

**DIRECT OBSERVATION
OF SEAT BELT USE IN MICHIGAN:
JULY 1987**

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16. Abstract <p>Results of a direct observation study of seat belt use in Michigan conducted in July 1987 were compared with results of previous surveys in December 1984, April 1985, July 1985, December 1985, April 1986, July 1986, December 1986, and April 1987. In the current survey, 18,663 occupants in 12,219 cars and light trucks were observed between July 7 and July 31, 1987. The main finding was that use of seat belts changed little between April 1987 and July 1987. Front-seat restraint use among all motorists observed was 46.6% in July 1987, compared to 45.7% in April 1987. The increase is not statistically significant since the estimates have a margin of error of $\pm 2\%$. All age groups exhibited only marginal changes from the previous survey wave. Use rates were as follows in July 1987 (all seat positions): 72.9% among occupants age 0-3; 33.0% among occupants age 4-15; 38.3% among occupants age 16-29; 47.0% among occupants age 30-59; and 54.0% among occupants age 60 and older. Females continued to exhibit higher restraint use than males, 48.9% versus 40.7% in the current survey. As in previous surveys, restraint use varied by region of the state. Seat belt use has remained relatively stable since December 1985 when use among front-seat occupants was 44.5%. Finally, front-seat belt use among those age 16 and over remains significantly higher than it was before Michigan's mandatory use law took effect (46.5% in July 1987, versus 18.3% in December 1984). Additional surveys are scheduled for fall of 1987 and spring of 1988.</p>					
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CONTENTS

1	INTRODUCTION	1
2	METHODS	3
3	RESULTS	9
4	REFERENCES	35
5	APPENDIX A	37
6	APPENDIX B	41

LIST OF TABLES

2.1	Descriptive Statistics for the 240 Observation Sites	5
2.2	Sample Distributions for Major Variables by Seat Position	7-8
3.1	Percent Restrained by Major Variables and Seat Location	11-12
3.2	Restraint Use by Age and Seat Position	15
3.3	Percent Restraint Use by Sex, Type of Vehicle, Observation Site, and Weather Conditions	22
3.4	Percent Restraint Use by Time of Day and Day of Week	26
3.5	Percent Restraint Use by Michigan Department of Transportation Regions	27
3.6	Restraint Use, Number of Vehicles Observed, and Number of Occupants for Each Sampling Area	31
3.7	Number of Occupants in Nonstandard Seat Positions by Age	32

LIST OF FIGURES

3.1	Overall Restraint Use	10
3.2	Restraint Use by Seat Location, Occupants Age 16 and Over	14
3.3	Restraint Use by Seat Position	16-17
3.4	Restraint Use by Age	18-19
3.5	Driver Restraint Use by Age	21
3.6	Restraint Use by Vehicle Type	23-24
3.7	Restraint Use by Region	28-30
3.8	Percent of Belted Occupants with Incorrect Use	34

1 INTRODUCTION

The Michigan mandatory seat belt law, implemented in July of 1985, is one of 27 similar laws in the United States intended to reduce motor vehicle crash-related deaths and injuries (Highway and Vehicle Safety Report, 1987).¹ The success of these laws in preventing injury and death, however, has not been uniform, perhaps due to varying levels of compliance attained in these states. For example, a recently completed multiple time-series evaluation of effects in the first eight states with seat belt laws in the U.S. identified significant fatality reductions of 7.1% to 24.5% (Wagenaar, Maybee, and Sullivan, 1987). Compliance with mandatory belt laws has also varied **within** states over time. Although the short-term trend following such legislation has generally been a sharp increase in belt use immediately following implementation of such laws, followed by a partial decline over the subsequent six to twelve months, belt use in some states has exhibited a departure from this pattern. In Austin, Texas, for example, a sharp increase in belt use observed immediately after enforcement of the law began was still evident six months later (Bunch and others, 1986). These differing trends over time have implications for expected reductions in motor vehicle crash-related deaths and injuries. Consequently, evaluation of the success of mandatory seat belt laws should include an understanding of trends in belt use.

In order to measure compliance with Michigan's seat belt law, The University of Michigan Transportation Research Institute is conducting a series of direct-observation surveys of seat belt use among motor vehicle occupants throughout the state. Two survey waves (December 1984 and April 1985) were conducted prior to implementation of the law and provide a base against which effects of the law are assessed. The third wave was conducted in July 1985 immediately following implementation of the law. The fourth, fifth, sixth, seventh, and eighth waves were conducted five, nine, twelve, seventeen, and twenty-one months after the law took effect (December 1985, April, July, and December 1986, and April 1987). The ninth survey wave reported here covered the period from July 7 to July 31, 1987, twenty-four months after the Michigan law was implemented. Each of the surveys examined restraint use by a number of variables including age, sex, seating position, time of day, day of week, type of roadway, weather conditions, vehicle type and size, and region of the state. Readers are referred to earlier reports for complete results of the previous surveys (Wagenaar and Wiviott, 1985a; Wagenaar, Wiviott, and Compton, 1985; Wagenaar and Wiviott, 1985b; Wagenaar, Wiviott, and Businski, 1986; Wagenaar, Businski, and Molnar,

1. Laws in two additional states, Nebraska and Massachusetts, were repealed by voter referendum in November 1986.

1986a; Wagenaar, Businski, and Molnar, 1986b; Wagenaar, Molnar, and Businski, 1987a; and Wagenaar, Molnar, and Businski, 1987b). In the current report, restraint use in July 1987 is compared with the results of previous survey waves. Additional survey waves are scheduled for the fall of 1987 and spring of 1988.

2 METHODS

To ensure comparability across all survey waves in this series, the same methods were used in each wave. A few minor differences in the current wave are noted in this section. For a detailed discussion of the sample design, data collection procedures, and analytic procedures used throughout the series of survey waves, the reader is referred to the first report of this series (Wagenaar and Wiviott, 1985a).

As in previous survey waves, motor vehicle occupants at a carefully selected probability sample of 240 intersections throughout the State of Michigan were observed by trained field observers. Observers recorded restraint use, seat position, estimated age, and sex for occupants in **all** seating positions in each sampled vehicle. The size and type of vehicle were also recorded.

Detailed information on the seating positions of all occupants was recorded, including those in nonstandard seating positions. Specifically, observers noted whether passengers were sitting, standing, kneeling, or lying on the seat, floor, or cargo area of the vehicle. Passengers riding in the lap of another occupant were also recorded. The objective was to collect data on the full complement of restraint use and related information for all occupants of vehicles included in the sample.

Beginning in the July 1985 wave, observers were instructed to record incorrect use of seat belts. Examples of incorrect belt use included: positioning the shoulder harness under the outboard arm, behind the back, or over the inside shoulder; and restraining two occupants with one seat belt. The category of incorrect belt use did not include occupants (typically in the 4-15 age group) who were too short to wear a shoulder belt in the correct position across the chest. Often such occupants placed the belt behind the back. These occupants were coded as correctly belted. Occupants incorrectly using seat belts were coded as "belted" and, therefore, appear in the tables and figures below as restrained. However, incorrect use of belts was recorded to assess the extent of incorrect use and to permit further analyses of occupants who use seat belts incorrectly.

Observers limited the number of vehicles recorded during any given signal cycle to three. This procedure was adopted during the July 1985 wave. After the mandatory use law took effect, occupants in long traffic queues buckled up after noticing the observer examine

vehicles ahead of them in the queue. Recording data on only the first three vehicles prevented inclusion of these occupants in the survey.

The sample of 240 sites was identical to previous survey waves except that four alternative sites were selected (from the pool of sites selected in the original sample design) to replace sites at which construction was occurring or at which a yellow flashing rather than cycling traffic signal was in operation. Three field staff with experience in previous survey waves conducted observations. All field personnel were spot checked in the field by the field supervisor. Field personnel attended an extensive training session in which data collection policies and procedures were reviewed and practice field observations were conducted (the training program was described in the first report of this series; Wagenaar and Wiviott, 1985a).

The first observer visited 85 sites, the second 77 sites, and the third 70 sites. The remaining 8 sites were observed by the field supervisor. Beginning in the April 1985 wave, two-person teams were used to observe certain central city sites due to safety considerations. At each of these sites two observers collected data at the same intersection but from different paths of traffic. Each observer recorded half of the required vehicles at each site. Using two observers for central city sites allowed for efficient and rapid collection of data while providing security for the observers. All other sites were observed by a single observer. Within each sampling area, the first site observed for each day and city was selected, using a random number table.

Descriptive statistics for the 240 observation sites are shown in Table 2.1. The distribution of site observations by day of week and time of day was similar to previous survey waves conducted in the month of July except that observations were extended to 8:00 in the evening in the current wave. The distribution of site observations by weather conditions differed only slightly from that of the July wave a year ago in that there were more observations made under sunny and cloudy conditions and fewer under rainy conditions compared to a year ago.

TABLE 2.1
Descriptive Statistics for the 240 Observation Sites

Day of Week		Start Time		Site Choice		Weather		Observer	
Monday	13.8%	7-9 AM	7.1%	Primary	98.3%	Sunny	69.6%	(A)	3.3%
Tuesday	13.8%	9-11 AM	17.9%	Alternate	1.7%	Cloudy	26.7%	(B)	35.4%
Wednesday	14.6%	11-1 PM	22.9%			Rain	3.8%	(C)	32.1%
Thursday	17.1%	1-3 PM	23.3%					(D)	29.2%
Friday	17.9%	3-5 PM	20.9%						
Saturday	12.1%	5-7 PM	7.9%						
Sunday	10.8%								
TOTALS	100%		100%		100%		100%		100%

Actual numbers of cases observed across categories of the major variables are shown in Table 2.2. Restraint use estimates based on small numbers of cases, such as those for occupants in extra seats and cargo areas, need to be interpreted with care.

In addition to showing the actual number of cases by subcategory, Table 2.2 indicates the extent of missing data for each variable. The key restraint item was missing for only 0.1% of all occupants observed. These were cases in which the observer could not accurately identify whether the occupant was restrained. There were 2 cases of missing data on restraint use for the 12,219 drivers and 4,249 front-right occupants observed. Front-center occupants had no cases of missing data and rear-seat occupants had low levels of missing data on restraint use (0.2% to 1.1%; see Table 2.2).

TABLE 2.2
Sample Distributions for Major Variables by Seat Position,
Unweighted Ns and Percent Missing Data

	Seat Position									
	Driver	Front Center	Front Right	Rear Left	Rear Center	Rear Right	Extra Seats	Cargo Area	Held in Lap	All ¹
Restraint Use										
None	6,385	165	2,331	425	314	576	29	47	43	10,340
Belted	5,833	36	1,875	140	51	144	6	0	2	8,087
CRD Correct	—	5	24	46	27	34	4	0	0	140
CRD Wrong	—	11	18	17	14	16	0	0	0	76
Missing	1	0	1	7	1	5	4	1	0	20
% Missing	0.0	0.0	0.0	1.1	0.2	0.6	9.3	2.1	0.0	0.1
Sex										
Male	7,542	83	1,503	334	200	330	25	32	22	10,082
Female	4,676	133	2,744	299	207	444	18	16	23	8,574
Missing	1	1	2	2	0	1	0	0	0	7
% Missing	0.0	0.5	0.0	0.3	0.0	0.1	0.0	0.0	0.0	0.0
Age										
0-3	0	44	64	96	54	73	6	1	40	383
4-15	3	97	622	306	260	364	18	36	5	1,731
16-29	3,790	40	1,177	121	54	133	4	7	0	5,326
30-59	7,138	30	1,774	75	21	133	6	4	0	9,181
60+	1,281	6	606	36	17	71	9	0	0	2,026
Missing	7	0	6	1	1	1	0	0	0	16
% Missing	0.1	0.0	0.1	0.2	0.2	0.1	0.0	0.0	0.0	0.1
Vehicle Type										
Small Car	3,381	4	1,050	170	95	192	1	9	11	4,919
Midsize Car	3,143	37	1,177	199	131	248	2	3	10	4,958
Large Car	3,141	75	1,194	187	134	265	2	7	14	5,029
Pickup	1,335	94	396	4	1	6	0	20	3	1,859
Van	794	3	293	56	35	40	38	5	6	1,271
Other	422	4	137	18	10	23	0	4	1	619
Missing	3	0	2	1	1	1	0	0	0	8
% Missing	0.0	0.0	0.0	0.2	0.2	0.1	0.0	0.0	0.0	0.0
Site Type										
Intersection	9,672	178	3,426	498	323	612	35	42	35	14,845
Freeway Exit	2,547	39	823	137	84	163	8	6	10	3,818
Day of Week										
Monday	1,664	26	532	79	50	92	6	9	6	2,470
Tuesday	1,707	19	492	72	36	85	0	1	7	2,420
Wednesday	1,785	29	557	89	58	102	17	5	3	2,647
Thursday	2,093	35	579	85	63	107	1	2	6	2,973
Friday	2,187	32	713	106	56	121	6	10	7	3,241
Saturday	1,459	42	646	82	78	121	4	12	10	2,460
Sunday	1,324	34	730	122	66	147	9	9	6	2,452

TABLE 2.2 Continued

	Seat Position									
	Driver	Front Center	Front Right	Rear Left	Rear Center	Rear Right	Extra Seats	Cargo Area	Held in Lap	All ¹
Time of Day										
7-8 AM	129	1	26	2	2	3	0	0	1	164
8-9 AM	567	9	101	13	5	19	1	0	0	715
9-10 AM	852	15	256	31	29	35	13	0	5	1,239
10-11 AM	1,245	25	408	69	41	71	3	7	1	1,873
11-12 AM	1,557	26	540	83	47	89	2	8	8	2,363
12-1 PM	1,343	21	490	67	55	72	2	4	4	2,061
1-2 PM	1,232	23	475	83	57	110	3	7	5	1,999
2-3 PM	1,578	32	581	90	60	116	12	6	5	2,482
3-4 PM	1,446	30	554	75	43	99	2	7	4	2,263
4-5 PM	1,159	14	432	60	34	88	3	7	7	1,805
5-6 PM	711	11	219	32	19	33	0	1	2	1,030
6-7 PM	328	9	131	21	12	29	2	1	3	536
7-8 PM	72	1	36	9	3	11	0	0	0	133
Weather										
Sunny	8,508	150	2,859	422	273	509	28	31	26	12,823
Cloudy	3,258	59	1,199	185	113	228	13	16	17	5,096
Rain	453	8	191	28	21	38	2	1	2	744
MDOT Region										
Western U.P.	597	23	254	33	20	32	2	0	2	964
Eastern U.P.	408	11	235	38	22	39	3	1	5	762
Northwest	606	24	334	51	37	77	4	7	4	1,146
Northeast	407	9	201	25	13	29	2	2	2	691
West Central	1,397	28	497	58	45	79	0	6	2	2,117
East Central	1,431	33	457	73	52	78	10	8	12	2,158
Southwest	1,395	21	457	73	36	75	10	7	2	2,077
Southeast	1,216	20	336	59	35	71	3	8	2	1,754
Metro Detroit	4,762	48	1,478	225	147	295	9	9	14	6,994
TOTAL N	12,219	217	4,249	635	407	775	43	48	45	18,663

¹ Includes 25 occupants standing.

3 RESULTS

Seat belts or child restraint devices were used by 44.5% of all motor vehicle occupants observed during July 1987. By comparison, the use rate in the April 1987 survey wave was 43.9% (Figure 3.1);² this difference is not statistically significant ($Z= 0.35$).³

The latest survey supports earlier findings that restraint use has stabilized during the past nineteen months. In December 1985, five months after the mandatory seat belt law took effect, overall restraint use had declined to 43.0% from 58.4% in July 1985, immediately after the law took effect. Since that time, however, restraint use has changed little (43.7% in April 1986, 45.3% in July 1986, 43.6% in December 1986, 43.9% in April 1987, and 44.5% in July 1987). While restraint use in July 1987 was lower than the 58.4% peak restraint use rate observed in July 1985, it is still higher than it was before the law took effect. The July 1987 use rate of 44.5% represents a 124.7% increase from the December 1984 rate of 19.8%.

Table 3.1 provides summary information on restraint use by seat location (front and rear) for each major variable of the study, including sex, age, type of vehicle, site type, day of week, time of day, weather, and region. As in previous surveys, restraint use was higher among front-seat occupants than rear-seat occupants (46.6% versus 27.2%).

Young children have particularly high rates of restraint use as a result of mandatory child restraint legislation implemented in 1982 (Wagenaar, 1984; Wagenaar and Webster, 1986) and therefore exert an upward influence on overall use rates. Consequently, effects of the adult mandatory seat belt law on restraint use can be seen most clearly by including only motor vehicle occupants 16 years and older in the analyses. In December 1984, restraint use for adults (16 and over) was 18.3% among front-seat occupants and 7.2% among rear-seat occupants. A noticeable increase in belt use was seen in April 1985, after the law was enacted but before implementation. In July 1985, immediately after implementation, restraint use among front-seat occupants more than doubled, increasing to 60.5%. In December 1985, after five months of compulsory belt use, restraint use was down to 44.0% among front-seat occupants and 6.9% among rear-seat occupants. Adult restraint use remained essentially at those levels through April 1986--44.4% among front-seat occupants

2. These numbers include both correct and incorrect use of seat belts and child restraint devices.

3. Calculation of Z-statistics takes into account the design effect resulting from the multi-stage sampling procedure used. The design effect of the July 1987 wave was 9.0.

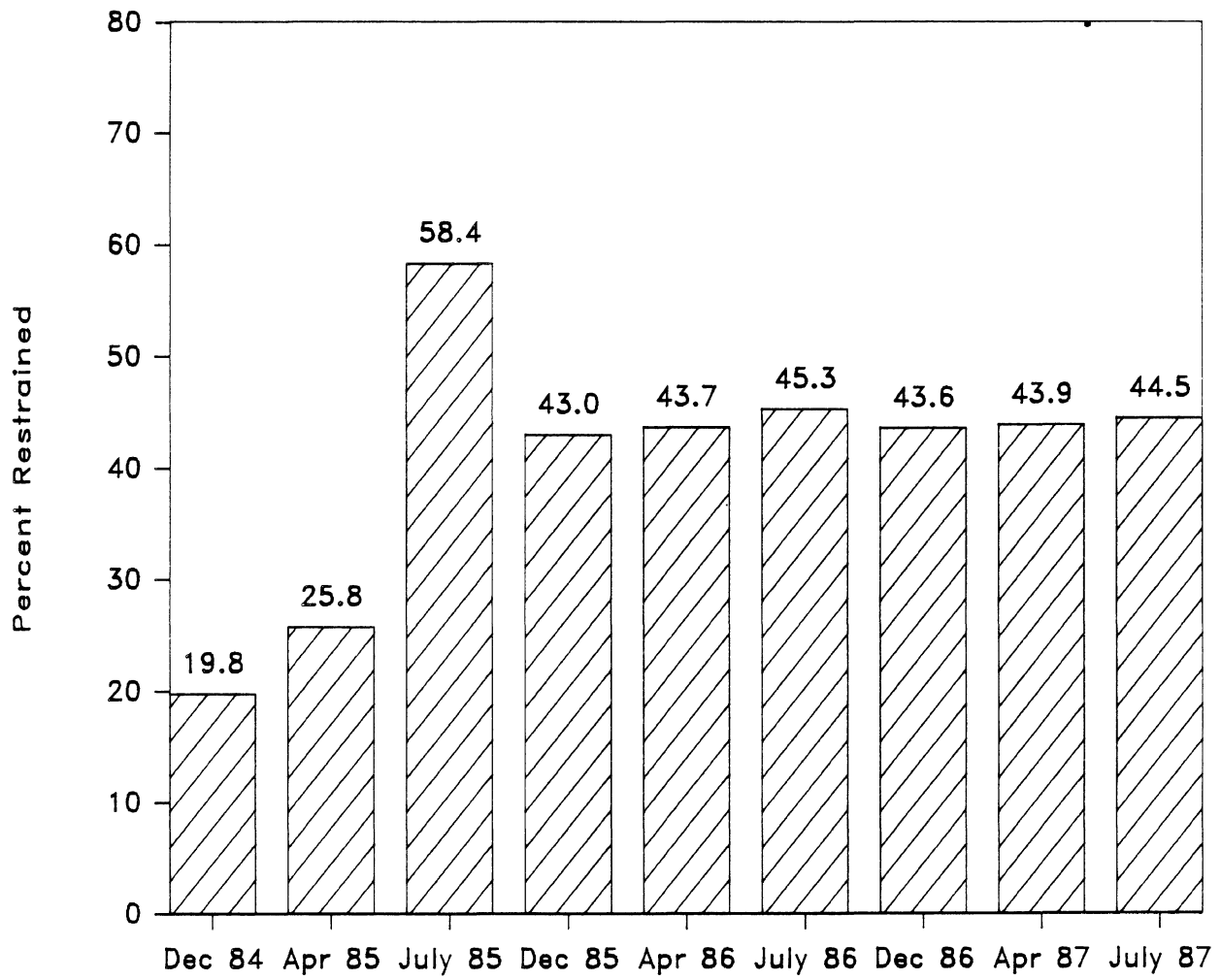
Figure 3.1: Overall Restraint Use

TABLE 3.1
Percent Restrained by Major Variables and Seat Location¹

	Seat Location		
	Front Seat	Rear Seat	All ²
<u>Sex</u>			
Male	42.0	30.5	40.7
Female	52.3	24.3	48.9
<u>Age</u>			
0-3	65.5	89.3	72.9
4-15	46.2	25.3	33.0
16-29	40.0	11.6	38.3
30-59	48.0	4.1	47.0
60+	57.3	3.5	54.0
<u>Type of Vehicle</u>			
Small Car	51.7	31.1	49.5
Mid-Sized Car	50.8	32.8	48.6
Large Car	43.7	15.9	40.2
Pickup Truck	32.6	17.9	32.2
Van	43.0	40.3	41.9
Other	48.8	32.4	47.2
<u>Site Type</u>			
Intersection	44.9	27.1	42.9
Freeway Exit	52.5	27.8	49.8
<u>Day of Week</u>			
Monday	44.0	27.0	42.3
Tuesday	49.8	31.4	48.2
Wednesday	43.6	24.8	41.6
Thursday	49.9	31.9	48.2
Friday	48.5	27.4	46.4
Saturday	42.2	25.1	39.7
Sunday	47.3	24.6	43.9

¹All percents are based on analyses weighted according to the sample design to accurately represent the entire state. Restraint use includes correct and incorrect use of child restraint devices and seat belts.

²Includes occupants riding in third and fourth seats of station wagons and vans and in nonstandard seat positions (i.e., on laps, in cargo area, on floor).

TABLE 3.1 Continued

	Seat Location		
	Front Seat	Rear Seat	All ²
<u>Time of Day</u>			
7-8 AM	54.1	27.9	52.9
8-9 AM	48.3	29.6	47.3
9-10 AM	48.0	23.5	46.0
10-11 AM	47.0	32.2	45.3
11-12 AM	45.2	26.5	43.1
12-1 PM	49.1	30.8	47.1
1-2 PM	44.4	26.6	41.8
2-3 PM	44.2	25.8	41.9
3-4 PM	47.8	28.4	45.7
4-5 PM	43.0	21.4	40.5
5-6 PM	50.4	22.3	48.2
6-7 PM	53.8	33.9	51.2
7-8 PM	45.8	35.2	43.7
<u>Weather</u>			
Sunny	47.0	28.0	45.0
Cloudy	46.9	25.8	44.3
Rain	38.1	23.4	36.3
<u>MDOT Region</u>			
Western U.P.	43.7	14.6	40.9
Eastern U.P.	42.2	23.2	39.2
Northwest	54.7	36.0	51.2
Northeast	52.7	17.9	48.8
West Central	45.9	31.1	44.5
East Central	47.1	31.5	45.0
Southwest	49.6	37.7	48.2
Southeast	51.5	26.4	48.7
Metro Detroit	44.0	22.8	41.8
TOTAL	46.6	27.2	44.5

¹All percents are based on analyses weighted according to the sample design to accurately represent the entire state. Restraint use includes correct and incorrect use of child restraint devices and seat belts.

²Includes occupants riding in third and fourth seats of station wagons and vans and in nonstandard seat positions (i.e., on laps, in cargo area, on floor).

and 6.6% among rear-seat occupants. In July 1986, estimated adult restraint use increased slightly to 47.0% among front-seat occupants and 7.3% among rear-seat occupants. In December 1986, restraint use among both front-seat and rear-seat adult occupants declined slightly (to 44.3% and 4.6%, respectively) and then increased again in April 1987 (to 45.6% and 11.1%, respectively). In the current survey wave, restraint use for adults was 46.5% among front-seat occupants and 7.6% among rear-seat occupants (Figure 3.2); changes from the previous survey wave were not statistically significant ($Z=0.49$ for front-seat adult occupants and $Z=0.62$ for rear-seat adult occupants).

An examination of restraint use by vehicle seating position indicates that in all age groups restraint use was higher among drivers than occupants of other seating positions (Table 3.2). Furthermore, as in previous post-law survey waves, only drivers and front-right passengers had use rates which were substantially higher than those observed in December 1984, prior to enactment of the seat belt law. Occupants in all other seating positions had use rates comparable to pre-law levels (Figure 3.3). This finding is consistent with expectations, given that the law applies only to front-seat occupants.

Restraint use remained highest among occupants age 0-3, who have been required to be restrained when traveling in motor vehicles in Michigan since 1982. A total of 72.9% of occupants 0-3 years were restrained, compared to 33.0% of occupants 4-15 years, 38.3% of occupants 16-29 years, 47.0% of occupants 30-59 years, and 54.0% of occupants 60 years and older (Table 3.2). All age groups exhibited only marginal increases in restraint use from April 1987 except the age group 60 and older which exhibited a marginal decline (Figure 3.4); none of these differences were statistically significant.⁴

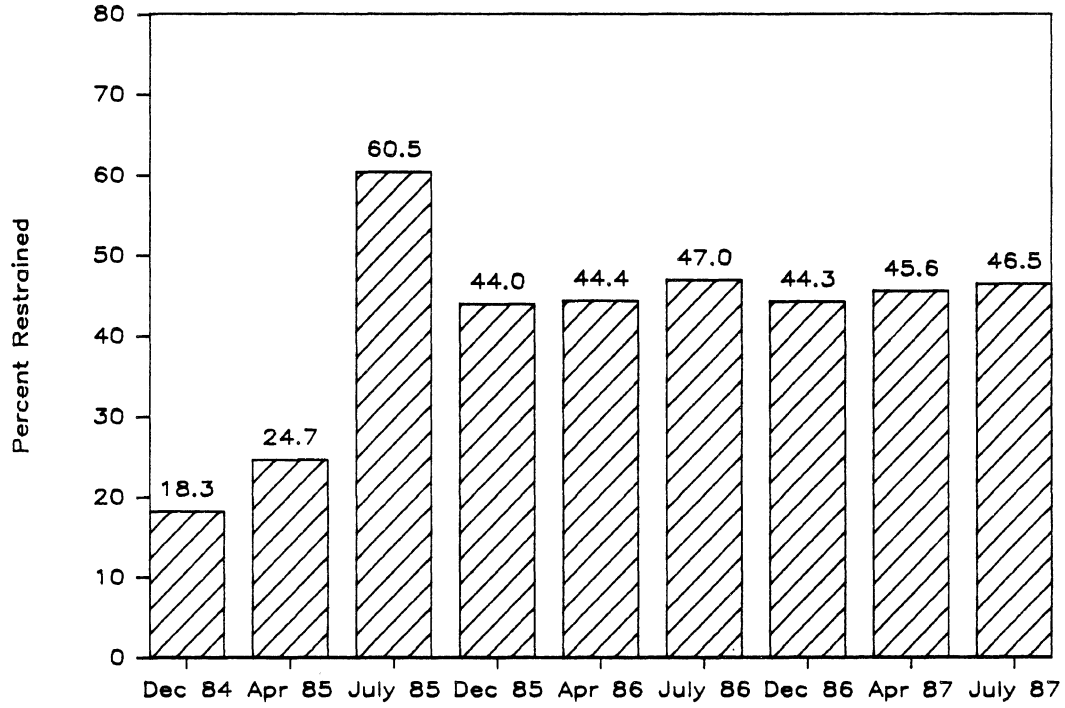
Incorrect use of safety seats among children age 0-3 increased slightly from the previous wave and continues to be a problem. A total of 35.2% of child restraint devices were observed to be incorrectly used in the current wave, compared to 27.5% in April 1987, 24.4% in December 1986, 28.1% in July 1986, 27.3% in April 1986, and approximately 20% in each prior wave. Because incorrect use was limited only to cases **obvious** to the observer (noting the data collection process used), data presented here should be considered a conservative estimate. A more detailed study of restraint use among Michigan children under the age of four found that 62.9% of child restraint devices were incorrectly used (Wagenaar, Molnar, Businski, and Margolis, 1986). Incorrect use of child restraint devices in that study was measured both by how the child restraint device was installed in the vehicle and how the child was positioned in the restraint device. Specifically, data were collected on

4. The Z-statistics are as follows: 0-3 years, 0.97; 4-15 years, 0.18; 16-29 years, 0.40; 30-59 years, 0.04; and 60 and over, 0.37.

Figure 3.2: Restraint Use by Seat Location

Occupants Age 16 and Over

Front Seat



Rear Seat

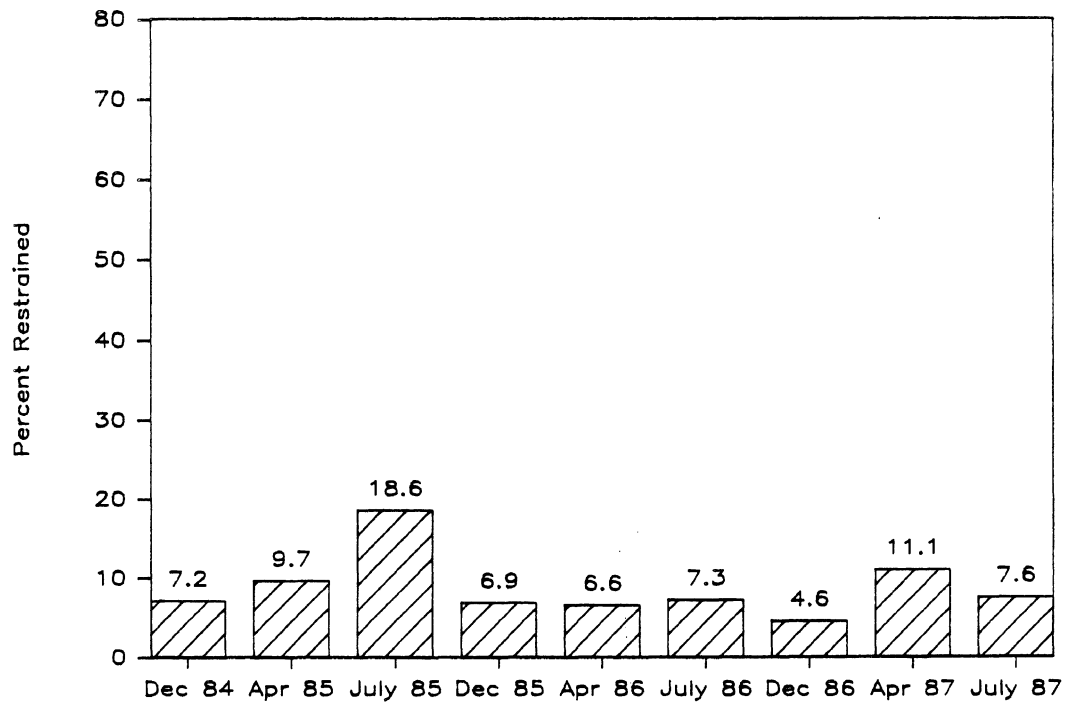


TABLE 3.2
Restraint Use by Age and Seat Position¹

Age Group	Seat Position									
	Driver	Front Center	Front Right	Rear Left	Rear Center	Rear Right	Extra Seats	Cargo Area	Held in Lap	All ²
<u>Age 0-3</u>										
% Belted	—	7.3	18.4	29.9	8.3	27.3	19.2	0.0	5.7	18.8
% Correct CRD	—	10.4	36.4	46.3	49.3	42.8	80.8	0.0	0.0	35.4
% Incorrect CRD	—	20.3	28.7	16.7	24.2	19.9	0.0	0.0	0.0	18.7
% Restrained ³	—	38.0	83.5	92.9	81.8	90.0	100.0	0.0	5.7	72.9
Unweighted N	—	44	64	96	54	73	6	1	40	383
<u>Age 4-15</u>										
% Restrained	100.0	26.4	48.7	29.4	16.3	28.3	12.7	0.0	0.0	33.0
Unweighted N	3	97	622	306	260	364	18	36	5	1,731
<u>Age 16-29</u>										
% Restrained	42.4	7.3	32.8	12.7	7.8	12.1	26.8	0.0	—	38.3
Unweighted N	3,790	40	1,177	121	54	133	4	7	0	5,326
<u>Age 30-59</u>										
% Restrained	48.9	11.0	45.1	6.8	0.0	3.3	0.0	0.0	—	47.0
Unweighted N	7,138	30	1,774	75	21	133	6	4	0	9,181
<u>Age 60+</u>										
% Restrained	57.5	13.3	57.3	5.4	7.6	1.5	31.6	—	—	54.0
Unweighted N	1,281	6	606	36	17	71	9	0	0	2,026
<u>All Ages</u>										
% Restrained	47.7	23.1	44.5	32.7	23.1	25.0	29.4	0.0	5.2	44.5
Unweighted N	12,219	217	4,249	635	407	775	43	48	45	18,663

¹All percents are based on analyses weighted according to the sample design to accurately represent the entire state. Unweighted Ns indicate the actual number of occupants observed in a given group.

²Restraint use for all positions includes cargo areas, passengers held in laps, and passengers standing.

³Percent restrained includes correct and incorrect CRD use.

Figure 3.3: Restraint Use by Seat Position

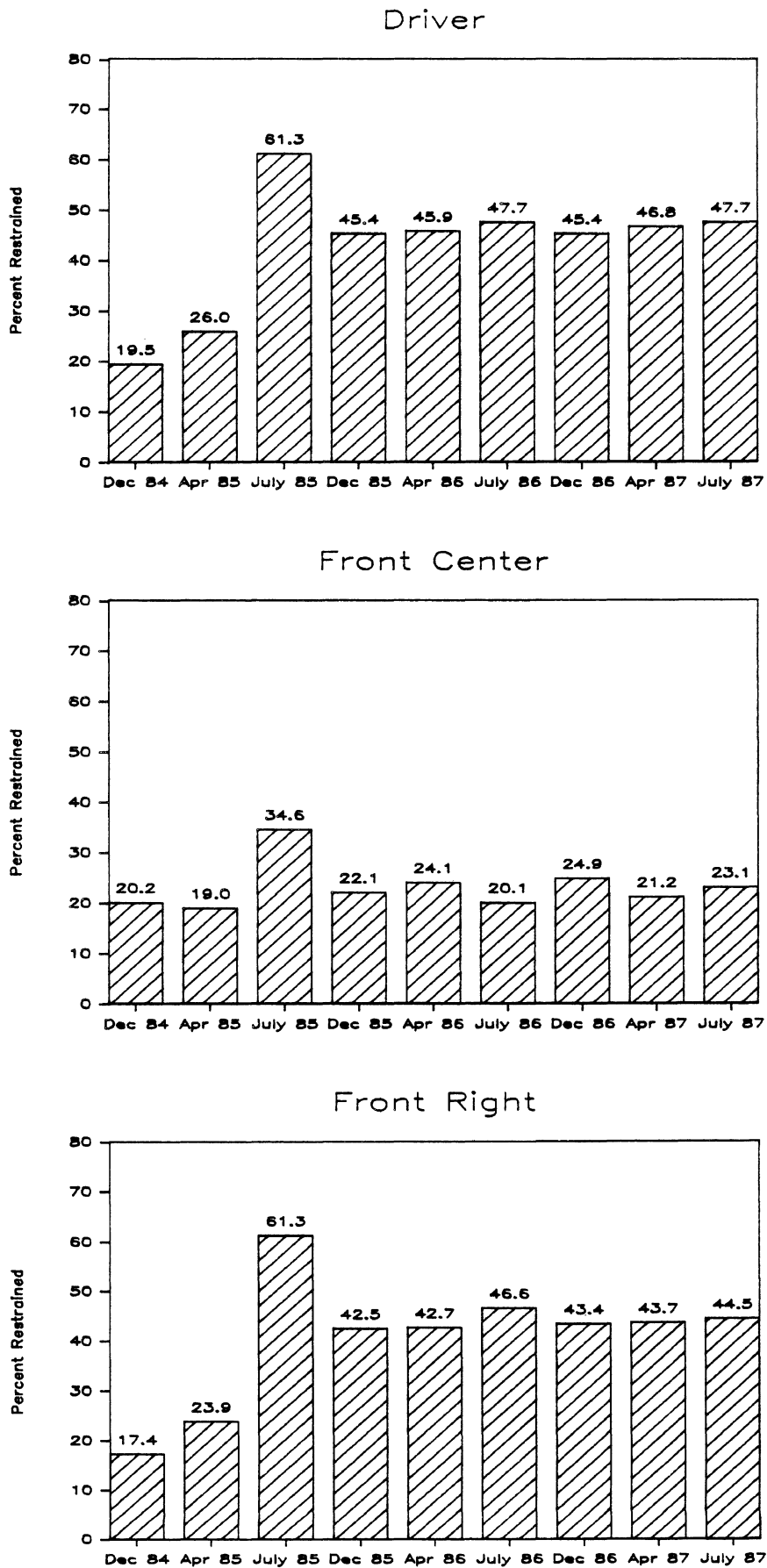


Figure 3.3 (Continued): Restraint Use by Seat Position

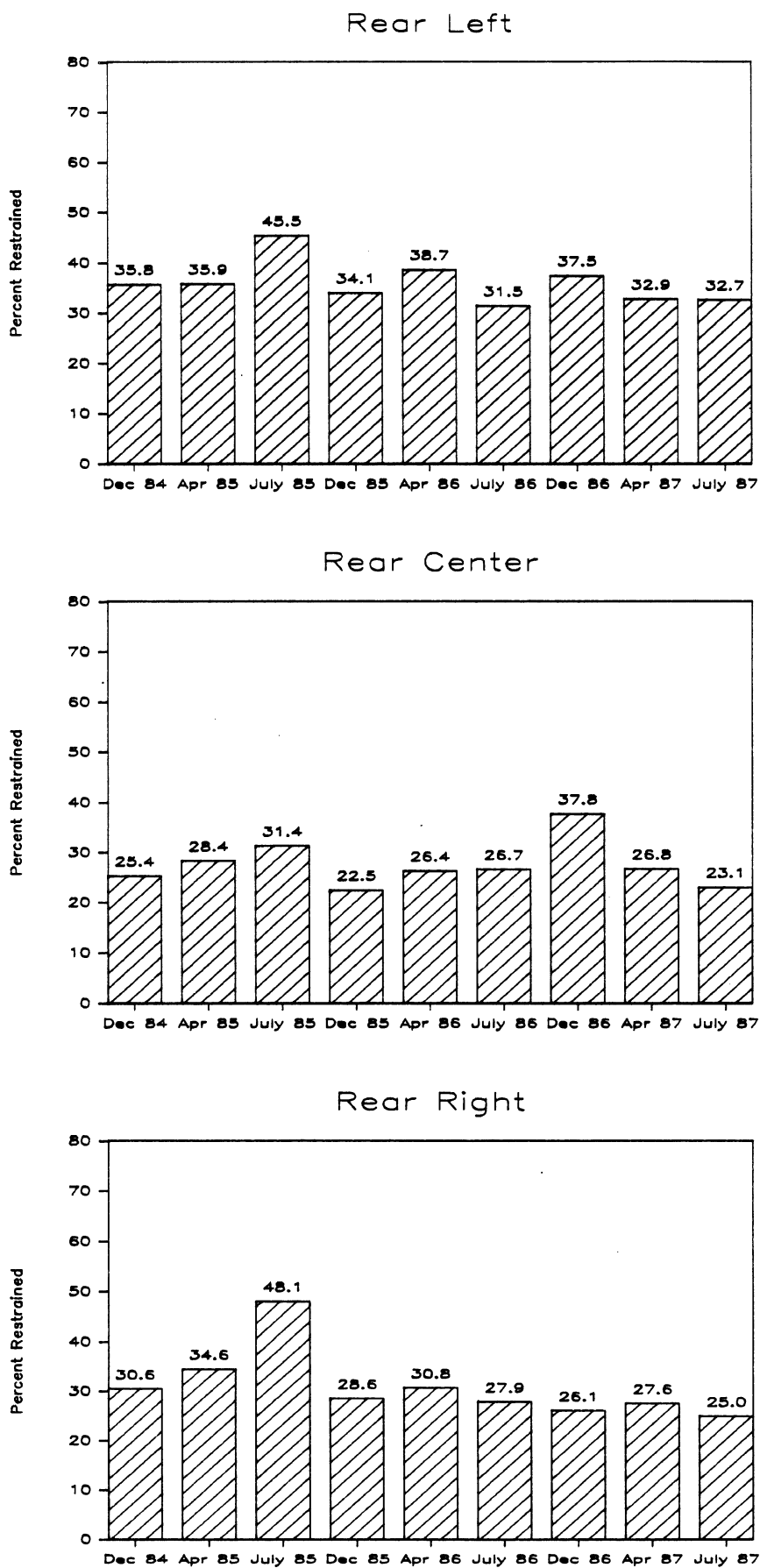


Figure 3.4: Restraint Use by Age

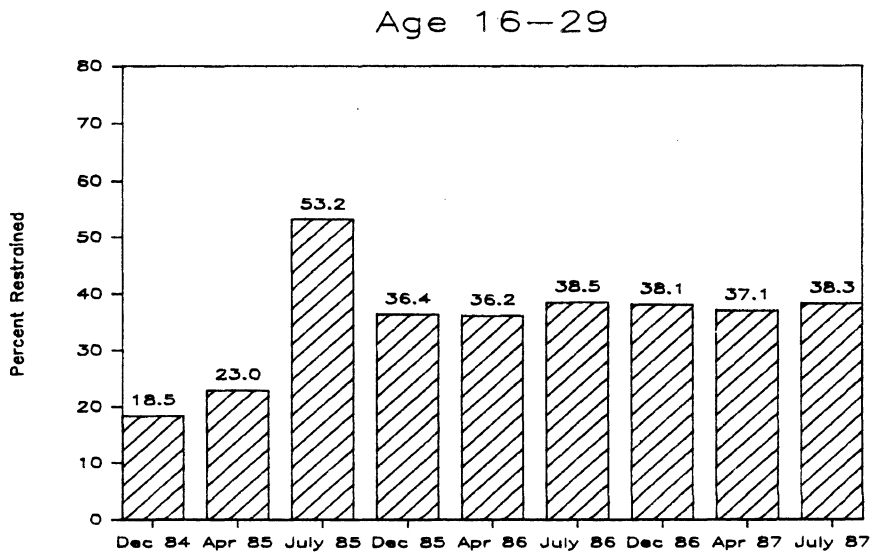
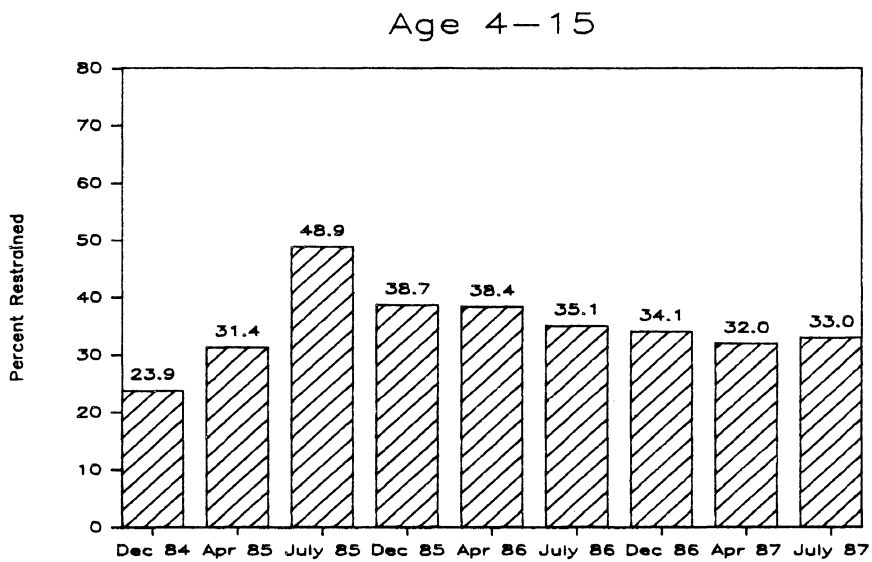
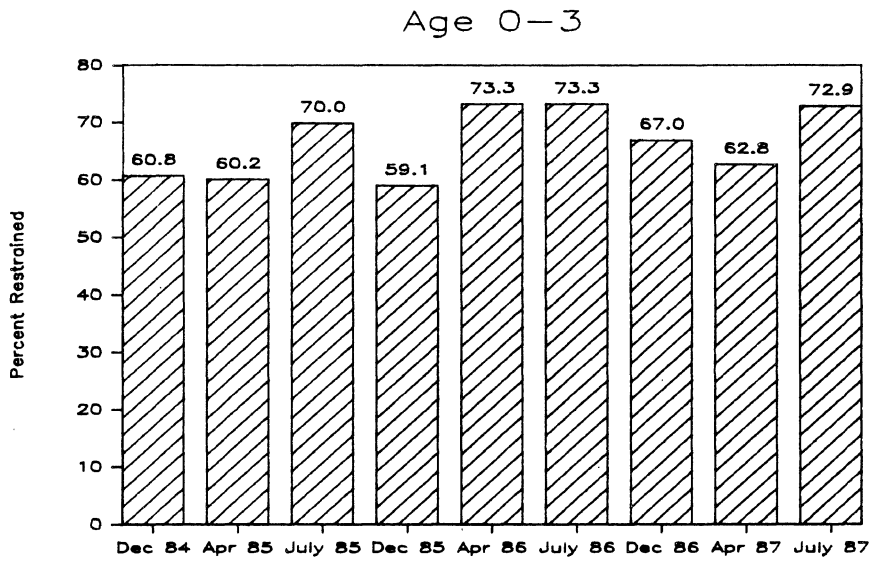
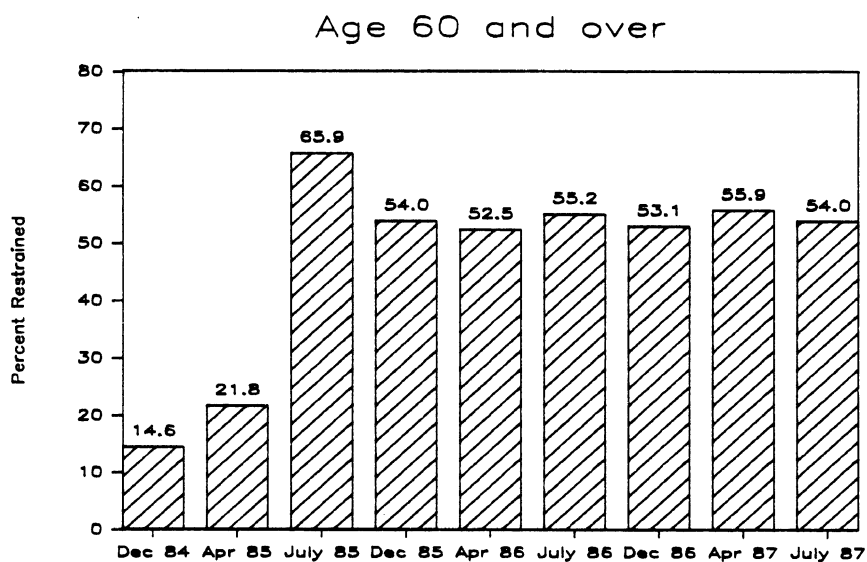
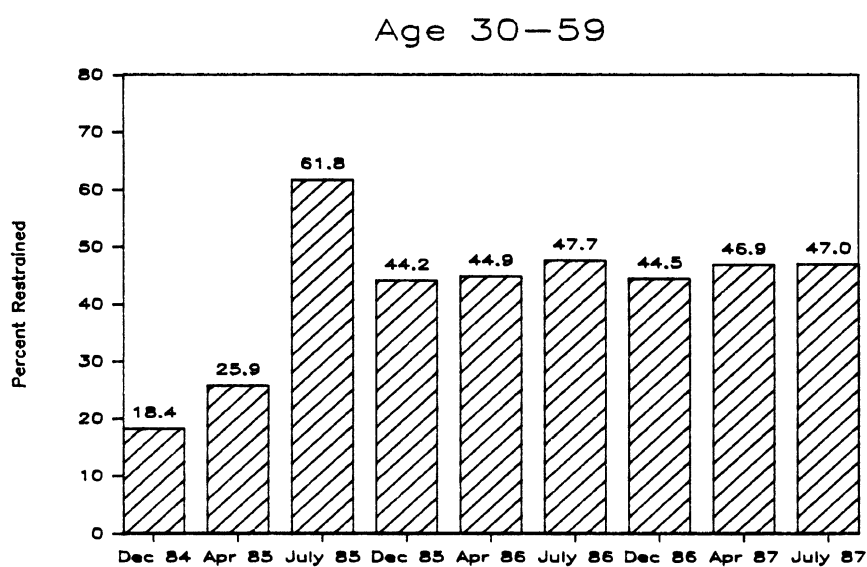


Figure 3.4 (Continued): Restraint Use by Age



the type of seat used, whether the automobile belt was fastened, snug, and routed correctly, whether a locking clip was used, and whether a tether was required, used, anchored, and anchored properly. Data were also collected on whether a shield and/or harness were used, whether the harness was snug, whether a harness clip was used, and the harness position. Findings from that study confirm that the problem of incorrect use remains pervasive.

As in previous survey waves, occupants age 60 years and older had a restraint use rate higher than any other age group except occupants age 0-3. Prior to enactment of the mandatory seat belt law, the 60 and older age group had the lowest rate of use of all age groups. Since December 1984, however, the 269.9% increase in restraint use among those age 60 years and older has been greater than all other age groups (0-3 increased 19.9%; 4-15 increased 38.1%; 16-29 increased 107.0%; and 30-59 increased 155.4%). The pattern of driver restraint use by age was similar to that of total occupants by age (Figure 3.5).

Restraint use continued to vary by occupant sex, with a greater proportion of females than males using restraints (48.9% versus 40.7%; Table 3.3). The rate of increase in belt use among both females and males, however, has been similar since December 1984.

The pattern of restraint use by type of vehicle has been similar throughout the series of surveys (Figure 3.6). Occupants of small cars and mid-sized cars had the highest rates of restraint use in the current wave (49.5% and 48.6%, respectively; Table 3.3). Use rates for occupants of other types of vehicles were: vans, 41.9%; large cars, 40.2%; pickup trucks, 32.2%; and other vehicles, 47.2%.

Consistent with previous survey waves, occupants in vehicles observed at freeway exits had a higher rate of restraint use than those observed at local intersections (49.8% versus 42.9% in the current wave; Table 3.3). However, the rate of increase in restraint use at freeway exits since December 1984 has been slightly less than that at local intersections (113.7% versus 128.2%).

In the current survey, restraint use was similar across all weather conditions (Table 3.3). Comparisons with previous waves continue to indicate no consistent pattern of restraint use by weather conditions.

Figure 3.5: Driver Restraint Use by Age

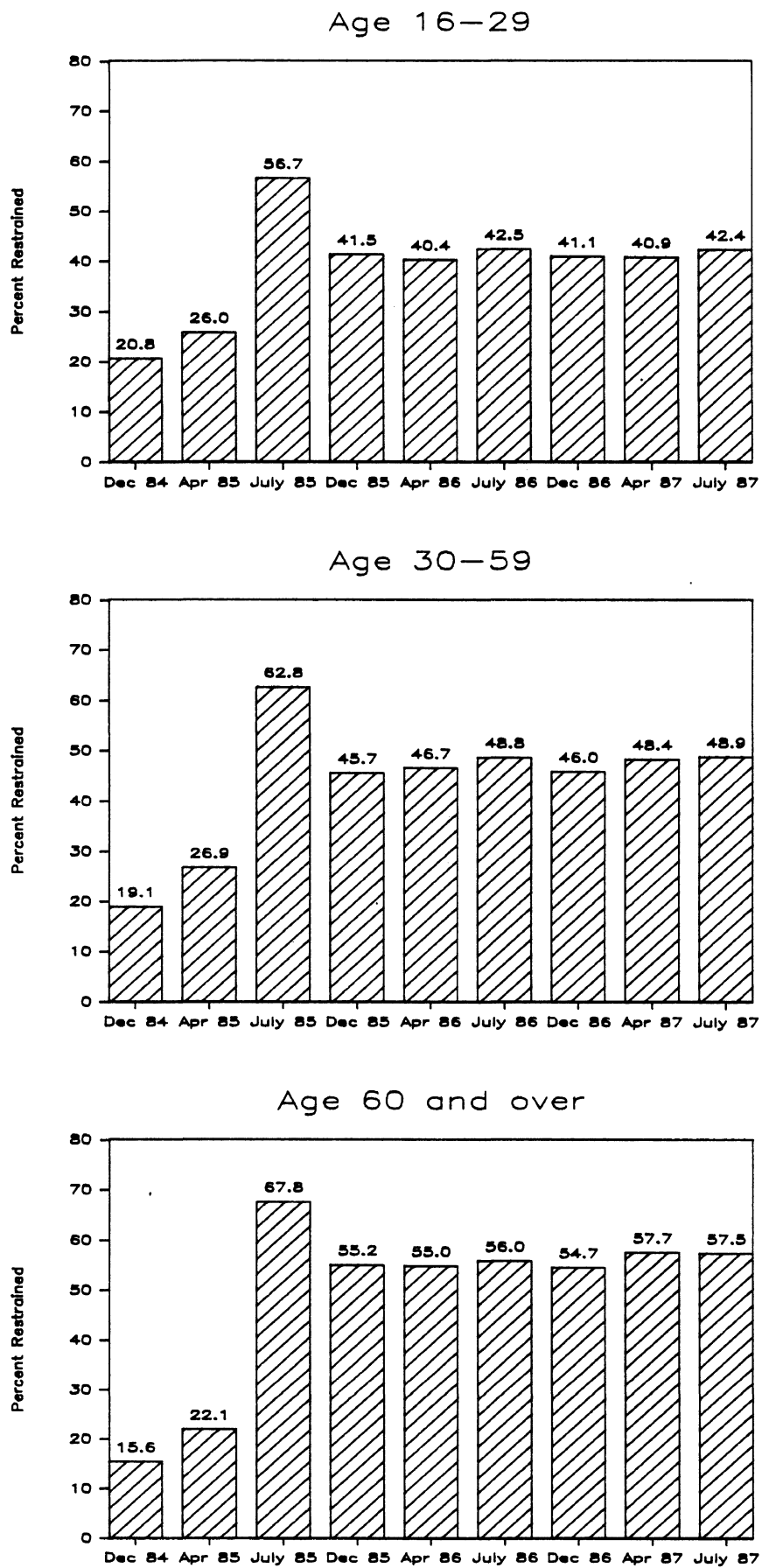


TABLE 3.3
Percent Restraint Use by Sex, Type of Vehicle,
Observation Site, and Weather Conditions¹

	Seat Position							
	Driver	Front Center	Front Right	Rear Left	Rear Center	Rear Right	Extra Seats ²	All ³
<u>Sex</u>								
Male	42.9	19.8	38.3	35.8	26.5	27.6	18.9	40.7
Female	55.3	24.4	48.0	29.3	19.8	23.1	46.6	48.9
<u>Type of Vehicle</u>								
Small Car	53.2	0.0	46.6	34.2	26.0	31.0	0.0	49.5
Mid-Sized Car	52.1	22.7	48.2	40.7	27.9	29.0	100.0	48.6
Large Car	44.1	22.1	43.7	19.1	13.8	14.8	0.0	40.2
Pickup Truck ⁴	33.2	26.6	31.8	22.4	0.0	18.1	—	32.2
Van	44.2	0.0	39.7	45.9	32.2	39.9	26.6	41.9
Other	49.0	0.0	49.9	35.4	35.0	28.5	—	47.2
<u>Observation Site</u>								
Intersection	46.1	23.0	42.5	32.1	23.1	25.1	30.0	42.9
Freeway Exit	53.3	23.3	51.4	34.3	23.1	24.7	27.3	49.8
<u>Weather Conditions</u>								
Mostly Sunny	48.1	20.9	44.8	34.1	22.4	26.0	41.1	45.0
Mostly Cloudy	47.8	26.3	45.2	30.4	23.3	23.4	0.0	44.3
Raining	39.0	51.4	35.5	21.8	31.8	19.9	0.0	36.3
TOTAL	47.7	23.1	44.5	32.7	23.1	25.0	29.4	44.5

¹All percents are based on analyses weighted according to the sample design to accurately represent the entire state. Restraint use includes correct and incorrect use of child restraint devices.

²Based on only 43 observed occupants.

³Restraint use for all positions includes cargo areas, passengers held in laps, and passengers standing.

⁴Data on rear seat passengers includes 11 occupants, riding in crew cab.

Figure 3.6: Restraint Use by Vehicle Type

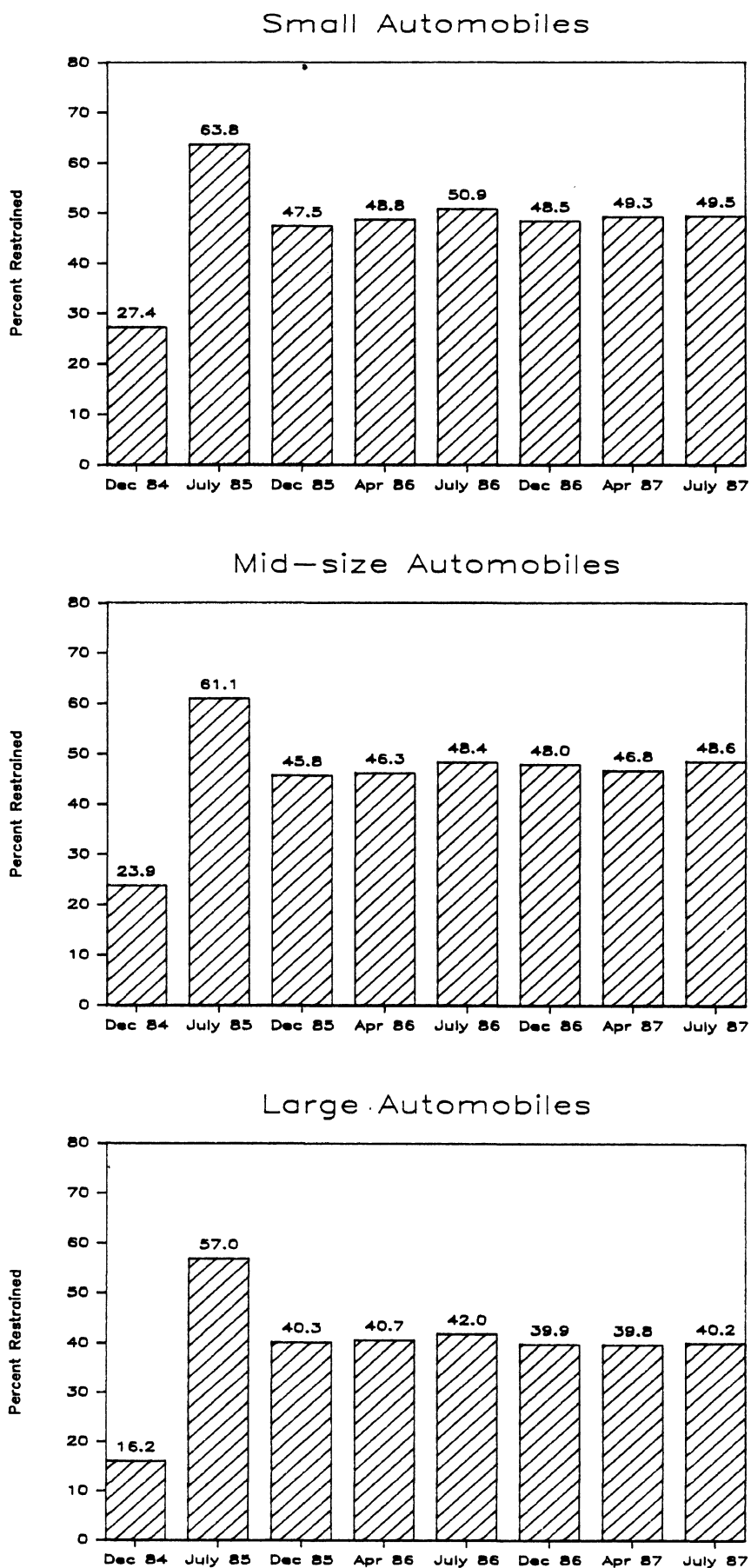
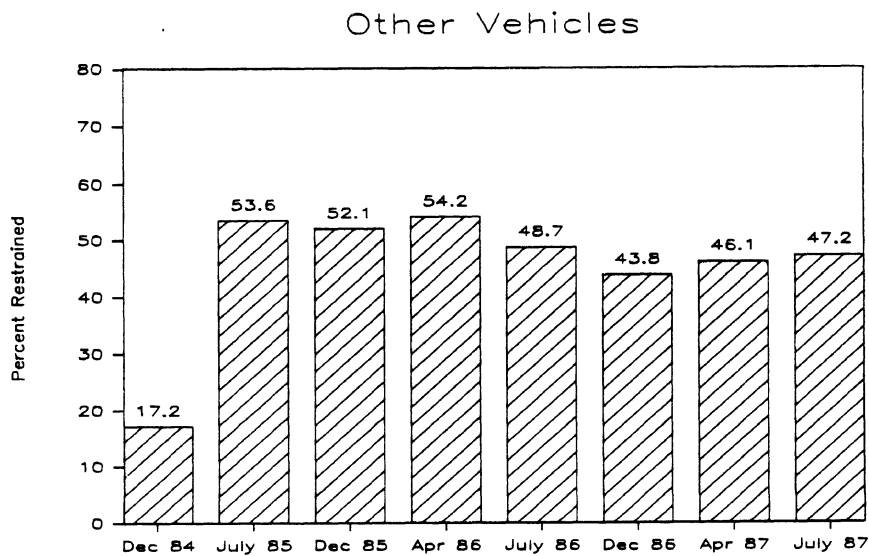
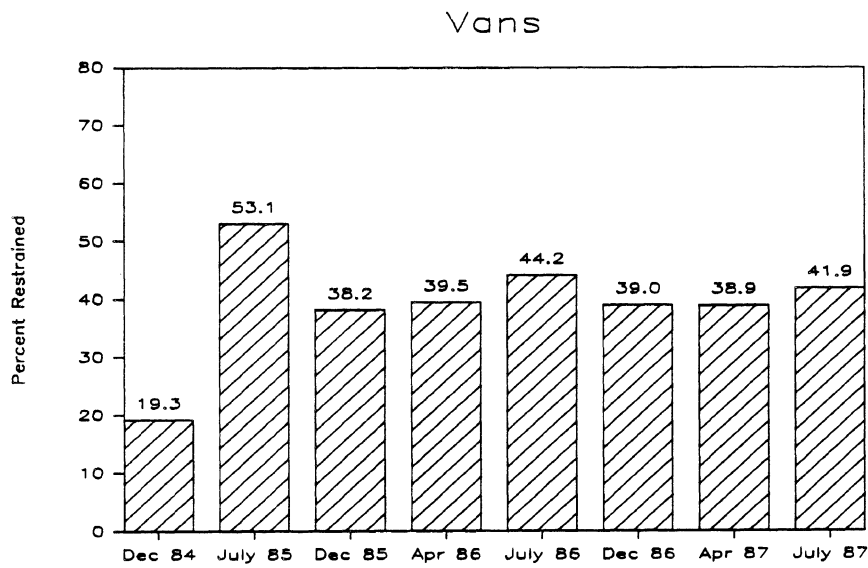
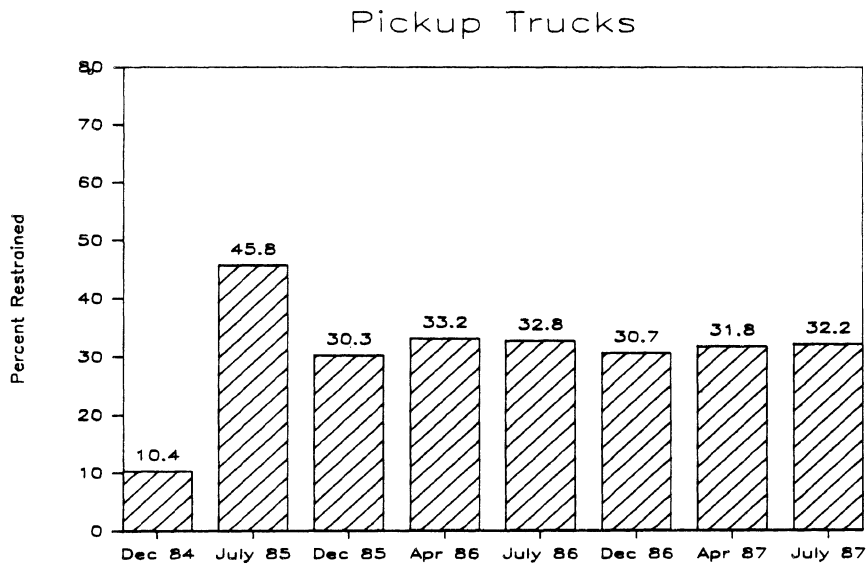


Figure 3.6 (Continued): Restraint Use by Vehicle Type



As in previous survey waves, there was no consistent pattern of restraint use across time of day and day of week (Table 3.4).

Restraint use continued to vary by region of the state (Table 3.5 and Figure 3.7). Use rates were highest in the Northwest region (51.2%) and lowest in the Eastern upper peninsula (39.2%). By comparison, the Southeast region led restraint use in all previous survey waves except December 1985 and July 1986. The Eastern upper peninsula has had the lowest restraint use in every wave except April 1986. Five regions experienced decreases in restraint use between April 1987 and July 1987 and four regions experienced increases in restraint use.

There was also variability in restraint use by sampling area (Table 3.6). Low rates of restraint use were seen in Wayne County, City of Melvindale (29.3%), Dickinson County (31.6%), the City of Detroit (32.0%), and Delta County (32.6%). Sampling areas with high restraint use rates in the current survey included Washtenaw County, City of Ann Arbor (62.4%), Kent County (58.7%), Wayne County, City of Livonia (57.6%), and Grand Traverse County (54.3%). The pattern of change in restraint use from previous survey waves was not consistent across sampling areas. Twenty-two sampling areas exhibited decreases in restraint use and twenty-two exhibited increases. Most of these changes are presumably due to sampling error and are not of interest.

Although restraint use in all sampling areas has increased since December 1984 (before enactment of mandatory seat belt legislation), the magnitude of the increases has varied. The largest percentage increases were experienced in Berrien County (306.3%), Wayne County, City of Detroit (226.5%), Mecosta-Newago Counties (220.8%), and Delta County (219.6%). One reason for these large percentage increases is the low prelegislation rates of belt use in these areas.

Occupants riding in nonstandard positions were tallied separately (Table 3.7). Nonstandard positions included: lying, standing, sitting, or kneeling on the floor, seat, or cargo area; sharing seat belts; or riding on the lap of another occupant. Occupants in nonstandard seating positions were typically under 16 years of age, as might be expected. A total of 16.7% of occupants 0-3 years and 10.1% of occupants 4-15 years were observed in nonstandard seating positions. Within the 0-3 age group, the most common nonstandard seating position was sitting on the lap of another occupant. Within the 4-15 age group, the most common positions were sitting on the edge of the rear seat or in the cargo area.

TABLE 3.4
Percent Restraint Use by Time of Day and Day of Week¹

	Seat Position							
	Driver	Front Center	Front Right	Rear Left	Rear Center	Rear Right	Extra Seats ²	All ³
<u>Time of Day</u>								
7-8 AM	55.2	100.0	46.9	66.4	37.3	0.0	—	52.9
8-9 AM	49.4	24.2	43.6	30.1	21.8	31.1	0.0	47.3
9-10 AM	48.5	21.8	47.7	34.5	16.1	20.4	51.0	46.0
10-11 AM	48.4	34.7	42.9	33.0	27.3	34.2	54.7	45.3
11-12 AM	46.5	15.2	43.0	34.9	21.2	21.8	0.0	43.1
12-1 PM	49.4	14.2	49.8	37.8	33.4	22.5	—	47.1
1-2 PM	45.8	21.2	41.7	33.2	21.4	24.3	0.0	41.8
2-3 PM	45.0	29.3	42.8	28.8	21.2	25.7	16.6	41.9
3-4 PM	48.6	12.2	47.6	35.0	20.8	26.9	100.0	45.7
4-5 PM	44.1	23.4	40.6	27.1	18.1	19.1	0.0	40.5
5-6 PM	52.4	33.7	44.5	25.7	16.1	22.2	—	48.2
6-7 PM	57.0	31.7	46.7	33.6	38.0	32.4	0.0	51.2
7-8 PM	41.8	100.0	52.6	31.7	0.0	48.2	—	43.7
<u>Day of Week</u>								
Monday	44.7	22.6	42.8	32.9	24.8	23.2	47.9	42.3
Tuesday	51.6	17.6	44.2	44.4	16.0	27.1	—	48.2
Wednesday	45.6	31.3	37.8	27.3	26.6	21.8	18.5	41.6
Thursday	50.3	17.4	49.9	37.7	31.2	27.6	0.0	48.2
Friday	49.9	21.0	45.5	34.2	18.7	25.7	60.9	46.4
Saturday	42.8	29.4	41.6	28.4	19.4	26.5	25.0	39.7
Sunday	47.2	19.0	48.9	26.8	23.2	23.4	37.8	43.9
TOTAL	47.7	23.1	44.5	32.7	23.1	25.0	29.4	44.5

¹All percents are based on analyses weighted according to the sample design to accurately represent the entire state. Restraint use includes correct and incorrect use of child restraint devices.

²Based on only 43 observed occupants.

³Restraint use for all positions includes cargo areas, passengers held in laps, and passengers standing.

TABLE 3.5
Percent Restraint Use by Michigan Department of Transportation Regions¹

MDOT Region	Seat Position							
	Driver	Front Center	Front Right	Rear Left	Rear Center	Rear Right	Extra Seats ²	All ³
1. Western U.P.	45.0	31.7	41.6	14.6	16.7	13.3	0.0	40.9
2. Eastern U.P.	40.4	9.1	46.8	26.3	13.6	25.6	0.0	39.2
3. Northwest	54.1	37.5	56.9	41.1	21.7	39.5	0.0	51.2
4. Northeast	52.8	22.4	53.7	24.0	30.7	6.9	0.0	48.8
5. West Central	46.8	18.9	45.0	34.4	27.6	30.7	—	44.5
6. East Central	48.5	26.9	43.9	38.1	23.0	30.8	37.2	45.0
7. Southwest	50.3	36.0	48.1	43.5	29.5	36.2	29.8	48.2
8. Southeast	52.2	29.8	50.3	33.8	20.0	23.5	63.4	48.7
Metro Detroit	45.6	10.5	39.8	28.0	21.9	19.3	29.2	41.8
TOTAL	47.7	23.1	44.5	32.7	23.1	25.0	29.4	44.5

¹All percents are based on analyses weighted according to the sample design to accurately represent the entire state. Restraint use includes correct and incorrect use of child restraint devices.

²Based on only 43 observed occupants.

³Restraint use for all positions includes cargo areas, passengers held in laps and passengers standing.

Figure 3.7: Restraint Use by Region

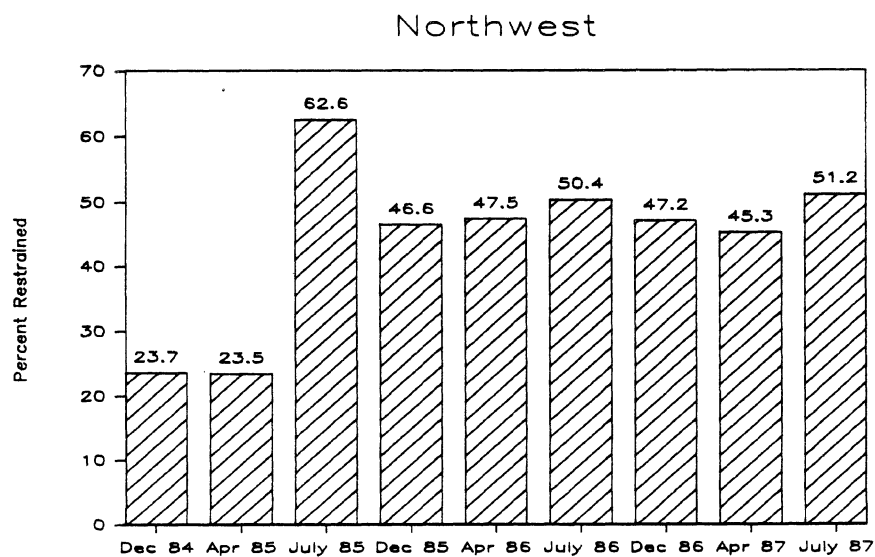
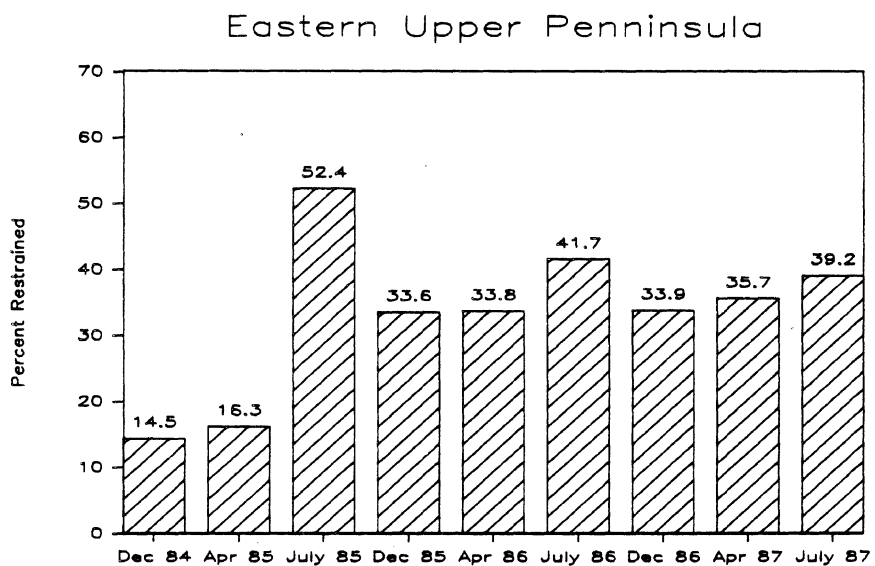
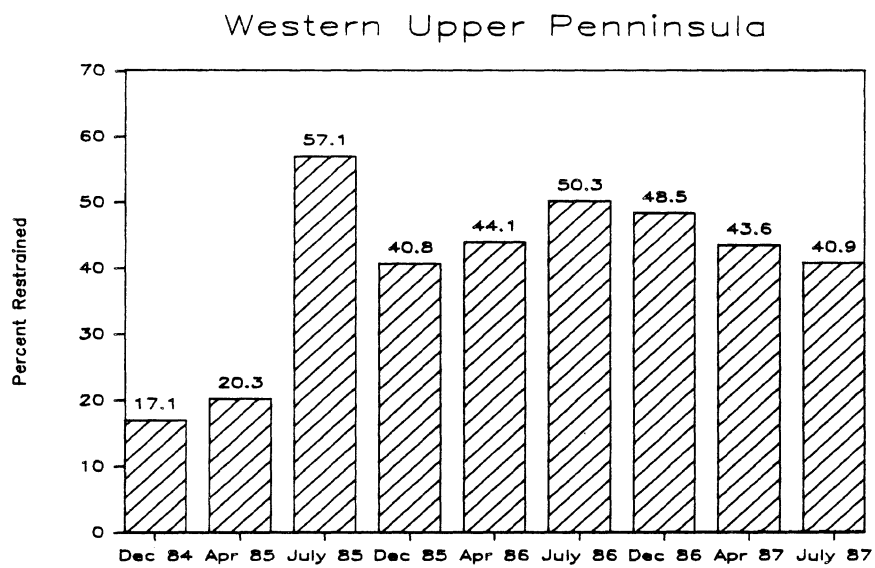


Figure 3.7 (Continued): Restraint Use by Region

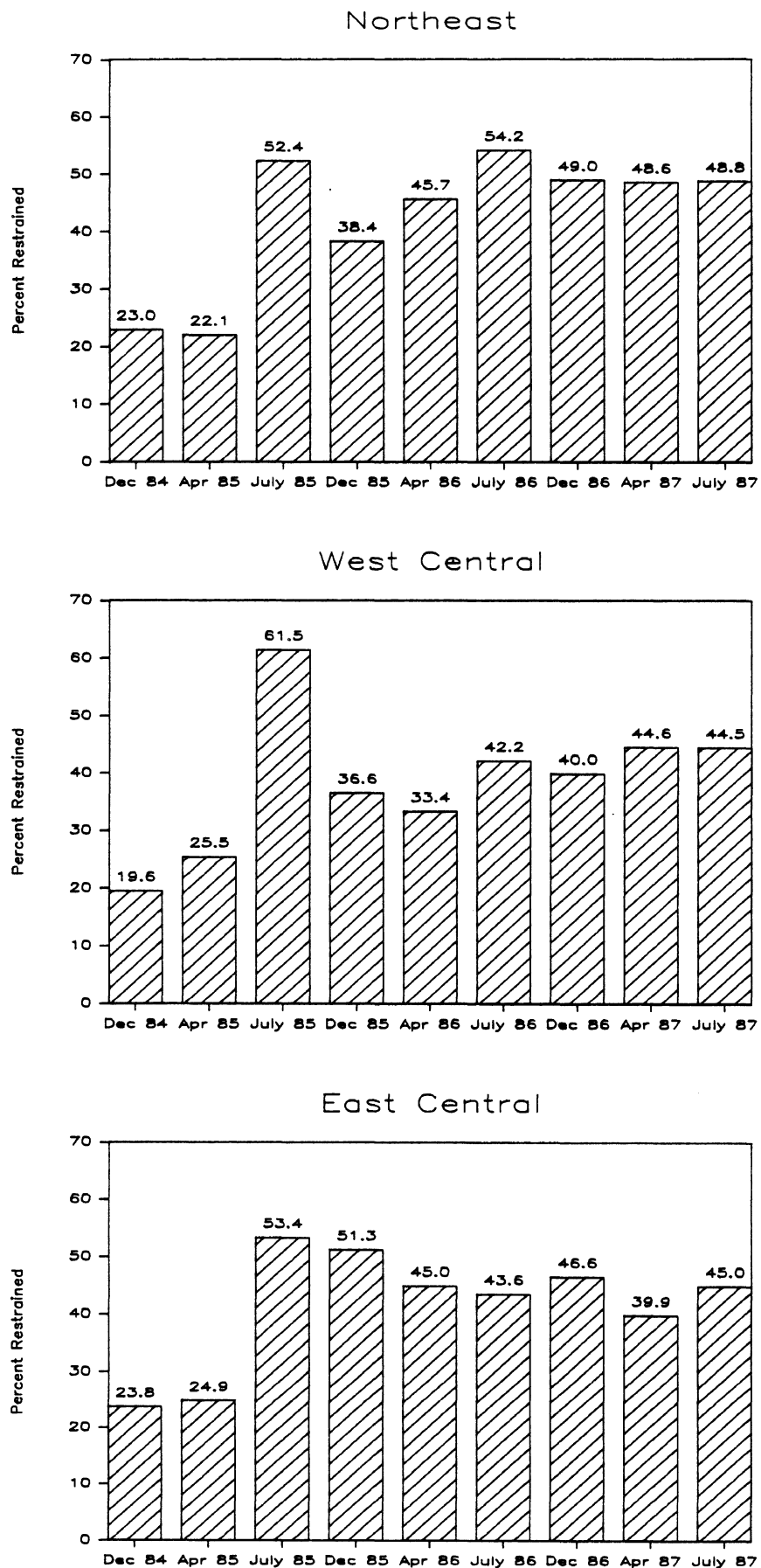


Figure 3.7 (Continued): Restraint Use by Region

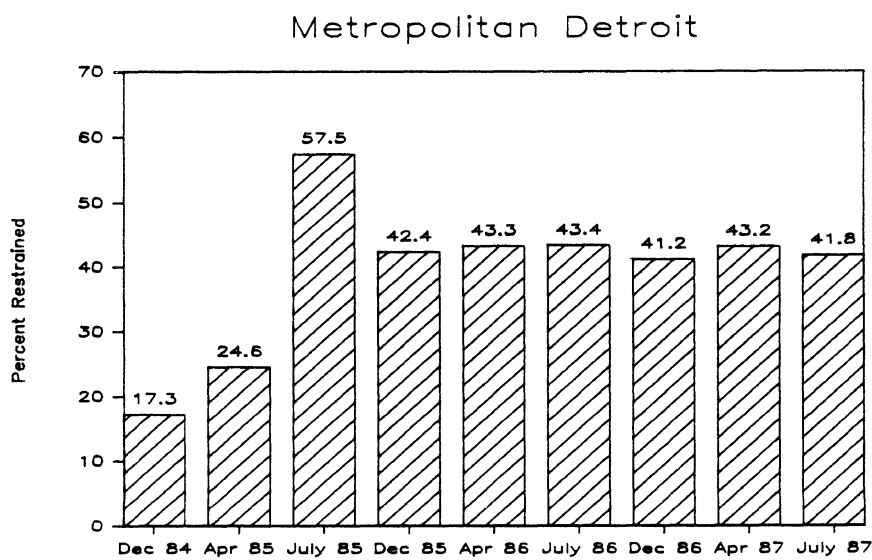
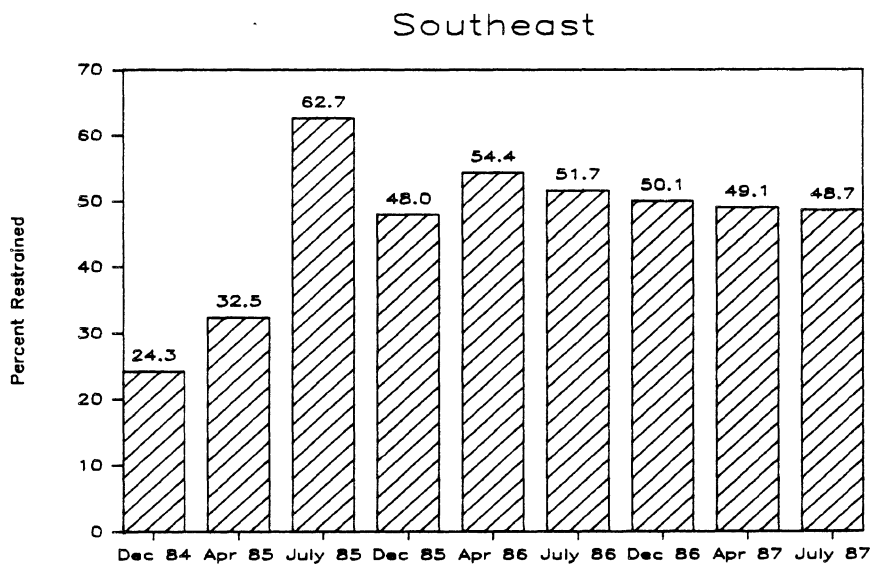
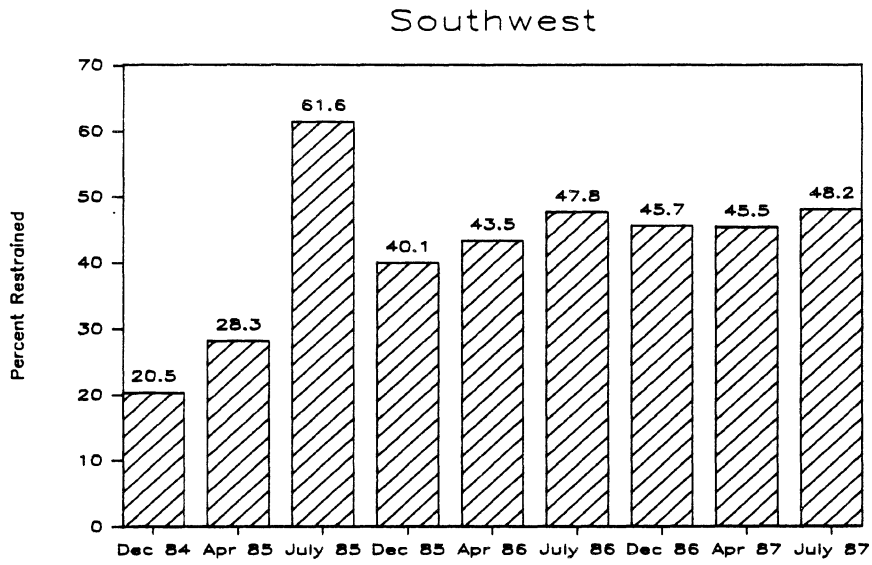


TABLE 3.6
Restraint Use, Number of Vehicles Observed, and Number
of Occupants Observed for Each Sampling Area¹

Sampling Area	Number of Vehicles Observed	Number of Occupants Observed	Percent Drivers Restrained	Percent Front Seat Passengers Restrained ²	Percent All Occupants Restrained ²
Barry ³	204	287	55.4	48.1	53.0
Bay	204	311	54.4	48.5	49.8
Berrien County	204	296	49.5	57.1	52.0
Berrien, Niles	204	319	52.9	50.0	49.8
Charlevoix	204	365	49.0	58.6	51.2
Chippewa	204	437	46.1	53.0	44.2
Crawford-Roscommon	203	353	47.8	51.8	45.0
Delta	204	325	34.8	32.6	32.6
Dickinson	204	335	36.3	29.8	31.6
Eaton	204	291	50.0	47.5	46.4
Genesee	615	904	47.3	41.8	43.9
Grand Traverse	198	394	61.4	58.4	54.3
Ingham County	204	289	51.5	46.4	47.4
Ingham, East Lansing	204	277	56.9	57.4	52.3
Iosco-Alcona	204	338	57.8	53.0	52.7
Jackson	204	303	48.3	56.5	49.7
Kalamazoo County	198	282	50.8	43.8	46.4
Kalamazoo City	204	311	53.4	48.1	51.4
Kent County	204	283	57.8	60.7	58.7
Kent, Grand Rapids	189	266	39.8	34.2	36.5
Kent, Wyoming	204	290	49.0	39.4	46.2
Lapeer	204	316	53.4	47.4	50.0
Lenawee ³	196	338	50.4	45.7	44.9
Macomb	612	853	51.6	44.3	48.6
Marquette	393	629	49.4	46.3	45.6
Mason	204	387	52.0	50.0	47.8
Mecosta-Newaygo	203	362	42.8	42.3	40.1
Monroe ³	204	302	42.6	38.7	39.1
Montcalm ³	204	349	47.1	47.1	43.8
Muskegon	189	272	37.6	33.1	36.4
Oakland County	1,019	1,502	54.9	50.3	50.7
Oakland, Royal Oak	207	303	55.0	56.1	53.4
Ottawa	204	295	53.4	46.9	51.0
Saginaw	408	627	45.3	39.4	42.1
St. Clair	204	314	35.3	38.4	35.7
VanBuren	177	291	39.8	40.0	39.4
Washtenaw, Ann Arbor	204	245	62.7	60.0	62.4
Wayne, Detroit	1,515	2,262	36.9	26.1	32.0
Wayne, Canton	204	302	52.0	44.3	47.7
Wayne, Garden City	203	315	47.7	42.7	44.0
Wayne, Livonia	204	262	57.8	63.2	57.6
Wayne, Melvindale etc.	204	328	32.4	31.3	29.3
Wayne, Trenton etc.	187	244	39.5	31.5	37.3
Wayne, Wyandotte	203	309	39.4	37.9	36.4
TOTAL	12,219	18,663	47.7	43.5	44.5

¹All percentages are based on weighted analyses.

²Includes correct and incorrect use of child restraint devices.

³For these sampling areas no signalized freeway exits existed. Therefore, freeway exits required by the sample design were selected from an adjacent county.

TABLE 3.7 Number of Occupants in Nonstandard Seat Positions by Age¹

Position	Age of Occupant		
	0-3	4-15	16+
<u>Lying</u>			
Rear seat	1	11	4
<u>Standing</u>			
Front seat	6	5	0
Rear seat	2	7	0
On floor	5	20	0
<u>Kneeling</u>			
Front seat	1	6	0
Rear seat	0	5	0
<u>Sitting</u>			
On edge of front seat	0	2	0
On edge of rear seat	1	57	7
Between bucket seats	6	6	0
On lap	40	5	0
Cargo area	1	36	11
Shared seat belt	1	15	0
Total occupants in nonstandard positions	64	174	22
Total occupants in all positions	383	1,731	18,533

¹ Data are not weighted.

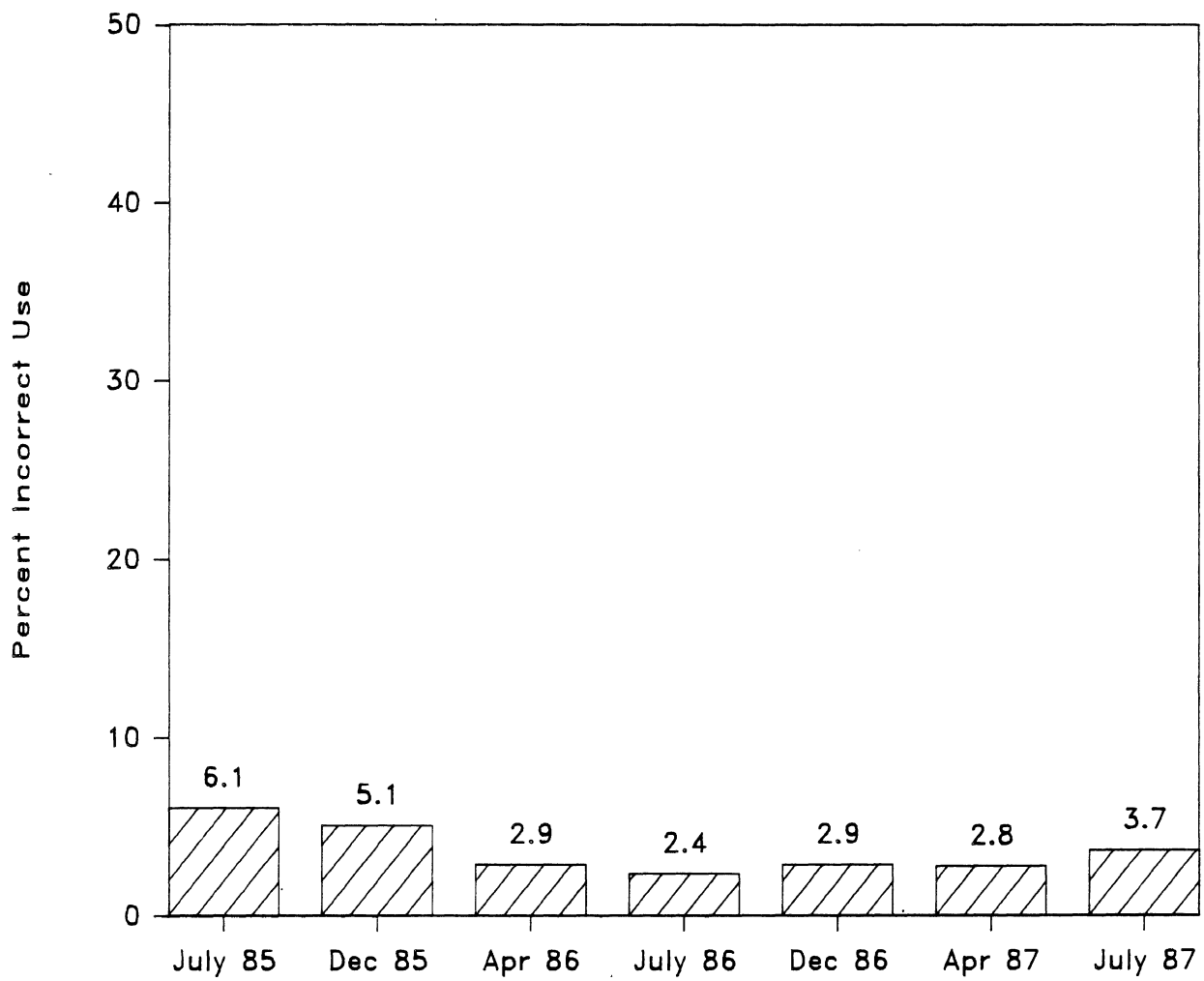
The proportion of belted occupants observed using their seat belts incorrectly in the current survey wave was slightly higher than in the four previous survey waves (Figure 3.8; incorrect use of child restraint devices is **not** included here). The percentage of belted occupants with incorrect use was 3.7% in the current wave, 2.8% in April 1987, 2.9% in December 1986, 2.4% in July 1986, and 2.9% in April 1986. By comparison, incorrect use of belts was 5.1% in December 1985 and 6.1% in July 1985. One possible explanation for the apparent decline in incorrect belt use since July 1985 is that occupants who used their belts incorrectly immediately after the law took effect are no longer using them at all.

In reporting findings from earlier survey waves, it was noted that a number of occupants observed during the July 1985 survey wave employed methods to **appear** restrained, when they were not. The relative absence of such attempts at deception since July 1985 may be due to a perception by the public that strict enforcement of the mandatory seat belt law is not occurring. Such a perception may also explain the decline in restraint use from the peak restraint use rate observed immediately following implementation of the law. Findings from other studies on the effects of mandatory seat belt legislation support the conclusion that public perception of enforcement of compulsory use laws and actual enforcement efforts affect restraint use. In Elmira, New York, for example, seat belt use increased substantially following a seat belt use law enforcement and publicity campaign conducted in late 1985; use declined in a comparison city during the same period (Williams and others, 1986). In Texas, strong enforcement efforts have been associated with high levels of seat belt use one year after implementation of seat belt legislation. Approximately 7,000 tickets per month are issued by state highway patrol officers to motorists in Texas who fail to obey the law (Insurance Institute for Highway Safety, 1986). In Michigan, a total of 16,242 tickets were issued by state police in the first five months of 1987. However, the Texas law permits primary enforcement, in contrast to the Michigan law, which is limited to secondary enforcement.

Finally, restraint use in Illinois declined from 50% observed in August 1985, immediately after enforcement of the mandatory seat belt law began, to 30% one year later. Mortimer (1986) attributes the low use rates to lack of enforcement of the law and to the nature of the law, which permits only secondary enforcement.

Adherence to Michigan's seat belt law would be facilitated if it permitted primary enforcement. Even without such new legislation, however, stricter enforcement of the current law is needed, coupled with major publicity campaigns, in order to strengthen public perception about enforcement of the law and to ensure the law's continued success.

Figure 3.8: Percent of Belted Occupants with Incorrect Use



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APPENDIX A

**MICHIGAN DEPARTMENT OF TRANSPORTATION
REGION MAP**

DISTRICT and COUNTY NUMBERS



Appendix B
SEAT BELT SURVEY CODEBOOK

MICHIGAN SEAT BELT SURVEY
Wave 9, July 1987

<u>Variable Number</u>	<u>Variable Name</u>	<u>Field Width</u>	<u>Character Type</u>	<u>Mult Resp</u>	<u>Page Number</u>
1	SITE NUMBER	3	Numeric		47
2	SITE TYPE	1	Numeric		47
3	SITE CHOICE	1	Numeric		47
4	MONTH	2	Numeric		47
5	DAY OF MONTH	2	Numeric		47
6	START HOUR	2	Numeric		48
7	START MINUTE	2	Numeric		48
8	DAY OF WEEK	1	Numeric		48
9	WEATHER	1	Numeric		48
10	BREAK TIME (MINUTES)	2	Numeric		49
11	END HOUR	2	Numeric		49
12	END MINUTE	2	Numeric		49
13	SAMPLE REGION	1	Numeric		49
14	PSU ID	2	Numeric		50
15	MDOT REGION	1	Numeric		51
16	REGION WEIGHT	5	Numeric		51
17	ELAPSED TIME	2	Numeric		51
18	SITE OBSERVER	1	Numeric		51
19	SAMPLE ERROR COMP UNIT #	2	Numeric		51

MICHIGAN SEAT BELT SURVEY
Wave 9, July 1987

<u>Variable Number</u>	<u>Variable Name</u>	<u>Field Width</u>	<u>Character Type</u>	<u>Mult Resp</u>	<u>Page Number</u>
20	VEHICLE OBSERVER	1	Numeric		52
21	VEHICLE TYPE	1	Numeric		52
22	SEQUENCE NUMBER	2	Numeric		52
23	SITE # COUNT	2	Numeric		52
24	OBSERVER COUNT	2	Numeric		53
25	SITE/OBSERVER SEQ #	2	Numeric		53
26	HOUR OF OBSERVATION	2	Numeric		53
27	MINUTE OF OBSERVATION	2	Numeric		53
28	SITE WEIGHT	6	Numeric		53
29	TOTAL WEIGHT	6	Numeric		53
30	WAVE	2	Numeric		54
31	DRIVER BELTED (Y/N)	1	Numeric		54
32	DRIVER RESTRAINT USE	1	Numeric		54
33	DRIVER SEX	1	Numeric		54
34	DRIVER AGE	1	Numeric		54

MICHIGAN SEAT BELT SURVEY
Wave 9, July 1987

<u>Variable Number</u>	<u>Variable Name</u>	<u>Field Width</u>	<u>Character Type</u>	<u>Mult Resp</u>	<u>Page Number</u>
35	POSITION	2	Numeric		55
36	BELTED (Y/N)	1	Numeric		55
37	RESTRAINT USE	1	Numeric		55
38	SEX	1	Numeric		56
39	AGE	1	Numeric		56
40	SPECIAL TAG	2	Numeric		56
41	OCCUPANT # IN POSITION	1	Numeric		56

MICHIGAN SEAT BELT SURVEY
Wave 9, July 1987

Site Variables

Variables 1 through 19 describe site level information.
The frequencies for the site variables contain one record for
each of the 240 sites.

Variable	1	<u>SITE NUMBER</u>	MD1: None	Field Width: 3
			MD2: None	Type: Numeric

Variable	2	<u>SITE TYPE</u>	MD1: None	Field Width: 1
			MD2: None	Type: Numeric

FREQ	Prcnt	SITE TYPE
190	79.2	1. Intersection
50	20.8	2. Freeway Exit

Variable	3	<u>SITE CHOICE</u>	MD1: None	Field Width: 1
			MD2: None	Type: Numeric

FREQ	Prcnt	SITE CHOICE
236	98.3	1. Primary
4	1.7	2. Secondary

Variable	4	<u>MONTH</u>	MD1: None	Field Width: 2
			MD2: None	Type: Numeric

FREQ	Prcnt	MONTH
240	100.0	07. July

Variable	5	<u>DAY OF MONTH</u>	MD1: None	Field Width: 2
			MD2: None	Type: Numeric

MICHIGAN SEAT BELT SURVEY
Wave 9, July 1987

Variable	6	START HOUR	MD1: None	Field Width: 2
			MD2: None	Type: Numeric

FREQ	Prcnt	START HOUR
------	-------	------------

5	2.1	07.
12	5.0	08.
18	7.5	09.
25	10.4	10.
29	12.1	11.
26	10.8	12.
25	10.4	13.
31	12.9	14.
28	11.7	15.
22	9.2	16.
12	5.0	17.
6	2.5	18.
1	0.4	19.

Variable	7	START MINUTE	MD1: None	Field Width: 2
			MD2: None	Type: Numeric

Variable	8	DAY OF WEEK	MD1: None	Field Width: 1
			MD2: None	Type: Numeric

FREQ	Prcnt	DAY OF WEEK
------	-------	-------------

33	13.7	1. Monday
33	13.7	2. Tuesday
35	14.6	3. Wednesday
41	17.1	4. Thursday
43	17.9	5. Friday
29	12.1	6. Saturday
26	10.8	7. Sunday

Variable	9	WEATHER	MD1: None	Field Width: 1
			MD2: None	Type: Numeric

FREQ	Prcnt	WEATHER
------	-------	---------

167	69.6	1. Mostly Sunny
64	26.7	2. Mostly Cloudy
9	3.7	3. Rain
0	0.0	4. Snow

MICHIGAN SEAT BELT SURVEY
Wave 9, July 1987

Variable	10	BREAK TIME (MINUTES)	MD1: None	Field Width: 2
			MD2: None	Type: Numeric

Variable	11	END HOUR	MD1: None	Field Width: 2
			MD2: None	Type: Numeric

FREQ	Prcnt	END HOUR
1	0.4	07.
9	3.7	08.
16	6.7	09.
22	9.2	10.
30	12.5	11.
29	12.1	12.
25	10.4	13.
29	12.1	14.
28	11.7	15.
25	10.4	16.
16	6.7	17.
8	3.3	18.
2	0.8	19.

Variable	12	END MINUTE	MD1: None	Field Width: 2
			MD2: None	Type: Numeric

Variable	13	SAMPLE REGION	MD1: None	Field Width: 1
			MD2: None	Type: Numeric

FREQ	Prcnt	SAMPLE REGION
20	8.3	1. Upper
20	8.3	2. Northern
20	8.3	3. Western
20	8.3	4. Central
20	8.3	5. South Central
20	8.3	6. Eastern
120	50.0	7. South Eastern

MICHIGAN SEAT BELT SURVEY
Wave 9, July 1987

Variable	14	PSU ID	MD1: None	Field Width: 2
			MD2: None	Type: Numeric

FREQ	Prcnt	PSU ID
4	1.7	08. BARRY
4	1.7	09. BAY
4	1.7	11. BERRIEN COUNTY
4	1.7	12. BERRIEN, NILES
4	1.7	15. CHARLEVOIX
4	1.7	17. CHIPPEWA
4	1.7	20. CRAWFORD-ROSCOMMON
4	1.7	21. DELTA
4	1.7	22. DICKINSON
4	1.7	23. EATON
12	5.0	25. GENESEE
4	1.7	28. GRAND TRAVERSE
4	1.7	33. INGHAM COUNTY
4	1.7	34. INGHAM, EAST LANSING
4	1.7	35. IOSOC-ALCONA
4	1.7	38. JACKSON
4	1.7	39. KALAMAZOO COUNTY
4	1.7	40. KALAMAZOO, CITY OF
4	1.7	41. KENT COUNTY
4	1.7	42. KENT, GRAND RAPIDS
4	1.7	43. KENT, WYOMING
4	1.7	44. LAPEER
4	1.7	46. LENAWEE
12	5.0	50. MACOMB
8	3.3	52. MARQUETTE
4	1.7	53. MASON
4	1.7	54. MECSOTA-NEWAYGO
4	1.7	58. MONROE
4	1.7	59. MONTCALM
4	1.7	61. MUSKEGON
20	8.3	63. OAKLAND COUNTY
4	1.7	64. OAKLAND, ROYAL OAK
4	1.7	70. OTTAWA
8	3.3	73. SAGINAW
4	1.7	74. ST. CLAIR
4	1.7	80. VANBUREN
4	1.7	81. WASHTENAW, ANN ARBOR
28	11.7	82. WAYNE, DETROIT
4	1.7	83. WAYNE, CANTON
4	1.7	84. WAYNE, GARDEN CITY
4	1.7	85. WAYNE, LIVONIA
4	1.7	86. WAYNE, MELVINDALE ETC.
4	1.7	87. WAYNE, TRENTON ETC.
4	1.7	88. WAYNE, WYANDOTTE

MICHIGAN SEAT BELT SURVEY

Wave 9, July 1987

Variable	15	MDOT REGION	MD1: None	Field Width: 1
			MD2: None	Type: Numeric

FREQ	Prcnt	MDOT REGION
12	5.0	1. Western U.P.
8	3.3	2. Eastern U.P.
12	5.0	3. Northwest
8	3.3	4. Northeast
28	11.7	5. West Central
28	11.7	6. East Central
28	11.7	7. Southwest
24	10.0	8. Southeast
92	38.3	9. Metro Detroit

Variable	16	REGION WEIGHT	MD1: None	Field Width: 5
			MD2: None	Type: Numeric
			Implied Dec Places: 4	

Variable	17	ELAPSED TIME	MD1: None	Field Width: 2
			MD2: None	Type: Numeric

Variable	18	SITE OBSERVER	MD1: None	Field Width: 1
			MD2: None	Type: Numeric

FREQ	Prcnt	PRIMARY OBSERVER FOR THIS SITE
8	3.3	1. Observer #1
85	35.4	2. Observer #2
77	32.1	4. Observer #4
70	29.2	5. Observer #5

Variable	19	SAMPLE ERROR COMP UNIT #	MD1: None	Field Width: 2
			MD2: None	Type: Numeric

MICHIGAN SEAT BELT SURVEY
Wave 9, July 1987

Vehicle variables

Variables 20 through 34 describe the vehicle and driver.
The frequencies for the vehicle variables reflect one record
for each vehicle observed.

Variable	20	VEHICLE OBSERVER	MD1: None	Field Width: 1
			MD2: None	Type: Numeric

FREQ	Prct	ACTUAL OBSERVER FOR THIS VEHICLE
------	------	----------------------------------

402	3.3	1. Observer #1
4382	35.9	2. Observer #2
3955	32.4	4. Observer #4
3480	28.5	5. Observer #5

Variable	21	VEHICLE TYPE	MD1: 8	Field Width: 1
			MD2: None	Type: Numeric

FREQ	Prct	VEHICLE TYPE
------	------	--------------

3381	27.7	1. Small Car
3143	25.7	2. Midsize Car
3141	25.7	3. Large Car
1335	10.9	4. Pickup
794	6.5	5. Van
422	3.5	6. Other
3	0.0	8. Missing Data

Variable	22	SEQUENCE NUMBER	MD1: None	Field Width: 2
			MD2: None	Type: Numeric

Variable	23	SITE # COUNT	MD1: None	Field Width: 2
			MD2: None	Type: Numeric

MICHIGAN SEAT BELT SURVEY
Wave 9, July 1987

Variable	24	OBSERVER COUNT	MD1: None	Field Width: 2
			MD2: None	Type: Numeric

Variable	25	SITE/OBSERVER SEQ #	MD1: None	Field Width: 2
			MD2: None	Type: Numeric

Variable	26	HOUR OF OBSERVATION	MD1: 88	Field Width: 2
			MD2: None	Type: Numeric

FREQ Prcnt HOUR OF THE DAY THIS VEHICLE WAS OBSERVED

129	1.1	07.
567	4.6	08.
852	7.0	09.
1245	10.2	10.
1557	12.7	11.
1343	11.0	12.
1232	10.1	13.
1578	12.9	14.
1446	11.8	15.
1159	9.5	16.
711	5.8	17.
328	2.7	18.
72	0.6	19.

Variable	27	MINUTE OF OBSERVATION	MD1: 88	Field Width: 2
			MD2: None	Type: Numeric

Variable	28	SITE WEIGHT	MD1: None	Field Width: 6
			MD2: None	Type: Numeric
			Implied Dec Places: 4	

Variable	29	TOTAL WEIGHT	MD1: None	Field Width: 6
			MD2: None	Type: Numeric
			Implied Dec Places: 4	

MICHIGAN SEAT BELT SURVEY
Wave 9, July 1987

Variable	30	WAVE	MD1: None	Field Width: 2
			MD2: None	Type: Numeric

FREQ	Prcnt	WAVE	
12219	100.0	09.	

Variable	31	DRIVER BELTED (Y/N)	MD1: 8	Field Width: 1
			MD2: None	Type: Numeric

FREQ	Prcnt	DRIVER BELTED (Y/N)	
6385	52.3	1. Not Belted	
5833	47.7	2. Belted	
1	0.0	8. Missing data	

Variable	32	DRIVER RESTRAINT USE	MD1: 8	Field Width: 1
			MD2: None	Type: Numeric

FREQ	Prcnt	DRIVER RESTRAINT USE	
6385	52.3	1. Not Belted	
5833	47.7	2. Belted	
1	0.0	8. Missing Data	

Variable	33	DRIVER SEX	MD1: 8	Field Width: 1
			MD2: None	Type: Numeric

FREQ	Prcnt	DRIVER SEX	
7542	61.7	1. Male	
4676	38.3	2. Female	
1	0.0	8. Missing Data	

Variable	34	DRIVER AGE	MD1: 8	Field Width: 1
			MD2: None	Type: Numeric

FREQ	Prcnt	DRIVER AGE	
3	0.0	2. 4-15	
3790	31.0	3. 16-29	
7138	58.4	4. 30-59	
1281	10.5	5. 60+	
7	0.1	8. Missing Data	

MICHIGAN SEAT BELT SURVEY
Wave 9, July 1987

Variables 35 through 37 describe the occupants.
The frequencies for the occupant variables contain
one record for each occupied occupant position.

Variable	35	<u>POSITION</u>	MD1:	88	Field Width:	2
			MD2:	None	Type:	Numeric

FREQ	Prcnt	POSITION
12219	65.5	01. Front Left
217	1.2	02. Front Center
4249	22.8	03. Front Right
635	3.4	04. Rear Left
407	2.2	05. Rear Center
775	4.2	06. Rear Right
45	0.2	07. In Lap
48	0.3	08. Cargo Area
43	0.2	09. Extra Seat
25	0.1	10. Standing
0	0.0	88. Missing Data

Variable	36	<u>BELTED (Y/N)</u>	MD1:	8	Field Width:	1
			MD2:	None	Type:	Numeric

FREQ	Prcnt	BELTED (Y/N)
10340	55.4	1. Not Belted
8303	44.5	2. Belted (any type)
20	0.1	8. Missing Data

Variable	37	<u>RESTRAINT USE</u>	MD1:	8	Field Width:	1
			MD2:	None	Type:	Numeric

FREQ	Prcnt	RESTRAINT USE
10340	55.4	1. Not Belted
8087	43.3	2. Belted
140	0.8	3. CRD OK
76	0.4	4. CRD Wrong
20	0.1	8. Missing Data

MICHIGAN SEAT BELT SURVEY
Wave 9, July 1987

Variable	38	SEX	MD1:	8	Field Width:	1
			MD2:	None	Type:	Numeric

FREQ	Prcnt	SEX
10082	54.0	1. Male
8574	45.9	2. Female
7	0.0	8. Missing Data

Variable	39	AGE	MD1:	8	Field Width:	1
			MD2:	None	Type:	Numeric

FREQ	Prcnt	AGE
383	2.1	1. 0-3
1731	9.3	2. 4-15
5326	28.5	3. 16-29
9181	49.2	4. 30-59
2026	10.9	5. 60+
16	0.1	8. Missing Data

Variable	40	SPECIAL TAG	MD1:	None	Field Width:	2
			MD2:	None	Type:	Numeric

FREQ	Prcnt	SPECIAL TAG
18351	98.3	00. None
312	1.7	01. Shoulder Belt Misused
0	0.0	02. Lap Belt Misused

Variable	41	OCCUPANT # IN POSITION	MD1:	8	Field Width:	1
			MD2:	None	Type:	Numeric

Sequence number for occupants in same seat position.
(Includes cargo areas and extra seats)

FREQ	Prcnt	OCCUPANT # IN POSITION
		1. First Occupant
		2. Second Occupant