

**Incident Experience of Massachusetts Drivers  
Before and After Participation in the  
*DDC-Attitudinal Dynamics of Driving Course*  
During the Period July through September 2007**

Submitted to the  
Commonwealth of Massachusetts  
Registry of Motor Vehicles

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## Executive Summary

This study compares the motor-vehicle records for 12 months before participation in the DDC Attitudinal Dynamics of Driving Course with participant's 12 month post-ADD experience and indicates any significant differences in incidents. Use of the DDC-ADD program satisfies provisions of Chapter 175, section 113B, of the Motor Vehicle and Traffic Laws of Massachusetts. This section states that drivers subject to suspension for accumulating *five surchargeable incidents* within a three year period must be offered a *driver education program*, which may be completed in lieu of suspension. Since its introduction in the Commonwealth of Massachusetts, more than 349,000 drivers have completed DDC-ADD.

The findings presented in this report are limited to those drivers who attended DDC-ADD during a three month period from July 1, 2007, through September 30, 2007. A total of 4,762 drivers are included in this study who experienced a violation within 12 months before or after the training date. Three categories of motor vehicle incidents were analyzed:

- Major traffic violations
- Minor traffic violations
- Surchargeable violations

### Results summary:

- Except for females 65 and older who had an insufficient sample to test, all participant groups had significantly fewer violations in the 12 months after taking DDC-ADD than in the 12 months before.
- Minor traffic violations decreased an average of 71% the 12 months following DDC-ADD participation
- Major traffic violations decreased an average of 64% the 12 months following DDC-ADD participation
- Surchargeable violations decreased an average of 73% the 12 months following DDC-ADD participation
- Of all participants, 4,345 (91%) had at least one minor violation in the 12 months prior to DDC-ADD training. Of this number, 2,604 (60%) did not record a minor violation in the following 12 months.
- 1,347 (28%) of all participants had at least one major violation in the 12 months prior to DDC-ADD training. Of this number, 1,177 (87%) did not record a major violation in the following 12 months.
- 4,486 (94%) of all participants had at least one surchargeable violation in the 12 months prior to DDC-ADD training. Of this number, 2,679 (60%) did not record a surchargeable violation in the following 12 months.

## Introduction

On January 19, 1994, the Commonwealth of Massachusetts began using the National Safety Council's DDC-Attitudinal Dynamics of Driving (ADD) for the retraining of repeat traffic offenders. This is the fourth report to the Registry of Motor Vehicles to fulfill the Council's contractual commitment "to routinely measure and document the effectiveness" of the DDC-ADD program.

Use of the DDC-ADD program satisfies provisions of Chapter 175, section 113B, of the Motor Vehicle and Traffic Laws of Massachusetts. This section states that drivers subject to suspension for accumulating *five surchargeable incidents* within a three year period must be offered a *driver education program*, which may be completed in lieu of suspension.

A *surchargeable incident* is an "at-fault" accident or motor vehicle-violation that can increase a driver's insurance surcharge points under the Safe Driver Insurance Plan (SDIP). A surchargeable incident is defined by the nature of the violation and not by the number of citations. It is possible, therefore, to receive several surcharge points for a single citation. The Massachusetts Point System defines surchargeable incidents as follows:

- Minor Traffic Law Violations: = **2 points**
- Minor Accidents (at fault in excess of 50%):  
(between \$501 and \$2001 property damage/collision coverage) = **3 points**
- Major Accidents (at fault in excess of 50%):  
(exceeds \$2001 property damage/collision coverage) = **4 points**
- Major Traffic Law Violations: = **5 points**

DDC-ADD is an 8-hour course that is divided into four units of instruction. It emphasizes small group discussion and active dialogue between the instructor and the students. During the course, students first discuss the traffic citations that brought them to the class. They then take a "Rules of the Road" quiz, the purpose being to show themselves that they do in fact know the traffic laws. Next, students are exposed to the concepts of Choice Theory, helping them to understand how their actions are a result of their own choices. They learn that it is up to them to drive poorly or properly, and how they can change. They are then guided in making a plan of action in which they practice good driving behavior.

Since its introduction in the Commonwealth of Massachusetts, more than 349,000 drivers have completed DDC-ADD. Beginning with the first enrollee, the Council has kept a computerized record of all drivers who have been offered DDC-ADD, whether or not they have attended the course.

The findings presented in this report are limited to those drivers who attended DDC-ADD during a three month period from July 1, 2007, through September 30, 2007. This study compares the 12 month pre-ADD motor-vehicle records of participants with their 12 month post-ADD experience and indicates any significant differences in surchargeable incidents.

## Method

The National Safety Council (NSC) sent the Massachusetts Registry of Motor Vehicles (RMV) a computerized list of 5,402 drivers who completed the DDC-ADD course. This driver group attended the course from July 1, 2007, through September 30, 2007. The RMV furnished a computerized list containing the motor-vehicle records (MVRs) of 4,762 drivers who experienced a violation within 12 months before or after the training date.

The course participant MVR data used in this study were as follows:

- Motorist ID
- Gender
- Age at time of training
- Training date
- Number/type of violations

The MVR provided information about surchargeable violations. These descriptions were used to group surchargeable incidents into three categories:

- Major traffic violations
- Minor traffic violations
- Surchargeable violations

The violation descriptions used to code major and minor violations are listed in Appendix A.

Statistical tests were computed using the computer software package SPSS. Paired samples *t*-tests were used for pre/post comparisons of mean violations per driver. Two types of *t*-tests were used. One used the actual MVR data of each subject and the other used the square root of each subject's data. The square root transformation was done to equalize pre-and post-course variances. When rare event means, such as surchargeable incidents, are compared, inequality between their variances can be large enough to violate a primary assumption that must be followed for the valid use of a *t*-test (Snedecor & Cochran, 1980).

In addition, the McNemar test was used to measure the significance of the change in surchargeable incidents frequency for drivers after their exposure to the ADD course (McNemar, 1966). This test requires that variables be transformed into dichotomous values, either "clean record" or "not clean record." The test then compares the number of subjects whose records change from one disposition before exposure to the ADD course to the other, after taking ADD.

An alpha level of .05 was used for all statistical tests.

## Results

The mean age of the 4,762 ADD participants was 30.4 years. The mean age for male participants was 30.1 years. The mean age for females was 31.3 years. Females made up 21.9% of the drivers studied.

A slightly larger proportion of the male drivers were under 21 years old compared to female drivers – 19.6% versus 16.0% while a larger proportion of female driver were 21 to 64 years old compared to male drivers – 83.1% versus 79.4%. There were very few drivers aged 65 and older in the study group.

**Table 1. Number and Percentage of DDC-ADD Course Participants by Gender and Age**

Age Group	Gender					
	Male		Female		TOTAL	
	Number	%	Number	%	Number	%
Under 21	728	19.6	167	16.0	895	18.8
21-64	2,953	79.4	867	83.1	3,821	80.2
65 and older	34	0.9	8	0.8	42	.9
<b>TOTAL</b>	<b>3,718</b>	<b>100</b>	<b>1,043</b>	<b>100</b>	<b>4,762</b>	<b>100</b>

Note: Age or sex was not known for 5 drivers.

Table 2 shows the mean (average) number of violations per participant in the study group in the 12 months prior to and following exposure to ADD and the percent changes in the means. Except for females 65 and older who had an insufficient sample to test, all participant groups had significantly fewer violations in the 12 months after taking DDC-ADD than in the 12 months before.

As shown in the "All Age Groups" column in Table 2, males and females had statistically significant reductions across the three MVR categories defined in this study using both raw data and the square root transformations. Percentage reductions in surchargeable incidents after DDC-ADD ranged from a 61% decrease in major traffic violations for males, to a 75% decreases in surchargeable violations by females. Females had consistently greater post-DDC-ADD reductions in the all violation categories and all age groups than did males.

**Table 2. Mean Number of Before/After Violations and Percentage Change for ADD Participants by Age and Sex**

Sex	Age Group											
	Under 21 Years Old			21-64 Years Old			65 And Older			All Age Groups		
	Before	After	% Chg.	Before	After	% Chg.	Before	After	% Chg.	Before	After	% Chg.
<b>Minor Traffic Violation</b>												
Male	3.60	1.13	-69	2.53	0.75	-70	2.18	0.35	-84	2.74	0.82	-70
Female	2.86	0.74	-74	2.42	0.61	-75	I.S.	I.S.	I.S.	2.48	0.63	-74
Both	3.46	1.05	-70	2.51	0.72	-71	2.10	0.36	-83	2.68	0.78	-71
<b>Major Traffic Violations-61</b>												
Male	0.42	0.17	-60	0.34	0.13	-62	0.53	0.12	-77	0.36	0.14	-61
Female	0.44	0.10	-77	0.37	0.12	-68	I.S.	I.S.	I.S.	0.38	0.12	-68
Both	0.42	0.16	-62	0.34	0.13	-62	0.62	0.17	-73	0.36	0.13	-64
<b>Surchargeable Violations</b>												
Male	3.36	0.94	-72	2.48	0.70	-72	2.44	0.38	-84	2.65	0.74	-72
Female	2.95	0.72	-76	2.50	0.61	-76	I.S.	I.S.	I.S.	2.57	0.63	-75
Both	3.29	0.90	-73	2.49	0.68	-73	2.5	0.45	-82	2.64	0.72	-73

Note: *t*-tests were conducted on both male and female means using raw data and the square root transformation.

All changes in means from before to after were statistically significant ( $p < 0.05$ ).

I.S. means insufficient sample size.

**Table 3. Number of Drivers with Clean Records and Violations Before and After Participation in the DDC-ADD Program for Each of Three Incident Categories**

**Minor Traffic Violations**

		After Training		
		Clean Record	Violation	Total
Before Training	Clean Record	141	276	417
	Violation	2,604	1,741	4,345
	Total	2,745	2,017	4,762

Degrees of Freedom = 1,  $\chi^2 = 1880.184$ ,  $p < .0001$

**Major Traffic Violations**

		After Training		
		Clean Record	Violation	Total
Before Training	Clean Record	3,083	332	3,415
	Violation	1,177	170	1,347
	Total	4,260	502	4,762

Degrees of Freedom = 1,  $\chi^2 = 472,058$ ,  $p < .0001$

**Surchargeables**

		After Training		
		Clean Record	Violation	Total
Before Training	Clean Record	47	229	276
	Violation	2,679	1,807	4,486
	Total	2,726	2,036	4,762

Degrees of Freedom = 1,  $\chi^2 = 2062.449$ ,  $p < .0001$

Table 3 shows, for each violation category, the number of drivers whose records were “clean” (no violation) or had at least one violation before and after taking the DDC-ADD course. The table shows that the number of drivers whose records changed from "violation" to "clean" increased significantly in the 12 months following exposure to the ADD course. The significant increases in "clean" MVRs appears across the three incident categories.

As can be seen in Table 3, there are drivers who have clean records before training for minor, major, and accident violation categories. This result may initially appear inconsistent with the fact that this sample of drivers was court mandated to participate in the DDC-ADD course because of their surchargeable experience. However, many drivers accumulated the five surchargeable points that prompt mandatory DDC-ADD participation in only one or two incident categories.

Of all participants, 4,345 (91%) had at least one minor violation in the 12 months prior to DDC-ADD training. Of this number, 2,604 (60%) did not record a minor violation in the following 12 months.

Some 1,347 (28%) of all participants had at least one major violation in the 12 months prior to DDC-ADD training. Of this number, 1,177 (87%) did not record a major violation in the following 12 months. Of the 3,415 participants who did not have a major violation before DDC-ADD, only 332 (10%) had a major violation recorded following the course – 90% maintained their clean record.

Some 4,486 (94%) of all participants had at least one surchargeable violation in the 12 months prior to DDC-ADD training. Of this number, 2,679 (60%) did not record a surchargeable violation in the following 12 months.

In summary, based on the information made available by the Commonwealth of Massachusetts RMV, participants in this study showed statistically significant reductions in surchargeable incidents in the 12 months after exposure to the DDC-ADD course compared with the 12 months before.

## References

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- Norusis, M.J. (1992). *SPSS/PC+ Version 5.0* [Computer Software]. Chicago: SPSS Inc.
- Snedecor, G. W. & Cochran W.G. (1980). *Statistical Methods* (7th ed.). Ames, IA: Iowa State University Press.

## ***APPENDIX A***

### Violation Description Groupings

## Violation Description Groupings

### Major Traffic Violations

- LICENSE REVOKED
- LICENSE SUSPENDED
- DWI SERIOUS INJURY
- LEAVE SCENE PERS INJ
- LEAVE SCENE PROP DAM
- VEHICULAR HOMICIDE
- USING W/O AUTHORITY
- DWI ALCOHOL PROGRAM
- DWI DRUGS
- DWI LIQUOR
- DRIVING TO ENDANGER
- OPERATING RECKLESSLY
- OUT ST DWI ALCOH/DRUG

### Minor Traffic Violations

- ALLOW UNLIC OPERATE
- DPW STAT HWAY REGS
- LICENSE RESTRICTION
- NO INSPECTION STCKER
- REGISTRAR RULE/REG
- SCHOOL BUS LICENSE
- SUM/CAL TNL INSP STK
- FAIL TO USE SAFETY
- FAIL DIM LIGHTS
- FAIL STOP SCHOOL BUS
- FAIL TO GIVE SIGNAL
- FAIL TO KEEP RIGHT
- FAILURE TO STOP
- ILLEGAL OPERATION
- IMPEDE EMERG VEHICLE
- IMPEDING OPERATION
- IMPROPER PASSING
- KEEP IN RIGHT LANE
- KEEP RIGHT NO VIEW
- LANE VIOLATION
- LEFT LANE EXCLUSION
- MASS PIKE VIOLATION
- MINOR TRAFFIC
- ONE WAY STREET
- RT OF WAY INTERSECTION
- ST HWAY VIOLATION

### Minor (continued)

- SUM/CAL TUNL OTHER
- TRAFFIC VIOLATION
- YIELD TO PEDESTRIAN
- UNREG/IMPROPER EQUIPMENT
- MODIFY VEH HEIGHT
- OPER W/O SAFETY GLASS
- OVERSIZE VEHICLE
- TIRE TREAD
- UNREG/IMPROPER EQUIP
- MASS PIKE SPEED
- SPEEDING
- SUM/CAL TUNL SPEED
- REG SUSPEND/REVOKED
- STOP AT RR CROSSING
- SURCHARGEABLE ACID
- SUCH. BUS OPER/EQUIP.
- IMPROPER EQUIPMENT
- LEARNER PERMIT
- LI TRANS BY MINOR
- NO LIABILITY POLICY
- OPERATOR UNLICENSEND
- OUT ST DEFECT EQUIPMENT
- OUT ST DPW SIGN/DEVICES
- OUT ST EQUIPMENT VIOLATION
- OUT ST FAIL TO GIVE SIGNAL
- OUT ST FAILURE TO OBEY
- OUT ST FOLLOW TOO CLOSE
- OUT ST IMPROP BACKING
- OUT ST IMPROP ENTRANCE
- OUT ST LEAVE SCENE PROP DAM
- OUT ST OPER UNLICNESE
- OUT ST OPERATING RECKLESSLY
- OUT ST OPR AFTER SUSPENSION
- OUT ST PASS CONDITION
- OUT ST PASS WRONG SIDE
- OUT ST REG SUSPEND/REVOKED
- OUT ST RESTRICTION VIOL
- OUT ST SIGNS
- OUT ST SPEEDING
- OUT ST UNLIC PERSON TO OPER
- REFUSE OBEY POLICE