



U.S. Department
of Transportation

National Highway
Traffic Safety
Administration



People Saving People

<http://www.nhtsa.dot.gov>

DOT HS 808 573
NHTSA Technical Report

June 1995

Patterns of Driver Age, Sex, and Belt Use by Car Weight



Patterns of Driver Age, Sex, and Belt Use by Car Weight

Susan C. Partyka
Office of Safety Performance Standards
National Highway Traffic Safety Administration
June 30, 1995

Summary

This report describes the association between passenger car weight and three driver factors (age, sex, and belt use) for all drivers in towaway crashes and, separately, for fatally-injured drivers. The data indicate that drivers of heavier cars are more likely than drivers of lighter cars to be older, male, and unbelted.

These patterns confirm the results of previous research and complicate the analysis of car weight and safety by suggesting that cars of different weights are used differently. This exposes their occupants to different crash and injury risks. The question addressed in this report is whether the patterns of vehicle use suggested by the association between car weight and these driver factors have changed over time, as newer and lighter cars have replaced older and heavier cars.

The data presented in this report suggest that the patterns across car weight have changed over the past 14 years. First, drivers tend to be older now than was the case in the early 1980s (both for all drivers in towaway crashes and for fatally-injured drivers), and this shift has been greatest among drivers of heavier cars. The fraction of drivers in the heaviest cars who were at least 65 years old is now twice as high as it was in the early 1980s.

Second, females now account for a larger fraction of drivers in towaway crashes and of fatally-injured drivers than they did in the early 1980s. However, the increase has occurred fairly uniformly across cars of all weights.

Third, belt use rates have increased greatly since the early 1980s, but there is still a tendency for use rates to be higher in lighter cars. Belt use rates were twice as high in lighter cars as in heavier cars in the early 1980s, but the difference is smaller now. The diminishing difference by weight class is consistent with earlier research that suggested that controlling for vehicle age seemed to eliminate the association between belt use and car weight.

Data

There were 36,887 drivers in towed passenger cars investigated by the National Accident Sampling System (NASS) between 1981 and 1986. No statistical file is available for 1987, but NASS investigated an additional 34,221 towed passenger car drivers between 1988 and 1993. The NASS data for the earlier six years were compared to the data for the later six years to describe changes in the patterns of driver involvements in towed passenger cars.

Data on car driver fatalities are available from the Fatal Accident Reporting System (FARS). Three years of FARS were used, corresponding to the first year of NASS data used here (1981), the year between the two groups of NASS data (1987), and the last year of NASS data used here (1993). There were 16,722 car driver fatalities in 1981, 16,691 car driver fatalities in 1987, and 14,206 car driver fatalities in 1993.

All data are stored in Statistical Analysis System (SAS) file format, and SAS was used to generate the tables included here.

Method

Passenger cars were divided into six classes based on vehicle curb weight. The curb weight included in the NASS analysis files is that reported by the NASS investigators from all sources available to them. The curb weight included in the FARS analysis files is derived from the vehicle identification number as part of the routine file-building process. The weight classes were defined in the standard 500-pound categories used by the agency, as follows:

Minicompact	= up to 1,949 pounds
Subcompact	= 1,950 through 2,449 pounds
Compact	= 2,450 through 2,949 pounds
Intermediate	= 2,950 through 3,449 pounds
Fullsize	= 3,450 through 3,949 pounds
Largest	= 3,950 pounds and over.

The tables of NASS data included in this report show the number of drivers in investigated cases, the national estimates produced by statistically weighting the data (using the national inflation factors), and percentages relevant to this analysis. NASS is a statistical sample, and estimates derived from NASS contain both sampling and nonsampling errors. Some idea of the reliability of the estimates is suggested by the number of investigated cases on which each estimate is based; estimates based on only a few cases are particularly susceptible to sampling error. The tables of FARS data included here show the number of driver fatalities and relevant percentages.

The data for drivers in towaway crashes and for fatally-injured drivers were plotted on the same scale in the first three pairs of figures (Figures 1 and 2 for young drivers, Figures 3 and 4 for older drivers, and Figures 5 and 6 for female drivers). This makes it easier to compare the results for towaway crashes to those for fatal crashes. The effectiveness of safety belts in preventing fatality suggests that it would be more useful to plot the towaway and fatality results on different scales.

Belt use in towaway crashes was plotted on a scale of 0 to 80 percent in Figure 7. Safety belts are estimated to be between 40 to 50 percent effective in preventing fatality, so a use rate of 80 percent in some subset of towaway crashes would suggest that:

$$80 \text{ percent} * (1 - 0.45) = 44 \text{ percent}$$

of the fatalities in this subset of towaway crashes would be belted if there were no association between belt use and crash severity. So, fatalities were plotted on a scale of 0 to 45 percent in Figure 8 to make it easier to compare these results with the results for towaway crashes shown in Figure 7.

Driver Age

Drivers of heavier cars tend to be older than drivers of lighter cars (both in towaway crashes and among fatally-injured drivers), and the age difference seems greater now than it was in the early 1980s.

Figure 1 (summarized from Tables 1 through 4) shows that the fraction of towed cars with a young driver (defined here as those aged 15 through 24 years old) decreased with increasing vehicle weight. An estimated:

49 percent of minicompact cars,
43 percent of subcompact cars,
41 percent of compact cars,
41 percent of intermediate cars,
40 percent of fullsize cars, and
32 percent of the largest cars

that were towed from a crash between 1981 and 1986 had a young driver. The fraction of towed cars with a young driver seems not to have changed much in the lightest three car classes. From 1988 through 1993:

- 47 percent of minicompact cars,
- 45 percent of subcompact cars,
- 41 percent of compact cars,
- 34 percent of intermediate cars,
- 23 percent of fullsize cars, and
- 22 percent of the largest cars

in towaway crashes had a young driver. However, heavier cars in towaway crashes now seem less likely to be have a young driver than was the case in the early 1980s. For example, young drivers were 32 percent of those in the largest cars in towaway crashes during the earlier six years and only 22 percent of those during the later six years.

Figure 2 (summarized from Tables 5 through 7) shows similar results for fatally-injured drivers. Young drivers were a smaller fraction of fatalities in heavier cars than in lighter cars, they were a declining fraction of driver fatalities from 1981 to 1987 to 1993, and the decline seems to have been especially pronounced in heavier cars. For example, in the largest cars, young drivers were:

- 22 percent of driver fatalities in 1981,
- 19 percent of driver fatalities in 1987, and
- 12 percent of driver fatalities in 1993.

In contrast, young drivers accounted for closer to the same fraction (between 36 and 41 percent) of fatalities in minicompact cars in these three years.

Figure 3 shows that a higher fraction of drivers involved in towaway crashes were older drivers (that is, they were at least 65 years old) in the later six years of NASS than they had been in the earlier six years. The differences were small for minicompact, subcompact, compact, and intermediate cars; the greatest differences were the large increases in the fraction of towed fullsize and largest cars that had older drivers. In both fullsize and the largest cars, these older drivers were:

- 8 percent of involvements in the earlier years and
- 16 percent of involvements in the later years.

Thus, the tendency for older drivers to be driving heavier cars when they become involved in towaway crashes seems greater now than it was in the early 1980s.

Figure 4 shows similar results for fatally-injured drivers. Older drivers were a larger fraction of fatalities in heavier cars than of fatalities in lighter cars in all three years presented here, they were an increasing fraction of driver fatalities from 1981 to 1987 to 1993, and the increase seems especially pronounced for heavier cars. For example, in the largest cars, older drivers were:

- 17 percent of driver fatalities in 1981,
- 21 percent of driver fatalities in 1987, and
- 34 percent of driver fatalities in 1993.

In contrast, older drivers accounted for closer to the same proportion (between 5 and 8 percent) of fatalities in minicompact cars in these three years.

Driver Sex

More of the drivers of heavier cars are men than is the case for lighter cars (both in towaway crashes and among fatally-injured drivers), but the association between driver sex and car weight does not seem much different now than it was in the early 1980s.

Figure 5 (summarized from Tables 8 through 11) shows that the fraction of towed cars with a female driver tended to decrease with increasing vehicle weight and was higher in the later six years of NASS than it had been in the early 1980s. For example, estimates from the 1988 through 1993 NASS data are that females accounted for:

50 percent of minicompact car drivers and
34 percent of drivers of the largest cars

in towaway crashes. These estimates are slightly higher than the estimates obtained from the 1981 through 1986 NASS data (42 percent and 32 percent, respectively). Increases of roughly the same magnitude appear in all six weight classes.

Similar results are shown for driver fatalities in Figure 6 (summarized from Tables 12 through 14). For example, in compact cars, women drivers were:

27 percent of driver fatalities in 1981,
34 percent of driver fatalities in 1987, and
35 percent of driver fatalities in 1993.

Women have increased as a fraction of driver fatalities in compact cars, but the size of the increase is about the same as in the other five car weight classes.

Safety Belt Use

Drivers of heavier cars are less likely to use their safety belts than are drivers of lighter cars (both in towaway crashes and among fatally-injured drivers), but the difference smaller now than it was in the early 1980s.

Figure 7 (summarized from Tables 15 through 18) shows the dramatic increase in belt use in towaway crashes that occurred between the earlier NASS years (1981 through 1986) and the later NASS years (1988 through 1993). Belt use among drivers in towaway crashes between 1981 and 1986 was:

28 percent in minicompact cars,
33 percent in subcompact cars,
30 percent in compact cars,
25 percent in intermediate cars,
21 percent in fullsize cars, and
17 percent in the largest cars.

Belt use was about twice as high in subcompact cars as in the largest cars. As belt use has increased, differences among car weight classes (as measured by the ratio of the belt use rates) have declined. Belt use in towaway crashes that occurred between 1988 and 1993 was:

71 percent in minicompact cars,
75 percent in subcompact cars,
75 percent in compact cars,
70 percent in intermediate cars,
67 percent in fullsize cars, and
46 percent in the largest cars.

Note that some dampening in the belt use curve would be unavoidable at very high use rates. For example, when belt use reaches an estimated 67 percent in fullsize cars, it is impossible for belt use to be twice as high in minicompact cars.

Previous research (*Belt Use in Serious Impacts Estimated from Fatality Data*, S. Partyka, DOT HS 807 519, December 1989) suggests another explanation for the decreasing differences across car weight classes. The observed differences in belt use by car weight may actually reflect differences in belt use by car age. That is, newer cars in the 1980s tended to be lighter than older cars, and drivers of newer cars tend to use their safety belts more often than do drivers of older cars. If car age is more important than car weight in understanding belt use, then differences in belt use rates by car weight would tend to decline as lighter cars aged.

Figure 8 (summarized from Tables 19 through 21) shows a similar effect for car driver fatalities. There have been dramatic increases in belt use over time, and there are consistent (though apparently declining) differences in belt use across car weight class (with higher use rates in lighter cars).

The agency has estimated that lap-and-shoulder belts are between 40 and 50 percent effective in preventing fatality (*Final Regulatory Impact Analysis: Amendment to Federal Motor Vehicle Safety Standard 208, Passenger Car Front Seat Occupant Protection*, DOT HS 806 572, July 1984), and the belt use rates shown in Tables 19 through 21 reflect both their use in serious crashes and the effectiveness of belts in preventing fatality. The concept of belt use in "potentially-fatal crashes" is useful in separating the two effects. For example, a belt use rate of 33.09 percent among driver fatalities in minicompact cars in 1993 suggests that:

$$33.09 \text{ percent} / (1 - 0.45 \text{ percent}) = 60.16 \text{ percent}$$

of drivers in serious crashes in minicompact cars in 1993 were belted, with 45 percent of them saved by their belts. The effectiveness of belts needs to be considered in interpreting Figure 8 and the data in Tables 19 through 21.

Figure 1 (NASS, above) and Figure 2 (FARS, below)

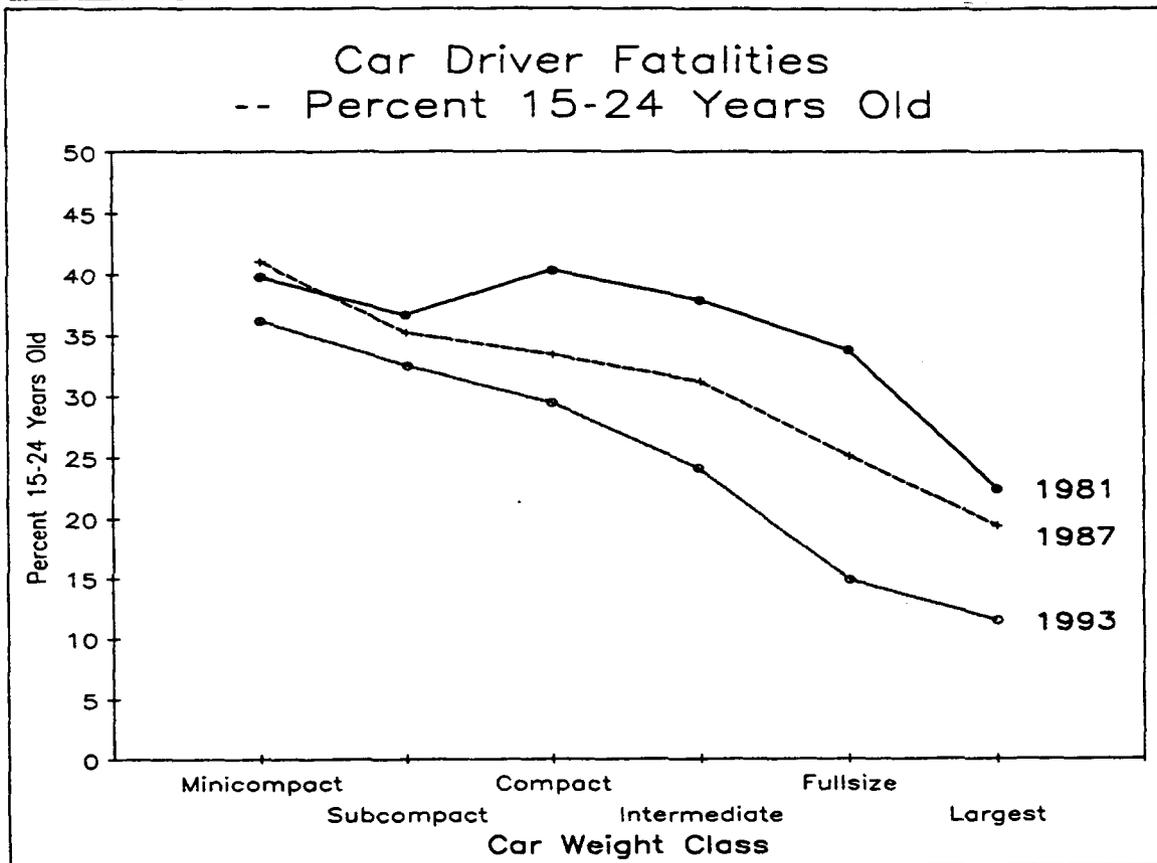
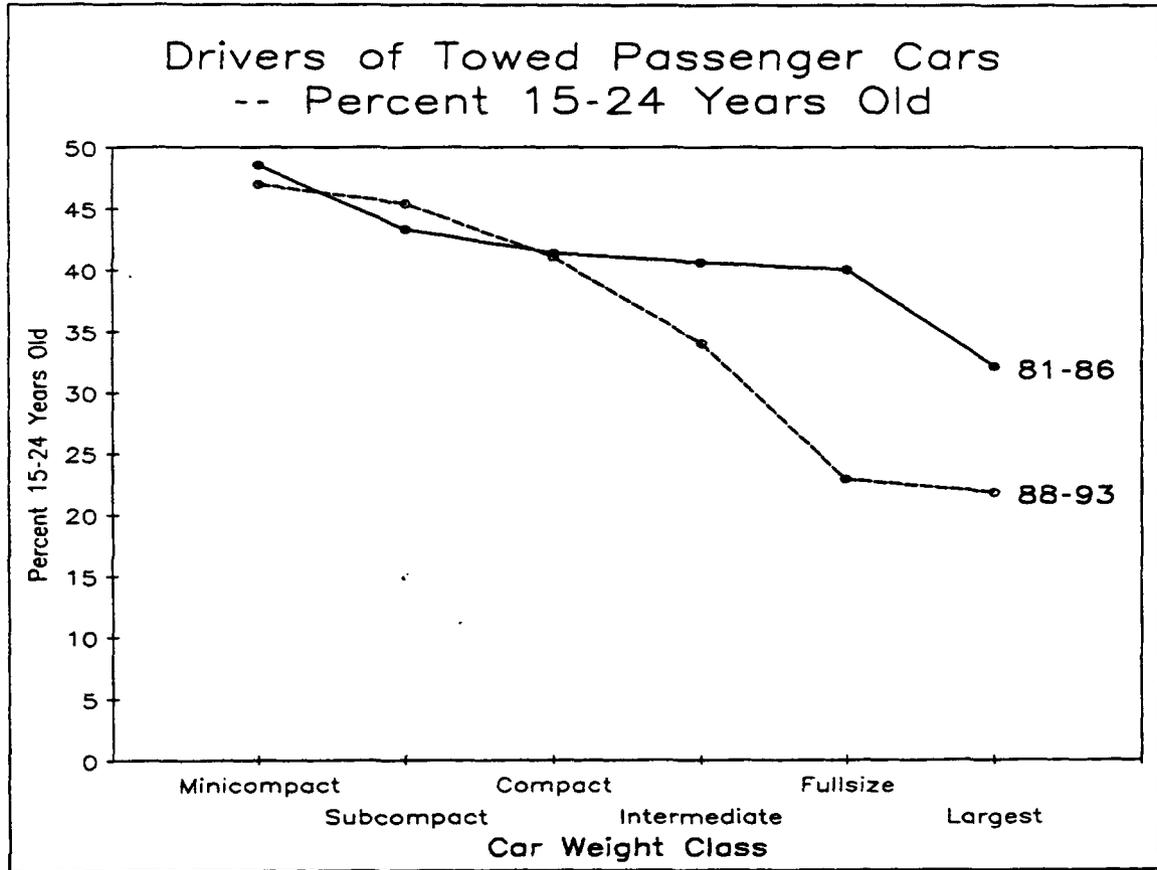


Figure 3 (NASS, above) and Figure 4 (FARS, below)

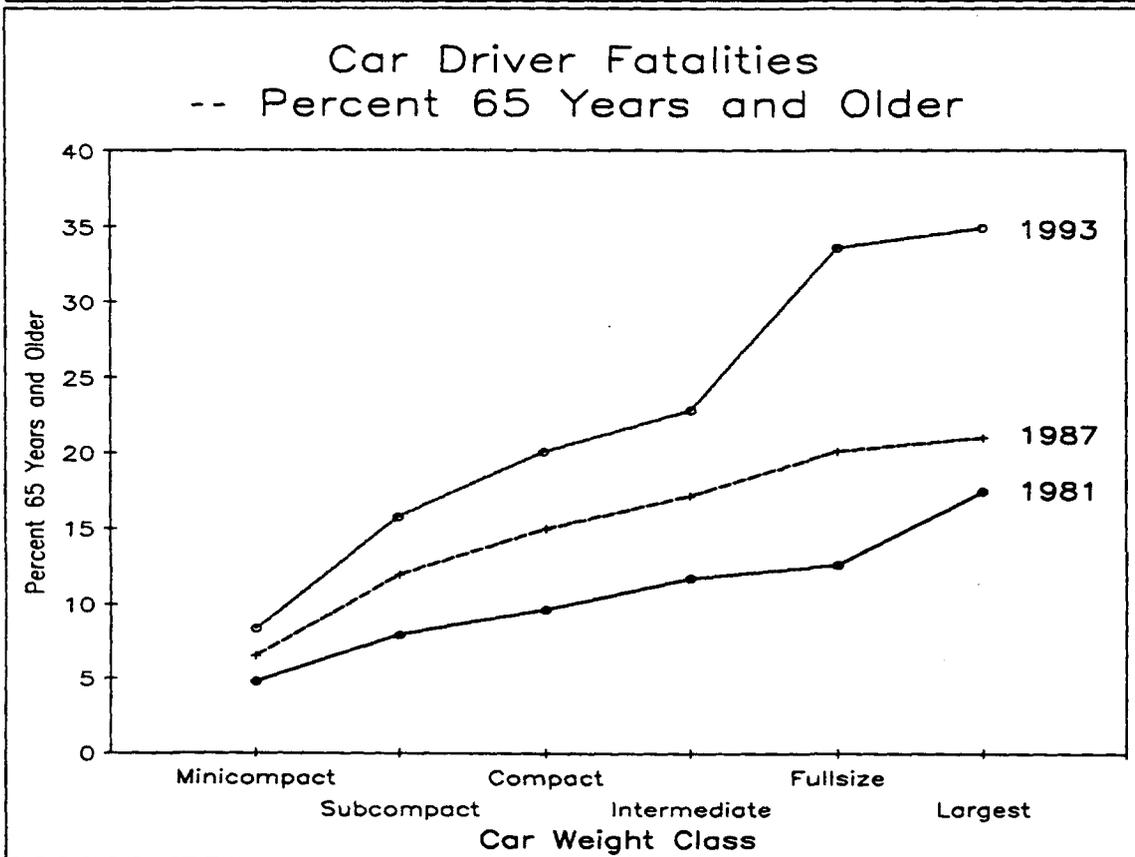
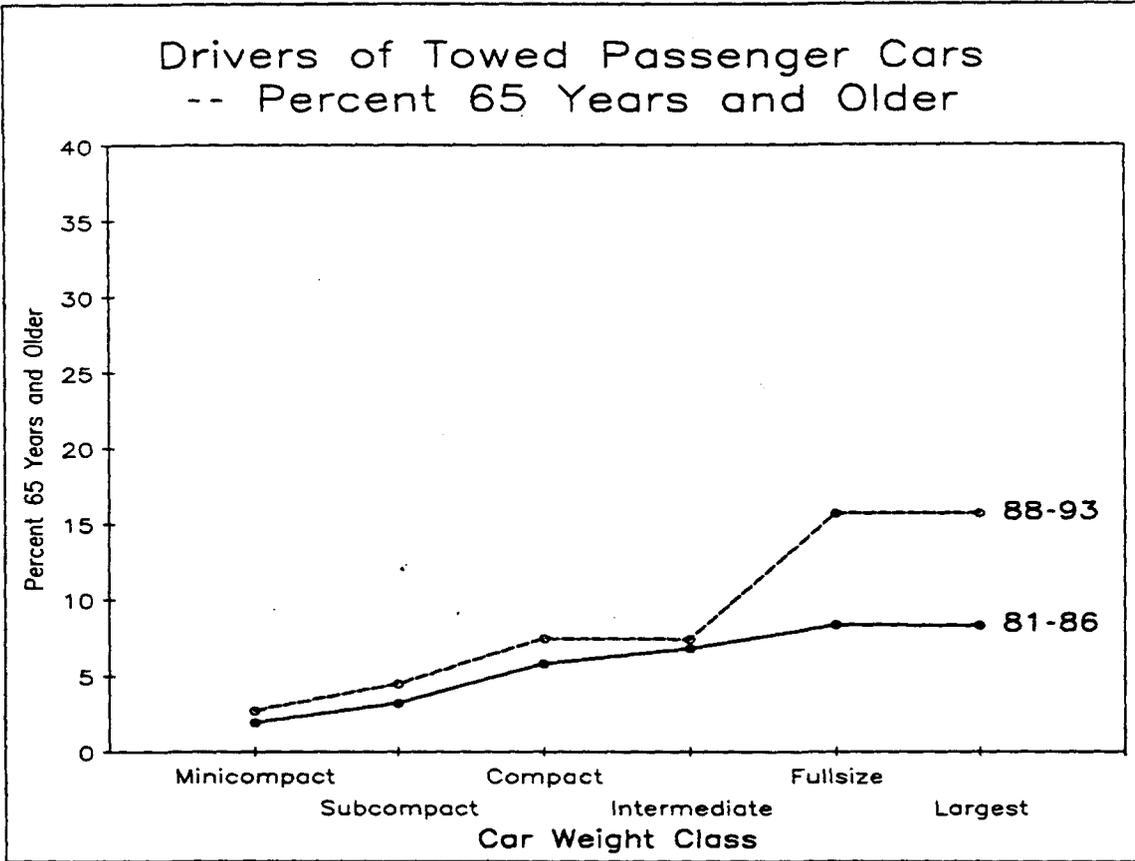


Figure 5 (NASS, above) and Figure 6 (FARS, below)

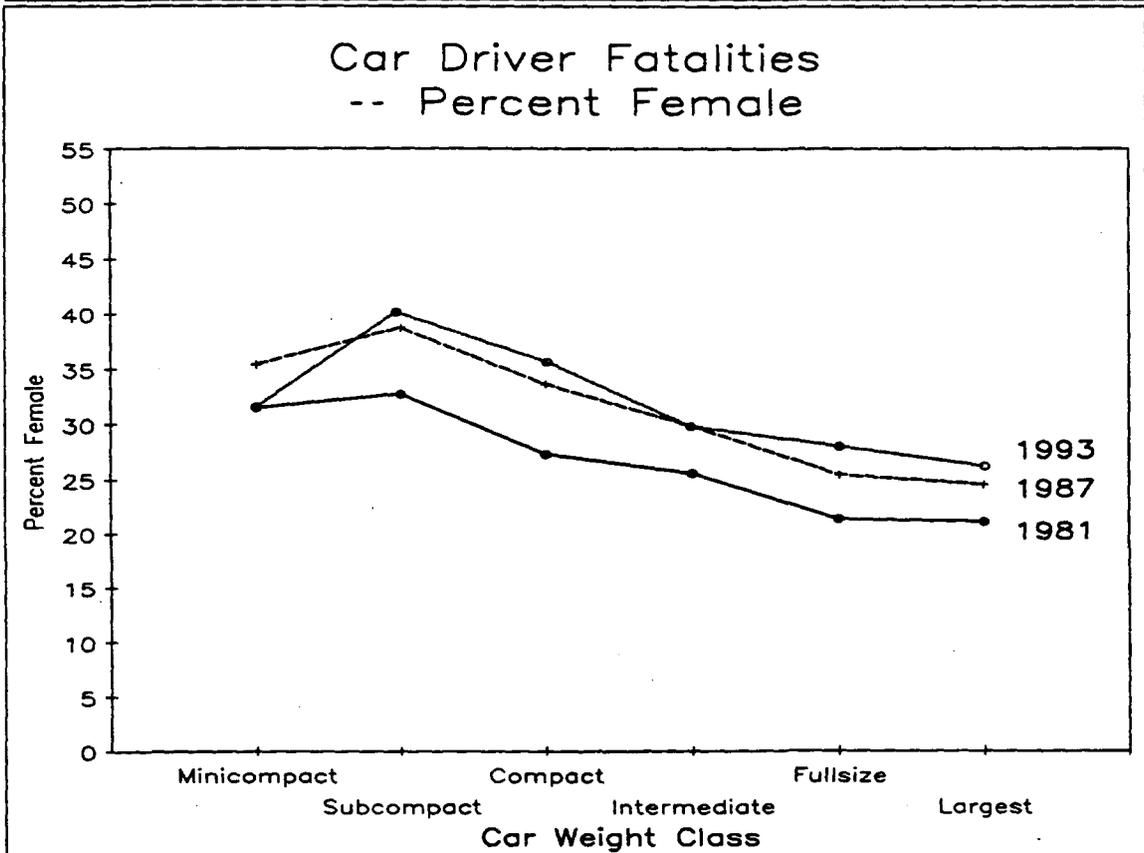
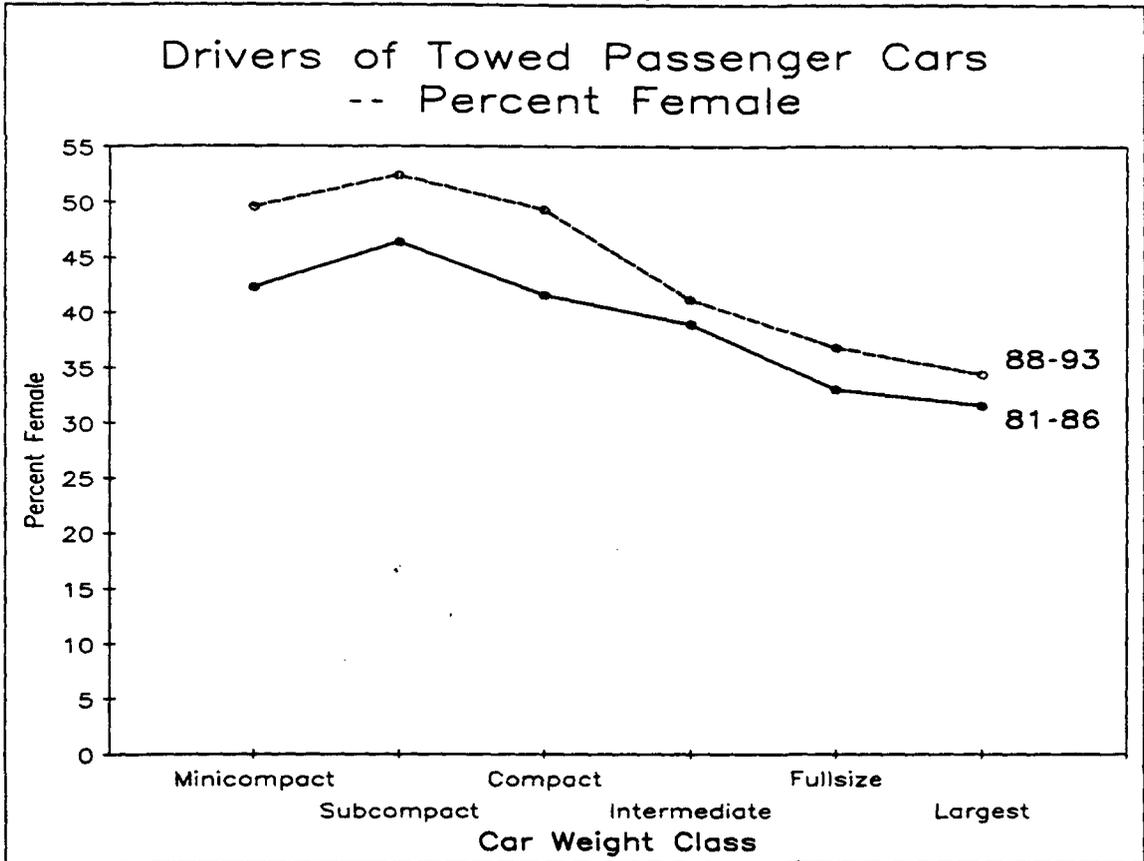


Figure 7 (NASS, above) and Figure 8 (FARS, below)

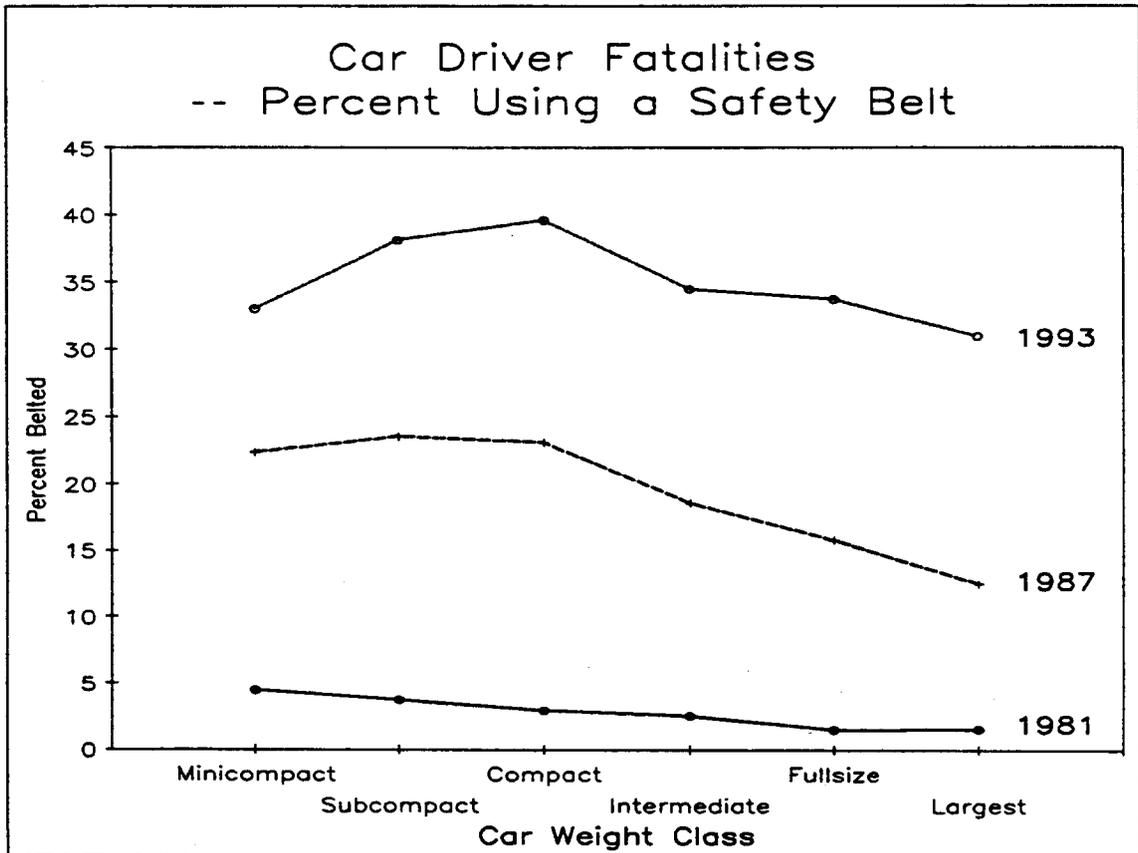
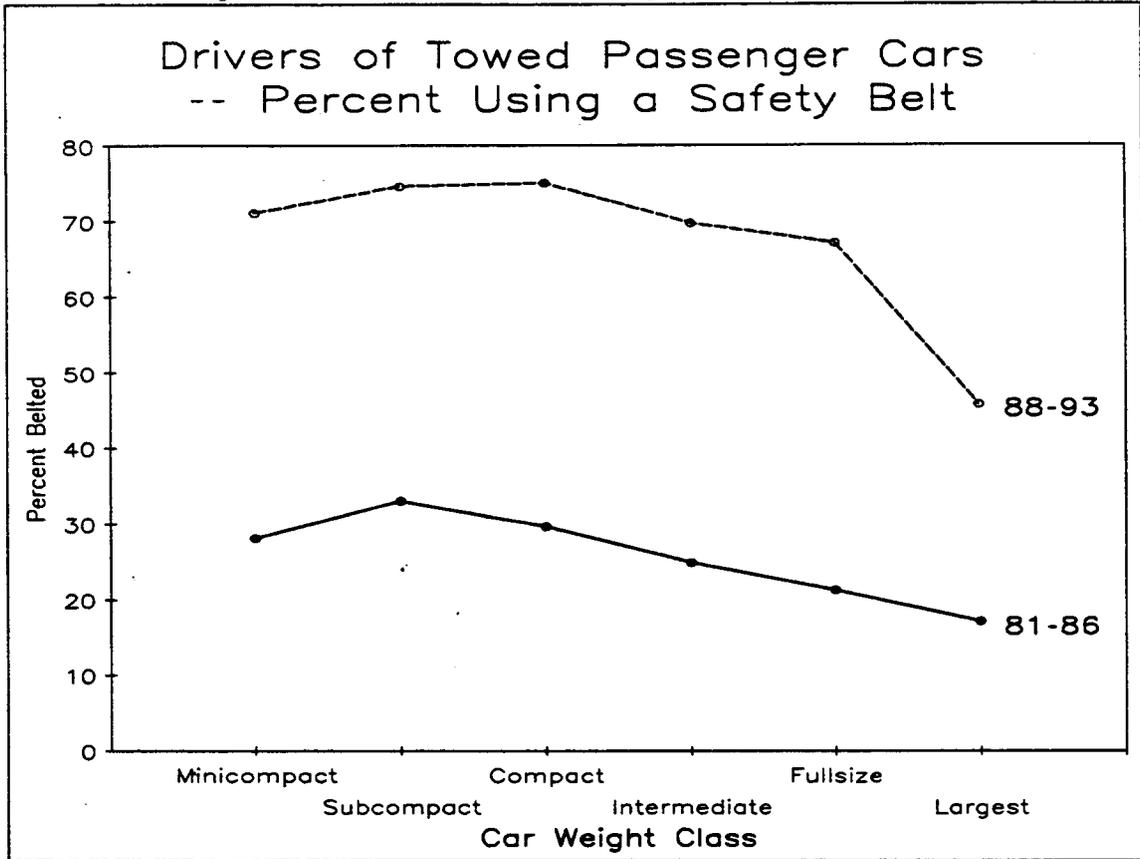


Table 1: Car Driver Age in Towaway Crashes, Unweighted 1981-1986 NASS Data

AGE	CAR WEIGHT CLASS							Total	
	Frequency	Mini-compact	Sub-compact	Compact	Inter-mediate	Fullsize	Largest		Unknown
Unknown		9	38	47	69	70	87	17	337
00-14		1	4	8	12	3	2	2	32
15-24		955	3205	2771	2957	2285	1792	306	14271
25-44		890	3231	2746	2953	2142	2267	310	14539
45-64		187	831	862	1134	972	1162	107	5255
65-97		40	291	430	588	562	501	41	2453
Total		2082	7600	6864	7713	6034	5811	783	36887

Table 2: Car Driver Age in Towaway Crashes, Unweighted 1988-1993 NASS Data

AGE	CAR WEIGHT CLASS							Total	
	Frequency	Mini-compact	Sub-compact	Compact	Inter-mediate	Fullsize	Largest		Unknown
Unknown		16	64	79	98	46	42	28	373
00-14		2	7	14	7	5	0	1	36
15-24		710	3957	3094	2065	858	413	215	11312
25-44		682	4122	4081	2940	1453	813	374	14465
45-64		147	1096	1353	1181	782	412	131	5102
65-97		33	533	813	730	520	253	51	2933
Total		1590	9779	9434	7021	3664	1933	800	34221

Table 3: Car Driver Age in Towaway Crashes, Weighted 1981-1986 NASS Data

AGE	CAR WEIGHT CLASS							Total
Frequency Column %	Mini- compact	Sub- compact	Compact	Inter- mediate	Fullsize	Largest	Unknown	Total
Unknown	2593	18306	19981	36041	33110	45556	30318	.

00-14	115	730	2199	7574	1058	621	3734	16032
	0.02	0.03	0.10	0.32	0.06	0.04	0.61	
15-24	307279	999495	882923	967657	708847	552311	272793	4691304
	48.57	43.31	41.34	40.59	40.01	32.14	44.47	
25-44	254097	995426	871526	910257	636761	676193	245905	4590167
	40.17	43.13	40.81	38.18	35.94	39.35	40.08	
45-64	59002	238589	255291	336560	277295	346829	58258	1571826
	9.33	10.34	11.95	14.12	15.65	20.18	9.50	
65-97	12111	73513	123645	161817	147796	142411	32788	694079
	1.91	3.19	5.79	6.79	8.34	8.29	5.34	
Total	632604	2307753	2135585	2383866	1771757	1718365	613479	11563408

Frequency Missing = 185906

Table 4: Car Driver Age in Towaway Crashes, Weighted 1988-1993 NASS Data

AGE	CAR WEIGHT CLASS							Total
Frequency Column %	Mini- compact	Sub- compact	Compact	Inter- mediate	Fullsize	Largest	Unknown	Total
Unknown	8856	46550	55003	69561	26459	39243	8152	.

00-14	3119	547	2552	3137	2455	0	24	11835
	0.48	0.01	0.07	0.12	0.18	0.00	0.01	
15-24	307753	1698724	1459720	921596	306299	157350	86979	4938421
	46.98	45.43	41.04	33.96	22.87	21.82	31.53	
25-44	256624	1521678	1359165	1154176	519376	302217	140572	5253808
	39.18	40.70	38.22	42.53	38.78	41.91	50.96	
45-64	69844	351031	470493	434602	301330	148438	35605	1811343
	10.66	9.39	13.23	16.01	22.50	20.59	12.91	
65-97	17688	167017	264463	200417	209917	113051	12674	985228
	2.70	4.47	7.44	7.38	15.67	15.68	4.59	
Total	655029	3738998	3556394	2713928	1339378	721055	275854	13000635

Frequency Missing = 253825

Table 5: Age of Car Driver Fatalities, 1981 FARS Data

AGE	CAR WEIGHT CLASS							Total
Frequency	Mini-	Sub-	Compact	Inter-	Fullsize	Largest	Unknown	
Column %	compact	compact	Compact	mediate	Fullsize	Largest	Unknown	
Unknown	1	5	4	5	5	6	2	.
	
00-14	0	3	3	4	2	0	3	15
	0.00	0.12	0.12	0.12	0.08	0.00	0.12	
15-24	503	949	1019	1295	857	429	833	5885
	39.79	36.68	40.29	37.85	33.77	22.37	34.18	
25-44	525	1000	930	1139	890	629	982	6095
	41.53	38.65	36.77	33.29	35.07	32.79	40.30	
45-64	176	431	334	582	469	525	377	2894
	13.92	16.66	13.21	17.01	18.48	27.37	15.47	
65-97	60	204	243	401	320	335	242	1805
	4.75	7.89	9.61	11.72	12.61	17.47	9.93	
Total	1264	2587	2529	3421	2538	1918	2437	16694

Frequency Missing = 28

Table 6: Age of Car Driver Fatalities, 1987 FARS Data

AGE	CAR WEIGHT CLASS							Total
Frequency	Mini-	Sub-	Compact	Inter-	Fullsize	Largest	Unknown	
Column %	compact	compact	Compact	mediate	Fullsize	Largest	Unknown	
Unknown	0	4	3	2	0	1	0	.
	
00-14	4	6	5	2	4	2	2	25
	0.28	0.14	0.13	0.06	0.21	0.22	0.18	
15-24	590	1459	1264	1064	470	179	392	5418
	41.03	35.18	33.40	31.12	25.09	19.41	35.70	
25-44	581	1595	1410	1210	648	339	431	6214
	40.40	38.46	37.26	35.39	34.60	36.77	39.25	
45-64	170	593	537	557	375	208	152	2592
	11.82	14.30	14.19	16.29	20.02	22.56	13.84	
65-97	93	494	568	586	376	194	121	2432
	6.47	11.91	15.01	17.14	20.07	21.04	11.02	
Total	1438	4147	3784	3419	1873	922	1098	16681

Frequency Missing = 10

Table 7: Age of Car Driver Fatalities, 1993 FARS Data

AGE	CAR WEIGHT CLASS							Total
Frequency/ Column %	Mini- compact	Sub- compact	Compact	Inter- mediate	Fullsize	Largest	Unknown	
Unknown	0 .	1 .	0 .	4 .	1 .	1 .	0 .	.
00-14	1 0.13	5 0.13	12 0.29	5 0.16	4 0.33	1 0.22	1 0.11	29
15-24	274 36.20	1207 32.59	1209 29.39	736 23.99	183 15.07	52 11.53	282 31.65	3943
25-44	295 38.97	1347 36.37	1440 35.00	1057 34.45	356 29.32	130 28.82	364 40.85	4989
45-64	125 16.51	565 15.25	649 15.78	578 18.84	267 21.99	113 25.06	135 15.15	2432
65-97	62 8.19	580 15.66	804 19.54	692 22.56	404 33.28	155 34.37	109 12.23	2806
Total	757	3704	4114	3068	1214	451	891	14199

Frequency Missing = 7

Table 8: Car Driver Sex in Towaway Crashes, Unweighted 1988-1993 NASS Data

SEX	CAR WEIGHT CLASS							Total
Frequency	Mini-compact	Sub-compact	Compact	Inter-mediate	Fullsize	Largest	Unknown	Total
Unknown	5	17	33	40	42	45	10	192
Male	1183	4086	3928	4697	3999	3919	536	22348
Female	894	3497	2903	2976	1993	1847	237	14347
Total	2082	7600	6864	7713	6034	5811	783	36887

Table 9: Car Driver Sex in Towaway Crashes, Unweighted 1988-1993 NASS Data

SEX	CAR WEIGHT CLASS							Total
Frequency	Mini-compact	Sub-compact	Compact	Inter-mediate	Fullsize	Largest	Unknown	Total
Unknown	8	31	39	51	18	21	12	180
Male	855	4854	5022	4231	2411	1330	524	19227
Female	727	4894	4373	2739	1235	582	264	14814
Total	1590	9779	9434	7021	3664	1933	800	34221

Table 10: Car Driver Sex in Towaway Crashes, Weighted 1981-1986 NASS Data

SEX	CAR WEIGHT CLASS							Total
Frequency/ Column %	Mini- compact	Sub- compact	Compact	Inter- mediate	Fullsize	Largest	Unknown	Total
Unknown	1688 . . .	10298 . . .	16246 . . .	26028 . . .	24033 . . .	29401 . . .	21517
Male	365935 57.76	1242216 53.64	1250735 58.46	1461895 61.07	1193224 67.00	1187472 68.46	395620 63.58	7097097
Female	267574 42.24	1073544 46.36	888585 41.54	931985 38.93	587610 33.00	547048 31.54	226660 36.42	4523005
Total	633509	2315761	2139320	2393879	1780834	1734520	622280	11620102

Frequency Missing = 129212

Table 11: Car Driver Sex in Towaway Crashes, Weighted 1988-1993 NASS Data

SEX	CAR WEIGHT CLASS							Total
Frequency/ Column %	Mini- compact	Sub- compact	Compact	Inter- mediate	Fullsize	Largest	Unknown	Total
Unknown	2412 . . .	31275 . . .	39029 . . .	43998 . . .	9796 . . .	16014 . . .	4714
Male	333783 50.46	1788184 47.63	1811674 50.71	1612193 58.85	857178 63.21	488271 65.60	179162 64.15	7070445
Female	327690 49.54	1966088 52.37	1760694 49.29	1127299 41.15	498863 36.79	256013 34.40	100131 35.85	6036777
Total	661473	3754272	3572368	2739492	1356040	744284	279292	13107222

Frequency Missing = 147239

Table 12: Sex of Car Driver Fatalities, 1981 FARS Data

SEX	CAR WEIGHT CLASS							Total
Frequency/ Column %	Mini- compact	Sub- compact	Compact	Inter- mediate	Fullsize	Largest	Unknown	
Unknown	0	1	0	0	0	1	0	.

Male	867	1744	1843	2550	1999	1517	1904	12424
	68.54	67.31	72.76	74.43	78.61	78.89	78.06	
Female	398	847	690	876	544	406	535	4296
	31.46	32.69	27.24	25.57	21.39	21.11	21.94	
Total	1265	2591	2533	3426	2543	1923	2439	16720

Frequency Missing = 2

Table 13: Sex of Car Driver Fatalities, 1987 FARS Data

SEX	CAR WEIGHT CLASS							Total
Frequency/ Column %	Mini- compact	Sub- compact	Compact	Inter- mediate	Fullsize	Largest	Unknown	
Unknown	0	1	0	0	0	0	0	.

Male	929	2544	2515	2402	1398	697	813	11298
	64.60	61.30	66.41	70.21	74.64	75.51	74.04	
Female	509	1606	1272	1019	475	226	285	5392
	35.40	38.70	33.59	29.79	25.36	24.49	25.96	
Total	1438	4150	3787	3421	1873	923	1098	16690

Frequency Missing = 1

Table 14: Sex of Car Driver Fatalities, 1993 FARS Data

SEX	CAR WEIGHT CLASS							Total
Frequency/ Column %	Mini- compact	Sub- compact	Compact	Inter- mediate	Fullsize	Largest	Unknown	
Unknown	0	0	0	0	1	0	0	.

Male	516	2194	2654	2156	874	332	608	9334
	68.16	59.22	64.51	70.18	71.99	73.45	68.24	
Female	241	1511	1460	916	340	120	283	4871
	31.84	40.78	35.49	29.82	28.01	26.55	31.76	
Total	757	3705	4114	3072	1214	452	891	14205

Frequency Missing = 1

Table 15: Car Driver Belt Use in Towaway Crashes, Unweighted 1981-1986 NASS Data

BELT USE CAR WEIGHT CLASS

Frequency	Mini-compact	Sub-compact	Compact	Inter-mediate	Fullsize	Largest	Unknown	Total
Unknown	188	694	679	762	629	676	304	3932
No belt	1394	4846	4529	5414	4334	4293	322	25132
Belted	500	2060	1656	1537	1071	842	157	7823
Total	2082	7600	6864	7713	6034	5811	783	36887

Table 16: Car Driver Belt Use in Towaway Crashes, Unweighted 1988-1993 NASS Data

BELT USE CAR WEIGHT CLASS

Frequency	Mini-compact	Sub-compact	Compact	Inter-mediate	Fullsize	Largest	Unknown	Total
Unknown	129	755	768	698	375	225	393	3343
No belt	631	3320	3025	2461	1438	848	125	11848
Belted	830	5704	5641	3862	1851	860	282	19030
Total	1590	9779	9434	7021	3664	1933	800	34221

Table 17: Car Driver Belt Use in Towaway Crashes, Weighted 1981-1986 NASS Data

BELT USE CAR WEIGHT CLASS

Frequency/ Column %	Mini- compact	Sub- compact	Compact	Inter- mediate	Fullsize	Largest	Unknown	Total
Unknown	59359	223557	217904	262963	225467	223771	139544	.
No belt	414037 71.90	1408516 66.99	1362943 70.34	1619795 75.10	1243959 78.76	1277315 82.93	351463 69.70	7678027
Belted	161801 28.10	693987 33.01	574719 29.66	537150 24.90	335441 21.24	262835 17.07	152789 30.30	2718722
Total	575838	2102502	1937662	2156945	1579400	1540150	504252	10396749

Frequency Missing = 1352564

Table 18: Car Driver Belt Use in Towaway Crashes, Weighted 1986-1993 NASS Data

BELT USE CAR WEIGHT CLASS

Frequency/ Column %	Mini- compact	Sub- compact	Compact	Inter- mediate	Fullsize	Largest	Unknown	Total
Unknown	42466	302904	315070	298961	146326	97470	131806	.
No belt	179695 28.92	886550 25.46	823969 25.00	750485 30.21	401769 32.95	359179 54.19	30298 19.91	3431946
Belted	441724 71.08	2596094 74.54	2472357 75.00	1734043 69.79	817742 67.05	303648 45.81	121902 80.09	8487511
Total	621419	3482644	3296327	2484528	1219511	662828	152200	11919457

Frequency Missing = 1335004

Table 19: Belt Use by Car Driver Fatalities, 1981 FARS Data

BELT USE CAR WEIGHT CLASS

Frequency Column %	Mini- compact	Sub- compact	Compact	Inter- mediate	Fullsize	Largest	Unknown	Total
Unknown	280	504	493	575	416	310	331	.
	
No belt	941	2010	1980	2779	2095	1589	2050	13444
	95.53	96.26	97.06	97.47	98.50	98.45	97.25	
Belted	44	78	60	72	32	25	58	369
	4.47	3.74	2.94	2.53	1.50	1.55	2.75	
Total	985	2088	2040	2851	2127	1614	2108	13813

Frequency Missing = 2909

Table 20: Belt Use by Car Driver Fatalities, 1987 FARS Data

BELT USE CAR WEIGHT CLASS

Frequency Column %	Mini- compact	Sub- compact	Compact	Inter- mediate	Fullsize	Largest	Unknown	Total
Unknown	252	524	508	483	235	136	161	.
	
No belt	921	2774	2521	2393	1379	688	762	11438
	77.66	76.48	76.88	81.45	84.19	87.42	81.32	
Belted	265	853	758	545	259	99	175	2954
	22.34	23.52	23.12	18.55	15.81	12.58	18.68	
Total	1186	3627	3279	2938	1638	787	937	14392

Frequency Missing = 2299

Table 21: Belt Use by Car Driver Fatalities, 1993 FARS Data

BELT USE CAR WEIGHT CLASS

Frequency Column %	Mini- compact	Sub- compact	Compact	Inter- mediate	Fullsize	Largest	Unknown	Total
Unknown	62	364	413	306	140	53	93	.
	
No belt	465	2028	2203	1789	710	277	511	7983
	66.91	60.70	59.52	64.68	66.05	69.42	64.04	
Belted	230	1313	1498	977	365	122	287	4794
	33.09	39.30	40.48	35.32	33.95	30.58	35.96	
Total	695	3341	3701	2766	1075	399	798	12775

Frequency Missing = 1431