0	73	12	4	2	11	263
DIST. COLUMBIA	0	0	0	10	0	3	0	8	0	0	0	49	0	70
FLORIDA	1	2	90	89	487	220	98	17	85	80	2002	2519	80	5770
GEORGIA	2	1	117	274	186	187	318	189	10	22	2736	2853	53	6948
HAWAII	0	0	0	0	0	0	0	0	0	0	2	4	0	6
IDAHO	1	0	51	22	60	10	105	9	1	0	1239	639	53	2190
ILLINOIS	1	2	470	465	193	71	965	171	121	212	5615	5278	40	13604
INDIANA	0	0	161	241	550	356	812	169	13	10	4001	3289	506	10108
IOWA	0	6	354	142	1	0	1002	18	0	3	4257	2339	664	8786
KANSAS	0	0	307	94	116	1	1152	8	4	0	5228	2273	481	9664
KENTUCKY	0	0	82	56	326	31	11	2	397	32	1688	776	252	3653
LOUISIANA	1	1	62	107	388	117	7	1	233	120	1604	2209	13	4863
MAINE	1	0	53	55	79	21	5	1	209	60	277	333	23	1117
MARYLAND	0	0	48	26	57	1	43	5	41	6	436	213	245	1121
MASSACHUSETTS	1	1	14	112	8	4	33	92	0	0	307	380	278	1230
MICHIGAN	0	11	188	198	91	42	1144	20	0	0	3101	2633	888	8316
MINNESOTA	1	0	187	122	116	22	1059	125	1	4	3285	2820	66	7808
MISSISSIPPI	0	1	112	56	139	26	357	44	1	1	1424	1222	207	3590
MISSOURI	0	1	103	46	734	61	2	6	7	1	3690	1596	309	6556

TABLE 41. (CONT.)

HIGHWAY SYSTEM TYPE

STATE	01	02	03	04	05	06	07	08	09	10	11	12	14	TOTAL
MONTANA	4	1	74	27	0	0	184	4	0	0	1602	266	62	2224
NEBRASKA	0	0	203	61	165	3	499	33	1	0	3053	1320	211	5549
NEVADA	1	0	17	6	17	0	9	0	6	0	192	102	11	361
NEW HAMPSHIRE	0	1	48	29	45	1	0	0	42	17	166	248	121	718
NEW JERSEY	0	0	28	42	9	15	76	97	2	11	525	1196	214	2215
NEW MEXICO	0	0	13	21	66	13	4	0	27	12	424	224	39	843
NEW YORK	0	0	166	109	107	46	430	233	27	23	1809	1498	0	4448
NORTH CAROLINA	0	1	67	65	456	60	0	3	2280	508	56	1835	179	5510
NORTH DAKOTA	0	0	181	25	84	1	631	13	0	0	4042	686	106	5769
OHIO	1	16	212	217	651	214	708	437	28	8	4567	2798	109	9966
OKLAHOMA	3	0	120	75	180	0	314	1	7	0	3233	1514	281	5728
OREGON	0	0	69	101	57	11	214	15	1	0	1023	1112	325	2928
PENNSYLVANIA	2	3	235	225	447	141	1	0	795	156	1980	2309	419	6713
RHODE ISLAND	0	0	0	7	2	5	1	16	2	10	6	63	27	139
SOUTH CAROLINA	0	1	126	172	822	810	175	6	588	303	896	492	14	4405
SOUTH DAKOTA	0	0	134	22	65	3	318	3	5	3	1959	640	123	3275
TENNESSEE	0	0	64	116	78	34	227	41	0	0	1625	1972	3	4160
TEXAS	25	66	131	314	986	382	0	0	282	173	4919	7336	0	14614
UTAH	1	0	15	12	64	49	34	17	0	9	547	626	1	1375
VERMONT	0	0	55	8	27	4	40	9	17	3	339	92	0	594
VIRGINIA	1	0	38	126	586	53	6	86	920	73	13	894	43	2839
WASHINGTON	4	1	55	36	116	30	372	126	27	1	1571	1735	216	4290
WEST VIRGINIA	0	0	115	35	559	33	32	1	644	49	345	650	1	2464
WISCONSIN	0	1	251	223	98	0	459	0	3	1	2821	2401	954	7212
WYOMING	1	2	23	9	49	6	1	0	1	0	390	134	13	629
PUERTO RICO	0	0	13	1	3	0	0	0	18	3	7	10	0	55
TOTAL	62	137	5206	5801	10023	3366	12722	2423	7050	1975	86193	73033	8991	216982

HIGHWAY SYSTEM CODES

CODE	SYSTEM	CODE	SYSTEM
01	INTERSTATE, RURAL, OPEN TO TRAFFIC	02	INTERSTATE, URBAN, OPEN TO TRAFFIC
03	OTHER FA[1] PRIMARY, RURAL	04	OTHER FA PRIMARY, URBAN
05	FA SECONDARY RURAL, STATE JURISDICTION	06	FA SECONDARY URBAN, STATE JURISDICTION
07	FA SECONDARY RURAL, LOCAL JURISDICTION	08	FA SECONDARY URBAN, LOCAL JURISDICTION
09	OTHER STATE HIGHWAYS, RURAL (NON-FA)	10	OTHER STATE HIGHWAYS, URBAN (NON-FA)
11	LOCAL RURAL ROADS (NON-FA)	12	LOCAL URBAN ROADS (NON-FA)
		14	FEDERAL-AID URBAN

[1] FEDERAL-AID

TABLE 42. TOTAL CROSSINGS BY HIGHWAY SYSTEM GROUP (ON-STATE/OFF-STATE) AND STATE, 1978

STATE	HIGHWAY SYSTEM GROUP ON-STATE	OFF-STATE	TOTAL
ALABAMA	324	4449	4773
ALASKA	100	125	225
ARIZONA	67	975	1042
ARKANSAS	616	3380	3996
CALIFORNIA	415	8977	9392
COLORADO	255	2116	2371
CONNECTICUT	95	433	528
DELAWARE	257	6	263
DIST. COLUMBIA	60	10	70
FLORIDA	1105	4704	5809
GEORGIA	806	6142	6948
HAWAII	0	6	6
IDAHO	156	2034	2190
ILLINOIS	1531	12073	13604
INDIANA	961	9147	10108
IOWA	534	8253	8787
KANSAS	541	9124	9665
KENTUCKY	1029	2624	3653
LOUISIANA	1042	3821	4863
MAINE	226	891	1117
MARYLAND	189	932	1121
MASSACHUSETTS	44	1186	1230
MICHIGAN	505	7811	8316
MINNESOTA	451	7357	7808
MISSISSIPPI	344	3246	3590
MISSOURI	951	5605	6556
MONTANA	348	1876	2224
NEBRASKA	433	5116	5549
NEVADA	65	297	362
NEW HAMPSHIRE	206	513	719
NEW JERSEY	207	2008	2215
NEW MEXICO	180	663	843
NEW YORK	464	3984	4448
NORTH CAROLINA	3592	1918	5510
NORTH DAKOTA	291	5478	5769
OHIO	1332	8634	9966
OKLAHOMA	437	5291	5728
OREGON	202	2726	2928
PENNSYLVANIA	2344	4369	6713
RHODE ISLAND	30	109	139
SOUTH CAROLINA	3016	1389	4405
SOUTH DAKOTA	233	3042	3275
TENNESSEE	274	3886	4160
TEXAS	2350	12264	14614
UTAH	147	1228	1375
VERMONT	173	421	594
VIRGINIA	1683	1168	2851
WASHINGTON	250	4040	4290
WEST VIRGINIA	1482	982	2464
WISCONSIN	632	6580	7212
WYOMING	96	533	629
PUERTO RICO	38	17	55
TOTAL	33109	183959	217068

TABLE 43. TOTAL CROSSINGS BY FUNCTIONAL CLASSIFICATION OF ROAD AT GRADE CROSSING, 1978

CL	XINGS	CL	XINGS	CL	XINGS	CL	XINGS	CL	XINGS
01	30	11	25	21	1	31	7	41	36
02	1603	12	103	22	107	32	72	42	368
03	5190	13	1343	23	1342	33	764	43	4650
04	13243	14	2160	24	2072	34	1159	44	7687
05	15175	15	2145	25	1939	35	1109	45	6167
06	102157	16	7213	26	7728	36	4531	46	26791

XINGS = CROSSINGS

CL = FUNCTIONAL CLASSIFICATION CODES

RURAL CODES		URBAN CODES				
			POPULATION (THOUSANDS)			
			05-10	10-25	25-50	>50
INTERSTATE	01	INTERSTATE	11	21	31	41
OTHER PRINCIPAL ARTERIAL	02	OTHER FREEWAY AND EXPRESSWAY	12	22	32	42
MINOR ARTERIAL	03	OTHER PRINCIPAL	13	23	33	43
MAJOR COLLECTOR	04	MINOR ARTERIAL	14	24	34	44
MINOR COLLECTOR	05	COLLECTOR	15	25	35	45
LOCAL	06	LOCAL	16	26	36	46

TABLE 44. TOTAL CROSSINGS BY NUMBER OF TRAFFIC LANES AND STATE, 1978

STATE	NUMBER OF LANES (BOTH DIRECTIONS) 1	2	3	4	5	>5	TOTAL
ALABAMA	980	3530	25	219	8	11	4773
ALASKA	29	187	1	7	1	0	225
ARIZONA	156	755	6	95	10	20	1042
ARKANSAS	1062	2869	13	51	0	1	3996
CALIFORNIA	519	6609	192	1647	178	247	9392
COLORADO	181	2008	19	139	4	6	2357
CONNECTICUT	34	464	5	24	0	0	527
DELAWARE	4	237	3	18	0	1	263
DIST. COLUMBIA	5	56	0	6	0	3	70
FLORIDA	314	4802	68	472	32	50	5738
GEORGIA	1414	5285	29	213	0	7	6948
HAWAII	0	6	0	0	0	0	6
IDAHO	634	1467	9	75	2	3	2190
ILLINOIS	2623	10205	49	696	13	18	13604
INDIANA	2068	7555	49	418	6	12	10108
IOWA	2062	6483	23	210	2	7	8787
KANSAS	2384	6973	7	298	0	3	9665
KENTUCKY	1140	2439	7	66	1	0	3653
LOUISIANA	688	3933	14	203	7	18	4863
MAINE	70	1029	4	14	0	0	1117
MARYLAND	165	866	10	74	1	5	1121
MASSACHUSETTS	49	1113	7	60	1	0	1230
MICHIGAN	658	6899	63	625	26	45	8316
MINNESOTA	1342	6177	17	270	2	0	7808
MISSISSIPPI	490	2978	8	107	2	5	3590
MISSOURI	1815	4584	8	142	2	5	6556
MONTANA	310	1885	4	24	1	0	2224
NEBRASKA	1388	4053	5	98	2	3	5549
NEVADA	141	189	1	25	0	1	357
NEW HAMPSHIRE	45	642	4	25	2	1	719
NEW JERSEY	135	1917	11	145	2	5	2215
NEW MEXICO	286	519	2	30	3	3	843
NEW YORK	433	3843	24	138	4	6	4448
NORTH CAROLINA	341	4909	37	202	11	10	5510
NORTH DAKOTA	1307	4422	1	38	0	0	5768
OHIO	1468	8068	73	330	14	13	9966
OKLAHOMA	1008	4429	7	276	6	2	5728
OREGON	352	2424	47	99	3	3	2928
PENNSYLVANIA	1047	5309	125	202	2	28	6713
RHODE ISLAND	6	112	0	21	0	0	139
SOUTH CAROLINA	760	3454	15	159	8	9	4405
SOUTH DAKOTA	905	2298	5	63	1	3	3275
TENNESSEE	772	3148	22	198	14	6	4160
TEXAS	2674	10574	71	1165	35	94	14613
UTAH	261	1019	0	84	1	10	1375
VERMONT	135	447	4	8	0	0	594
VIRGINIA	601	2130	16	72	6	8	2833
WASHINGTON	445	3385	70	351	24	15	4290
WEST VIRGINIA	1270	1173	10	10	0	1	2464
WISCONSIN	658	6256	18	259	3	18	7212
WYOMING	162	438	2	26	1	0	629
PUERTO RICO	2	53	0	0	0	0	55
TOTAL	37798	166605	1210	10197	441	706	216957

TABLE 45. TOTAL CROSSINGS BY NUMBER OF TRAFFIC LANES AND HIGHEST WARNING DEVICE, 1978

HIGHEST WARNING DEVICE [1]	NUMBER OF LANES (BOTH DIRECTIONS) 1	2	3	4	5	>5	TOTAL
GATES	230	10924	234	2223	154	222	13987
FLASHING LIGHTS	816	28621	378	4015	176	262	34268
HWY. SIGNALS, WIGWAGS, BELLS	311	2544	41	270	28	49	3243
SPECIAL WARNING DEVICES	509	6095	127	705	19	37	7492
CROSSBUCKS	31247	104661	307	2293	48	102	138658
STOP SIGNS	552	2896	11	64	1	7	3531
OTHER SIGNS	240	788	7	20	0	2	1057
NO SIGNS OR SIGNALS	3893	10076	105	607	15	25	14721
TOTAL	37798	166605	1210	10197	441	706	216957

[1] See Appendix A for definition of highest warning device.

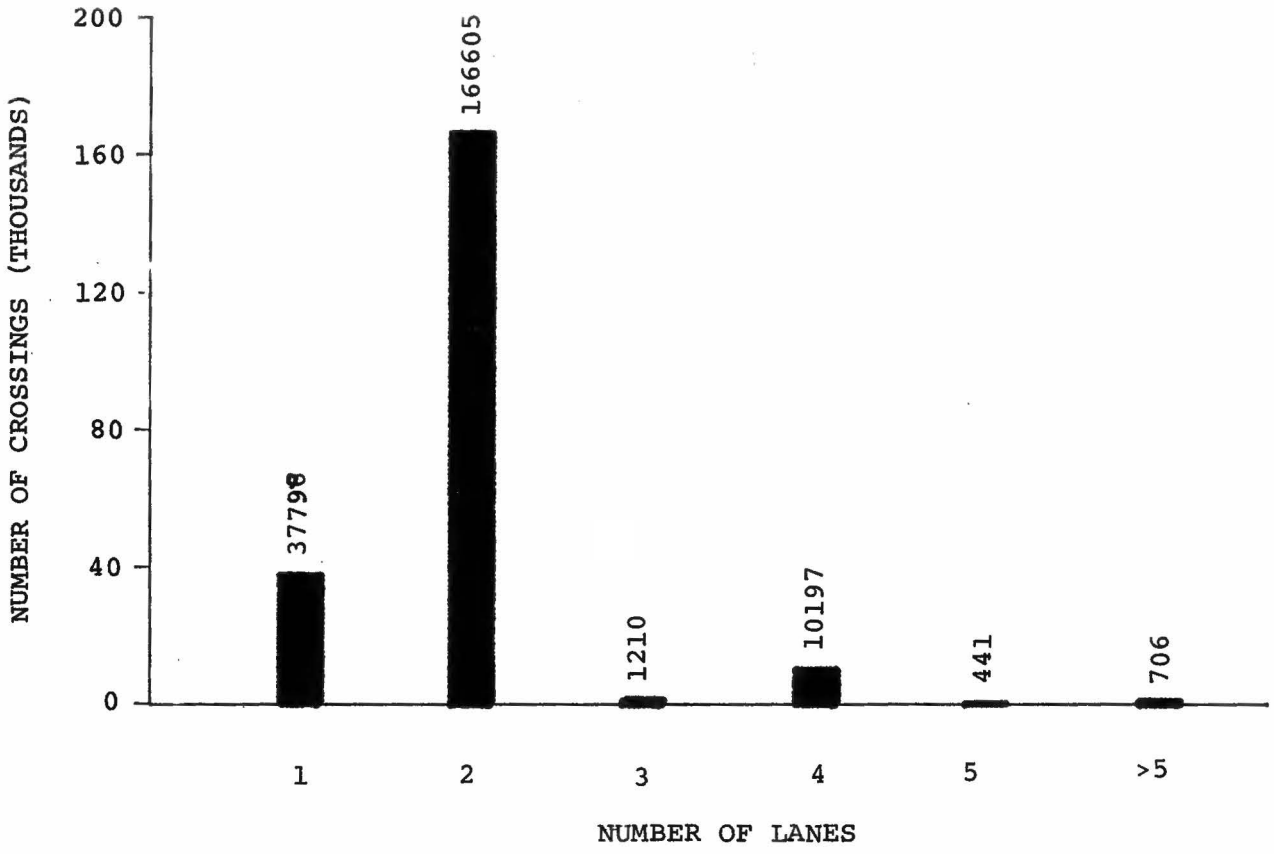


FIGURE 31. CROSSINGS BY NUMBER OF TRAFFIC LANES, 1978

3.1.4 WARNING DEVICE DATA

TABLE 46. TOTAL CROSSINGS BY HIGHEST WARNING DEVICE AND STATE, 1978

STATE	HIGHEST WARNING DEVICE[2] GATES	CANTI-LEVERED FLASHING LIGHTS	STANDARD FLASHING LIGHTS	HWY.-SIG. WIGWAGS BELLS	SPECIAL[1]	CROSS-BUCKS	STOP SIGNS	OTHER SIGNS	NO SIGNS OR SIGNALS	TOTAL
ALABAMA	118	64	528	20	56	3457	72	10	448	4773
ALASKA	1	3	41	0	18	146	2	1	13	225
ARIZONA	178	20	94	14	93	586	8	0	49	1042
ARKANSAS	128	52	384	30	105	2828	21	1	447	3996
CALIFORNIA	2361	257	1174	577	215	4274	96	21	417	9392
COLORADO	80	49	315	43	69	1662	22	2	129	2371
CONNECTICUT	48	8	162	8	93	76	10	2	121	528
DELAWARE	30	8	77	0	48	81	2	0	17	263
DIST. COLUMBIA	0	0	3	0	12	25	6	0	24	70
FLORIDA	968	341	678	8	165	3138	43	106	362	5809
GEORGIA	329	65	554	24	166	5284	18	11	497	6948
HAWAII	0	0	0	0	0	6	0	0	0	6
IDAHO	43	70	134	14	21	1805	7	2	94	2190
ILLINOIS	1575	263	2575	228	327	8063	12	2	559	13604
INDIANA	639	282	2071	168	280	5849	96	15	708	10108
IOWA	327	141	955	166	83	6786	6	1	322	8787
KANSAS	277	130	682	109	259	7952	2	1	253	9665
KENTUCKY	200	59	614	39	134	2129	5	0	473	3653
LOUISIANA	145	143	549	19	75	2778	318	29	807	4863
MAINE	61	12	333	28	167	496	0	4	16	1117
MARYLAND	71	18	173	35	91	485	15	42	191	1121
MASSACHUSETTS	164	16	429	43	247	280	2	2	47	1230
MICHIGAN	557	392	1492	81	263	5245	20	40	226	8316
MINNESOTA	193	83	852	20	45	6310	28	2	275	7808
MISSISSIPPI	28	65	298	19	60	388	2357	25	350	3590
MISSOURI	205	154	898	155	158	4489	8	3	486	6556

TABLE 46. (CONT.)

STATE	HIGHEST WARNING DEVICE[2]									
	GATES	CANTI-LEVERED FLASHING LIGHTS	STANDARD FLASHING LIGHTS	HWY.SIG. WIGWAGS BELLS	SPECIAL[1]	CROSS-BUCKS	STOP SIGNS	OTHER SIGNS	NO SIGNS OR SIGNALS	TOTAL
MONTANA	61	26	178	10	21	1709	3	1	215	2224
NEBRASKA	225	65	469	66	16	4415	6	24	263	5549
NEVADA	49	7	46	3	6	209	0	7	35	362
NEW HAMPSHIRE	24	13	144	16	179	304	9	4	26	719
NEW JERSEY	358	23	614	32	415	644	6	3	120	2215
NEW MEXICO	105	17	91	10	12	584	0	5	19	843
NEW YORK	696	56	1223	104	519	1559	1	56	234	4448
NORTH CAROLINA	274	214	618	35	250	3568	18	23	510	5510
NORTH DAKOTA	86	29	217	2	0	5035	2	0	398	5769
OHIO	682	325	1981	97	115	6235	15	17	499	9966
OKLAHOMA	124	138	576	57	169	4469	4	9	182	5728
OREGON	285	28	151	77	114	1805	99	12	357	2928
PENNSYLVANIA	525	158	1212	109	795	2785	77	442	610	6713
RHODE ISLAND	8	0	24	19	33	28	5	2	20	139
SOUTH CAROLINA	133	93	258	5	374	3250	1	18	273	4405
SOUTH DAKOTA	1	42	150	5	0	2965	0	1	111	3275
TENNESSEE	127	72	475	19	305	2337	35	2	788	4160
TEXAS	692	992	1765	147	107	9793	34	17	1067	14614
UTAH	49	51	170	13	122	816	5	50	99	1375
VERMONT	12	20	126	7	57	343	1	7	21	594
VIRGINIA	317	38	407	45	248	1433	2	14	347	2851
WASHINGTON	94	203	344	60	63	2975	21	12	518	4290
WEST VIRGINIA	64	49	266	20	52	1657	8	6	342	2464
WISCONSIN	259	144	1106	429	243	4737	1	3	290	7212
WYOMING	20	15	101	7	1	417	2	2	64	629
PUERTO RICO	4	0	1	2	48	0	0	0	0	55
TOTAL	14000	5513	28778	3244	7514	138690	3531	1059	14739	217068

[1] Special warning device not train activated, e.g. crossing flagged by crew.

[2] See Appendix A for definition of highest warning device.

TABLE 47. TOTAL CROSSINGS BY HIGHEST WARNING DEVICE AND RAILROAD (CLASS I), 1978

RAILROAD	GATES	CANTI-LEVERED FLASHING LIGHTS	STANDARD FLASHING LIGHTS	HWY. SIG. WIGWAGS BELLS	HIGHEST WARNING DEVICE[4] SPECIAL[1]	CROSS-BUCKS	STOP SIGNS	OTHER SIGNS	NO SIGNS OR SIGNALS	TOTAL
LINE HAUL RAILROAD										
ALABAMA GREAT SOUTHERN RAILROAD[2]	0	0	0	0	0	0	0	0	0	0
AMTRAK	45	0	12	0	1	2	0	1	0	61
ATCHISON, TOPEKA & SANTA FE	1154	397	1227	316	608	7991	8	11	84	11796
BALTIMORE & OHIO RAILWAY	223	225	961	44	117	3574	18	7	301	5470
BESSEMER & LAKE ERIE RAILROAD	21	1	24	0	4	94	0	0	3	147
BOSTON & MAINE CORPORATION	175	11	279	33	253	445	4	4	50	1254
BURLINGTON NORTHERN	741	302	1672	185	101	15968	124	28	1461	20582
CENTRAL OF GEORGIA RAILROAD[2]	0	0	0	0	0	0	0	0	0	0
CHESAPEAKE & OHIO RAILWAY	285	145	750	16	81	2977	6	2	323	4585
CHICAGO & NORTH WESTERN	426	184	1301	482	126	7865	6	6	437	10833
CHICAGO, MILWAUKEE, ST. PAUL & PACIFIC	238	191	1027	159	241	6619	4	8	505	8992
CHICAGO, ROCK ISLAND & PACIFIC	426	132	697	53	12	5088	9	3	340	6760
CINN., NEW ORLEANS & TEXAS PACIFIC[2]	0	0	0	0	0	0	0	0	0	0
CLINCHFIELD RAILROAD	6	0	21	3	10	94	0	0	9	143
COLORADO & SOUTHERN RAILWAY	4	17	56	9	2	296	3	0	35	422
CONSOLIDATED RAIL CORPORATION	1672	403	4074	296	1065	7388	88	335	1059	16380
THE ESTATES[3]	359	174	1577	127	835	4527	79	180	951	8809
DELAWARE & HUDSON RAILWAY	148	6	154	8	20	159	0	21	21	537
DENVER & RIO GRANDE WESTERN	34	24	190	2	6	765	4	2	84	1111
DETROIT, TOLEDO & IRONTON	16	16	93	0	9	381	1	0	14	530
DULUTH, MISSABE & IRON RANGE	5	0	43	0	4	172	1	1	0	226
ELGIN, JOLIET & EASTERN	71	6	70	1	13	88	0	0	1	250
FLORIDA EAST COAST RAILWAY	397	28	121	0	4	261	0	0	12	823
FORT WORTH & DENVER RAILWAY	14	55	51	0	3	698	0	2	116	939
GRAND TRUNK WESTERN	254	62	304	11	100	648	2	0	5	1386
ILLINOIS CENTRAL GULF RAILROAD	404	169	1181	191	178	5000	2227	17	691	10058
KANSAS CITY SOUTHERN RAILWAY	13	36	127	10	0	694	2	0	122	1004
LONG ISLAND RAIL ROAD	273	0	29	0	0	11	0	0	1	314
LOUISIANA & ARKANSAS RAILWAY COMPANY	9	28	110	0	0	506	1	0	65	719
LOUISVILLE & NASHVILLE	346	148	1328	48	210	4846	70	11	903	7910
MISSOURI-KANSAS-TEXAS RAILROAD	53	103	258	58	2	1537	2	1	192	2206
MISSOURI PACIFIC RAILROAD	399	419	1532	60	129	8654	23	6	1105	12327
NORFOLK & WESTERN RAILWAY	524	192	1480	147	196	4831	18	10	367	7765
PITTSBURGH & LAKE ERIE RAILROAD	18	0	10	2	3	64	0	0	15	112
ST. LOUIS-SAN FRANCISCO RAILWAY	118	183	591	46	221	3883	94	3	262	5401
ST. LOUIS SOUTHWESTERN RAILWAY	58	50	188	0	2	1059	9	0	58	1424
SEABOARD COAST LINE RAILROAD	996	476	1099	22	520	8125	35	11	564	11848
SOO LINE	72	52	506	27	1	3590	1	1	112	4362
SOUTHERN PACIFIC TRANSPORTATION COMPANY	2265	368	1189	501	31	6398	89	24	916	11781
SOUTHERN RAILWAY	453	245	1282	39	625	8585	36	37	1779	13081
UNION PACIFIC RAILROAD	380	206	649	90	173	5736	21	56	510	7821
WESTERN MARYLAND RAILWAY	25	14	119	11	28	253	2	17	26	495
WESTERN PACIFIC	158	24	79	18	0	293	10	1	47	630

TABLE 47. (CONT.)

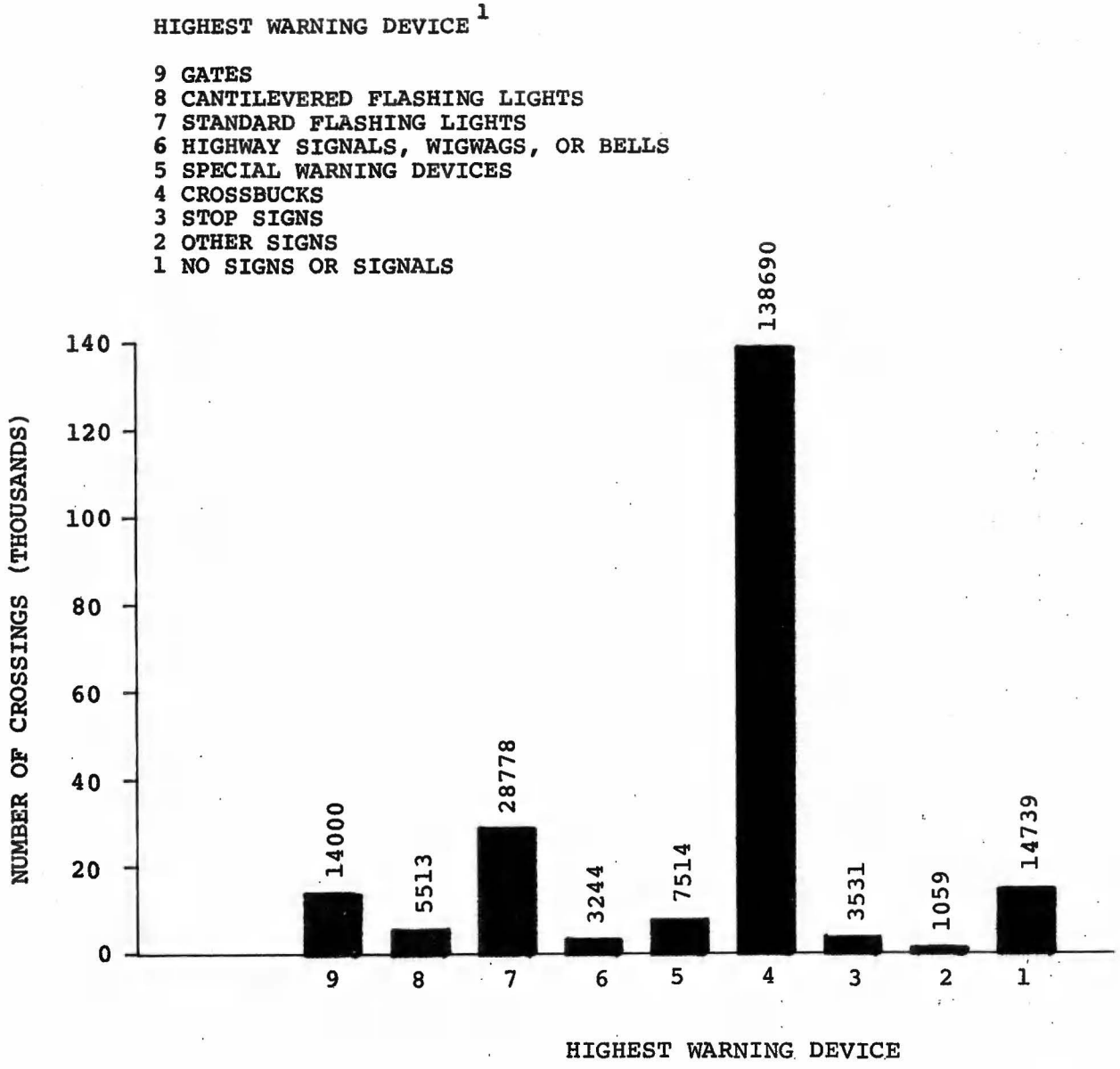
RAILROAD	GATES	CANTI-LEVERED FLASHING LIGHTS	STANDARD FLASHING LIGHTS	HWY. SIG. WIGWAGS BELLS	HIGHEST WARNING DEVICE[4] SPECIAL[1]	CROSS-BUCKS	STOP SIGNS	OTHER SIGNS	NO SIGNS OR SIGNALS	TOTAL
SWITCHING & TERMINAL RAILROAD										
UNION RAILROAD COMPANY (PITTSBURGH)	3	5	9	0	0	0	0	0	0	17
RECAPITULATION										
TOTAL CLASS I - LINE HAUL	13278	5092	26461	3015	5934	130165	2997	806	13546	201294
TOTAL CLASS I - SWITCHING & TERMINAL	3	5	9	0	0	0	0	0	0	17
CLASS II & III RAILROADS	719	416	2308	229	1580	8525	534	253	1193	15757
TOTAL	14000	5513	28778	3244	7514	138690	3531	1059	14739	217068

1 Special warning device not train activated, e.g. crossing flagged by crew.

2 Crossings on these lines are included under Southern Railway.

3 Crossings on lines not merged into Consolidated Rail Corporation or not yet identified as belonging to Consolidated Rail Corporation.

4 See Appendix A for definition of highest warning device.



[1] See Appendix A for definition of highest warning device.

FIGURE 32. CROSSINGS BY HIGHEST WARNING DEVICE, 1978

TABLE 48. TOTAL CROSSINGS BY PAVEMENT MARKINGS[1] AND STATE, 1978

STATE	PAVEMENT MARKING STOP LINES	RR XING SYMBOL	BOTH	NONE PAVED	NONE UNPAVED	TOTAL
ALABAMA	37	103	124	3341	1168	4773
ALASKA	3	1	13	94	114	225
ARIZONA	51	11	188	471	321	1042
ARKANSAS	53	91	115	2040	1697	3996
CALIFORNIA	1136	244	5314	2318	380	9392
COLORADO	19	29	49	1277	997	2371
CONNECTICUT	15	3	88	416	6	528
DELAWARE	2	17	15	221	8	263
DIST. COLUMBIA	1	0	0	68	1	70
FLORIDA	337	122	1353	2897	1100	5809
GEORGIA	65	152	347	4190	2194	6948
HAWAII	2	0	0	4	0	6
IDAHO	37	6	113	1029	1005	2190
ILLINOIS	114	256	488	8537	4209	13604
INDIANA	90	216	1453	6404	1945	10108
IOWA	79	108	598	3114	4888	8787
KANSAS	31	85	255	3091	6203	9665
KENTUCKY	78	153	346	2130	946	3653
LOUISIANA	8	31	131	3491	1202	4863
MAINE	9	15	96	835	162	1117
MARYLAND	47	24	95	876	79	1121
MASSACHUSETTS	46	14	34	1096	40	1230
MICHIGAN	80	139	626	5029	2442	8316
MINNESOTA	117	202	416	3013	4060	7808
MISSISSIPPI	15	22	14	2378	1161	3590
MISSOURI	89	150	588	2702	3027	6556
MONTANA	9	28	23	647	1517	2224
NEBRASKA	49	95	278	1427	3700	5549
NEVADA	9	0	52	137	164	362
NEW HAMPSHIRE	21	7	21	588	82	719
NEW JERSEY	50	85	86	1859	135	2215
NEW MEXICO	4	15	39	361	424	843
NEW YORK	132	248	297	3365	406	4448
NORTH CAROLINA	348	170	1052	3055	885	5510
NORTH DAKOTA	14	14	185	772	4784	5769
OHIO	741	792	4787	2768	878	9966
OKLAHOMA	19	17	45	2926	2721	5728
OREGON	150	322	464	1356	636	2928
PENNSYLVANIA	67	348	163	5352	783	6713
RHODE ISLAND	13	0	5	121	0	139
SOUTH CAROLINA	100	130	467	2883	825	4405
SOUTH DAKOTA	19	4	104	876	2272	3275
TENNESSEE	14	26	83	3064	973	4160
TEXAS	219	487	1222	8073	4613	14614
UTAH	15	14	102	874	370	1375
VERMONT	13	17	23	350	191	594
VIRGINIA	109	116	746	1494	386	2851
WASHINGTON	164	30	580	2538	978	4290
WEST VIRGINIA	26	11	104	1501	822	2464
WISCONSIN	73	18	64	5829	1228	7212
WYOMING	16	4	37	171	401	629
PUERTO RICO	0	14	0	36	5	55
TOTAL	4955	5206	23888	113485	69534	217068

[1] The Manual on Uniform Traffic Control Devices does not require pavement markings at all crossings.

TABLE 49. TOTAL CROSSINGS BY RAILROAD ADVANCE WARNING[1] AND STATE, 1978

STATE	RAILROAD ADVANCE WARNING YES	NO	TOTAL
ALABAMA	885	3888	4773
ALASKA	68	157	225
ARIZONA	467	575	1042
ARKANSAS	574	3422	3996
CALIFORNIA	7380	2012	9392
COLORADO	786	1568	2354
CONNECTICUT	230	297	527
DELAWARE	223	40	263
DIST. COLUMBIA	30	40	70
FLORIDA	2399	3383	5782
GEORGIA	1136	5812	6948
HAWAII	1	5	6
IDAHO	466	1724	2190
ILLINOIS	4865	8739	13604
INDIANA	5999	4109	10108
IOWA	4559	4228	8787
KANSAS	3525	6140	9665
KENTUCKY	762	2891	3653
LOUISIANA	1254	3609	4863
MAINE	890	227	1117
MARYLAND	429	692	1121
MASSACHUSETTS	888	342	1230
MICHIGAN	5401	2915	8316
MINNESOTA	3250	4558	7808
MISSISSIPPI	368	3222	3590
MISSOURI	1238	5318	6556
MONTANA	324	1900	2224
NEBRASKA	1981	3568	5549
NEVADA	104	258	362
NEW HAMPSHIRE	515	204	719
NEW JERSEY	781	1434	2215
NEW MEXICO	167	676	843
NEW YORK	3276	1172	4448
NORTH CAROLINA	3938	1572	5510
NORTH DAKOTA	931	4838	5769
OHIO	6177	3789	9966
OKLAHOMA	1007	4721	5728
OREGON	1717	1211	2928
PENNSYLVANIA	2445	4268	6713
RHODE ISLAND	19	120	139
SOUTH CAROLINA	2209	2196	4405
SOUTH DAKOTA	885	2390	3275
TENNESSEE	560	3600	4160
TEXAS	3257	11357	14614
UTAH	400	975	1375
VERMONT	201	393	594
VIRGINIA	1755	1080	2835
WASHINGTON	2852	1438	4290
WEST VIRGINIA	506	1958	2464
WISCONSIN	3138	4074	7212
WYOMING	111	518	629
PUERTO RICO	32	23	55
TOTAL	87361	129646	217007

[1] The Manual on Uniform Traffic Control Devices does not require railroad advance warning at all crossings.

TABLE 50. TOTAL CROSSINGS MEETING THE MANUAL ON UNIFORM TRAFFIC CONTROL DEVICE'S (MUTCD) STANDARD FOR CROSSBUCKS BY STATE[1], 1978

STATE	ACTIVE WARNING DEVICE[2]	MEETS STANDARDS YES	NO	TOTAL
ALABAMA	730	3038	1005	4773
ALASKA	45	145	35	225
ARIZONA	306	507	229	1042
ARKANSAS	594	1625	1777	3996
CALIFORNIA	4369	3206	1817	9392
COLORADO	487	1379	505	2371
CONNECTICUT	226	138	164	528
DELAWARE	115	29	119	263
DIST. COLUMBIA	3	12	55	70
FLORIDA	1995	2822	992	5809
GEORGIA	972	5055	921	6948
HAWAII	0	5	1	6
IDAHO	261	1737	192	2190
ILLINOIS	4641	6175	2788	13604
INDIANA	3160	4018	2930	10108
IOWA	1589	6418	780	8787
KANSAS	1198	5641	2826	9665
KENTUCKY	912	1876	865	3653
LOUISIANA	856	2346	1661	4863
MAINE	434	372	311	1117
MARYLAND	297	239	585	1121
MASSACHUSETTS	652	351	227	1230
MICHIGAN	2522	4264	1530	8316
MINNESOTA	1148	6221	439	7808
MISSISSIPPI	410	365	2815	3590
MISSOURI	1412	3232	1912	6556
MONTANA	275	1316	633	2224
NEBRASKA	825	3817	907	5549
NEVADA	105	136	121	362
NEW HAMPSHIRE	197	348	174	719
NEW JERSEY	1027	545	643	2215
NEW MEXICO	223	567	53	843
NEW YORK	2079	1211	1158	4448
NORTH CAROLINA	1141	3324	1045	5510
NORTH DAKOTA	334	3452	1983	5769
OHIO	3085	4698	2183	9966
OKLAHOMA	895	2517	2316	5728
OREGON	541	1303	1084	2928
PENNSYLVANIA	2004	1975	2734	6713
RHODE ISLAND	51	8	80	139
SOUTH CAROLINA	489	3311	605	4405
SOUTH DAKOTA	198	2776	301	3275
TENNESSEE	693	2267	1200	4160
TEXAS	3596	6470	4548	14614
UTAH	283	786	306	1375
VERMONT	165	151	278	594
VIRGINIA	807	1082	962	2851
WASHINGTON	701	2397	1192	4290
WEST VIRGINIA	399	1211	854	2464
WISCONSIN	1938	4239	1035	7212
WYOMING	143	340	146	629
PUERTO RICO	7	18	30	55
TOTAL	51535	111481	54052	217068

1 The Manual on Uniform Traffic Control Devices states that two reflectorized crossbucks be in place at all crossings.

2 Crossings with active warning devices are considered as meeting the MUCTD standard for crossbucks.

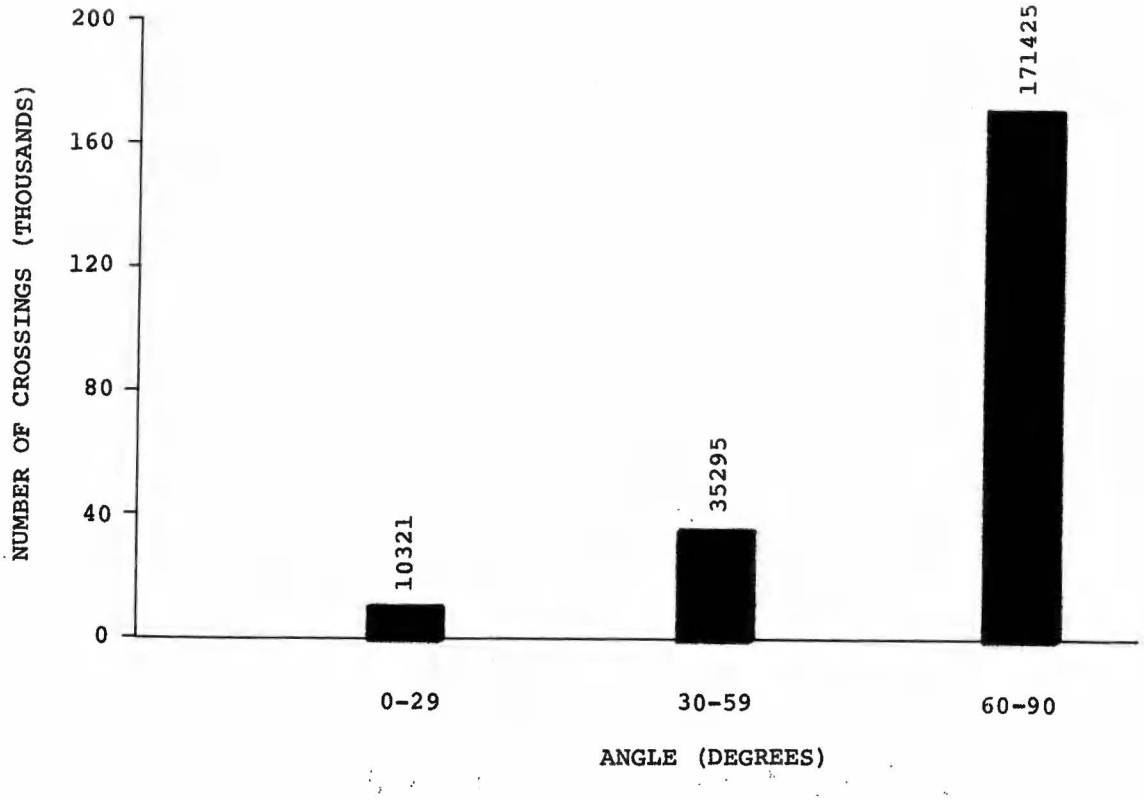


FIGURE 33. CROSSINGS BY SMALLEST CROSSING ANGLE, 1978

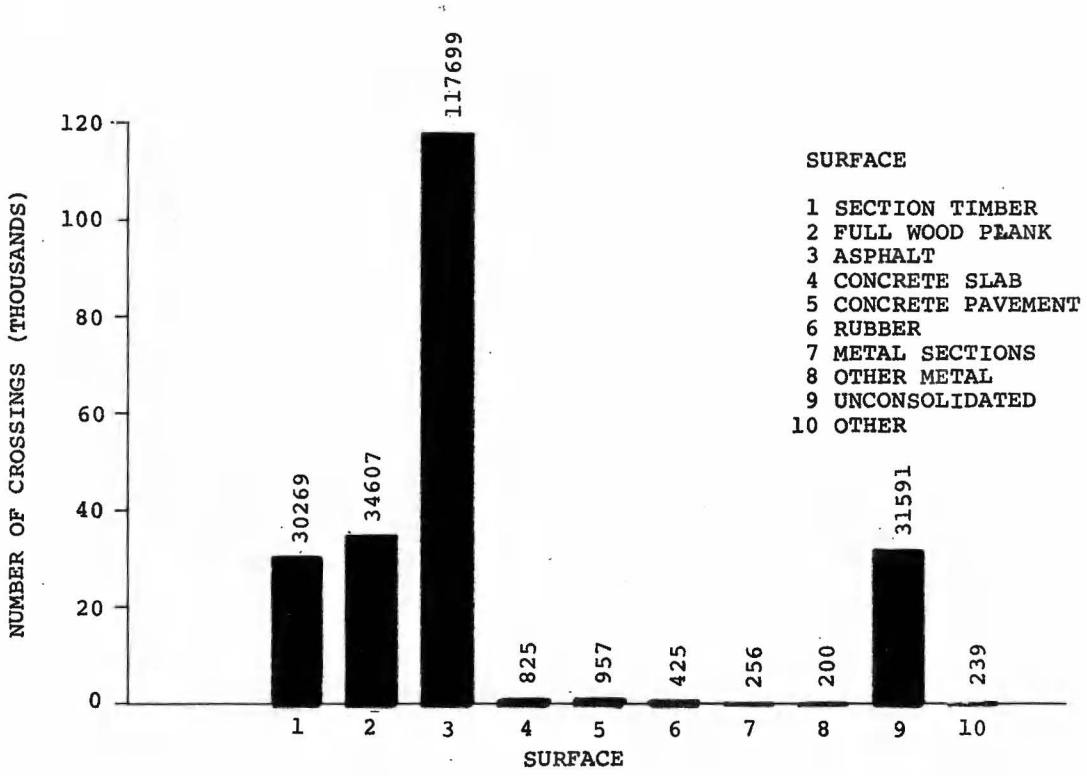


FIGURE 34. CROSSINGS BY CROSSING SURFACE, 1978

3.2 OPERATIONAL CHARACTERISTICS

3.2.1 TRAIN TRAFFIC DATA

TABLE 51. TOTAL CROSSINGS BY TOTAL NUMBER OF TRAINS PER DAY, 1978

TRAINS PER DAY	CROSSINGS	TRAINS PER DAY	CROSSINGS
01-05	100828	101-105	25
06-10	36391	106-110	60
11-15	12757	111-115	4
16-20	12891	116-120	12
21-25	5612	121-125	13
26-30	4571	126-130	4
31-35	2284	131-135	6
36-40	1715	136-140	12
41-45	529	141-145	8
46-50	1079	146-150	3
51-55	255	151-155	2
56-60	510	156-160	4
61-65	268	161-165	2
66-70	148	166-170	5
71-75	116	171-175	0
76-80	186	176-180	3
81-85	41	181-185	0
86-90	42	186-190	2
91-95	74	191-195	2
96-100	86	196-200	23
<1	36485	>200	10

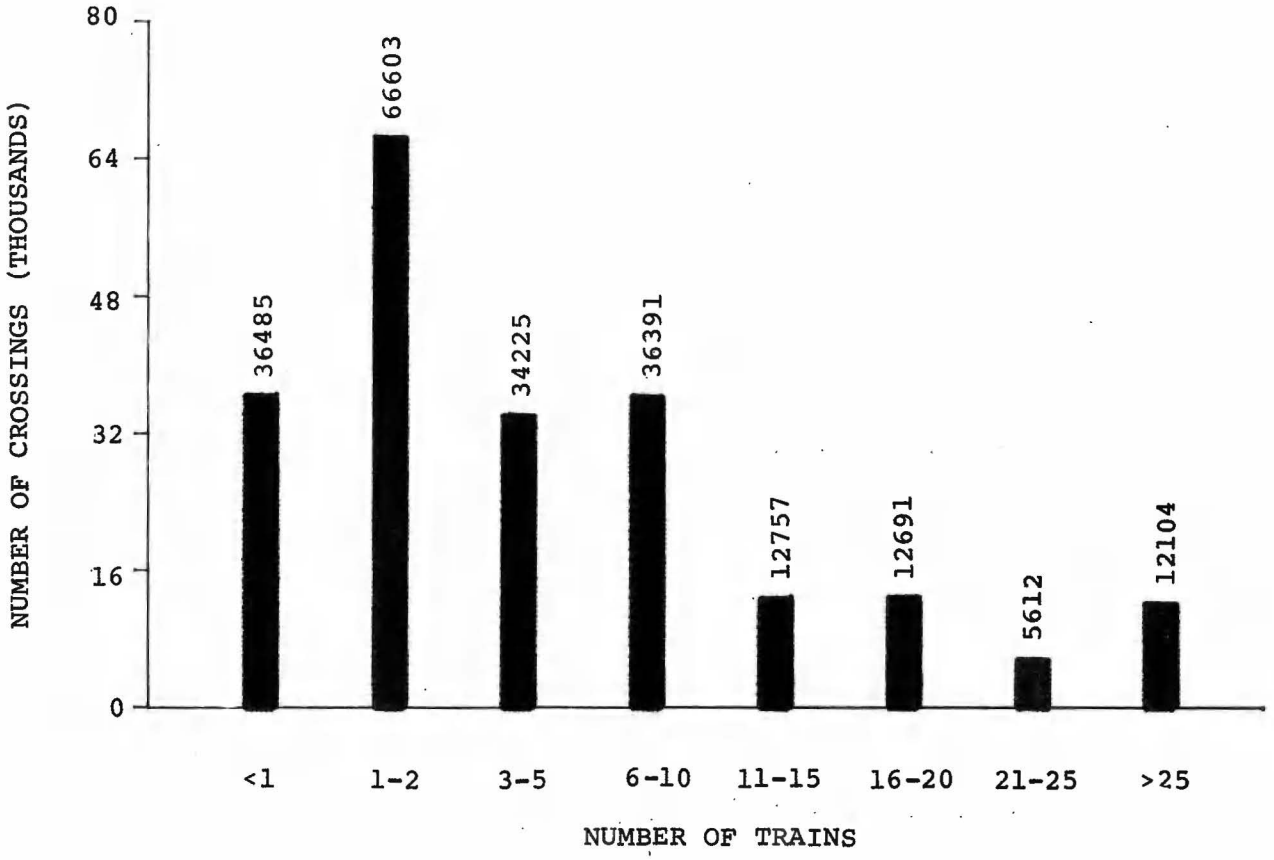
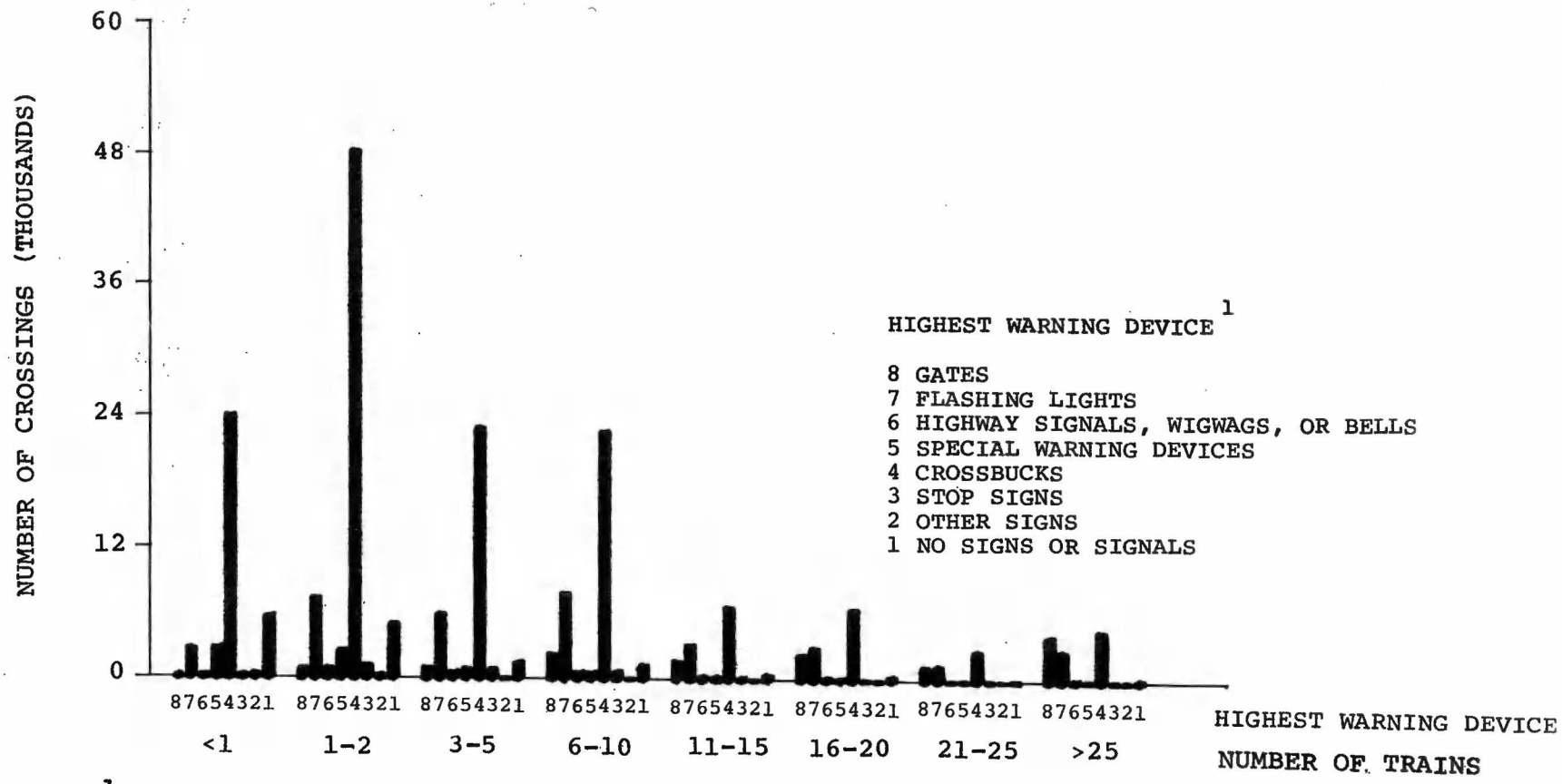


FIGURE 35. CROSSINGS BY TOTAL NUMBER OF TRAINS PER DAY, 1978



[1] See Appendix A for definition of highest warning device.

FIGURE 36. CROSSINGS BY NUMBER OF TRAINS PER DAY AND HIGHEST WARNING DEVICE, 1978

TABLE 52. TOTAL CROSSINGS BY NUMBER OF THRU TRAINS AND SWITCHING TRAINS PER DAY, 1978

NUMBER OF SWITCHING TRAINS	NUMBER OF THRU TRAINS								
	<1	1-2	3-5	6-10	11-15	16-20	21-25	>25	TOTAL
<1	36485	37064	16109	16592	4674	6063	2320	4447	123754
1-2	28284	10015	7144	7334	3010	2689	1112	1947	61535
3-5	6651	1864	1911	2654	1184	793	509	1008	16574
6-10	3697	974	1126	1696	668	827	366	571	9925
11-15	766	137	193	315	145	129	83	156	1924
16-20	670	141	130	252	87	91	130	143	1644
21-25	163	32	19	174	16	17	40	55	516
>25	415	95	76	181	118	121	28	162	1196
TOTAL	77131	50322	26708	29198	9902	10730	4588	8489	217068

TABLE 53. TOTAL CROSSINGS BY NUMBER OF DAY AND NIGHT TRAINS PER DAY, 1978

NUMBER OF DAY TRAINS	NUMBER OF NIGHT TRAINS								
	<1	1-2	3-5	6-10	11-15	16-20	21-25	>25	TOTAL
<1	36485	9636	1093	249	17	4	2	1	47487
1-2	40005	34677	3590	509	26	47	0	0	78854
3-5	6553	13376	18421	1991	233	175	3	3	40755
6-10	2319	2732	7828	15516	1732	184	10	17	30338
11-15	205	275	648	3436	5404	712	55	27	10762
16-20	98	38	75	780	1351	2122	169	191	4824
21-25	14	12	10	97	353	269	580	128	1463
>25	55	14	10	104	244	457	437	1264	2585
TOTAL	85734	60760	31675	22682	9360	3970	1256	1631	217068

TABLE 54. TOTAL CROSSINGS BY NUMBER OF TRAINS PER DAY AND HIGHEST WARNING DEVICE, 1978

HIGHEST WARNING DEVICE [1]	NUMBER OF TRAINS <1	1-2	3-5	6-10	11-15	16-20	21-25	>25	TOTAL
GATES	283	917	1021	2288	1691	2400	1255	4145	14000
FLASHING LIGHTS	2708	7384	6004	7979	3192	2975	1354	2695	34291
HWY. SIGNALS, WIGWAGS, BELLS	310	902	626	633	263	211	103	196	3244
SPECIAL WARNING DEVICES	2788	2549	941	593	246	199	40	158	7514
CROSSBUCKS	23963	48303	23033	22767	6707	6605	2710	4602	138690
STOP SIGNS	313	1184	861	701	182	140	46	104	3531
OTHER SIGNS	388	294	150	134	33	36	2	22	1059
NO SIGNS OR SIGNALS	5732	5070	1589	1296	443	325	102	182	14739
TOTAL	36485	66603	34225	36391	12757	12891	5612	12104	217068

[1] See Appendix A for definition of highest warning device.

TABLE 55. TOTAL CROSSINGS BY NUMBER OF TRAINS PER DAY AND ANNUAL AVERAGE DAILY TRAFFIC, 1978

NUMBER OF TRAINS	ANNUAL AVERAGE DAILY TRAFFIC 1-250	251-500	501-1K	1K-5K	5K-10K	>10K	TOTAL
<1	18429	4095	3759	6876	2044	1188	36391
1-2	37643	7152	6327	10647	2905	1799	66473
3-5	18127	3843	3506	5995	1629	1073	34173
6-10	19424	4168	3642	6189	1773	1118	36314
11-15	6119	1289	1379	2617	794	547	12745
16-20	6137	1445	1448	2552	779	491	12852
21-25	2603	648	675	1171	308	194	5599
>25	4868	1262	1339	2893	1043	659	12064
TOTAL	113350	23902	22075	38940	11275	7069	216611

K = THOUSANDS

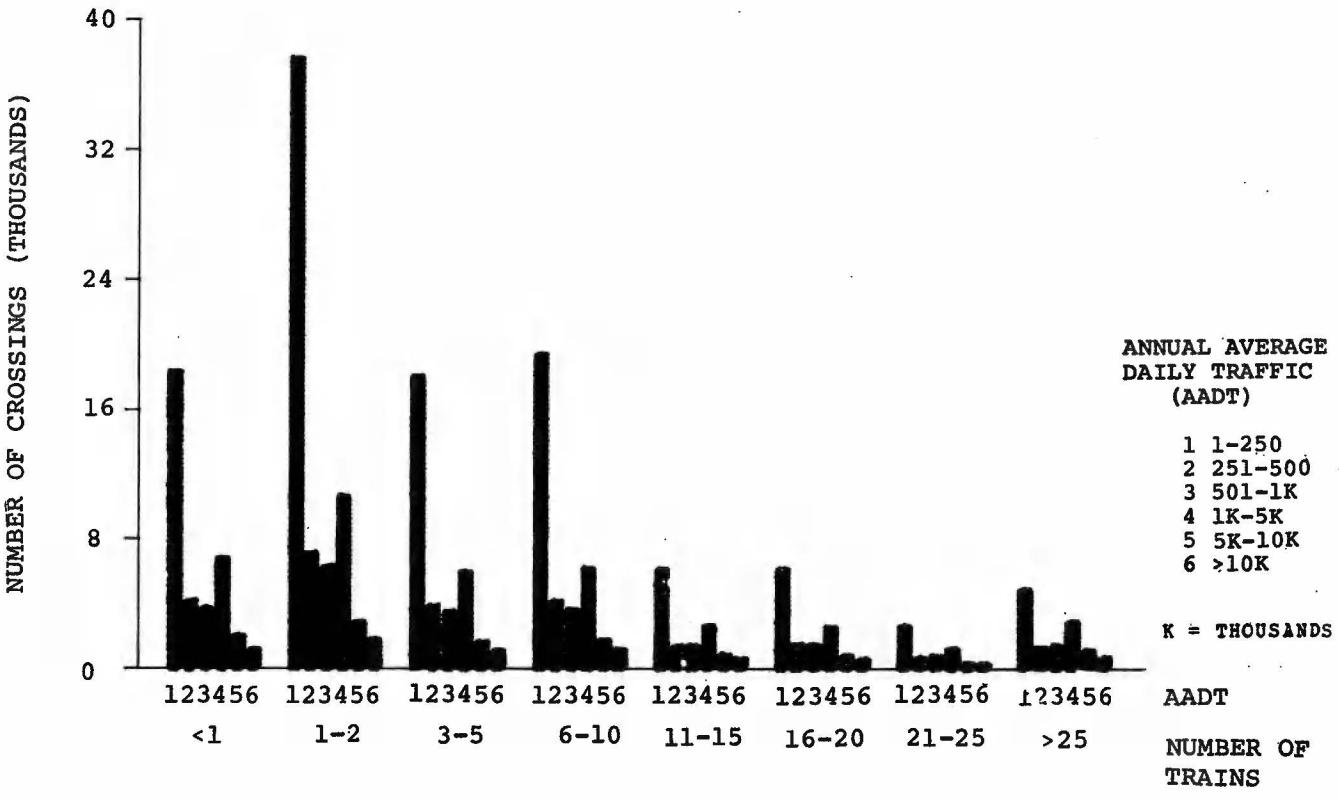


FIGURE 37. CROSSINGS BY NUMBER OF TRAINS PER DAY AND ANNUAL AVERAGE DAILY TRAFFIC, 1978

3.2.2 TRAIN SPEED DATA

TABLE 56. TOTAL CROSSINGS BY MAXIMUM TIMETABLE SPEED, 1978

MAXIMUM SPEED (MPH)	CROSSINGS	MAXIMUM SPEED (MPH)	CROSSINGS	MAXIMUM SPEED (MPH)	CROSSINGS
01-05	9919	36-40	20435	71-75	862
06-10	30964	41-45	5632	76-80	5247
11-15	17204	46-50	18309	81-85	11
16-20	17577	51-55	2680	86-90	852
21-25	25090	56-60	11816	91-95	0
26-30	28186	61-65	1221	96-100	5
31-35	15975	66-70	4568	>100	6

TABLE 57. TOTAL CROSSINGS BY TYPICAL TRAIN SPEED VARIATION, 1978

TYPICAL SPEED VARIATION[1] (MPH)	CROSSINGS	TYPICAL SPEED VARIATION (MPH)	CROSSINGS	TYPICAL SPEED VARIATION (MPH)	CROSSINGS
01-05	60147	36-40	6690	71-75	676
06-10	53930	41-45	3397	76-80	487
11-15	24744	46-50	5084	81-85	58
16-20	21263	51-55	1066	86-90	61
21-25	13162	56-60	2624	91-95	0
26-30	12310	61-65	808	96-100	0
31-35	6151	66-70	744	>100	2

<1 3664

[1]Typical speed variation is the difference between typical maximum and typical minimum speeds.

3.2.3 HIGHWAY TRAFFIC DATA

TABLE 58. TOTAL CROSSINGS BY ANNUAL AVERAGE DAILY TRAFFIC (AADT), 1978

AADT	CROSSINGS	AADT	CROSSINGS	AADT	CROSSINGS
1-100	79428	1-1K	159327	1-10K	209542
101-200	20421	1K-2K	17475	10K-20K	5727
201-300	20221	2K-3K	10395	20K-30K	1088
301-400	8290	3K-4K	5790	30K-40K	201
401-500	8892	4K-5K	5280	40K-50K	30
501-600	4906	5K-6K	3080	50K-60K	7
601-700	3780	6K-7K	2323	60K-70K	4
701-800	5922	7K-8K	2374	70K-80K	4
801-900	2874	8K-9K	1583	80K-90K	3
901-1K	4593	9K-10K	1915	90K-100K	1
				>100K	4

K = THOUSANDS

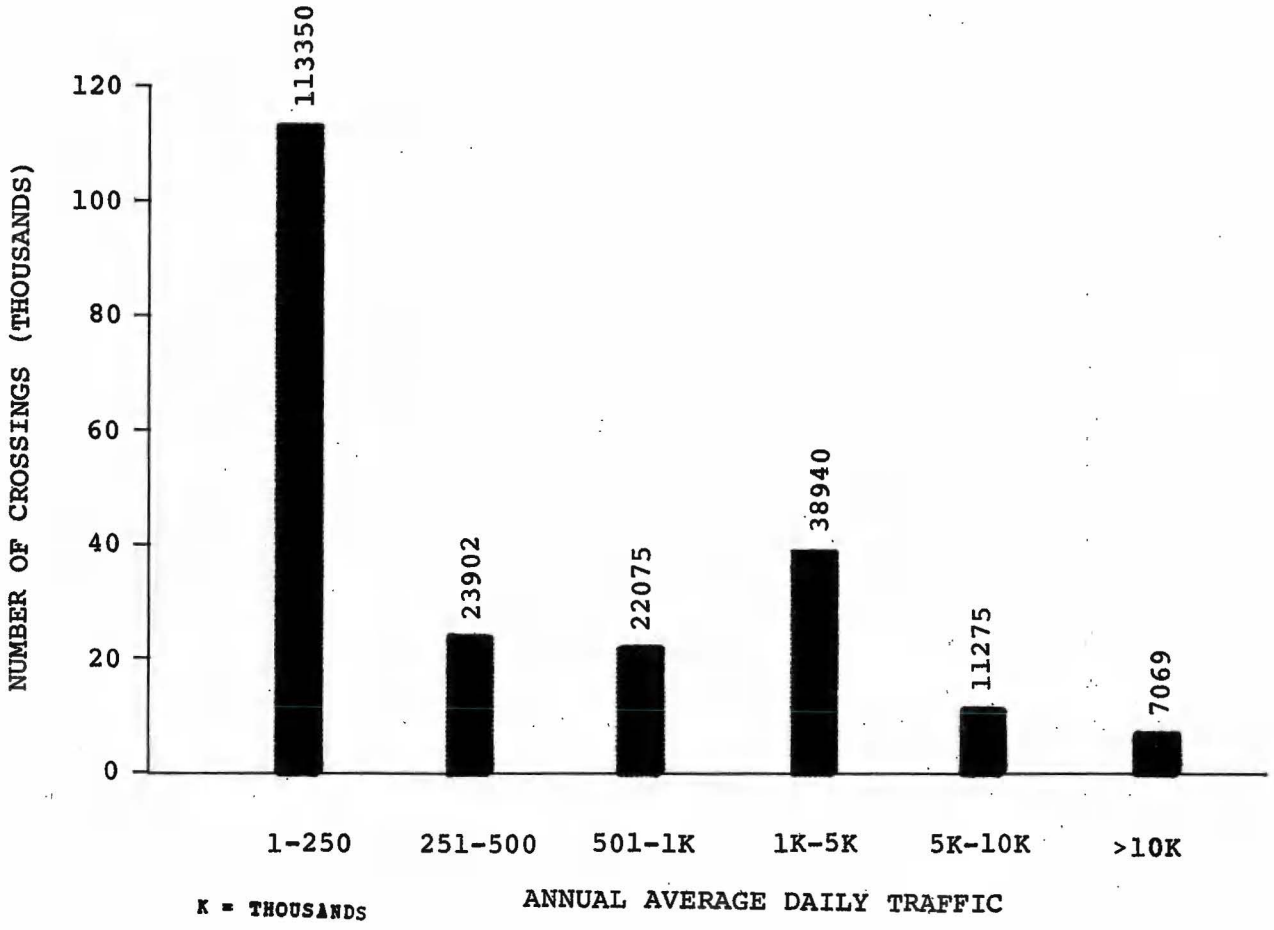


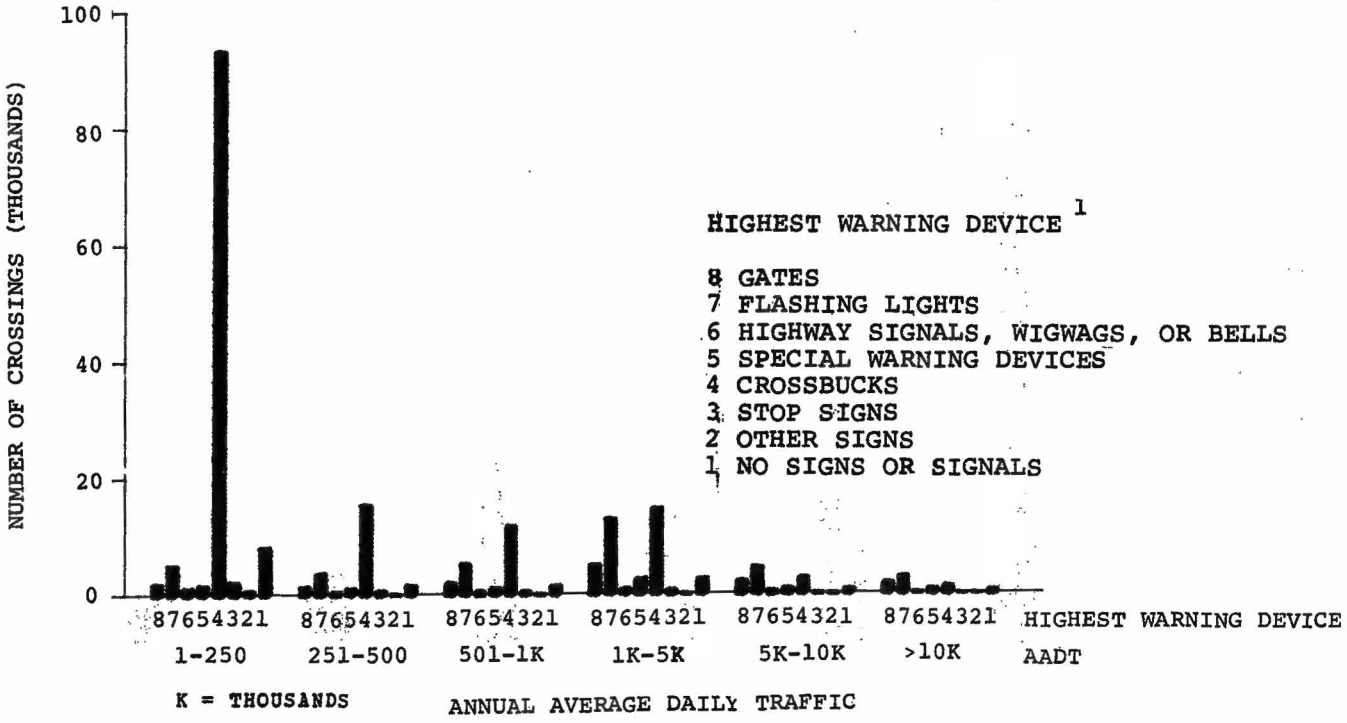
FIGURE 38. CROSSINGS BY ANNUAL AVERAGE DAILY TRAFFIC (AADT), 1978

TABLE 59. TOTAL CROSSINGS BY ANNUAL AVERAGE DAILY TRAFFIC AND HIGHEST WARNING DEVICE[1], 1978

HIGHEST WARNING DEVICE [1]	ANNUAL AVERAGE DAILY TRAFFIC 1-250	251-500	501-1K	1K-5K	5K-10K	>10K	TOTAL
GATES	1804	1269	1848	5051	2215	1772	13959
FLASHING LIGHTS	5087	3698	5158	12988	4407	2908	34246
HWY. SIGNALS, WIGWAGS, BELLS	993	388	462	882	284	234	3243
SPECIAL WARNING DEVICES	1599	925	990	2443	877	642	7476
CROSSBUCKS	93256	15300	11633	14533	2644	1106	138472
STOP SIGNS	2080	475	382	484	79	25	3525
OTHER SIGNS	519	203	139	140	40	13	1054
NO SIGNS OR SIGNALS	8012	1644	1463	2419	729	369	14636
TOTAL	113350	23902	22075	38940	11275	7069	216611

K = THOUSANDS

[1] See Appendix A for definition of highest warning device.



[1] See Appendix A for definition of highest warning device.

FIGURE 39. CROSSINGS BY ANNUAL AVERAGE DAILY TRAFFIC AND HIGHEST WARNING DEVICE, 1978

TABLE 60. TOTAL CROSSINGS BY TRUCK TRAFFIC AS PERCENT OF ANNUAL AVERAGE DAILY TRAFFIC, 1978

%	CROSSINGS	%	CROSSINGS
<1	7885		
01-05	86084	51-55	21
06-10	76000	56-60	165
11-15	23105	61-65	5
16-20	10159	66-70	58
21-25	2446	71-75	115
26-30	8003	76-80	70
31-35	418	81-85	6
36-40	1173	86-90	57
41-45	159	91-95	1
46-50	1133	96-99	5

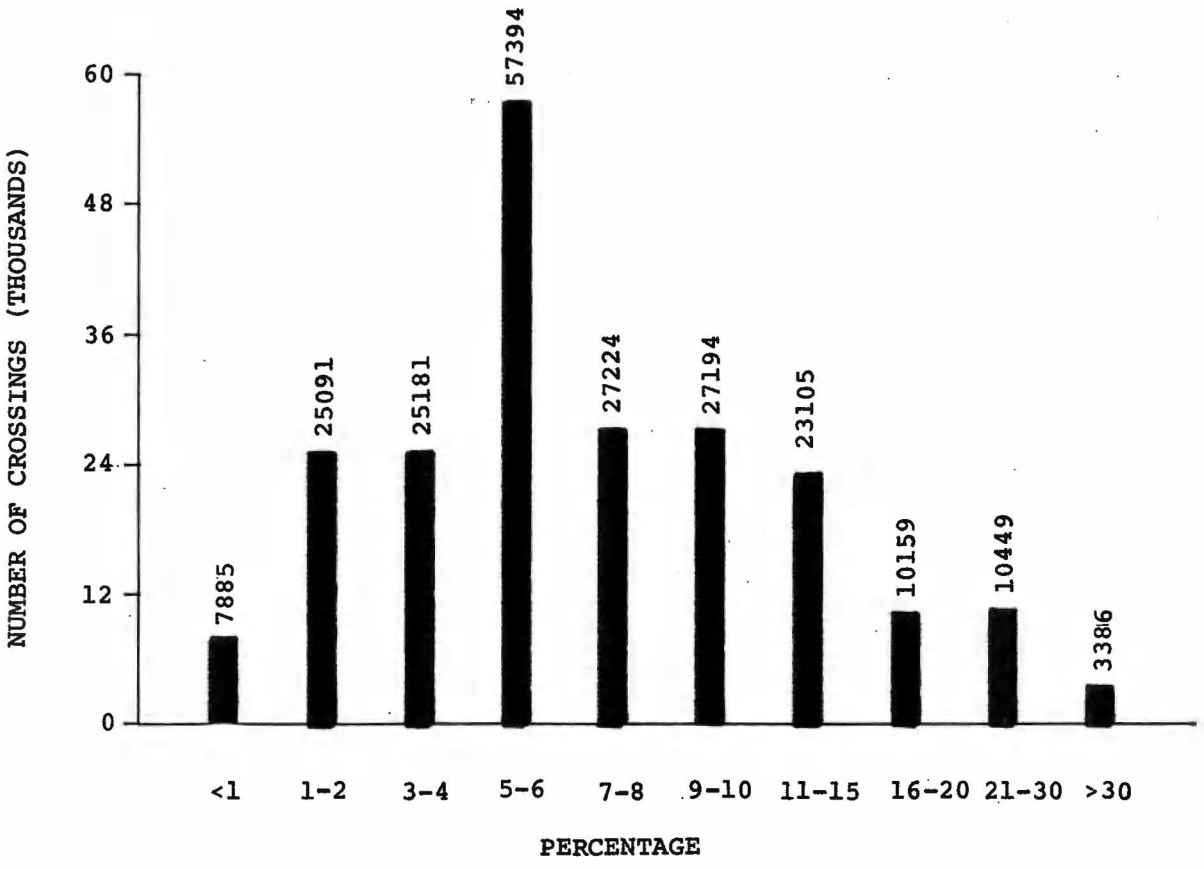


FIGURE 40. CROSSINGS BY TRUCK TRAFFIC AS PERCENT OF ANNUAL AVERAGE DAILY TRAFFIC, 1978

APPENDIX A: DEFINITIONS

ACCIDENT/INCIDENT REPORTABILITY REQUIREMENTS

The rules governing monthly reporting of railroad accidents/incidents, which were in effect at the end of 1978, define a reportable accident/incident as an event arising from the operation of a railroad that results in one or more stated circumstances.

(a) An impact occurs between railroad on-track equipment and an automobile, bus, truck, motorcycle, bicycle, farm vehicle, pedestrian or other highway user at a rail-highway grade crossing.

(b) Any collision, derailment, fire, explosion, act of God or other event involving the operation of railroad on-track equipment (standing or moving) which results in more than $2300 in damages to railroad on-track equipment, signals, track and/or track structures, and roadbed.

(c) Any event arising from the operation of a railroad which results in:

(i) death of one or more persons;

(ii) injury to one or more persons, other than railroad employees, requiring medical treatment;

(iii) injury to one or more employees requiring medical treatment or resulting in restriction of work or motion for one or more days, one or more lost workdays, transfer to another job, termination of employment or loss of consciousness;

(iv) any occupational illness of a railroad employee diagnosed by a physician.

CLASSIFICATION OF ACCIDENTS/INCIDENTS

Accidents/Incidents are divided into the following groups:

Train accidents are defined as those events, with or without casualties, arising from the operation of railroad on-track equipment which satisfies the conditions specified in (b) above.

From 1957 through 1974, the damage threshold for reporting train accidents remained at $750. In 1975, the threshold was increased to $1750, and in 1977 it was increased to $2300. The reporting threshold is reviewed periodically and adjusted every two years as necessary.

Train incidents are defined as those events arising from the movement of railroad on-track equipment which result in a reportable death, injury or illness, but do not result in railroad, equipment, track or roadbed damage of more than $2300.

Non-train incidents are defined as events which result in a reportable death, injury or illness arising from the operation of a railroad and not the movement of railroad on-track equipment.

CLASSIFICATION OF CASUALTIES

Fatalities: Prior to 1975, a railroad operation death occurring more than 24 hours after the initial injury was reported as an injury and as a subsequent fatality. Such fatal injuries are now classified as fatalities. In addition, fatalities resulting from occupational illnesses within 365 days of the initial diagnosis are now reportable. These were not reportable prior to 1975.

Occupational Illness: This is a new category with no counterpart in casualty statistics prior to 1975. In this publication, nonfatal illnesses are included as injury data.

Occupational Injuries: The definition of a reportable injury was substantially changed in 1975. This made railroad industry statistics comparable with those published by the Occupational Safety and Health Administration (OSHA) for other industries. Previous regulations required that injury to an employee was to be reported if performance of normally assigned duties was prevented for more than 24 hours during the 10 days immediately following the injury. Since only those injuries causing at least 2 days of lost or restricted time were reported, the revised regulation requires the reporting of any employee injury which results in one or more lost or restricted workdays, medical treatment beyond first

aid, transfer to another job, termination of employment, or loss of consciousness. In addition, each case remains active for 365 days rather than the 10-day period previously specified. Injury to a person other than an on-duty employee was reportable if their customary vocation or mode of life of the injured person was prevented for more than 24 hours during the 10 days immediately following the injury. Such an injury is presently reportable if the injured person requires medical treatment beyond first aid.

TYPES OF PERSONS

Employees "on duty" are those persons engaged in the operation of a railroad. Ordinarily, this will be determined by whether or not an employee is in pay status. An employee who is on railroad property performing required tasks is considered to be "on duty." This includes rest or meal periods, training periods, or work-related tasks that are performed outside of normal working hours.

Employees "not on duty" are those employees on railroad property for personal business to get a paycheck or pick up clothes with railroad permission, but who are not "on duty" as defined above.

Passengers are persons boarding, riding, or alighting from railroad cars for the purpose of travel.

Trespassers are persons on that part of railroad property used in railroad operation, and whose presence is prohibited, forbidden, or unlawful. Employees who are injured while trespassing are categorized as trespassers. A person entering a rail-highway grade crossing is classified as a trespasser if the crossing is protected by gates, or other barriers, which are closed. Any person attempting to pass over or under trains or rail cars at a crossing is considered as a trespasser.

Nontrespassers are persons who are lawfully on railroad property which is used in railroad operation (other than those defined as employees, passengers or trespassers), and persons

adjacent to railroad premises when injured as the result of railroad operation.

Contractor employees are persons employed by a contractor engaged by a railroad to perform normal maintenance work to railroad rolling stock, track structure, bridges, building, etc.

CLASSIFICATION OF ON-TRACK EQUIPMENT

Train: A train is a locomotive unit, or units, coupled with or without cars and with or without markers displayed. Included in this definition are those trains consisting entirely of self-propelled units designed to carry passengers and/or freight traffic.

Locomotive: A locomotive is a self-propelled unit of equipment designed for moving other equipment. It includes a self-propelled unit designed to carry freight and/or passenger traffic.

Car: A car is any unit of equipment designed to be hauled by locomotives or on-track work equipment such as a track motorcar, highway-rail car, on-track crane, on-track ballast tamping machine, etc.

Equipment Consist: An equipment consist is a train, locomotive(s), cut of cars, or any single car not coupled to another car or locomotive.

HIGHEST WARNING DEVICE: At crossings which have more than one warning device, the "highest warning level" is determined by the following method:

Highest	8)	Gates[1]
	7)	Flashing lights[1]
	6)	Highway signals, wigwags or bells
	5)	Special warning devices
	4)	Crossbucks
	3)	Stop signs
	2)	Other signs
Lowest	1)	No signs or signals

[1]When cantilevered flashing lights are categorized separately they are ranked 8th and gates are ranked 9th.

RAILROAD CLASSES:

Class I Railroads are those railroads having annual gross operating revenues in excess of $50,000,000. This includes switching and terminal companies.

Class II Railroads have annual operating revenues between $10,000,000 and $50,000,000.

Class III Railroads have annual operating revenues of $10,000,000 or less.

FORMS

Up to three separate forms may be required to properly report a rail-highway grade crossing accident/incident. These forms are:

FRA F 6180-57 Grade Crossing Accident/Incident Report
FRA F 6180-55 Railroad Injury and Illness Summary
FRA F 6180-54 Rail Equipment Accident/Incident Report.

For all reportable grade crossing accidents/incidents, form FRA F 6180-57 must be submitted by the carrier having on-track equipment involved. If reportable casualties resulted, these casualties must be reported individually on form FRA F 6180-55. Finally, if the accident also resulted in more than $2300 in damages to railroad on-track equipment, signals, track, track structures and roadbed, form FRA 6180-54 must be submitted.

GRADE CROSSING INVENTORY CHARACTERISTICS

Annual Average Daily Traffic: Estimate of the annual average daily highway traffic total in both directions.

Active Warning Devices: Warning systems activated by an approaching train; e.g. gates, flashing lights, highway signals, wigwags and bells.

Commercial Power: A source of commercial power within 500 feet of the crossing.

Crossing Surfaces:

1. Sectional treated timber - prefabricated units approximately eight feet long, made of treated timber individually installed and removable for maintenance and replacement purposes.

2. Full wood plank - wood surface, other than sectional treated timber, covering the entire crossing area above the cross-ties.

3. Asphalt - surface over the entire crossing area, or the area between planks or other material, forming flangeway openings with or without single planks on the outside of running rails.

4. Concrete slab - precast concrete slabs, installed and removable individually for maintenance and replacement purposes.

5. Concrete pavement - continuous concrete surface over the track area which cannot be removed except by destruction of the surface.

6. Rubber slabs - preformed rubber sections which can be installed and individually removed for maintenance and replacement purposes.

7. Metal sections - preformed sections of steel, or other metal which can be installed and removed individually for maintenance and replacement purposes.

8. Other metal - crossing area is completed with covered rails or other permanent metal materials in limited sectional units.

9. Unconsolidated - ballast or other unconsolidated material is placed above the tops of crossties, with or without planks on one or both sides of running rail.

Daylight Train Movements: Train movements between 6 am to 6 pm.

Flashing Lights: Includes cantilevered flashing lights, mast mounted flashing lights and other flashing lights not conforming with the latest "Manual on Uniform Traffic Control Devices."

Highway Signals: Train activated highway lights (red-amber-green) that control street traffic over the crossing.

Main Track: A track over which "thru" trains operate.

Maximum Speed Minus Minimum Speed: Typical variation in train speed over crossing. Indicates possible warning time variability between signaling of train and its passage over the crossing if warning devices are not equipped with speed selection equipment.

Maximum Timetable Speed: Maximum train speed permitted over the crossing.

Nearby Intersecting Highway: A highway intersection within 75 feet of the crossing.

Night Train Movements: Train movements between 6 pm to 6 am.

Number of Crossbucks: The number of masts with crossbucks. A mast with two or more crossbucks is counted as one. A crossbuck on an active device is not counted.

Other Signs: Signs other than crossbucks or stop signs.

Other Stop Signs: Stop signs other than the standard highway stop signs.

Other Track: A track other than main track.

Passive Warning Device: Warning systems not automatically activated by an approaching train; e.g. signs (crossbucks, standard highway signs) or special warning devices (manually operated gates, flood lights, etc.).

Pavement Markings: Markings prescribed, or generally similar, in highway traffic manuals, in particular, stoplines and railroad crossing symbols.

Percentage Trucks: The percentage of total daily highway traffic represented by trucks.

Public Crossing: A location open to public travel where rail tracks cross a road which is under the jurisdiction and maintenance of a public authority.

Railroad: The railroad company that owns and maintains the roadbed, tracks and signal system controlling the crossing.

Railroad Advance Warnings: Advance warning signs present on any highway approaches.

Rural Crossing: A crossing classification derived from the highway system code.

Signals For Train Operation: Automatic signals or interlocks which control train operation in the vicinity of a crossing.

Smallest Crossing Angle: The smallest angle between the highway and the track.

Special Warning Devices: Non-train-activated devices other than signs. Includes manually operated gates, train crew flagging the crossing, watchmen, and the use of flood lights.

Speed Selection For Trains: The provisions for a uniform warning time for the speed range of trains typically encountered at the crossing.

Standard Highway Stop Sign: Octagonal, red sign with white letters.

Stop Signs: The standard octagonal highway stop sign or other stop signs.

Switch Trains: All trains other than thru trains; i.e., locals, industrial runs, switch engines.

Thru Trains: Trains whose primary responsibility is to move cars over the road and may have a limited number of pickups and setouts along the route.

Total Train Movements: Includes all movements for both the reporting company and any other railroad operating over the crossing.

Traffic Lanes: Number of highway traffic lanes, not including shoulders or parking lanes.

Truck Pullout Lane: A special lane designed to accommodate vehicles required to stop at a crossing.

Type of Development:

1. Open space - undeveloped or sparsely developed, very lightly populated or agricultural

2. Residential - built-up residential area
3. Commercial - retail stores, businesses, offices, personal services.
4. Industrial - manufacturing, construction, heavy products, factories, warehouses, etc.
5. Institutional - schools, churches, hospitals, parks, and other community facilities

Typical Maximum Speed: Maximum train speed (mph) typically encountered at a crossing.

Typical Minimum Speed: Minimum train speed (mph) typically encountered at the crossing.

Urban Crossing: A crossing classification derived from the highway system code.

APPENDIX B: REPORTING FORMS

DEPARTMENT OF TRANSPORTATION
FEDERAL RAILROAD ADMINISTRATION

RAIL-HIGHWAY GRADE CROSSING ACCIDENT/INCIDENT REPORT

FORM APPROVED
OMB NO. 04R4033

1. NAME OF REPORTING RAILROAD	1a. Alphabetic Code	1b. Railroad Accident/Incident No.
Amtrak ☐ Autotrain ☐		
2. NAME OF OTHER RAILROAD INVOLVED IN TRAIN ACCIDENT/INCIDENT	2a. Alphbetic Code	2b. Railroad Accident/Incident No.
3. NAME OF RAILROAD RESPONSIBLE FOR TRACK MAINTENANCE *(single entry)*	3a. Alphabetic Code	3b. Railroad Accident/Incident No.
4. U.S. DOT-AAR GRADE CROSSING IDENTIFICATION NUMBER	5. DATE OF ACCIDENT/INCIDENT month / day / year	6. TIME OF ACCIDENT/INCIDENT am ☐ pm ☐

LOCATION

7. NEAREST RAILROAD STATION	8. COUNTY	9. STATE *(two letter code)* CODE
10. CITY *(if in a city)*	11. HIGHWAY NAME OR NUMBER *(if private crossing, so state)*	

ACCIDENT/INCIDENT SITUATION

HIGHWAY USER INVOLVED

12. TYPE — CODE
1. Auto 3. Truck-Trailer 6. Motorcycle
2. Truck 4. Bus 7. Pedestrian
5. School Bus 8. Other *(specify)*

13. SPEED *(estimated mph at impact)*

14. DIRECTION *(geographical)* — CODE
1. North 3. East
2. South 4. West

15. POSITION — CODE
1. Stalled on crossing 2. Stopped on crossing 3. Moving over crossing

RAILROAD EQUIPMENT INVOLVED

16. EQUIPMENT — CODE
1. Train *(units pulling)* 3. Train *(standing)* 6. Light loco(s) *(moving)*
2. Train *(units pushing)* 4. Car(s) *(moving)* 7. Light loco(s) *(standing)*
5. Car(s) *(standing)* 8. Other *(specify)*

17. POSITION OF CAR/UNIT IN TRAIN — CODE

18. CIRCUMSTANCE — CODE
1. Train struck highway user 2. Train struck by highway user

19. Was the highway user and/or rail equipment involved in the impact transporting hazardous materials? 1. Highway user 2. Rail equipment 3. Both 4. Neither — CODE

ENVIRONMENT

20. TEMPERATURE *(specify, if minus)* °F

21. VISIBILITY *(single entry)* — CODE
1. Dawn 3. Dusk
2. Day 4. Dark

22. WEATHER *(single entry)* — CODE
1. Clear 3. Rain 5. Sleet
2. Cloudy 4. Fog 6. Snow

TRAIN AND TRACK

23. TYPE OF TRAIN — CODE
1. Freight 3. Mixed 5. Yard/Switching
2. Passenger 4. Work 6. Light Locomotive(s)

24. TRACK TYPE USED BY TRAIN INVOLVED — CODE
1. Main 3. Siding
2. Yard 4. Industry

25. TRACK NUMBER OR NAME

26. FRA TRACK CLASSIFICATION

27. NUMBER OF LOCOMOTIVE UNITS

28. NUMBER OF CARS

29. TRAIN SPEED *(recorded speed, if available)* Est ☐ MPH Recorded ☐

30. TIME TABLE DIRECTION — CODE
1. North 3. East
2. South 4. West

CROSSING WARNING

31. TYPE *(place X in appropriate box(es))*
1 ☐ Gates
2 ☐ Cantilever FLS
3 ☐ Standard FLS
4 ☐ Wig Wags
5 ☐ Hwy. Traffic Signals
6 ☐ Audible
7 ☐ Crossbucks
8 ☐ Stop Signs
9 ☐ Watchman
10 ☐ Flagged by crew
11 ☐ Other *(specify)*
12 ☐ None

32. SIGNALED CROSSING WARNING
Was the signaled crossing warning identified in item 31 operating? — CODE
1. Yes 2. No

33. LOCATION OF WARNING — CODE
1. Both sides 2. Side of vehicle approach 3. Opposite side of vehicle approach

34. CROSSING WARNING INTERCONNECTED WITH HIGHWAY SIGNALS — CODE
1. Yes 2. No 3. Unknown

35. CROSSING ILLUMINATED BY STREET LIGHTS OR SPECIAL LIGHTS — CODE
1. Yes 2. No 3. Unknown

MOTORIST ACTION

36. MOTORIST PASSED STANDING HIGHWAY VEHICLE — CODE
1. Yes 2. No 3. Unknown

37. MOTORIST DROVE BEHIND OR IN FRONT OF TRAIN AND STRUCK OR WAS STRUCK BY SECOND TRAIN — CODE
1. Yes 2. No 3. Unknown

38. MOTORIST — CODE
1. Drove around or thru the gate 2. Stopped and then proceeded 3. Did not stop 4. Other *(specify)* 5. Unknown

39. VIEW OF TRACK OBSCURED BY *(primary obstruction)* — CODE
1. Permanent structure 2. Standing railroad equipment 3. Passing train 4. Topography 5. Vegetation 6. Highway vehicles 7. Other *(specify)* 8. Not obstructed

HIGHWAY VEHICLE PROPERTY DAMAGE/CASUALTIES

40. HIGHWAY VEHICLE PROPERTY DAMAGE *(est. dollar damage)*

41. DRIVER WAS — CODE
1. Killed 2. Injured 3. Uninjured

42. WAS DRIVER IN THE VEHICLE? — CODE
1. Yes 2. No

43. TOTAL NUMBER OF OCCUPANTS KILLED

44. TOTAL NUMBER OF OCCUPANTS INJURED

45. TOTAL NUMBER OF OCCUPANTS *(include driver)*

46. IS A RAIL EQUIPMENT ACCIDENT/INCIDENT REPORT BEING FILED? 1. Yes 2. No — CODE

47. TYPED NAME AND TITLE

48. SIGNATURE

49. DATE

FORM FRA F 6180-57 (12-74) REPLACES FORM FRA F 6180-13 (10-67) WHICH IS OBSOLETE

DEPARTMENT OF TRANSPORTATION
FEDERAL RAILROAD ADMINISTRATION

RAILROAD INJURY AND ILLNESS SUMMARY

Form Approved
OMB No. 04-R4009

1. NAME OF REPORTING RAILROAD	2. ALPHABETIC CODE	3. REPORT MONTH & YEAR	4. STATE ALPHABETIC CODE	5. COUNTY

NAME OF REPORTING OFFICER	OFFICIAL TITLE

ADDRESS	TELEPHONE *(Area Code) (Number)*

6.

I, _____, being first duly sworn, do say upon my oath that I
(Name of Affiant)

am _____, of the railroad aforesaid and as such officer of the said railroad it is my duty to have supervision
(Title of Office held by affiant)

over the record of reportable incidents arising from the operation of the said railroad, and that I have caused to be compiled from the said record and to be carefully examined the annexed report of such incidents occurring during the month named at the head of this sheet; and that the said report is true and complete to the best of my knowledge and belief.

Subscribed and sworn to before me, a notary public in and for the State and County aforesaid, this _____ day of _____, 19 _____ .

(Use an impression seal) [L.S.]

_____ *(Notary Public)*

_____ *(Signature of affiant)*

7. MILES RUN DURING MONTH

A. LOCOMOTIVE TRAIN MILES	B. MOTOR TRAIN MILES	C. YARD SWITCHING MILES	D. TOTAL

8.

A. EMPLOYEE MANHOURS WORKED	B. PASSENGER MILES OPERATED	C. NUMBER OF PASSENGERS TRANSPORTED

TOTAL TRAIN ACCIDENTS	TOTAL FRA FORMS 6180-55A	TOTAL FRA FORMS 6180-54	TOTAL FRA FORMS 6180-57

SECTION A—RECAPITULATION OF ALL CASUALTIES *INCLUDING* HIGHWAY GRADE CROSSING ACCIDENT/INCIDENT CASUALTIES								CLASS OF PERSON FOR SECTIONS A AND B	SECTION B—RECAPITULATION OF ALL HIGHWAY GRADE CROSSING ACCIDENT/ INCIDENT CASUALTIES							
TRAIN ACCIDENTS		TRAIN INCIDENTS		NONTRAIN INCIDENTS		TOTAL			TRAIN ACCIDENTS		TRAIN INCIDENTS		NONTRAIN INCIDENTS		TOTAL	
Kld	Inj	Kld	Inj	Kld	Inj	Kld	Inj		Kld	Inj	Kld	Inj	Kld	Inj	Kld	Inj
								1. Employees on duty								
								2. Employees not on duty								
								3. Passengers on trains								
								4. Other nontrespassers								
								5. Trespassers (all classes)								
								6. Contractor Employees								
								7. GRAND TOTAL								

SECTION C—MEMORANDUM—SUBSEQUENT FATALITIES DEVELOPED FROM REPORTED CASUALTIES

LINE NO.	ACCIDENT/INCIDENT NUMBER	TYPE PERSON OR JOB CODE	DATE OF INJURY	DATE OF DEATH	STATE
1.					
2.					
3.					
4.					

FORM FRA F 6180-55 (8-76) REPLACES FORM FRA F 6180-55 (12-74) WHICH IS OBSOLETE.

This report is required by law (45 USC 40). Failure to report can result in the imposition of civil penalties.

DEPARTMENT OF TRANSPORTATION
FEDERAL RAILROAD ADMINISTRATION

RAILROAD INJURY AND ILLNESS SUMMARY
(CONTINUATION SHEET)

FORM APPROVED
OMB NO. 04R4035

SHEET____ OF____

1. NAME OF REPORTING RAILROAD	2. ALPHABETIC CODE	3. REPORT MONTH

9.

CASUALTIES (*Cont.*)

a. INCIDENT NUMBER	b. TYPE PERSON OR JOB CODE	c. INJURY OR ILLNESS CODE	d. OCCURRENCE CODE	e. AGE	f. NUMBER OF DAYS AWAY FROM WORK	g. NUMBER OF DAYS OF RESTRICTED ACTIVITY	h. CASES WITH-OUT LOST WORK DAYS	i. STATE ALPHABETIC CODE

FORM FRA F 6180-55a (8-74)

GPO 880-564

DEPARTMENT OF TRANSPORTATION
FEDERAL RAILROAD ADMINISTRATION

RAIL EQUIPMENT ACCIDENT/INCIDENT REPORT

FORM APPROVED
OMB NO. 04R4008

1. NAME OF REPORTING RAILROAD	Amtrak ☐ Autotrain ☐	1a. Alphabetic Code	1b. Railroad Accident/Incident No.
2. NAME OF OTHER RAILROAD INVOLVED IN TRAIN ACCIDENT/INCIDENT		2a. Alphabetic Code	2b. Railroad Accident/Incident No.
3. NAME OF RAILROAD RESPONSIBLE FOR TRACK MAINTENANCE *(single entry)*		3a. Alphabetic Code	3b. Railroad Accident/Incident No.
4. U. S. DOT-AAR GRADE CROSSING IDENTIFICATION NUMBER		5. DATE OF ACCIDENT/INCIDENT month / day / year	6. TIME OF ACCIDENT/INCIDENT am ☐ pm ☐

7. TYPE OF ACCIDENT/INCIDENT *(enter number in code box, single entry)* — CODE

1. Derailment 2. Head-on collision 3. Rear end collision 4. Side collision 5. Raking collision 6. Broken train collision 7. Rail-Hwy crossing 8. RR grade crossing 9. Obstruction 10. Explosion-Detonation 11. Fire or violent rupture 12. Other *(specify)*

HAZARDOUS MATERIALS *(number of)*

8. CARS CARRYING	9. CARS DAMAGED OR DERAILED	10. CARS WHICH RELEASED HAZ. MAT.	11. PEOPLE EVACUATED *(est.)*

LOCATION

12. DIVISION	13. NEAREST STATION	14. MILEPOST *(to nearest tenth)*	15. STATE *(two letter code)*	CODE

ENVIRONMENTAL CONDITIONS

16. TEMPERATURE *(specify if minus)*	17. VISIBILITY *(single entry)*	CODE	18. WEATHER *(single entry)*	CODE
°F	1. Dawn 3. Dusk 2. Day 4. Dark		1. Clear 2. Cloudy 3. Rain 4. Fog 5. Sleet 6. Snow	

OPERATIONAL DATA

19. METHOD *(place X in appropriate box(es))*

1 ☐ Manual block 2 ☐ Interlocking 3 ☐ Cab signal 4 ☐ Automatic block 5 ☐ Traffic control 6 ☐ Auto. train stop 7 ☐ Yard rules 8 ☐ Time table 9 ☐ Radio 10 ☐ Auto. train control 11 ☐ Verbal permission 12 ☐ Train orders 13 ☐ Other *(specify)*

20. SPEED *(recorded speed, if available)*	21. TRAIN NUMBER	22. TIME TABLE DIRECTION	CODE
Est. ☐ MPH Recorded ☐		1. North 2. South 3. East 4. West	

EQUIPMENT

23. TRAILING TONS *(gross tonnage, excluding power units)*	24. TYPE OF EQUIPMENT CONSIST *(single entry)*	CODE	25. WAS THE EQUIPMENT IDENTIFIED IN ITEM 24 UNATTENDED?	CODE
	1. Freight train 2. Passenger train 3. Mixed train 4. Work train 5. Single car 6. Cut of cars 7. Yard/switching 8. Light loco(s)		1. Yes 2. No	

26. TRACK NUMBER OR NAME	27. FRA TRACK CLASSIFICATION	28. ANNUAL TRACK DENSITY *(gross tons in millions)*	29. TYPE OF TRACK	CODE
			1. Main 2. Yard 3. Siding 4. Industry	

30. PRINCIPLE CAR/UNIT	30a. Initial and Number	30b. Position in Train	30c. Loaded *(yes or no)*
(1) First Involved *(derailed, struck, striking, etc.)*			
(2) Causing *(mechanical failures)*			

31. LOCOMOTIVE UNITS *(no. of)*	a. Head End	Mid Train b. Manual	Mid Train c. Remote	Rear End d. Manual	Rear End e. Remote	32. CARS *(no. of)*	Loaded a. Freight	Loaded b. Pass.	Empty c. Freight	Empty d. Pass.	e. Caboose
(1) Total in Train						(1) Total in Equipment Consist					
(2) Total Derailed						(2) Total Derailed					

PROPERTY DAMAGE *(estimated cost, including labor, to repair or replace)*

33. EQUIPMENT DAMAGE *(to be reported for this equipment consist only)*	$	34. TRACK, SIGNAL, WAY AND STRUCTURES DAMAGE *(to be reported by railroad in item 3 only)*	$

ACCIDENT/INCIDENT CAUSE CODE

35. PRIMARY CAUSE	CODE	36. CONTRIBUTING CAUSE	CODE	37. If no code available, explain cause.

CASUALTIES

38. NUMBER OF PERSONS INJURED	39. ESTIMATED TOTAL DAYS DISABILITY	40. NUMBER OF FATALITIES

CREW *(no. of)*

41. ENGINEERS	42. FIREMEN	43. CONDUCTORS	44. BRAKEMEN

HOURS ON DUTY

45. ENGINEER	46. CONDUCTOR
Hrs: Mins:	Hrs: Mins:

47. TYPED NAME AND TITLE	48. SIGNATURE	49. DATE

50. NARRATIVE DESCRIPTION — *Describe the cause, nature and circumstances of accident/incident*

FORM FRA F 6180-54 (12-74) REPLACES FORM FRA F 6180-15 (11-72) WHICH IS OBSOLETE

GPO 880-606

OMB-004-R4039

U.S. DOT — AAR CROSSING INVENTORY FORM

A. INITIATING AGENCY ☐ RAILROAD ☐ STATE

B. CROSSING NUMBER ⌊⌊⌋⌊⌊⌋⌊⌋

C. REASON FOR UPDATE:
☐ CHANGES IN EXISTING CROSSING DATA
☐ NEW CROSSING
☐ CLOSED CROSSING

D. EFFECTIVE DATE ⌊⌋⌊⌋⌊⌋ (M D Y)

Part I Location and Classification of All Crossings (Must Be Completed)

1. Railroad Operating Company ⌊⌋⌊⌋⌊⌋⌊⌋
2. Railroad Division or Region ⌊⌋⌊⌋⌊⌋⌊⌋⌊⌋⌊⌋
3. Railroad Subdivision or District ⌊⌋⌊⌋⌊⌋⌊⌋⌊⌋⌊⌋
4. State ⌊⌋⌊⌋
5. County ⌊⌋⌊⌋⌊⌋
6. County Map. Ref. No. ⌊⌋⌊⌋⌊⌋⌊⌋
7. City ⌊⌋⌊⌋⌊⌋⌊⌋⌊⌋
8. Nearest City ⌊⌋⌊⌋⌊⌋⌊⌋⌊⌋
9. Highway Type and No. ⌊⌋⌊⌋⌊⌋⌊⌋⌊⌋
10. Street or Road Name ⌊⌋⌊⌋⌊⌋⌊⌋⌊⌋⌊⌋⌊⌋
11. RR I. D. No. ⌊⌋⌊⌋⌊⌋⌊⌋⌊⌋⌊⌋
12. Nearest RR Timetable Station ⌊⌋⌊⌋⌊⌋⌊⌋⌊⌋⌊⌋⌊⌋⌊⌋
13. Branch or Line Name ⌊⌋⌊⌋⌊⌋⌊⌋⌊⌋⌊⌋⌊⌋⌊⌋
14. Railroad Mile Post ⌊⌋⌊⌋⌊⌋⌊⌋⌊⌋⌊⌋

DO NOT WRITE IN THIS SPACE
State ⌊⌋⌊⌋ County ⌊⌋⌊⌋⌊⌋
City ⌊⌋⌊⌋⌊⌋⌊⌋ Nearest City ☐
RR Code ⌊⌋⌊⌋⌊⌋⌊⌋ Timetable Station ⌊⌋⌊⌋⌊⌋⌊⌋⌊⌋⌊⌋

15. Pedestrian Crossing
☐ 1. at grade
☐ 2. RR under
☐ 3. RR over

16. Private Vehicle Crossing
A. ☐ 1. Farm ☐ 2. Residential ☐ 3. Recreational ☐ 4. Industrial
B. ☐ 5. at grade ☐ 6. RR under ☐ 7. RR over
C. ☐ 8. signs-specify ⌊⌋⌊⌋⌊⌋⌊⌋⌊⌋⌊⌋⌊⌋⌊⌋⌊⌋⌊⌋⌊⌋⌊⌋
☐ 9. signals-specify ⌊⌋⌊⌋⌊⌋⌊⌋⌊⌋⌊⌋⌊⌋⌊⌋⌊⌋⌊⌋⌊⌋⌊⌋
☐ 0. none

17. Public Vehicle Crossing
☐ 1. at grade
☐ 2. RR under
☐ 3. RR over

COMPLETE REMAINDER OF FORM ONLY FOR PUBLIC VEHICLE CROSSINGS AT GRADE

Part II Detailed Information for Public Vehicular at Grade Crossing

1A. Typical Number of Daily Train Movements

Daylight (6 AM to 6 PM)		Night (6 PM to 6 AM)	
thru trains	switching	thru trains	switching
⌊⌋⌊⌋ 1	⌊⌋⌊⌋ 2	⌊⌋⌊⌋ 3	⌊⌋⌊⌋ 4

1B. Check if Less Than One Movement Per Day ☐ 5

2. Speed of Train at Crossing
A. Maximum time table speed ⌊⌋⌊⌋⌊⌋ 1
B. Typical Speed Range Over Crossing from ⌊⌋⌊⌋⌊⌋ 2 to ⌊⌋⌊⌋⌊⌋ 3 mph

3. Type and Number of Tracks
main ⌊⌋ 1 other ⌊⌋ 2 If other specify ⌊⌋⌊⌋⌊⌋⌊⌋⌊⌋⌊⌋⌊⌋⌊⌋⌊⌋⌊⌋⌊⌋⌊⌋ 3

4. Does Another RR Operate a Separate Track at Crossing?
☐ Yes 1 ☐ No Specify: RR ⌊⌋⌊⌋⌊⌋⌊⌋⌊⌋⌊⌋⌊⌋⌊⌋⌊⌋⌊⌋⌊⌋⌊⌋⌊⌋⌊⌋⌊⌋ 2

5. Does Another RR Operate Over Your Track at Crossing?
☐ Yes 1 ☐ No Specify: RR ⌊⌋⌊⌋⌊⌋⌊⌋⌊⌋⌊⌋⌊⌋⌊⌋⌊⌋⌊⌋⌊⌋⌊⌋⌊⌋⌊⌋⌊⌋ 2

6. Type of Warning Device at Crossing

A. Signs

Crossbucks		Standard Highway Stop Sign	Other Stop Signs	Other Signs: Specify
reflectorized	non-reflectorized			
⌊⌋⌊⌋ 01 Number	⌊⌋⌊⌋ 02 Number	⌊⌋⌊⌋ 03 Number	⌊⌋⌊⌋ 04 Number	⌊⌋⌊⌋ 05 Number ⌊⌋⌊⌋⌊⌋⌊⌋⌊⌋⌊⌋⌊⌋⌊⌋⌊⌋⌊⌋ 06 ⌊⌋⌊⌋ 07 Number ⌊⌋⌊⌋⌊⌋⌊⌋⌊⌋⌊⌋⌊⌋⌊⌋⌊⌋⌊⌋ 08

B. Train Activated Devices

Gates		Cantilevered Flashing Lights		Mast Mounted Flashing Lights	Other Flashing Lights	Highway Traffic Signals	Wigwags	Bells
red & white reflectorized	other colored	over traffic lane	not over traffic lane		Specify			
⌊⌋⌊⌋ 09 Number	⌊⌋⌊⌋ 10 Number	⌊⌋⌊⌋ 11 Number	⌊⌋⌊⌋ 12 Number	⌊⌋⌊⌋ 13 Number	⌊⌋⌊⌋ 14 Number ⌊⌋⌊⌋⌊⌋⌊⌋⌊⌋⌊⌋⌊⌋⌊⌋⌊⌋⌊⌋ 15	⌊⌋⌊⌋ 16 Number	⌊⌋⌊⌋ 17 Number	⌊⌋⌊⌋ 18 Number

C. Specify Special Warning Device not Train Activated ⌊⌋⌊⌋⌊⌋⌊⌋⌊⌋⌊⌋⌊⌋⌊⌋⌊⌋⌊⌋⌊⌋⌊⌋⌊⌋⌊⌋⌊⌋⌊⌋ 19

D. No Signs or Signals ☐ 20

7. Is Commercial Power Available? ☐ Yes ☐ No
8. Does Crossing Signal Provide Speed Selection for Trains? ☐ Yes ☐ No ☐ N/A
9. Method of Signalling for Train Operation: Is Track Equipped with Signals? ☐ Yes ☐ No

Part III Physical Data

1. Type of Development ☐ 1. Open Sp. ☐ 2. Res ☐ 3. Comm. ☐ 4. Ind. ☐ 5. Inst.
2. Smallest Crossing Angle ☐ 0°-29° ☐ 30°-59° ☐ 60°-90°
3. Number of Traffic Lanes Crossing Railroad ⌊⌋ Number
4. Are Truck Pullout Lanes Present? ☐ Yes ☐ No
5. Is Highway Paved ☐ Yes ☐ No
6. Pavement Markings ☐ Stoplines ☐ RR Xing Sym. ☐ None
7. Are RR Advance Warning Signs Present? ☐ Yes ☐ No
8. Crossing Surface ☐ 1. Sec. Timber ☐ 2. Full Wd. Plank ☐ 3. Asphalt ☐ 4. Concrete Slab ☐ 5. Concrete Pave. ☐ 6. Rubber ☐ 7. Metal Sections ☐ 8. Other Metal ☐ 9. Unconsolidated ☐ 0. Other Specify
9. Does Track Run Down A Street? ☐ Yes ☐ No
10. Nearby Intersecting Highway? ☐ Yes ☐ No

Part IV Highway Department Information

1. Highway System ⌊⌋⌊⌋
2. Is Crossing on State Highway System? ☐ Yes ☐ No.
3. Functional Classification of Road over Crossing ⌊⌋⌊⌋
4. Estimate AADT ⌊⌋⌊⌋⌊⌋⌊⌋⌊⌋⌊⌋
5. Estimate Percent Trucks ⌊⌋⌊⌋

I. D. Number

APPENDIX C: REFERENCE TO PREVIOUS PUBLICATIONS

This section is provided for those wishing to compare data contained in this report with previous Accident/Incident Bulletins. The "Old Table" numbers listed below are those used in the 1977 report.

Old Table	New Table
A	1
B	2
1	10
2-A	11
2-B, 2-C	12
3	18
4	27
5	28
6	29
7	30
8	14
9-A, 9-B	23
10	24
11	25
12	26
13	17, 19
14	31

Old Table	New Table
15	20, 21
16	15
17-A	3
17-B	3
18	5
19	3, 30
20-A	3
20-B	4
21	13
22	7
23	34
24	35
25-A, 25-B	55
26	46
27	47

The compendium of tables and figures below is provided for those wishing to compare the data contained in this report with the data in the second edition of "Summary Statistics of the National Railroad-Highway Crossing Inventory for Public At-Grade Crossings" published in May, 1978. The "Old Table" and "Old Figure" numbers are those used in the 1978 report.

Old Table	New Table	Old Table	New Table
3-1	34	3-33	48
3-2	35	3-34	48
3-3	36	3-38	49
3-8	37	4-5	51
3-10	40	4-8	54
3-12	38	4-9	55
3-15	41	4-10	56
3-17a	42	4-13	57
3-17b	42	4-14	58
3-23	43	4-17	59
3-24	44	4-18	60
3-25	44		
3-27	45	5-1	D-2
3-32	46		

Old Figure	New Figure
3-1	28
3-5	29
3-6	30
3-16	31
3-20	32
3-27	33
3-28	34
4-5	35
4-7	36
4-8	37
4-13	38
4-16	39
4-17	40

APPENDIX D: MISCELLANEOUS DATA

TABLE D-1. MISCELLANEOUS DATA RECEIVED FROM THE RAIL-HIGHWAY CROSSING ACCIDENT/INCIDENT REPORTS, 1978

IS RAIL EQUIPMENT ACCIDENT/INCIDENT REPORT BEING FILED?

YES	260	NO	12089	NOT REPORTED	86

WAS DRIVER IN VEHICLE?

YES	10939	NO	1382	NOT REPORTED	114

DRIVER WAS

KILLED	672	INJURED	2888	UNINJURED	8727	NOT REPORTED	148

IS CROSSING WARNING INTERCONNECTED WITH HIGHWAY SIGNALS?

YES	186	NO	9486	NOT REPORTED	2763

DIRECTION (GEOGRAPHICAL) OF HIGHWAY USER INVOLVED:

NORTH	3242	SOUTH	3174	EAST	3028	WEST	2900	NOT REPORTED	91

TRAIN TIMETABLE DIRECTION:

NORTH	2415	SOUTH	2380	EAST	3720	WEST	3834	NOT REPORTED	86

TABLE D-2. MISCELLANEOUS DATA CEIVED FROM DOT-AAR INVENTORY FORMS, 1978

LESS THAN ONE TRAIN PER DAY?					
YES	37202	NO	179865	N/R	1
DOES ANOTHER RAILROAD OPERATE A SEPARATE TRACK AT CROSSING?					
YES	5419	NO	211547	N/R	102
DOES ANOTHER RAILROAD OPERATE OVER YOUR TRACK AT CROSSING:					
YES	28245	NO	188667	N/R	156
IS TRACK EQUIPPED WITH ANY SIGNS OR SIGNALS?					
YES	200914	NO	16147	N/R	7
IS TRACK EQUIPPED WITH SIGNALS FOR TRAIN OPERATION?					
YES	60013	NO	156649	N/R	406
IS HIGHWAY PAVED?					
YES	147504	NO	69534	N/R	30
IS COMMERCIAL POWER AVAILABLE?					
YES	195196	NO	21748	N/R	124
DOES TRACK RUN DOWN A STREET?[1]					[1]
YES	6724	NO	201046	N/R	9298
NEARBY INTERSECTING HIGHWAY?[1]					[1]
YES	75743	NO	131937	N/R	9388
RR ADVANCE WARNING SIGNS PRESENT?					
YES	87361	NO	129646	N/R	61
ARE TRUCK PULLOUT LANES PRESENT?					
YES	2778	NO	214190	N/R	100
IS CROSSING ON STATE HIGHWAY SYSTEM?					
YES	33109	NO	183865	N/R	94
DOES CROSSING PROVIDE SPEED SELECTION?					
YES	5837	NO	74778	N/A	136453

[1]Not on original inventory form used in the five pilot states.

N/R = Not Recorded

N/A = Not Applicable

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U.S. DEPARTMENT OF TRANSPORTATION
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