

**DIRECT OBSERVATION
OF SEAT BELT USE IN MICHIGAN:
APRIL 1985**

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16. Abstract Results of a direct-observation seat belt survey of 18,581 occupants in 12,345 cars and light trucks in April, 1985 were compared with results of a similar survey conducted in December, 1984. Use of restraint systems increased between December and April in all age groups except children under age 4, whose use remained at 60%. Changes for other age groups were: (1) from 23.9% in December to 31.4% in April among 4-15-year-olds, (2) 18.5% to 23.0% among 16-29-year-olds, (3) 18.4% to 25.9% among 30-59-year-olds, and (4) 14.6% to 21.8% among those age 60 and over. By region, the largest increases in restraint use occurred in the southern lower peninsula (about 8 percentage points). Central lower peninsula and upper peninsula increased moderately (1 to 6 percentage points), but no increase in restraint use was observed in the northern lower peninsula. By seating position, the largest increases in restraint use (6.5 percentage points) occurred among drivers (from 19.5% to 26.0%) and right front passengers (from 17.4% to 23.9%). The seat belt law that takes effect July 1 applies only to front-seat occupants. It appears that the attention given to seat belts in recent months has resulted in an increase in the proportion of motorists buckling up, even though the law does not take effect until July 1. Results of the current survey, along with results of the December, 1984 survey, will be used as a baseline from which to assess the effects of Michigan's mandatory seat belt law. Additional survey waves are planned for 1985 and 1986.					
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Chapter 1

INTRODUCTION

In December, 1984, The University of Michigan Transportation Research Institute conducted a direct-observation survey of 17,568 motor vehicle occupants throughout the State of Michigan. The December survey found 19.5% of drivers and 17.6% of front seat passengers were restrained. Restraint use among all drivers and passengers averaged 19.8%. Of the 538 children under four observed, 60.8% were restrained, as required by the Michigan Child Restraint law. Differential restraint use was examined by age, sex, seating position, time of day, day of week, type of roadway, weather conditions, vehicle type and size, and region of state. The reader is referred to the earlier report for complete results of the December, 1984 survey (Wagenaar and Wiviott, 1985).

On March 8, 1985, Public Act No. 1 of 1985 was signed into law, requiring front-seat occupants of motor vehicles traveling in Michigan to use seat belts beginning July 1, 1985. This report presents results from a direct observational survey conducted in April, 1985, the second of two pre-belt-law surveys. These results, combined with the data collected in December, 1984, will function as a baseline from which the effects of the law will be measured. In addition, the current survey will provide information on the effect of publicity surrounding **passage** of the mandatory use law on restraint use, independent of its **implementation**, since the second survey was conducted after the law was passed by the legislature and signed by the governor, but before it took effect.

Chapter 2

METHODS

To ensure comparability across survey waves, the same methods were used in the December, 1984 and April, 1985 survey waves, except for a few minor differences. The sample design, data collection methods, and analytic procedures are discussed in detail in the earlier report (Wagenaar and Wiviott, 1985). In both waves, trained observers observed motor vehicles at a carefully selected probability sample of 240 intersections throughout the state. Observers recorded restraint use, seat position, estimated age, and sex for all occupants in each observed vehicle. In addition, the size and type of the vehicle was recorded in the December, 1984, wave. In April, 1985, the license plate number was recorded instead of the vehicle size and type. Accurate recording of license plate numbers by the observers was generally not a problem. However, for other reasons, collection of license plate numbers proved to be somewhat more difficult than originally anticipated. Despite attempts to record the plate numbers discreetly, observers on several occasions were personally threatened by belligerent drivers who did not wish to have their plate numbers recorded. On rare occasions bellicose drivers exited their vehicles and demanded that the record of their plate number be destroyed. Occasionally drivers would drive around the block and pass the observer a second time. These intimidating actions made the tasks of the observers more difficult. Because lack of seat belt use will be a violation of law beginning July 1, drivers may become increasingly suspicious of observers who record their vehicle license plate numbers.

In the current survey wave, recorded license plate numbers were matched with information obtained from vehicle registration data recorded by the Michigan Department of State. Of the total of 12,345 vehicles observed, license plate numbers were not recorded by observers for only 262 (2.1%). An additional 406 vehicles (3.3%) had out-of-state license plates. Finally, no matching registration information was found for 144 (1.2%) vehicles. Lack of matching registration information may be a result of observer recording errors or unregistered vehicles. In total, 812 of 12,345 vehicles (6.6%) could not be matched with registration information. For the vehicles that were matched, the vehicle make/model information provided by the vehicle registration records was of limited use. The make/model information recorded was frequently not specific enough for accurate coding into the vehicle size/type variable used in this series of seat

belt surveys.¹ More accurate information was available in the form of vehicle identification numbers. However, considerable effort is required to code vehicle size and type from these numbers. Because of limited utility of the vehicle registration data, and because observed motorists are increasingly annoyed at having their license plate numbers recorded, in future survey waves we will return to having observers directly code vehicle size and type, as in the December, 1984, survey.

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

The December, 1984, and April, 1985 waves included the same sample of 240 sites. In both survey waves, every site selected into the probability sample was observed. One full-time observer visited 120 sites, the second full-time observer visited 92 sites; 28 sites were visited by the field supervisor. A fourth observer worked with one of the full-time observers at central city sites where two-person observation teams were required. At these sites the two observers collected data at the same intersection but from different paths of traffic. Each observer typically recorded 27 vehicles at each site, providing a total of 54 vehicles for each of the 27 Detroit sites. Using two-person teams for central city sites allowed for efficient and rapid collection of data while providing security for the observers. Descriptive statistics for the 240 observation sites are shown in Table 2.1.

Actual number of cases observed across categories of the major variables are shown in Table 2.2. Restraint use estimates based on a small number of cases, such as those for occupants in extra seats, cargo areas, or in laps, 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 2.9% of all occupants observed. These are cases in which the observer could not accurately identify whether the occupant was restrained. Belt use was not recorded for only 0.6% of the 12,345 drivers observed, and 2.4% of the 4,158 right front occupants observed. Restraint use could not be determined for 14 of 31 occupants of third and fourth seats of station wagons or vans. Front center and rear seat occupants had moderate levels of missing data on restraint use (12 to 25%). Missing data for all other variables was less than 1%.

¹For example, "Ford Wagon" does not provide any information on vehicle size.

TABLE 2.1
Descriptive Statistics for the 240 Observation Sites

Day of Week		Start Time		Site Choice		Weather		Observer	
Monday	13.3%	7-10 AM	19.1%	Primary	98.3%	Sunny	76.2%	(A)	50.0%
Tuesday	14.6%	10-12 AM	24.2%	Alternate	1.7%	Cloudy	20.4%	(B)	38.3%
Wednesday	15.8%	12-2 PM	22.5%			Rain	2.9%	(C)	11.7%
Thursday	15.0%	2-4 PM	22.9%			Snow	0.4%		
Friday	15.0%	4-7 PM	11.3%						
Saturday	13.3%								
Sunday	12.9%								
TOTALS	100%		100%				100%		100%

TABLE 2.2 Continued

	Seating Position									
	Driver	Front Center	Front Right	Rear Left	Rear Center	Rear Right	Extra Seats	Cargo Area	Held in Lap	All
<u>Time of Day</u>										
7-9 AM	862	9	186	27	16	40	3	1	0	1,144
9-10 AM	1,279	24	346	39	29	57	3	8	2	1,791
10-11 AM	1,437	28	423	53	33	60	10	0	10	2,055
11-12 AM	1,543	44	534	67	52	91	0	5	14	2,353
12-1 PM	1,370	27	496	63	39	73	5	2	5	2,082
1-2 PM	1,166	17	444	50	32	73	2	4	10	1,798
2-3 PM	1,376	31	505	59	41	80	2	4	9	2,109
3-4 PM	1,439	34	522	69	44	100	3	5	13	2,231
4-5 PM	1,107	33	388	52	45	80	3	12	6	1,731
5-7 PM	766	34	314	50	40	69	0	7	7	1,287
Missing	0	0	0	0	0	0	0	0	0	0
<u>Weather</u>										
Sunny	9,362	221	3,175	397	267	562	18	47	53	14,119
Cloudy	2,575	58	877	118	100	145	11	1	23	3,909
Rain	357	2	89	13	3	14	2	0	0	481
Snow	51	0	17	1	1	2	0	0	0	72
Missing	0	0	0	0	0	0	0	0	0	0
<u>MDOT Region</u>										
Western U.P.	581	20	246	38	20	53	0	3	4	967
Eastern U.P.	408	12	156	13	13	21	0	0	5	628
Northwest	611	14	186	21	12	32	0	4	2	884
Northeast	408	6	150	9	6	15	0	0	4	598
West Central	1,402	39	510	83	61	92	18	5	10	2,221
East Central	1,413	22	459	52	45	74	0	5	10	2,080
Southwest	1,378	48	562	78	46	106	10	18	5	2,259
Southeast	1,221	33	369	54	35	68	1	1	2	1,788
Metro Detroit	4,923	87	1,520	181	133	262	2	12	34	7,156
Missing	0	0	0	0	0	0	0	0	0	0
TOTAL N	12,345	281	4,158	529	371	723	31	48	76	18,581

Chapter 3

RESULTS

Restraint use among drivers and passengers in Michigan during April, 1985 averaged 25.8%, a clear increase from the 19.8% restrained in December, 1984, and the 12.9% restrained in August, 1983 (Figure 3.1). For drivers alone, 26.0% were restrained in April, 1985, compared to 19.5% in December, 1984, and 13.6% in August, 1983 (Figure 3.2). It appears that publicity surrounding passage of Michigan's mandatory seat belt use law has resulted in an increase in use of seat belts by motorists, even before the law takes effect.

Use of seat belts increased between December, 1984 and April, 1985 for all age groups except children under four, whose use remained at 60% (Table 3.1).² Occupants age 4-15 increased from 23.9% in December to 31.4% in April. Occupants age 16-29 increased from 18.5% to 23.0%. Similar figures for motorists age 30-59 are from 18.4% to 25.9%, and for those age 60 and over, from 14.6% to 21.8%.

The largest increase in restraint use from December, 1984 to April, 1985 occurred among drivers, 19.5% to 26.0%, and right front passengers, 17.4% to 23.9% (Figure 3.3). This pattern may be because the seat belt law to take effect July 1 applies only to front seat occupants.

Female motor vehicle occupants increased their seat belt use from December to April slightly more than males (Table 3.2). Males increased from 17.5% to 23.4%, and females from 21.9% to 28.5%. As a result, the sex differential in use noted in the earlier report remains, with males less likely to use belts than females.

The increased use of seat belts between December and April was particularly pronounced for freeway travel. Observed restraint use at freeway exits increased 9.1 percentage points, from 23.3% to 32.4% (Table 3.2). The increase at regular intersections was 5.5 percentage points. This change accentuated the belt use difference between motorists at freeway and regular intersections, with freeway exits having substantially higher rates of restraint use.

The use of seat belts increased at all times of the day, except the period from 5 to 7 p.m. Restraint use among motorists traveling in the early evening decreased from 27.8% in December to 24.2% in April (Table 3.3 and Figure 3.4). The largest increase in restraint use, from 19.7% to 32.9%, occurred from 7 to 9 a.m. These differences may be partly a result of differences in the

²Compare Table 3.1 here with Table 3.1 in Wagenaar and Wiviott, 1985.

FIGURE 3.1
Restraint Use by Age

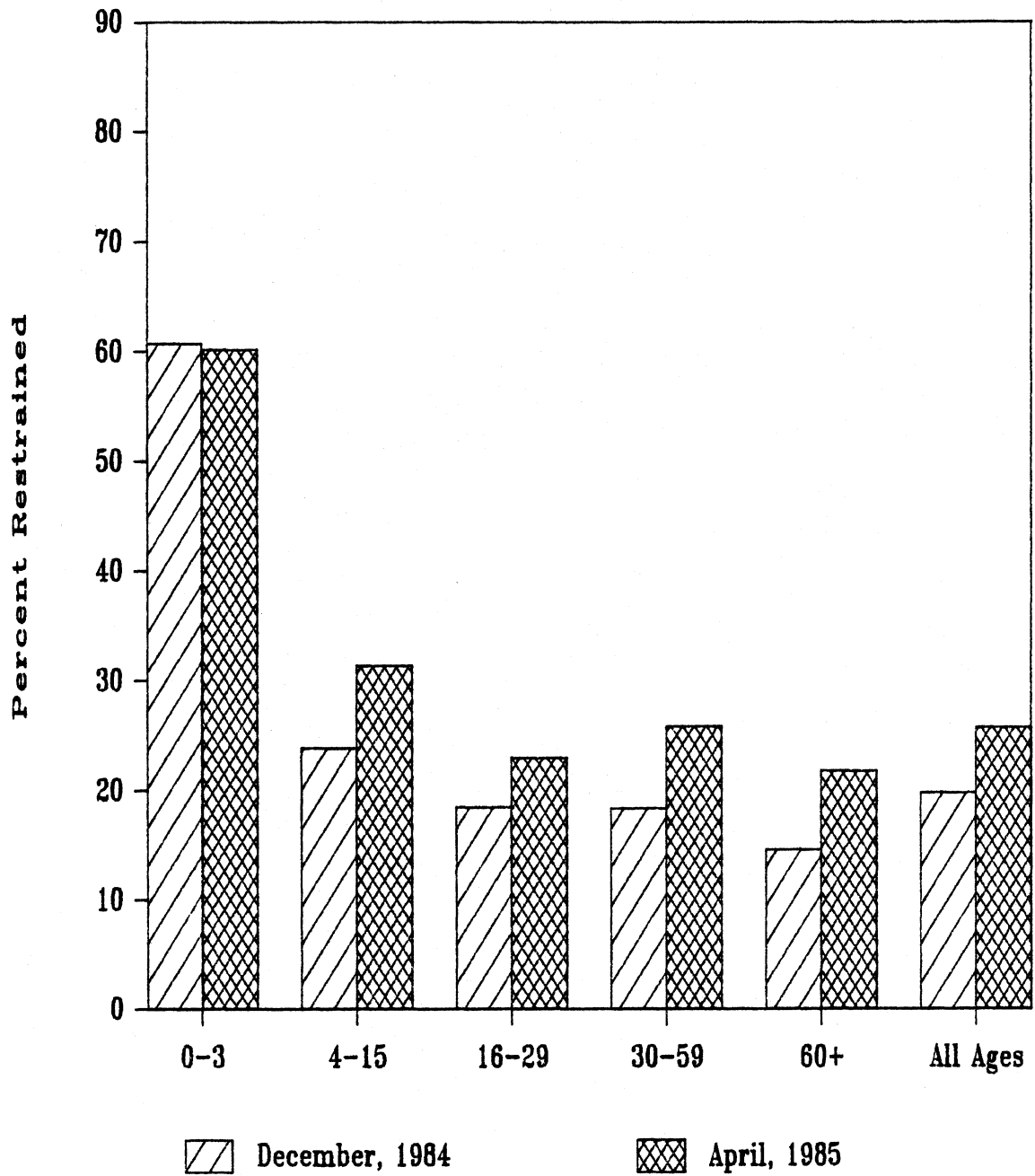


FIGURE 3.2

Driver Restraint Use by Age

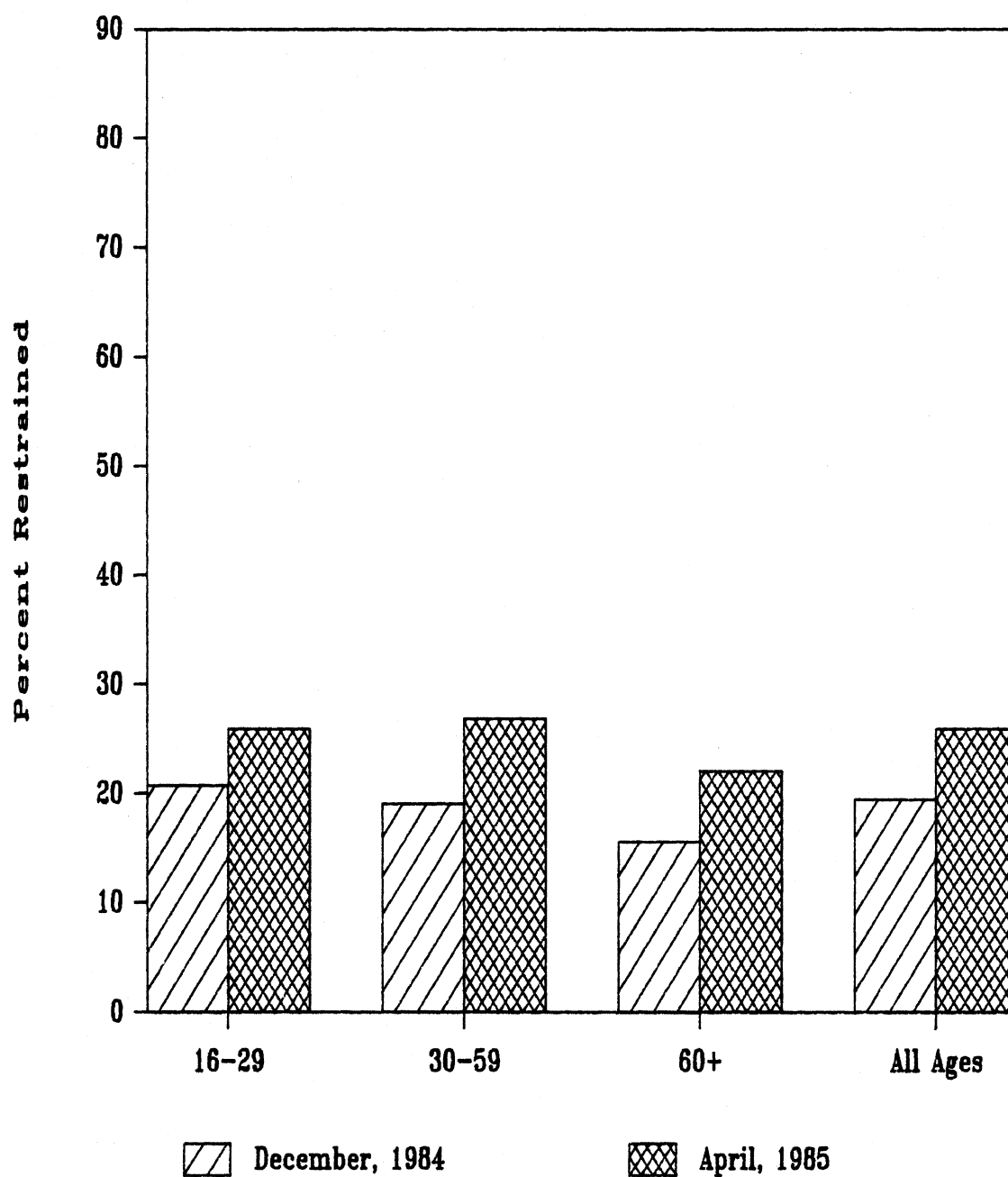


TABLE 3.1
Restraint Use by Age and Seating Position¹

Age Group	Seating 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	—	14.5	18.5	17.3	8.3	18.7	44.2	0.0	0.0	13.7
% Correct CRD	—	26.2	45.5	53.5	42.0	55.7	55.8	0.0	0.0	39.8
% Incorrect CRD	—	10.4	5.1	8.2	8.5	8.2	0.0	0.0	0.0	6.7
% Restrained ³	—	51.1	69.1	79.0	58.8	82.6	100.0	0.0	0.0	60.2
Unweighted N	—	59	98	87	82	89	2	6	54	481
<u>Age 4-15</u>										
% Restrained	42.2	18.0	36.2	35.2	23.0	37.6	25.5	0.0	0.0	31.4
Unweighted N	3	101	506	260	230	326	12	33	20	1,506
<u>Age 16-29</u>										
% Restrained	26.0	0.0	16.2	11.1	0.0	8.0	0.0	0.0	0.0	23.0
Unweighted N	4,356	72	1,300	79	31	126	5	1	1	5,971
<u>Age 30-59</u>										
% Restrained	26.9	0.0	23.6	16.8	0.0	13.1	—	0.0	—	25.9
Unweighted N	6,620	33	1,605	68	15	115	0	1	0	8,457
<u>Age 60+</u>										
% Restrained	22.1	0.0	22.8	5.0	0.0	8.2	—	—	—	21.8
Unweighted N	1,319	9	615	29	7	62	0	0	0	2,041
<u>All Ages</u>										
% Restrained	26.0	19.0	23.9	35.9	28.4	34.6	30.2	0.0	0.0	25.8
Unweighted N	12,345	281	4,158	529	371	723	31	48	76	18,581

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

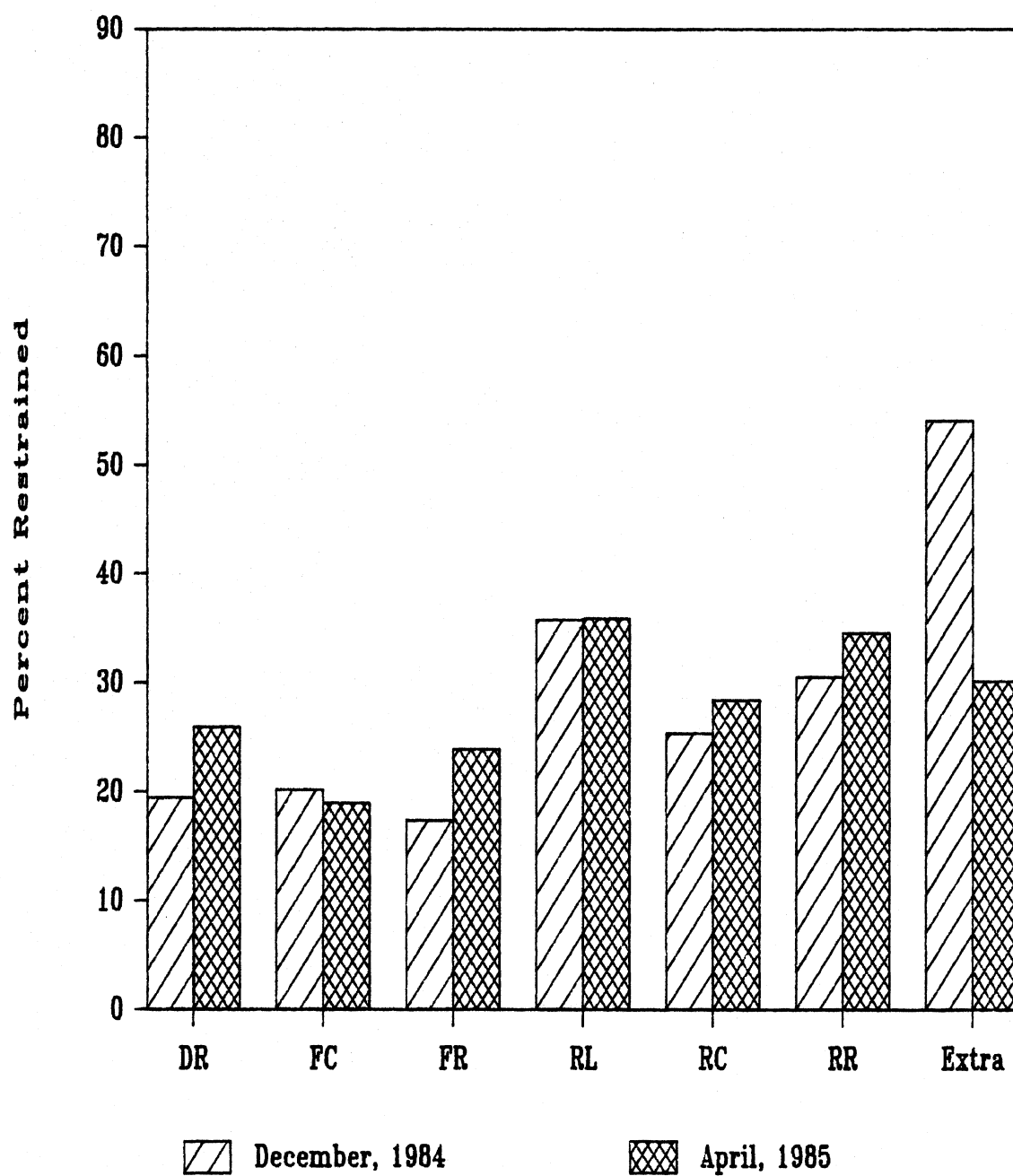


TABLE 3.2
Percent Restraint Use by Sex, Observation Site, and Weather Conditions¹

	Seating Position							
	Driver	Front Center	Front Right	Rear Left	Rear Center	Rear Right	Extra Seats ²	All ³
<u>Sex</u>								
Male	23.4	17.7	20.1	34.2	31.2	35.6	34.1	23.4
Female	30.3	18.2	25.6	34.9	23.8	32.5	39.3	28.5
<u>Observation Site</u>								
Intersection	24.1	18.2	22.9	34.6	27.2	35.0	31.8	24.3
Freeway Exit	33.6	26.4	28.1	42.2	35.1	32.7	0.0	32.4
<u>Weather Conditions</u>								
Mostly Sunny	25.1	19.8	24.1	36.6	30.0	37.5	35.9	25.4
Mostly Cloudy	25.9	16.7	19.6	34.3	22.0	26.2	0.0	24.4
Raining	42.3	0.0	43.8	30.8	100.0	16.7	0.0	41.7
Snowing	62.7	—	58.8	—	—	50.0	—	59.7 ⁴
TOTAL	26.0	19.0	23.9	35.9	28.4	34.6	30.2	25.8

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 31 observed occupants.

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

⁴Only 51 vehicles were observed while it was snowing.

TABLE 3.3
Percent Restraint Use by Time of Day and Day of Week¹

	Seating Position							
	Driver	Front Center	Front Right	Rear Left	Rear Center	Rear Right	Extra Seats ²	All ³
<u>Time of Day</u>								
7-9 AM	33.0	22.7	30.4	34.8	34.5	42.6	66.7	32.9
9-10 AM	23.8	10.2	22.3	60.0	52.1	47.7	100.0	24.9
10-11 AM	24.6	27.8	22.0	50.6	41.7	55.5	0.0	25.4
11-12 AM	24.4	31.7	25.0	37.1	37.2	36.0	0.0	25.4
12-1 PM	26.2	21.9	28.1	34.2	16.0	35.2	0.0	26.7
1-2 PM	25.3	15.4	21.1	34.8	7.5	31.0	0.0	24.1
2-3 PM	24.8	26.1	23.1	30.0	16.7	22.1	0.0	24.1
3-4 PM	27.4	9.4	22.6	32.6	26.1	31.4	0.0	26.2
4-5 PM	27.3	10.1	25.4	29.9	34.9	30.8	0.0	26.6
5-7 PM	26.0	7.3	20.4	26.7	26.7	29.3	0.0	24.2
<u>Day of Week</u>								
Monday	22.2	25.5	18.1	43.0	34.8	39.2	0.0	22.1
Tuesday	26.5	12.2	19.2	26.3	23.9	31.9	100.0	25.0
Wednesday	29.9	7.0	25.0	35.0	30.5	24.4	0.0	28.4
Thursday	23.8	25.3	19.9	44.0	33.5	37.5	0.0	23.7
Friday	29.9	35.8	26.3	47.3	33.7	42.2	0.0	29.8
Saturday	21.1	8.7	22.8	25.6	21.7	32.0	41.8	21.8
Sunday	27.4	25.7	30.7	38.4	28.5	37.7	0.0	29.0
TOTAL	26.0	19.0	23.9	35.9	28.4	34.6	30.2	25.8

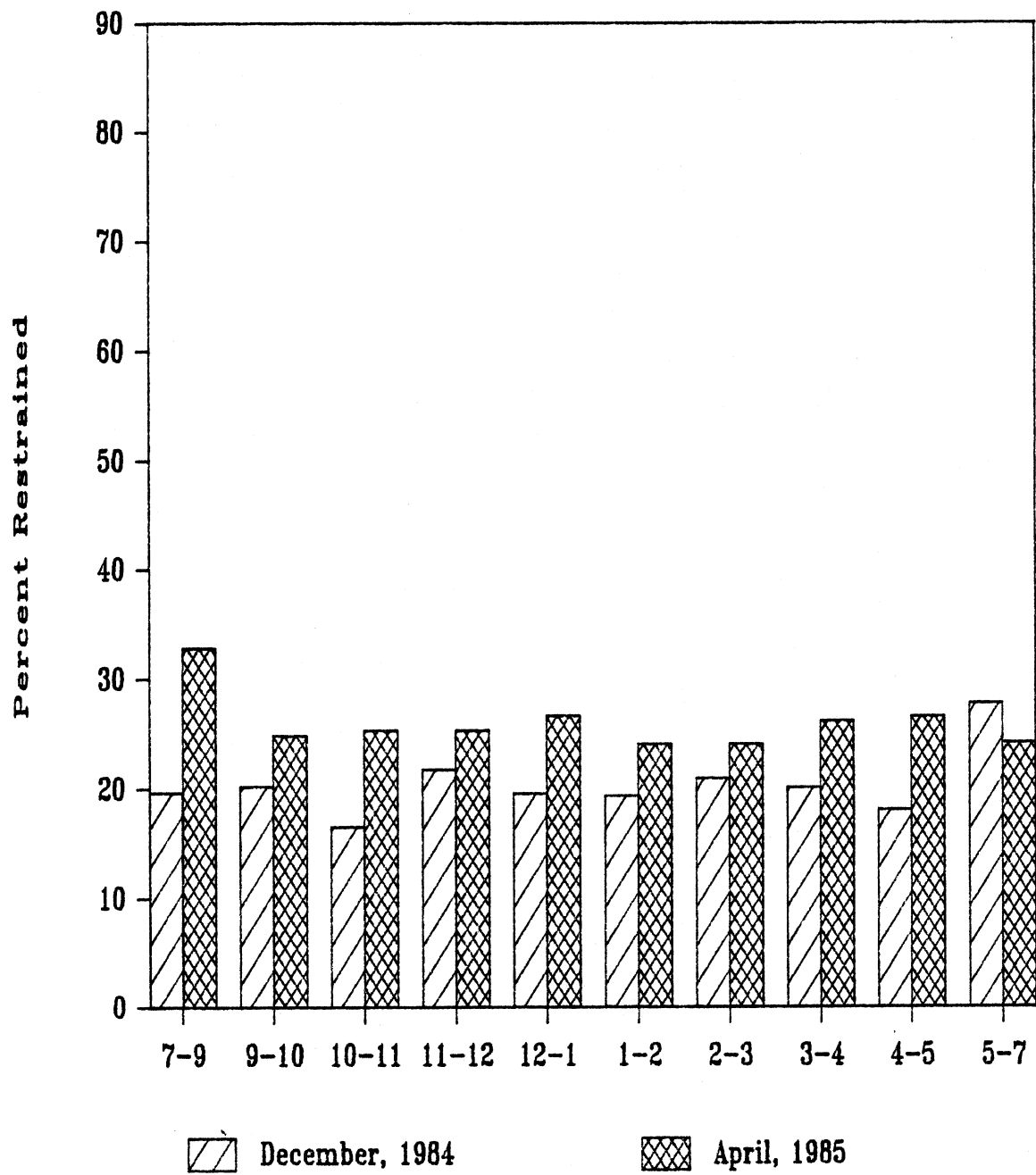
¹All percents are based on analyses weighted according to the sample design to accurately represent the entire state. Restraint use includes correct and incorrect use of child restraint devices.

²Based on only 48 observed occupants.

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

FIGURE 3.4

Restraint Use by Time of Day



age or sex of motorists at various times of the day and changes in driving patterns between December and April. Additional multivariate analyses of these relationships are planned after additional survey waves are completed.

There were no consistent patterns in changes in restraint use by day of week (Table 3.3 and Figure 3.5). Although belt use increased the most on Sundays (from 18.0% to 29.0%), use also increased substantially on Tuesdays, Wednesdays, and Fridays.

The size of increases in seat belt use from December to April varied by region of the state (Table 3.4 and Figure 3.6).³ Belt use was up 8 percentage points in the southwestern and southeastern regions, and was up 7% in the Detroit metropolitan area. In contrast, virtually no change in restraint use was seen in the northwestern, northeastern, and east central regions.

As found in the December, 1984 survey, restraint use in April, 1985 varied substantially by sampling area (Table 3.5). In addition, the change in belt use from December to April varied across sampling areas. Belt use in five sampling areas increased by over 13 percentage points (Wayne County, City of Livonia, up 20 percentage points; Washtenaw County, City of Ann Arbor, up 18.4 percentage points; Kent County, City of Wyoming, up 15.5 percentage points; Mecosta and Newaygo counties, up 14.1 percentage points; and Kalamazoo County, up 13.8 percentage points). In contrast, observed restraint use declined slightly in five sampling areas (Grand Traverse County, down 7.8 percentage points; Crawford and Roscommon counties, down 4.8 percentage points; Saginaw County, down 1.4 percentage points; Dickinson County, down 0.9 percentage points; and Ingham County, down 0.5 percentage points). Because only 200 to 300 occupants are observed in most sampling areas, however, these differences are of minor significance.

As found in the previous survey wave, passenger restraint use is closely correlated with belt use of the driver (Table 3.6). Of passengers traveling with a belted driver, 74.8% were restrained. In contrast, only 10.8% of passengers traveling with an unbelted driver were restrained.

Finally, occupants in nonstandard seating positions, such as lying on a seat or in cargo area, standing on seat, floor, or cargo area, kneeling on a seat, or sitting on lap of another passenger, were tallied separately (Table 3.7). Of the nonstandard positions, children riding on the lap of another passenger was the most common.

In summary, the use of seat belts increased from December, 1984 to April, 1985, a time of extensive publicity surrounding passage and signing of Michigan's mandatory seat belt law. Use increased for all age groups except children under 4, who have been subject to mandatory restraint use since April, 1982. The data reported here will be used as a baseline, along with the December, 1984 wave, from which to assess the effects of Michigan's mandatory seat belt law. Further survey waves are planned for July and December of 1985, and April, July, and December of 1986.

³See Appendix A for a map delineating region boundaries.

FIGURE 3.5
Restraint Use by Day of Week

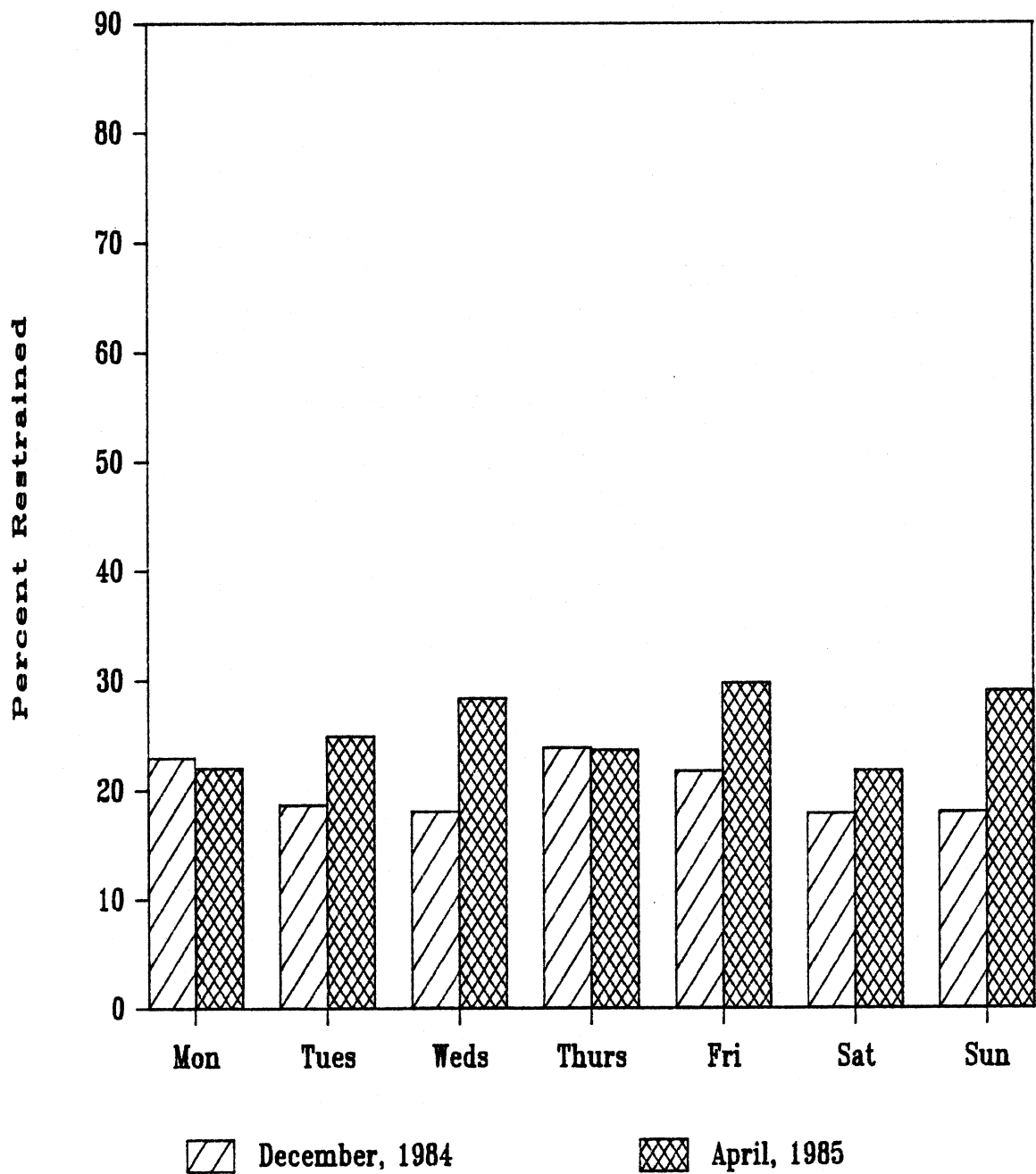


TABLE 3.4
Percent Restraint Use by Michigan Department of Transportation Regions¹

MDOT Region	Seating Position							
	Driver	Front Center	Front Right	Rear Left	Rear Center	Rear Right	Extra Seats ²	All ³
1. Western U.P.	18.2	15.0	22.9	39.0	16.9	53.3	—	20.3
2. Eastern U.P.	16.6	25.0	13.6	14.3	30.0	33.3	—	16.3
3. Northwest	23.6	12.5	20.5	37.7	30.1	57.2	—	23.5
4. Northeast	23.1	60.0	15.4	50.0	33.3	44.4	—	22.1
5. West Central	25.4	20.1	23.9	37.9	24.3	46.2	21.8	25.5
6. East Central	26.4	12.8	20.9	29.9	16.0	31.5	—	24.9
7. Southwest	27.5	8.9	27.6	42.3	44.3	50.5	42.8	28.3
8. Southeast	32.3	23.2	31.5	45.3	41.3	35.0	0.0	32.5
Metro Detroit	25.0	21.5	22.6	31.3	26.4	28.0	0.0	24.6
TOTAL	26.0	19.0	23.9	35.9	28.4	34.6	30.2	25.8

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 31 observed occupants.

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

FIGURE 3.6
Restraint Use by Region

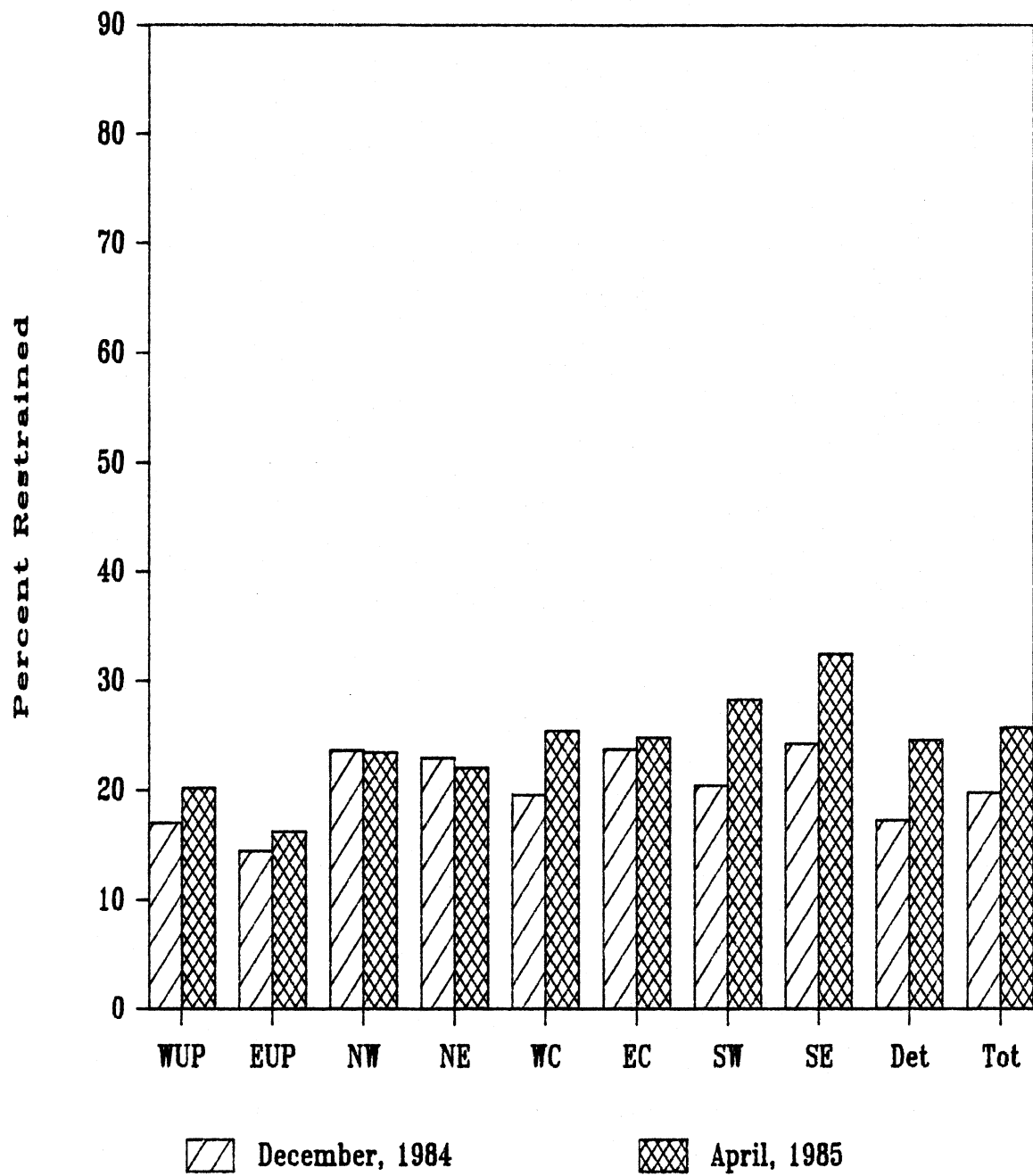


TABLE 3.5

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	203	275	27.5	22.0	26.4
Bay	191	347	27.1	25.9	26.4
Berrien County	197	407	22.9	22.0	25.1
Berrien, Niles	196	356	21.2	19.9	21.6
Charlevoix	204	285	20.3	17.0	19.8
Chippewa	204	283	20.3	22.0	21.5
Crawford-Roscommon	204	307	19.2	18.2	19.9
Delta	204	345	12.9	9.0	11.9
Dickinson	181	344	7.8	18.4	12.8
Eaton	204	354	31.4	31.6	32.2
Genesee	611	862	27.5	21.8	26.1
Grand Traverse	203	282	31.1	22.7	30.9
Ingham County	203	350	27.6	30.8	30.7
Ingham, East Lansing	204	314	36.8	34.8	36.4
Iosco-Alcona	204	291	27.0	15.5	24.4
Jackson	202	274	25.7	32.7	27.4
Kalamazoo County	194	269	32.6	37.8	35.3
Kalamazoo City	203	263	32.0	24.6	31.3
Kent County	201	277	35.7	26.2	34.1
Kent, Grand Rapids	198	292	23.1	17.7	21.3
Kent, Wyoming	204	284	28.6	40.4	33.1
Lapeer	203	293	27.1	20.0	25.7
Lenawee ³	204	310	24.0	14.7	21.6
Macomb	612	817	28.1	25.0	28.9
Marquette	400	623	23.2	25.0	24.6
Mason	204	317	19.4	20.3	20.1
Mecosta-Newaygo	204	392	26.7	28.1	26.6
Monroe ³	204	275	27.1	25.5	27.2
Montcalm ³	187	393	22.0	25.1	23.4
Muskegon	204	301	19.3	10.3	18.7
Oakland County	1012	1,484	36.6	35.4	36.4
Oakland, Royal Oak	204	302	28.4	31.8	30.1
Ottawa	204	282	22.1	13.2	21.9
Saginaw	408	578	23.9	14.2	21.4
St. Clair	197	320	19.4	20.7	20.3
VanBuren	181	335	24.6	30.6	28.6
Washtenaw, Ann Arbor	204	265	52.0	57.8	53.2
Wayne, Detroit	1,677	2,362	15.1	9.1	13.3
Wayne, Canton	201	400	27.9	27.9	27.2
Wayne, Garden City	204	275	24.5	24.6	26.3
Wayne, Livonia	204	264	37.9	45.5	40.9
Wayne, Melvindale etc.	204	316	19.6	21.5	19.7
Wayne, Trenton etc.	204	294	24.0	15.9	21.4
Wayne, Wyandotte	204	322	20.2	17.4	18.7
TOTAL	12,345	18,581	26.0	23.6	25.8

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 3.6
Passenger Restraint Use by Driver Restraint Use by Age¹

	Passenger Seating Position		Total Passengers
	Front Seats	Rear Seats	
<u>Driver Restrained</u>			
Passengers 0-3			
% Restrained	97.2	97.6	97.5
Unweighted N	38	86	124
Passengers 4-15			
% Restrained	90.5	76.5	82.4
Unweighted N	140	219	359
Passengers 16-29			
% Restrained	67.8	37.0	63.9
Unweighted N	239	50	289
Passengers 30-59			
% Restrained	76.1	32.1	71.8
Unweighted N	382	57	439
Passengers 60+			
% Restrained	66.6	23.2	62.7
Unweighted N	152	22	174
Total Passengers			
% Restrained	76.0	71.8	74.8
Unweighted N	959	442	1,401
<u>Driver Not Restrained</u>			
Passengers 0-3			
% Restrained	49.8	61.4	56.6
Unweighted N	113	163	276
Passengers 4-15			
% Restrained	15.2	15.6	15.4
Unweighted N	463	589	1,052
Passengers 16-29			
% Restrained	3.9	1.4	3.6
Unweighted N	1,116	184	1,300
Passengers 30-59			
% Restrained	6.0	5.5	6.0
Unweighted N	1,243	140	1,383
Passengers 60+			
% Restrained	7.7	1.8	7.1
Unweighted N	467	75	542
Total Passengers			
% Restrained	8.4	18.9	10.8
Unweighted N	3,435	1,158	4,593

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. Unweighted Ns indicate the actual number of occupants observed in each group. This table excludes 155 occupants in nonstandard seats (third or fourth seats, cargo areas, riding on the lap of another passenger, or doubled in one seat position).

TABLE 3.7
Number of Occupants in Nonstandard Seating Positions by Age¹

Position	Age of Occupant		
	0-3	4-15	16+
<u>Lying</u>			
Front seat	1	1	
Rear seat	3	4	3
Cargo area			3
<u>Standing</u>			
Front seat	8	1	
Front floor		1	
Rear seat	8	8	
Rear floor	8	9	
Cargo area		1	
Between bucket seats	1		
<u>Kneeling</u>			
Front seat	1	2	
Rear seat	1	2	
<u>Sitting</u>			
On edge of rear seat		5	2
Between bucket seats	1	3	
On lap	54	20	1
Shared seat belt		2	
Total occupants in nonstandard positions	86	59	9
Total occupants in all positions	481	1,506	16,469

¹ Data are not weighted.

Chapter 4

REFERENCES

Wagenaar, Alexander C. and Margaret B.T. Wiviott. *Direct Observation of Seat Belt Use in Michigan: December 1984*. Ann Arbor: The University of Michigan Transportation Research Institute, 1985.

Appendix A

MICHIGAN DEPARTMENT OF TRANSPORTATION REGION MAP

DISTRICT and COUNTY NUMBERS

