

The Surchargeable Incident Experience
of Massachusetts Drivers Before and After
Participation in the *DDC-Attitudinal
Dynamics of Driving Course* During the
Period, January through March 1996

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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 second report to the Registry of Motor Vehicles to fulfill the Council's contract 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 1991 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:

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

DDC-ADD is an 8-hour course that is divided into four units of instruction, each two hours long. 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 Reality Therapy and Control 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, over 100,000 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 January 1, 1996, through March 31, 1996. This allows for a six month follow up for each driver in the sample. This study compares the pre-ADD motor-vehicle records of participants with their 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 4,228 drivers who completed the DDC-ADD course. This driver group attended the course from January 1, 1996, through March 31, 1996. The RMV furnished a computerized list containing the motor-vehicle records (MVRs) for the 3,545 identified drivers for the six months before and the six months after DDC-ADD course completion.

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 accidents

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 (Norusis, 1992). 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 incident rates 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 "surchargeable incident(s)." 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 .01 was used for all statistical tests.

Results

The mean age of the 3,545 ADD participants was 28.6 years and, as shown in Table 1, 87% were males. The mean age for male participants was 28.4 years. Within this group, 65% were 21-34 years of age. The mean age for females was 30.0 years. Among them, 65% were in the 21-34 year age group. A minimal number of study group drivers were over 64.

Table 1
Number and Percentage of ADD Course Participants
by Gender and Age

Age Group	Gender				TOTAL	
	Male		Female			
	Number	%	Number	%	Number	%
Under 21	527	17	55	12	582	16
21-24	856	28	88	20	944	27
25-34	1,142	37	204	45	1346	38
35-44	389	13	75	17	464	13
45-64	162	5	25	6	187	5
Over 64	18	<1	4	<1	22	<1
TOTAL	3,094	87	451	13	3,545	100

Table 2 shows that in the six months following exposure to ADD, participants had significantly fewer violations than in the six months before ADD. 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 ADD ranged from an 57% decrease in both major and minor traffic violation rate for females, to 38% decreases in major violations and surchargeable accidents by males. Females had greater post-ADD reductions in the three surchargeable incident categories than did males.

Participants over 64 years exhibited the greatest rate change in minor violations with a 65% reduction, while the 45-64 year group had the largest decrease in major violations (-76%), and the 25 to 34 age group had the largest reduction in surchargeable accidents (-45%).

Table 3 shows that the number of drivers whose records changed from "surchargeable

87% were
21-34
34

Table 2

Mean Number of Before/After Surchargeable Violations and Percentage Change for ADD Participants
By Age and Gender

Gender	Age Groups																				
	Under 21			21-24			25-34			35-44			45-64			Over 64			All Age Groups		
	Before	After	% Chg	Before	After	% Chg	Before	After	% Chg	Before	After	% Chg	Before	After	% Chg	Before	After	% Chg	Before	After	% Chg
Minor Traffic Violations																					
Male	2.54	1.46	-42	1.93	1.08	-44	1.78	0.86	-52	1.87	0.82	-56	1.74	0.78	-55	I.S. ^a	I.S.	I.S.	1.96	1.02	-48*
Female	2.11	1.13	-46	1.85	0.78	-58	1.91	0.74	-61	1.77	0.72	-59	1.64	0.96	-41	I.S.	I.S.	I.S.	1.88	0.80	-57*
Both	2.50	1.43	-43	1.92	1.06	-45	1.80	0.84	-53	1.85	0.80	-57	1.72	0.80	-53	1.68	0.59	-65	1.95	0.99	-49*
Major Traffic Violations																					
Male	0.12	0.11	-8	0.15	0.10	-33	0.17	0.10	-41	0.20	0.09	-55	0.19	0.06	-68	I.S.	I.S.	I.S.	0.16	0.10	-38*
Female	0.05	0.11	+120	0.05	0.05	0	0.17	0.03	-82	0.16	0.11	-31	0.32	0.00	-100	I.S.	I.S.	I.S.	0.14	0.06	-57*
Both	0.12	0.11	-8	0.14	0.09	-36	0.17	0.09	-47	0.19	0.09	-53	0.21	0.05	-76	0.09	0.04	-56	0.16	0.09	-44*
Surchargeable Accidents																					
Male	0.31	0.20	-35	0.20	0.13	-35	0.19	0.11	-42	0.19	0.11	-42	0.20	0.14	-30	I.S.	I.S.	I.S.	0.21	0.13	-38*
Female	0.42	0.22	-48	0.26	0.16	-38	0.28	0.11	-61	0.25	0.17	-32	I.S.	I.S.	I.S.	I.S.	I.S.	I.S.	0.30	0.15	-50*
Both	0.32	0.21	-34	0.20	0.13	-35	0.20	0.11	-45	0.20	0.12	-40	0.22	0.15	-32	I.S.	I.S.	I.S.	0.22	0.13	-41*

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

^a I.S. = Insufficient Sample Size

* p < .005

Table 3

Number of Drivers With Clean Records and Surchargeables Before and After Participation in the DDC-ADD Program for Each of Three Incident Categories

Minor Traffic Violations

		After Training	
		Clean Record	Surchargeable
Before Training	Clean Record	40	457
	Surchargeable	1,607	1,441

Degrees of Freedom = 1, $\chi^2 = 639.6323$, $p < .0001$

Major Traffic Violations

		After Training	
		Clean Record	Surchargeable
Before Training	Clean Record	2,926	191
	Surchargeable	369	59

Degrees of Freedom = 1, $\chi^2 = 55.9446$, $p < .0001$

Surchargeable Accidents

		After Training	
		Clean Record	Surchargeable
Before Training	Clean Record	2,530	335
	Surchargeable	591	89

Degrees of Freedom = 1, $\chi^2 = 70.2214$, $p < .0001$

on in the
incident(s)" to "clean" also increased significantly in the 6 months following exposure to the ADD course. Again, the significant increases in "clean" MVRs appears across the three surchargeable 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. In addition, there may have been a small percentage of drivers whose licenses were either suspended or revoked during the entire one year before training and thus, may not have experienced any incidents before attending the course.

Of all participants, 3,048 (86%) had at least one minor violation in the six months prior to ADD training. Of this number, 1,607 (53%) did not record a minor violation in the following six months.

Some 428 (12%) of all participants had at least one major violation in the six months prior to ADD training. Of this number, 369 (86%) did not record a major violation in the following 6 months. Of the 3,117 participants who did not have a major violation before ADD, only 191 (6%) had a major violation recorded following the course.

Some 680 (19%) of all participants had at least one surchargeable accident in the six months prior to ADD training. Of this number, 591 (87%) did not record a surchargeable accident in the following six months. Of the 2,530 participants who did not have surchargeable accident before ADD, only 335 (13%) had a surchargeable accident recorded following the course.

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 six months after exposure to the DDC-ADD course compared with the six months before.

References

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- Norusis, M.J. (1992). *SPSS/PC+ Version 5.0* [Computer Software]. Illinois: SPSS Inc.
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APPENDIX A

Violation Description Groupings

Appendix A

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
- SUM/CAL TUNL OTHER
- TRAFFIC VIOLATION
- YIELD TO PEDESTRIAN

Minor (continued)

- 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 UNLICENSED
- 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