



STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH 27611

JAMES B. HUNT, JR.
GOVERNOR

WILLIAM R. ROBERSON, JR.
SECRETARY

DIVISION OF HIGHWAYS

March 5, 1984

MEMORANDUM

TO: Area Traffic Engineers and Unit Heads

FROM: R. J. Dodge, P.E., Accident Studies Engineer *R. J. Dodge*

THRU: J. M. Lynch, P.E., Manager of Traffic Engineering *J. M. Lynch*

SUBJECT: Traffic Accident Rates by Road Types and Systems - 1983

The attached tables list various traffic accident rates for rural and municipal (urban) route systems for 1983 traffic accidents. These tables are for your information and use in any accident studies. Also included is a table of accident costs by accident type and injury level for 1983. Use these costs in any benefit/cost computations that you do in the future.

If you have need for any other types of traffic accident data summaries on a yearly basis, then give us a description of the specific information that you require and we will incorporate it in future summaries.

RJD/GGGjr:

Att.

cc: Mr. J. M. Lynch, P.E., att.
Mr. C. C. Sessoms, Jr., P.E., att.
Mr. W. A. Ward, P.E., att.
Traffic Engineers, att.
Division Traffic Engineers, att.
Accident Studies Staff, att.
Mr. Charles Adkins, P.E., att. (10)

Average Accident Costs by Injury Level (1983)

Accident Type	Fatal \$	A Inj \$	B Inj \$	C Inj \$	Non-Fat\$	PDO \$	Average \$
Run Off Road,Right	246966	36163	20257	11854	21920	1371	14398
Run Off Road,Left	236532	34977	19696	11423	21560	1349	14059
Run Off Road,Straight	240236	38544	19907	11679	22433	1204	12827
Overtuned in Road	234058	32989	19669	12861	22370	2578	15569
Other in Road	202795	26641	15696	10503	18940	1452	15302
Pedestrian	212933	25507	14538	8385	17659	NA	39772
Parked Vehicle	229934	40156	20437	12432	21031	1189	5080
Train	231184	31173	26351	11843	23599	3768	26444
Bicycle	204446	25169	15029	8613	17034	506	20610
Moped	202468	27378	14719	9072	18361	410	20500
Animal	NA	29843	18543	11717	18450	861	2569
Fixed Object	273761	34683	19055	12538	20988	1333	8309
Other Object	292532	35940	18354	11707	18775	717	3583
Rear End Other	246319	43122	24183	13318	18920	1225	8290
Rear End Turn	217173	44730	23822	13150	19670	1266	8589
Left Turn Same Road	237245	43659	25527	13378	23785	1343	9350
Left Turn Cross Road	234161	45854	24522	12862	21481	1206	7215
Right Turn Same Road	229095	35415	20698	12459	17133	1036	3761
Right Turn Cross Road	223595	44128	22944	12607	19683	1042	4866
Head On	308799	58270	29900	15633	39452	1721	28527
Sideswipe	287316	47651	22968	12862	22000	1052	5056
Angle	278001	48020	26648	14016	24809	1339	11075
Backing	214962	35761	21603	12440	17365	735	2015
Average Accident	246907	39447	22335	12504	21824	1074	9528

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
TRAFFIC ENGINEERING BRANCH
1988 ACCIDENT RATES

ITEMS	SYSTEM RURAL STATE HIGHWAYS				(4)	(4)
	INT	US	NC	PRI	SEC	TOTAL RURAL
Total Accidents	2645	16190	14838	33673	33570	67243
Fatal Accidents	44	213	217	474	369	843
Non-Fatal Injury Acc	901	6148	5654	12703	12413	25116
Night Accidents	893	4771	4916	10590	12715	23295
Wet Accidents	416	3451	3022	6889	6192	13081
% Fatal Accidents	1.66	1.32	1.46	1.41	1.10	1.25
% Non-Fatal Inj Acc	34.06	37.97	38.10	37.72	36.98	37.35
% Night Accidents	33.76	29.47	33.13	31.42	37.88	34.64
% Wet Accidents	15.73	21.32	20.37	20.46	18.45	19.45
Miles of Road	715	4361	6975	12051	63477	75528
ADT (1)	17565	5192	2438	4332	241	893
Travel (100MM) (1)	45.84	82.64	62.06	190.54	55.76	246.30
Total Acc Rate (2)	57.70	195.91	239.09	176.72	602.04	279.01
Fatal Acc Rate (2)	0.96	2.58	3.50	2.49	6.62	3.42
Non-Fat Inj Rate (2)	19.66	74.39	91.11	66.67	222.61	101.97
Night Acc Rate (2)	19.48	57.73	79.21	55.53	228.03	94.58
Wet Acc Rate (2)	9.08	41.76	48.69	36.16	111.05	53.11
Severity Index (3)	11.61	12.55	12.86	12.61	12.57	12.56

ITEMS	SYSTEM URBAN STATE HIGHWAYS						(4)
	INT	US	NC	PRI	SEC	NON SYS	TOTAL URBAN
Total Accidents	2281	16133	6746	25110	12845	46331	84266
Fatal Accidents	19	36	33	88	26	100	214
Non-Fatal Injury Acc	802	5376	2324	8502	4418	15293	28213
Night Accidents	613	3332	1508	5453	2912	10981	19352
Wet Accidents	580	3633	1379	5592	2700	9441	17733
% Fatal Accidents	0.85	0.22	0.49	0.35	0.20	0.22	0.25
% Non-Fatal Inj Acc	35.95	33.32	34.45	33.86	34.39	33.01	33.47
% Night Accidents	27.48	20.65	22.35	21.72	22.72	23.70	22.96
% Wet Accidents	26.00	22.52	20.44	22.27	21.02	20.38	21.04
Miles of Road	121	979	793	1883	2677	12834	17394
ADT (1)	31586	12428	5976	10976	3026	1701	2909
Travel (100MM) (1)	13.95	44.41	17.08	75.44	29.57	79.69	184.70
Total Acc Rate (2)	159.93	363.27	394.96	332.85	434.39	521.39	456.34
Fatal Acc Rate (2)	1.36	0.81	1.93	1.17	0.88	1.25	1.16
Non-Fat Inj Rate (2)	57.49	121.05	136.07	112.70	149.41	191.91	152.75
Night Acc Rate (2)	43.94	75.03	88.29	72.28	98.68	137.80	104.78
Wet Acc Rate (2)	41.58	81.81	80.74	74.13	91.31	118.47	96.01
Severity Index (3)	11.38	9.91	10.44	10.19	9.86	9.62	9.83

(1) Estimated Value

(2) Rate is for 100 million vehicle miles of travel

(3) $SI = [64(F+A) + 19.1(B+C) + PDO] / \text{Total Acc.}$

(4) Includes non-state system mileage

F=Fatal Acc.

A=A Inj Acc.

B=B Inj Acc.

C=C Inj Acc.

PDO=Property

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
 TRAFFIC ENGINEERING BRANCH
 ACCIDENT RATES
 1983
 BY ROAD TYPES & SYSTEMS

RURAL INTERSTATE ROUTES

Accident Rates (per 100MM)

Road Types	System Miles#	Total	Non-Fat			
			Fatal	Injury	Night	Wet
2 Lanes Undivided	--	--	--	--	--	--
3 Lanes Undivided	--	--	--	--	--	--
4+ Undivided	--	--	--	--	--	--
4+ Divided No	35	106.4	0.7	41.4	35.0	27.9
4+ Divided Partial	8*	100.1	0.0	42.2	36.9	26.3
4+ Divided Full	670	55.5	0.9	19.3	18.3	8.8
Total	715	57.7	0.9	20.2	19.1	9.6

URBAN INTERSTATE ROUTES

Accident Rates (per 100MM)

Road Types	System Miles#	Total	Non-Fat			
			Fatal	Injury	Night	Wet
2 Lanes Undivided	--	--	--	--	--	--
3 Lanes Undivided	--	--	--	--	--	--
4+ Undivided	3*	437.2	5.1	174.9	133.7	133.7
4+ Divided No	5*	241.6	3.4	98.7	81.7	71.5
4+ Divided Partial	3*	242.4	0.0	108.3	67.0	61.9
4+ Divided Full	109	153.0	1.3	51.8	39.7	37.7
Total	121	159.9	1.3	55.2	42.2	40.0

NOTES:

- # Includes only route segments with computerized traffic volume
- * Rates are not significant.

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
 TRAFFIC ENGINEERING BRANCH
 ACCIDENT RATES
 1983
 BY ROAD TYPES & SYSTEMS

RURAL UNITED STATES ROUTES

Accident Rates (per 100MM)

Road Types	System Miles#	Total	Non-Fat			
			Fatal	Injury	Night	Wet
2 Lanes Undivided	3307	217.5	2.9	82.6	65.4	46.2
3 Lanes Undivided	44	231.1	3.3	92.0	65.7	44.9
4+ Undivided	140	310.8	2.2	113.6	73.7	66.1
4+ Divided No	457	198.2	2.3	75.5	56.8	39.9
4+ Divided Partial	146	119.6	1.2	44.4	36.8	25.9
4+ Divided Full	267	61.5	1.0	19.6	21.0	10.7
Total	4361	195.9	2.4	73.7	57.5	41.0

URBAN UNITED STATES ROUTES

Accident Rates (per 100MM)

Road Types	System Miles#	Total	Non-Fat			
			Fatal	Injury	Night	Wet
2 Lanes Undivided	507	357.2	1.2	111.8	68.4	69.9
3 Lanes Undivided	6*	302.0	0.0	140.6	57.3	72.9
4+ Undivided	265	476.6	0.9	159.1	103.2	111.2
4+ Divided No	107	387.7	1.2	128.9	87.6	84.0
4+ Divided Partial	46	186.1	0.6	61.1	47.3	54.3
4+ Divided Full	48	140.7	0.5	49.2	30.2	42.9
Total	979	363.3	1.0	119.4	77.3	81.8

NOTES:

Includes only route segments with computerized traffic volume
 * Rates are not significant.

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
 TRAFFIC ENGINEERING BRANCH
 ACCIDENT RATES
 1983
 BY ROAD TYPES & SYSTEMS

RURAL NORTH CAROLINA ROUTES

Accident Rates (per 100MM)

Road Types	System Miles#	Total	Non-Fat			
			Fatal	Injury	Night	Wet
2 Lanes Undivided	6820	241.7	3.7	92.8	79.0	49.1
3 Lanes Undivided	12*	194.9	0.0	74.2	46.4	74.2
4+ Undivided	43	344.4	3.4	115.3	85.8	66.5
4+ Divided No	64	223.8	1.3	78.4	83.8	46.3
4+ Divided Partial	18*	73.5	0.0	29.4	27.6	7.4
4+ Divided Full	12*	0.0	0.0	0.0	0.0	0.0
Total	6969	239.1	3.5	91.2	78.0	48.5

URBAN NORTH CAROLINA ROUTES

Accident Rates (per 100MM)

Road Types	System Miles#	Total	Non-Fat			
			Fatal	Injury	Night	Wet
2 Lanes Undivided	623	380.0	2.4	123.1	85.6	71.9
3 Lanes Undivided	--	--	--	--	--	--
4+ Undivided	112	465.8	1.3	161.5	112.2	104.9
4+ Divided No	32	415.7	1.0	152.5	109.2	87.7
4+ Divided Partial	--	--	--	--	--	--
4+ Divided Full	9*	67.8	0.0	19.6	12.5	21.4
Total	778	395.0	1.9	132.7	92.4	80.3

NOTES:

- # Includes only route segments with computerized traffic volume
- * Rates are not significant.

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
 TRAFFIC ENGINEERING BRANCH
 ACCIDENT RATES
 1983
 BY ROAD TYPES & SYSTEMS

RURAL TOTAL PRIMARY ROUTES

Accident Rates (per 100MVM)

Road Types	System Miles#	Total	Fatal	Non-Fat Injury	Night	Wet
2 Lanes Undivided	10127	230.8	3.8	88.2	72.9	47.8
3 Lanes Undivided	56	227.3	2.9	90.1	63.7	48.0
4+ Undivided	184	315.7	2.4	113.0	76.1	65.3
4+ Divided No	557	194.5	2.1	73.2	58.7	39.8
4+ Divided Partial	171	115.4	1.0	48.2	36.2	24.6
4+ Divided Full	950	55.8	0.9	19.1	18.6	9.0
Total	12045	176.2	2.4	66.3	54.8	35.8

URBAN TOTAL PRIMARY ROUTES

Accident Rates (per 100MVM)

Road Types	System Miles#	Total	Fatal	Non-Fat Injury	Night	Wet
2 Lanes Undivided	1129	368.2	1.8	117.3	76.7	70.9
3 Lanes Undivided	7*	325.5	0.0	146.2	61.3	75.3
4+ Undivided	381	473.4	1.1	159.9	105.9	109.9
4+ Divided No	144	389.1	1.3	133.0	91.9	84.4
4+ Divided Partial	51	187.8	0.5	63.5	48.0	54.0
4+ Divided Full	166	147.5	1.0	50.2	36.6	38.4
Total	1878	331.0	1.2	110.0	74.1	73.2

NOTES:

- # Includes only route segments with computerized traffic volumes.
- * Rates are not significant.

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
 TRAFFIC ENGINEERING BRANCH
 1983 TRAFFIC ACCIDENT TYPES BY ROUTE SYSTEMS

ACCIDENT TYPES	SYSTEM					TOTAL RURAL
	INT	RURAL STATE HIGHWAYS			SEC	
		US	NC	PRI		
Ran-Off-Road	1044	4600	5248	10892	16316	27208
Non-Collision in Road	96	247	202	545	419	964
Collision w Pedestrn	21	131	121	273	362	635
Parked Vehicle	61	171	129	361	644	1005
Train	0	12	7	19	72	91
Bicycle & Moped	2	86	94	182	277	459
Animal	124	700	967	1791	1492	3283
Fixed Object	75	136	91	302	255	557
Other Object	112	237	147	496	260	756
Another Veh-Rear End	472	3762	2730	6964	2996	9960
Left Turn	30	2027	1803	3860	2815	6675
Right Turn	5	304	270	579	550	1129
Head On	15	165	214	394	614	1008
Sideswipe	255	867	617	1739	1401	3140
Angle	320	2596	1931	4847	3724	8571
Backing	13	149	265	427	1313	1740
Totals	2645	16190	14836	33671	33510	67181

ACCIDENT TYPES	SYSTEM						TOTAL URBAN
	INT	URBAN STATE HIGHWAYS			SEC	NON SYS	
		US	NC	PRI			
Ran-Off-Road	477	1125	670	2272	1548	5726	9546
Non-Collision in Road	41	107	47	195	84	337	616
Collision w Pedestrn	11	193	84	288	174	824	1286
Parked Vehicle	63	301	152	516	534	3549	4599
Train	1	9	6	16	12	71	99
Bicycle & Moped	5	124	50	179	133	679	991
Animal	9	44	18	71	25	70	166
Fixed Object	70	207	47	324	127	599	1050
Other Object	55	86	33	174	69	241	484
Another Veh-Rear End	797	4758	1835	7390	3056	8181	18627
Left Turn	70	2854	1268	4192	2353	7638	14183
Right Turn	18	762	351	1131	613	2333	4077
Head On	19	95	50	164	93	388	645
Sideswipe	261	1083	329	1673	629	2193	4495
Angle	318	4009	1591	5918	2753	10361	19032
Backing	16	376	215	607	642	3141	4390
Totals	2231	16133	6746	25110	12845	46331	84286

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
 TRAFFIC ENGINEERING BRANCH
 1983 TRAFFIC ACCIDENT TYPES BY ROAD FEATURES

ACCIDENT TYPES	RURAL ROAD FEATURES				MEDIAN XOVER	OTHER FEAT.	TOTAL FEAT.
	BRIDGE/ UNDERPS	DRIVE WAY	ALLEY	INTERST			
Ran-Off-Road	1002	1391	27	2498	98	404	5420
Non-Collision in Road	39	45	2	164	9	39	298
Collision w Pedestrn	8	64	2	42	3	13	132
Parked Vehicle	36	118	0	60	3	34	251
Train	0	2	0	1	0	84	87
Bicycle & Moped	5	57	1	94	0	6	163
Animal	27	60	1	40	2	21	151
Fixed Object	191	33	1	111	7	29	372
Other Object	47	20	0	54	4	17	142
Another Veh-Rear End	207	1461	31	2708	97	339	4843
Left Turn	19	1630	29	3503	86	128	5395
Right Turn	4	284	4	608	8	27	935
Head On	41	61	1	95	1	11	210
Sideswipe	129	141	9	287	23	79	668
Angle	102	1250	38	3973	90	181	5634
Backing	5	633	7	291	3	52	991
Totals	1862	7250	153	14529	434	1464	25692

ACCIDENT TYPES	URBAN ROAD FEATURES				MEDIAN XOVER	OTHER FEAT.	TOTAL FEAT.
	BRIDGE/ UNDERPS	DRIVE WAY	ALLEY	INTERST			
Ran-Off-Road	285	532	24	1869	87	597	3394
Non-Collision in Road	15	40	2	194	7	59	317
Collision w Pedestrn	11	74	5	355	14	56	515
Parked Vehicle	36	282	11	379	24	186	918
Train	1	1	0	6	0	89	97
Bicycle & Moped	5	106	9	517	8	26	671
Animal	3	7	0	29	5	4	48
Fixed Object	169	67	2	293	13	79	623
Other Object	36	17	4	90	8	35	190
Another Veh-Rear End	366	1192	48	6669	293	1074	9642
Left Turn	45	1265	57	9899	148	341	11755
Right Turn	19	472	21	2497	33	152	3194
Head On	15	43	1	173	7	31	270
Sideswipe	105	211	8	1162	79	259	1824
Angle	144	1578	94	11914	167	604	14501
Backing	13	927	43	783	33	227	2026
Totals	1268	6814	329	36829	926	3819	49985

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
 TRAFFIC ENGINEERING BRANCH
 1983 TRAFFIC ACCIDENTS - OBJECTS HIT BY VEHICLES

FIXED OBJECTS STRUCK	INT	RURAL ROUTES				RTS SEC**	** TOTAL STATE	TOTAL RURAL
		US	NC	STATE	PRI			
Tree	58	507	752	1317	980	2297	4003	
Utility Pole or Lumi	36	295	301	622	380	1002	1447	
Fence or Fence Post	35	129	225	389	372	761	1420	
Guardrail in Median	91	48	18	157	10	167	171	
Guardrail on Shoulder	212	219	109	540	70	610	673	
Bridge or Underpass	102	140	118	360	175	535	764	
Mailbox	2	117	183	302	326	628	1041	
Island, Curb, or Median	27	99	31	157	23	190	211	
Sign or Sign Post	55	289	207	551	214	765	935	
Animal	123	688	951	1762	520	2292	3244	
Ditch Bank	205	1888	2310	4403	2629	7031	11401	
Parked Vehicle	40	171	175	386	238	624	1193	
Pedestrian	21	135	126	282	167	449	667	
Other Object	213	817	714	1744	867	2811	3821	
None *	1425	10658	8618	20701	8113	28814	36192	
TOTALS	2645	16190	14838	33673	15098	48766	67183	

FIXED OBJECTS STRUCK	INT	URBAN ROUTES				RTS SEC**	** TOTAL STATE	TOTAL URBAN
		US	NC	STATE	PRI			
Tree	15	83	71	169	223	392	1372	
Utility Pole or Lumi	20	382	221	623	470	1093	3047	
Fence or Fence Post	20	33	17	70	80	150	578	
Guardrail in Median	71	106	8	185	13	198	244	
Guardrail on Shoulder	127	101	16	244	59	303	417	
Bridge or Underpass	79	89	21	189	41	230	387	
Mailbox	0	12	13	25	56	81	246	
Island, Curb, or Median	40	112	42	194	115	309	732	
Sign or Sign Post	40	133	83	256	117	375	763	
Animal	10	35	18	63	25	88	134	
Ditch Bank	48	129	94	271	209	480	1042	
Parked Vehicle	42	309	168	519	554	1073	4470	
Pedestrian	16	194	82	294	181	475	1309	
Other Object	95	402	204	701	493	1194	3173	
None *	1608	14005	5688	21301	10207	31508	66324	
TOTALS	2231	16127	6746	25104	12945	37949	84286	

NOTES:

- * Includes all vehicles for which no fixed object code was given.
- ** Excludes secondary routes not mileposted.