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A Strategy for Reducing the Impact of Driving Under Influence of Intoxicants in Portland, Oregon

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A Strategy for Reducing the Impact of Driving Under Influence of Intoxicants in Portland, Oregon

FINAL REPORT

City of Portland Office of Transportation
Community and School Traffic Safety Partnership
Portland State University: Intelligent Transportation Systems

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16. Abstract

Driving under the influence of intoxicants (DUII) applies to operating a vehicle under the influence of any substance that can impair driving performance. Nationally and locally there is a strong desire to reduce the societal impacts of this significant social problem. The trend in U.S. alcohol-related motor vehicle crashes was generally decreasing in the mid to late 1980's but has remained fairly flat since the early 1990s. In 1982, approximately 60% of all US traffic fatalities were alcohol-related. By 1994, this had decreased to 43% but in the decade that followed it has changed little. In 2005, nearly 39% of fatal crashes still involved alcohol. This contrasts sharply with the trends in many other peer industrialized countries such as Australia which has seen a 60% drop in the total number of fatal alcohol-involved crashes since 1980. In most U.S. jurisdictions, the trend for alcohol-involved crashes mirrors the disappointing national trends and in some has even been slightly increasing. The reasons for these trends are many but can be found in changing demographics, reduced resources for enforcement, prosecution, and treatment as well as changing public behaviors and attitudes. The objective of this study was to identify tools, techniques and strategies that could help reverse this trend for the Portland metropolitan area. It is clear that the system to prevent, enforce, adjudicate, and treat alcohol-related problems is complex and will require the cooperation and energy of many different stakeholders.

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DISCLAIMER

Errors or inaccuracies are entirely the responsibility of the authors.

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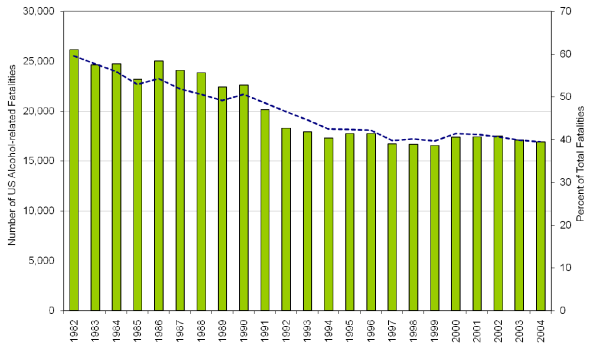
EXECUTIVE SUMMARY

Driving under the influence of intoxicants (DUII) is defined as operating a vehicle under the influence of any substance that can impair driving performance. In the ten year period from 1996-2005, there were 122 motor vehicle, 49 pedestrian, and 9 bicycle alcohol-related fatalities in Portland, Oregon. Over the same period, there were 1,734 reported alcohol-involved injury crashes, many of these life-altering and painful. Using conservative estimates from the National Safety Council, the City of Portland estimates the economic value of these crashes is approximately $767 million. This value does not include the significant public cost to deal with prevention, enforcement, and adjudication of alcohol-involved offenders.

The trend in U.S. alcohol-related motor vehicle crashes was generally decreasing in the mid to late 1980's but has remained fairly flat since the early 1990s. In 1982, approximately 60% of all US traffic fatalities were alcohol-related. By 1994, this had decreased to 43% but in the decade that followed it has changed little. In 2005, nearly 39% of fatal crashes still involved alcohol. This contrasts sharply with the trends in many other peer industrialized countries (such as



Australia) which has seen a 60% drop in the total number of fatal alcohol-involved crashes since 1980. In most U.S. jurisdictions, the trend for alcohol-involved crashes mirrors the disappointing national trends and in some has even been slightly increasing.

The reasons for these trends are many but can be found in changing demographics, reduced resources for enforcement, prosecution, and treatment as well as changing public behaviors and attitudes. Nationally and locally there is a strong desire to reduce the societal impacts of this significant social problem. The objective of this study was to identify tools, techniques and strategies that could help reverse this trend for the Portland metropolitan area. It is clear that the system to prevent, enforce, adjudicate, and treat alcohol-related problems is complex and will require the cooperation and energy of many different stakeholders to make meaningful improvements.

State of the Problem

No single statistic can completely explain the problem, impacts, or trends of driving under the influence of intoxicants. This report attempted to present as many metrics as could reasonably be assembled. Compared with much of the nation, Oregon's current metrics on alcohol-involved crashes are generally below average (as are many other traffic safety-related metrics). In 2005, Oregon ranked 35th by percent of total motor-vehicle fatalities that are alcohol-involved and 32nd in alcohol-involved fatalities per 100,000 persons. In Multnomah County, there were 2.60 alcohol-related fatalities per 100,000 persons which is well below the national average rate of 5.69. In contrast, nearly 46 percent of all fatalities involved alcohol which is above the national average of 39 percent.

To better understand the how DUII related-offenses are handled in the Portland and Multnomah County region, the research team conducted targeted interviews of stakeholders. The team interviewed representatives from Oregon Liquor Control Commission, Oregon Restaurant Association, Portland Department of Transportation, Trauma Nurses Talk Tough, Portland Police Bureau, Ride On Portland, Multnomah County District Attorney, Multnomah County District Court, Multnomah County DUII Intensive Supervision Program, Multnomah County Treatment Providers, and others. The results of these interviews were compiled with existing literature to document the current practices.

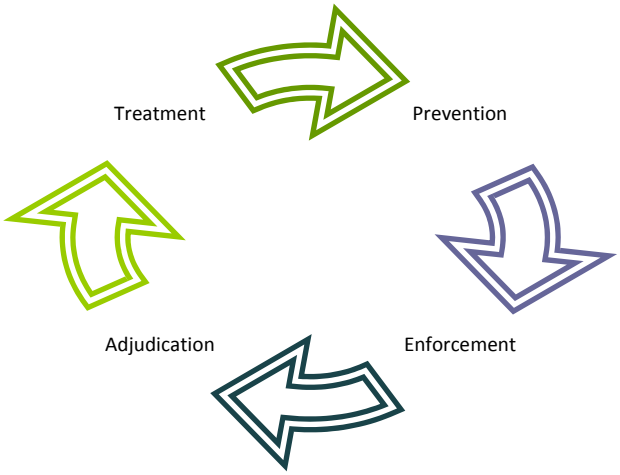
Analysis of data and information gathered during the interviews suggest the following:

- Alcohol-involved crashes are more severe. While fatal crashes account for less than 3% of total reported crashes, nearly 30% of alcohol-involved crashes that are fatal. Not surprisingly, speed and alcohol crashes are often related.

- Younger drivers, particularly male, are a risk group for alcohol-involved crashes. The 21-30 age cohort is overrepresented in alcohol-involved crashes compared to the general population. Males are almost 2 times more likely than females to be involved in a crash and about 3 times more likely than females to be involved in a fatal alcohol-involved crash.
- The majority of people fatally injured an alcohol-involved crash had not been drinking. Approximately 60% of all participants fatally injured in an alcohol-involved crash had a BAC of 0.00.
- Most drivers arrested for DUII are well above the 0.08 blood alcohol concentration that is the per se legal limit in Oregon. The average BAC of those arrested in Portland is approximately 0.15 g/dl.
- As one might expect, the majority of fatal alcohol-involved crashes occur during the weekend late night and early morning hours, with Friday and Saturday being the most common. There was also a small peak noted late Wednesday night and early Thursday morning.
- The average time required for the Portland Police Bureau to process a DUII arrest is approximately 2 hours - taking away valuable police presence. Given that 2,194 arrests were made in 2005 this processing time is nearly equal to 2 officers working full-time for a year just to process DUII offenders.
- Nearly 3,500 DUII arrests (offenses) are made every year in Multnomah County. This is approximately 51.07 offenses per 10,000 people (lower that the statewide rate of 70.26). However, enforcement activity measures as the rate of fatal alcohol-involved crashes per arrests was 150 - the lowest of the three metro counties.
- Nearly all first-time offenders are sent to diversion and court-ordered treatment. The completion rate for those that have been sent to treatment program via diversion is approximately 65%.
- Of those arrested and not eligible for diversion, there are approximately 1,600 to 1,300 convictions per year. The majority of these convictions have been for a first DUII (not counting diversion), however, about one third of all convictions have been for subsequent DUII convictions.

Best Practices

A comprehensive literature review was conducted to identify best practices which have been found to be an effective means of reducing impaired driving. These best practices are organized into four focus areas: prevention, enforcement, adjudication, and treatment. It is clear that modifications that improve or modify one focus area will have impacts in another. For example, an increase in enforcement activities will require more court resources and presumably more treatment resources to process these additional persons.



The review found the following promising best practices:

- Targeted marketing of the impacts and issues of intoxicated driving is more effective that traditional general public service announcements which have not been shown to noticeably change behavior.
- Controlling access to alcohol can be effective since nearly 40% of all impaired driving incidents begin in a licensed establishment. Judiciously managing the number of licenses and establishments, as well cooperative efforts to reward well-managed establishments may be a way to reduce impaired driving. Excise taxes, particularly on beer, have also been shown to have a reduce alcohol sales and consumption.
- Zero-tolerance laws for underage drivers can be effective. Minimum legal drinking age laws and zero tolerance laws were enacted in the 1970s and 1980s, respectively. These laws have been extensively evaluated and have shown reductions in alcohol-involved crashes.
- Well-funded and strategic enforcement is key ingredient to the long-term success of combating impaired driving. Police departments with

dedicated DUII officers have made a significant impact on impaired driving. Saturation patrols coupled with media coverage have also been effective.

- Ignition interlocks – devices which require the driver to pass a breath test prior to starting the vehicle and at random intervals – can be effective at targeting repeat offenders. Ignition interlocks have been shown to reduce violations when compared to a control group and reduce crashes. Electronic monitoring and house arrest are used in many states as a way to free up jail space and allow offenders to reduce recidivism rates.

- Intensive supervision programs have been proven to be somewhat cost effective (varying research results), but effective in reducing recidivism rates by 12% in two years after the start of treatment. ISP program usually only have the resources to handle the most severe cases are handled. ISP program has been known to be effective in contributing to community service, helping offenders find jobs with usually higher paying annual salaries, and freeing up some jail space.

- Treatment programs have been known to be effective in reducing recidivism rates. Research indicates treatment programs that are tailored to the individual where the individual has one point of contact have been observed to be more effective in reducing recidivism.

- Up to 50% of all ER trauma patients have been found to have some alcohol problem. In many trauma centers, motivational interviews are conducted when a patient is released from the hospital and followed up 30 days, to a year later. These interviews have resulted in a reduction in future hospital emergency room visits. In addition, patients who were surveyed reported their alcohol use was reduced compared to a control group.

Recommendations

Based on the data, review of best practices, and stakeholder interviews a matrix was developed to assist the DUII Working Group in determining a suitable set of strategies for reducing the impact of driving under the influence of intoxicants (drugs and alcohol). For each possible strategy, a cost and effectiveness rank of low, medium, or high was assigned. The effectiveness ranking was based on the potential to reduce alcohol-related crashes. The working group then conducted a voting process over the course of two meetings. The following strategies are recommended:

- Re-explore possibility of using pseudo-checkpoints or saturation patrols coupled with intensive media coverage to raise awareness of DUI enforcement.

- Obtain support from Portland Police Bureau upper management for increased enforcement, especially on nights and weekends.

- For qualified low-income clients, increase funding available for treatment services.

- Engage DUII working group to work with juvenile system to identify areas where the group can work to improve the current situation.

- Work to find ways to increase funding for the highly successful DISP program to expand program services to help reduce chronic repeat offenders.

- Work with court system to advocate for ways to enhance efficiency.

- Provide alternative transportation options from drinking establishment for impaired drivers using programs such as RideOn Portland and-or increasing transit options. These efforts should be coupled with a strong, effective marketing campaign.

- Deliver education campaigns in a more appealing manner (social marketing) particularly highlighting minors and other key groups.

- Work to increase the use of ignition interlocks as sanctions.

- Encourage consistent application of motivational interviews for hospital patients upon discharge.

- Continue DUII Working Group efforts and build relationship with Governor's Council on Alcohol and Drug Abuse Program

Next Steps

The DUII Working Group should select a number of items for targeted efforts from the above priority list and help expand these ideas. The Community and School Traffic Safety Partnership should be encouraged to develop and write grants to ODOTs Transportation Safety Division for funding high priority efforts.

1.0 INTRODUCTION

In the United States, there were approximately 42,000 highway-related fatalities in 2003 and nearly forty percent of these crashes occurred in cities (*NHTSA, 2003*). Nationally, nearly 36 percent of these crashes involved the presence of alcohol or other intoxicants. Perhaps even more tragic is that nearly 60 percent of those fatally-injured in an alcohol-involved crash were not the intoxicated participant. These preventable crashes inflict a significant toll on society which extends beyond those fatally injured in these crashes. Injuries, especially life changing ones, can be just as tragic and catastrophic.

The trend in U.S. alcohol-related motor vehicle crashes was generally decreasing in the mid to late 1980's but has remained fairly flat since the early 1990s. In 1982, approximately 60% of all US traffic fatalities were alcohol-related. By 1994, this had decreased to 43% but in the decade that followed it has changed little. In 2005, nearly 39% of fatal crashes still involved alcohol. This contrasts sharply with the trends in many other peer industrialized countries such as Australia which has seen a 60% drop in the total number of fatal alcohol-involved crashes since 1980. In most U.S. jurisdictions, the trend for alcohol-involved crashes mirrors the disappointing national trends and in some has even been slightly increasing. The reasons for these trends are many but can be found in changing demographics, reduced resources for enforcement, prosecution, and treatment as well as changing public behaviors and attitudes. The objective of this study was to identify tools, techniques and strategies that could help reverse this trend for the Portland metropolitan area. It is clear that the system to prevent, enforce, adjudicate, and treat alcohol-related problems is complex and will require the cooperation and energy of many different stakeholders. Public views about the social acceptability of drinking and driving in Oregon have also recently declined slightly. In 2002 about 93% of those surveyed for ODOT *Traffic Safety Attitude Survey* said that drinking and driving was a socially unacceptable behavior. In 2005, only 90% percent of those answered positively.

Compared with much of the nation, Oregon's current status on alcohol-involved crashes is below average (as are many other traffic-safety related metrics). In 2005, Oregon ranked 35th by percent of total alcohol-involved fatalities motor vehicle fatalities and 32nd in alcohol-involved fatalities per 100,000 persons. In Multnomah County, the 2.60 alcohol-related fatalities per 100,000 persons rate is well below the national average of 5.69. However, it is clear that despite these positive national comparisons there exists an opportunity to make significant improvements reducing alcohol-involved crashes. In the ten year period from 1996-2005, there were 122 motor vehicle, 49 pedestrian, and 9 bicycle alcohol-related fatalities. There were 1,734 reported injury alcohol-involved crashes over the same period, many of these life-altering and painful. Using conservative estimates from the National Safety Council, the City of Portland estimates the economic value of these crashes is approximately $767 million (*PDOT, 2006*). This value does not include the significant public cost to deal with prevention, enforcement, and adjudication of alcohol-involved offenders.

While no single statistic can completely explain the problem or trends of driving under the influence of intoxicants these data to motivate the desire to reduce the societal impacts of this

significant social problem. The system to prevent, enforce, and treat alcohol-related problems is complex and involves many different agents. In fact, the problem is so wide-scoping that the complexity itself presents a challenge to improvement. There is a depth of published research on many facets of this problem. This report has attempted to define the state of the problem in the City of Portland, document the current process for dealing with offenders, and identify potential strategies that could be pursued for improvement.

1.1.1 Purpose of Report

In 2005, members on the Community and School Traffic Safety Partnership DUII Working Group identified a need to become more familiar with national best practices to reduce impaired driving. The contents of this report are meant to provide useful quantitative and qualitative information to the DUII Working Group so they can evaluate their current impaired driving initiatives and determine a suitable improvement implementation strategy to further reduce the occurrence of impaired driving.

1.1.2 Scope of the Analysis

The impairment resulting from drugs (both illegal and prescription) are an important and growing concern related to this problem but they are not covered in detail in this report. This is partly due to the greater amount of literature and data on alcohol abuse. However, research has shown a strong link between alcohol abuse and other substances so a majority of the strategies, trend analysis, data, and analysis are still very relevant.

1.1.3 Organization of Report

This report is organized into five main sections following this brief introduction. Chapter 2 includes an analysis of crash data at the federal, state, county, and city level. Chapter 3 documents current efforts in the City of Portland and Multnomah County to reduce impaired driving. Chapter 4 summarizes national best practices which were supported by significant quantitative or qualitative analysis in the literature. Chapter 5 combines the results of all three chapters to develop specific strategies for the working group to consider. These strategies are defined and categorized based on cost and expected effectiveness. Finally, Chapter 6 presents the prioritized strategies forwarded by the DUII Working Group.

2.0 STATE OF THE PROBLEM

Driving under the influence of intoxicants (DUII) applies to any substance that can impair driving performance. However, because a greater amount of literature and collected data exists on alcohol use, the emphasis in this chapter (and report) is typically placed on impaired driving due to alcohol use. It should be noted however that the use of other intoxicants (illegal drugs such as methamphetamines and legal prescription drugs) are of increasing concern and that research shows that there is a strong link between addictive users of alcohol and other drugs.

This chapter begins with a summary of alcohol-involved crash data trends. The chapter continues with a more detailed analysis of crash data, enforcement and other issues such as minors in possession program, court activities, treatment programs. Where possible, data are summarized at the national (United States), state (Oregon urban areas), county (Multnomah County), and city level (City of Portland). International trends (European Union and Australia) are also included wherever applicable to provide a more expansive comparison of alcohol-involved crash trends.

2.1 METHODOLOGY

A performance metric commonly used to quantify the problem of impaired driving is motor-vehicle crashes. The use of crash data are emphasized in this report because it is available at the federal, state, county, and city level and collected using similar reporting procedures. However, crash-related data can only describe a portion of the problem related to enforcing, prosecuting, and treating those involved in alcohol-related motor vehicle crashes. As such other sources relating to enforcement, prosecuting, and treatment data are presented where available.

2.1.1 Data Sources

Several data sources were used in the analysis of federal, state, county and city level alcohol-involved crashes. The sources include:

- National Highway Transportation Safety Administration's (NHTSA) Fatality Analysis Reporting System (FARS);
- Oregon Department of Transportation (ODOT) Statewide Crash Data System (CDS);
- U.S. Census Bureau;
- Oregon Liquor Control Commission (OLCC);
- Portland Police Bureau (PPB);
- Oregon State Police Law Enforcement Data System (LEDS);
- Oregon Judicial Information Network (OJIN);
- Multnomah County Alcohol and Drug Evaluation Program;
- Multnomah County District Attorney's Office;
- DUII Intensive Supervision Program (DISP);

- Legacy Emanuel Hospital Trauma Services;
- Trauma Nurses Talk Tough; and
- Data from industrialized western countries was obtained through various literature sources.

2.1.2 Definitions

The Oregon Department of Transportation (ODOT) Statewide Crash Data System (CDS); defines an alcohol-involved crash as those crashes where at least one active participant (a driver, pedestrian, or pedalcyclist) in a position of control during the crash, used alcohol as indicated by a police report or had a positive BAC test result (measurable or estimated blood alcohol concentration (BAC) of 0.01 grams per deciliter (g/dl) or above) as indicated by any police report, crime lab report, or medical examiner toxicology report (*ODOT, 2006*).

The National Highway Transportation Safety Administration's (NHTSA) Fatality Analysis Reporting System (FARS) defines an alcohol-related or alcohol-involved crash as "a crash where "either a driver or a non-motorist (usually a pedestrian) had a measurable or estimated blood alcohol concentration (BAC) of 0.01 grams per deciliter (g/dl) or above. NHTSA defines a nonfatal crash as alcohol-related or alcohol-involved if police indicate on the police accident report that there is evidence of alcohol present. The code does not necessarily mean that a driver or non-occupant was tested for alcohol" (*FARS, 2008*).

2.2 ALCOHOL-INVOLVED CRASH TRENDS

This section begins with an overview of the number and percentage of alcohol-involved crashes from 1995 – 2004 nationally (United States), internationally, and Oregon (statewide and urban areas), Multnomah County, and the City of Portland. Fatal and injury, or non-fatal, crashes are analyzed. Concluding this section is a more in depth analysis of the crash data by the causes and contributing factors of the fatal and injury only alcohol-involved crashes.

2.2.1 National Trends

The trends in both the number and percent of total fatalities that are alcohol-related has remained relatively flat since the early 1990s in the United States as shown in Figure 1. In 1982, 59.6% of all US traffic fatalities were alcohol related. This has dropped to 42.5% by 1994. Ten years later it has changed little and approximately 39.5% of fatal crashes involved alcohol. Looking at state-level performance reveals that there are significant differences among states as shown in Table 1. In terms of percentage of total crashes for 2005, the District of Columbia had the worst record with nearly 55% of the total crashes related to alcohol. Oregon ranked 35th with 36% of total motor-vehicle fatalities that were alcohol-involved. While all metrics expressed as a rate must be interpreted with caution, the worst state was Montana with nearly 13.27 fatalities per 100,000 persons. Oregon ranked 32nd in fatalities with 4.86 per 100,000 persons.

The same data in Table 1 are presented for five years in Table 2 for Oregon counties. It is clear that there is also a significant difference between Oregon counties. As shown in Table

2, Multnomah County was above the national average for percent of fatalities (46%) that were alcohol-involved. However, on a per population basis Multnomah County is well below average. Figure 2 shows thematic maps of *a*) average county fatality rate per 100,000 population and *b*) average percent of total alcohol-involved fatalities. The total alcohol fatalities over the 5 years are shown in the scaled-bubbles. In both maps, light colors (green) indicate better performance. Benton, Grant, Union, and Yamhill counties are in the best performance category for both metrics. However, both the average populations and total crashes are well below that of Multnomah county. Of the tri-county metropolitan areas Washington County has best alcohol involved metrics (ranked 26th and 34th).

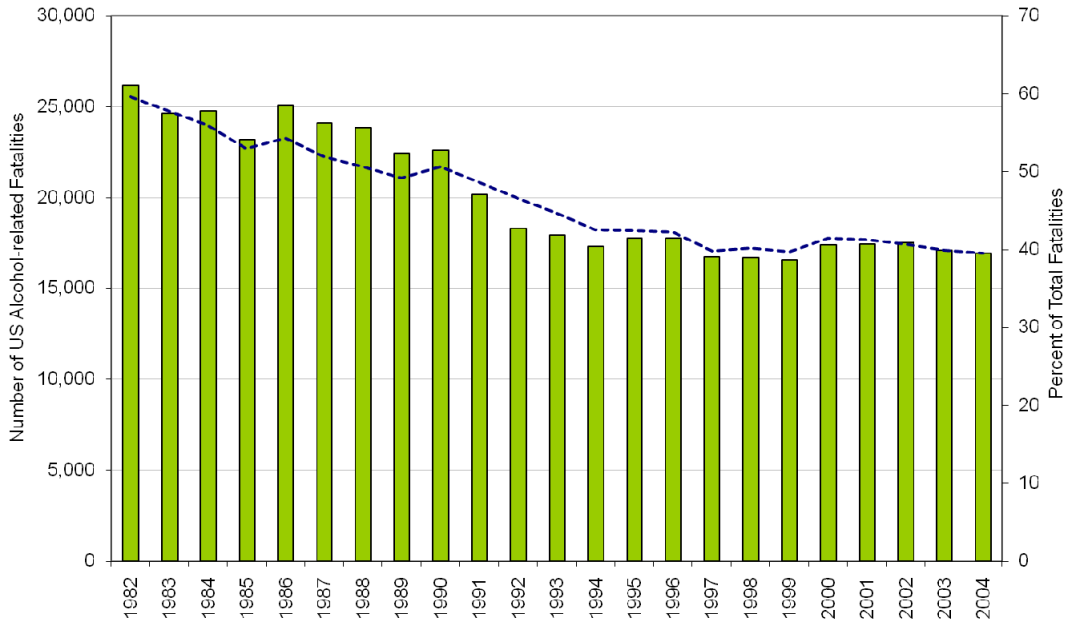


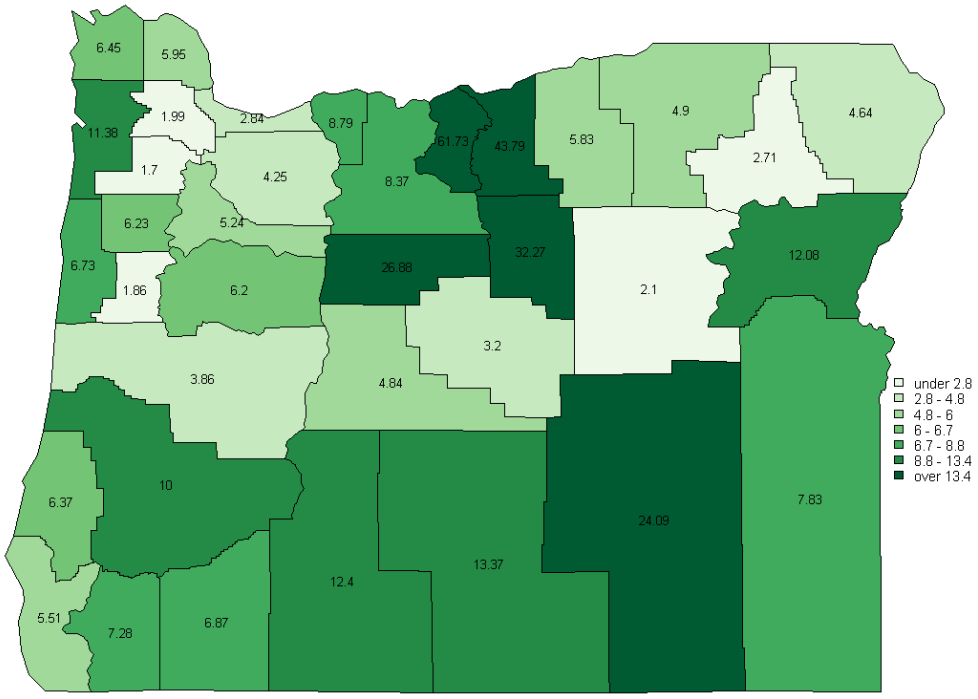
Figure 1: US Alcohol-Related Crash Trends

Table 1: 2005 State Crash Data

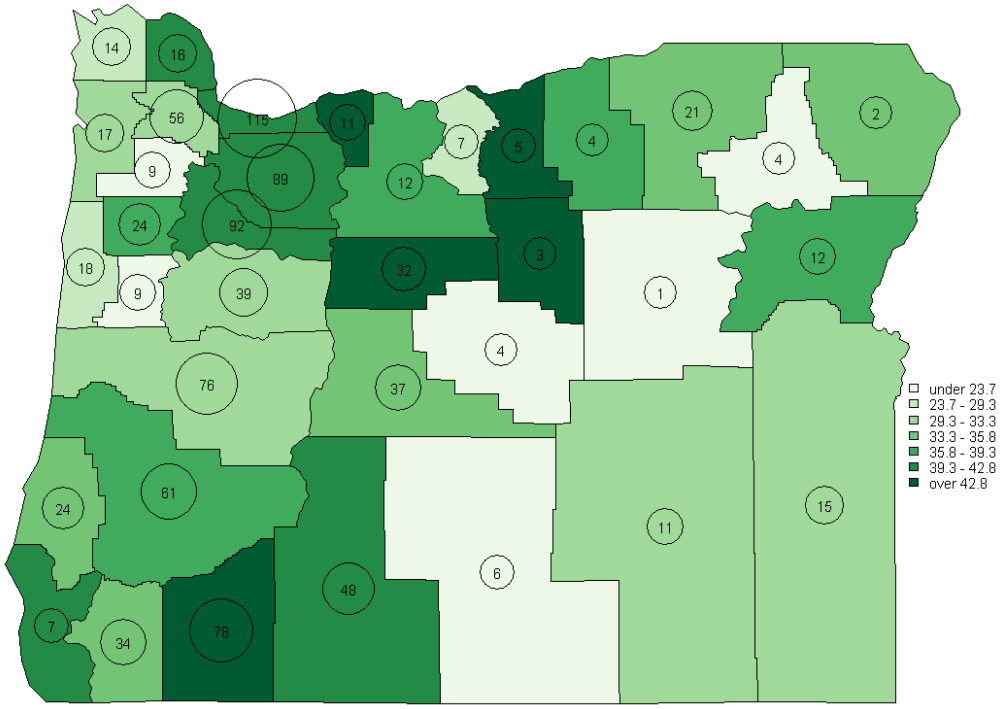
State	Total Fatalities	Total Alcohol Fatalities	Percent	Rank by Percent	Population	Alcohol Fatalities per 100,000 persons	Rank
Alabama	1,131	423	37	29	4,548,327	9.30	7
Alaska	72	35	48	6	663,253	5.28	27
Arizona	1,177	492	42	14	5,953,007	8.26	13
Arkansas	648	233	36	35	2,775,708	8.39	11
California	4,329	1719	40	19	36,154,147	4.75	33
Colorado	606	244	40	19	4,663,295	5.23	28
Connecticut	274	120	44	11	3,500,701	3.43	47
Delaware	134	66	49	4	841,741	7.84	15
DC	48	26	55	1	582,049	4.47	40
Florida	3,543	1471	42	14	17,768,191	8.28	12
Georgia	1,729	545	32	47	9,132,553	5.97	24
Hawaii	140	71	51	2	1,273,278	5.58	25
Idaho	275	89	32	47	1,429,367	6.23	23
Illinois	1,361	580	43	12	12,765,427	4.54	38
Indiana	938	320	34	44	6,266,019	5.11	31
Iowa	450	118	26	50	2,965,524	3.98	45
Kansas	428	151	35	40	2,748,172	5.49	26
Kentucky	985	313	32	47	4,172,608	7.50	17
Louisiana	955	394	41	17	4,507,331	8.74	10
Maine	169	59	35	40	1,318,220	4.48	39
Maryland	614	235	38	26	5,589,599	4.20	42
Massachusetts	442	171	39	23	6,433,367	2.66	50
Michigan	1,129	421	37	29	10,100,833	4.17	43
Minnesota	559	201	36	35	5,126,739	3.92	46
Mississippi	931	371	40	19	2,908,496	12.76	3
Missouri	1,257	515	41	17	5,797,703	8.88	9
Montana	251	124	49	4	934,737	13.27	1
Nebraska	276	91	33	46	1,758,163	5.18	29
Nevada	427	159	37	29	2,412,301	6.59	21
New Hampshire	166	60	36	35	1,306,819	4.59	36
New Jersey	748	263	35	40	8,703,150	3.02	48
New Mexico	488	189	39	23	1,925,985	9.81	6
New York	1,429	524	37	29	19,315,721	2.71	49
North Carolina	1,534	549	36	35	8,672,459	6.33	22
North Dakota	123	58	47	7	634,605	9.14	8
Ohio	1,323	505	38	26	11,470,685	4.40	41
Oklahoma	802	283	35	40	3,543,442	7.99	14
Oregon	**488**	**177**	**36**	**35**	**3,638,871**	**4.86**	**32**
Pennsylvania	1,616	636	39	23	12,405,348	5.13	30
Rhode Island	87	43	50	3	1,073,579	4.01	44
South Carolina	1,093	464	42	14	4,246,933	10.93	4
South Dakota	186	80	43	12	774,883	10.32	5
Tennessee	1,270	464	37	29	5,955,745	7.79	16
Texas	3,504	1569	45	8	22,928,508	6.84	19
Utah	282	37	13	51	2,490,334	1.49	51
Vermont	73	29	40	19	622,387	4.66	35
Virginia	947	347	37	29	7,564,327	4.59	37
Washington	647	294	45	8	6,291,899	4.67	34
West Virginia	374	126	34	44	1,814,083	6.95	18
Wisconsin	815	369	45	8	5,527,644	6.68	20
Wyoming	170	65	38	26	508,798	12.78	2
USA	**43,443**	**16,885**	**39**		**296,507,061**	**5.69**	

Table 2: 2000-2005 Oregon County Summary

County	Average Pop.	Total Alcohol Fatalities						Total Fatalities						% of Alcohol-Involved	Alcohol Fat. per 100,000 persons	Rank	Rank
		2000	2001	2002	2003	2004	2005	2000	2001	2002	2003	2004	2005				
Baker	16,600	0	1	2	0	3	6	2	4	8	4	4	11	36.36	12.08	12	8
Benton	80,400	1	2	1	1	2	2	10	5	10	4	5	4	23.68	1.86	31	35
Clackamas	350,900	24	17	12	12	8	16	42	34	32	40	23	41	41.98	4.25	9	28
Clatsop	36,200	3	3	1	1	2	4	8	14	5	3	9	12	27.45	6.45	30	17
Columbia	44,900	2	4	4	1	3	2	2	15	5	3	4	9	42.11	5.95	8	21
Coos	62,800	2	4	5	7	3	3	12	11	10	15	14	10	33.33	6.37	20	18
Crook	20,500	0	0	2	1	0	1	8	2	4	5	2	4	16.00	3.20	34	30
Curry	21,200	0	1	0	4	2	0	2	1	4	6	4	0	41.18	5.51	10	23
Deschutes	128,900	6	8	6	8	3	6	15	19	16	22	17	19	34.26	4.84	18	26
Douglas	101,700	12	9	6	9	15	10	32	27	24	26	29	31	36.09	10.00	15	10
Gilliam	1,900	1	0	0	1	3	0	2	0	0	2	3	4	45.45	43.79	3	2
Grant	7,800	1	0	0	0	0	0	2	2	1	2	4	0	9.09	2.10	36	33
Harney	7,600	3	6	0	0	2	0	8	10	3	5	3	5	32.35	24.09	22	5
Hood River	20,700	0	1	0	3	6	1	2	4	3	4	7	3	47.83	8.79	1	11
Jackson	188,100	5	11	10	16	23	13	21	27	20	28	44	32	45.35	6.87	4	15
Jefferson	19,800	5	4	4	9	5	5	14	8	12	14	7	14	46.38	26.88	2	4
Josephine	77,800	4	7	5	9	3	6	17	18	10	20	17	13	35.79	7.28	17	14
Klamath	64,500	7	7	10	5	15	4	13	20	22	20	23	24	39.34	12.40	11	7
Lake	7,500	1	4	1	0	0	0	5	8	9	0	2	4	21.43	13.37	32	6
Lane	329,300	20	11	13	11	9	12	50	43	32	46	37	35	31.28	3.86	24	29
Lincoln	44,600	7	2	2	2	1	4	10	13	16	10	5	11	27.69	6.73	29	16
Linn	104,800	8	6	5	6	8	6	17	21	14	27	18	27	31.45	6.20	23	20
Malheur	31,900	1	1	2	9	0	2	5	5	6	17	6	9	31.25	7.83	25	13
Marion	293,500	25	10	11	14	20	12	43	37	28	36	37	34	42.79	5.24	6	24
Morrow	11,500	1	0	1	2	0	0	3	2	3	2	1	0	36.36	5.83	12	22
Multnomah	**675,600**	**14**	**22**	**16**	**24**	**23**	**16**	**33**	**48**	**46**	**56**	**46**	**40**	**42.75**	**2.84**	**7**	**31**
Polk	64,000	2	3	3	7	5	4	10	9	10	17	11	10	35.82	6.23	16	19
Sherman	1,900		0	1	3	2	1	3	1	8	7	2	3	29.17	61.73	28	1
Tillamook	24,800	0	1	3	5	5	3	2	13	10	9	12	12	29.31	11.38	27	9
Umatilla	71,400	2	4	6	2	4	3	8	12	10	11	11	10	33.87	4.90	19	25
Union	24,700	0	0	2	2	0	0	2	5	3	6	5	0	19.05	2.71	33	32
Wallowa	7,200	1	0	0	0	0	1	2	1	0	0	2	1	33.33	4.64	20	27
Wasco	23,800	3	4	2	1	1	1	3	7	6	9	3	5	36.36	8.37	12	12
Washington	467,800	11	9	5	6	10	15	33	34	36	27	31	30	29.32	1.99	26	34
Wheeler	1,500		1		1		1	0	1	0	3	1	2	42.86	32.27	5	3
Yamhill	87,800	1	1	2	2	1	2	10	6	10	6	7	19	15.52	1.70	35	36
TOTALS	**3,525,900**	**173**	**164**	**143**	**184**	**187**	**162**	**451**	**487**	**436**	**512**	**456**	**488**	**35.80**	**28.73**		



A – Average Alcohol-Involved Fatalities per 100,000 Population, 2000-2005

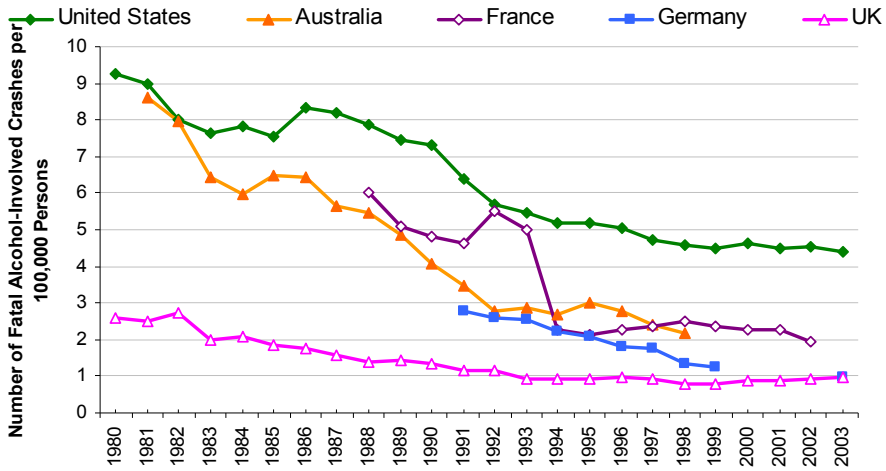


B – Average Percent of Total Alcohol-Involved Fatalities (Total Alcohol Fatalities in Bubbles), 2000-2005

Figure 2: Oregon Alcohol-Involved Fatalities Metric, 2000-2005

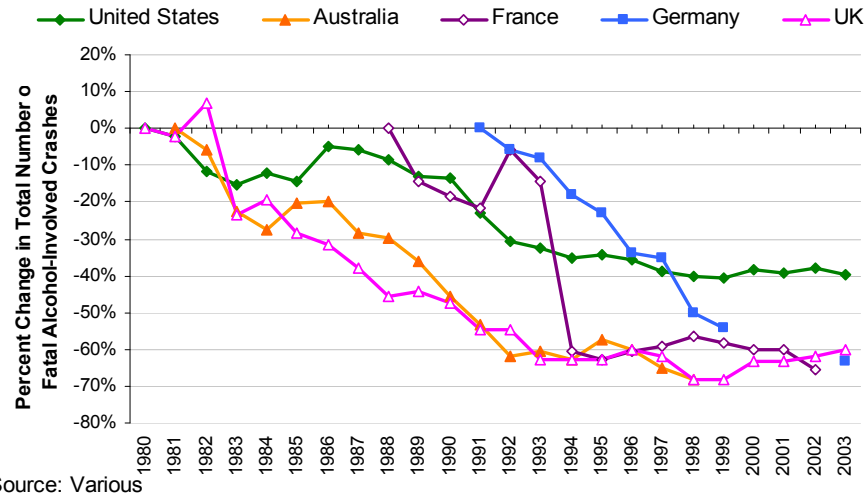
2.2.2 International Trends

Direct comparison of alcohol-related crash trends across countries is challenging because of different definitions and reporting procedures. However, some comparison is possible if data are normalized. Where data were available, comparisons of US trends to peer industrialized countries were made. Figure 3a indicates the total number of fatal alcohol-involved crashes per 100,000 persons based on the total population of each western industrialized country. The rate in the United States exceeds all other countries in numbers of fatal alcohol-involved crashes per 100,000 persons. Figure 3b shows the percentage change since the first recording year of fatal alcohol-involved crashes in each western industrialized country. These figures highlight that some counties (particularly Australia) have been able to positively impact these metrics.



Source: Various

A- Total Number of Fatal Alcohol-Involved Crashes per 100,000 Persons



Source: Various

B - Percent Change Since First Data Year in Total Number of Fatal Alcohol-Involved Crashes

Figure 3 International Comparison

2.2.3 Oregon Trends

Fatal alcohol-involved crash trends for Oregon urban areas, Multnomah County and the City of Portland are displayed in Figure 4, 5 and 6. In Figure 4, the percent of total fatal crashes that are alcohol-involved crashes is shown. Overall, in all three jurisdictions, the percent of total fatal crashes that are alcohol-involved crashes fluctuates, increasing in the late 1990s, decreasing in the 2001, and increasing again in 2003. The ten year trend for the three jurisdictions indicates the average percent of total fatal crashes that are alcohol-involved crashes is approximately 40% or 46, 20, and 15 crashes per year for the three jurisdictions, respectively.

Figure 5 and 6 displays the total number per 100,000 persons and percent change since 1995 of fatal alcohol-involved crashes. In Figure 5, the trend in total number of fatal alcohol-involved crashes per 100,000 persons matches the declining trend for western industrialized countries (Figure 3A) with the exception of an increase starting 1995 and 2003. Figure 6 displays the percent change since 1995 in total number of fatal alcohol-involved crashes for Oregon urban areas, Multnomah County, and the City of Portland. In all three jurisdictions, the trend in percent change in total number of fatal alcohol-involved crashes rises starting 1995, declines starting 1998, and rises again in 2002.

Data from all Oregon urban areas are contrasted to Multnomah County and the City of Portland in Figure 7, 8 and 9. The ten year trend for total percent share of injury only crashes that are alcohol-involved is displayed in Figure 7. The percent share of injury only crashes that are alcohol-involved holds steady at approximately 2%, or approximately 280, 111, and 92 crashes, respectively, for the three jurisdictional areas. To put the problem in perspective with respect to the population, Figure 8 indicates the total number of injury only alcohol-involved crashes remains at about 10 to 20 crashes per 100,000 persons with the exception of 30-40 crashes in 1996.

Figure 9 shows the percent change in total number of injury only alcohol-involved crashes since 1995. With the exception of a spike in 1996 and 2003, the percent change since 1995 in total number of injury only alcohol-involved crashes has remained relatively the same at about a 20% decrease in total number of alcohol-involved crashes since 1995. Compared to the percent change in total number of fatal alcohol-involved crashes since 1995 (Figure 7), the rate for injuries shows decreases while the rate for fatalities shows increases since 1995. Furthermore, the rates fluctuate more for fatal than injury only alcohol-involved crashes.

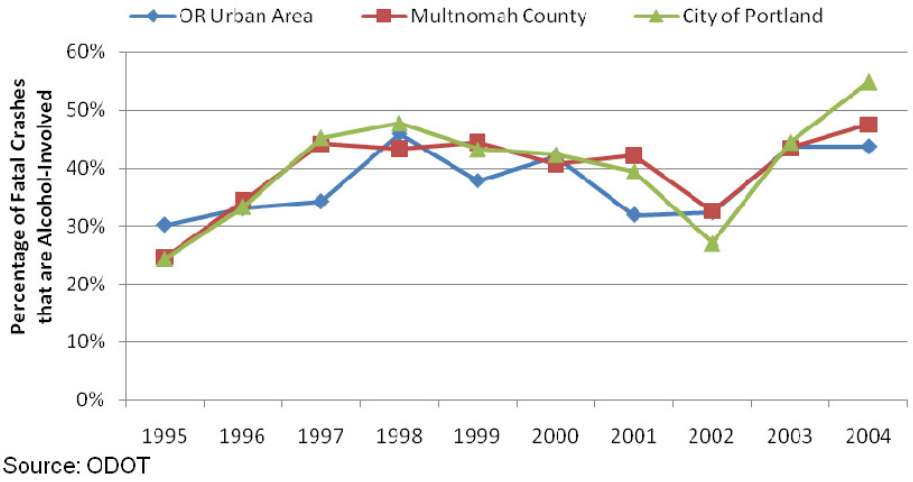


Figure 4: Percent Share of All Fatal Crashes that are Alcohol-Involved

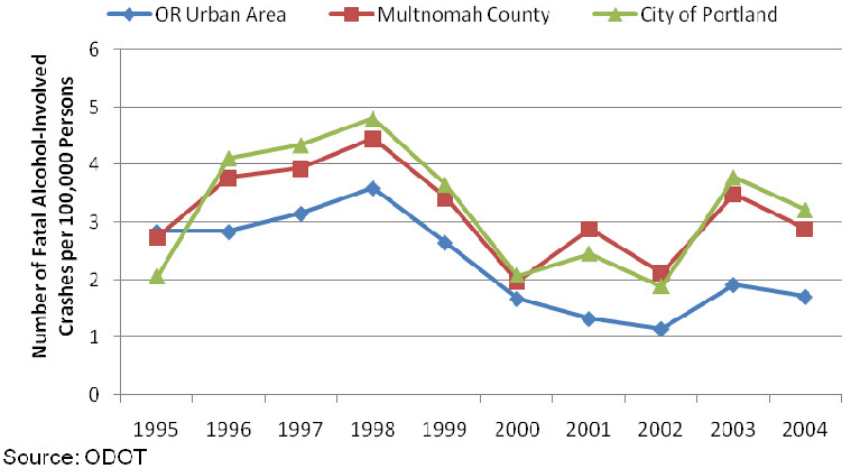


Figure 5: Total Number of Fatal Alcohol-Involved Crashes per 100,000 Persons

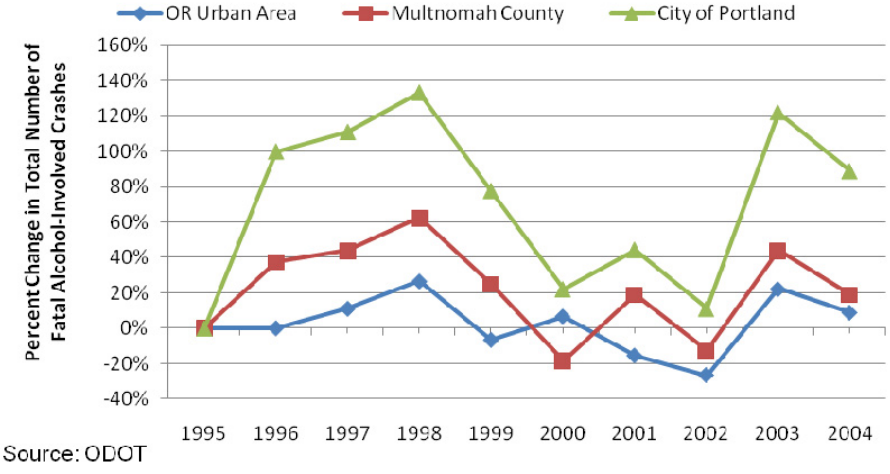
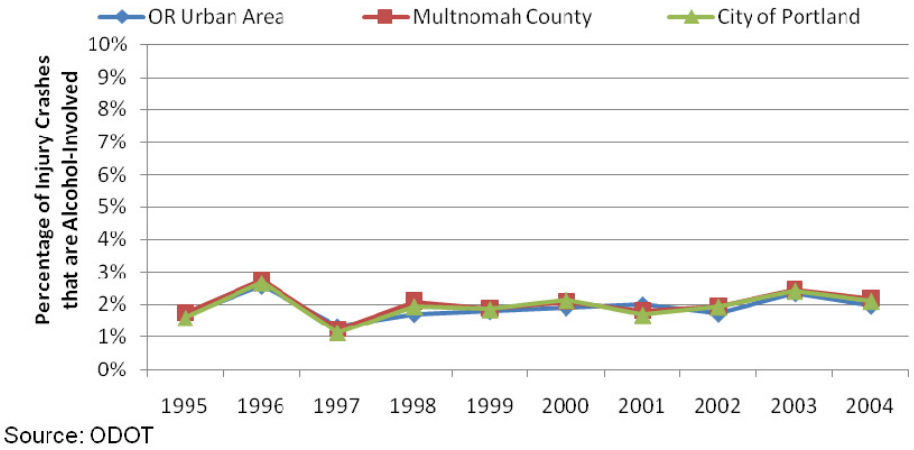
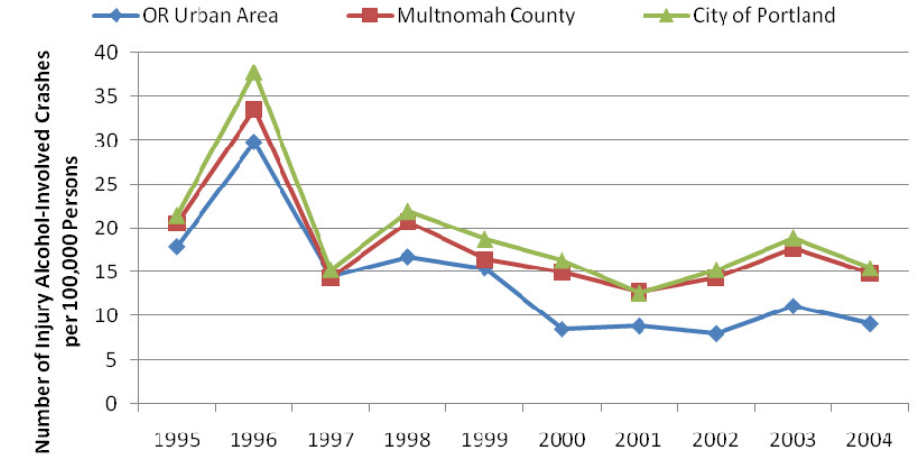


Figure 6: Percent Change in Total Number of Fatal Alcohol-Involved Crashes Since 1995



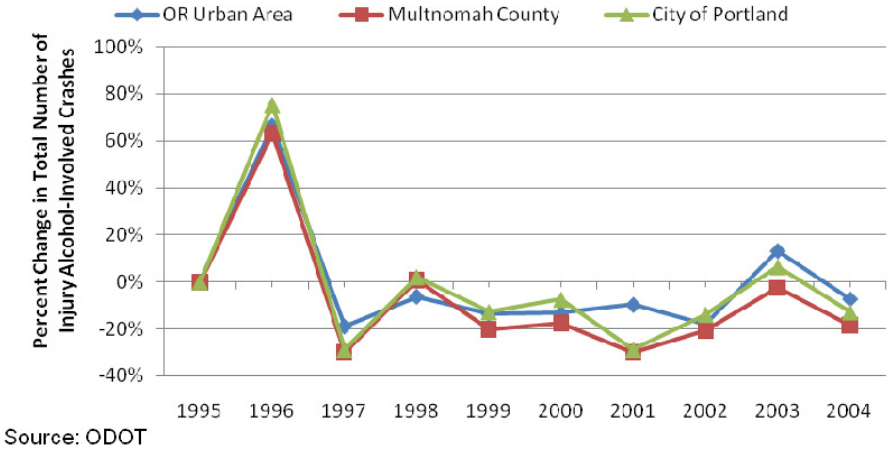
Source: ODOT

Figure 7: Percentage Share of All Injury Crashes that are Alcohol-Involved



Source: ODOT

Figure 8: Total Number of Injury Alcohol-Involved Crashes per 100,000 Persons



Source: ODOT

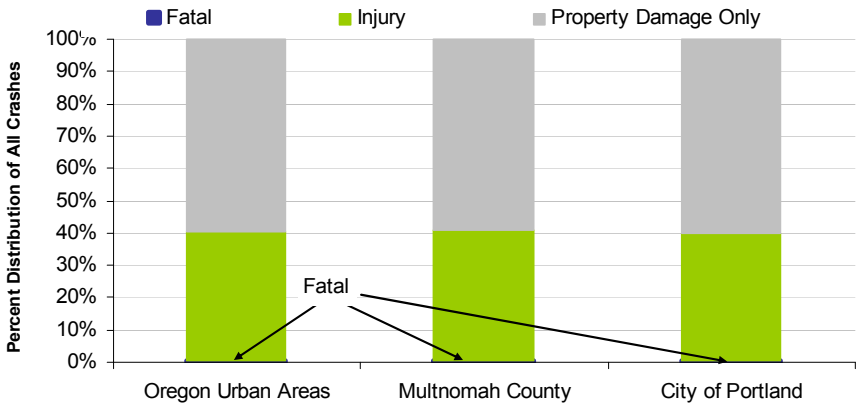
Figure 9: Percent Change in Total Number of Injury Only Alcohol-Involved Crashes Since 1995

2.3 CRASH ANALYSIS

2.3.1 Severity

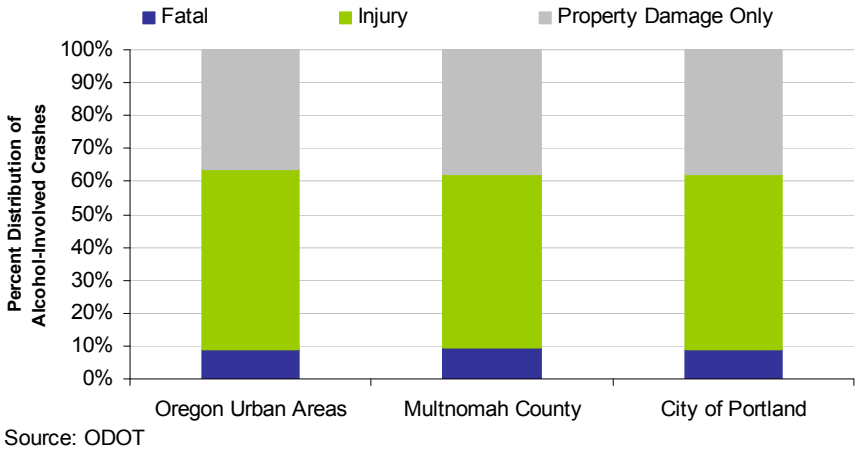
Crash data in the United States is typically categorized in three crash severity types. These severity types, in decreasing order of severity, include fatal, injury only, and property damage only. In this section, crash severity data are presented on the crash severity types for all crashes and alcohol-involved crashes.

Figure 10 and 11 show the breakdown of the crash severity types in Oregon urban areas, Multnomah County, and the City of Portland. It is clear from comparing the distribution of crashes by crash severity between the two figures that alcohol-involved crashes are typically more severe. As shown in Figure 10, the share of all crashes that is fatal is approximately 0.34%, 0.37%, and 0.32% respectively in Oregon urban areas, Multnomah County, and City of Portland. However, for alcohol-involved crashes as shown in Figure 11, the share of all alcohol-involved crashes that is fatal is 8.99%, 9.32%, and 8.88% respectively for the same three jurisdictions.



Source: ODOT

Figure 10: Percentage Distribution of All Crashes by Crash Severity Type, 1995-2004



Source: ODOT

Figure 11: Percentage Distribution of Alcohol-Involved Crashes by Crash Severity Type, 1995-2004

2.3.2 Causes and Contributing Factors of Crashes

Causes and contributing factors of fatal and injury only alcohol-involved crashes include driver error and collision type variables for impaired drivers. Figures 12-17 displays the percentage of all drivers in a fatal and injury only alcohol-involved crash by impaired driver error and collision type in Oregon urban areas, Multnomah County, and the City of Portland. Data in these figures display the most frequently occurring driver errors. The total number of impaired drivers and those excluded from the figures (those driver errors with low frequency percentages), are noted in the figures.

Impaired driver data were used for the analysis because they are typically the drivers who are the striking vehicle in an alcohol-involved crash and are the group of concern. Because the impaired drivers are those only with a positive BAC level (as indicated in the ODOT CDS), the total number of drivers is much less than total number of drivers involved in an alcohol-involved crash or total number of alcohol-involved crashes. The data presented in this section will only indicate the possible causes of alcohol-involved crashes from the perspective of impaired drivers with positive BAC levels.

Figure 12, 14, and 16 display the percentage of impaired drivers in a fatal and injury only alcohol-involved crash by driver error for Oregon urban areas, Multnomah County, and the City of Portland. The trends for the three jurisdictional areas are similar. Not surprisingly, speed and alcohol-involved crashes are closely associated, For fatal alcohol-involved crashes, "BASCRULE", or driving too fast for conditions, is the most frequent contributing cause for close to 50% of all driver errors. This is followed by a related driver error, speed, of approximately 10% of all driver errors. For injury only alcohol-involved crashes, "BASCRULE" also is the most frequent contributing cause of 24% to 30% of all driver errors. The second most frequent impaired driver error for fatal alcohol-involved crashes is rear-ending crashes of approximately 18% in all three jurisdictions.

Figure 13, 15, and 17 display the percentage of drivers in a fatal and injury only alcohol-involved crash by collision type in Oregon urban areas, Multnomah County, and the City of Portland. For fatal alcohol-involved crashes, the most frequent collision type is hitting a fixed object of approximately 50% in all three jurisdictions. For injury only alcohol-involved crashes, the most frequent collision type is rear-ending of up to 30%, followed closely by hitting a fixed object of just over approximately 20%, and turning or angle collision of approximately 15%. The collision types are more uniformly distributed among turning and angle collision crashes in the City of Portland and Multnomah County than in Oregon urban areas.

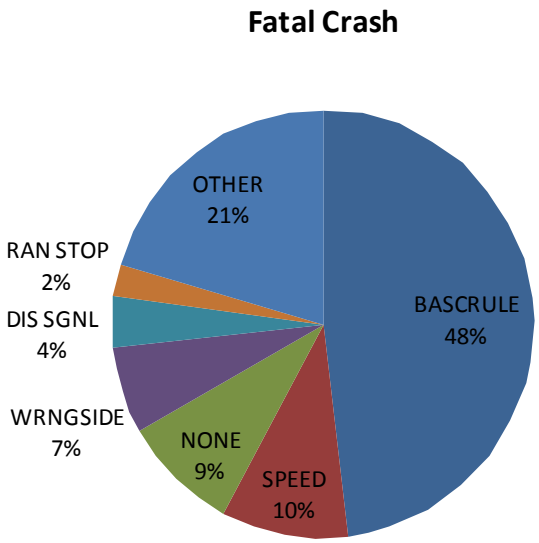
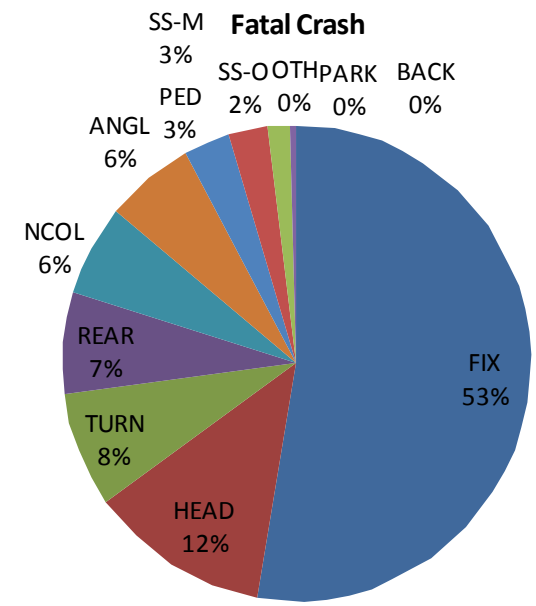
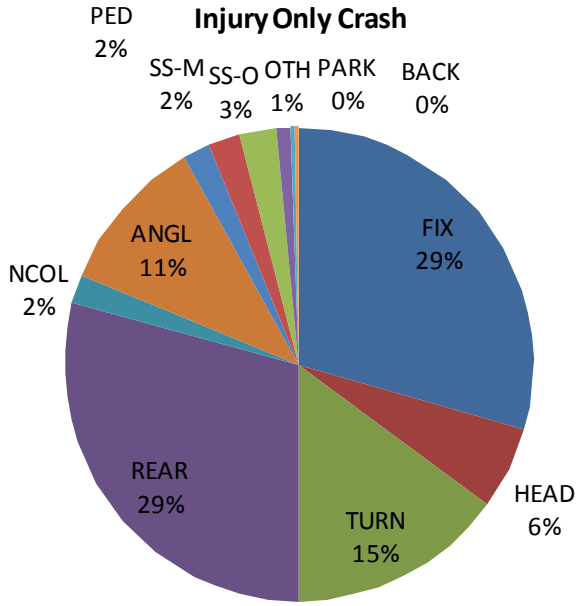


Figure 12: Oregon Urban Areas - Percentage of Impaired Drivers in an Alcohol-Involved Crash by Driver Error, 1995-2004 (Fatal Crashes -> Total Impaired Drivers = 89)



Source: ODOT



Source: ODOT

Figure 13: Oregon Urban Areas - Percentage of Impaired Drivers in an Alcohol-Involved Crash by Collision Type, 1995-2004 (Fatal Crashes -> Total Impaired Drivers = 258, Injury Only Crashes -> Total Impaired Drivers = 316)

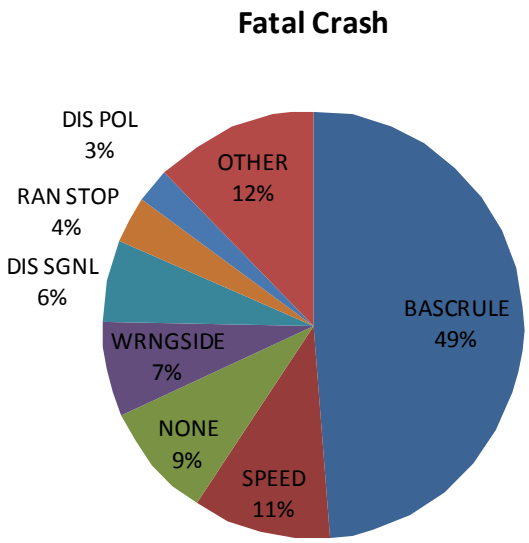


Figure 14: Multnomah County - Percentage of Impaired Drivers in an Alcohol-Involved Crash by Driver Error, 1995-2004 (Fatal Crashes -> Total Impaired Drivers =113, 1 excluded)

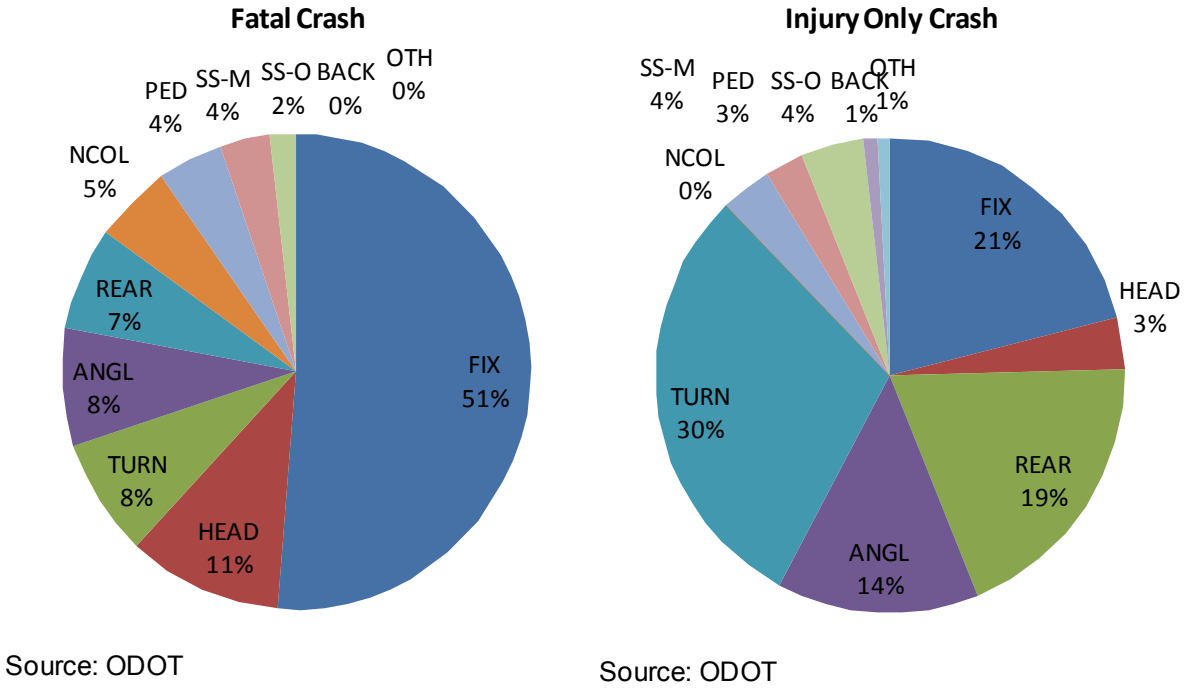


Figure 15: Multnomah County - Percentage of Impaired Drivers in an Alcohol-Involved Crash by Collision Type, 1995-2004 (Fatal Crashes -> Total Impaired Drivers = 113, Injury Only Crashes -> Total Impaired Drivers = 114)

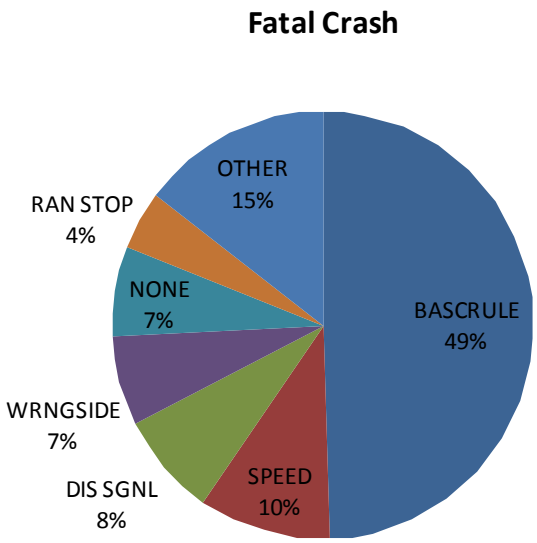


Figure 16: City of Portland - Percentage of Impaired Drivers in an Alcohol-Involved Crash by Driver Error, 1995-2004 (Fatal Crashes -> Total Impaired Drivers = 89)

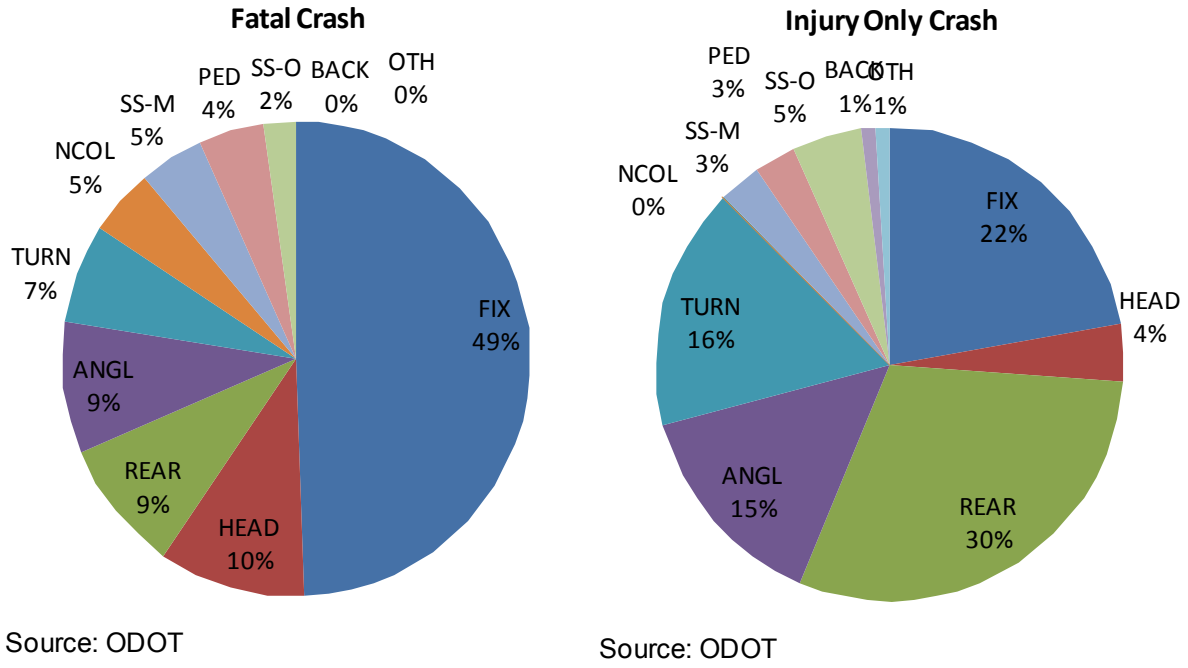


Figure 17: City of Portland - Percentage of Impaired Drivers in an Alcohol-Involved Crash by Collision Type, 1995-2004 (Fatal Crashes -> Total Impaired Drivers = 89, Injury Only Crashes -> Total Impaired Drivers = 103)

2.3.3 Analysis of the Impaired Driver

Figure 18 displays the percentage of impaired drivers by age cohort in a fatal alcohol involved crash in Oregon urban areas, Multnomah County, and City of Portland. In Figure 19, a histogram of the total population that is over age 15 by age group is shown. It is clear from the figures that the age cohort with the highest percentage of impaired drivers involved in a fatal alcohol-involved crash is the 21-25 age cohort. This cohort is involved in approximately 22% of fatal alcohol crashes, yet represents less than 9% of the population. The 26-30 age group is similarly overrepresented.

Figure 20 and 21 displays the total number of impaired drivers in fatal alcohol-involved crashes by gender. The analysis was conducted using FARS data. The total number of impaired drivers in the United States and Oregon statewide per year is approximately 56,500 and 640, respectively. The percentage of all impaired drivers in the United States and Oregon statewide, impaired drivers involved in a fatal alcohol-involved crash who are male is approximately 70%. Females comprise only approximately 25% or approximately 15,000 and 150 impaired drivers, respectively, of all impaired drivers in fatal alcohol-involved crashes. There are almost three times more impaired drivers who are males than females involved in a fatal alcohol-involved crash.

ODOT data were used to calculate the percent of impaired drivers in a fatal alcohol-involved crash by gender in Figure 22. The total number of impaired drivers for Oregon urban areas, Multnomah County, and City of Portland was 258, 113, and 89 impaired drivers from 1995-2004. The percentage of impaired drivers in an alcohol-involved crash that is male is a little above 80% for the three jurisdictional areas. This is approximately 10% more than the percentage of males at the statewide and national level and they are clearly overrepresented.

Data analysis was not conducted for age at the national and international levels. The driving history of offenders, or impaired drivers, including the status of the impaired driver's license and how often they were arrested with a suspended were not easily available to conduct an analysis of impaired drivers by license status or other measures. These data are available but require a special request from the Department of Motor Vehicles (DMV).

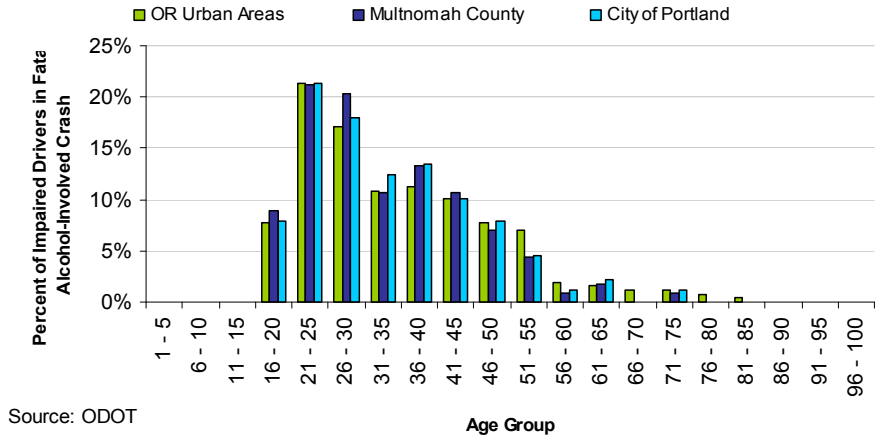
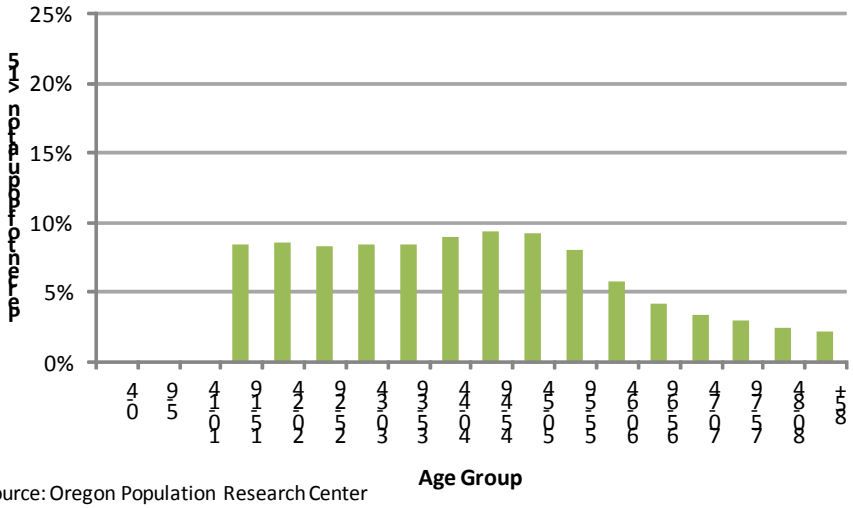
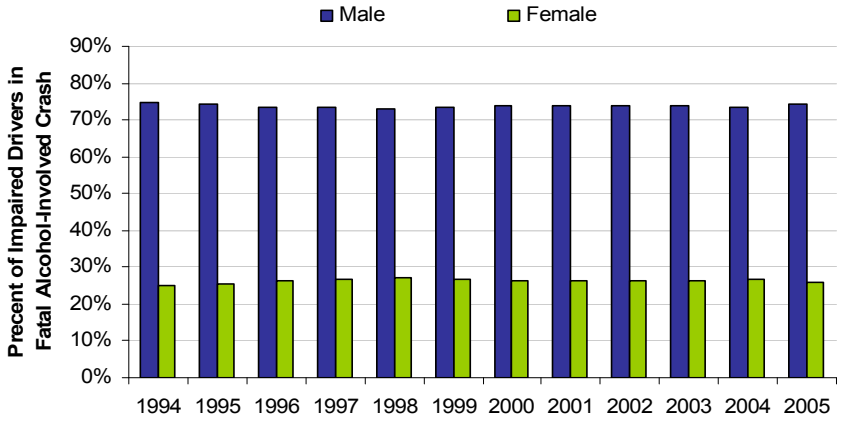


Figure 18: Percentage of Impaired Drivers in a Fatal Alcohol-Involved Crash by Age Group – Oregon Urban Areas, Multnomah County, and City of Portland, 1995-2004



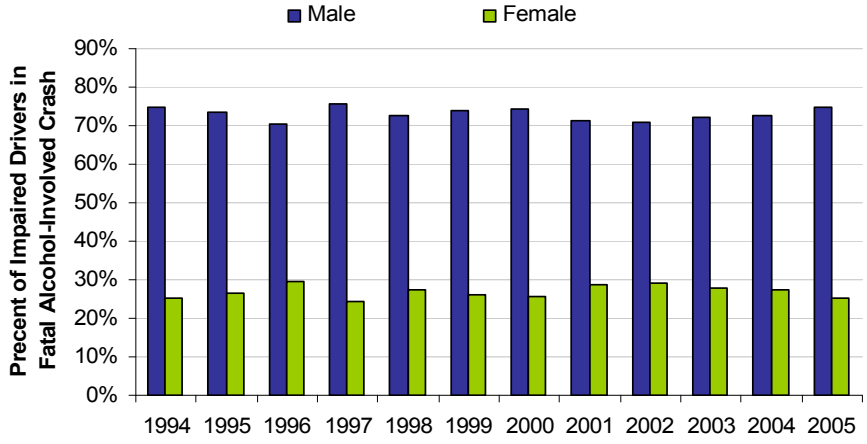
Source: Oregon Population Research Center

Figure 19: Percentage of Population > 15 years, 2005



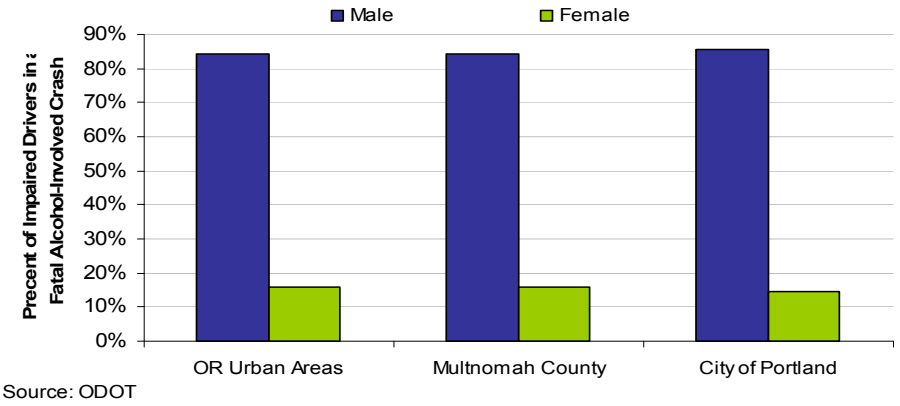
Source: FARS

Figure 20: Percentage of Impaired Drivers in the United States in a Fatal Alcohol-Involved Crash by Gender



Source: FARS

Figure 21: Total Number of Impaired Drivers in Oregon Statewide in a Fatal Alcohol-Involved Crash by Gender



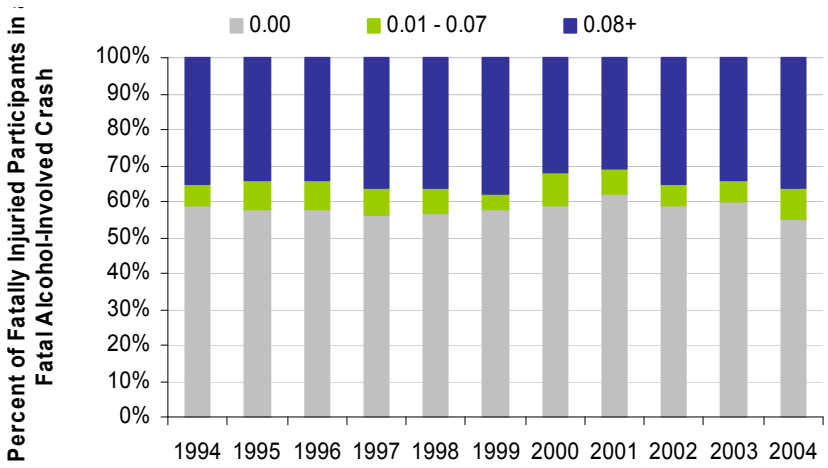
Source: ODOT

Figure 22: Percent of Impaired Drivers in a Fatal Alcohol-Involved Crash by Gender - Oregon Urban Areas, Multnomah County, and City of Portland, 1995-2004

2.3.4 Analysis of All Crash Participants

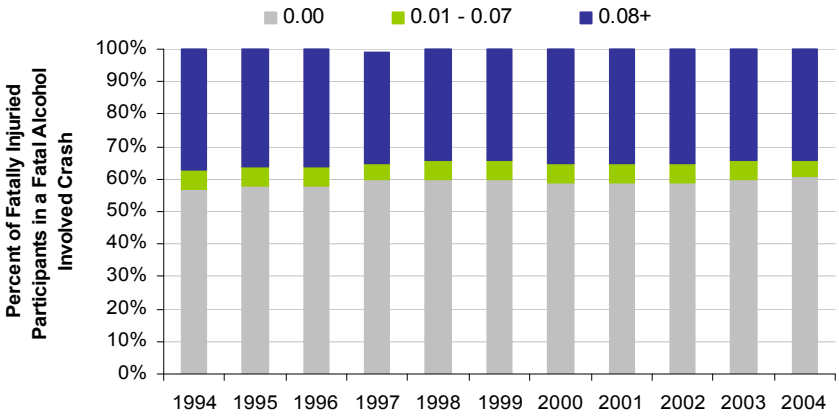
An analysis of all participants involved in a crash (e.g. all drivers and passengers) was conducted. International and nationwide data were not available for this analysis because participant demographics for all crashes were considered, not just fatal crashes. In the participant analysis by race and ethnicity, nationwide data were available. However, the analysis for race and ethnicity was conducted for fatal crashes only, since the data were taken from NTHSA FARS data. While race and ethnicity data were available in participant level data from ODOT, it was not used in this analysis because the field for race / ethnicity was not available for participants.

Figure 23 and 24 displays the percentage of persons fatally injured in fatal alcohol-involved crashes by the highest BAC level recorded from an impaired participant, which includes drivers, passengers, pedestrians, and cyclists. If a person did not drink, his or her BAC level was marked as 0.00. Figure 23 shows percent makeup of persons fatally injured by highest BAC level for the United States. Figure 24 shows the same information for Oregon statewide. In both the United States and Oregon, approximately 35% of all participants fatally injured in a fatal alcohol-involved crash had a BAC level of 0.08 or higher, or above the legal limit. Approximately 5% of all participants fatally injured in a fatal alcohol-involved crash had a BAC of 0.01 – 0.07. Approximately 60% of all participants fatally injured in a fatal alcohol-involved crash had a BAC of 0.00 highlighting the common perception that "innocent" people are more likely to be the victims in alcohol-involved crashes. Over the 10 years, the share of persons fatally injured by BAC level category remains fairly constant.



Source: FARS

Figure 23: Percent Makeup of Persons in United States Fatally Injured in Fatal Alcohol-Involved Crashes by Highest BAC Level, 1995-2004



Source: FARS

Figure 24: Percent Makeup of Persons in Oregon Statewide Fatally Injured in Fatal Alcohol-Involved Crashes by Highest BAC Level, 1995-2004

The percentage of participants fatally injured by age group for alcohol-involved crashes (total of 508, 216, and 173 for Oregon urban areas, Multnomah County, and City of Portland, respectively) is displayed in Figures 25, 26, and 27. For comparison purposes, the percentage of participants fatally injured or injured in all crashes by age group (total of 1335, 537, and 416 for Oregon urban areas, Multnomah County, and City of Portland, respectively) is also displayed in the same figures. For both alcohol-involved crashes and all crashes, the most participants fatally injured in all three jurisdictions occurred between the ages of 21-30 and 36-45 age groups. Comparing the data for alcohol-involved crashes and all crashes, the percentage of participants fatally injured is much more shifted in these age groups for alcohol-involved crashes than all crashes. For all crashes, the number of participants fatally injured is also high in the 71-75 age cohort.

The percentage of participants fatally injured or injured by gender for alcohol-involved crashes (total of 508, 216, and 173 for Oregon urban areas, Multnomah County, and City of Portland, respectively) is displayed in Figures 28, 29, and 30. For comparison purposes, the percentage of participants fatally injured or injured in all crashes by gender (total of 1335, 537, and 416 for Oregon urban areas, Multnomah County, and City of Portland, respectively) is also displayed. In Oregon urban areas, Multnomah County, and the City of Portland, approximately 70% and 80% of the participants fatally injured in all crashes and in alcohol-involved crashes, respectively, are males. For alcohol-involved crashes, male participants fatally injured exceed females fatally injured in all jurisdictions by approximately 10%.

The percentage of persons in the United States, Oregon statewide, and Multnomah County involved in a fatal alcohol-involved crash by race or ethnicity is displayed in Figures 31, 32, and 33. Oregon statewide data were used in this analysis instead of Oregon urban areas because the FARS dataset, which was used for the analysis, does not have a field coding for Oregon urban areas.

The trends for the percentage of persons in the United States and Oregon statewide involved in a fatal alcohol-involved crash by race/ethnicity are similar. Of all persons involved in a fatal alcohol-involved crash from 2001 to 2004, persons of the Non-Hispanic Native Americans race / ethnicity are overrepresented in fatal alcohol-involved crashes. It should be noted, however, that the total number of persons in the Native American population is much smaller and may therefore skew the percentages. Asian/Pacific Islander race appears to be underrepresented in fatal alcohol-involved crashes. For Multnomah County, the trends are similar.

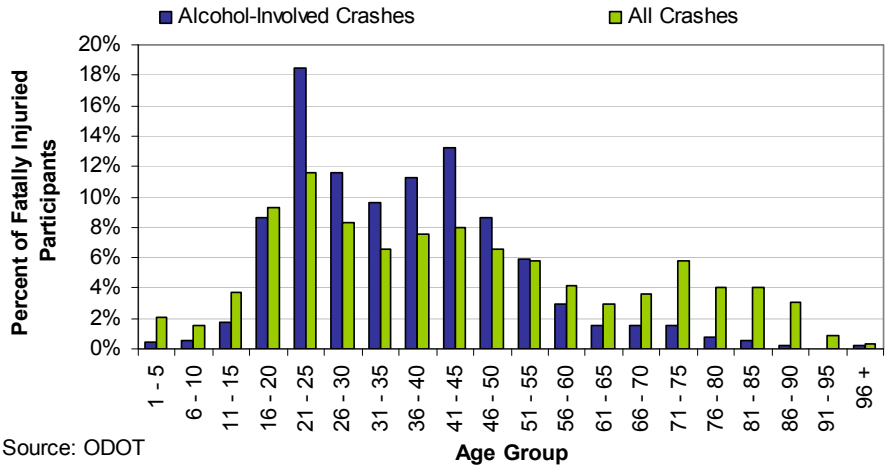


Figure 25: Percentage of Fatally Injured Participants in All Alcohol-Involved and All Crashes by Age – Oregon Urban Areas, 1995-2004

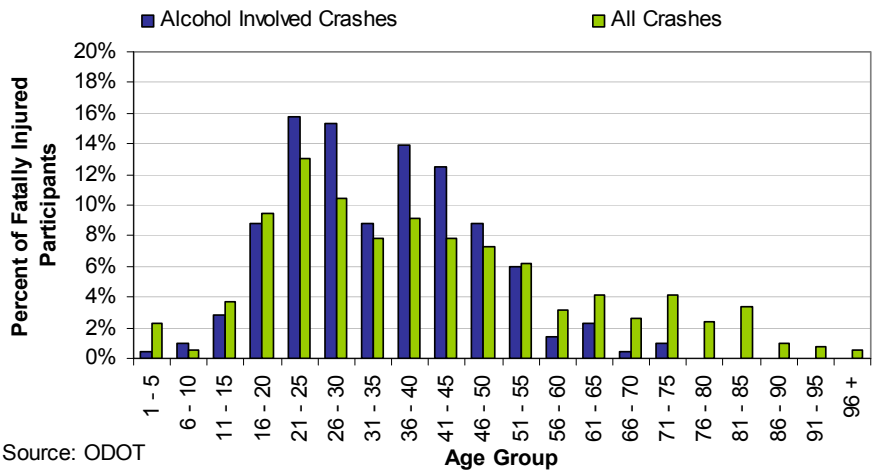


Figure 26: Percentage of Fatally Injured Participants in All Alcohol-Involved and All Crashes by Age – Multnomah County, 1995-2004

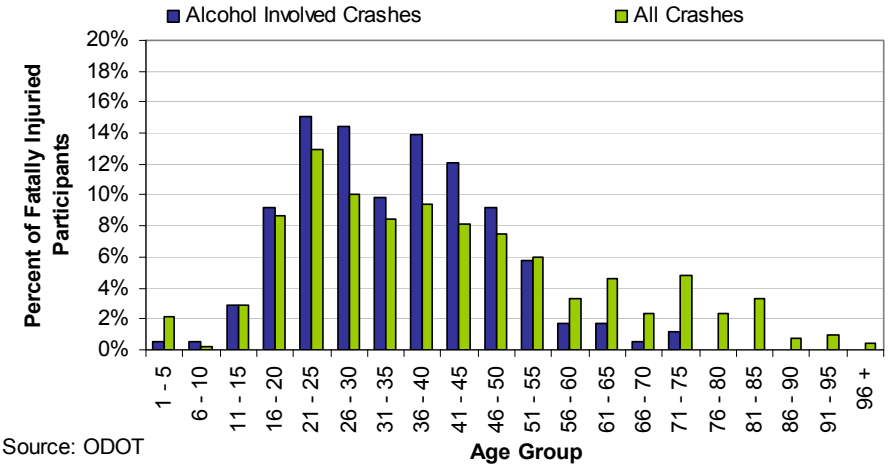


Figure 27: Percentage of Fatally Injured Participants in All Alcohol-Involved and All Crashes by Age – City of Portland, 1995-2004

Figure 28: Percentage of Fatally Injured Participants in All Alcohol-Involved and All Crashes by Gender – Oregon Urban Areas, 1995-2004

Figure 29: Percentage of Fatally Injured Participants in All Alcohol-Involved and All Crashes by Gender – Multnomah County, 1995-2004

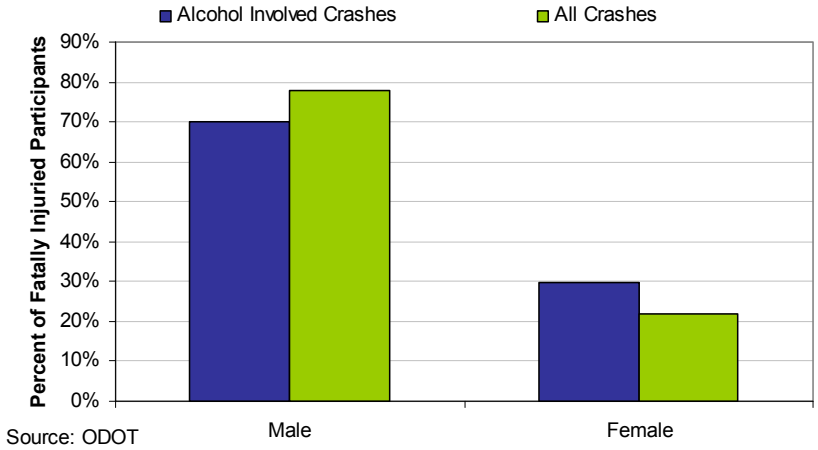


Figure 30: Percentage of Fatally Injured Participants in All Alcohol-Involved and All Crashes by Gender – City of Portland, 1995-2004

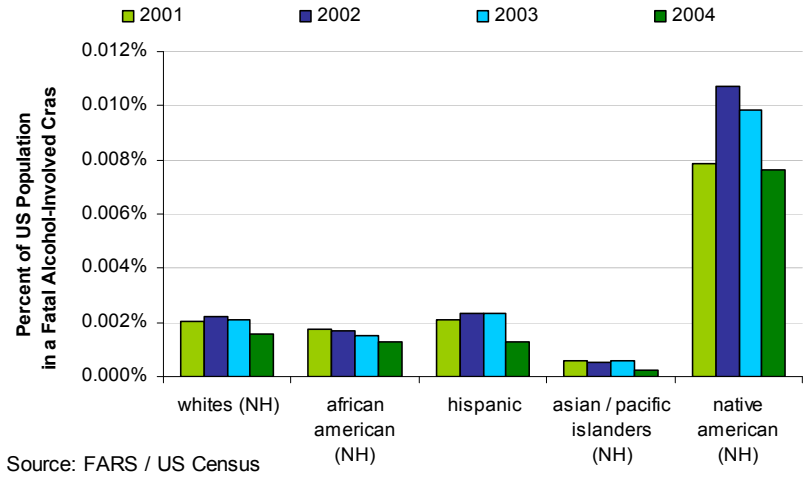


Figure 31: Percentage of Persons in United States Population Involved in a Fatal Alcohol-Involved Crash by Race / Ethnicity, 2001 - 2004

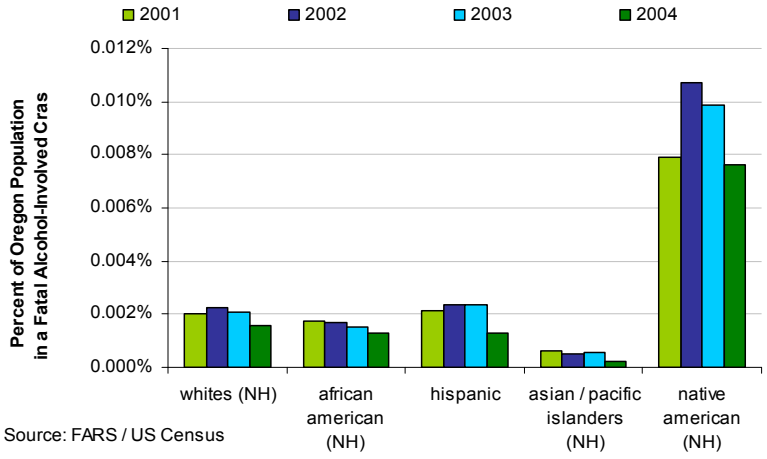


Figure 32: Percentage of Persons in Oregon Statewide (Not Urban Areas) Population Involved in A Fatal Alcohol-Involved Crash by Race / Ethnicity, 2001 – 2004

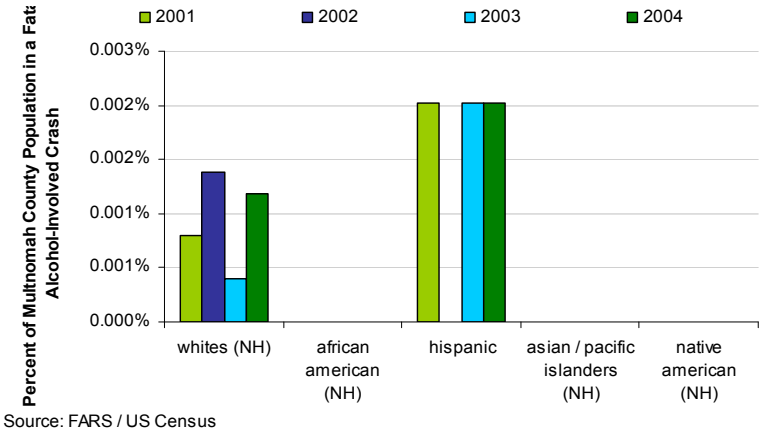
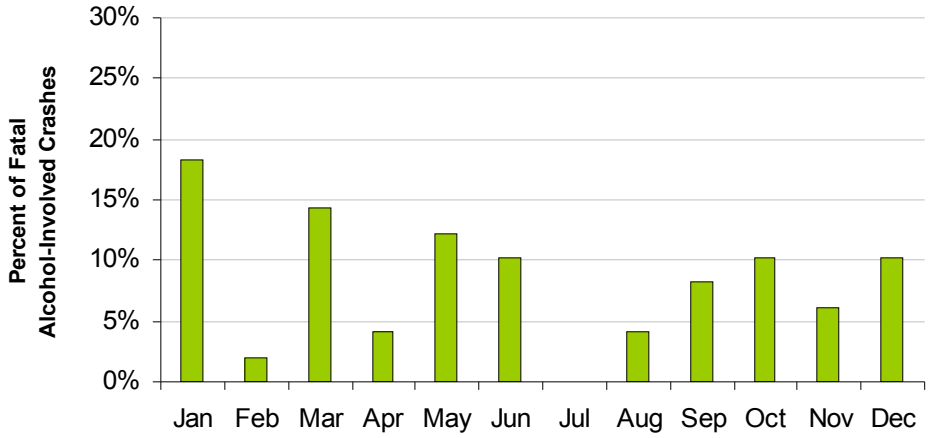


Figure 33: Percentage of Persons in Multnomah County Population Involved in A Fatal Alcohol-Involved Crash by Race / Ethnicity, 2001 – 2004

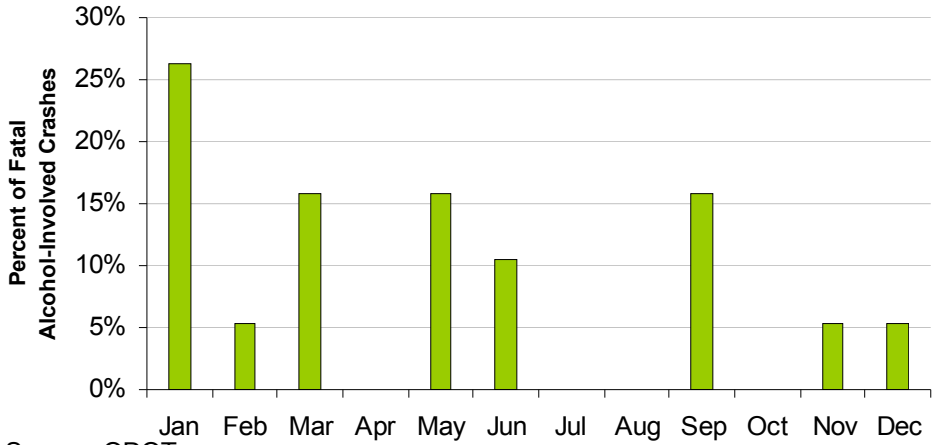
2.3.5 Temporal Issues for DUII Crashes

The percentage of fatal alcohol-involved crashes by month for Oregon urban areas, Multnomah County, and City of Portland for 2004 is displayed in Figure 34, 35, and 36. There does not appear to be any consistent pattern. The percentage of fatal alcohol-involved crashes by day of week for Oregon urban areas, Multnomah County, and City of Portland for 2004 is displayed in Figure 37, 38, and 39. As one might expect, the majority of fatal alcohol-involved crashes occur on weekends. The percentage of fatal alcohol-involved crashes by hour of day for Oregon urban areas, Multnomah County, and City of Portland for 2004 is displayed in Figure 40, 41, and 42. The majority of fatal alcohol-involved crashes occur on nights between 5 PM and 9 PM and again from 12 AM to 2 AM. A surface plot of alcohol-involved crashes by hour of day and weekday for a ten-year history in Multnomah County is displayed in Figures 43 and 44. These figures highlight that the most common time for an alcohol-involved crash is during the weekend late night and early morning hours, with Friday and Saturday being the most common. Note that Friday's peak starts later (10 PM (22 HR)) while Saturday night starts as early as 8 PM (20 HR).



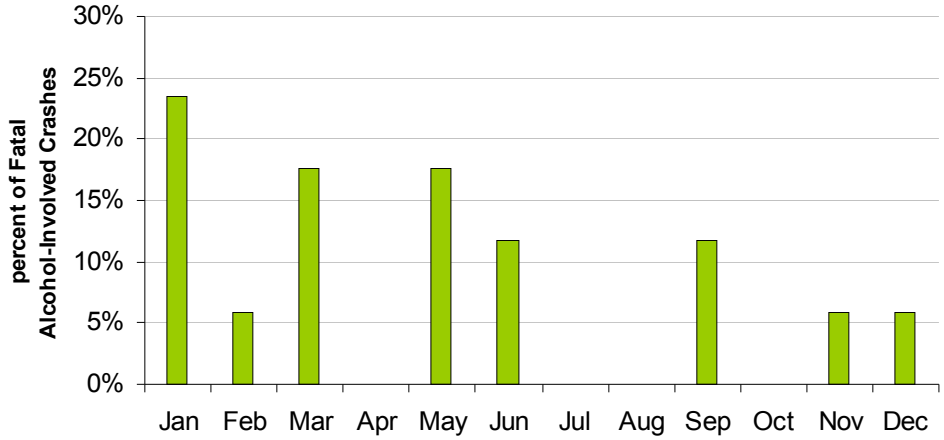
Source: ODOT

Figure 34: Percentage of Fatal Alcohol-Involved Crashes by Month – Oregon Urban Areas, 2004



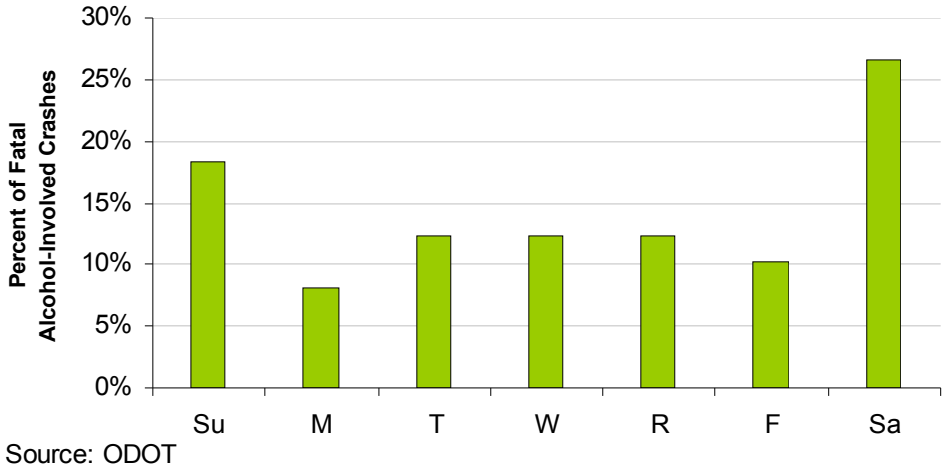
Source: ODOT

Figure 35: Percentage of Fatal Alcohol-Involved Crashes by Month – Multnomah County, 2004



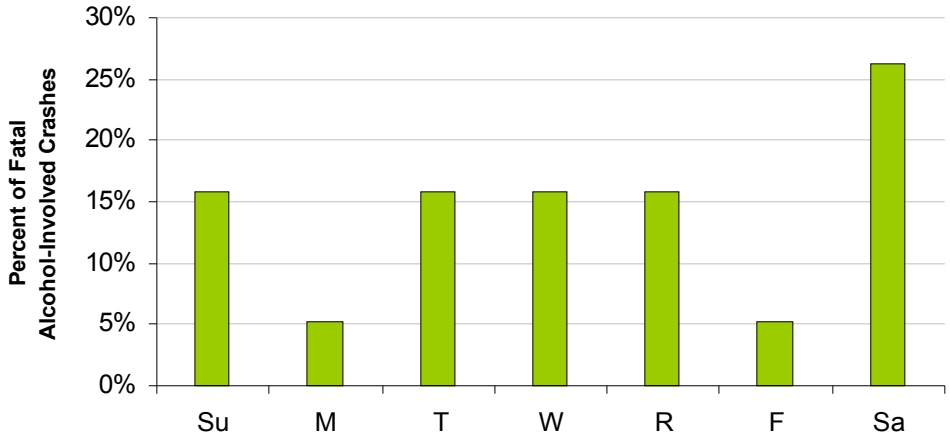
Source: ODOT

Figure 36: Percentage of Fatal Alcohol-Involved Crashes by Month – City of Portland, 2004



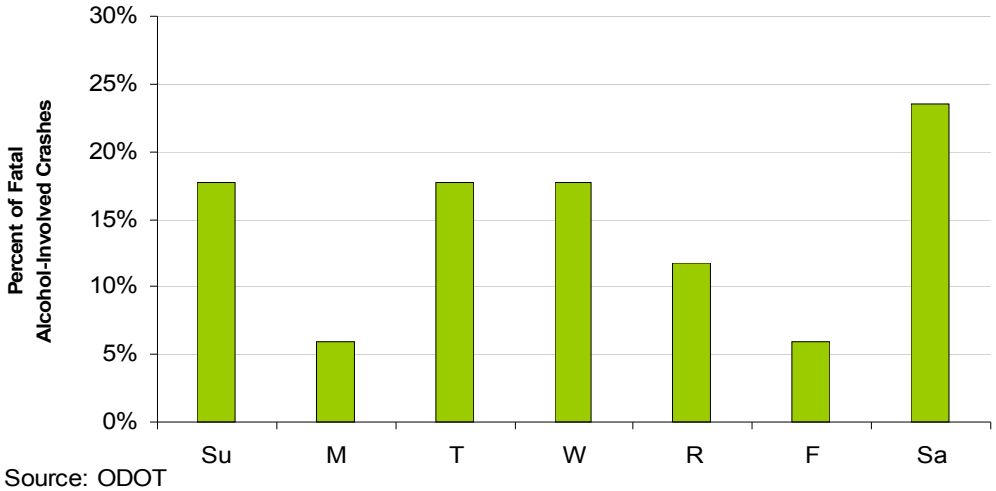
Source: ODOT

Figure 37: Percentage of Fatal Alcohol-Involved Crashes by Day of Week – Oregon Urban Areas, 2004



Source: ODOT

Figure 38: Percentage of Fatal Alcohol-Involved Crashes by Day of Week – Multnomah County, 2004



Source: ODOT

Figure 39: Percentage of Fatal Alcohol-Involved Crashes by Day of Week – City of Portland, 2004

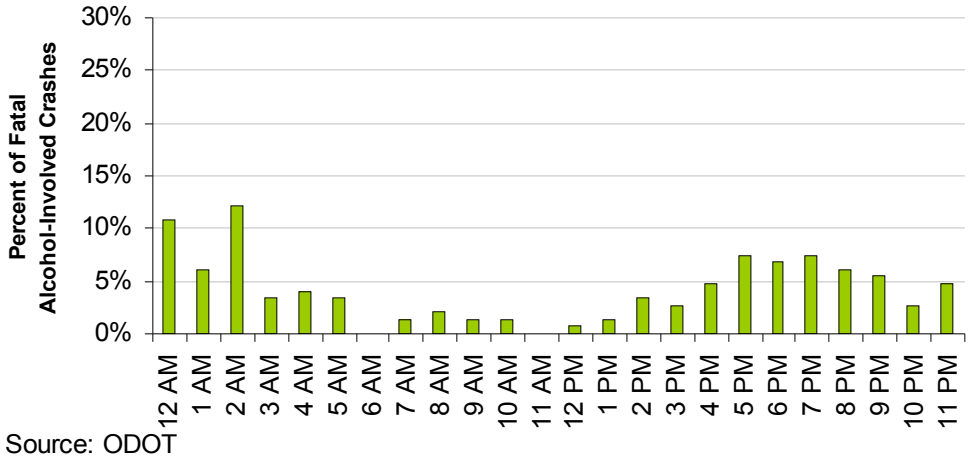


Figure 40: Percentage of Fatal Alcohol-Involved Crashes by Hour of Day – Oregon Urban Areas, 2004

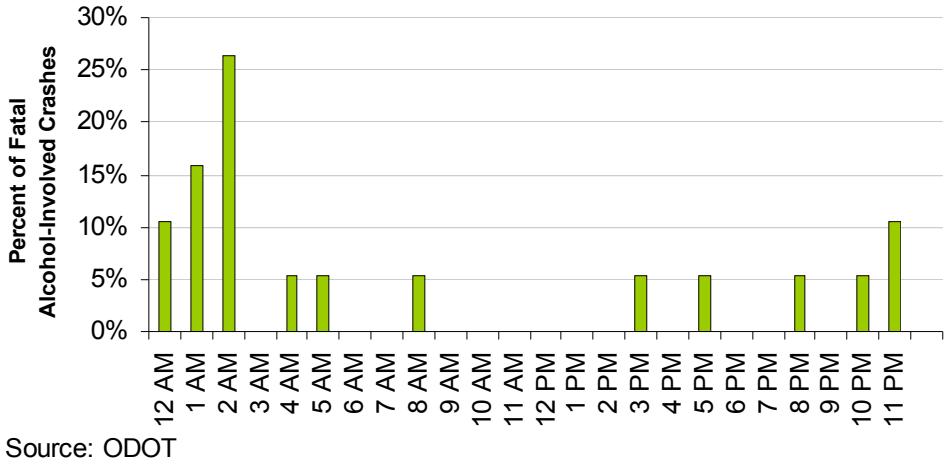


Figure 41: Percentage of Fatal Alcohol-Involved Crashes by Hour of Day – Multnomah County, 2004

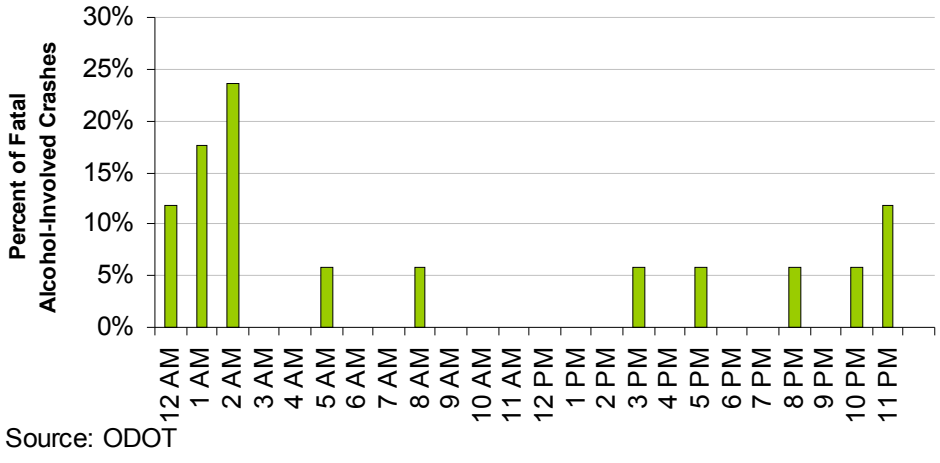


Figure 42: Total Percentage of Fatal Alcohol-Involved Crashes by Hour of Day – Oregon, Multnomah County, City of Portland

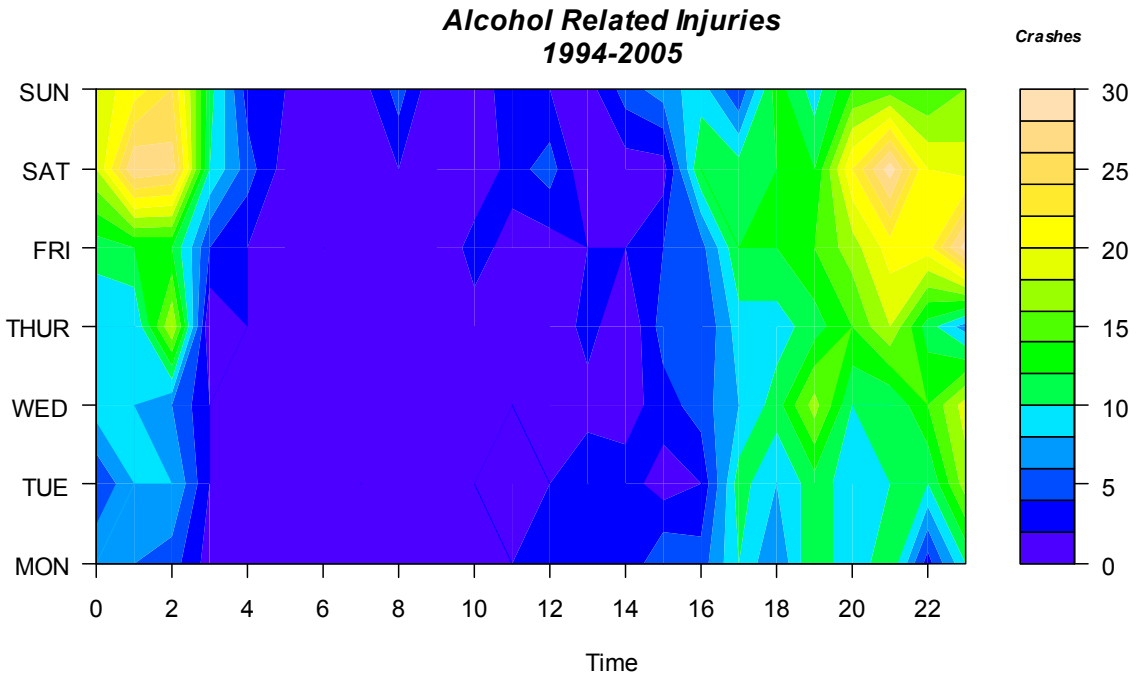


Figure 43: Surface Plot of Alcohol-Involved Injury Crashes by Hour of Day and Weekday –Multnomah County, 1995-2004

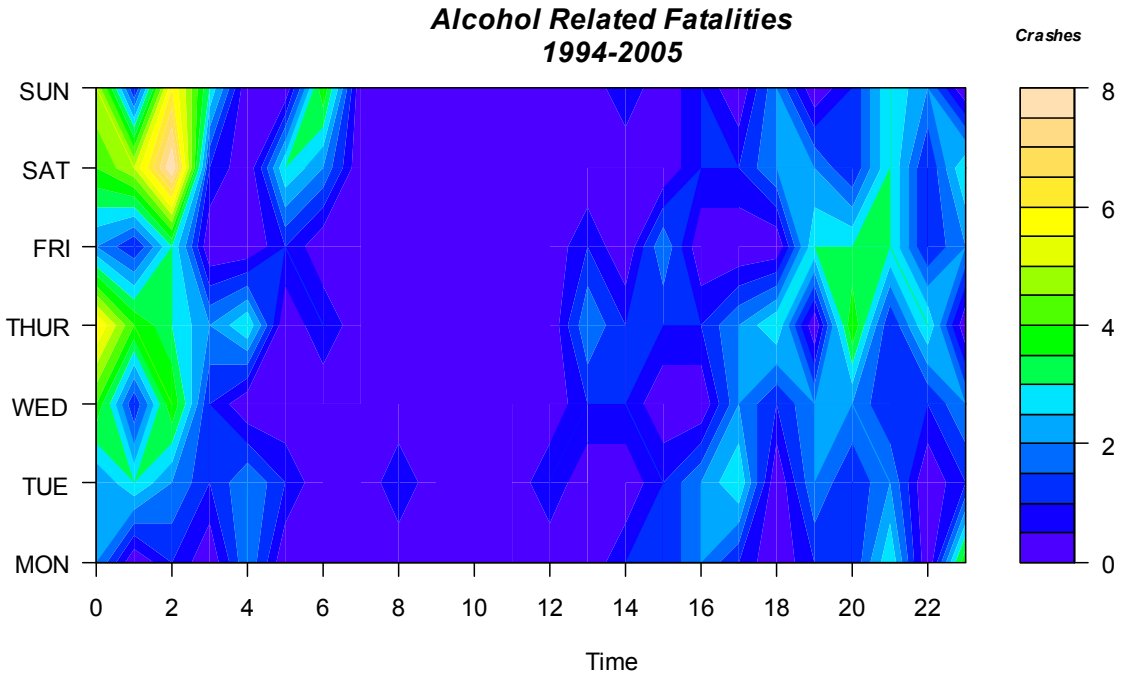


Figure 44: Surface Plot of Alcohol-Involved Fatal Crashes by Hour of Day and Weekday– Multnomah County, 1995-2004

2.4 ENFORCEMENT

Data on enforcement activities was taken from three primary sources: 1) the Oregon Uniform Crime Reporting Program, 2) ODOT Transportation Safety Division DUII Control System Performance Measures, and 3) the Portland Police Bureau. The Oregon Uniform Crime Reporting Program (OUCR) publishes an annual report of statewide criminal offenses and arrests. The Law Enforcement Data System (LEDS) is the database in which all police agencies in Oregon participate. The ODOT Transportation Safety Division publishes a DUII Control System Performance Measures for Oregon Counties every year. Data in the report covers the previous 10 years and includes compiled statistics on DUII crashes, enforcement activity, court activity, and youth. The Portland Police Bureau publishes an annual report which includes traffic statistics as reported by the Portland Police Bureau's Traffic Division.

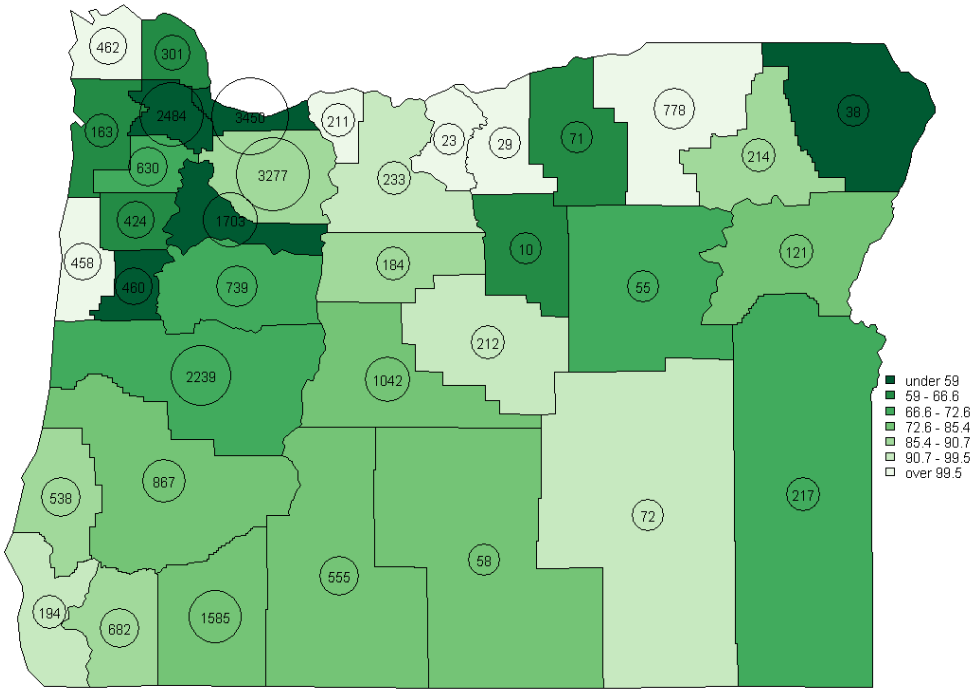
The total number of DUII offenses for each Oregon county from 2000-2005 is shown in Table 3. The 2005 population for each county is also shown. Two performance metrics were computed for enforcement activities: 1) the average annual offenses per 10,000 people and 2) the average annual offenses per average annual alcohol-related fatalities (from Table 2). These metrics are shown as thematic plots in Figure 45. Neither metric completely explains the variation of enforcement intensity or activity but they do provide useful benchmarks. The first metric captures the enforcement intensity per population. Over the five-year period approximately 25,000 offenses per year were reported statewide. In Multnomah County, an average of 3,450 offenses was reported. With a population of approximately 675,600 persons in the county over the five-year period there were 51.07 offences per 10,000 people. In comparison, the DUII rate per 10,000 persons statewide for the same year is 70.26 offenses per 10,000 people. Of the other region's metro counties Clackamas had a higher reported enforcement per population (93.37) but Washington was comparable to Multnomah at 53.10.

The second metric is not tabulated in Table 3 but shown thematically in Figure 45B. Higher ratios (lighter shades) would tend to suggest more active enforcement levels. Compared to Clackamas and Washington, Multnomah's activity level is lower but is still among the higher ratios statewide. Time series bar charts for total DUII offenses, which comprises primarily alcohol use for statewide and Multnomah County is displayed in Figure 46 and 47. Figure 48 displays the total number of DUII offenses by BAC statewide, for 2004. Figure 49 displays the total number of DUII offenses by BAC for Oregon statewide from 1995-2004. Most offenses resulted in DUIIs of over 0.08 and up to 0.19. Figure 50 displays the total number of DUII arrests statewide and in the City of Portland. Citywide total number of arrests equates to approximately 2,100 arrests per year. Figure 51 displays the average and high BAC values of persons arrested for DUII in Multnomah County for 2000-2005. All years show similar trends of an average of a BAC of 0.15 and high BAC of approximately 0.50 with the exception of 2003. It is unknown why the average BAC level in 2003 was lower than 0.05.

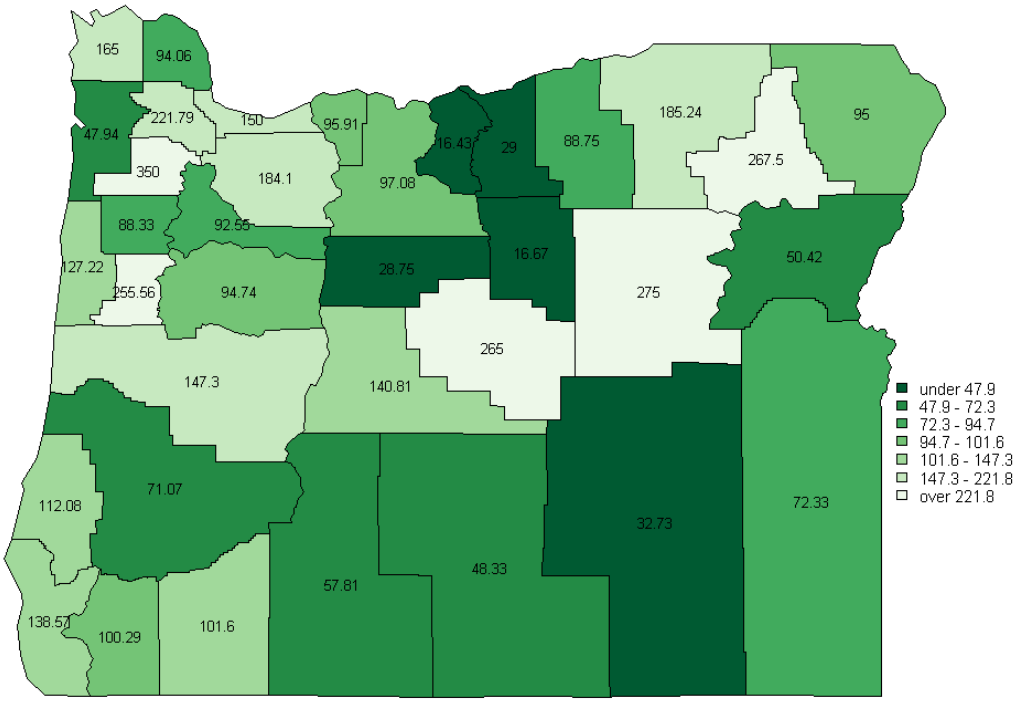
Table 3: 2000-2005 DUII Offenses, Oregon County Summary

County	Average Pop.	Total DUII Offenses 2000	2001	2002	2003	2004	2005	Average DUII Offenses per Year	Offenses per 10,000 persons	Rank
Baker	16,600	143	108	137	144	102	89	121	72.59	21
Benton	80,400	329	348	382	453	683	564	460	57.19	33
Clackamas	350,900	2,229	3,324	3,964	3,613	3,408	3,121	3,277	93.37	10
Clatsop	36,200	452	510	498	430	453	428	462	127.58	2
Columbia	44,900	331	359	378	244	234	258	301	66.96	27
Coos	62,800	591	477	637	516	528	479	538	85.67	16
Crook	20,500	223	210	175	247	200	214	212	103.17	5
Curry	21,200	255	227	227	153	166	136	194	91.51	12
Deschutes	128,900	1,068	977	1,116	979	1,037	1,077	1,042	80.86	19
Douglas	101,700	995	954	906	864	781	700	867	85.22	17
Gilliam	1,900	39	25	37	29	21	24	29	153.51	1
Grant	7,800	49	56	56	44	63	61	55	70.30	24
Harney	7,600	121	58	58	48	61	83	72	94.08	9
Hood River	20,700	282	320	314	62	158	129	211	101.85	7
Jackson	188,100	1,622	1,752	1,799	1,631	1,434	1,271	1,585	84.25	18
Jefferson	19,800	239	231	231	155	143	104	184	92.85	11
Josephine	77,800	797	774	813	697	604	407	682	87.66	13
Klamath	64,500	667	614	621	478	492	460	555	86.10	15
Lake	7,500	66	66	47	58	60	50	58	77.11	20
Lane	329,300	2,071	2,180	2,149	2,358	2,464	2,209	2,239	67.98	25
Lincoln	44,600	489	488	433	482	402	454	458	102.69	6
Linn	104,800	1,019	836	798	613	625	545	739	70.55	23
Malheur	31,900	269	198	212	262	213	147	217	67.97	26
Marion	293,500	1,921	1,644	1,657	1,363	1,697	1,935	1,703	58.02	32
Morrow	11,500	74	111	122	84	8	24	71	61.30	31
Multnomah	675,600	3,897	3,289	2,466	3,670	4,171	**3,209**	**3,450**	**51.07**	**36**
Polk	64,000	431	429	535	349	425	373	424	66.20	29
Sherman	1,900	27	29	25	23	21	10	23	118.42	3
Tillamook	24,800	194	150	172	133	152	177	163	65.73	30
Umatilla	71,400	878	804	875	766	723	622	778	108.96	4
Union	24,700	178	213	233	206	226	230	214	86.77	14
Wallowa	7,200	22	32	35	52	58	27	38	52.31	35
Wasco	23,800	315	309	277	204	156	135	233	97.76	8
Washington	467,800	2,406	2,387	2,403	2,249	2,621	2,838	2,484	53.10	34
Wheeler	1,500	8	7	13	18	11	3	10	66.67	28
Yamhill	87,800	652	601	550	513	797	664	630	71.70	22
TOTALS	**3,525,900**	**25,349**	**25,097**	**25,351**	**24,190**	**25,398**	**23,257**	**24,774**	**70.26**	

Source: ODOT DUII Control Measures



A: Average DUII Offenses per 10,000 Population (Yearly Average in Bubbles), 2000-2005



B: Average DUII Offenses per Average Annual Alcohol-Involved Fatalities, 2000-2005

Figure 45: DUII Enforcement Levels, 2000-2005

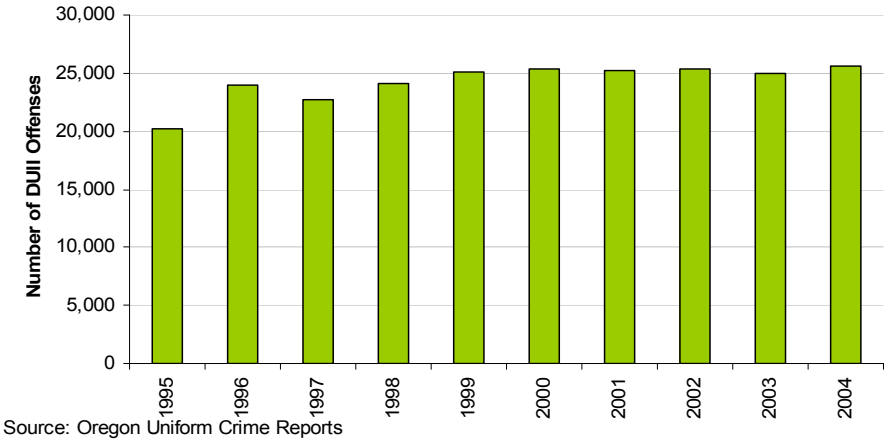


Figure 46: Total Number DUII Offenses – Oregon

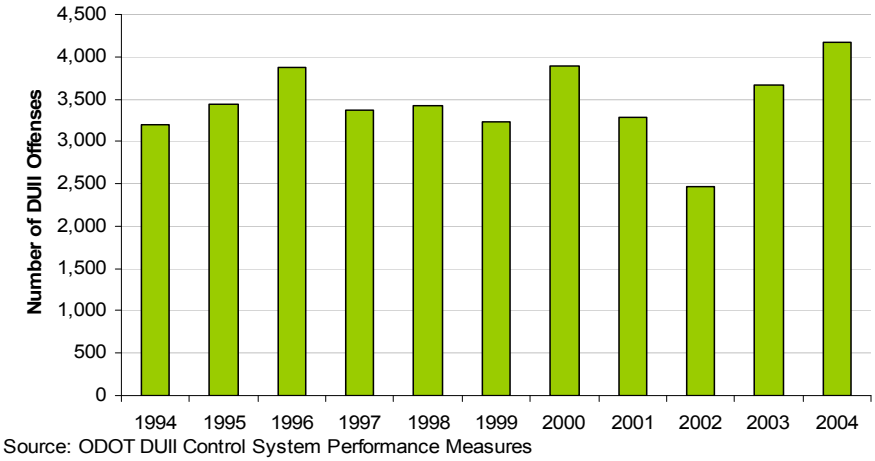


Figure 47: Total Number DUII Offenses - Multnomah County

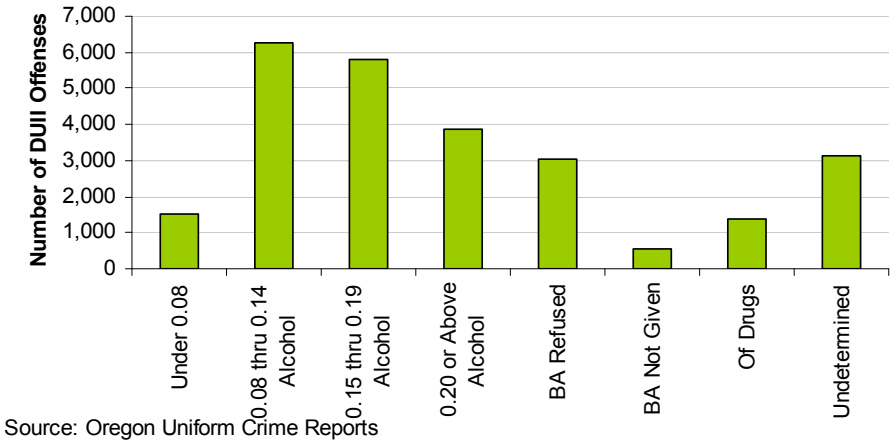
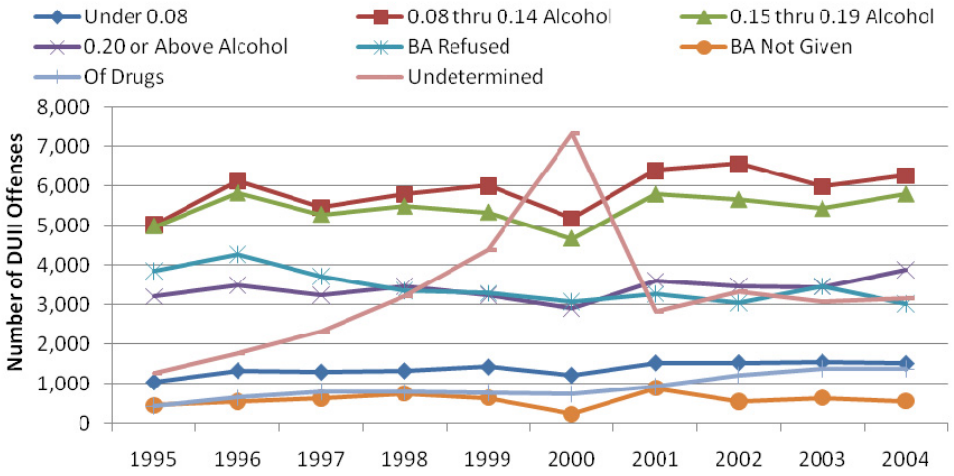
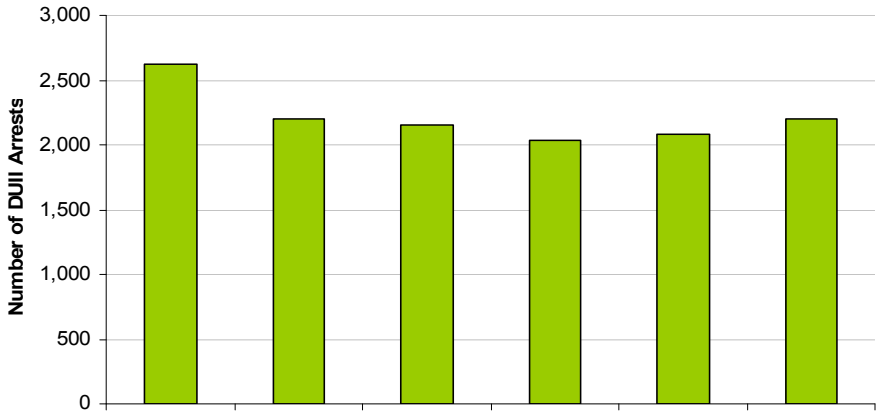


Figure 48: Total Number DUII Offenses by BAC – Oregon, 2004



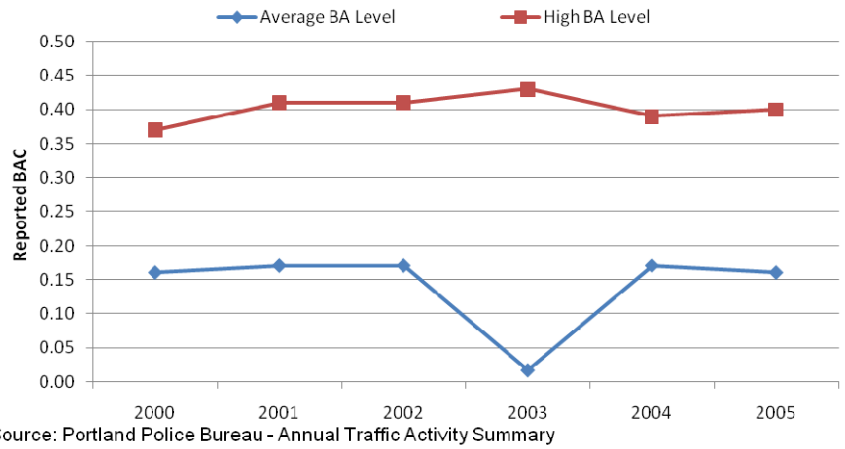
Source: Oregon Uniform Crime Reports

Figure 49: Total Number DUII Offenses by BAC– Oregon, 1995 – 2004



Source: Portland Police Bureau - Annual Traffic Activity Summary

Figure 50: Total Number DUII Arrests – City of Portland



Source: Portland Police Bureau - Annual Traffic Activity Summary

Figure 51: Average & High BAC Values of Persons Arrested for DUII – City of Portland, 2000 - 2005

2.4.1 Minor in Possession

The 2006 Healthy Teens survey of Oregon students was conducted statewide of 8th and 11th graders about underage drinking. The survey is conducted annually by the Oregon Department of Human Services. Students were asked about their drinking behaviors in the past 30 days since completion of the survey. Among all eighth graders, binge drinking, the consumption five or more drinks in a row, was 13.3%. This was an increase in 43% from 9.3% in 2001. For eleventh graders, the percentage fell over a five year period from 25.3% in 2001 to 24.9% in 2006. The survey also found that parents have a large influence on eighth graders on the consumption of alcohol, with 80% of students whose parents thought it was "very wrong" to drink who did not drink in the 30 days prior to the date the survey was completed. In comparison, approximately 30% of students whose parents thought it was "not wrong at all" to drink in the 30 days prior to the date the survey was completed. For eleventh graders this data were 66.9% and 26.7 % respectively. The survey also showed teens felt it was easy to obtain alcohol (*Oregon Department of Human Services, 2006*).

A minor in possession of alcohol is a possible indicator for future involvement in alcohol-related events. Figure 52 displays the total number of minor in possessions issued to youth under 21 years of age. The number of MIPS for 1997 and 1999 are unknown. It is not necessarily clear what the reason for the decline in MIP issued since 2001. Anecdotal evidence suggests that the issue is possibly related to the reluctance of officers to issue citations since the courts have not been able to deal adequately with citations. MIPs in Multnomah County have generally been issued warning letters following a citation.

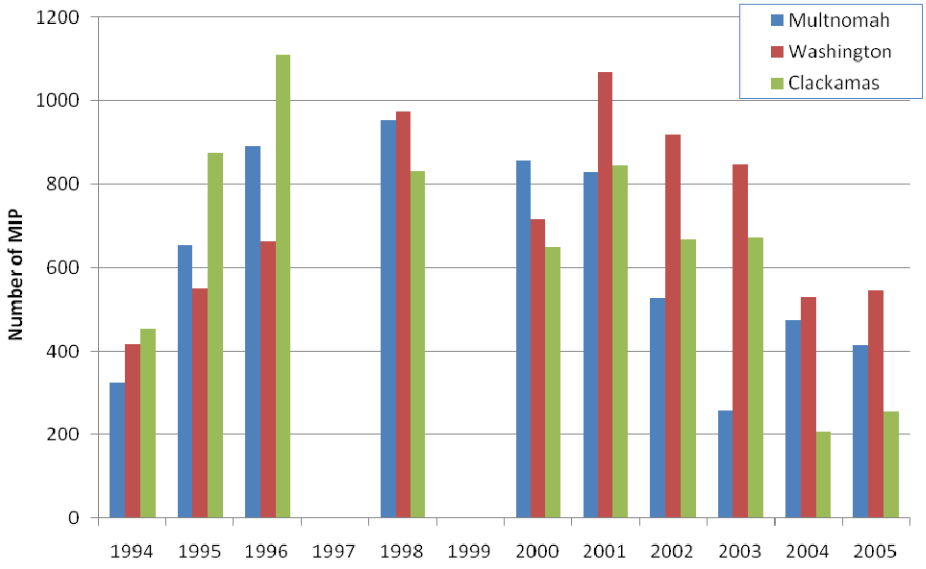
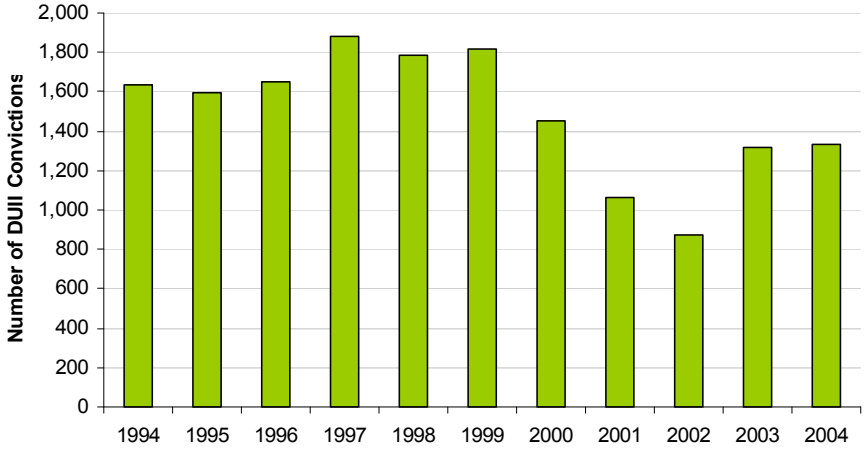


Figure 52: Total Number of MIP for Youth Under 21 Years of Age – Tri CountyArea

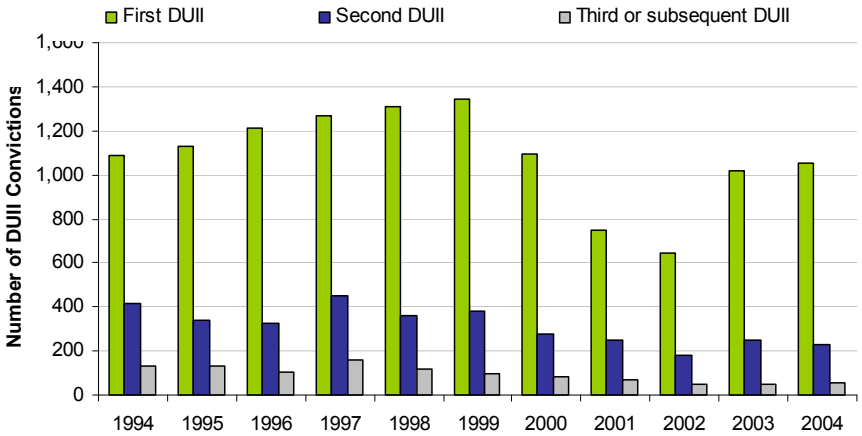
2.5 COURT ACTIVITIES

Figure 53 shows the total number of DUII convictions in Multnomah County. Of the 2,200 arrests made in Multnomah County (estimated based City of Portland arrests in Figure 50), approximately 1,500 persons arrested are convicted of DUII between 1995 and 2004. Note that some arrested will be first-time offenders and eligible for diversion. Starting 2000, the total number of convictions has fallen by approximately 300 persons. The majority of convictions are first DUII convictions as displayed in Figure 54. The DUII Control System Performance Measures, produced by ODOT, lists the total number of DUII related DWS / DWR (driving while suspended or revoked) convictions. Figures 55 shows the time trends of DWS / DWR violation convictions in Multnomah County from 1994 to 2004.



Source: ODOT DUII Control System Performance Measures

Figure 53: Total Number DUII Convictions - Multnomah County



Source: ODOT DUII Control System Performance Measures

Figure 54: DUII Conviction Level Trends - Multnomah County

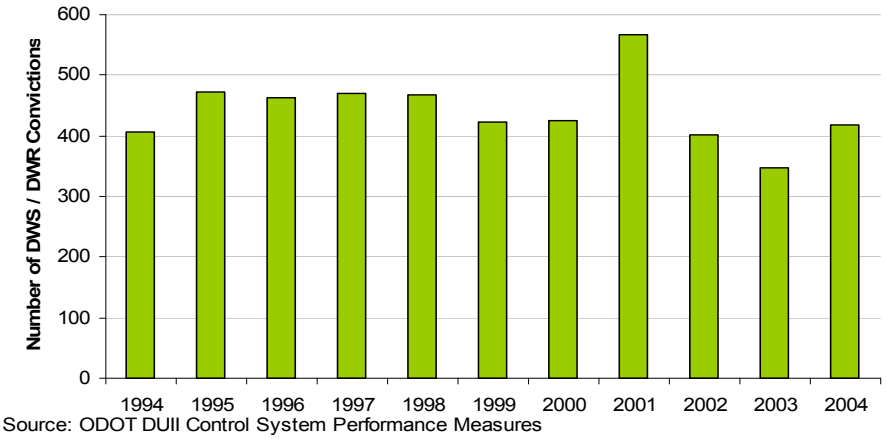


Figure 55: Total Number of DWS / DWR Misdemeanor Convictions - Multnomah County

2.6 TREATMENT

The treatment program is an evaluation and rehabilitation program that persons arrested of DUII can take if they either sent to diversion or convicted of a DUII. Diversion agreements in Multnomah County as reported by the Oregon DMV are displayed in Figure 56. The successful completion or termination of the Multnomah County Alcohol and Drug Treatment Program for FY 2006 was approximately 65% (*Ryan, 2006*).

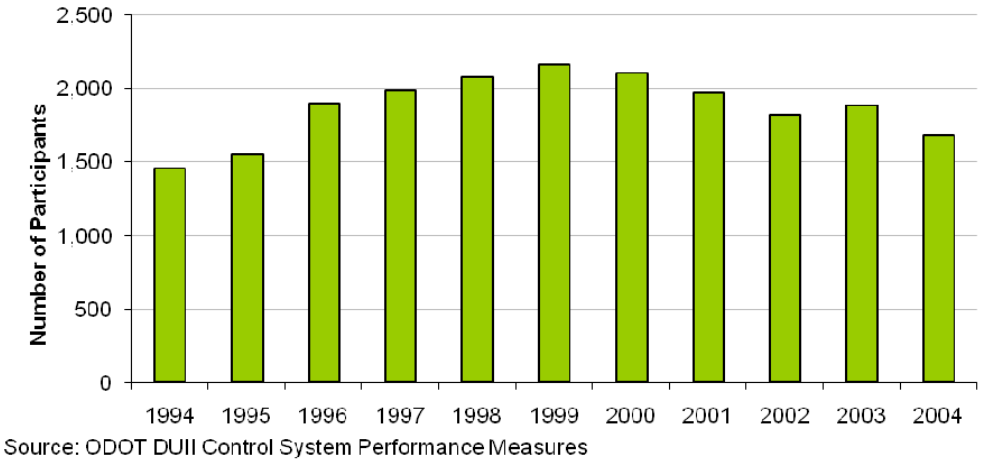


Figure 56: Diversion Program Trends -Multnomah County, 1994-2004

2.7 SUMMARY

Analysis of data on crashes, participants, impaired drivers, offenders, enforcement, treatment, and public perception reveals the state of the problem on DUII, or driving under the influence of intoxicants.

- Alcohol-involved crashes are more severe. While fatal crashes account for less than 3% of total reported crashes, nearly 30% of alcohol-involved crashes that are fatal. Not surprisingly, speed and alcohol crashes are often related.

- Younger drivers, particularly male, are a risk group for alcohol-involved crashes. The 21-30 age cohort is overrepresented in alcohol-involved crashes compared to the general population. Males are almost 2 times more likely than females to be involved in a crash and about 3 times more likely than females to be involved in a fatal alcohol-involved crash.

- The majority of people fatally injured an alcohol-involved crash had not been drinking. Approximately 60% of all participants fatally injured in an alcohol-involved crash had a BAC of 0.00.

- Most drivers arrested for DUII are well above the 0.08 blood alcohol concentration that is the per se legal limit in Oregon. The average BAC of those arrested in Portland is approximately 0.15.

- As one might expect, the majority of fatal alcohol-involved crashes is during the weekend late night and early morning hours, with Friday and Saturday being the most common. There was also a small peak noted late Wednesday night and early Thursday morning.

- The average time required for the Portland Police Bureau to process a DUII arrest is approximately 2 hours - taking away valuable police presence. Given that 2,194 arrests were made in 2005 that is nearly equal to 2 officers working full-time for a year to process DUII offenders.

- Nearly 3,500 DUII arrests (offenses) are made every year in Multnomah County. This is approximately 51.07 offenses per 10,000 people (lower that the statewide rate of 70.26). However, enforcement activity measures as the rate of fatal alcohol-involved crashes per arrests was 150 - the lowest of the three metro counties.

- Nearly all first time offenders are sent to diversion and court-ordered treatment. The completion rate for those that have been sent to treatment program via diversion is approximately 65%.

- Of those arrested and not eligible for diversion, there are approximately 1,600 to 1,300 convictions per year. The majority of these convictions have been for a first DUII (not counting diversion), however, about one third of all convictions have been for subsequent DUII convictions.

3.0 CURRENT PRACTICES

This chapter summarizes the current practices as they relate to the prevention, enforcement, adjudication and treatment of DUII related-offenses in the Portland and Multnomah County region. This summary was compiled through review of existing documentation and interview techniques of key persons in each area. Interviews of the City of Portland's DUII Working Group were conducted by researchers from Portland State University between April and May 2006. Prior to the 30 minute to 1 hour long interview, members were provided a list of questions to guide the interview process. The interview questions are included in the Appendix D.

3.1 PREVENTION

Prevention is the approach of changing or modifying behaviors such that the problem that needs addressing never occurs in the first place. Education and media campaigns can prevent impaired driving by making people aware of impaired driving laws and the consequences of driving impaired. Educational information can be provided to the public through a variety of avenues and has traditional been done at the state-level by television, print, and radio ads. In Portland, many education programs are offered through treatment programs for first time and repeat offenders. These campaigns are achieved through general impaired driving education classes or media campaigns similar in nature to the national seat belt campaign. They are usually directed at the general population, but can also be directed at specific demographic such as youths.

3.1.1 Trauma Care

Approximately 80%-90% of trauma surgeries are traffic related with at least 60% involving intoxicants of some form. People brought into trauma care are often under the influence of more than one intoxicant. The "Trauma Nurses Talk Tough" (TNTT) program is one example of an educational program sponsored by Legacy Health System of hospitals and health care provider services in Oregon. The TNTT program was established in 1986 by three trauma care nurses to prevent and lessen the severity of traffic injuries (*Legacy Health System, 2007*). Seatbelt and helmet use is covered in this section because of their effectiveness in reducing the severity of all traffic collision incidents. Classes are offered to patients and their families and taught by trauma nurses, medics, EMTs, and physicians. Each class is different depending on the age of the participants. Some classes may offer a Parent Educator program. TNTT programs are offered in 48 elementary, middle, and high schools throughout the state. In these school education programs, TNTT educators educate students and/or parents about traffic safety and substance abuse issues. For instance, students are educated on the importance of buckling up when in a vehicle and reminding others to buckle up as well, wearing a helmet when riding a bicycle, and learning the "rules of the road". A pre-post survey of self-reported behavior taken in 2004-2005 shows that 48% to 61% of students indicated they had made a change to improve their safety as a result of the TNTT presentation.

Other TNTT classes conducted in the past include a Victim Speakers or Victims Impact Panel program in which people who have been injured share their stories of how the injury affected them physically, emotionally, and financially (*Trauma Nurses Talk Tough, 2006*). Pre and post surveys on self-reported behavior have indicated the overall program to be effective (*Trauma Nurses Talk Tough, 2006*). The program was cancelled due to funding issues and problems getting people to pay for the class. A TNTT class that is no longer offered due to funding issues that addresses alcohol and drug use and driving is the "Not My Kid" (NMK) Campaign. This two hour forum was offered to youths 10-18 years of age and their parents at 23 Oregon Middle and High Schools for youths and their parents. It was supported by law enforcement, health experts, insurance industry, the legal community, victims, and family educators who teach parents and their children about the consequences and liabilities of impaired driving (Trauma Nurses Talk Tough, 2006). It is a program also supported by diversion courts (*Todd, 2006*). A pre-post survey conducted in 2001 showed 75% - 90% of participants felt they would make some safety change. Another new class that is being offered is the Insight Class, which is focused on students caught at school with alcohol (*Fairchild, 2006*). While many classes offered in the TNTT program are optionally attended, some are court ordered.

Two TNTT classes are court ordered and target alcohol use. One class is the MIP Over 18 & Adult Furnishing Class. This three hour class is directly related to alcohol and is taken by anyone furnishing alcohol or providing a place for consumption of alcohol by minors. The class is offered in two locations. A self-reported survey conducted in 2005 indicated that 43% to 90% would make some change to stop underage drinking (*Trauma Nurses Talk Tough, 2006*). The second court ordered class is the Minors in Possession Class. This 3 hour class, which is available in four Oregon hospital locations, is taken by youths cited for a being a minors in possession of alcohol (MIP) and their parents. An evaluation of the class was conducted in 2005 at Emanuel Hospital. Self-reported test showed that approximately 55% of youth participants said they would either stop using alcohol until they were 21 years old or would increase participating in alcohol-free activities. Approximately 95% of parents said they would monitor alcohol in the home and something should be done about driving privileges for youths citied for an MIP. Trauma nurses do not feel enforcing MIP laws is a priority. However, research by Dent, Grube, and Biglan (*2004*) of alcohol use in Oregon high schools indicates that for minors, strong enforcement of MIP resulted in lower levels of alcohol use and binge drinking, but not in school or driving. By actively involving the participants in a problem-posing style of learning, participants who attend the TNTT classes are made aware of the effects of high risk behavior and are empowered to do something about their behaviors all with the support of their families.

3.1.1.1 Possible Improvement Areas

A possible issue of concern is funding for the TNTT programs. Some programs are able to cover costs through participant fees while others rely on state grants. Already many viable programs have been cancelled due to budget cuts.

3.1.2 Oregon Liquor Control Commission

The Oregon Liquor Control Commission (OLCC) was established in 1933 following the

repeal of prohibition. The OLCC serves as the state's regulatory agency for those who manufacture, sell, or serve alcohol (*Oregon Liquor Control Commission, 2004*). The OLCC does not have policy making responsibilities, rather, policies for the OLCC are set by a five-member governor appointed and Senate confirmed board of commissioners. Each commissioner serves four-year terms and represents a congressional district in Oregon (*OLCC, 2004*).

One responsibility of the OLCC is regulating the manufacture, distribution and service of alcohol through mandatory licensing for individuals or businesses that sell or serve alcohol. Licensing requires a successful criminal background check. In Oregon, approximately 11,000 licenses were issued in 2004 (*OLCC, 2006*). The OLCC also regulates the distribution of liquor. Approximately 250 retail liquor stores throughout the state purchase liquor for distribution from OLCC's liquor distribution center (*OLCC, 2004*). Most of these stores sell exclusively liquor. The program is a major source of revenue for state and local programs. The majority of OLCC revenue is distributed to the state's general fund.

A second responsibility of the OLCC is server permitting. The OLCC requires all alcoholic beverage servers who mix, serve, or sell alcohol and managers who supervise servers to take and pass a state approved server training course promoting responsible drinking. "In Oregon, it is against the law to serve alcohol to a visibly intoxicated person or allow a visibly intoxicated customer to continue drinking alcohol" (*OLCC, 2007*). The course must be taken every five years. The course, which is offered in Chinese and Spanish, covers the effects of alcohol on the body, interaction effects of alcohol with other drugs, both prescription and illicit, problem drinking and alcoholism, State of Oregon alcohol service laws, drinking and driving laws in Oregon as well as legal liability issues, effective server intervention techniques including how to intervene with a customer who is drinking too much or shows signs of intoxication, and alcohol marketing practices for responsible alcohol service.

A third responsibility of the OLCC is enforcing license and permit requirements by making targeted and random visits to establishments, often accompanied by local police officers, and issuing citations to license and permit holders where necessary. In 2003, approximately 13,000 observation visits were conducted on licensed premises (OLCC, 2006). In about half of those visits, server permits were checked. OLCC enforcement officers issued 720 criminal citations for clerks. Approximately 695 administrative notices of violations were also issued. A total of about 20,000 criminal citations and administrative notice of violations for servers have been issued since the program's inception in 1979.

Another OLCC offered education program is the Responsible Vendor Program (OAR 845-009-0135). In this program, started in 1999, the OLCC provides education through partnerships with businesses and other organization such as MADD or the Oregon Department of Human Services. OLCC has also worked with business organizations, such as ONSA, the Oregon Neighborhood Store Association, (www.onsa.net) who work especially on behalf of small storeowners to promote the Responsible Vendor Program. Under the program, which owners have to qualify for based on responsible service behavior, if they go through the program and are in compliance, they will qualify for reduced fines and/or suspensions if they sell to a minor. The program provides additional training and requires the establishment and posting of house policies regarding service of alcohol to

patrons. The program, however, is not utilized by all owners. ONSA reports 95% of its members are not taking advantage of the program (*Oregon Neighborhood Store Association and OLCC, 2007*).

The OLCC also has a Clerk Training Program, which started in 1999, to target clerks selling alcohol to minors. This program is only taken if a clerk has been found to sell to a minor. OLCC performance may be improved by placing a bigger emphasis on underage drinking. The OLCC currently has an underage drinking program called the Minor Decoy Operations which was initiated in 1997 (*Miliucci, 2006*). In this program, OLCC enforcement officers can target specific drinking establishments or retail stores upon receiving a complaint or conduct random observation visits of establishments. Another concern raised is the number of enforcement officers. Currently, the state has 45 enforcement officers for 11,500 licensed establishments. The system could benefit from obtaining additional funding for hiring more enforcement officers.

3.1.3 Restaurant and Bar Associations

The Oregon Restaurant Association (ORA) represents over 9,000 restaurants and beverage businesses statewide. A part of the ORA, the Oregon Restaurant Education Foundation (OREF) was founded in 1991 and works with the OLCC as a provider of Alcohol Server Education classes so servers can receive permits to serve alcohol. Currently, first time servers are required to take the 4.5 hour course in person and servers renewing their permits may take renewal courses offered online. The ORA is currently working with OLCC to make the mandatory class online (*Oregon Restaurant Association, 2007*). The cost to take the Alcohol Server Education course is $30. Successful completion of the course is measured by a written 50-question multiple choice test in which the server must pass with 80% (*ORA, 2006*), which is 10% higher than the passing score required by the OLCC. In 2004, 5,475 Oregonians were trained (*Oregon Restaurant Association, 2007-2*).

3.2 ENFORCEMENT

3.2.1 Portland Police Bureau

In the City of Portland, the Portland Police Bureau is organized into several precincts and divisions. Each precinct and division has their own specific enforcement duties. While all precincts and divisions have officers who enforce DUII, the Traffic Division handles most of the traffic enforcement, including DUIIs, citywide (*Krueger, 2006*). In 2004, 2,084 DUII arrests were made citywide. The number of arrests increased slightly by 5% to 2,194 in 2005 (*Portland Police Bureau, 2005*). The Portland Police Bureau may enforce DUII either reactively by responding to a collision event, notification of or neighborhood complaint call through the Enhanced Vehicle Safety Enforcement Program (EVSEP), or proactively by conducting planned enforcement missions in entertainment areas, during holidays, or random or planned lane restriction missions to look for violators. It should be noted that sobriety checkpoints and roadblocks are illegal in Oregon as a result of an Oregon Supreme Court ruling on search and seizure, ruling sobriety checkpoints as unconstitutional. However,

increased DUII enforcement does occur during the holidays. These are usually announced prior to the day of increased enforcement.

Officers may also stop drivers at any time for suspicion of DUII based on reasonable grounds. In Oregon, implied consent laws apply (ORS 813.100). As a provision to being issued a driver's license, when a driver is stopped for suspicion of DUII and asked to take a chemical breath / blood / urine or field sobriety test, the driver must consent to take the test. In Oregon, law enforcement officers will, after informing the driver of the consequences and their rights under ORS 813.130, first ask drivers to take a chemical breath test or blood test if receiving medical care. If the driver consents and their blood alcohol level is 0.08 or more, the driver will be arrested for a DUII and their license will be confiscated. A driver may also be arrested if there is probable cause of being under the influence of an intoxicating liquor or controlled substance.

Once a driver is arrested and their license is confiscated, the police officer will provide the person with a written notice of intent to suspend the license (ORS 813.100). They will then transport the individual to jail. Central City Concern (CCC) established a David P. Hooper Detoxification Center in 1971. A van picks up and transports impaired persons to the detoxification center where they can safely sober up. Law enforcement officers may also take individuals to the detoxification center. The center also provides services where individuals can stay for up to a week and receive counseling, treatment, and education. The center is dependent upon the state, county, and city for funding and is currently receiving funds to allow it to operate 24 hours a day. Although most individuals who go to this center are pedestrians, it does have the benefit of freeing up jail space for impaired drivers (*City of Portland, 2004*).

3.2.1.1 Possible Improvement Areas

As suggested during the interviews, on possible area that could be improved include requiring drivers to submit to a mandatory blood draw upon arrest, and increasing the penalty for refusal of a breath test. Administratively, an improvement measure could be to increase the priority of enforcing DUII across all precincts. The Traffic Division has from 33% to 50% of the number of officers compared to other precincts. The limited staff sometimes makes it difficult for the Traffic Division to provide adequate coverage citywide. It could help DUII enforcement efforts to increase priority of DUII enforcement in other precincts, especially during nights and weekends. This could be resolved either by an emphasizing the priority of DUII enforcement from leadership in each precinct and/or by increasing the familiarity of all officers with current DUII enforcement procedures (*Krueger, 2006*). Finally, traffic officers are often required to go to traffic court at inconvenient times. Although no solution has currently been proposed, it could save time and money for courts to coordinate their efforts with local police to reduce the time police officers spend at court. The total time required to process a DUII can be challenging.

3.3 ADJUDICATION

The Multnomah County Courthouse is the largest circuit court in Oregon. Approximately 3,000 DUII cases are screened each year. In Oregon, the DUII relevant laws are codified

under Oregon Revised Statutes Chapter 813. After a DUII arrest by law enforcement officers, all individuals must attend a court hearing. Prosecutors may decide whether or not to try a case depending on available evidence (e.g. BAC level of at least 0.08). If there is sufficient evidence there will be an arraignment.

3.3.1 Possible Court Sanctions

3.3.1.1 General

A first time offender is often sent to diversion. If convicted of a DUII, a fine will be issued of up to $10,000 (Note that $6,250 is the maximum unless a minor is in the vehicle and is 3 years younger than the convicted driver). The fine amounts are set based on the defendant's past DUII record and depend on the severity of case particulars. The minimum fines are:

- 1st offense = $1000 minimum
- 2nd offense = $1500 minimum
- 3rd + offense = $2000 minimum if not sentenced to a term of imprisonment

Individuals charged with a DUII offense may obtain the services of an attorney to represent them in a hearing, who lead them through the entire prosecution process. No interviews were conducted of lawyers outside of the District Attorney's office. It is therefore unknown what opportunities if any exist for prevention of second DUII offenses from lawyers representing defendants in DUII cases.

In addition to fines, the following sanctions may be imposed:

- Complete a screening interview to determine placement for treatment and attend mandatory treatment program
- Imprisonment for 48 hours, served consecutively or community service not less than 80 hrs or more than 250 hrs. It is common for the prosecution to ask for 10 day minimums.
- Complete Victim Impact Panel treatment program (at own cost unless indigent)

Additional fees for screening interview and treatment programs are to be paid for by the defendant. Other sanctioning programs include home arrest with electronic monitoring, treatment as part of a diversion program, intensive supervision probationary treatment programs for repeat offenders, vehicle forfeiture, impoundment, immobilization, registration suspension, ignition interlock, suspension or revocation of drivers' license, and imprisonment (*The Century Council, 2007-2*). The average DUII costs $6,418 and can range from $1,570 to $11,266 (Multnomah County DUII Evaluation Program, 2006).

3.3.1.2 License Suspension

If a driver refuses to take the breath test, their license will be suspended and a temporary driving permit of 30 days may be issued at the discretion of the Oregon Department of Transportation. The refusal is considered a traffic offense and in addition to any DUII

related fines, the driver could pay a fine of at least $500 to $1000 (ORS 813.095). The minimum ODL suspension period is:

- Refusal to take a breath, urine, or blood test:
  - 1st offense = 1 yr / no hardship 90 days
  - 2nd offense = 3 yrs / no hardship 1 yr
- If BAC ≥ 0.08:
  - 1st offense = 90 days / no hardship 30 days
  - 2nd offense = 1 yr / no hardship 90 days

3.3.1.3 House Arrest

Some repeat DUII offenders can participate in an electronically monitored house arrest program as an alternative to incarceration. In such monitoring programs, a device is attached to the wrist or ankle of the offender. The device can transmit signals to a computer indicating the offender's presence in an assigned area. Some devices have been equipped with an alcohol breath device where the offender is required to take a test after receiving a random call.

3.3.1.4 Ignition Interlock

Persons convicted of DUII and granted hardship permits may be required to have any vehicle the offender drives installed with an ignition interlock device (ORS 813.602). Any tampering of an ignition interlock device will result in further suspension of license. Other persons who knowingly furnish motor vehicle without an ignition interlock device or blows into the device for the offender will be subject to a Class A traffic violation (ORS 813.608).

3.3.2 DUII Intensive Supervision Program (DISP)

Multnomah County has a DUII Intensive Supervision Program (DISP) program to treat repeat DUII offenders on an individually supervised basis. The program was started in 1992 by Judge Dorothy Baker and is now supervised by Judge Eric J. Bloch. DISP participants are on probation for three years under the program. In this time, they are subject to random alcohol testing, attending educational meetings, and it is entirely offender funded. The DISP program is most effective when payments are not a hassle, expectations are made clear, failure for completing treatment is addressed quickly and stopping BAC refusals (*Dieter, 2006*). Improvements can be made in these areas through changes in the Oregon Administrative Rule pertaining to treatment program responsibilities, legislation for DUII penalties, and adding DUII Evaluators as part of the Court system process (*Dieter, 2006*). The biggest barrier in the DISP program has been getting low income clients to pay for treatment. Fees are often waived for 38% of all clients.

3.4 TREATMENT

3.4.1 Court Ordered Diversion

In the Oregon, if a person is arrested and charged for DUII they are typically referred to

diversion if it is their first DUII offense. They will not get a conviction if they agree to participate and successfully complete a treatment program. Before attending a treatment program, individuals first participate in a screening program. This is provided by a treatment provider and the screening interview meets all standards set by the Director of Human Services. It is preferred that the provider conducting the screening interview not be the treatment provider. Individuals entering diversion are required to go through a DUII Rehabilitation Program, or treatment program.

There are a variety of treatment program sponsors in the City of Portland and Multnomah County. These treatment providers monitor the progress of the individual and report to the referring court that individual's treatment status. In Multnomah County, County-sponsored DUII Evaluators and Alcohol and Drug Evaluation Specialists (ADES) personnel work as the liaison between treatment providers and the courts. Guidelines and criteria used to determine the appropriate treatment program and measure the effectiveness of the treatment of convicted DUII clients by the treatment. The client is placed into an appropriate treatment program based on his/her needs and severity of illness (*American Society of Addiction Medicine, 2006*).

Clients of treatment programs are informed and educated about alcohol and other substance abuse (*DUII Working Group, Jan 30 2006*). Completion of the DUII Rehabilitation Program in Multnomah County for fiscal year 2006 was 71.8% for diversion courts, 57.9% for those convicted, and 67% for a the combined. The combined completion rate of 67% was consistent with the national average. As part of the treatment program, many DUII clients may be required to attend a Victim Impact Panel. Panel members consist of volunteers who have been injured or experienced a personal DUII related loss (*Maginn, 2005*). A source of funding for the Victim Impact Panel is provided through the Intoxicated Driver Program Fund (ORS 813.270).

3.4.1.1 Possible Improvement Areas

One concern with the effectiveness of treatment programs is the lack of resources to handle all individuals who are required to undergo treatment. In fiscal year 2006 for Multnomah County, the waiting list for inpatient treatment was 4-6 months (*DUII Working Group, Jan 30 2006*). Treatment non-compliance related to the failure to pay for treatment continues to be a problem. DUII Program Evaluators in Multnomah County want to avoid a client's failure to complete the treatment program for payment purposes and other court related complications. A report of clients in this situation needs to be reported back to ADES in a timely manner for proper handling (*Ryan, Jan 2006*). One suggestion made to improve the non-compliance is to have the program sited in the Courthouse (*Dieter, 2006*). Other changes to handle non-compliance include making phone calls on the next day, writing letters, and sending notices to DUII clients (*Ryan, Dec 2005*).

A related concern involves the continued ability to provide treatment for qualified indigent clients meeting a certain income level and have an Oregon Health Plan. ADES is concerned the number of slots will be reduced in the coming years due to funding cutbacks (*Ryan, Jan 2006*). A final concern is the number of repeat clients of treatment programs. Recent activity to improve the medical treatment process include sending clients with a BAC of 0.20 and

above through the adjudication process and medical treatment program assignment on the same day, seeing clients who come to the office on that day and explaining to them how they can fulfill court requirements, and establishing individual payment plans (*Ryan, Dec 2005*). Such recent efforts have decreased the number of clients send back to the court by 50%.

3.5 SUMMARY

In summary, it is helpful to think of the process that leads to an individual impaired driver operating a vehicle in three general temporal steps – pre-drinking, during drinking, and post drinking activities. Those involved in attempting to mitigate the adverse social effects of impaired driving generally target their activities in one or more of these temporal steps. A simple flowchart representing these steps and activities are shown in Figure 58. This representation is essentially the classical Haddon matrix. Policy and procedures are generally set by the state legislature with input from the Governor's Advisory Council on DUII and is shown at the top of the figure. On the far left of the figure each primary actor in the process is given a color code. For example, the OLCC is represented by yellow coloring. The individual is represented by light blue. When multiple actors are shown for topic, the primary is shown on top with the other influencing actors placed behind. For example, the service of alcohol is primarily regulated by the OLCC but can be influenced by restaurant and beverage industry as well as enforcement.

On the far right, the three temporal frames are shown. The activities of each primary actor are placed in the chart at the appropriate temporal frame. For example, the Oregon Liquor Control Commission (OLCC) regulates those who manufacture, sell, or serve alcohol. Their activities are represented in the yellow shapes - primarily in the "pre-drinking" time. The restaurants and beverage industry (shown by grey boxes) operates in these same areas. The efforts of these actors are to ensure that alcohol is consumed legally in a controlled manner. The primary actor, clearly, is the individual. Once the individual elects to consume alcohol the outcomes are determined by their choices and action. The decision to consume alcohol (and how much) can be affected by education, servers, or enforcement. If individual engages in behavior that results in impairment and chooses to operate a vehicle one of three possible outcomes will occur. They will be involved in a crash, found and stopped by law enforcement, or perhaps more likely (unfortunately) complete their action with no apparent consequence. If they enter the enforcement / judicial system they will be engaged by treatment, education actors or have sanctions imposed on them. Clearly, there is potential for overlap of these important players in the system. The figure also (simplistically) represents that the process repeats itself.

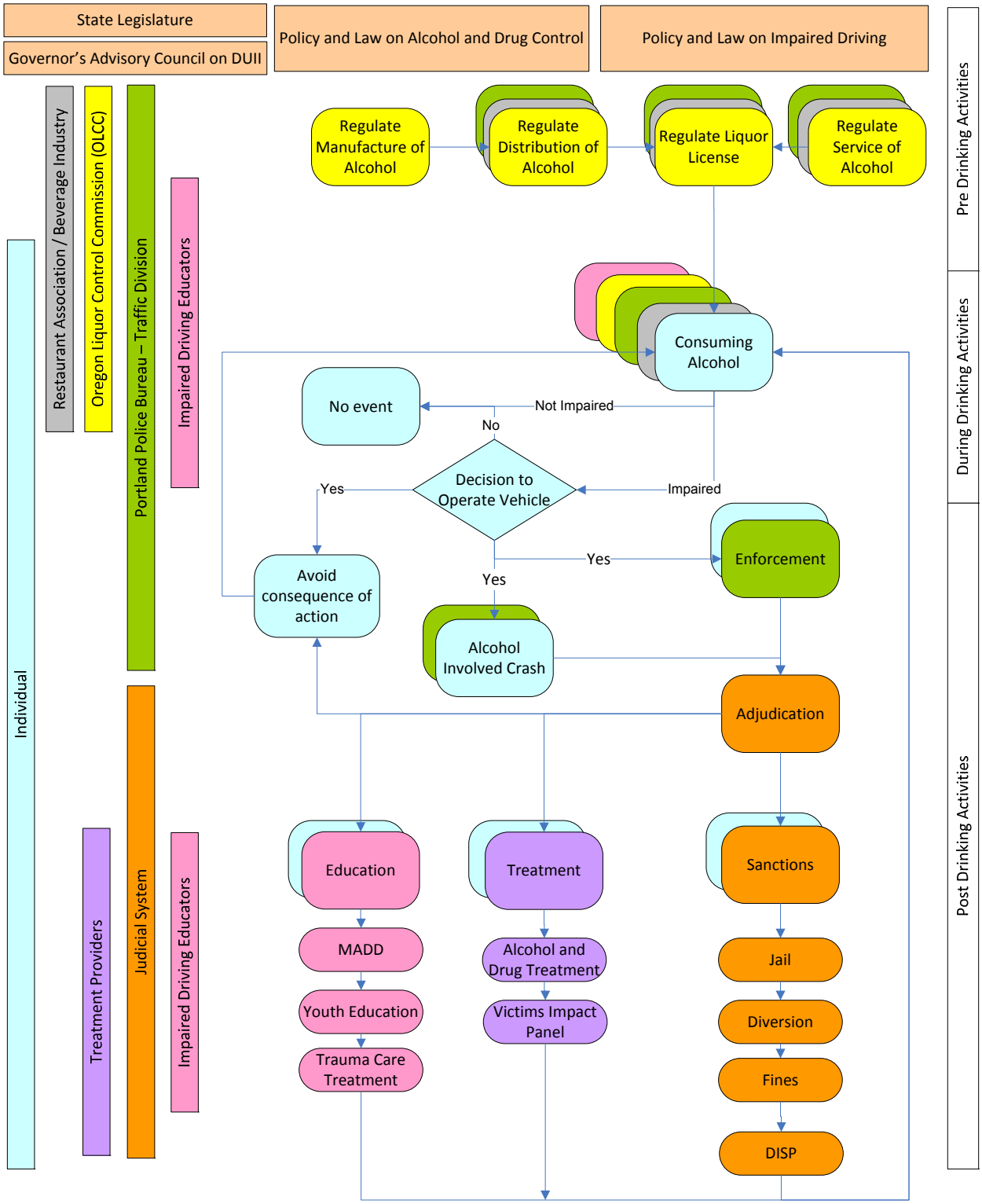


Figure 58: Schematic Flowchart of the DUII Process

4.0 REVIEW OF BEST PRACTICES

Impaired driving and driving under the influence of intoxicants has been the focus of a substantial amount of research. In the following subsections, research highlighting best practices are critically summarized and reviewed. The field is dynamic and covers a wide spectrum of knowledge; this review should not be considered comprehensive. The best practices are summarized by focus area.

4.1 PREVENTION

4.1.1 Public Information and Education Campaigns

Targeting behavioral and social practices are essential in preventing impaired driving. Public information and education campaigns are seen as a prevention tool aimed at the general public or at specific target groups such as youths or college students. In other words, they are general deterrence programs ranging from general campaigns on drinking and driving, usually done at the national level, to offering education classes or supplementing enforcement with media coverage. Despite the many different types of public information and education campaigns, few have been evaluated (*Hedlund and McCartt, 2002*).

At the federal and regional level, MADD has been visible in increasing public awareness of impaired driving. MADD is working with each state's Governor's Highway Safety Association, with support from the National Highway Traffic Safety Association, US Department of Transportation, and Insurance Institute for Highway Safety, to bring forth a "Campaign to Eliminate Drunk Driving" (*Governor's Highway Safety Association, 2007*). Of focus for the campaign are four key areas:

1. Intensive high-visibility enforcement;
2. Implementation of ignition interlock programs;
3. Exploration of advanced vehicle technologies; and
4. Mobilization of grass roots efforts to fight to eliminate drunk driving.

Another type of education campaign is designating a particular month to focus on impaired driving. For example, the month of December is the National Drunk and Drugged Driving ("3D") Prevention Month. This is a prevention campaign aimed at preventing impaired driving among youth. Substance Abuse and Mental Health Services Administration (SAMHSA).

Televised public service announcements have been a primary medium used to prevent alcohol-impaired driving. Some researchers of these public service announcements (PSA) believe there is little evidence to support the notion that these campaigns actually change drinking and driving behavior. For example, Dejong and Atkin (*1995*) prepared a content analysis of PSAs that aired on national television between 1987 and 1992 and found that most PSAs were intended to reach a general audience and not necessarily focused on those who were at greatest risk for driving while intoxicated. They also found that almost two-

thirds of all the PSAs studied included a celebrity, and were designed to create awareness of the problem of DUII or to promote individual behavior change, and the use of designated drivers. Dejong and Atkin claim that these media campaigns ignore the fact that people's behavior is shaped by their social environment, which is shaped by public policies. Ultimately, they recommend a different approach to more successfully deter DUI, which includes future mass media campaigns that focus on changing policies and laws that will motivate individuals to change their behavior and sustain initiatives that support those persons.

Similarly, Rothschild, Mastin, and Miller (*2006*) believe that public education campaigns, like public service announcements, fail to help decrease the number of alcohol-related driving fatalities because they do not address certain social behavior components, such as self interest. Instead, they recommend taking a "social marketing" approach to DUII education where target groups can receive immediate benefits for alternative behavior to impaired driving. Researchers initiated a ride program called the *Road Crew*, where an appealing transportation option of riding in an older luxury vehicle would be given to, between, and home from bars. The study was conducted in three rural communities. Results showed a significant shift in driving behavior, particularly among 21-34 year olds. Because the study is so recent, the researchers involved have projected a 17% decrease in alcohol-involved crashes in the first year, no increase in drinking behavior, and large savings between the reactive cost of crash clean-up efforts and the proactive cost of avoiding these crashes. To date, the program has become self-sustaining based on fares and tavern contributions, and have even become part of the community culture. The Road Crew program was initiated in Wisconsin and funded by the NHTSA and the Wisconsin Department of Transportation.

The effectiveness of an education campaign via offering alternative transportation may indicate an opportunity to integrate mass education campaigns within the day to day activities of those who drink or are involved in preventing impaired driving. This would include coupling sobriety checkpoints with media campaigns. The goal is a culture change among the drinking population. From the research that has been done, the less effective approaches appear to be isolated education campaigns that attempt to make the general public aware of impaired driving. While organizations such as MADD may have started with general mass media campaigns, they are now focusing additional efforts on programs that focus on the repeat offender, such as through campaigns promoting the use of ignition interlocks. This brings up the effectiveness of mass media campaigns, particularly on the youth population who include persons who have never drank before. Few evaluations on the effectiveness of mass media campaigns exist, but those that do exist reveal that they generally are not that effective (*DeJong and Hingson, 1998*). General education campaigns may still be a viable option for the youth population, but may have to be done in a creative manner. Nevertheless, more research needs to be conducted on the effective of mass general public information and education campaigns.

One community in Massachusetts is taking a more comprehensive approach to public education on alcohol-impaired driving. Hingson et al. (*1996*) conducted a study to assess whether a community driven program called *Saving Lives* in Massachusetts, begun in 1988 where multiple city departments and private citizens were organized, could reduce alcohol-

impaired driving, related risks, traffic deaths, and injuries. In each of the communities with a *Saving Lives* program, a full-time coordinator form the mayor's office organized a task force of private citizens and organizations (schools, police, and health) to develop community initiatives to deal with DUII education. Initiatives included media campaigns, business information, programs, speeding and drunk driving awareness days, speed watch telephone hotlines, police training, high school peer led education, Students Against Drunk Driving chapters, college prevention programs, alcohol-free prom nights, beer keg registration, and increased liquor outlet surveillance (*Hingson et al., 1996*).

The method of study consisted of comparing trends in fatal crashes and injuries per 100 crashes in *Saving Lives* cities with the rest of Massachusetts from March of 1984 through February of 1993. The group found that in cities with the *Saving Lives* program, fatal crashes decreased 25%, and fatal crashes involving alcohol decreased 42%, with visible injuries decreasing 5%. Additionally, the proportions of vehicles that were observed speeding and teenagers who drove after drinking was reduced by 50% over the 5 year period. This suggests that community-based educational efforts targeted in certain areas within a given community may be successful at reducing DUI related risks.

News media can be used to educate the public. However, they are also involved where bills are taken under consideration. A study was conducted on the effectiveness of news media in Louisiana from 1994 to 2003 on 13 underage alcohol bills relating to bans on minors in bars, alcohol tax increase, beer keg registrations, and zero tolerance laws. The research found high press coverage was associated with the unsuccessful passing of alcohol bills with exception of the zero tolerance law (*Harwood et al., 2005*). The researchers suggest advocacy should be concentrating their efforts on laying the groundwork, but not on pushing for the passing of the bill directly. Advocate groups should first consider taking a more "behind the scenes" approach by physically present at the legislature, assist legislators in drafting bills and personally address policy makers during negotiations itself (*Harwood et al., 2005*). If the behind the scenes approaches do not work, then they may have to apply more direct approaches through the media, particularly with regards to strong opponents.

4.1.1.1 Limitations

A recent NCHRP Research Results Synthesis 322 suggests that the characteristics of unsuccessful programs include the following (quoted directly) :

Unsuccessful programs	**Successful programs:**
• Passive messaging that is communicated by signs, pamphlets, brochures, and buttons. • Slogans that give simple exhortations for people to behave in certain ways to avoid undesirable outcomes. • Education programs that are lecture-oriented, information-only in nature. • Short-term programs that have low-intensity messages. • Use of extreme fear or scare techniques,	• Public information programs that involve careful pre-testing of messages, delineation of the target group, and making sure the messages reach the target group. • Longer-term programs that deliver the messages in sufficient intensity over time. • Public information programs that communicate health knowledge not previously well known. • Public information implemented in

especially when directed at adolescents. • Fear messages are given without communication of concrete steps that can be taken to avoid the danger.	conjunction with other ongoing prevention activities—for example, in combination with law enforcement programs—publicizing the enforcement presence and results of the enforcement. • Public information and education included as part of broader-based, longer-term community programs. • Education programs based on behavior change models, using interactive methods to teach skills to resist social influences through role playing, behavior rehearsal, and group discussion. • Fear messages combined with concrete steps people can take to avoid the danger

4.1.2 Alternative Transportation Programs

Designated Driver Programs (DDPs) and Ride Service Programs (RSPs) are two types of alternative transportation options to help impaired persons safely get to a destination. DDPs can be server-based or community-wide programs. In a server-based DDP, drinking establishment servers can ask an impaired person or friends of the impaired person who the designated driver is. Community-wide DDPs are community based organizations that will promote a designated driver (NHTSA). RSPs are often community based organizations. Some operate only during holidays while others are year round. NHTSA has not found any evidence that these programs promote or encourage more drinking or that they are effective in reducing fatalities and injury from alcohol-involved crashes.

Similarly, Rothschild, Mastin, and Miller (*2006*) believe that public education campaigns, like public service announcements, fail to help decrease the number of alcohol-related driving fatalities because they do not address certain social behavior components, such as self interest. Instead, they recommend taking a "social marketing" approach to DUII education where target groups can receive immediate benefits for alternative behavior to impaired driving. Researchers initiated a ride program called the *Road Crew*, where an appealing transportation option of riding in an older luxury vehicle would be given to, between, and home from bars. The study was conducted in three rural communities. Results showed a significant shift in driving behavior, particularly among 21-34 year olds. Because the study is so recent, the researchers involved have projected a 17% decrease in alcohol-involved crashes in the first year, no increase in drinking behavior, and large savings between the reactive cost of crash clean-up efforts and the proactive cost of avoiding these crashes. To date, the program has become self-sustaining based on fares and tavern contributions, and have even become part of the community culture. The Road Crew program was initiated in Wisconsin and funded by the NHTSA and the Wisconsin Department of Transportation.

If alternative transportation cannot be provided, another possible solution is to place bars near transit lines to encourage transit use. Transit services would possibly have to run later than normally scheduled, especially during weekends. No evaluations have been conducted to show the effectiveness of situating bars near transit lines or running late night transit

services on reducing impaired driving. A sample table tent is shown in Figure 57.

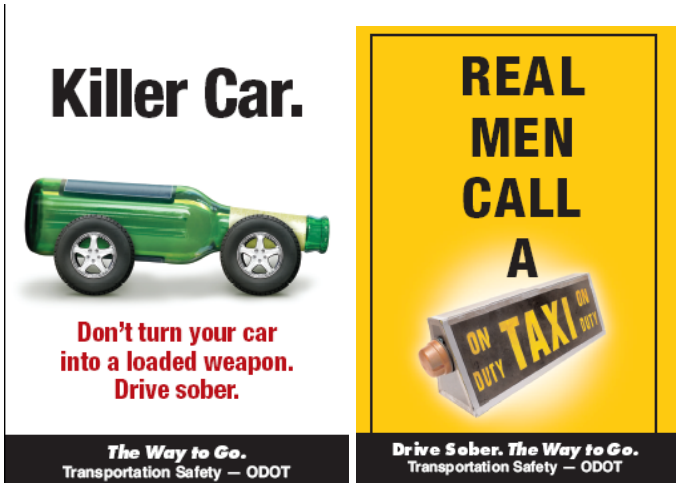


Figure 57: Sample Public Information Materials (ODOT)

4.1.3 State Control and Distribution of Alcohol

Following the repeal of the prohibition in 1933, many states decided to shift the control of alcoholic beverage sales to the state (*Saltz, 1993*). At first, states had monopoly over alcohol sales. Today, although the distribution of alcohol is primarily privatized, some state agencies still have a fair measure of control over the availability of alcohol by assuming the role of wholesaler and/or retailer. As of 2002, 18 states and 1 county controlled the availability of alcohol. These states are known as control states. States that do not control the availability of alcohol, and therefore leave the wholesale and retail aspects of alcohol to the private sellers, are known as open or license states (*NHTSA, 2002*).

Where the retail purchase of alcohol is controlled, research results indicting effectiveness in reducing impaired driving are divided. However, most indicate a negative relationship between retail outlets and alcohol-involved crashes. Mann et al. (*2005*) found that the majority of studies he reviewed found that a greater presence of outlets, (e.g. mini-markets, restaurants, or liquor stores) resulted in a higher number of alcohol-involved crashes. When accounting for the number of beverage outlets per a specific comparable geographic unit of area, areas that had more beverage outlets also had more crashes. Scribner et al. (*1994*), in a study of 72 cities in Los Angeles, found that in a typical city of 500,000 persons and 100 alcohol outlets, an additional outlet would add an additional 2.7 crashes. These same areas also tended to have more cases of crime and violence (*Kwabena, 2001*). Where the price of alcohol is set by the state, either by the bottle or through excise taxes, research shows a positive impact on alcohol sales and consumption. When the price of alcohol is high, fewer patrons consume alcohol, leading to improved health. Furthermore, when patrons consume less alcohol, enforcement burden is lessened (*Mann et al., 2005*). This trend is observed nationally and internationally.

Server programs have also been evaluated by Holder and Wagenaar (*1994*). A total of

36,000 servers and 6,000 owners were trained when the requirement went into effect. In general, approximately 13,000 new servers are trained a year (*Holder and Wagenaar, 1994*). In 2004, approximately 103,000 active service permits were issued (*OLCC, 2004*). Holder and Wagenaar evaluated the effectiveness of the Oregon mandated server training program on traffic crashes. Traffic crashes involving a single-vehicle between 8 PM to 4 AM where the driver had a nonzero blood alcohol level were evaluated in a before / after study. Traffic crash data from January 1, 1976 to December 31, 1989 was evaluated. The Oregon server training program had a statistically significant effect on single-vehicle nighttime traffic crashes. In the first six months of the new policy, the number of crashes reduced by 4%. This reduction rose to 11% by the end of the first year, 18% by the end of the second year, and 33% by the end of the third year. Oregon was the first state in the United States to pass legislation to make alcohol server education mandatory (*OLCC, 2007*).

Although they do not set alcohol laws, alcohol-control agencies are able to influence laws on how, when, and where alcohol is sold and consumed, and how much alcohol can be sold for. For example, although they target the entire drinking population, they oftentimes focus on minors and visibly intoxicated persons. Alcohol-control agencies may be able to influence laws and regulations that limit the number of retail licenses for drinking establishments and therefore control the availability of alcohol. For example, they may influence the issuance of permits for sellers and servers of alcohol at licensed establishments.

Control over the availability of alcohol has become more flexible, especially as more states privatize the sale of alcohol. In a study evaluating the privatization of wine in five states, Alabama, Idaho, Maine, Montana, and New Hampshire, Wagenaar and Holder (*1995*) found increases in wine sales of 42%, 150%, 137%, 75%, and 15%, respectively. However, increased wine sales may not necessarily result in increased levels of crash frequencies or severities (*Grunewald and Ponicki, 1995*). It should be noted that analysis of alcohol use should be broken down into the varying alcohol types (e.g. beer versus distilled spirits, versus wine). Gruenewald and Ponicki (*1995*) have found that in many cases the occurrence of impaired driving occurs primarily with beer as the beverage of choice. The same is true of the type of establishment where the sale occurs (e.g. restaurant or liquor store). For example, Gruenewald and Ponicki (*1995*) found the single-vehicle nighttime crash fatality rates were higher for beer drinkers than spirit or wine sales. Decreasing beer sales by 1% led to a 1.45% decrease in nighttime fatality rates. One possible strategy to reduce the sale of beer as well as spirits and wine leading to impaired driving would be to reduce the sale of alcohol where gasoline is also sold.

4.1.3.1 Limitations

While the operation of alcohol-control agencies in each state differs, one criticism raised in research studies has been that alcohol-control agencies may not place enough emphasis on alcohol use prevention. Their role as controlling the distribution and sale of alcohol to generate revenue may conflict with prevention purposes (*Saltz, 1993*). Even though enforcement of liquor laws may be preventative, many states have inadequate resources to have a properly effective enforcement role. Another problem encountered is that requirements for controlling distribution and sale of alcohol differs by state, making it difficult for researchers to adequately compare server practices and the effectiveness control

on alcohol availability.

4.1.4 Third Party Liability

Third party liability laws on excessive drinking have been around since the early 1900s. At first, they were directed at patrons displaying "habitual drunkenness" (*Saltz, 1993*). However, once automobiles became more popular, the focus was tightened to "visibly intoxicated" patrons. With liquor liability laws, also known as dram shop liability, alcohol servers are held responsible for harm that an intoxicated or underage patron causes. However, liability does not end with the servers. Dram shop liability laws were first created to resolve the issue of compensating the victim(s) in an impaired driving related incident (*Saltz, 1993*). However, since advocacy organizations, such as MADD was formed in the 1980s, dram shop liability is now seen as a preventative tool. Dram shop liability laws are now used with server intervention programs to prevent the occurrence of impaired driving Bars, clubs, and any supplier(s) of alcohol can be held liable for harm in third-party liability suits which may be result in a criminal or civil trial depending on the nature of the harm inflicted.

There are varying forms of dram shop liability laws. Some states have licensing rules that state a business cannot sell alcoholic beverages to a visibly intoxicated person. If they do, their business license can be suspended or revoked. These suits, though rare, come about because of the limits in the amount insurance companies can pay. If a drunk driver or his/her insurance company is unable to pay for all damages, the commercial server is then called upon to pay the remaining damages. In Utah, a person can collect up to $500,000 per injury per incident from a tavern with a maximum total amount of $1 million (*Dillon and Bernick, 2001*). Other states do not have a statute on dram shop liability. Rather, they are enforced through common law based on precedence in court decisions (*Saltz, 1993*). In a liability case in Iowa, the case report states "individuals, drunk or sober, were responsible for their own torts" (*Smith, 2000*). The report continues to state that a dramshop can only be held liable if they serve the underage or a visibly intoxicated person. The same occurs in Colorado, Florida, Ohio, and Utah (*Smith, 2000*).

4.1.4.1 Limitations

Insurance companies offering liability insurance do not appear to consider in their premium estimates for drinking establishments improved performance of alcohol servers recognizing visibly intoxicated persons (*Saltz, 1993*). Premiums remain high and as a result, many drinking establishments choose not to pay for liability insurance. To remedy this problem, Saltz (*1993*) and Mosher (*1984*) suggests putting in place an incentive of lowering liability if a drinking establishment had exhibited responsible beverage service. The Oregon Restaurant and Bar Association (ORBA) originally had proposed this solution in a bill. However, it was later removed due to pressures from trial lawyers and the bill was never passed with the proposed provision.

4.1.5 Alcohol Server Training

Approximately 40% of all impaired driving incidents begin in a licensed drinking establishment (*NHTSA, 2005*). Preventative efforts have therefore been made to promote

responsible drinking in drinking establishments. Some of these preventative efforts have been spearheaded by the alcohol-control agencies. However, in some cases, the alcoholic beverage industry and restaurant associations have gone beyond what has been required by alcohol-control agencies to prevent impaired driving. In others, the alcoholic beverage industry and restaurant association are concerned with the cost of server training, especially due to high turnover, and are against putting in place further regulations pertaining to the drinking establishment (*Saltz, 1993*). In an evaluation of 11 studies that contained data on drinking locations gathered through post-accident, post-DUII arrest, and BAC roadside surveys, O'Donnell (*1985*) found that 40% to 63% of persons arrested who had taken a roadside-survey had a BAC exceeding 0.10 and 26% of impaired drivers involved in a crash had departed from a drinking establishment before driving.

The most common prevention strategy has involved educating servers of the effects of alcohol and the alcohol beverage control laws so they can prevent patrons from consuming too much alcohol and becoming overly impaired. These programs may also be called Responsible Beverage Service (RBS) programs (*Mosher et al., 2002*) and server integration programs. Servers can respond to impaired patrons by offering them food or delaying service to slow alcohol absorption by the body. Servers can refuse service. They can also prevent patrons from driving while impaired by arranging alternative transportation. Oregon was the first state to introduce server training in December 1986. Single-vehicle nighttime traffic crashes were significantly reduced by December 1989 (*Holder and Wagenaar, 1994*). In California and in several other states, server integration programs have been explored (*Shults et al., 2001*). A national survey of adults 18 and over found that 89% and 88% of the population were in favor of mandating server and manager training, respectively (*Wagenaar et al., 2000*).

To address effective server training, Toomey et al. (*1998*) evaluated 24 server training programs nationwide. They found that management support was essential in preventing underage and intoxicated patrons. In server training, the perceptions of the norm with regards to refusing service, laws, policies and procedures of the establishment, and understanding the social support for specific types of preventative and proactive interventions are important as well as their consequences. Training programs that incorporate role playing to try to change patron behavior have been effective. Finally, the presentation of server training should be interesting, employing different education methods such as video, discussion, and role playing. Finally, although no legal mandate occurs, water may be provided to patrons at drinking establishments as part of server responsibility. The effectiveness of the above practices has not been scientifically evaluated.

4.1.5.1 Limitations

One problem identified with server intervention programs is that there is currently no standard training program for server education. Many educators meet state alcohol-control agencies minimum requirements, but training methods may vary in amount of time, delivery method and content covered. This makes it difficult to compare and evaluate server intervention programs. Having a state-wide mandatory training program may help to decrease traffic crashes (*Toomey and Wagenaar, 1999 and Mosher et al., 2002*). The Responsibility Hospitality Council, an organization dedicated to promoting the responsible

sale and service of alcoholic beverages, has worked to develop standards to help set policy on server training (*Saltz, 1993*).

4.1.6 Underage Drinking

The youth has often been a targeted population for impaired driving initiatives. Although many states had minimum legal drinking age (MLDA) laws starting in the 1970s (*Dee and William, 2001*), the MLDA law, passed through the National Minimum Purchase Age Act, was enacted nationwide in 1984. In general, MLDA laws "makes it illegal for any person who is less than 21 years old to purchase, possess, or consume alcoholic beverages or to misrepresent their age to obtain such beverages" (*NHTSA and NIAA, 2000*). MLDA laws have been effective in reducing crashes. Sweedler (*1995*) found that in 1980, 53% of all teenage drivers killed in crashes had a BAC of over 0.10. In 1987, this percentage was reduced to 28%. Zwerling, and Jones (*1999*) reported the percentage was reduced to 21% in 1996. From 1993 to 2001, the number of college students who drank alcohol decreased from 81% to 77.4%. However the occurrence of binge drinking increased in those same years from 21.3% to 23.5%. Other benefits of the MLDA laws include a decrease in alcohol consumption and improved health (*Wechsler et al., 2002*).

The zero tolerance law, which makes it illegal for persons under 21 to drink and operate a motor vehicle, was enacted nationwide in 1998 (*Ferguson. and Williams, 2002*). States differ in enforcing the law, varying from an arrest or BAC test as in New Mexico, Texas, Florida, Main, and Oregon, to only obtaining a preliminary breath test as in California. The consequences are typically a license suspension or revocation and monetary payments, gradually getting more severe on subsequent offenses. Zero tolerance laws have been found to be effective. Zwerling and Jones (*1999*) conducted a study of six controlled studies which evaluated the impact of various laws limiting underage drinking (20 years of age and younger). Half of the studies were from Australia and the other half were from the United States. Although the results in the studies were statistically insignificant, all showed reductions in the number of injuries and crashes. The study was limited in that the studies selected had occurred from 1984 to 1994 and during this time other laws may have influenced the outcome. However, zero tolerance laws are most effective when coupled with public information and education campaigns. Blomberg (*1992*) found that in Maryland, the zero tolerance law resulted in a statewide 11% reduction in crashes among underage drivers. In six counties, public information and education campaigns were conducted. The result was a 21% reduction in crashes before the campaign and 36% after the campaign.

4.1.6.1 Limitations

Problems encountered with the various laws to prevent underage drinking include the paperwork involved in enforcement practices. It was suggested by Ferguson and Williams (*2002*) that the simple forms, such as used in California are easier to use than longer forms, as in New York. Law enforcement officers frequently complained about the long forms as a disincentive to underage drinking enforcement.

4.2 ENFORCEMENT

4.2.1 Police Enforcement

Police enforcement plays a major role in reducing DUII related incidents. When an enforcement officer observes a driver suspected of impaired driving they will likely initiate a traffic stop if probable cause is present. The officer will pull the driver over and ask them to take a standardized field sobriety test. Police departments with dedicated DUII officers may have a significant impact on impaired driving. For example, the Austin Police Department has a dedicated unit of officers who handle DUII enforcement. These officers have dedicated enforcement decals on their patrol cars (*Stuster, 2006*). The presence of the special impaired driving unit resulted in a 25% decrease in alcohol-involved fatal crashes between 1997 and 2001 and a 10% increase in the conviction rate of impaired drivers.

An enforcement method used in many states is sobriety checks in select locations. A sobriety check usually works where law enforcement officers set up a checkpoint, stop drivers, and assess their degree of alcohol impairment. Either random breath testing (RBT) and selective breath testing (SBT) is used at sobriety checkpoints. RBT checkpoints are usually conducted in Australia and other European countries. SBT checkpoints are conducted in the United States due to issues about the violation of constitutional rights which limit the number of RBT checkpoints (*Shults, 2001*). Shults et al. (*2001*) conducted a review of a variety of sobriety checkpoint studies. Of 15 studies pertaining to the effectiveness of SBT checkpoints and 17 pertaining to RBT checkpoints, the number of alcohol-involved crashes decreased from 16% to 24%. The study did not find a difference in the effectiveness between SBT and RBT checkpoints.

The sobriety checkpoint system is advantageous in that the purpose is not to catch drunk drivers, but to discourage the public from driving impaired. Sobriety checks are an effective enforcement measure, especially for law enforcement programs without a sufficient number of law enforcement officers to enforce impaired driving laws. They also allow for media coverage, thereby increasing the visibility of the operation in the hopes of deterring drivers from drinking and driving. California is one state that uses the sobriety checkpoint system. In Los Angeles County, an "Avoid the 50" program was established among 50 law enforcement agencies, supported by the California Office of Traffic Safety. Special 8-hr DUII patrols are conducted by at least 50 officers each month and sobriety checkpoints conducted throughout the year to create public awareness. Alcohol-involved injury crashes declined by 34% between 2002 and 2003, compared to a 6% increase nationwide. Alcohol-involved fatal crashes declined by 56% compared to a 2% decline in California and 3% nationwide (*Stuster, 2006*). Fresno Police Department (also in California) has a similar program. Alcohol-involved injury and fatal crashes declined by 17.4% and all alcohol-related crashes declined by 25%, compared to a 6% increase in alcohol-related crashes nationwide (*Stuster, 2006*).

Instead of utilizing sobriety checkpoints, other states may use saturation patrols. In saturation patrols a command center is set up, usually in a parking lot, where persons arrested for impaired driving are taken to for testing. In Maricopa County, Arizona, the East Valley DUI Task Force has conducted visible, large scale saturation patrols since 1983. Large

special saturation vehicles are parked in parking lots. Although breath tests are administered, officers are trained to draw blood and have the support of an on staff judge to provide a warrant to force a blood draw as needed. Alcohol-involved fatal crashes declined by 14% in 2002, compared to 2% in other areas of the County and an increase of 3% nationwide (*Stuster, 2006*). Several other states researched by Stuster (*2006*) that conducted sobriety checkpoints and saturation patrols all revealed decreases in alcohol-related crashes.

4.2.1.1 Limitations

One challenge for law enforcement is that when administering a breath test, the device tests only for alcohol use. A driver may be impaired because they have taken a drug other than alcohol. In this case, the breath results will show up with a 0.00 BAC. In some states, a Drug Evaluation and Classification (DEC) Program counters this problem by certifying offers to become Drug Recognition Experts (DRE). Certified officers can arrest and convict drivers who show symptoms of impairment due to drug use (*Talpins and Hayes, 2004*). The program was started by the Los Angeles Police Department (LAPD) in the early 1970s, but became a federal program in the early 1980s. As of 2004, 37 states and the District of Columbia have a DEC Program. A study in New York in 1994 found the most commonly found single drug was cannabis at 59% (NHTSA, 1996). In 1993, Arizona Department of Public Safety Central Regional Crime Laboratory conducted a study to determine the impact of the DREs in getting impaired drivers off the road. Of all drivers arrested and prosecuted, approximately 33% had consumed alcohol and 5% had a BAC of 0.10 or higher (*NHTSA, 1996*). Few sources were available indicating funding sources for enforcement. However, in New York, enforcement efforts take up about 60% of all available DWI resources (*Williams et al., 2005*).

4.3 ADJUDICATION

4.3.1 Court Programs

Persons arrested for impaired driving often go through an adjudication process and are issued sanctions. The goals of such sanctioning programs are to reduce the recidivism rate of DUII offenders. Typical sanctions for persons arrested and/or convicted of a DUII include paying a fine, serving jail time, and getting their license suspended or revoked (*Jones et al., 1996*). In Oregon, evaluation and treatment is mandated as part of the conviction. New York has a comprehensive DUII program known as STOP-DWI. Created in 1981, STOP-DWI is a comprehensive, unique and statewide alcohol and highway safety program sustained by funds from DWI and driving while ability-impaired (DWAI). DWI occurs when the driver has a BAC of 0.08 or greater. DWAI occurs when a driver has a BAC of 0.05 or greater. To keep offenders in the system and to tract recidivism, drivers arrested and convicted for DWI or DWAI may not have their convictions dropped to a non-alcohol offense. The program has been successful in reducing alcohol-involved fatalities by 54% from 1131 fatalities in 1982 to 520 fatalities in 2002. T he alcohol-involved fatality rates per 100 million VMT was 0.36 versus 0.61 for the United States (*Williams et al., 2005*).

Some states offer offenders to substitute community service for jail time (*Jones et al., 1996*). This is done oftentimes because jail space is limited. Known as intermediate sanctions

programs (*Lord, 2001*), these programs include community service, intensive supervision, boot camps, house arrest, electronic monitoring and day-reporting centers (*McDonald, 1987*). Other strategies recommended by Hedlund and McCartt (*2002*) include controlling offenders closely during probation, using home detention and electronic monitoring, or jailing offenders as appropriate. These strategies are explored in other parts of this section. Finally, problems with court sanctions are not well known because many states do not have good record systems (*Hedlund and McCartt, 2002*).

Electronic monitoring is used for offenders who are on house arrest and was first used in 1984 (*Skelton and Renzema, 1990*). Offenders typically have to wear an electronic band around their wrist or ankle. Communication between the offender and probation office can vary. Some devices can send continuous signals. Others devices work using random phone calls made by the probation officer. Others work by transmitting photos to the office (*Jones et al., 1996*). Los Angeles County, CA has had an electronic monitoring program for repeat offenders convicted of a DUII since October 1992. Offenders do not face jail time, but are monitored at home. They have to wear a transmitter on a band tied to their ankle. Up to 50 offenders start the program each month and pay at least $15 a day for ISP. Recidivism using the EM program was reduced by about 1/3 after 1 year of the program. The cost of the program was minimal because it was paid for by the participants.

Instead of incarcerating offenders, some states have set up special "DWI jails" (*Jones et al., 1996*). These can be weekend programs where the offenders perform acts of community service. These programs may require the offender to live at a certain place for awhile. For example, young people often are sent to boot camps where they are educated under strict conditions. Other offenders may go to Dedicated Detention Centers (DD), where they can live and receive counseling and treatment. Similarly, Day Reporting Centers (DRC) provides education and counseling services, but is not intended for residential living.

4.3.1.1 Limitations

Hedlund and McCartt (*2002*) observed that administrative sanctions do little to curb impaired driving and sanctions are not always applied consistently. Some state laws allow for offenders to escape payment of fines or an impaired driving conviction through a plea bargain (not Oregon).

4.3.2 License Suspension or Revocation

License suspensions are a common and effective way to reduce the occurrence of alcohol-involved crashes by removing those who have the highest potential to drink and drive. Another possible method used to reduce impaired driving offenses is administrative license revocations (ALR). An ALR can be issued when law enforcement officers stop a vehicle and the offender either refuses to take a drug test or fails one and is therefore arrested. In some states, the license is seized upon a DUII conviction. When the offender's license is taken away, the state Department of Motor Vehicles will suspend the offenders' license for a period of time depending on the outcome of the trial. As of 2002, 40 out of 50 states have ALR laws (*Voas and DeYoung, 2002*). New York's STOP-DWI program includes a Judicial Per Se License Revocation law (Section 1193[2](e)(7)a of the Vehicle and Traffic Law)

which requires a "mandatory loss of license if a driver takes a breath test and registers a score of 0.08 percent or greater, his or her driver license is suspended no later than the conclusion of arraignment" (*Williams et al., 2005*). Other states have Administrative License Revocation (ALR) laws that will temporarily provide a 15-day license until a hearing can be scheduled.

4.3.2.1 Limitations

The drawback to such programs is that many of these drivers continue to drive without a license. The only time enforcement officers know of someone who is violating a driving while suspended (DWS) law is if they the officers stops a vehicle for a traffic violation. Also, because offenders often use their vehicle as a way of getting to work, many courts have granted offenders a hardship or occupational license, allowing the offender to drive on a limited basis. This would include to and from work, and during daytime hours only.

Studies have shown that the rate of first time offenders with suspended licenses who drive is high. From fall 2001 to fall 2002, McCartt et al. (*2003*) studied the extent to which first time offenders drove while having a suspended license. First time DUII convicted offenders in the City of Milwaukee, Wisconsin and Bergen County, New Jersey. The penalties for first time DWI offenses and DWS / DWR differed. In Wisconsin, mandatory minimum administrative and court suspension penalties existed. However, DWS / DWR penalties were not mandatory. In New Jersey, administrative and court suspension penalties were not mandatory. Offenders were not allowed to obtain hardship licenses and there were substantial penalties for a DWS / DWR. In both study areas, offenders were either not eligible to receive hardship licenses or hardship licenses applied only a minimal number of offenders. Observations were made of 93 first time DUII offenders (57 in Milwaukee, 36 in Bergen County) during their license suspension and after license reinstatement. Results showed 88% of Milwaukee offenders drove while their license was suspended versus 36% in Bergen County. The results showed that administrative license suspensions were effective, particular where the state had tougher laws. However, it only focused on whether or not offenders drove. In another study where offenders were given a survey to complete, 68% of the offenders said they had driven while their license was suspended or revoked (*Wiliszowski et al., 1996*). Most drove for employment or medical reasons. The frequency of driving varied. What is of importance is that of all offenders, 54% admitted they drove after drinking during their penalty period. This indicates license suspension / revocation programs are not effective in reducing impaired driving occurrences.

Another problem with administrative licenses suspensions is that many licenses are never reinstated. Voas and McKnight (*1989*) found that approximately 50% of all license suspensions are reinstated. According to Voas and DeYoung (*2002*), this occurs because of either the cost of reinstating a license, consequences of increased insurance for the offender, and low probability of apprehension. If those who are not reinstated still continue to drive, especially while intoxicated, this could present problems. Other sanctioning programs that may avoid the problem posed by administrative license suspensions include license plate impoundment, cancellation of vehicle registrations, vehicle impoundment or immobilization, and the forfeiture of vehicles (*Voas and DeYoung, 2002*).

4.3.3 Repeat Offenders

Since the 1980s, various agencies and organizations have sought to educate the public of the problems of impaired driving. As a result, the general population today is more aware of the consequences of impaired driving. However, education or threats to punish drivers while intoxicated do not appear to reach repeat offenders and chronic drunk drivers. Many definitions are used to describe repeat offenders and chronic drunk drivers. Repeat offenders typically refer to drivers who have been previously convicted of a DUII and are facing a subsequent conviction. Chronic drunk drivers are defined by the National Council on Alcoholism and Drug Dependence (NCADD) as people with an underlying alcohol problem that interferes with their driving as well as other aspects of their life. These drivers make up about 1% of all drivers on weekend nights, but account for about 50% of all fatal crashes (*NCADD, 2006*). Regardless of the varying definitions used for repeat offenders and chronic drunk drivers, the population referred to in this section is best characterized by persons who repeatedly drive after drinking, have a very high blood alcohol content, often have been previously convicted of an impaired driving offense, and display signs of serious problems with alcohol abuse by drinking frequently, to excess or by being resistant to appeals and threats to drink less (*Health Canada, 1997*).

Several strategies have been used in an attempt to repeat offenders. Many of these strategies or countermeasures are strict, punishing the driver for repeated offenses. Their effectiveness in reducing the occurrence of impaired driving and fatal crashes vary. In Maine, repeat DUII offenders are subject to lower per se BAC limit laws. Since program implementation, the limit has been reduced to "zero tolerance". In six years, fatal crashes involving repeat DUII offenders decreased by 25%. The trend is notable because the percent of fatal crashes involving repeat DUII offenders in neighboring states increased. Some states have passed laws requiring repeat DUII offenders to install license plates that visibly stand out. Ohio, Iowa, and Minnesota are three states requiring these special license plates (*Insurance.com website, 2007*). Zebra markings were experimented on in two states. Washington is another state that requires zebra stickers (*MADD, 2007*.

4.3.3.1 *Limitations*

In general, a problem is that not all repeat offenders are identified (*Hedlund and McCartt, 2002*). Hedlund and McCartt (*2002*) suggest screening all drivers to determine if they are a chronic drunk driver or repeat offender especially if they have out-of-state convictions.

4.3.4 Intensive Supervision Program (ISP)

Intensive Supervision Programs are early intervention programs that require offenders take treatment shortly after arrest and during the pretrial period with ongoing monitoring and supervision. Milwaukee County, Wisconsin has an ISP. Started in October, it processes about 50 new clients every month found that the ISP reduced re-arrest recidivism probability by about one half after one year of the program (*Jones et al., 1996*). At the time of the study, the program was not found to be cost effective, despite the savings in reduced jail time.

New Jersey has an intensive supervision program involving 375 to 500 participants at a time.

What makes New Jersey's program unique is that participants must serve at least two months in prison before entering the program. In an evaluation conducted in 1998 (*Pearson*), the New Jersey program was found to reduce the need for limited prison space, was monetarily cost-beneficial and cost-effective compared to other incarceration programs, prevented criminal behavior, provided counseling, and delivered appropriate, intermediate punishment.

The program is rated medium in strictness by a survey of community justice professionals. While in the program, participants must look for a job if unemployed, perform community service, and attend counseling sessions. Participants in the first six months are contacted most frequently, with a median monthly number of contacts of 31 per month, 12 face to face interviews by ISP officers, 7 curfew checks, and 4 urinalysis checks. Intermediate and advanced participants are contacted less frequently, but still received more contact than parole or probation participants. Supervision in the program is strict and any violation results in return to prison. Approximately 40% to 50% of all participants are returned to prison. In addition to an ISP officer, each participant also has a community sponsor who is nominated by the offender and must volunteer their time (*Pearson, 1998*).

The New Jersey ISP program takes about a year and a half to complete and costs approximately $13,000 per offender, an approximate savings of about $7,000 when compared to $20,000 for a typical correction period of a prison term. The program also allows the offender to make $10,000 in annual income compared to the $5,000 in annual income paroles make. The program contributes approximately $200,000 in community service a year. Finally, despite the selective screening of the ISP, recidivism rates were 12% lower in the two years starting treatment (*Pearson, 1998*).

4.3.5 Vehicle Impoundment or Immobilization

Related to license suspension or revocation in that they prevent offenders from driving, some states impound or immobilize offender's vehicles at the time of arrest. When a vehicle is impounded, it is taken away from the offender for approximately 30 to 90 days. This is achieved by either taking either the entire vehicle or license plate. Vehicles can also be forfeited and sold by the government.

Vehicle impoundment laws were passed by many states in 1999 and 2000 (*Voas and DeYoung, 2002*). Both California and Ohio have effective programs. Vehicle impoundments have been known to cause up to a 25% reduction in alcohol-involved crashes. DeYoung (*2000*) studied the effectiveness of the California impound law through a time series analysis. The implementation of the law resulted in a 13.6% reduction in crashes among the offender group. Compared to the 8.6% general reduction of crashes of nonsuspended / nonrevoked drivers, the law was not highly effective.

With regards to vehicle forfeiture, Portland, Oregon had a forfeiture program in 1989 (*Voas and DeYoung, 2002*) for drivers convicted of a DUII or for repeat offenders. As referenced in Voas and DeYoung's work, in 1995, Crosby evaluated the effectiveness of the program between 1990 and 1995. Using a Cox regression, Crosby was able to determine that the offenders who had their vehicles forfeited had a significantly longer time before they were

rearrested compared to those who did not have their vehicles forfeited.

4.3.5.1 Limitations

The problems associated with vehicle impoundment and immobilization practices include its high cost due to towing and vehicle storage, difficulty to enforce and prevent offenders from driving other vehicles, and its impact on other family members who may rely on the vehicle for their daily needs.

4.3.6 Ignition Interlock

The ignition interlock technology consists of alcohol breath testing device or breath alcohol ignition interlock device (BAIID) connected to the ignition system of a driver's vehicle. To start the vehicle, the driver must have a BAC level lower than the specified amount. As the offender blows into the device, they can read their own BAC level. The use of ignition interlocks has been targeted primarily at repeat offenders. In a study conducted by Beck et al. (*1999*) multiple alcohol offenders were studied. Half of the group was required to go through the ignition interlock program. The other half served as the control group. The offenders were monitored for two years. Before the start of the program, the mean number of alcohol traffic violations did not differ and was at about 3.5 violations. After two years, 41 or 5.9% of the ignition interlock group committed another violation while 63 or 9.1% of the control group committed a violation. This result was statistically significant.

International Alcohol Interlock Programs
Ignition interlock programs were first introduced in Canada as a pilot program in the province of Alberta in 1989. In 1999, as part of a package of amendments to the sections of the *Criminal Code of Canada* dealing with impaired driving offences, first offenders were given the opportunity to reduce the mandatory minimum period of driving prohibition from one year to three months by participating in an ignition interlock program. Subsequent amendments extended the reductions in the period of prohibition for repeat offenses -- from two years to six months for a second offense and from three years to 12 months for subsequent offences -- if the offender participated in an interlock program.There are now interlock programs in six provinces -- Alberta, Saskatchewan, Manitoba, Ontario, Quebec, and Newfoundland and Labrador -- and the Yukon Territory. These programs are administered by the driver licensing authority in the respective province or territory and most participants are volunteers who take advantage of the reduction in the period of driving prohibition and the opportunity to obtain their license.

There have been some challenges to interlock programs in used in some provinces. For example, the proportion of DWI offenders who elect to participate in interlock programs remains relatively low at between 10% and 20%. That being said, finding ways of enhancing the number of participants in interlock programs remains a challenge for every program. Many of these jurisdictions are either considering or proceeding with legislation that makes participation in the interlock program mandatory, at least for repeat and/or high-risk offenders (*Bierness et al., 2000*).

Starting in 2003, various countries in the European Union (EU) started to devise interlock

program trials. The Netherlands Ministry of Transport decided to implement an alcolock sometime in 2005. Similarly, a working group of the Finnish Ministry of Transport also presented a proposal for a national alcolock field trial, also set to begin in 2005. By early 2004, an in-depth qualitative EU field trial began by incorporating small-scale trials in Belgium, Germany, Norway and Spain, as well as the start of a 30-month UK field trial investigating the social impact of alcolocks on users and their families.

The procedure for the Netherlands trial consisted of a target group of DWI offenders who underwent a medical/psychiatric assessment and were declared "not unfit to drive". This group forms approximately 1% of all arrested DWI offenders in the Netherlands. In 2002, police apprehended 38,500 DWI offenders; 4000 of these were multiple recidivists or had a BAC above 1.8g/l, and had to undergo an assessment. The verdict in 90% of these assessments was "unfit to drive", with the remaining 10% being declared "fit to drive". The alcolock program would be mandatory under administrative law and will have duration of two years with the possibility of a six-month extension.

The program cost per installed alcolock was estimated to be 2,200 Euros. Program costs will be divided as 2/3 for DWI offenders and 1/3 by the Ministry of Transport. A future extension of the program will include alcohol dependent drivers and DWI offenders with a BAC between 1.3 and 1.8g/l BAC, who presently have to attend a 3-day driver improvement program, may increase the road safety benefits by a factor of 20. The initial trial program is also designed to reduce post-program recidivism such as integrating driver improvement elements for all participants and integrating counseling for drivers who have failed a predetermined number of tests.

The estimated effectiveness was based on an outlook of two years after program implementation. It has been estimated that the target group will stabilize at approximately 800 subjects. The estimated benefit of the program is an annual reduction of 4-5 fatalities, at an annual program cost of 0.9 million Euros. The estimated reduction in road fatalities is based on a 65% reduced crash rate for alcolock users (as demonstrated in previous studies). However, even at only a 25% reduced crash rate, the alcolock program would still be cost-efficient.

Victoria, Australia also implemented an interlock program in May of 2003 where interlocks became mandatory for all repeat offenders of driving under the influence of alcohol, but can also be ordered at the Court's discretion for first offenders who have committed a serious offense. Typical installation period varies from 6 months to 3 years depending on the nature of the offense. The program was set for review of effectiveness in 2005 where an "effectiveness evaluation" would follow. However, circumvention had already been found to be an issue. There are some steps that have been taken with the program to reduce circumvention. These include:

- A summary report of the monthly data are used for a compliance assessment that the Magistrate can then use when making a decision to remove an interlock.
- Drivers must provide a "compliant" record in order to demonstrate that the interlock device can be safely removed.

- Imposing penalties for circumvention that can include fines up to $3000, imprisonment up to 4 months or vehicle immobilization for up to 12 months.
- Financial incentives which include payment of additional charges for 7 day recall events. If there is no circumvention or misuse after monthly service, the supplier may extend services to 2 or 3 months (Swann).

Western Australia has experienced issues with its alcohol interlock program such as low participation rates; Maintaining the effect after the interlock device is removed; Keeping drivers within a system of legal control and limiting unlicensed driving; Equality and inclusiveness. The Melanie Hands Injury Research Centre at the University of Western Australia has proposed a model for better effectiveness of the program. This model would include all drink driving offenders -- both first time and repeat offenders. The minimum period of program participation would be six months but never less than the original disqualification period, while the maximum period would be determined on the basis of performance—thus rewarding compliance. Assessment would be required of all repeat offenders and those with high BACs and those identified with serious alcohol problems would be referred to a remedial program. Their success in rehabilitation and the interlock program would be monitored.

Importantly, an effort would be made to get offenders into the interlock program as soon as possible after the drink driving offence in an attempt to balance the risks of unlicensed driving with the benefits of interlocks. Also, the Research Center has recommended an option of deferring the fine for an offence to offset the cost of the interlock and remedial program. The fine would be waived following successful completion of the programs and reinstated in cases where the offender failed to complete the program and alternative sanctions would be imposed. The model also includes the stipulation that participation always be coupled with a requirement to participate in a remedial program -- either brief intervention or treatment (*Melanie Hands Injury Research Centre*).

4.4 TREATMENT

4.4.1 Treatment Programs

Treatment programs typically educate offenders about the impacts of impaired driving. Clients of treatment programs are often required to attend as a requirement in the adjudication process of a DUII they have received. However, clients can also be voluntary. Treatment programs have been effective in reducing DUII recidivism. Wells-Parker et al. (*1995*) conducted a meta-analysis, or a statistical analysis to literature review of remediation programs pertaining to alcohol treatment, education, psychotherapy, counseling or contact probation. Of 215 DUII studies used, 30 from other countries, researchers identified 71 critical factors for success or failure of DUI intervention efforts. The study concluded that remediation programs reduced subsequent DUII offenses by 7-9%.

California legislation requires courts to order the enrollment of persons convicted of a DUI into an alcohol / drug education program as a condition of probation. In 2006, a study was conducted, as mandated by AB 1916 (*Torlakson*), to determine the effectiveness of a 3 month

versus 6 month treatment program (*Tashima and Daoud, 2006*). Data were collected on convictions between July 2003 and June 2004. Driver records were analyzed to determine the proportion of offenders involved in any crash and DUI incidents. For first DUI offenders, the length of time was found to have an insignificant effect on the 1 year subsequent crash rates. The crash rate for 6 month program participants was 2.4% lower than for the 3 month program. However, participants in the 3 month program had significantly fewer DUI incidents of about a 28.1% difference compared to participants in the 6 month program. This can, however, be explained by presence of more participants in the 6 month program with higher BAC levels and more likely to recidivate. In consideration of BAC levels, the study was limited to participants with BAC levels of 0.20 or above. The results indicated for this BAC group, the length of an education program had little and insignificant effect on crash rates and DUII incidents. In a similar study conducted by DeYoung in 1995, the treatment programs for second offenders from 12 to 18 months had little impact in reducing DUII recidivism.

Other types of treatment include pharmaceutical treatments that treat alcoholism. Drugs, such as naltrexone, have been known to prevent alcoholics from drinking to excess. DUII offenders could be assigned such treatment programs. No studies were found to illustrate the effects of the drug.

4.4.2 Victim Impact Panels

Victim Impact Panels were first suggested by MADD in 1982 (*Rojek et al., 2003*) and meant to be used in conjunction with court sanctions. Victim Impact Panels are meetings offenders are required to attend where they listen to stories shared by people who have either been involved in an impaired driving incident or lost a loved one in an impaired driving incident. These speakers are usually volunteers. Baca et al (*2000*) conducted a study which compared the 5-year recidivism rates of convicted first-time DWI offenders who went through the VIP process with those who did not attend the VIP. Of all Hispanic offenders studied in Bernalillo County, New Mexico 5238 were asked to complete an interview. Statistical tests were conducted and results show that referral to VIP did not reduce the rearrest recidivism rate. Another study by Sinar and Compton (*1995*) showed victim impact panels also did not have a significant affect on arrest recidivism rates. However, the one problem with the Shinar and Compton study is that it included repeat offenders, whose behaviors would not change (*Lord, 2001*). There have been a number of other studies that indicate improvements in recidivism rates. For example, in Clackamas County, Oregon, DUII offenders who did not attend a victims impact panel, compared to those who did, were found to be three times more likely to be rearrested within the first year (*O'Laughlin, 1990*). However, this study and others showing improvements had results that were either not statistically tested.

4.4.3 Trauma Care Interventions

A different type of treatment occurs in the emergency care of hospital patients. It has been discovered that many hospital patients have alcohol and drug problems. While many health care professionals recognize the problem, they do not know what they can do to remedy the problem or think that their efforts would be futile. In Washington, 46% of all ER trauma patients were found to have alcohol problems. They were given a 30 minute motivational

interview after release from the hospital. The interview was followed by a letter sent to the patient 30 days later. The treatment effort after 30 days showed a 47% reduction in hospital emergency room visits. After 1 year, patients were found to reduce their alcohol consumption over 3 times more than control patients (*National Highway Traffic Safety Administration, Emergency Nurses Association, American College of Emergency Physicians, 2001*). This study shows that health care professionals can make an impact in reducing alcohol consumption, and therefore a likelihood of reduced occurrences of impaired driving.

4.5 OTHER

4.5.1 Data Programs

The problem of impaired driving involves many organizations, each with a different role and objective. Some states have formed a comprehensive DUII program, supported by strong leadership. State transportation, health, law enforcement, motor vehicle, and justice departments should work together (*Hedlund and McCartt, 2002*) in a task force to monitor the DUII program.

California is the only state in the United States who has a DUII Information Management System. In 1989, the Department of Motor Vehicles (DMV) was required to "establish and maintain a data and monitoring system to evaluate the efficacy of intervention programs for persons convicted to provide accurate and up-to-date comprehensive statistics to enhance the ability of the Legislature to make informed and timely policy decisions" (*Tashima and Helander, 2005*). The state of California has a DUI management information system (DUI-MIS) that tracks the processing of offenders through the DUI system from the point of arrest and to identify the frequency with which offenders flow through each branch of the system process (from law enforcement through adjudication to treatment and license control actions) (*Tashima and Daoud, 2006*). The information system includes a data flow to tract resources for a more detailed understanding, improved management, and evaluation of the DUI process. The California DUI-MIS model has contributed to a national initiative to design a model DUI reporting system under NHTSA. Other states have developed similar DUI systems, but these systems may not be as comprehensive.

4.6 CONCLUSION

Many parties are involved in reducing the impact of driving under the influence of intoxicants. Alcoholic beverage control agencies and liquor control commissions are responsible for, with the support of the restaurant associations, store associations, and beverage industry, controlling the manufacture, distribution, and sale of alcoholic beverages. Public agencies and liquor control commissions are also involved in enforcing jointly with law enforcement officers the responsible sale and service of alcoholic beverages in drinking establishments and retail stores. Law enforcement officers have an added enforcement responsibility of maintaining public safety through their efforts to identify, contain, and arrest impaired drivers, bicyclists, and pedestrians. Offenders who have been arrested for DUII will face either a violation or a conviction on their driving record. In addition, through prosecution, they will face either diversion or be processed for a DUII as a misdemeanor or

felony depending on how many DUII offenses they have committed in the past and the severity of the incident. All offenders are required to go through a treatment program. Where offenders are identified by hospital personnel, some are provided with motivational interviews or referred to law enforcement officers for follow up. Many hospitals also are involved in treatment and education efforts. Finally, other parties, such as alternative transportation organizations, colleges, and non-profit organizations aid efforts to reduce the impact of driving under the influence through specialized programs.

4.6.1 Best Practices

Through a literature review, several best practices which have been cited from research studies an effective means of reducing the frequency and impact of impaired driving and reducing alcohol-involved crash rates include controlling the availability of alcoholic beverages, minimum legal drinking age and zero tolerance laws, dedicated DUII officers, utilizing sobriety checkpoints, utilizing saturation patrols, utilizing ignition interlock, vehicle impoundment and immobilization, intensive supervision programs, general treatment programs, and motivational interviews in hospitals.

- Targeted marketing of the impacts and issues of intoxicated driving is more effective that traditional general public service announcements which have not been shown to noticeably change drinking behavior.
- Controlling access to alcohol can be effective since nearly 40% of all impaired driving incidents begin in a licensed establishment. Judiciously managing the number of licenses and establishments, as well cooperative efforts to reward well-managed establishments may be a way to reduce impaired driving. Excise taxes, particularly on beer, have also been shown to have a reduce alcohol sales and consumption.
- Zero-tolerance laws for underage drivers can be effective. Minimum legal drinking age laws and zero tolerance laws were enacted in the 1970s and 1980s, respectively. These laws have been extensively evaluated and have shown reductions in teenagers killed in alcohol-involved crashes of up to 25%.
- Well-funded and strategic enforcement is key ingredient to the long-term success of combating impaired driving. Police departments with dedicated DUII officers have made a significant impact on impaired driving. Saturation patrols coupled with media coverage have also been effective.
- Ignition interlocks – devices which require the driver to pass a breath test prior to starting the vehicle and at random intervals – can be effective at targeting repeat offenders. Ignition interlocks have been shown to reduce violations by 4% when compared to a control group, and reduce crash rates by 25%. Electronic monitoring and house arrest are used in many states as a way to free up jail space and allow offenders to reduce recidivism rates.
- Intensive supervision programs have been proven to be somewhat cost effective (varying research results), but effective in reducing recidivism rates by 12% in two years after the start of treatment. ISP program usually only have the resources to handle the most severe cases are handled. ISP program has been known to be effective in contributing to community service, helping offenders find jobs with usually higher paying annual salaries, and freeing up some jail space.

- Treatment programs have been known to be effective in reducing recidivism by 7% - 9%. Research indicates treatment programs that are tailored to the individual where the individual has one point of contact have been observed to be more effective in reducing recidivism.
- Up to 50% of all ER trauma patients have been found to have some alcohol problem. In many trauma centers, motivational interviews are conducted when a patient is released from the hospital and followed up 30 days, to a year later. These interviews have resulted in a 47% reduction in hospital emergency room visits. In addition, patients who were surveyed reported their alcohol use was reduced three times compared to a control group.

4.6.2 Promising Practices

Through a literature review on best practices, some practices were found to lack studies demonstrating effectiveness in research, but still were considered best practices. These promising practices include dram shop liability laws, requiring server training programs, enforcing underage drinking, administrative sanctions, special "DWI Jails", special license plates, victims impact panels, pharmaceutical treatments, and DUII data management systems.

- Enforcement of dram shop liability vary widely from state to state. Some states have dram shop liability laws. However, in most states, dram shop liability is enforced through common law based on precedence in court decisions. In these states, a dram shop can be held liable for damages inflicted by the intoxicated person. However, many states limit the scope to their responsible share and do not extend damages to the victim's family members or have a cap on the amount dram shops pay.

- Many alcoholic beverage agencies require that servers in drinking establishments be trained to responsibility serve alcohol. While this is a common practice, no research has been conducted demonstrating its effectiveness. Despite the lack of research, restaurant associations and the beverage industry are dedicated to promote the responsible sale and service of alcoholic beverages and are working to develop standards to help establish policy on server training.

- Special "DWI jails" or boot camps have been used to address repeat offenders where the offender is monitored under strict and close supervision. These programs are expensive to start and maintain, and little research has been conducted to determine its effectiveness on reducing the impact of driving under the influence of intoxicants.

- Victim impact panels were first suggested by MADD in 1982. While they result in positive testimony from offenders who have gone through the presentation, research results show mixed results from doing little to reduce the rearrest recidivism rate to reducing rearrest recidivism rates by three times when compared to a control group. None of the research results were statistically tested.

- Pharmaceutical treatments have been given to some offenders to prevent habitual

drinkers from drinking to access. Research studies on these treatments are relatively new and the effectiveness of treatment is unknown.

- Public information and education campaigns have not been extensively evaluated to determine its effectiveness in reducing the impacts of impaired driving. However, mass campaigns have been criticized for being ineffective because they do not directly impact the actions of an individual while they are drinking. These campaigns ignore the fact that people's behavior is shaped by their social environment. Social marketing strategies, such as providing attractive transportation options to people who are intoxicated, are still relatively new as applied to reducing impaired driving, but shows promise in reducing alcohol-involved crashes.

- Many of the research studies evaluated in this literature review lacked adequate data. With the large number of parties involved, each party with a distinct and different role and objective, a comprehensive DUII data management system may be a first step in combating the DUII problem. Currently, California is the only state in the United States who has a DUII Information Management System. No research has been conducted to determine its effectiveness in reducing recidivism or alcohol-involved crashes.

5.0 POTENTIAL STRATEGIES

This chapter provides a synthesis knowledge of current trends, best practices, and current Portland practices and feedback from the DUII Working Group. For each identified possible strategy, a cost and effectiveness rank of low, medium, or high is assigned. The cost ranking is low if implementation of the strategy is less than $150,000, medium if between $150,000 and $300,000 and high if over $300,000. The costs should be considered general estimates. The cost ranking is based on how much funds from the DUII Working Group could be applied towards implementation of the strategy. The scope of the solution will determine the total costs. It should be noted that some strategies, for example those that involve private parties, are difficult for a group such as the DUII Working Group to help fund. The effectiveness ranking is based on the potential to reduce alcohol-related (or to some extent intoxicant-related) crashes. The effectiveness ranking is low if implementation of the strategy results in a crash reduction of less than 5%, medium if 5% to 10%, and high if above 10%. These crash reduction percentages are based on best practice research results.

The interaction between the four focus areas represented in Figure 59 represent both a challenge and opportunity. It is clear that modifications that improve or modify one focus area will have impacts in another. For example, an increase in enforcement activities will require more court resources and presumably more treatment resources. This is important to remember when considering strategies.

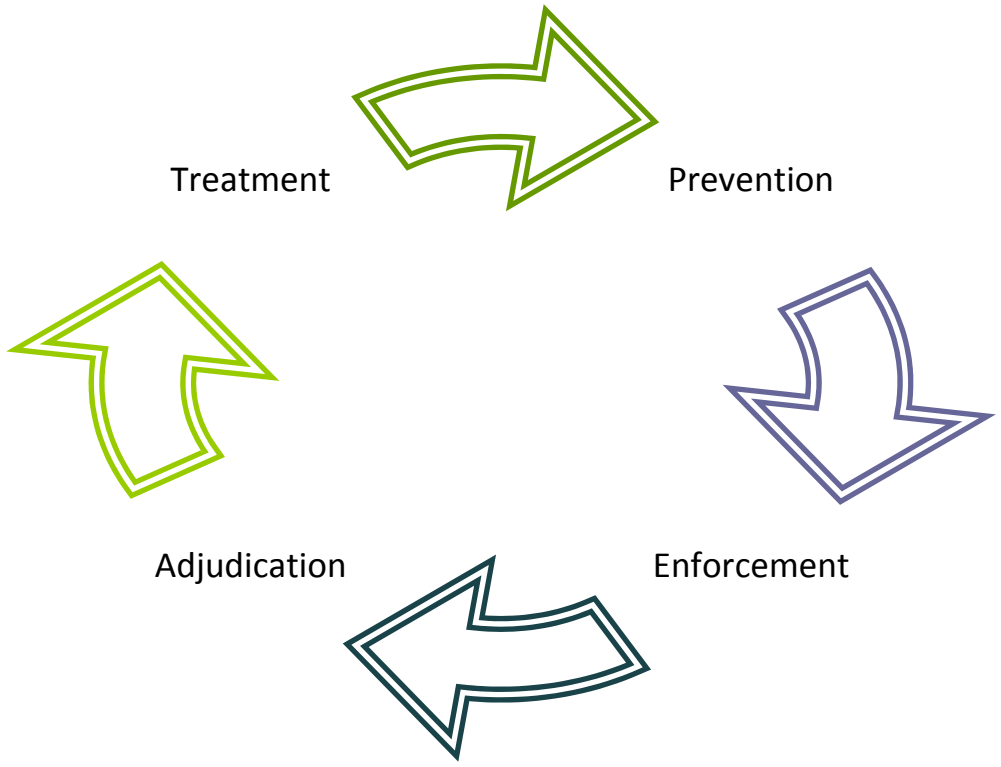


Figure 59: Interaction of Interventions or Treatments

5.1 PREVENTION

5.1.1 Public Education and Media Campaigns

5.1.1.1 Increase funding for youth specific education

COST = LOW	EFFECTIVENESS = LOW
This strategy was rated low cost because it would pertain only to a select segment of the population.	This strategy was rated low on the effectiveness scale at reducing alcohol-involved crashes because research was unclear on effectiveness and there is limited research.

Mass public information and education programs have been known to be less than effective when aimed at the general public. Instead of directing education programs at the general public, a directed approach yields for a more effective impact. Like successful marketing, the information should contain a clear message and actions that one can take. In the prevention focus area, one target group identified by the DUII Working Group is the youth population. Currently, youth education is provided by the Multnomah County Sherriff's Office (Every 15 Minutes Program) and Legacy Health System (Trauma Nurses Talk Tough, Not My Kid Campaign, Insight Class, and MIP class). All of these classes, with the exception of the MIP class can be attended without an order from the court. The problem present in providing youth education is funding for the classes. Many programs have been cancelled due to budget cuts. In depth evaluations have not been conducted because of the high cost such evaluations would require. Despite the lack of research, youth education is still a recommended strategy since it is one of few options available to prevent youths from becoming habitual drinkers.

5.1.1.2 Expand education to include personal risks of intoxication for pedestrians and bicyclists

COST = LOW	EFFECTIVENESS = LOW
This strategy was rated low cost because it would pertain only to a select segment of the population. However, advocacy groups needed are likely willing to participate.	This strategy was rated low on the effectiveness scale at reducing alcohol-involved crashes because research was unclear on effectiveness and there is limited research.

The primary concern of the bicycle community is the powerlessness of resolving vehicular impaired driving. Many active bicyclists are aware of the additional risk to imposed by DUII drivers and make conscious decisions not to ride their bicycle particularly on nights and weekends (*Bicyclist DUII Survey, 2006*). Strategies to reduce motor vehicle impaired driving should improve these perceptions. However, there are also risks one takes with traveling intoxicated under any mode. The data indicate that often times intoxicated pedestrians are at

elevated risk and in some recent cases for cyclist. Education campaigns could highlight that impairment can cause problems for any mode.

5.1.1.3 Deliver education campaigns in a more appealing manner integrated within the existing system.

COST = LOW	EFFECTIVENESS = LOW
This strategy was rated low cost because it would pertain only to a select segment of the population. The strategy would most likely involve small changes to an existing system.	This strategy was rated low on the effectiveness scale at reducing alcohol-involved crashes because research was preliminary on effectiveness and there is limited research.

Current research on education campaigns indicates mass public information and education campaigns may not be effective (*NCHRP, 2007*). In addition to focusing on specific target groups, particularly those who are most at risk of habitual and impaired drinking, campaigns can be more effective. In addition, research has indicated campaigns are more effective when integrated into the activities of the drinking population through social marketing approaches. Education campaigns through programs delivering appealing

The target population, particularly individuals between 21 to 34 years of age, is presented with appealing options during the time period they have to make a decision while intoxicated. When presented with an appealing option, they may also be made more aware of enforcement activities. The best education programs would accomplish reductions through positive and more effective social marketing approaches integrated into the existing impaired driving system. When presented with a wide range of options, most individuals select the option that provides them with what they feel provides them with the maximum benefit. Recent examples of this approach include a program where young males were targeted in a ride-home program using high-end transportation options. Research, though still preliminary, shows a 17% decrease in crashes through the provision of luxury vehicles to transport intoxicated individuals home. Regardless of the program, social marketing, "make(s) the environment more favorable for desired behavior, value can be created, communicated and delivered" (*Rothschild, Matsin and Miller, 2006*).

5.1.2 Access to Alcohol

5.1.2.1 Promote responsible sale of alcoholic beverages

COST = LOW	EFFECTIVENESS = LOW
This strategy was rated low cost because the responsible beverage sale program is already in place. The strategy would require annual investment.	This strategy was rated low on the effectiveness scale at reducing alcohol-involved crashes because although research indicates positive results, research is limited.

Using a team approach with members of the DUII Working Group, more emphasis could be

placed on prevention efforts on the part of the restaurant association and beverage industry. Currently, servers are taught to recognize the signs of a visibly intoxicated patron for alcohol. However, this could be expanded to signs of alcohol and drug impairment. This could also be expanded to include clerks in retail stores. Restaurant association, beverage industry, and retail store owners support is needed so the server feels comfortable about refusing alcoholic sale or service to minors, visibly intoxicated patrons.

The Oregon Neighborhood Store Association (ONSA) indicates only approximately 5% of their members participate in the OLCC Responsible Vendor Program. The Responsible Vendor Program targets sales to minors at retail outlets. By qualifying and then participating in the program, vendors, retail and drinking establishments, are eligible for reduced sanctions if their employees sell to minors. Although the participation rate of only one retail store organization is known, it still indicates a need to improve promote so more vendors are encouraged to apply and comply with the Responsible Vendor Program. Support from the Oregon Restaurant Association and other beverage industry partners are encouraged.

Server and clerk training go hand in hand with enforcement. Increased resources in OLCC, police enforcement, as well as the restaurant association and beverage industry at drinking establishments and retail stores could be invested. A coordinated effort would go a long way to increase communication between impaired driving parties, but also to show the drinking population and those involved in it that there are no loop holes from which to try to avoid penalties such as suspension or revocation of permits and licenses. Efforts here could also limit youth access to alcohol.

5.1.2.2 Expand OLCC's Clerk Training Program

COST = MEDIUM	**EFFECTIVENESS = LOW**
This strategy was rated medium cost because it would require additional funding to support clerk training.	This strategy was rated low on the effectiveness scale at reducing alcohol-involved crashes because research is limited.

The OLCC's Clerk Training Program (OAR 845-009-0145) rule states that "If a clerk sells alcohol to a minor, or fails to properly verify a customer's age, the clerk must complete an approved training program" (*OLCC, 2007*). The program could be expanded to require vendors to train all clerks prior to the start of work. Research indicating the effectiveness of clerk training is limited.

5.1.3 Alternative Transportation

5.1.3.1 Provide alternative transportation programs

COST = LOW	EFFECTIVENESS = MEDIUM
This strategy was rated low cost because it would require only a start up cost from the DUII Working Group.	This strategy was rated medium on the effectiveness scale at reducing alcohol-involved crashes because some research indicates positive results.

The DUII Working Group identified a creative proposal to address impaired driving through the abundant transportation options available especially in the downtown Portland area. Research already indicates alternative transportation programs may be up to 17% effective in reducing alcohol-involved crashes. An alternative transportation program in Portland is RideOnPortland, a non-profit offering the services of driving a person's vehicle home from a drinking location.

5.1.3.1 Provide transit alternatives late at night

COST = HIGH	EFFECTIVENESS = LOW
This strategy was rated high cost because TriMet has indicated in the past of the expensive.	This strategy was rated low on the effectiveness scale at reducing alcohol-involved crashes because results are unknown.

The DUII Working Group identified a creative proposal to address impaired driving through the abundant transportation options available especially in the downtown Portland area. A long standing question has been the availability of late-night transit service. While system-wide service is likely cost-prohibitive it may be possible to consider some limited service. In addition, low cost options like providing cab stands combined with social marketing to target key groups (like Seattle) may prove effective. There was not any specific research that indicated the effectiveness of any of these strategies.

5.1.4 Medical Care

5.1.4.1 Encourage consistent application of motivational interviews for hospital patients upon discharge and follow up

COST = MEDIUM	EFFECTIVENESS = MEDIUM
This strategy was rated medium cost because it would require additional staffing to handle the administrative tasks involved.	This strategy was rated medium on the effectiveness scale at reducing alcohol-involved crashes because although research indirectly relates to crash outcomes, the strategy shows promise.

Research indicates motivational interviews result in a 47% reduction in hospital emergency

room visits 30 days after the interview and positive results up to a year later. In another study of approximately 2500 hospital patients, those with a positive BAC were given a brief motivational interview prior to their discharge from the hospital. This intervention was followed up 12 months with another interview. The recidivism rate to the emergency department or trauma service was reduced by 46%. Patients reduced their consumption of alcohol by approximately 21.8 drinks with a standard deviation of 3.7 compared to a control group of 6.7 drinks with a standard deviation of 5.8. When following up with patients 3 years later, readmissions for treatment was reduced by 48% (*Gentilello et al., 1999*).

Motivational interviews are encouraged as an avenue for further exploration, such as a standard part of admission routines. Trauma centers in Oregon are currently providing motivational interviews for the more severe cases. However the effectiveness of this prevention approach is limited due to limited staff or training for existing. One strategy for getting around this barrier is to allow the cost for the interviews to be an insurance billable item, especially where patients, unless they were convicted, have no health insurance to help pay for medical expenses.

5.2 ENFORCEMENT

5.2.1 Additional Resources

5.2.1.1 Increase efforts to lobby for additional funds

COST = LOW	EFFECTIVENESS = LOW
This strategy was rated low cost because it would not require funding from the DUII Working Group.	This strategy was rated low on the effectiveness scale at reducing alcohol-involved crashes because no clear research exists on the effectiveness of increased funding on reducing alcohol-involved crashes.

One of the primary areas of concern for the DUII Working Group includes funding. The DUII Working Group identified one area where funding was needed was increased enforcement activity by the OLCC enforcement and law enforcement officers. One strategy is to increase efforts to lobby for additional funds. This may be through an increase in the beer and wine tax on manufacturers and distributors of alcohol. Regardless of the type of alcoholic beverage the tax is applied, the primary purpose would be to use the increased funds for prevention activities.

The idea of increasing the beer and wine tax has been particularly important in strategic action towards reducing alcohol consumption among young people. Saffer and Grossman (*1987*) have found in a six year time series study of alcohol users age 15-24 that taxes on liquor cause decreases in the fatal motor vehicle crash rate by serving to reduce alcohol consumption. Compared to all other age groups, users in the 15-24 age group had a death rate that was twice as high, corresponding to 45 out of 100,000 fatal outcomes in crashes in 1980. After an excise tax on beer, the number of deaths fell by 11 out of 100,000, a 21% reduction in lives saved.

5.2.1.2 Expand OLCC's Minor Decoy Operations enforcement

COST = MEDIUM	EFFECTIVENESS = MEDIUM
This strategy was rated medium cost because it would not require some start up costs from the DUII Working Group for increased staff. A grant could be made to the appropriate agencies.	This strategy was rated medium on the effectiveness scale at reducing alcohol-involved crashes because although no clear research exists, there is still a higher chance of affecting the target group.

OLCC's Minor Decoy Operations enforces the law prohibiting minors from drinking alcoholic beverages at drinking establishments or purchasing them at retail stores. A possible strategy is to expand the use of the Minor Decoy Operations to target minors. Similar programs nationwide, such as the "Cops in Shops" program, where law enforcement officers pose as clerks in retail stores to catch the sale of alcohol to minors, have been considered effective despite limited research.

5.2.2 Traffic Enforcement - General

5.2.2.1 Provide adequate police coverage for impaired driving enforcement

COST = LOW	EFFECTIVENESS = HIGH
This strategy was rated low cost because it would not require additional funds from the DUII Working Group for increased staff. Funds are needed to maintain a certain number of officers.	This strategy was rated highly effective at reducing alcohol-involved crashes because while no clear research exists, most studies directly relate enforcement to crash reductions. Special approaches, however, may be required.

The City of Portland has a designated Traffic Division at the Portland Police Bureau that works with all precincts to handle impaired driving occurrences. Although all law enforcement officers in all precincts know how to handle DUIIs, they often refer the occurrences to the Traffic Division. With limited staff, however, the Traffic Division may not be able to provide adequate coverage. As previously mentioned, special units already exist in Portland to handle DUII cases. Special DUII units in Texas with special decals on patrol vehicles and where officers are specially trained to handle impaired driving cases have resulted in a 25% decrease in alcohol-involved fatal crashes between 1997 and 2001 and a 10% increase in the conviction rate of impaired drivers. With limited staff and the responsibilities the Traffic Division has to also enforce traffic however, these special units could benefit from upper management support to promote additional coverage during impacted times when coverage is not sufficient. This may require additional training of other police officers or hiring additional officers in the Traffic Division. Nevertheless, support from upper management could increase the priority of impaired driving enforcement and work to further reduce alcohol-involved crashes, especially on nights and weekends.

A briefing to the Portland Police Bureau may be one way of increasing police officers' awareness, not just in the Traffic Division. Senior management could increase awareness by communicating how DUII enforcement is an effective use of officers' time and especially on how much DUIIs actually cost the city. This effort would require gathering detailed

information on DUIIs and presenting it in a manner that would make an impact on senior staff. The goal of this action is to start to build a coalition at the top that can effectuate a change in how DUIIs are processed. In a study conducted by Johnson (*2005*), on how management influences officer traffic enforcement productivity, Officers were surveyed in the Cincinnati, Ohio metropolitan area to determine how management activities impacted officer performance. Officers at several agencies completed questionnaires on how they perceived expectations from management and the resulting training, arrests, and citations made. The study concluded by giving recommendations to police administrators, including clearly communicating expectations, ensure officers have capabilities to engage in traffic enforcement by providing officers with training , officers have the opportunity to engage in DUII enforcement, and make sure supervisors set an example and motivate officers by enforcing DUII (*Johnson, 2005*).

5.2.2.2 Re-explore the possibility of using sobriety or pseudo-checkpoints and saturation patrols

COST = MEDIUM	EFFECTIVENESS = HIGH
This strategy was rated medium cost because it additional funds may be needed to fund additional staff and set up media campaigns.	This strategy was rated highly effective at reducing alcohol-involved crashes because while no clear research exists, most studies directly relate enforcement to crash reductions. Special approaches, however, may be required.

Few opportunities exist for officers in Oregon other than through law enforcement to identify impaired drivers and start the DUII sanctioning and treatment process. The most common enforcement method is for officers to pull over suspected impaired drivers as part of their routine enforcement activity. One potential approach that is utilized frequently during holidays is sobriety checkpoint. In the literature, these have been demonstrated to be an effective means of reducing alcohol-involved crashes (reduction of 16-56% in alcohol-involved crashes). Regionally coordinated efforts have been known to help take advantage of limited research and have been used in California with a 24% decrease in alcohol-involved injury crashes and 56% decrease in alcohol-involved fatal crashes. Unfortunately in Oregon, sobriety checkpoints are unconstitutional. One strategy to getting the benefit of checkpoints without violating the Oregon constitution is to either conduct high-visibility saturation patrols or an approach where all vehicles meeting the legal threshold for a traffic stop are pulled over. These events should be accompanied by significant media events and an arrangement to increase the ease at which arrested drivers could be processed. Several states have combated the time issue by utilizing special impaired driving enforcement unit (IDEU) vans that is sent to an incident or stationed at a command center, which is closer to where an officer is patrolling. This type of van has been used in Phoenix, Arizona and has resulted in a reduction of the processing time from 3 hours to 1 hour (*United States, 1999*). It would be helpful of the saturation events occurred at random, well advertised times to increase public awareness.

5.2.3 Traffic Enforcement - Specific

5.2.3.1 Allow for immediate blood draw

COST = LOW	EFFECTIVENESS = LOW
This strategy was rated low cost because it may not require DUII Working Group funds.	This strategy was rated low on the effectiveness scale at reducing alcohol-involved crashes because it is primarily a special Oregon-problem and can be resolved through legal means.

One of the primary concerns raised by enforcement personnel is the difficulty in obtaining an the results of a blood draw from an alcohol-involved crash patient at the hospital. When a patrolling law enforcement officer's request to administer a breadth test is refused by a suspected impaired driver who is pulled over, the officer may choose to transport offenders to the hospital where they will be subject to a blood test. Law enforcement may also be involved where an accident occurred and the impaired driver is taken to the hospital for injury treatment. For law enforcement, the issue of concern regarding blood draw is how soon the blood draw can be taken. Current HIPAA statutes prevent hospital staff from releasing medical records or other patient reports to law enforcement personnel without the written consent of the patient, a subpoena, or as otherwise required by law. If a blood draw cannot be taken immediately after the offender consumed intoxicating substances, then the BAC level may be just too low to prosecute the offender. This makes a huge impact if the offender has had prior DUII convictions.

HIPAA statutes also impact the chance of identifying potential impaired drivers. Law enforcement may not be involved in all blood draw instances. In many instances, patients admitted to the hospital are suspected by physicians at the hospital of alcohol intoxication or inappropriate drug usage. In these incidents, law enforcement officers are not involved. HIPAA statutes currently do not require physicians to deliver a blood sample with patient identifying information without the authorization of the patient or through some other legal process (ORS 676.260). A legislative change is recommended to speed up the time necessary for a blood draw. If this cannot be achieved, an organized body could be set up to facilitate discussions between law enforcement and medical personnel. Members on this body may include representatives from law enforcement agencies and the Oregon Medical Association. The goal of these efforts is to reduce the time taken to test a suspected impaired driver.

5.2.3.2 Train more police officers to become Drug Recognition Experts

COST = MEDIUM	EFFECTIVENESS = MEDIUM
This strategy was rated medium cost because it may require funds for increased training.	This strategy was rated medium on the effectiveness scale at reducing alcohol-involved crashes because it is relates to better processing rather than reducing the alcohol-involved crashes.

Although no crash data analysis was completed due to inconsistent data, through discussions

with the DUII Working Group, it was recognized that driving and the use of controlled substances (e.g. drugs), especially in combination with alcohol, is on the rise. Additional training for police officers and possibly also for servers is suggested as a possible way to account for the effects of intoxication from a controlled substance. Training more officers to become Drug Recognition Experts could help. Policy could also be developed to determine how to handle intoxication from both a controlled substance and alcohol.

5.2.4 Prosecution - Administrative

5.2.4.1 Decrease delays in processing of first time offenders

COST = HIGH	EFFECTIVENESS = MEDIUM
This strategy was rated high cost because additional up front funds are needed to start new programs.	This strategy was rated medium on the effectiveness scale at reducing alcohol-involved crashes because of limited research. However, the issue was identified as a concern by several members of the DUII Working Group.

In the 1980's, an arrested person spent the night in jail and was held until arraignment the following day. This is no longer the case. In extreme cases, the same person could be arrested two to three times the same night because they were not held. Part of this problem may be due to the lack of jail space for impaired drivers. Furthermore, once an impaired driver leaves the police department, it may be weeks before they can go to trial for the DUII offense. The lack of consequences precludes changes in impaired driving behavior (*Krueger and Bloch, 2006*). The DUII Working Group identified a need to decrease delays in the processing of first time offenders. Sources of delays included the time police officers spend at court during the prosecution of first time offenders, the limited number of attorneys available to handle the heavy case load of first time and repeat offenders, and the time before treatment starts for first time offenders. Specific research was not available to propose possible strategies. However, some possible strategies could be hiring more prosecutors, increasing the efficiency of the paperwork completed. The goal is speed up the processing of DUII offenders with immediate consequences to the offender.

A primary concern brought up by the DUII Working Group is the need to shorten the amount of time required for police enforcement to process a DUII case. This is more of an issue for less dense and more spread out areas such as Clackamas County, where the average DUII case is processed in approximately four hours. In the City of Portland, the processing time is approximately 2 hours. The concern is not getting the offender to an intoxilizer for a chemical breath test, but in the transfer of the offender to the jail. The increased time reduces the BAC level of the offender as well as prevents the officer from spending time patrolling elsewhere. Furthermore, the time a law enforcement officer has to spend on a DUII case may be a disincentive for him/her to make any DUII arrests (*NHTSA, 2003*).

Several states have combated the time issue by utilizing special impaired driving enforcement unit (IDEU) vans that is sent to an incident or stationed at a command center, which is closer to where an officer is patrolling. The latter is usually what is employed in a saturation patrol. This type of van has been used in Phoenix, Arizona and has resulted in a

reduction of the processing time from 3 hours to 1 hour (*United States, 1999*). Nevada law enforcement used the vans and found their processing time reduced from 2 hours to 1 hour or less (*NHTSA, 2002*). To give this some perspective, the average time to process a DUII case (without the use of vans) is 45 minutes to 4 hours (*NHTSA, 2003*).

5.2.5 Prosecution – Target Groups

5.2.5.1 Engage the DUII Working Group to improve areas where deficiencies may exist in the juvenile system

COST = LOW	EFFECTIVENESS = MEDIUM
This strategy was rated low cost because deficiencies would need to be first identified.	This strategy was rated medium on the effectiveness scale at reducing alcohol-involved crashes because of the body of research for controlling youth access to alcohol (MLDA and zero tolerance laws) which have been shown to be effective. This effectiveness could be transferred to similar programs.

The DUII Working Group identified a possible area of concern as a lack of strict penalties applied for minors in possession of alcohol. Particularly, there is no penalty for minors with a MIP citation who fail to show up to court. To target and prevent habitual drinking among the youth population, penalties must be applied to minors who fail to show up to court. A possible strategy is to further explore the juvenile system to identify and then resolve deficiencies or close up gaps where minors are currently avoiding penalties. Getting the parents of minors involved may be one possible strategy to explore. Although the effectiveness of applying penalties are unknown, similar strategies, such as the minimum drinking age laws (MLDA) and zero tolerance laws have been shown to be effective in reducing alcohol-involved crashes of approximately 20%. It is likely the effectiveness for resolving such deficiencies would result in similar decreases in alcohol-involved crashes among minors.

5.2.5.2 Provide training or education to encourage judges to apply existing penalties for first time offenders.

COST = LOW	EFFECTIVENESS = LOW
This strategy was rated low cost because money is not needed to address the barrier of more strict penalties.	This strategy was rated low on the effectiveness scale at reducing alcohol-involved crashes because harsher penalties may not be needed.

There is a perception among some members of the DUII Working group that penalties are not applied consistently or more severe enough to first time offenders. DUII conviction remains on the individual's driving record to ensure the record remains on file for the identification of a repeat offense. It is recommended that through the efforts of the DUII Working Group, training or education be provided to encourage that judges consistently apply existing penalties for first time offenders. Some argue that harsher penalties may not

be needed since some research shows that higher penalties do not significantly reduce alcohol-involved crashes. However, additional evaluation may be needed to determine how well court sanctions affect recidivism. Effective evaluations depend on reliable and closely monitored record systems that are not readily available. Oregon is not alone in this problem.

5.2.5.3 Increase the use of ignition interlocks

COST = MEDIUM	EFFECTIVENESS = HIGH
This strategy was rated medium cost because it is an improvement of a program currently in place.	This strategy was rated highly effective at reducing alcohol-involved crashes because of the extensive body of research showing its effectiveness.

Ignition interlocks are used in Portland for repeat offenders. The devices ensure the driver of the vehicle is not impaired when driving an equipped vehicle. Research indicates ignition interlocks reduce traffic violations, and therefore the potential for an alcohol-involved crash, by up to 9.1%. Internationally, the reduction in alcohol-involved fatal crashes goes as high as 65% among interlock users and 25% among all alcohol-involved fatal crashes. Increased use of the ignition interlocks is therefore suggested as an effective strategy for reducing alcohol-involved crashes.

5.2.5.4 Implement special DUII camps or increase the use of house arrest or community service

COST = HIGH	EFFECTIVENESS = MEDIUM
This strategy was rated high cost because a new program would have to be established, that may require a high upfront and annual program costs.	This strategy was rated medium on the effectiveness scale at reducing alcohol-involved crashes because of the supervision that would be needed to make the program succeed.

DUII camps and house arrest are two sanctioning programs that have been used to reduce the limited jail space taken up primarily by repeat offenders. A DUII offender in Oregon must spend at least 48 hours in jail. This jail time is higher for repeat offenders. To free up jail space, DUII camps or DUII jails could be reintroduced. The DUII camps would require high upfront and annual operating costs, but could work not only to free up jail space, but provide intensive supervised treatment for repeat offenders. Programs that would cost less would include increasing the use of house arrest (electronic monitoring) or community service. Both would require supervision and therefore high annual operating costs. However, the costs would be less than that for the DUII camp. The community service program has an added benefit in that offenders may be able to pay for their treatment through community service. The effectiveness of these programs however has not been extensively evaluated.

5.3 TREATMENT

5.3.1 Administrative

5.3.1.1 Increase the number of Alcohol and Drug Evaluation Specialists

COST = HIGH	EFFECTIVENESS = MEDIUM
This strategy was rated high cost because of the additional staffing required.	This strategy was rated medium on the effectiveness scale at reducing alcohol-involved crashes because although no research has been conducted on the effectiveness of increased number of supervisors, treatment programs are generally more effective because increased supervision typically leads to increased compliance.

In Multnomah County, a person entering division will be required complete a treatment course. County sponsored DUII Evaluators and Alcohol and Drug Evaluation Specialists (ADES) personnel work as the liaison between the abundant number of private treatment providers and the courts. The DUII Working Group recognized a need to increase the number of evaluators and specialists due the number of individuals entering diversion. The waiting list for individuals waiting to enter inpatient treatment was 4-6 months in the fiscal year 2006. Additional staff could be effective in ensuring timely participation in treatment programs and compliance with diversion court requirements. No research has been conducted on the effectiveness of liaisons between courts and treatment providers. However, increased supervision typically leads to increased compliance. Individuals may be treated in a timelier manner, the effectiveness of treatment may increase, and the potential for repeat impaired driving occurrences and therefore alcohol-involved crashes may decrease.

5.3.1.2 Include treatment evaluators and specialists in the courthouse or in close proximity to facilitate communication with the client.

COST = MEDIUM	EFFECTIVENESS = MEDIUM
This strategy was rated medium cost because of the evaluators are already in close proximity	This strategy was rated medium on the effectiveness scale at reducing alcohol-involved crashes because no research has been conducted on the effectiveness proximity of evaluators to the courthouse or more efficient processing of paperwork. However, efficient processing time is generally regarded as having a positive effect on the success of a program.

The DUII Rehabilitation Program in Multnomah County is the liaison between the individual undergoing treatment and the courts. It has been identified that clients need to report to the DUII Rehabilitation and Courthouse in a timely, not only physically but also with regards to the paperwork. The DISP program, which is focused on repeat offenders, is already housed in the County Courthouse and has been shown to be effective in reducing recidivism. The DUII Rehabilitation Program, which is estimated to have a potential to reduce recidivism by

48%, could also be moved closer to the courthouse to decrease delays in the system and improve the effectiveness of treatment. Solutions may include moving the physical location of the program closer to the courthouse, but could also include exploring the coordinated effort between evaluators, specialists, judges and other adjudication staff include making phone calls on the next day, writing letters, and sending notices to DUII clients. Decreasing delays in how treatment cases are processed is likely to result in successful treatments and reduced recidivism.

5.3.1.3 Increase funding for DUII Rehabilitation Program treatment services

COST = MEDIUM	EFFECTIVENESS = MEDIUM
This strategy was rated medium cost because of the need for funding to pay for treatment for qualified clients.	This strategy was rated medium on the effectiveness scale at reducing alcohol-involved crashes because although no research has been conducted on the effectiveness of increased number of supervisors, treatment programs are generally more effective because increased supervision typically leads to increased compliance.

The DUII Rehabilitation Program in Multnomah County, targeting first time offenders, identified a concern of clients displaying non-compliance with a treatment program due to the inability to pay for treatment. Although programs are already in place to pay for treatment, additional funding could greatly increase the number of individuals who complete treatment and therefore increase the overall effectiveness of treatment programs. No research has been done to show the effectiveness of providing funds for clients who are unable to pay for treatment. Funding sources may include the National Highway Traffic Safety Association (NHTSA) Grants through the Oregon Department of Transportation (ODOT). New York has addressed their funding shortfalls by establishing itself as a foundation, which qualifies them for additional funds (*Williams, M. D., Gunnels, M., Richie, S., Oct 2005*). These funding strategies could be further explored by the DUII Working Group.

5.3.1.4 Increase funding for DISP treatment services

COST = MEDIUM	EFFECTIVENESS = HIGH
This strategy was rated medium cost because of the need for funding to pay for treatment for qualified clients.	This strategy was rated high on the effectiveness scale at reducing alcohol-involved crashes because although no research has been conducted on the effectiveness of increased number of supervisors, treatment programs are generally more effective because increased supervision typically leads to increased compliance. Furthermore, the DISP program has been known to be effective in reducing recidivism among repeat offenders.

The DUII Intensive Supervision Program, targeting repeat offenders, identified a concern of clients displaying non-compliance with a treatment program due to the inability to pay for

treatment. Although programs are already in place to pay for treatment, additional funding could greatly increase the number of individuals who complete treatment and therefore increase the overall effectiveness of treatment programs. No research has been done to show the effectiveness of providing funds for clients who are unable to pay for treatment. Funding sources may include the National Highway Traffic Safety Association (NHTSA) Grants through the Oregon Department of Transportation (ODOT). New York has addressed their funding shortfalls by establishing itself as a foundation, which qualifies them for additional funds (*William, et al., 2005*). These funding strategies could be further explored by the DUII Working Group.

5.3.1.5 Expand treatment to include strategies to target specific groups

COST = LOW	EFFECTIVENESS = LOW
This strategy was rated low cost because of the need for funding to pay for treatment for qualified clients.	This strategy was rated low on the effectiveness scale at reducing alcohol-involved crashes because although no research has been conducted on the effectiveness of increased number of supervisors, treatment programs are generally more effective because increased supervision typically leads to increased compliance.

Analysis of crash data indicates that Hispanic and white male populations between ages 21-30 and 36-45 are a significant target profile of persons fatally injured in an alcohol-involved crash. DUII treatments could be expanded to include strategies for changing the drinking culture for these target groups. No research or programs targeting specific impaired profiles are known and it is unknown what forum these education programs could be delivered in.

5.4 OTHER

5.4.1 Leadership

5.4.1.1 Continue DUII Working Group efforts and build relationship with Governor's Council on Alcohol and Drug Abuse Program

COST = LOW	EFFECTIVENESS = HIGH
This strategy was rated low cost because little additional money is needed to sustain the DUII Working Group and build lasting relationships with other parties.	This strategy was rated highly effective at reducing alcohol-involved crashes because although there is not research on the effectiveness of coordinated leadership per se on alcohol-involved crashes, it has been identified as best practice.

Leadership provided in DUII Committees and Systems is recognized as a best practice. Currently the efforts of the DUII Working Group have focused on the City of Portland and Multnomah County. However members from neighboring jurisdiction and from the state are active members of the DUII Working Group. In addition, many of the possible strategies identified involve lobbying at the state level of could be efficiently be implemented through building a relationship with other parties such as the neighboring counties in the Portland

metropolitan area.

5.4.2 Funding

5.4.2.1 Pursue various funding resources

COST = LOW	EFFECTIVENESS = HIGH
This strategy was rated low cost because little money is required to explore other funding options.	This strategy was rated highly effective at reducing alcohol-involved crashes because although there is not research on the effectiveness of coordinated leadership per se on alcohol-involved crashes, it has been identified as best practice.

The majority of barriers identified by the DUII Working Group and observed through research on best practices indicate limited resources available to provide a fail proof system for combating the impaired driving issue. Additional funding sources that may be explored include NHTSA, ODOT Safety, and OTREC (for research purposes.) Other funding sources may include the drinking population. The idea on placing an excise tax on beer and wine is an economic one of making the consumer pay the full social cost of producing, consuming alcoholic beverages, and therefore reducing the consequences of consuming alcohol (*Cook and Moore, 1994*). A tax on beer and wine could be increased to pay for areas where deficiencies due to funding have been indicated as a barrier to the program's success. Currently, only about 5% of all revenue generated from the beer and wine tax goes to mental health, alcoholism, and drug services (*Oregon Liquor Control Commission, 2007-2*).

5.4.3 DUII Tracking System

5.4.3.1 Create a consolidated data system

COST = HIGH	EFFECTIVENESS = MEDIUM
This strategy was rated high cost because it would require a substantial amount of upfront costs to fund a comprehensive DUII tracking system.	This strategy was rated medium on the effectiveness scale at reducing alcohol-involved crashes because although there is not research on the effectiveness of coordinated leadership per se on alcohol-involved crashes, it has been identified as best practice.

Currently, data on impaired driving comes from several sources. In putting together this report, one of the challenges was to make sense of what often seemed like conflicting data interpretations or differences in what was reported. A single DUII tracking system include information by offender such as blood test results from hospitals, effectiveness of motivational interviews, treatment program success ratings, police records, and notes should be kept to provide for better service to the offender, serve as a wealth of information for persons involved in impaired driving such as law enforcement personnel, liquor control commission, researchers, and policymakers. One issue that would have to be worked out is privacy concerns.

5.4.3.2 Keep a tracking system to record and archive bicycle near misses and actual collisions

COST = LOW	EFFECTIVENESS = LOW
This strategy was rated low cost because it would pertain only to a select segment of the population.	This strategy was rated low on the effectiveness scale at reducing alcohol-involved crashes because although there is not research on the effectiveness of coordinated leadership per se, but was identified by the DUII Working Group.

Currently, limited alcohol-involved crash and incident data exists on pedestrians and bicyclists. Although current crash data does include a field coding for pedestrians and bicyclists, it may not include information about whether or not the pedestrian or bicyclist was impaired. Furthermore, the data may not reflect what actually occurs, since the majority of pedestrian and bicyclist involved incidents are not reported. This limitation is more severe in Oregon since the majority of crash data are citizen reported. If more incidents are reported, possibly with the support of bicycle and pedestrian advocate groups, and the current crash database can be modified to accommodate increased pedestrian and bicyclist oriented fields, then valid quantitative data can be produced to better understand and then communicate the personal risks of intoxication.

Overall, more data needs to be collected on impaired bicycling and the occurrence of alcohol-involved crashes involving bicyclists. The bicycle community has already expressed concern over their personal safety. Having research to support their claims would help to better determine an appropriate future course of action. A tracking system for bicycle near misses and collisions would require an organization to be the keepers of the data. The same system could also keep track of pedestrian near misses or actual collisions. This system would likely have to be kept by an organization such as ODOT to reduce the amount of citizen generated reports. Regardless, the purpose of collecting these data are to assist in developing possible strategies to reduce the number of pedestrians hit by vehicles in an alcohol-involved crash.

5.5 NAMEOCRACY

As shown in the previous section, each identified possible strategy, a cost and effectiveness rank of low, medium, or high is assigned. The effectiveness ranking is based on the potential to reduce alcohol-related (or to some extent intoxicant-related) crashes. Crash reduction percentages are based on best practice research results. To rank the potential strategies, a "nameocracy" effort was conducted. This exercise and the results are presented in this chapter. The information in the previous chapter was presented to the working group in spreadsheet form. Each member was given dots indicting their 1st, 2nd, 3rd, and 4th priority strategy for funding. The effort was conducted on two separate meetings. The total points is reflective of the number of priority votes multiplied by a weight for each value. The detailed results are shown in the Appendix D.

6.0 RECOMMENDATIONS

Based on the data, review of best practices, and stakeholder interviews a matrix was developed to assist the DUII Working Group in determining a suitable strategy for reducing the impact of driving under the influence of intoxicants (drugs and alcohol) in Multnomah County and the City of Portland. Barriers and potential strategies are organized into three categories, prevention, enforcement and treatment categories. These categories pertain to target opportunities prior to, during, and following an impaired driving incident.

6.1 PRIORITIZED STRATEGIES

The results of the analysis, literature review, and ranking by the DUII working group results in the following strategies being recommended:

- Re-explore possibility of using pseudo-checkpoints or saturation patrols coupled with intensive media coverage to raise awareness of DUI enforcement.
- Obtain support from Portland Police Bureau upper management for increased enforcement, especially on nights and weekends.
- For qualified low-income clients, increase funding available for treatment services.
- Engage DUII working group to work with juvenile system to identify areas where the group can work to improve the current situation.
- Work to find ways to increase funding for the highly successful DISP program to expand program services to help reduce chronic repeat offenders.
- Work with court system to advocate for ways to enhance efficiency.
- Provide alternative transportation options from drinking establishment for impaired drivers using programs such as RideOn Portland and-or increasing transit options. These efforts should be coupled with a strong, effective marketing campaign.
- Deliver education campaigns in a more appealing manner (social marketing) particularly highlighting minors and other key groups.
- Work to increase the use of ignition interlocks as sanctions.
- Encourage consistent application of motivational interviews for hospital patients upon discharge.
- Continue DUII Working Group efforts and build relationship with Governor's Council on Alcohol and Drug Abuse Program.

6.2 NEXT STEPS

The DUII Working Group should select a number of items for targeted efforts and help expand these ideas. The COP CSTSP should be encouraged to develop and write grants to ODOTs Transportation Safety Division for funding high priority efforts.

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APPENDIX A GLOSSARY

Administrative Per Se Laws - Laws which state that if a driver's blood alcohol concentration is in excess of a specific level (typically .10 percent), the State driver licensing agency may suspend the driver's license via administrative action which is independent of any court action related to a DUI charge (www.ncadd.com).

Alcohol-related / Alcohol-involved – An event involving a motor vehicle driver, bicyclist, or pedestrian where there is evidence that alcohol was involved and tests were not necessarily conducted.

Alcohol-related crash / Alcohol-involved crash – A crash where at least one driver or nonoccupant (pedestrian, pedalcyclist, or bicyclist) involved in the crash is determined to have had a blood alcohol concentration (BAC) of 0.01 gram per deciliter (g/dl) or higher (FARS, Williams, M. D., Gunnels, M., Richie, S, Oct 2005). This report will use the term, alcohol-involved.

Blood Alcohol Concentration (BAC) - Alcohol concentration in the body, also referred to as blood alcohol content, blood alcohol level (BAL) or breath alcohol content. BAC can be measured either in blood or breath. The national BAC limit is 0.08 milligrams of alcohol per 100 milliliters of blood.

> FARS definition - The BAC is measured as a percentage by weight of alcohol in the blood (grams/deciliter). A positive BAC level (0.01 g/dl and higher) indicates that alcohol was consumed by the person tested. A BAC level of 0.10 g/dl or more indicates that the person was intoxicated (FARS, 2006).

Blood Alcohol Test - Any chemical test of breath, blood, urine or other bodily substance used to determine the concentration of alcohol in the blood (www.ncadd.com).

Chronic drunk drivers – An NCAAD term, also known as Problem Drinkers or Persistent Drinking Driver, people with an underlying alcohol problem that interferes with their driving as well as other aspects of their life.

Crash – Event that produces injury and/or property damage, involves a motor vehicle in transport, and occurs on a trafficway or while the vehicle is still in motion after running off the trafficway (FARS, 2006).

Drinking driver – Any driver with a positive BAC level.

Driving Under the Influence of Intoxicants (DUII) – (Oregon) The offense of driving while impaired or under the influence of an intoxicating liquor, also known as **Driving While Intoxicated (DWI)** and **Driving Under the Influence (DUI)**.

In this report, DUII will be used in place of DWI and DUI. Although some states include drugs and other substance abuse in DUII, the use of such substances will not be explored in

this report. However, it is noted because of the impact it may have in data interpretation.

Drunk driving / Impaired driving - Driving with a BAC level exceeding a state's per se level or while sufficiently impaired by alcohol to be guilty of DUII. (Note: In some cases, impaired driving applies to any driver who is driving and is under the influence of alcohol. The amount of alcohol consumed by the individual is irrelevant.)

Fatal Crash - A police-reported crash involving a motor vehicle in transport on a traffic way in which at least one person dies within 30 days of the crash (FARS, 2006).

Illegal Per Se Laws - Laws which make it an offense to operate a motor vehicle with a specified amount of alcohol in the blood. In States having such laws the specified amount of BAC is .10 percent. Rebuttable evidence is not considered relevant, except that the test was improperly administered (www.ncadd.com).

Presumptive Laws - Laws which state that if a specified level of alcohol is present in a driver's blood, the driver is presumed to have been driving under the influence or intoxicated. However, because the presumption is rebuttable, other evidence can be introduced by the defendant to disprove allegation (www.ncadd.com).

Zero Tolerance Laws - Laws in support of allowing no measurable amount of alcohol in the blood of a driver under the age of 21 (www.ncadd.com).

APPENDIX B CRASH CODES

Table 1: Descriptions of Driver Error Types

Short Driver Error Description	Long Driver Error Description
A/TRAF-P	Walking, running, riding, etc., on pavement FACING traffic
BASCRULE	Driving too fast for conditions (Not excessive speed)
BTWN INT	Crossing between intersections
CUT CORN	Cut corner on turn
DIAGONAL	Crossing at intersection - diagonally
DIS EMER	Disregarded siren or warning of emergency vehicle
DIS OFCR	Disregarded police officer or flagman
DIS POL	Disregarding Police (eluding)
DIS RR	Disregarded RR signal, RR sign, or RR flagman
DIS SGNL	Disregarded traffic signal
DIS SIGN	Disregarded warning sign, flares or flashing amber
F/MT SPD	Citation issued for “Failure to maintain reasonable speed”
F/SLO MV	Failed to decrease speed for slower moving vehicle
FAIL LN	Failed to maintain lane
FAIL TRN	Failed to obey mandatory traffic turn signal, sign or lane markings
FRM WRNG	Turned from wrong lane
ILLEG U	U-turned illegally
IMP BACK	Backing improperly (Not parking)
IMP CHG	Improper change of traffic lanes
IMP LGHT	Improper or no lights (vehicle in traffic)
IMP STOP	Improperly stopped in traffic lane
L IN TRF	Left turn in front of oncoming traffic
LAYON RD	Standing or lying in roadway
N/PAS ZN	Passing in “No Passing” zone
NO DIM	Failed to dim lights (until 4/1/97) / Inattention (after 4/1/97)
NO ROW	Did not have right-of -way
NONE	No error
OFF RD	Ran off road
PAS CURV	Passing on a curve
PAS INTR	Passing an intersection
PAS TANG	Passing on straight road under unsafe conditions
PAS TRAF	Passing in front of oncoming traffic
PUSH MV	Pushing or working on vehicle in road or on shoulder
RAN STOP	Disregarded stop sign or flashing red
REAR-END	Failed to avoid stopped or parked vehicle ahead other than school bus
SPEED	Excessive speed
STRDL LN	Straddling or driving on wrong lanes

UNSF VEH	Driving unsafe vehicle (no other error apparent)
W/TRAF-P	Walking, running, riding, etc., on shoulder WITH traffic
WIDE TRN	Wide turn
WK IN RD	Working in roadway or along shoulder
WRNG WAY	Wrong way on one-way roadway (Vehicle is deliberately traveling on wrong side)
WRNGSIDE	Driving on wrong side of road
X N/SGNL	Crossing at intersection – no traffic signal present
X W/SGNL	Crossing at intersection – traffic signal present

Table 2: Descriptions of Collision Types

Short Collision Type Description	Long Collision Type Description
ANGLE	Angle
BACKING	Backing
FIXED OBJ	Fixed Object or Other Object
HEAD-ON	Head-On
NON-COLL	Non-collision
OTHER	Miscellaneous
PARKING	Parking Maneuver
PED	Pedestrian
REAR-END	Rear-End
SS-MEET	Sideswipe – Meeting
SS- OVER	Sideswipe - Overtaking
TURNING	Turning movement

APPENDIX C OREGON TRAFFIC SAFETY HISTORY

Significant Laws in Oregon Traffic Safety, from Oregon Transportation Safety Division

1931

· As part of National Model Driver License law, driver licenses could be suspended upon conviction for DUII.

1937

· Law passed making driving under the influence of intoxicants a misdemeanor. Upon conviction, punishable by fine of up to $1,000 and a year in jail or both and license revocation for one year.

1941

· DUII law amended to permit police to test blood, breath and urine for alcohol content *unless* driver objected. BAC of 15% set as presumptive evidence.

1965

· Implied consent law on DUII passed but limited to breath test.

1971

· Blood alcohol level at which a driver is presumed to be under the influence of intoxicants lowered to .10 BAC. Illegal per se set at .15 BAC.

· Judge required to order registration suspended or vehicle impounded in case of driving while suspended.

1973

· Minimum jail sentence for driving while suspended established. First: two days; second: 10 days; third: 30 days.

· To receive an occupational license, a convicted drunk driver must submit to a mental health exam and complete an alcohol education program.

· Habitual offender act. Regular driver license suspended for 10 years for anyone convicted of three major traffic offenses or 20 moving violations in five years.

· Open container law. Illegal to have an opened bottle of alcoholic beverage in the passenger compartment.

· Driver improvement program established.

1975

· Driver license examination expanded to include knowledge and understanding of safe driving practices.

1977

· Motorcycle helmet law repealed, except for riders under age of 18.

1979

· State constitution amended to limit use of motor vehicle fuel and other taxes. Eliminated use for policing.

1981

· Motorcycle instruction program established.

· Reimbursement for driver education increased form $50 to $100.

· Diversion program for drivers arrested for first DUII in a 10-year period established.

· Minimum damage increased from $200 to $400 for reporting a property damage crash.

1983

· Child safety seat or seat belt required for all children less than five years old.

· BAC limit for DUII reduced from .10 to .08.

· Responsibility for motorcycle rider education transferred to Oregon Traffic Safety Commission.

· Juvenile denial law. Persons age 13-17 convicted of any crime, violation, or infraction involving possession, use, or abuse of alcohol or controlled substances have their driving privileges suspended or right to apply denied.

· Administrative license suspension for failure of breath test or refusal to take breath test. (Implemented in 1984)

· Alcohol treatment or education and additional penalties upon conviction of DUII. (Implemented in 1984)

1985

· Classified driver license system established.

· Occupant protection law strengthened. Children under one year must be in a child safety seat and children between one and 16 must be secured by a seat or belt.

· Alcohol server education program established.

1987

· Bicycle rider education program established.

· Issuance of hardship licenses restricted.

· Ignition interlock system established as a pilot study.

· Motorcycle helmet law re-established. Passed by a vote of the people after the Legislature's referral placed the measure on the ballot.

1989

· Ignition interlock program extended. Oregon Traffic Safety Commission directed to evaluate diversion program.

· Alcohol and drug policies and curriculum mandated for educational institutions.

· Provisional driver license for persons under 18 established. Persons under 18 found to have consumed any alcohol subject to an implied consent suspension.

· Pilot program started requiring police to mark the license plates of persons driving while suspended or revoked.

· Commercial driver license program implemented. .04 BAC established as the standard of intoxication for commercial vehicle operators. (Implemented in 1990)

· A safety belt law for all occupants. Passed by a vote of the people after an initiative placed the measure on the ballot. (Implemented in 1990)

1991

· A 0.00 BAC limit for implied consent suspension extended to include all persons under age 21.

· Driver license suspended for minors using false identification to purchase alcohol.

· Boating under the influence of intoxicants established as a Class A misdemeanor.

1993

· Child restraint system for all children less than 40 pounds or less than four years required.

· Minimum damage for reporting a property damage crash increased from $400 to $500.

· Tuition reimbursement for driver education increased to $150 and some restrictions were changed.

· Bicycle helmets required for riders and passengers under age 16.

1995

· Health care providers permitted to report blood alcohol content of motor vehicle accident victims.

· Suspension of driving privileges under implied consent law for failing blood test for BAC.

· Police officers may request urine test when presence of controlled substances is suspected.

· Photo radar speed enforcement demonstration project authorized in Beaverton and Portland.

· Fines double in work zones.

· Federal government repeals national maximum speed limit.

1997

· Accident reporting amount increased from $500 to $1,000.

· Vehicle immobilization on vehicle owned or operated by person convicted of driving while suspended/revoked or second or subsequent DUII.

· Motorcycle education (TEAM Oregon) required for all individuals under age 21 applying for motorcycle endorsement.

· Vehicle impoundment for operation by person driving while suspended/revoked or DUII.

· Sunset provision removed for urine testing of DUII's.

· School Zones “When Children are Present” defined.

· School Zones - doubles fines when signs posted.

1999

· Graduated Driver License program recommending completion of traffic safety education course and requiring a period of supervised driving before persons under 18 years receive non-restricted driver license. (Implemented in 2000)

· Certain cities authorized to establish demonstration project using cameras to record drivers failing to obey traffic signals.

· Certain cities authorized to operate photo radar systems to record drivers relative to speeding.

· Establishes DUII as Class C felony when individual has three or more prior convictions.

· Authorization for use of immobilization devices in addition to boot.

2001

· Uniform standards established for minor decoy operations by law enforcement relative to MIP.

APPENDIX D INTERVIEW QUESTIONS

GENERAL DUII PROGRAM

1. What are three general suggestions for improving the DUII program? When it comes to reducing / controlling DUII, what 3 big issues / 3 small issues do you feel most strongly about?

2. How would you propose to resolve these issues?

YOUR SPECIFIC INVOLVEMENT

1. What DUII activity / program are you specifically involved in?

2. In your words, what is the purpose of this activity / program?

3. Describe the activity / program. What does it require? How does it work?

4. If there was one story you would like to share from your experiences, what would it be?

5. How effective is the activity / program in achieving your stated purpose? Successes? Failures? Barriers? (qualitative and quantitative answers)

6. What performance metrics do you use for evaluation purposes?

7. How does / could the program incorporate bicyclists / pedestrians?

8. What types of information / resources / policies could make your program operate more efficiently or allow for more feasibility in accomplishing your goals?

9. What other organizations / persons do you depend on for your activity / program to work?

10. Where can I find additional information pertaining to your activities / programs?

OTHER QUESTIONS

1. ODOT / Transportation Safety Division – Explain the DUII process from your perspective?

2. What are some DUII trends by race / ethnicity?

3. Are bicyclists / pedestrians who are drunk stopped by the police? What are the handling procedures for bicycling / walking while intoxicated?

4. What kinds of breath or other tests do drunk drivers take when first stopped by a police officer?

5. How long is the diversion court / treatment process?

6. How often do clients repeat the treatment program?

7. What are the specific roles / responsibilities of the Drug Evaluators and Treatment Providers? How do you work together?

APPENDIX D RESULTS OF FINAL VOTING

Category	Target Groups	Identified Barrier or Problem	Potential Solution	NUMBER OF VOTES				
				Top Priority	Second Priority	Third Priority	Fourth Priority	Points
Traffic Enforcement - General	**General**	Perception that likelihood of getting arrested or stopped by police officer is relatively low. Also, the highest BAC levels are occurring year round, not during the holiday period. They are also not always occurring on weekends, despite more who drink on the weekend.	Re-explore possibility of using pseudo-checkpoints to draw in more impaired drivers or saturation patrols to speed up processing. These efforts should be coordinated with media campaigns. Enforce strategically for impaired drivers. Consider region-wide, coordinated effort.	7	2	1	1	37
Traffic Enforcement - General	**General**	Adequate police coverage citywide is needed. Increase priority of impaired driving enforcement through out Portland Police Bureau.	Obtain support from upper management for increased enforcement, especially on nights and weekends, increase training for all police officers, increase staffing at the Traffic Division	4	3	4	0	33
Treatment - Administrative; Funding	**First Time Offenders**	Many clients unable to adequately pay for treatment services	For qualified clients, increase funding for treatment services	4	3	3	0	31
Prosecution - Target Group	**Youth**	Lack of penalties for minors in possession of alcohol	Engage DUII working group to work with juvenile system to increase effectiveness of program	3	2	2	4	26
Treatment - Administrative; Funding	**Repeat Offenders**	Low-income offenders have trouble paying for treatment in the highly-effective DISP Program	Increase funding for the DISP program to expand program services	1	3	1	5	20

Prosecution - Administrative	**First Time Offenders**	Delays in processing first-time offenders lengthen the time needed by all participants, reducing the effectiveness of system	Multiple solutions: hire more prosecutors, start a night court, increase the efficiency of the paperwork completed, or require the start of a treatment program prior to court hearing	1	2	1	2	14
Alternative Transportation	**General**	Alternative transportation options are not readily available to impaired persons or are not used (i.e. most transit service is not available after bars close 2AM)	Provide more alternative transportation programs such as Ride On Portland and promote its use among the drinking public. In addition, restaurant and beverage industry support is encouraged.	0	1	2	6	13
Education / Media - Specific; Funding	**Youth**	Lack of adequate funding for youth education programs.	Increase funding for education campaigns but directed at youth-specific issues	3	0	0	1	13
Education / Media - Specific	**Youth**	Data analysis indicates that the Hispanic and white male populations between ages 21-30 and 36-45 are a significant target profile of persons fatally injured in a alcohol involved crash.	Deliver education campaigns in a more appealing manner integrated within the existing system. New research on media-specific applications indicates this may be promising approach	0	4	0	0	12
Prosecution - Target Group	**Repeat Offenders**	Repeat offenders still drive even when their licenses have been suspended or revoked.	Increase the use of ignition interlocks. Possible explore the use of marked license plates. Provide direct funding or encourage judicial application of existing laws.	0	2	3	0	12
Medical Care	**General**	Missed opportunity in education at trauma hospitals for alcohol-involved patients.	Encourage consistent application of motivational interviews for hospital patients upon discharge and follow up.	0	3	0	1	10
Leadership	**General**	Statewide and regional or citywide leadership through establishment of coalitions needed	Continue DUII Working Group efforts and build relationship with Governor's Council on Alcohol and Drug Abuse Program	1	0	1	1	7
Additional Resources	**General**	Lack of resources (and or officers) to properly enforce alcohol permitted locations and servers	Increase efforts to lobby for additional funds by increase beer and wine tax (or equivalent) to generate funds for	0	1	0	0	3

			increased enforcement activity					
Additional Resources	**Youth**	Minors access to alcohol	OLCC Minor Decoy Operations could be expanded, consequences may not be strict enough to be effective	0	0	1	0	2
Funding	**General**	Resources for all parties involved	Explore and pursue various funding mechanisms (NHTSA, ODOT Safety, OTREC-for research)	0	0	1	0	2
Traffic Enforcement - Specific Issue	**General**	Additional training and legislative action is needed to account for the effects of intoxication from a controlled substance. Possible increasing trend of other substances being the prime intoxicant.	Train more police officers to become Drug Recognition Experts. Determine new policy to determine how to handle intoxication from both alcohol and a controlled substance.	0	0	0	1	1