



**1996 TRAFFIC COLLISIONS IN
WASHINGTON STATE**

**Data summary
and highway safety
problem analysis**

September 1997

Washington Traffic Safety Commission

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Introduction

This document identifies and analyzes traffic safety problems and trends in Washington State. Factors which contribute to the occurrence of traffic collisions and resultant fatalities, injuries and property damage are outlined. The analysis is intended to give traffic safety program specialists the information needed to design new countermeasures, monitor their progress and document program outcomes.

Data and analysis are presented in areas such as safety-restraint use, heavy truck collisions, and population segments which are at greatest risk including drinking drivers, youth, older drivers, pedestrians, bicyclists, and motorcyclists. Current year data are compared to that of recent years for trend identification.

Sources of data include traffic collision records (Washington State Patrol), the Fatal Accident Reporting System (Washington Traffic Safety Commission), driver records (Department of Licensing), vehicle registration records (Department of Licensing), highway/roadway information (Washington State Department of Transportation), and population data (Office of Financial Management).

The collision record system includes all collisions on public roadways reported to the WSP. The reporting criteria are death, injury, or property damage of \$500 or more. The records include both citizen reports and law enforcement investigation reports. The data elements include information on vehicles, roadways, collision circumstances, and the drivers, passengers, pedestrians, and bicyclists involved in collisions. In some tables and charts, fatalities and injuries are combined so that numbers are large enough for statistical reliability.

The resources of the Traffic Records Data Center at the Washington Traffic Safety Commission have been used to analyze and summarize the data. Special thanks to DOT Transportation Data Office and WSP Accident Records and Computer Services.

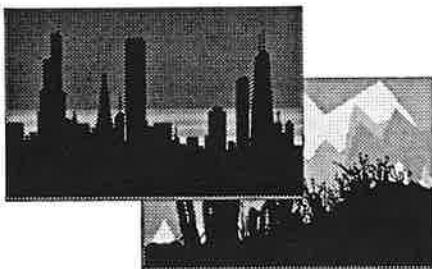
I M P O R T A N T

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Introduction

I. Overview



In Washington State in 1996, 712 persons were killed in traffic crashes, an 8.9 percent increase from the previous year. This increase was significantly higher than the 0.2 percent average yearly increase during the previous four years. The death rate per 100 million miles of travel was 1.45. The number of serious injuries was 3.5 percent fewer than the previous year. The serious injury rate was

10.65 serious injuries per 100 million miles of travel, the lowest rate on record (Table 1-1).

Table 1-1: Overview of traffic crashes

Five-year comparison

	1996	1995	1994	1993	1992	'96 chg from prev year	'92 - '95 avg yearly change
Total collisions	140,215	135,198	129,899	123,965	125,565	3.7%	2.5%
Fatal	643	577	574	579	593	11.4%	-0.9%
Injury	56,401	56,589	54,782	51,500	51,186	-0.3%	3.4%
Property dmg only	83,171	78,032	74,543	71,886	73,786	6.6%	1.9%
Persons killed	712	654	639	661	651	8.9%	0.2%
Persons injured	83,781	84,236	81,419	76,332	75,803	-0.5%	3.6%
Serious injury	5,249	5,438	5,331	5,713	6,531	-3.5%	-5.7%
Evident injury	25,928	24,805	25,165	24,549	24,246	4.5%	0.8%
Possible injury	52,604	53,993	50,923	46,070	45,026	-2.6%	6.3%
Drivers involved	252,792	243,688	233,099	221,503	224,316	3.7%	2.8%
Vehicles involved	263,858	254,056	243,438	231,756	234,938	3.9%	2.7%
Motor veh. travel*	49,270	49,248	47,674	46,426	48,644	0.0%	0.5%
Death rate**	1.45	1.33	1.34	1.42	1.34	8.8%	-0.1%
Serious injury rate**	10.65	11.04	11.18	12.31	13.43	-3.5%	-6.2%
Economic loss +	\$2,054	\$1,980	\$1,924	\$1,894	\$1,919	3.7%	1.1%

* In millions of miles.

Source: WSP, WSDOT, Nat'l Safety Council

**Deaths/injuries per 100 million vehicle miles of travel.

+In \$ millions; based on National Safety Council estimates in constant 1996 dollars.

(Death ⇒\$790,000; serious inj ⇒\$41,200; evident inj ⇒\$13,900; possible inj ⇒\$7,900; ppty dmg only ⇒\$6,000.)

The estimated economic loss to the state from traffic-related injury, death, and damage amounted to \$2.054 billion. This value is based on National Safety Council estimates of average costs of traffic collisions and injuries. Components of the estimate include property damage, medical costs, emergency care costs, wage and productivity losses, insurance administration, and legal/court costs. Economic losses (in 1996 constant dollars) increased by 3.7 percent compared to the previous year.

I. Overview

Exposure and rates

Motor vehicle travel increased only slightly from the previous year. Motor vehicle registrations were up 1.8 percent, the number of licensed drivers increased 7.0 percent, and the state's population was up 1.6 percent compared to the previous year (Table 1-2).

Table 1-2: Travel, registered vehicles, licensed drivers & population

Fatality and collision rates - five-year comparison

	1996	1995	1994	1993	1992	'96 chg from prev year	'92 - '95 avg yearly change
Total collisions	140,215	135,198	129,899	123,965	125,565	3.7%	2.5%
Persons killed	712	654	639	661	651	8.9%	0.2%
Motor vehicle travel*	49,270	49,248	47,674	46,426	48,644	0.0%	0.5%
Motor veh. registration	4,651,632	4,570,615	4,535,415	4,428,944	4,435,259	1.8%	1.0%
Licensed drivers	4,037,543	3,774,980	3,862,305	3,784,430	3,689,741	7.0%	0.8%
State's population	5,516,800	5,429,900	5,334,400	5,240,900	5,116,685	1.6%	2.0%
<i>Fatality rate ** by:</i>							
Vehicle travel	1.45	1.33	1.34	1.42	1.34	8.8%	-0.1%
Motor vehicle reg.	1.53	1.43	1.41	1.49	1.47	7.0%	-0.8%
Licensed drivers	1.76	1.73	1.65	1.75	1.76	1.8%	-0.5%
Population	1.29	1.20	1.20	1.26	1.27	7.2%	-1.8%
<i>Collision rate ** by:</i>							
Vehicle travel	284.6	274.5	272.5	267.0	258.1	3.7%	2.1%
Motor vehicle reg.	301.4	295.8	286.4	279.9	283.1	1.9%	1.5%
Licensed drivers	347.3	358.1	336.3	327.6	340.3	-3.0%	1.8%
Population	254.2	249.0	243.5	236.5	245.4	2.1%	0.5%

* In millions of miles

Source: WSDOT, DOL, OFM

**Fatalities/collisions by: 100 million vehicle miles traveled, 10,000 registered vehicles
10,000 licensed drivers and 10,000 population.

Traffic safety statistics: 1972 to 1996

Exposure statistics, including total licensed drivers, population, vehicle registration and travel, have generally increased each year (average increases have been 1% to 5%). 1996 established a new high in motor vehicle collisions with 140,215. The annual traffic death total ranged from a high of 1,034 in 1979 to a low of 639 deaths in 1994. The fatality rate was 3.82 in 1972, declining to 1.33 in 1995. The death rate in 1996 increased to 1.45 deaths per 100 million vehicle miles traveled, the highest recorded since 1991. (Table 1-3).

Table 1-3: Population, vehicle travel and collision summary for 1972 - 1996

year	population	lic. drivers	reg. vehicles	travel*	collisions**	injuries	deaths +	death rate ++
1972	3,418,800	2,011,893	2,315,310	22,363	101,002	55,454	855	3.82
1973	3,424,300	2,113,460	2,453,880	23,457	105,515	58,039	776	3.31
1974	3,448,100	2,122,131	2,545,975	22,585	106,242	57,716	761	3.37
1975	3,493,990	2,176,505	2,640,944	24,023	120,635	64,145	771	3.21
1976	3,571,591	2,324,697	2,785,500	25,932	120,864	66,309	825	3.18
1977	3,661,975	2,339,215	2,952,383	27,449	119,058	71,356	927	3.38
1978	3,774,300	2,485,248	3,042,265	29,378	116,923	64,669	1,006	3.42
1979	3,911,200	2,579,368	3,186,898	29,122	118,686	65,399	1,034	3.55
1980	4,132,353	2,662,659	3,293,065	28,696	113,751	61,532	985	3.43
1981	4,250,200	2,732,722	3,408,871	30,346	111,993	61,083	872	2.87
1982	4,264,000	2,774,212	3,313,348	30,353	100,644	54,789	757	2.49
1983	4,285,100	2,867,032	3,372,966	32,275	106,597	58,317	705	2.18
1984	4,328,100	2,973,468	3,459,772	33,344	111,655	61,366	761	2.28
1985	4,384,100	2,980,717	3,546,152	33,978	120,056	63,806	756	2.22
1986	4,419,700	3,029,375	3,651,102	36,416	122,918	66,707	714	1.96
1987	4,481,100	3,156,600	3,833,058	38,520	126,807	67,665	790	2.05
1988	4,565,000	3,264,065	3,896,828	41,698	125,920	72,449	785	1.88
1989	4,660,700	3,350,324	4,084,367	42,696	128,800	73,993	781	1.83
1990	4,866,692	3,366,146	4,233,853	44,157	132,056	76,064	825	1.87
1991	5,000,400	3,572,038	4,381,757	45,663	121,686	72,004	683	1.50
1992	5,116,685	3,689,741	4,435,259	48,664	125,565	75,803	651	1.34
1993	5,240,900	3,784,430	4,428,944	46,426	123,965	71,886	661	1.42
1994	5,334,400	3,862,305	4,535,415	47,674	129,899	81,419	639	1.34
1995	5,429,900	3,774,980	4,570,615	49,248	135,198	84,236	654	1.33
1996	5,516,800	4,037,543	4,651,632	49,270	140,215	83,781	712	1.45

Source: WSP, OFM, DOL, WSDOT

* In millions of vehicle miles traveled.

Method used by WSDOT for estimating miles traveled changed for 1993, resulting in lower mileage.

** Minimum damage for a reportable collision was increased from \$100 to \$300 to the property of one person on 7/1/77 and to \$500 on 10/1/87.

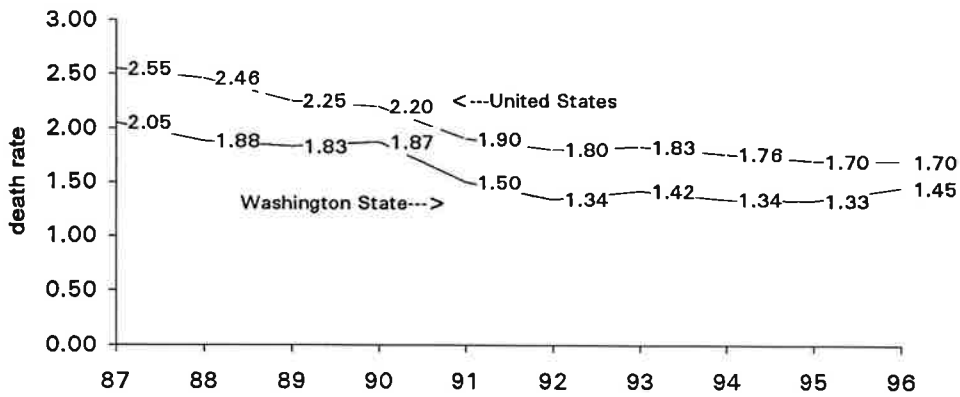
+State adopted a 90-day fatal-reporting policy in 1980 and a 30-day fatal-reporting policy in 1989.

++Traffic deaths per 100 million vehicle miles of travel.

I. Overview

A comparison of Washington and U.S. traffic fatality rates over the past 10 years is shown in Figure 1-1. Washington and the U.S. have both shown decreases, but Washington has consistently maintained a lower rate than the nation (Figure 1-1).

Figure 1-1:
Death rate (deaths per 100M miles)
Ten-year trend - Washington vs U.S.



Source: WSP, NHTSA

Persons involved in traffic collisions

Drivers accounted for 398 of Washington's 712 traffic fatalities in 1996. Of all pedestrians involved in traffic collisions, 4.34 percent were killed (Table 1-4).

Table 1-4: Status of persons involved in collisions
 By injury severity - 1996

status	killed	serious injury	evident injury	possible injury	no injury	total involved	pct killed of total involved*
Drivers (no m/cyclists)	398	2,830	15,258	35,177	183,665	237,328	0.17%
Passengers (no m/cyclists)	167	1,513	7,894	16,168	61,402	87,144	0.19%
Pedestrians	90	425	981	572	7	2,075	4.34%
Motorcyclists	41	303	773	313	233	1,663	2.47%
Bicyclists**	14	176	1,009	359	48	1,606	0.87%
Other***	2	2	13	15	-----	32	-----
Total	712	5,249	25,928	52,604	245,355	329,848	0.84%

* Not including unknown injury.

Source: WSP

** Includes unicyclists & tricyclists.

*** Two killed were riding horseback.

The age groups of 20-24 and 75-older had the highest fatality rates with 2.97 and 2.12 deaths per 10,000 population, respectively. The 20-24 age group also had the highest injury rate, with 327.3 injuries per 10,000 population (Table 1-5).

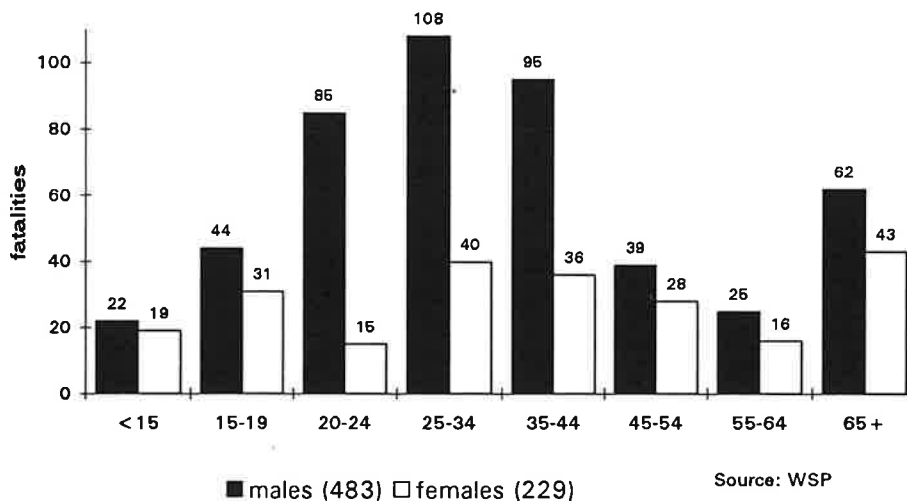
Table 1-5: Persons killed and injured in traffic collisions
By age group and sex - 1996

age	population	killed	death rate*	injured	injury rate*
0 - 4	408,416	8	0.20	1,420	34.8
5 - 9	433,117	12	0.28	2,233	51.6
10 - 14	410,996	21	0.51	2,858	69.5
15 - 19	376,476	75	1.99	12,036	319.7
20 - 24	336,579	100	2.97	11,015	327.3
25-34	832,821	148	1.78	17,567	210.9
35-44	954,407	131	1.37	14,959	156.7
45-54	709,861	67	0.94	9,760	137.5
55-64	417,223	41	0.98	4,425	106.1
65-74	348,976	44	1.26	2,702	77.4
75 & older	287,928	61	2.12	2,005	69.6
Age not stated	-----	4	-----	2,801	-----
Males	2,744,622	483	1.76	38,465	140.1
Females	2,772,178	229	0.83	45,316	163.5
Total	5,516,800	712	1.29	83,781	151.9

Source: WSP, OFM

Males had higher fatality rates than women in all age groups. The 25-34 year age group recorded the highest number of deaths for males, while more females were killed in the 65 and older age group (Figure 1-2).

Figure 1-2:
Traffic fatalities
By age and sex - 1996



I. Overview

Traffic collisions by month, day of week and hour of day

During 1996, the months recording the greatest number of traffic deaths were June, July and August. The greatest number of property damage collisions occurred in December (Table 1-6).

**Table 1-6: Persons killed and injured in collisions
By month - 1996**

	persons		collisions			
	killed	injured	fatal	injury	ppty dmg	total
January	47	7,149	43	4,981	8,749	13,773
February	43	6,251	41	4,288	6,686	11,015
March	59	6,085	52	4,055	5,838	9,945
April	58	6,609	52	4,408	6,288	10,748
May	45	7,140	40	4,717	6,164	10,921
June	69	6,683	67	4,392	5,864	10,323
July	72	7,266	66	4,781	6,335	11,182
August	74	7,096	68	4,645	6,241	10,954
September	71	7,061	57	4,771	6,456	11,284
October	63	7,784	57	5,332	7,752	13,141
November	55	7,260	50	4,965	7,874	12,889
December	56	7,397	50	5,066	8,924	14,040
Total	712	83,781	643	56,401	83,171	140,215

Source: WSP

Forty seven percent of Washington's fatal collisions occurred on weekends (Friday, Saturday and Sunday). Of total reported collisions, the majority occurred on weekdays (Table 1-7).

Table 1-7: Collisions by day of week and hour of day - 1996

	total week			Monday - Thursday			Friday - Sunday		
	total	injury	fatal	total	injury	fatal	total	injury	fatal
midnight	2,518	988	27	954	382	12	1,564	606	15
1:00 a.m.	2,276	897	33	805	315	13	1,471	582	20
2:00 a.m.	2,120	839	29	696	273	9	1,424	566	20
3:00 a.m.	1,166	440	23	453	163	11	713	277	12
4:00 a.m.	1,077	391	8	496	191	3	581	200	5
5:00 a.m.	1,607	613	19	968	379	12	639	234	7
6:00 a.m.	3,247	1,176	18	2,255	834	9	992	342	9
7:00 a.m.	6,300	2,537	25	4,663	1,898	18	1,637	639	7
8:00 a.m.	5,729	2,179	10	3,949	1,481	4	1,780	698	6
9:00 a.m.	5,372	1,959	19	3,317	1,218	10	2,055	741	9
10:00 a.m.	5,814	2,200	14	3,410	1,294	11	2,404	906	3
11:00 a.m.	7,308	2,828	25	4,235	1,604	13	3,073	1,224	12
noon	8,732	3,468	21	5,041	1,949	9	3,691	1,519	12
1:00 p.m.	8,801	3,537	33	5,034	1,962	20	3,767	1,575	13
2:00 p.m.	10,375	4,164	26	6,164	2,448	18	4,211	1,716	8
3:00 p.m.	11,917	4,954	31	7,435	3,060	22	4,482	1,894	9
4:00 p.m.	12,307	5,166	32	7,572	3,208	17	4,735	1,958	15
5:00 p.m.	12,642	5,453	30	7,962	3,443	14	4,680	2,010	16
6:00 p.m.	8,843	3,747	43	5,235	2,202	22	3,608	1,545	21
7:00 p.m.	6,016	2,548	43	3,309	1,407	23	2,707	1,141	20
8:00 p.m.	4,623	1,855	39	2,459	1,022	19	2,164	833	20
9:00 p.m.	4,548	1,811	37	2,378	989	16	2,170	822	21
10:00 p.m.	3,769	1,464	31	1,837	736	15	1,932	728	16
11:00 p.m.	3,108	1,187	27	1,426	535	20	1,682	652	7
Total	140,215	56,401	643	82,053	32,993	340	58,162	23,408	303

Source: WSP

I. Overview

Traffic collisions during holiday periods

Of the major holiday periods, Memorial Day had the highest rate of fatalities per 24 hours with 3.7, followed by Labor Day with 3.4. Christmas had the highest rate of collisions with 460.0 collisions per 24 hours. Overall, holiday periods had a somewhat higher fatality rate than the full year (Table 1-8).

Table 1-8: Traffic collisions during major holiday periods
Deaths, injuries, collisions per hour - 1996

	number of hours	deaths	injuries	collisions	rate per 24-hours	
					deaths	collisions
New Years Eve (95-96)	78	3	681	1,094	0.9	336.6
Memorial Day	78	12	582	787	3.7	242.2
4th of July	102	13	984	1,349	3.1	317.4
Labor Day	78	11	709	928	3.4	285.5
Thanksgiving	102	3	700	1,307	0.7	307.5
Christmas	54	2	556	1,035	0.9	460.0
Total holidays	414	41	3,531	5,406	2.4	313.4
Full year	8,784	712	83,781	140,215	1.9	383.1

Source: WSP

Traffic collisions & deaths by type of roadway

During 1996, the interstate system recorded the lowest death rate per vehicle miles traveled with 0.67 deaths per 100 million miles. The greatest number of fatalities occurred on county roads and state highways, which also experienced high fatality rates. City streets had by far the greatest number of total collisions with 65,582, followed by state highways and county roads. The greatest amount of vehicle travel was on state highways with an estimated 14,185 millions of vehicle miles traveled (Table 1-9).

Table 1-9: Highways, travel and collisions
By type of highway - 1996

type of highway	highway miles	miles traveled +	fatalities	collisions	fatality rate*	collision rate*
County roads	41,095	8,900	220	22,105	2.47	248.4
State highways	7,037	14,185	270	33,619	1.90	237.0
City streets	12,909	12,272	113	65,582	0.92	534.4
Interstate system	764	13,385	90	17,855	0.67	133.4
Other traffic ways**	18,515	528	19	1,054	3.60	199.7
Total	80,319	49,270	712	140,215	1.45	284.6

Source: WSP, WSDOT

+WSDOT estimate in millions of vehicle miles traveled.

*Fatalities/collisions per hundred million vehicle miles

** Includes parks/forest service roads. Does not include all-terrain-vehicle trails.

Table 1-10 compares collisions in urban and rural areas. Just under two-thirds of total collisions occurred in urban areas. Nearly three quarters of fatalities occurred in rural areas which also had a fatality rate more than 3 times higher than the urban rate.

Table 1-10: Collisions & injury severity in urban and rural areas*
By collision severity - 1996

	urban	rural	total
Total collisions	93,713	46,502	140,215
Vehicles involved	186,763	77,095	263,858
Drivers involved	177,426	75,366	252,792
Fatal clsns	177	466	643
Injury clsns	36,340	20,061	56,401
Ppty dmg only clsns	57,196	25,975	83,171
Persons killed	190	522	712
Serious injuries	2,582	2,667	5,249
Evident injuries	13,956	11,972	25,928
Possible injuries	36,065	16,539	52,604
Total injured	52,603	31,178	83,781
Population	3,075,881	2,440,919	5,516,800
Fatalities per 10,000 pop	0.6	2.1	1.3
Collisions per 10,000 pop	304.7	190.5	254.2

Source: WSP, OFM

* Urban = cities with 2,500 or more population.

Rural = unincorporated areas or cities with under 2,500 population.

I. Overview

Drivers under age 30 had higher collision and fatal collision rates than older drivers. Drivers 22 and 24 years of age had the highest rates of fatal collisions per 10,000 licensed drivers (Table 1-11). Drivers age 18 and 19 had the highest collision rates. Males had more collisions than females among all age groups (Figure 1-3).

Table 1-11: Driver distribution and collision involvement
By age group and sex*- 1996

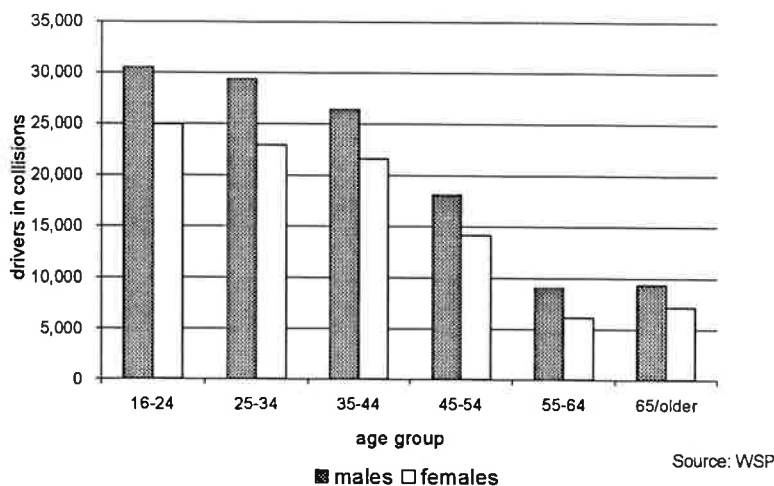
age	population	licensed drivers	total collisions	fatal collisions	collision rate **	fatal clsn rate **
Under 16	-----	-----	576	3	-----	-----
16	79,522	37,188	3,664	10	460.8	1.3
17	73,752	51,744	7,162	23	971.1	3.1
18	71,476	58,708	7,917	29	1,107.6	4.1
19	69,716	65,261	7,388	25	1,059.7	3.6
20	67,831	62,277	6,605	28	973.7	4.1
21	66,794	64,999	6,251	27	935.9	4.0
22	65,399	67,416	5,735	31	876.9	4.7
23	67,254	68,570	5,427	26	806.9	3.9
24	69,303	69,318	5,374	30	775.4	4.3
25-29	389,145	411,298	26,678	100	685.6	2.6
30-34	443,676	441,061	25,752	107	580.4	2.4
35-39	491,878	483,469	25,195	104	512.2	2.1
40-44	462,529	474,511	22,874	101	494.5	2.2
45-49	408,676	424,811	18,794	84	459.9	2.1
50-54	301,185	323,636	13,448	58	446.5	1.9
55-59	227,983	230,881	8,914	42	391.0	1.8
60-64	189,240	183,548	6,376	30	336.9	1.6
65-69	180,610	165,359	5,098	24	282.3	1.3
70 & over	456,294	353,488	11,475	79	251.5	1.7
Males (16 +)	2,020,705	2,084,458	136,749	694	676.7	3.4
Females (16 +)	2,161,558	1,953,085	104,119	271	481.7	1.3

* Does not include age or sex not stated.

Source: WSP, OFM

** Collisions/fatal collisions per 10,000 population.

Figure 1-3:
Drivers in collisions by age and sex - 1996



Single- and multiple-vehicle collision types

In single-vehicle collisions, the first harmful event most often recorded was “struck fixed/other object.” Vehicle-train and Vehicle-pedestrian collisions resulted in the highest percentage of fatalities. Of multiple-vehicle collisions, the largest percentage of fatalities occurred in head-on collisions (Table 1-12).

Table 1-12: First harmful event in investigated collisions
Single & multiple vehicle collisions - 1996

	ppty dmg			total	pct fatal
	fatal	injury	only		
Single-vehicle collisions					
Vehicle-pedestrian	83	1,699	6	1,788	4.6%
Vehicle-railway train	3	17	38	58	5.2%
Overtuned	91	2,831	2,494	5,416	1.7%
Struck fixed/other object	185	7,399	11,883	19,467	1.0%
Vehicle-bicyclist	14	1,432	28	1,474	0.9%
Non-collision	6	200	585	791	0.8%
Vehicle-animal	1	199	1,095	1,295	0.1%
Total single-vehicle	383	13,777	16,129	30,289	1.3%
Multiple vehicle collisions					
Head-on	12	190	107	309	3.9%
Broadside - opp. direction	2	210	262	474	0.4%
Angular direction	15	5,722	7,692	13,429	0.1%
Sideswipe	8	1,315	4,543	5,866	0.1%
Broadside - same direction	1	461	1,126	1,588	0.1%
Enter/leave driveway	5	2,482	4,916	7,403	0.1%
One left/one straight-opp dir	9	2,077	2,452	4,538	0.2%
Struck parked vehicle	4	638	5,752	6,394	0.1%
Rear-end	10	10,089	10,007	20,106	0.0%
Enter/leave parked position	0	148	709	857	0.0%
Total multiple vehicle	66	23,332	37,566	60,964	0.1%
Total collisions	449	37,109	53,695	91,253	0.5%

Source: WSP

Driver violations

Driver violations in traffic collisions are shown in Table 1-13. These violations represent the judgment of police officers as to driver behavior factors that may have contributed to collision occurrences. The majority of violations noted by police include right-of-way violations, exceeding safe speed, following too closely, and inattention.

Figure 1-4 illustrates the top 10 driver violations in fatal collisions. Speeding (both “exceeding safe speed” and “exceeding posted speed”) and DUI accounted for the vast majority of driver violations in fatal collisions.

I. Overview

Table 1-13: Contributory driver violations in investigated collisions*
By collision severity - 1996

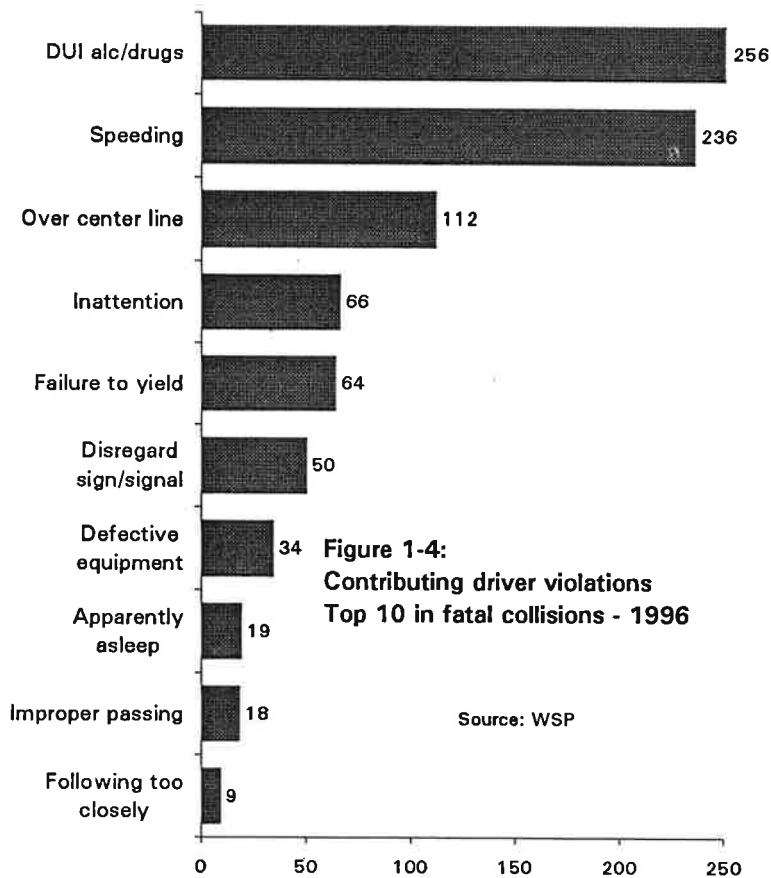
	fatal	injury	ppty drng only	total	pct of viols assoc/ w fatal clsns +
Failure to yield right of way**	64	11,117	16,212	27,393	0.2%
Exceeding safe speed	163	12,121	14,730	27,014	0.6%
Driver inattention	66	6,342	11,485	17,893	0.4%
Following too closely	9	8,402	8,144	16,555	0.1%
Disregarding signs/signals	50	3,996	4,246	8,292	0.6%
Driving under the influence of alcohol	242	4,435	3,208	7,885	3.1%
Improper turning - inc. "U" turn	8	656	3,571	4,235	0.2%
Defective equipment	34	1,337	2,203	3,574	1.0%
Exceeding posted speed	73	1,754	1,649	3,476	2.1%
Other violations	7	794	2,302	3,103	0.2%
Over center line	112	1,238	1,116	2,466	4.5%
Improper passing	18	702	1,412	2,132	0.8%
Apparently asleep	19	912	772	1,703	1.1%
Improper parking location	0	102	490	592	0.0%
Failing to signal/improper signal	0	140	292	432	0.0%
Under influence of drugs	14	120	89	223	6.3%
Did not dim headlights	2	87	81	170	1.2%
Total violations in collisions	881	54,255	72,002	127,138	0.7%

* More than one violation was recorded for some drivers.

Source: WSP

** Includes failure to yield to pedestrians.

+Percentage of violations associated with fatal collisions.



Vehicle condition

Defective brakes and worn or smooth tires were the leading defects noted by law enforcement officers in investigated collisions in 1996 (Table 1-14).

Table 1-14: Vehicle defects noted in investigated collisions *

By collision severity - 1996

					pct of defects
	fatal	injury	ppty dmg	total	assoc with
	collisions	collisions	only clsns	collisions	fatal clsns +
Defective brakes	15	589	694	1,298	1.2%
Worn or smooth tires	21	526	559	1,106	1.9%
Puncture or blowout	2	131	237	370	0.5%
Defective rear lights	2	87	123	212	0.9%
Defective steering	0	93	138	231	0.0%
Power failure	2	64	111	177	1.1%
Defective headlights	2	27	35	64	3.1%
Other lights/reflectors insufficient	1	27	32	60	1.7%
All other defects	13	550	1,189	1,752	0.7%
Total defects	58	2,094	3,118	5,270	1.1%
No defects noted	921	84,806	107,490	193,217	0.5%
Percent with defects noted	5.9%	2.4%	2.8%	2.7%	-----

*More than one defect was noted for some vehicles.

Source: WSP

+Percentage of total collisions associated with a vehicle defect which resulted in fatalities.

I. Overview

**Table 1-15: Traffic exposure factors +
By county - 1996**

county	population	licensed drivers	registered vehicles	centerline miles *	miles traveled**
Adams	15,400	11,490	16,479	2,601	441,249
Asotin	19,600	14,332	16,432	594	97,216
Benton	131,000	97,439	115,199	1,893	1,212,176
Chelan	61,300	46,507	60,131	2,308	612,950
Clallam	65,000	47,930	56,545	1,059	428,870
Clark	303,500	221,206	249,398	2,635	2,304,725
Columbia	4,200	3,125	4,606	838	72,015
Cowlitz	90,800	65,760	84,210	1,172	1,075,038
Douglas	30,400	20,625	23,846	3,126	347,959
Ferry	7,200	5,033	4,861	1,812	116,342
Franklin	43,700	29,194	42,594	1,710	498,253
Garfield	2,400	2,023	2,754	565	63,478
Grant	66,400	46,048	58,310	3,750	832,003
Grays Harbor	68,200	49,451	57,375	1,575	623,843
Island	70,300	49,246	52,962	1,362	374,544
Jefferson	25,700	19,826	22,511	936	288,856
King	1,628,800	1,251,022	1,393,758	7,272	14,845,638
Kitsap	224,700	158,431	175,987	1,675	1,465,739
Kittitas	30,800	22,162	27,833	2,464	931,233
Klickitat	18,700	13,924	17,362	1,487	222,186
Lewis	66,700	51,322	62,801	1,781	934,246
Lincoln	9,800	6,914	11,597	2,525	297,483
Mason	46,700	34,171	42,993	980	399,060
Okanogan	37,500	28,998	33,599	3,471	446,800
Pacific	21,100	16,058	18,601	740	213,949
Pend Oreille	11,100	8,563	9,944	1,615	146,608
Pierce	665,200	451,677	481,521	3,732	5,218,907
San Juan	12,400	9,799	12,847	342	32,274
Skagit	95,500	71,227	95,723	1,489	1,074,037
Skamania	9,800	5,882	6,800	876	90,838
Snohomish	538,100	387,538	448,125	3,775	4,683,264
Spokane	406,500	288,888	330,663	4,577	2,998,764
Stevens	36,600	26,117	29,636	2,344	370,248
Thurston	193,100	162,081	202,919	1,551	1,876,322
Wahkiakum	3,800	2,426	2,948	188	43,006
Walla Walla	53,400	33,664	38,504	1,274	401,090
Whitcom	152,800	110,990	130,606	1,811	1,248,832
Whitman	41,000	26,132	29,353	2,420	402,423
Yakima	207,600	137,637	179,299	3,228	1,537,791
Total	5,516,800	4,034,858	4,651,632	79,556	49,270,255

Source: DOL, DOT, OFM

* Total length of highway, regardless of number of lanes.

** Miles traveled estimated by WSDOT - in thousands of miles.

Table 1-16: Traffic deaths, injuries, miles traveled and rates
By county - 1996

county	miles traveled*	serious deaths	serious injuries	evident injuries	possible injuries	ppty dmg only clsns	total collisions	collision rate**	fatality rate**	econ loss +
Adams	441,249	9	42	150	144	294	508	115.1	2.04	\$ 13.8
Asotin	97,216	2	5	56	70	173	270	277.7	2.06	\$ 4.2
Benton	1,212,176	17	127	497	800	1,793	2,776	229.0	1.40	\$ 42.6
Chelan	612,950	10	90	350	437	988	1,556	253.9	1.63	\$ 25.9
Clallam	428,870	10	40	197	354	723	1,142	266.3	2.33	\$ 19.4
Clark	2,304,725	36	285	1,343	2,499	3,493	6,362	276.0	1.56	\$ 99.5
Columbia	72,015	1	7	22	21	84	122	169.4	1.39	\$ 2.1
Cowlitz	1,075,038	20	78	551	819	1,565	2,554	237.6	1.86	\$ 42.5
Douglas	347,959	9	38	160	135	345	556	159.8	2.59	\$ 14.0
Ferry	116,342	5	9	52	35	100	169	145.3	4.30	\$ 5.9
Franklin	498,253	12	51	207	215	648	994	199.5	2.41	\$ 20.0
Garfield	63,478	0	1	14	15	51	72	113.4	0.00	\$ 0.7
Grant	832,003	30	74	421	436	921	1,527	183.5	3.61	\$ 41.6
Grays Harbor	623,843	16	84	306	440	1,036	1,629	261.1	2.56	\$ 30.0
Island	374,544	8	47	206	289	488	854	228.0	2.14	\$ 16.3
Jefferson	288,856	8	29	107	120	297	476	164.8	2.77	\$ 11.7
King	14,845,638	130	1,692	7,582	20,633	29,463	49,927	336.3	0.88	\$ 617.6
Kitsap	1,465,739	15	190	929	1,545	2,541	4,315	294.4	1.02	\$ 60.0
Kittitas	931,233	21	38	297	323	932	1,393	149.6	2.26	\$ 30.4
Klickitat	222,186	6	48	106	76	271	432	194.4	2.70	\$ 10.4
Lewis	934,246	11	100	493	619	1,235	2,024	216.6	1.18	\$ 32.0
Lincoln	297,483	4	25	61	78	155	261	87.7	1.34	\$ 6.6
Mason	399,060	15	62	219	409	552	1,031	258.4	3.76	\$ 24.0
Okanogan	446,800	11	28	231	181	490	789	176.6	2.46	\$ 17.4
Pacific	213,949	3	18	114	114	293	450	210.3	1.40	\$ 7.4
Pend Oreille	146,608	2	27	54	25	143	213	145.3	1.36	\$ 4.5
Pierce	5,218,907	74	601	2,983	7,020	8,805	15,878	304.2	1.42	\$ 233.0
San Juan	32,274	1	14	58	22	58	124	384.2	3.10	\$ 2.7
Skagit	1,074,037	11	82	536	760	1,406	2,307	214.8	1.02	\$ 34.0
Skamania	90,838	1	8	42	41	114	173	190.4	1.10	\$ 2.7
Snohomish	4,683,264	51	354	2,415	5,214	7,120	12,533	267.6	1.09	\$ 172.4
Spokane	2,998,764	40	351	1,909	3,780	6,530	10,735	358.0	1.33	\$ 141.6
Stevens	370,248	8	64	186	139	372	624	168.5	2.16	\$ 14.9
Thurston	1,876,322	24	159	840	1,899	2,817	4,786	255.1	1.28	\$ 69.1
Wahkiakum	43,006	0	0	13	23	33	61	141.8	0.00	\$ 0.6
Walla Walla	401,090	11	47	266	231	781	1,166	290.7	2.74	\$ 20.8
Whatcom	1,248,832	14	122	671	1,030	2,194	3,479	278.6	1.12	\$ 46.7
Whitman	402,423	9	37	175	174	573	828	205.8	2.24	\$ 15.9
Yakima	1,537,791	57	175	1,109	1,439	3,294	5,119	332.9	3.71	\$ 98.8
Total	49,270,255	712	5,249	25,928	52,604	83,171	140,215	284.6	1.45	\$ 2,053.7

*In thousands of vehicle miles traveled.

Source: WSP, WSDOT, Nat'l Safety Council

**Traffic deaths/collisions per 100 million vehicle miles traveled.

+In \$millions; based on National Safety Council estimates in constant 1994 dollars.

(Death ⇒\$920,000; serious inj ⇒\$46,000; evident inj ⇒\$14,000; possible inj ⇒\$8,800; ppty dmg only ⇒\$6,600.)

I. Overview

Table 1-17: Traffic deaths, injuries and collisions *

Cities over 10,000 population - 1996

	population	deaths	injuries	collisions	collision rate**
<i>250,000 and over</i>					
Seattle	534,700	31	12,038	21,445	401.1
<i>100,000 to 250,000</i>					
Spokane	187,700	8	3,562	6,696	356.7
Tacoma	185,000	18	4,718	7,057	381.5
Bellevue	103,700	4	1,784	3,185	307.1
<i>50,000 to 100,000</i>					
Everett	81,810	4	1,922	3,236	395.6
Federal Way	75,240	12	1,551	2,199	292.3
Vancouver	67,450	8	1,442	2,713	402.2
Lakewood	62,788	2	808	1,201	191.3
Yakima	62,570	6	1,168	2,396	382.3
Kent	60,380	4	1,527	2,515	416.5
Bellingham	59,840	1	720	1,657	276.9
<i>25,000 to 50,000</i>					
Shoreline	48,205	2	800	1,209	250.8
Kennewick	48,010	3	707	1,295	269.7
Renton	45,170	4	1,381	2,247	497.5
Kirkland	43,180	1	706	1,284	297.5
Redmond	40,805	2	596	1,174	287.7
Bremerton	38,370	2	619	1,243	324.0
Olympia	37,960	1	825	1,668	439.4
Auburn	36,130	6	903	1,395	386.1
Richland	35,990	3	328	772	214.5
Edmonds	35,480	2	330	589	168.8
Longview	33,650	1	596	1,058	314.7
Lynnwood	32,420	2	910	1,411	435.2
Walla Walla	28,930	2	279	699	241.6
University Place	28,751	1	159	268	93.2
<i>15,000 to 25,000</i>					
Puyallup	28,660	1	618	1,141	398.1
Burien	27,830	0	440	723	259.8
Lacey	26,170	4	586	983	375.6
Bothell	25,990	3	394	710	273.2
<i>10,000 to 15,000</i>					
Wenatchee	24,690	0	332	581	236.3
Pullman	24,650	0	117	349	141.6
Sea Tac	23,110	9	766	1,188	513.2
Des Moines	23,020	2	173	290	126.0
Pasco	22,370	3	321	697	311.6
Mount Vernon	21,820	1	318	549	251.6
Mercer Island	21,490	0	185	338	156.4
Mountlake Terrace	20,160	0	238	403	199.9
Oak Harbor	19,530	1	123	230	117.8
Port Angeles	18,790	0	258	473	251.7
Bainbridge Island	18,530	2	100	210	113.3
Marysville	18,240	1	224	473	259.3
Aberdeen	16,700	3	237	565	338.3
Mukilteo	15,430	0	130	297	192.5
<i>10,000 to 15,000</i>					
Tukwila	14,880	3	1,334	1,999	1343.4
Ellensburg	13,210	0	100	266	201.4
Anacortes	13,140	1	78	217	165.1
Moses Lake	13,130	0	225	466	354.9
Centralia	12,880	1	302	604	469.7
Keelo	11,910	0	330	589	494.5
Turnwater	11,790	0	187	381	323.2
Sunnyside	11,720	1	96	238	203.1
Edgewood	10,534	0	77	110	104.4
Enumclaw	10,260	0	103	182	177.4

*Includes collisions occurring on the interstate system

Source: WSP, OFM

**Deaths/collisions per 10,000 population

Figure 1-5: Collision rates in Washington State - 1996

Collision rates represent traffic collisions per 100 million vehicle miles traveled. Darker shading indicates a higher collision rate. Rates are divided into five groups for shading purposes. See Table 1-16 for exact rates. Source: WSP, WSDOT



I. Overview

II. Drinking Drivers

Collisions where law enforcement reports noted the involvement of drinking drivers are summarized in Tables 2-1 and 2-2. Table 2-1 includes all collisions where the drivers were noted to have some level of alcohol in their system. There was an increase of 17.8 percent in fatal collisions from the previous year and an increase of 18.6 percent in the number of persons killed. The percentage of all traffic fatalities that involved drinking drivers was 46.5 percent up 9.0 percent from the previous year. The economic loss for drinking driver collisions was \$ 448.5 million. Table 2-2 summarizes collisions only involving drivers over the legal limit of .10 BAC (DUI drivers). The percent of traffic fatalities involving DUI drivers was 38.6 percent, an increase of 7 percent from the previous year.

Table 2-1: Drinking driver* collisions

	1996	1995	1994	1993	1992	'96 chg from avg yearly prev year change	
Total collisions	12,225	12,467	12,387	12,725	14,113	-1.9%	-3.9%
Number of drinking drivers	12,935	13,134	12,974	13,341	14,813	-1.5%	-3.8%
Fatal collisions	285	242	244	267	278	17.8%	-4.5%
Injury collisions	6,450	6,618	6,718	6,981	7,698	-2.5%	-4.9%
Prpty damage only**	5,490	5,607	5,425	5,477	6,137	-2.1%	-2.8%
Persons killed	331	279	281	306	308	18.6%	-3.2%
Percent of all traffic fatalities	46.5%	42.7%	44.0%	46.3%	47.3%	9.0%	-3.4%
Total injuries	10,326	10,513	10,557	11,022	12,108	-1.8%	-4.5%
Serious injuries	1,333	1,431	1,385	1,596	1,938	-6.8%	-9.2%
Evident injuries	4,678	4,736	4,850	5,083	5,549	-1.2%	-5.1%
Possible injuries	4,315	4,346	4,322	4,343	4,621	-0.7%	-2.0%
Economic loss in \$millions+	\$448.5	\$413.2	\$413.2	\$445.3	\$473.6	8.5%	-4.4%

*All drinking drivers, including DUI

Source: WSP, National Safety Council

**Damage over \$500

+In \$millions; based on National Safety Council estimates in constant 1996 dollars.

(Death = \$790,000; serious inj = \$41,200; evident inj = \$13,900; possible inj = \$7,900; ppty drng only = \$6,000.)

Table 2-2: Collisions involving drivers under the influence (DUI)

	1996	1995	1994	1993	1992	'96 chg from avg yearly prev year change	
Total collisions	7,841	7,750	7,933	8,204	8,990	1.2%	-4.8%
DUI drivers	7,884	7,815	7,984	8,283	9,086	0.9%	-4.9%
Fatal collisions	239	207	213	241	243	15.5%	-5.1%
Injury collisions	4,410	4,392	4,510	4,747	5,174	0.4%	-5.3%
Prop. damage only*	3,192	3,151	3,210	3,216	3,573	1.3%	-4.0%
Persons killed	275	236	243	279	269	16.5%	-4.0%
% of all traffic fatalities	38.6%	36.1%	38.0%	42.2%	41.3%	7.0%	-4.3%
Total injuries	7,113	7,110	7,170	7,603	8,267	0.0%	-4.9%
Serious injuries	1,029	1,098	1,029	1,213	1,455	-6.3%	-8.4%
Evident injures	3,397	3,342	3,435	3,664	3,876	1.6%	-4.8%
Possible injury	2,687	2,670	2,706	2,726	2,936	0.6%	-3.1%

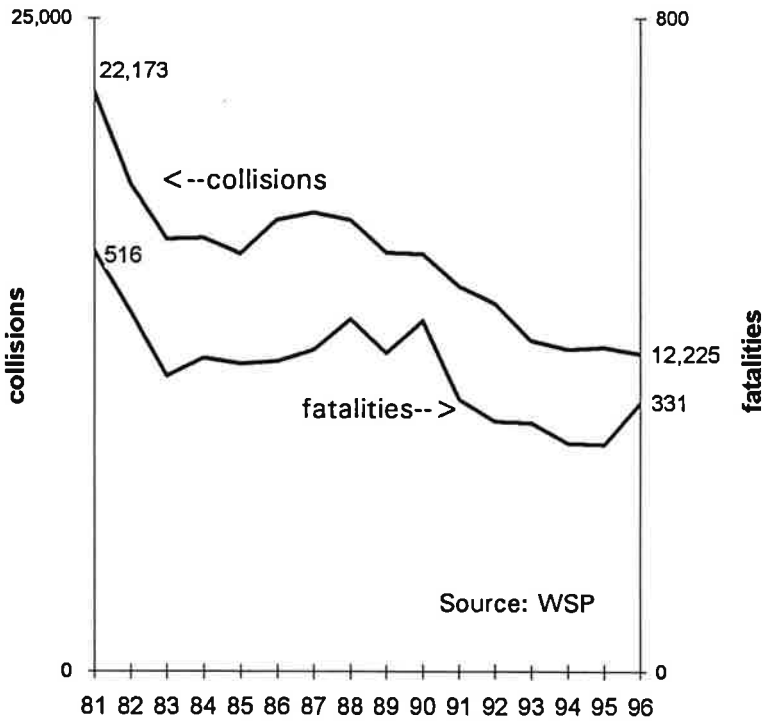
*Mnimum damage: \$500.

Source: WSP

II. Drinking Drivers

The number of drinking-driver-related collisions and fatalities have decreased by approximately 45% and 35%, respectively over the past 15 years (Figure 2-1).

Figure 2-1: Drinking-driver-related collisions & fatalities - 16 year trend



Most persons involved in drinking-driver related collisions were drivers. Of 135 pedestrians involved in drinking-driver related collisions, 14 were killed and 37 seriously injured (Table 2-3).

Table 2-3: Status of persons involved in drinking driver collisions*
By injury severity - 1996

status	killed	serious injury	evident injury	possible injury	total*	pct killed or ser injured of total
Drivers (no m/cyclists)	206	773	2,991	2,691	6,661	14.7%
Passengers (no m/cyclists)	87	432	1,431	1,551	3,501	14.8%
Motorcyclists	22	75	150	37	284	34.2%
Pedestrians	14	37	61	23	135	37.8%
Bicyclists	2	11	33	15	61	21.3%
Total	331	1,328	4,666	4,317	10,642	15.6%

*Total killed or injured - not including unknown injury or status.

Source: WSP

II. Drinking Drivers

The highest rate of death/injury in drinking driver collisions was among the 20-24 year age group (Table 2-4).

**Table 2-4: Persons killed/injured in drinking-driver collisions
By age group and sex - 1996**

age	population*	killed	injured	rate* injured/killed
0 - 4	408,416	2	108	2.7
5 - 9	433,117	1	164	3.8
10 - 14	410,996	6	221	5.5
15 - 19	376,476	39	1,352	36.9
20 - 24	336,579	61	1,828	56.1
25-34	832,821	94	2,767	34.4
35-44	954,407	69	1,988	21.6
45-54	709,861	30	960	13.9
55-64	417,223	9	381	9.3
65-74	348,976	10	167	5.1
75 & older	287,928	6	112	4.1
Age not stated	-----	4	278	-----
Males	2,744,622	259	6,381	24.2
Females	2,772,178	72	3,945	14.5
Total	5,516,800	331	10,326	19.3

Source: WSP, OFM

*Persons killed or injured in drinking-driver collisions per 10,000 population.

II. Drinking Drivers

Location of drinking-driver collisions

County roads recorded 116 fatal collisions involving drinking drivers followed by state routes with 77. The highest percentage of fatal collisions was on "other trafficways" followed by county roads, rural state routes, county roads, interstates and city streets (Table 2-5).

Table 2-5: Drinking driver collisions and highway type
By severity - 1996

roadway type	fatal collisions	injury collisions	ppty dmg collisions	total collisions	pct fatal clsns
County roads	116	1,802	1,240	3,158	3.7%
State routes (Rural)	77	1,105	662	1,844	4.2%
City streets	57	2,817	3,051	5,925	1.0%
Interstate	25	637	482	1,144	2.2%
Other traffic ways*	10	89	55	154	6.5%
Total	285	6,450	5,490	12,225	2.3%

Source: WSP

*Includes parks/forest service roads. Does not include all-terrain-vehicle trails.

Table 2-6 presents data on drinking-driver-related, single and multiple-vehicle collisions in urban and rural areas (urban areas are incorporated cities with 2,500 or more population).

Table 2-6: Alcohol-related collisions - 1996
Urban/rural, single-/multiple-vehicle by severity*

	fatal	injury	ppty dmg only	total	pct fatal
Urban					
Single-vehicle	27	999	1,056	2,082	1.3%
Multiple-vehicle	30	2,028	2,224	4,282	0.7%
Other*	9	126	2	137	6.6%
Total urban	57	3,027	3,280	6,364	0.9%
Rural					
Single-vehicle	146	2,119	1,400	3,665	4.0%
Multiple-vehicle	66	1,147	650	1,863	3.5%
Other*	7	31	16	54	13.0%
Total rural	212	3,266	2,050	5,528	3.8%
Statewide total	269	6,293	5,330	11,892	2.3%

*Collision with pedestrian, pedalcyclist, RR train or animal Source: WSP

II. Drinking Drivers

In fatal collisions, 31.8 percent of all drivers involved had been drinking. The percentage of drivers drinking in injury and total collisions was lower, with 8.6% and 7.5% respectively (Table 2-7).

Table 2-7: Sobriety of drivers in collisions
By collision severity - 1996

sobriety of driver	fatal collisions	injury collisions	ppty dmg only clsns	total collisions	pct fatal
Had been drinking - impaired	242	4,435	3,207	7,884	3.1%
Had been drinking - not impaired *	30	946	986	1,962	1.5%
Had been drinking - sobriety unk	23	1,404	1,662	3,089	0.7%
Total drivers drinking	295	6,785	5,855	12,935	2.3%
Had not been drinking	634	72,134	87,575	160,343	0.4%
Total drivers with known sobriety	929	78,919	93,430	173,278	0.5%
Sobriety not stated	48	27,245	52,221	79,514	0.1%
Percent drivers drinking	31.8%	8.6%	6.3%	7.5%	-----

* Includes had been drinking, sobriety unknown.

Source: WSP

Table 2-8 displays the number of drinking drivers by age group and gender involved in fatal and total collisions in 1996. Drivers age 20-24 had the highest rate of total and fatal drinking driver collisions with 66.4 and 1.89 collisions per estimated 10,000 licensed drivers.

Table 2-8: "Had been drinking" drivers in collisions
Fatal and total collisions by age & sex - 1996

drivers	licensed drivers	drivers in total collisions		drivers in fatal collisions	
		nmbr	rate *	nmbr	rate *
15 & under	-----	45	----	0	----
16-19	212,901	896	42.1	23	1.08
20-24	332,580	2,209	66.4	63	1.89
25-29	411,298	2,083	50.6	41	1.00
30-34	441,061	1,916	43.4	42	0.95
35-39	483,469	1,783	36.9	40	0.83
40-44	474,511	1,377	29.0	27	0.57
45-49	424,811	901	21.2	20	0.47
50-54	323,636	520	16.1	13	0.40
55-59	230,881	289	12.5	6	0.26
60-64	183,548	222	12.1	2	0.11
65-69	165,359	140	8.5	7	0.42
70 & over	353,488	230	6.5	8	0.23
Not stated	----	324	----	3	----
Male	2,084,458	9,357	44.9	245	1.18
Female	1,953,085	3,467	17.8	50	0.26
Sex not stated	----	111	----	0	----
Total	4,037,543	12,935	0.3	295	0.01

Source: WSP, DOL

* Total/fatal collisions per 10,000 licensed drivers.

II. Drinking Drivers

Figure 2-3:
Drivers in collisions who had been drinking by age and sex - 1996

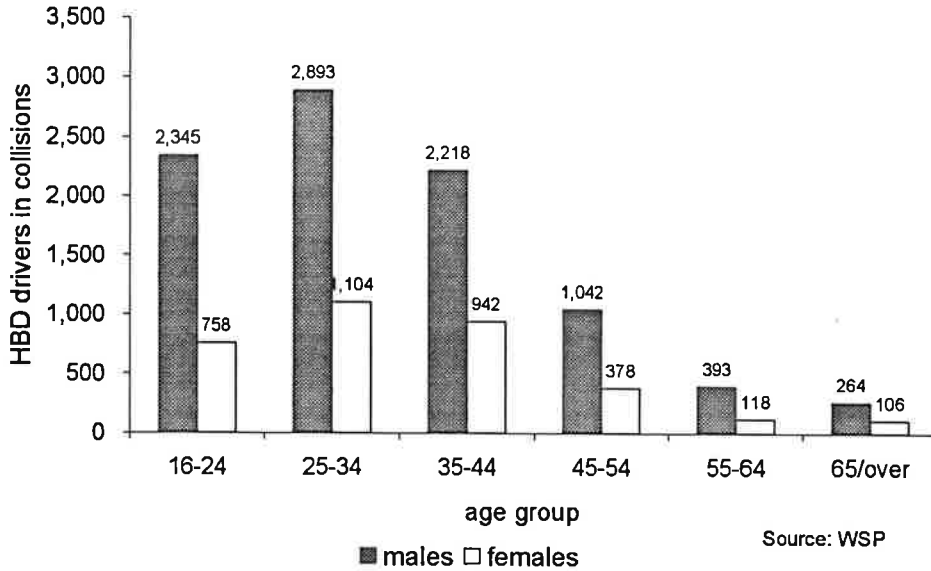
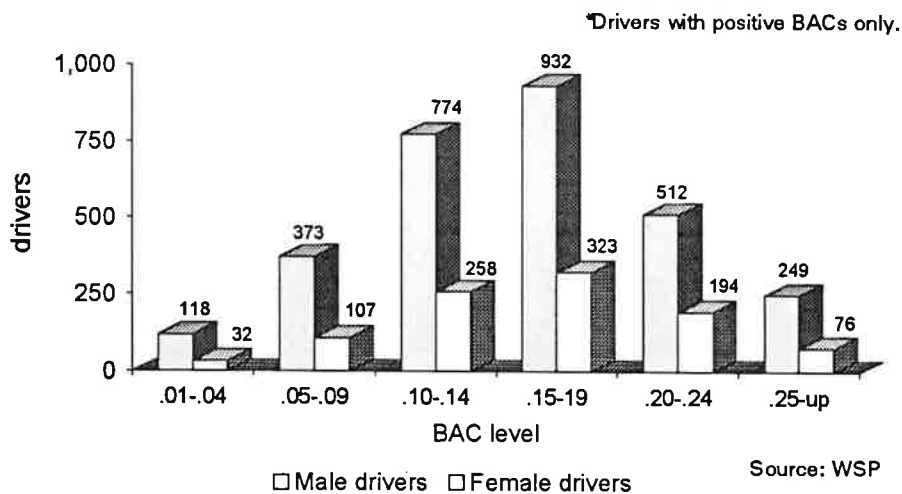


Figure 2-4 summarizes BAC levels of drivers involved in 1996 collisions (drivers with positive BACs only). BAC levels of .15 to .19 were most frequent. Over half had levels above .15.

Figure 2-3:
BAC levels of drivers* in collisions 1996



II. Drinking Drivers

Data on the BAC levels for drinking drivers in fatal crashes are shown in Figure 2-5. The numbers of drivers with BACs of .15 and under has leveled off over the past 5 years after showing significant improvements, while the numbers of higher-BAC drivers in fatal crashes has increased from the previous year.

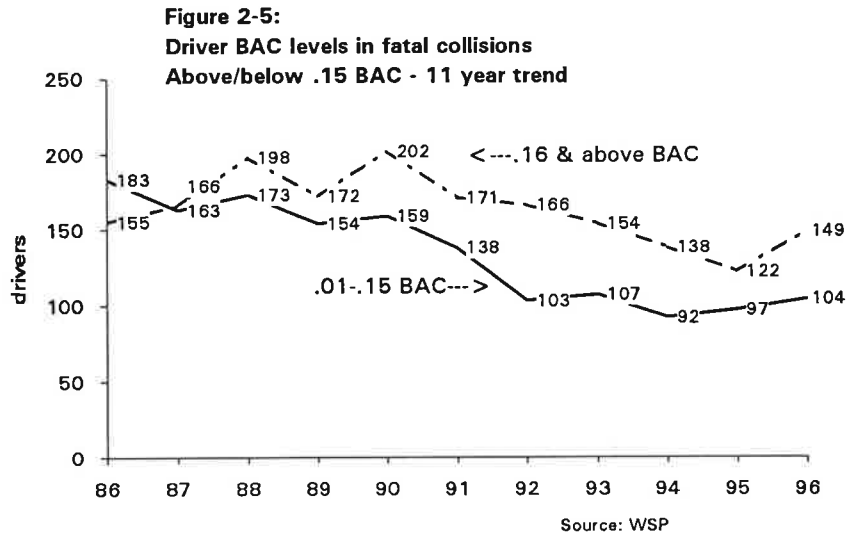
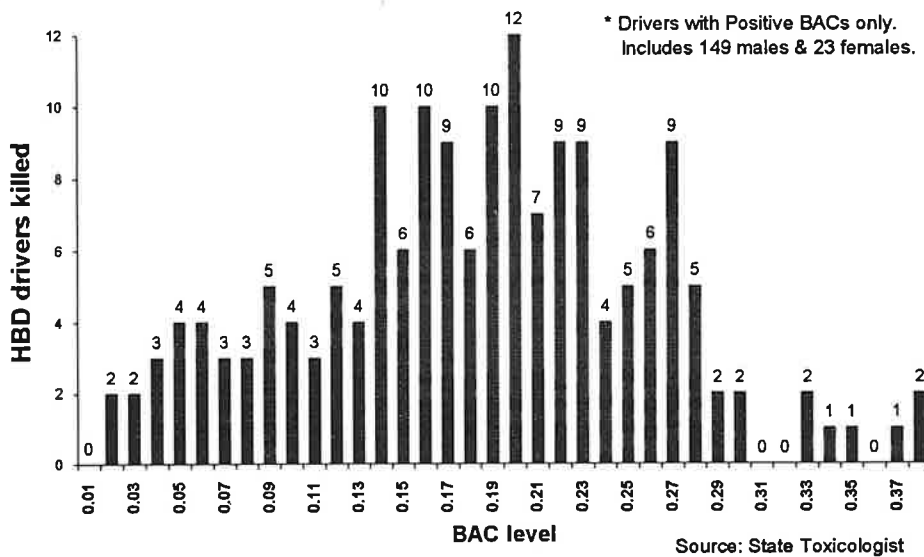


Figure 2-6 shows the levels of BAC readings for fatally injured drivers during 1996. It should be noted that the level with the highest number of drivers killed was 0.20.

Figure 2-6:
BAC levels of drivers killed in collisions



II. Drinking Drivers

DUI & physical control citations and dispositions

DUI citations filed in Washington courts in 1996 increased slightly over the preceding year, as did the number of persons who were convicted of the original charge. The number of cases convicted on reduced charges decreased from a year ago and from the previous four year trend (Table 2-9).

Table 2-9: Court dispositions for DUI/Physical Control
Ten-year comparison

	citations filed	convicted	reduced charges	deferred prosecution	not guilty
1987	33,848	15,528	6,407	5,322	640
1988	34,920	14,605	6,071	6,085	565
1989	40,060	16,012	7,454	6,840	546
1990	42,075	15,800	7,969	7,906	499
1991	38,610	17,502	8,767	8,424	437
1992	44,144	20,682	9,420	9,879	529
1993	45,139	23,239	10,135	9,471	413
1994	41,409	17,103	10,646	9,308	316
1995	37,247	14,286	10,981	8,123	363
1996	37,457	17,092	9,047	9,064	275

Source: OAC

II. Drinking Drivers

Table 2-10: Drinking-driver-related * fatalities, injuries and collisions
By county - 1996

county	miles traveled**	fatalities	injuries	ppty drng only clsns	alc-rel clsns	collision rate***	% of total collisions
Adams	441,249	4	37	18	46	104.2	9.1%
Asotin	97,216	1	21	19	34	349.7	12.6%
Benton	1,212,176	8	176	109	225	185.6	8.1%
Chelan	612,950	4	106	81	151	246.3	9.7%
Clallam	428,870	3	79	52	111	258.8	9.7%
Clark	2,304,725	17	500	232	562	243.8	8.8%
Columbia	72,015	0	4	2	5	69.4	4.1%
Cowlitz	1,075,038	8	212	131	271	252.1	10.6%
Douglas	347,959	5	50	29	58	166.7	10.4%
Ferry	116,342	3	31	20	40	343.8	23.7%
Franklin	498,253	6	66	46	96	192.7	9.7%
Garfield	63,478	0	3	4	7	110.3	9.7%
Grant	832,003	14	148	84	176	211.5	11.5%
Grays Harbor	623,843	6	163	115	230	368.7	14.1%
Island	374,544	3	73	33	86	229.6	10.1%
Jefferson	288,856	5	46	24	57	197.3	12.0%
King	14,845,638	65	2,882	1,548	3,355	226.0	6.7%
Kitsap	1,465,739	5	366	212	460	313.8	10.7%
Kittitas	931,233	7	56	37	84	90.2	6.0%
Klickitat	222,186	4	38	13	38	171.0	8.8%
Lewis	934,246	2	155	92	198	211.9	9.8%
Lincoln	297,483	1	36	13	36	121.0	13.8%
Mason	399,060	10	171	70	190	476.1	18.4%
Okanogan	446,800	7	111	55	128	286.5	16.2%
Pacific	213,949	2	84	39	89	416.0	19.8%
Pend Oreille	146,608	1	14	19	28	191.0	13.1%
Pierce	5,218,907	31	1,290	607	1,453	278.4	9.2%
San Juan	32,274	0	24	6	22	681.7	17.7%
Skagit	1,074,037	4	224	142	298	277.5	12.9%
Skamania	90,838	1	12	9	21	231.2	12.1%
Snohomish	4,683,264	17	1,105	500	1,214	259.2	9.7%
Spokane	2,998,764	20	739	411	872	290.8	8.1%
Stevens	370,248	5	104	25	91	245.8	14.6%
Thurston	1,876,322	13	332	181	420	223.8	8.8%
Wahkiakum	43,006	0	9	2	10	232.5	16.4%
Walla Walla	401,090	4	66	46	92	229.4	7.9%
Whatcom	1,248,832	9	298	198	388	310.7	11.2%
Whitman	402,423	2	66	33	74	183.9	8.9%
Yakima	1,537,791	34	429	233	509	331.0	9.9%
Total	49,270,255	331	10,326	5,490	12,225	248.1	8.7%

Source: WSP, WSDOT

* A collision in which one or more drivers involved had been drinking.

** In thousands of vehicle miles traveled.

*** Traffic deaths/collisions per 100 million vehicle miles traveled.

II. Drinking Drivers

Table 2-11: Drinking-driver-related collisions*
 Cities over 10,000 population - 1996

	population	fatal	injury	ppty dmg only	total collisions	alc-rel cls n rate**	pct of total cls n
<i>250,000 and over</i>							
Seattle	534,700	10	661	696	1,367	25.6	6.4%
<i>100,000 to 250,000</i>							
Spokane	187,700	4	209	256	469	25.0	7.0%
Tacoma	185,000	5	323	265	593	32.1	8.4%
Bellevue	103,700	2	56	59	117	11.3	3.7%
<i>50,000 to 100,000</i>							
Everett	81,810	1	140	110	251	30.7	7.8%
Federal Way	75,240	4	77	59	140	18.6	6.4%
Vancouver	67,450	3	89	100	192	28.5	7.1%
Lakewood	62,786	2	37	40	79	12.6	6.6%
Yakima	62,670	1	71	78	150	23.9	6.3%
Kent	60,380	2	99	62	163	27.0	6.5%
Bellingham	59,840	1	44	89	134	22.4	8.1%
<i>25,000 to 50,000</i>							
Shoreline	48,205	0	31	36	67	13.9	5.5%
Kennewick	48,010	2	48	38	88	18.3	6.8%
Renton	45,170	2	81	53	136	30.1	6.1%
Kirkland	43,160	0	37	41	78	18.1	6.1%
Redmond	40,805	1	22	30	53	13.0	4.5%
Bremerton	38,370	0	52	45	97	25.3	7.8%
Olympia	37,960	1	43	52	96	25.3	5.8%
Auburn	36,130	3	42	45	90	24.9	6.5%
Richland	36,990	0	29	25	54	15.0	7.0%
Edmonds	35,480	0	23	20	43	12.1	7.2%
Longview	33,650	1	34	36	71	21.1	6.7%
Lynnwood	32,420	1	45	29	75	23.1	5.3%
Walla Walla	28,930	0	17	29	46	15.9	6.6%
University Place	28,751	0	6	8	14	4.9	5.2%
Puyallup	28,660	0	39	36	75	26.2	6.6%
Burien	27,830	0	27	36	63	22.6	8.7%
Lacey	26,170	1	39	41	81	31.0	8.2%
Bothell	25,990	2	26	34	62	23.9	8.7%
<i>15,000 to 25,000</i>							
Wenatchee	24,690	0	18	32	50	20.3	8.6%
Pullman	24,650	0	10	23	33	13.4	9.5%
Sea Tac	23,110	3	52	45	100	43.3	8.4%
Des Moines	23,020	1	13	16	30	13.0	10.3%
Pasco	22,370	1	26	31	58	25.9	8.3%
Mbunt Vernon	21,820	1	22	20	43	19.7	7.8%
Mercer Island	21,490	0	11	9	20	9.3	6.0%
Mbuntake Terrace	20,160	0	11	18	29	14.4	7.2%
Oak Harbor	19,530	0	7	6	13	6.7	5.7%
Port Angeles	18,790	0	9	14	23	12.2	4.9%
Bainbridge Island	18,530	0	11	8	19	10.3	9.0%
Merysville	18,240	0	19	15	34	18.6	7.2%
Aberdeen	16,700	2	19	25	46	27.5	8.1%
Mukitico	15,430	0	10	11	21	13.6	7.1%
<i>10,000 to 15,000</i>							
Tukwila	14,880	0	62	44	106	71.2	5.3%
Ellensburg	13,210	0	5	14	19	14.4	7.1%
Anacortes	13,140	0	6	13	19	14.5	8.8%
Moses Lake	13,130	0	14	20	34	25.9	7.3%
Centralia	12,860	1	18	28	47	36.5	7.8%
Kelso	11,910	0	29	29	58	48.7	9.8%
Tumwater	11,790	0	12	10	22	18.7	5.8%
Sunnyside	11,720	1	9	18	28	23.9	11.8%
Edgewood	10,534	0	5	3	8	7.6	7.3%
Enumclaw	10,260	0	10	13	23	22.4	12.6%

*Drinking-driver-related collisions per 10,000 population

Source: WSP, OFM

II. Drinking Drivers



III. Safety Restraint Use

Much of the restraint usage data in this report are based upon collision investigation reports by law enforcement officers. Direct observation is usually not possible, so the investigating officer must rely on questioning those involved as to their seat belt use. There is a tendency for occupants to falsely report compliance with the seat belt law and the reported usage rates become artificially inflated. The collision-based rates are best used for comparison purposes.

The best available estimates of actual restraint use are from observational surveys. These studies are generally limited to shoulder-belt use by drivers and right front-window-seat occupants.

Observed safety restraint use

Since the passage of the seat belt law in 1986, a steady increase in restraint usage has been seen. Observed belt use in vehicles was 36% in 1986; it has more than doubled to 84% in 1996 (Table 3-1).

Table 3-1: Observed seatbelt use *
Ten-year comparison

	1986	1987	1988	1989	1991	1992	1993	1994	1995	1996
All vehicles	36%	52%	53%	55%	69%					
Passenger vehicles						73%	78%	81%	83%	84%
Pickups & heavy trucks						51%	50%			
Pickup trucks								62%	72%	
Heavy trucks								35%	53%	

Source: WTSC

*From 1986 to 1991 all types of vehicles were combined in one survey.

Beginning in 1992 different types of vehicles were observed in separate surveys

No surveys were conducted in 1990

III . Safety Restraint Use

Western Washington occupants were observed wearing safety restraints at a rate of 84.8%, while Eastern Washington's rate was 75.2%. Interstate highway travel had the highest rate at 86.7%, while the rate for city streets was lowest at 69.4%. More lanes of travel and higher speeds were associated with higher use-rates (Table 3-2).

Table 3-2: Observational surveys of seat belt use
Five-year comparison by roadway characteristics

characteristic	1996	1995	1994	1993	1992	avg yearly change
Western Washington	84.8%	85.2%	82.3%	80.4%	75.6%	2.9%
Eastern Washington	75.2%	75.7%	73.3%	70.1%	66.5%	3.1%
Interstate highways	86.7%	87.0%	84.8%	80.9%	75.4%	3.6%
State routes	78.4%	80.3%	75.9%	74.4%	69.7%	3.0%
US routes	77.5%	75.5%	75.0%	73.0%	68.3%	3.2%
County roads	72.8%	74.4%	69.8%	66.5%	60.1%	5.0%
City streets	69.4%	72.4%	68.3%	70.9%	62.3%	3.0%
Three or more lanes +	86.6%	86.0%	85.3%	82.5%	76.5%	3.2%
Two lanes +	81.2%	82.4%	77.7%	73.7%	69.4%	4.1%
One lane +	73.1%	76.7%	73.2%	72.4%	67.5%	2.1%
Average speed 20 mph	68.5%	69.4%	65.7%	68.7%	61.6%	2.9%
Average speed 40 mph	74.8%	75.9%	74.5%	72.0%	66.5%	3.0%
Average speed 60 mph	85.2%	85.0%	83.1%	79.2%	74.4%	3.5%
Commuter rush hours	83.0%	83.3%	79.9%	77.0%	72.2%	3.6%
Non-rush hours	82.7%	82.8%	80.6%	77.7%	73.6%	3.0%

+For one direction of travel

Source: WTSC

Table 3-3 and Figure 3-1 summarize the types of restraint systems used and severity of injuries sustained in collisions. The higher the level of injury sustained, the lower the reported safety restraint use. Persons sustaining evident injuries were twice as likely to have used safety restraints as were persons killed.

Table 3-3: Types of restraints used by persons injured or killed
By severity of injury - 1996

restraint type	killed	serious injury	evident injury	possible injury	total injured or killed
Lap & shoulder belt	159	2,054	12,250	30,766	45,229
Lap belt	16	216	1,341	2,154	3,727
Shoulder belt	13	66	276	427	782
Child restraint	4	18	170	306	498
Air bag not act/belted	3	9	100	223	335
Air bag not act/no belt	2	5	20	58	85
Air bag actv/belted	11	97	554	512	1,174
Air bag actv/no belt	5	28	60	29	122
Total restraints used**	206	2,460	14,691	34,388	51,745
No restraints**	315	1,300	4,547	3,434	9,596
Percent used	39.5%	65.4%	76.4%	90.9%	84.4%

* Where restraint use was stated.

Source : WSP

**Restraints used/not used regardless of air bag activation.

Figure 3-1:
Safety restraint use and injury severity - 1996

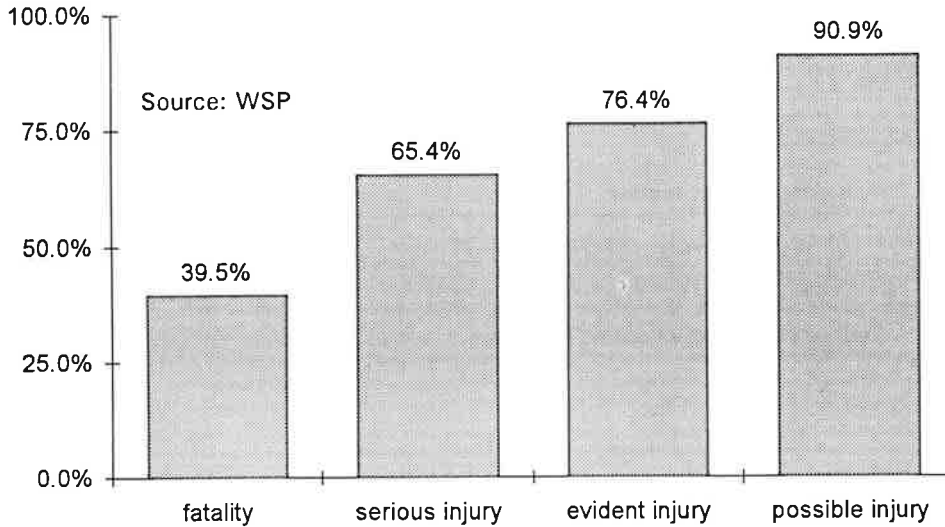


Table 3-4 displays restraint systems used in collisions by persons injured or killed by various age groupings. The age group of 11 to 15 had the lowest reported use rate. Overall, lap and shoulder belts were the most used safety restraint, followed by lap belt only. Child restraints were in use by 489 children injured or killed in collisions.

Table 3-4: Restraints used by persons injured or killed in collisions
By occupant age and sex - 1996

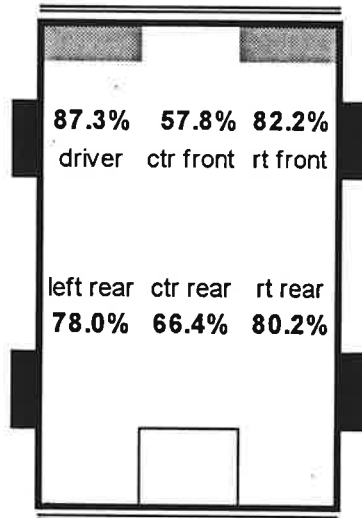
age	lap & shldr belt		activated air bag w/rstrnt		non-activ air bag w/restraint		child restraint	total used	restraint not used**	% used
	shldr belt	shldr belt	lap belt	w/rstrnt	w/restraint	restraint				
Under 1	16	0	5	0	0	56	77	12	86.5%	
1	17	1	3	0	0	106	127	20	86.4%	
2	47	0	27	1	0	113	188	42	81.7%	
3	97	2	65	2	1	64	231	49	82.5%	
4	164	8	82	1	2	45	302	54	84.8%	
5	150	1	81	1	0	15	248	49	83.5%	
6 - 10	828	12	342	11	3	9	1,205	313	79.4%	
11 - 15	1,309	25	358	22	3	--	1,717	616	73.6%	
16 - 20	6,956	150	734	148	22	--	8,010	2,339	77.4%	
21 - 24	4,595	97	273	110	35	--	5,110	1,256	80.3%	
25 - 29	5,005	90	287	128	43	--	5,553	1,119	83.2%	
30 - 64	21,569	313	1,174	608	188	--	23,852	3,053	88.7%	
65 & over	3,017	57	147	114	31	--	3,366	363	90.3%	
Unknown	919	21	123	14	3	81	1,161	258	81.8%	
Males	18,717	349	1,894	497	130	258	21,845	5,306	80.5%	
Females	25,937	427	1,806	662	201	231	29,264	4,208	87.4%	
Sex n/s/tated	35	1	1	1	0	0	38	29	-----	
Total	44,639	777	3,701	1,160	331	489	51,147	9,543	84.3%	

Source: WSP, WSDOT

** Irregardless of air bag.

III . Safety Restraint Use

Figure 3-2: Restraint use by seat position
Occupants killed or injured - 1996



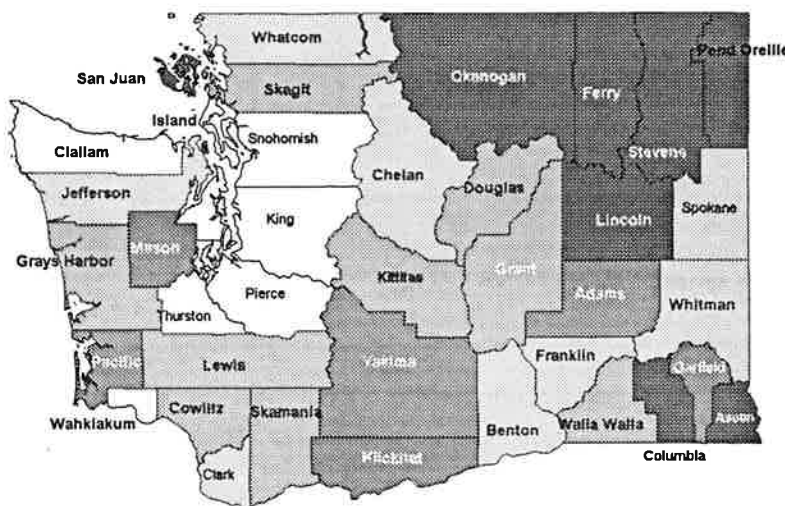
Source: WSP

Figure 3-3: Safety restraint use by county - 1996

Safety restraint use of persons killed or injured by county is represented in Figure 3-3. Lighter shading of a county indicates a higher usage rate.

**Safety Restraint Use By Persons Killed or Injured
in Traffic Collisions**

Lighter Shades Indicate Higher Restraint Use - 1996



III . Safety Restraint Use



IV. Youthful Drivers

In 1996, drivers age 24 and younger were involved in 50,079 collisions in which 248 persons were killed and 35,414 were injured. Fatal collisions in 1996 increased 9.5 percent over 1995. The average yearly change over the previous four years (1992-1995) had been -2.9 percent (Table 4-1).

Table 4-1: Collisions involving youthful drivers (24 & younger)

Five-year comparison	1996	1995	1994	1993	1992	'96 chg from prev year	'92 - '95 avg yearly change
Total collisions	50,079	50,133	48,179	46,189	47,588	-0.1%	1.8%
Fatal collisions	218	199	196	223	219	9.5%	-2.9%
Injury collisions	21,981	22,576	22,106	20,909	21,172	-2.6%	2.2%
Property damage only	27,880	27,358	25,877	25,057	26,197	1.9%	1.5%
Persons killed**	248	231	225	274	243	7.4%	-0.8%
Percent of all traffic fatalities	34.8%	35.3%	35.2%	41.5%	37.3%	-1.4%	-1.2%
Total injuries**	35,414	36,124	35,281	33,275	33,805	-2.0%	2.3%
Serious injuries	2,179	2,226	2,217	2,465	2,805	-2.1%	-7.3%
Evident injuries	11,231	10,700	11,015	10,824	11,139	5.0%	-1.3%
Possible injuries	22,004	23,198	22,049	19,986	19,861	-5.1%	5.4%
Youth population (16-24)	631,045	625,996	625,278	632,162	623,369	0.8%	0.1%
Youth licensed drivers	545,481	517,038	532,309	533,114	527,379	5.5%	-0.6%
Youth drivers in clsns	56,311	56,747	54,464	52,215	54,066	-0.8%	1.7%
Total collision rate*	918.07	969.62	905.09	866.40	902.35	-5.3%	2.5%
Fatal collision rate*	4.00	3.85	3.68	4.18	4.15	3.8%	-2.2%

*Youthful-driver fatal/total collisions per 10,000 youthful licensed drivers.

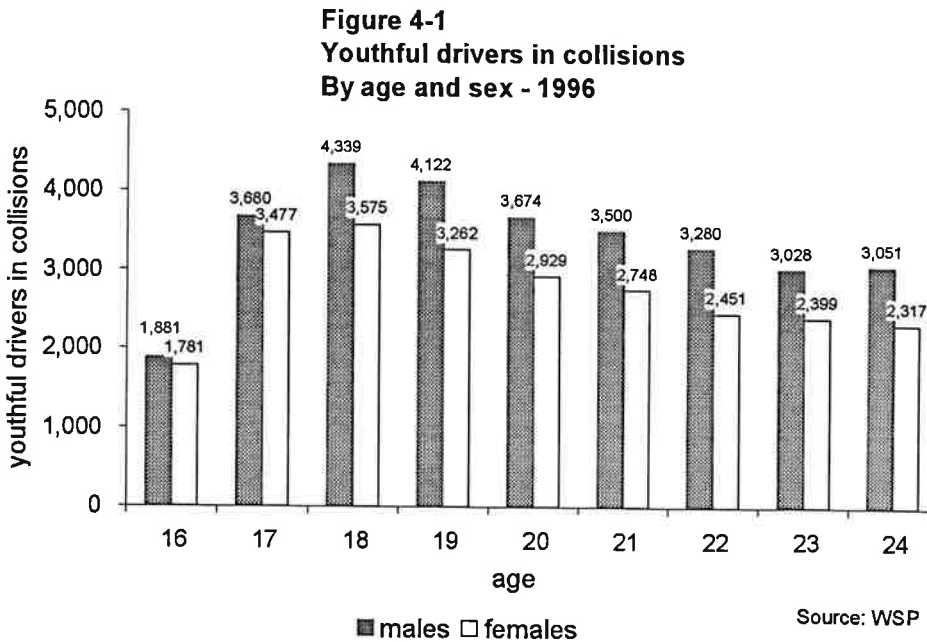
Source: WSP, DOL, OFM

**All persons killed/injured in collisions involving youthful drivers.

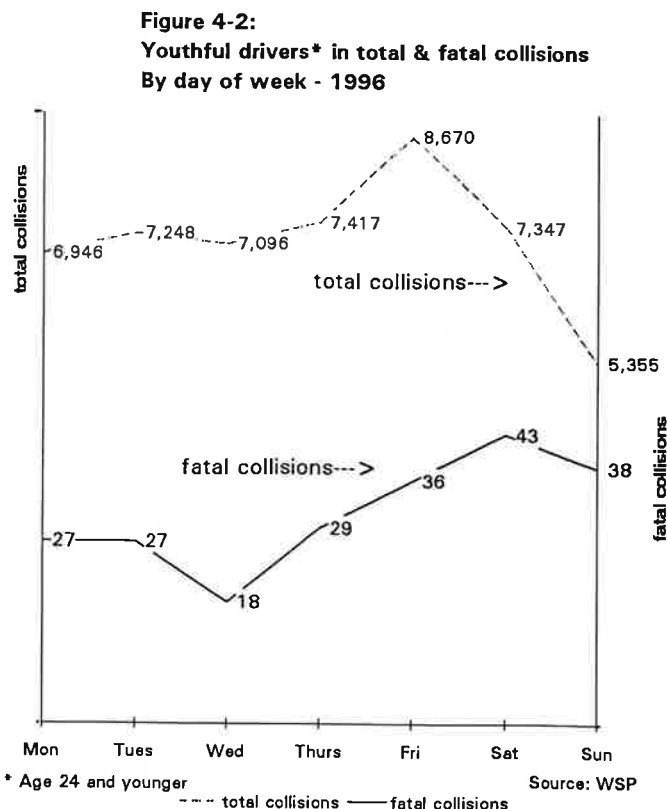
IV. Youthful Drivers

Collision involvement by driver age

Drivers age 18 had the highest number collisions for both male and female youthful drivers. Males consistently have more collisions than females (Figure 4-1).



During 1996, Friday was the day of the week accounting for the highest number of reported collisions involving youthful drivers. Saturday recorded the highest number of fatal collisions (Figure 4-2).



IV. Youthful Drivers

The most frequent type of collision involving youthful drivers were collisions with other moving vehicles (Table 4-2).

Table 4-2: Collisions involving youthful drivers *
By first harmful event- 1996

type of collision	fatal	injury	ppty dmg		total	pct fatal
			only			
Collision w/other moving motor vehicles	114	17,128	21,779		39,021	0.3%
Single-vehicle-collisions **	104	4,853	6,101		11,058	0.9%
Collision w/fixed/other object	50	2,841	3,905		6,796	0.7%
Overturning & other non-collision	35	1,135	862		2,032	1.7%
Collision w/parked vehicle	3	271	1,116		1,390	0.2%
Collision w/pedestrians/bicyclist	16	562	5		583	2.7%
Collision with animal	0	40	208		248	0.0%
Collision with railway train	0	4	5		9	0.0%
Total	218	21,981	27,880		50,079	0.4%

*Drivers 24 and younger.

Source: WSP

**All types except "collision w/other moving motor vehicle."

Traffic collisions involving youthful drinking drivers

There were 3,086 collisions in 1996 which involved drivers age 24 and younger who had been drinking. Fatal collisions involving youthful drinking drivers increased 38.7 percent compared to the previous year. As a result of these collisions 101 persons were killed, an increase of 34.7 percent from the previous year, and 2,931 persons were injured. (Table 4-3).

Table 4-3: Traffic collisions involving youthful drinking drivers *
Five-year comparison

	1996	1995	1994	1993	1992	'96 chg	
						from prev year	'92 - '95 avg yearly change
Total collisions	3,086	3,274	3,262	3,522	3,988	-5.7%	-6.2%
Fatal collisions	86	62	63	94	90	38.7%	-10.0%
Injury collisions	1,635	1,740	1,821	1,998	2,215	-6.0%	-7.7%
Property damage only	1,365	1,472	1,378	1,490	1,683	-7.3%	-4.1%
Persons killed	101	75	79	115	102	34.7%	-7.9%
Percent of all traffic fatalities	14.2%	11.5%	12.4%	17.4%	15.7%	23.7%	-8.4%
Persons injured	2,931	2,997	3,100	3,352	3,738	-2.2%	-7.1%
Serious injuries	430	435	468	518	623	-1.1%	-11.2%
Evident injuries	1,484	1,480	1,506	1,651	1,832	0.3%	-6.8%
Possible injuries	1,017	1,082	1,126	1,183	1,283	-6.0%	-5.5%
Youthful drinking drivers	3,139	3,329	3,314	3,582	4,070	-5.7%	-6.3%

*Drinking drivers age 24 and younger.

Source: WSP

IV. Youthful Drivers

Teenage driver collisions

Teenage drivers (age 19 and under) were involved in 24,714 collisions, 84 fatal collisions, and 10,687 injury collisions during 1996. The fatal collision rate for teenage drivers was 3.9 fatal collisions per 10,000 licensed drivers, which was the lowest in five years (Table 4-4).

Table 4-4: Teenage driver collisions - 19 years & younger
Five-year comparison

	1996	1995	1994	1993	1992	'96 chg from prev year	'92 - '95 avg yearly change
Total collisions	24,714	25,456	23,843	22,227	22,519	-2.9%	4.2%
Fatal collisions	84	100	87	94	80	-16.0%	8.3%
Injury collisions	10,687	11,326	10,823	9,825	9,936	-5.6%	4.6%
Licensed drivers	212,901	196,421	193,346	189,187	181,300	8.4%	2.7%
Teenage drivers involved	26,551	27,406	25,611	23,838	24,252	-3.1%	4.2%
Fatal collision rate*	3.9	5.1	4.5	5.0	4.4	-22.5%	5.4%
Total collision rate*	1247.1	1395.3	1324.6	1260.0	1337.7	-10.6%	1.6%

*Fatal/total collisions per 10,000 licensed drivers

Source: WSP, DOL

Teenage driver violations in collisions

"Speed too fast for conditions" was the most frequent driver violation for teenage drivers in collisions, noted in 25.0% of collisions. "Failure to yield right of way" was second, noted in 22.1% of the collisions (Table 4-5).

Table 4-5: Teenage driver violations in collisions *
By age - 1996

	16/yngr	17 yrs	18 yrs	19 yrs	total violations	pct of viols
Speed-too fast for conditions	696	1,208	1,349	1,196	4,449	25.0%
Failure to yield right of way	636	1,133	1,178	973	3,920	22.1%
Following too closely	273	616	745	695	2,329	13.1%
Exceeding legal speed	184	220	241	223	868	4.9%
Disregarding traffic sig./signs	158	271	330	351	1,110	6.2%
Operating defective equipment	94	139	182	191	606	3.4%
Driving under the influence	53	92	151	203	499	2.8%
Crossing over the center line	61	123	122	112	418	2.4%
Improper passing	44	81	121	90	336	1.9%
All other circumstances +	562	914	893	872	3,241	18.2%
Total	2,761	4,797	5,312	4,906	17,776	100.0%

*Age 16 through 19 - investigated collisions only

Source: WSP

+Including driver inattention

IV. Youthful Drivers

There were eight counties in 1996 with no fatal collisions involving youthful drivers. Whitman County had the highest youthful-driver percentage of total collisions with 48.7 percent (Table 4-6).

Table 4-6: Collisions involving youthful drivers (24 and under)
By county - 1996

county	licenced drivers	persons killed	persons injured	yth dvr collisions	pct of total clsns *	collision rate **
Adams	2,071	5	141	161	31.7%	777
Asotin	1,979	0	74	105	38.9%	531
Benton	14,982	8	690	1,180	42.5%	788
Chelan	6,806	2	338	526	33.8%	773
Clallam	5,442	1	268	390	34.2%	717
Clark	31,115	18	1,935	2,493	39.2%	801
Columbia	408	0	24	41	33.6%	1005
Cowlitz	9,591	3	662	993	38.9%	1035
Douglas	3,083	4	109	201	36.2%	652
Ferry	802	2	36	41	24.3%	511
Franklin	5,351	6	218	386	38.8%	721
Garfield	273	0	13	23	31.9%	842
Grant	7,767	7	435	604	39.6%	778
Grays Harbor	6,440	4	337	579	35.5%	899
Island	5,766	3	232	336	39.3%	583
Jefferson	1,815	5	107	127	26.7%	700
King	150,981	52	11,509	15,866	31.8%	1051
Kitsap	21,487	1	1,367	1,841	42.7%	857
Kititas	3,746	8	251	456	32.7%	1217
Klickitat	1,899	1	72	112	25.9%	590
Lewis	7,856	3	576	811	40.1%	1032
Lincoln	895	1	55	84	32.2%	939
Mason	3,966	6	294	361	35.0%	910
Okanogan	4,220	6	170	250	31.7%	592
Pacific	1,793	0	112	140	31.1%	781
Pend Oreille	1,155	0	41	64	30.0%	554
Pierce	59,275	27	4,561	5,822	36.7%	982
San Juan	875	0	43	36	29.0%	411
Skagit	9,688	3	605	887	38.4%	916
Skamania	771	0	31	45	26.0%	584
Snohomish	51,706	18	3,471	4,718	37.6%	912
Spokane	42,480	12	2,647	4,010	37.4%	944
Stevens	3,727	2	139	235	37.7%	631
Thurston	21,353	7	1,297	1,907	39.8%	893
Wahkiakum	4,115	0	21	18	29.5%	44
Walla Walla	4,985	1	223	444	38.1%	891
Whatcom	17,310	4	868	1,431	41.1%	827
Whitman	5,494	3	224	403	48.7%	734
Yakima	22,013	25	1,218	1,952	38.1%	887
Total	545,481	248	35,414	50,079	35.7%	555

*% of total collisions involving youthful drivers

Source: WSP

**Youthful driver collisions per 10,000 licensed drivers

IV. Youthful Drivers



V. Senior Drivers

During 1996, 31,863 senior drivers (55 years and older) were involved in 29,338 reported collisions, which included 161 fatal collisions and 11,841 injury collisions. The number of collisions involving senior drivers increased 2.5 percent from the previous year, and there were 21.1 percent more fatal collisions than the previous year. By contrast, the previous four years, 1992 through 1995, yielded an average decrease of 1.4 percent per year in fatal collisions involving senior drivers. Fatal collision rates per 10,000 senior drivers went up significantly during the past several years (Table 5-1).

Table 5-1: Collisions involving senior drivers (55 & older)

Five-year comparison by severity

	1996	1995	1994	1993	1992	'96 chg from prev year	'92 - '95 avg yearly change
Total collisions	29,338	28,623	26,731	25,509	26,020	2.5%	3.3%
Fatal	161	133	114	114	144	21.1%	-1.4%
Injury	11,841	11,825	11,165	10,338	10,399	0.1%	4.4%
Property damage only	17,336	16,665	15,452	15,057	15,477	4.0%	2.6%
Persons killed**	177	152	126	127	161	16.4%	-0.4%
Percent of all killed	24.9%	23.2%	19.7%	19.2%	24.7%	7.0%	-0.6%
Persons injured**	18,266	18,228	17,230	15,831	15,995	0.2%	4.5%
Serious injuries	1,122	1,098	1,091	1,155	1,355	2.2%	-6.6%
Evident injuries	5,244	4,975	4,844	4,738	4,607	5.4%	2.6%
Possible injuries	11,900	12,155	11,295	9,938	10,033	-2.1%	6.8%
Licensed senior dvrs	931,746	860,130	886,544	862,554	834,826	8.3%	1.0%
Senior dvrs in collisions	31,863	31,061	28,982	27,790	28,403	2.6%	3.1%
Fatal collision rate*	1.73	1.55	1.29	1.32	1.72	11.7%	-1.9%
Total collision rate*	314.87	332.78	301.52	295.74	311.68	-5.4%	2.4%

* Fatal/total collisions involving senior drivers per 10,000 licensed senior drivers.

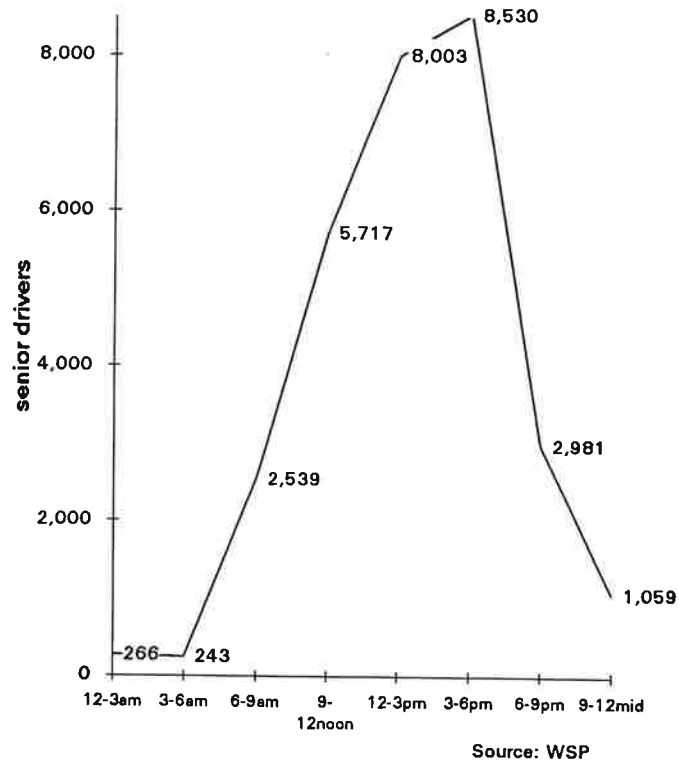
Source: WSP, DOL

** All persons killed/injured in collisions involving senior drivers.

V. Senior Drivers

The greatest number of crashes involving senior drivers occurred between the hours of 12:00 noon and 6:00 p.m. Very few crashes were recorded between midnight and 6:00 a.m. (Figure 5-1).

Figure 5-1:
Collisions involving senior drivers
By time (3-hour intervals) - 1996



Senior driver collisions by first harmful event

The great majority of collisions involving senior drivers were crashes with other moving vehicles, with 25,562, including 92 fatal crashes. The collision type which recorded the highest percentage of fatal collisions was "collision with pedestrian/bicyclist" (Table 5-2).

Table 5-2: Collisions involving senior drivers *
By first harmful event- 1996

type of collision	fatal	ppty dmg			total	pct fatal
		injury	only			
Collision w/other moving motor veh	92	10,237	15,233		25,562	0.4%
Total single-vehicle-collisions **	67	1,591	1,982		3,640	1.8%
Collision with fixed/other object	31	718	912		1,661	1.9%
Collision with parked vehicle	0	119	532		651	0.0%
Collision with pedestrian/bicyclist	24	486	5		515	4.7%
Overturning & other non collision	12	241	249		502	2.4%
Other collisions inc. RR train, animal	0	27	284		311	0.0%
Total	159	11,828	17,215		29,202	0.5%

* Collisions involving one or more senior drivers - age 55 or older

Source: WSP

** All types except "collision w/other moving motor vehicle."

Senior driver violations in collisions

"Failure to yield right of way" was by far the most frequent senior driver violation in collisions during 1996, accounting for over one-third of all violations noted (Table 5-3).

Table 5-3: Senior driver violations in collisions
Selected age groups - 1996

	age 55-64		age 65 & over		total
	violations	pct	violations	pct	
Failure to yield right of way	1,749	28.7%	3,431	39.7%	5,180
Exceeding legal/safe speed	1,134	18.6%	1,006	11.6%	2,140
Following too closely	789	12.9%	878	10.1%	1,667
Disregard traffic signal/signs	486	8.0%	875	10.1%	1,361
Improper turning	273	4.5%	409	4.7%	682
DUI	320	5.3%	201	2.3%	521
Defective equipment	147	2.4%	132	1.5%	279
Improper passing	105	1.7%	112	1.3%	217
Crossing over the centerline	98	1.6%	140	1.6%	238
All other violations +	993	16.3%	1,469	17.0%	2,462
Total	6,094	100.0%	8,653	100.0%	14,747

+including driver inattention

Source: WSP

V. Senior Drivers

In 1996, Asotin County had the highest percentage of total collisions involving senior drivers with 35.2 (Table 5-4).

Table 5-4: Collisions involving senior drivers (55 and older)
By county - 1996

county	licensed drivers	fatalities	injuries	sr dvr collisions	pct of total clsns *
Adams	2,827	4	33	78	15.4%
Asotin	4,419	2	38	95	35.2%
Benton	21,421	1	292	596	21.5%
Chelan	12,572	2	186	317	20.4%
Clallam	17,895	2	204	345	30.2%
Clark	48,356	5	858	1,332	20.9%
Columbia	1,057	1	11	28	23.0%
Cowlitz	17,921	6	358	633	24.8%
Douglas	5,379	2	100	139	25.0%
Ferry	1,349	0	10	23	13.6%
Franklin	6,213	1	104	186	18.7%
Garfield	747	0	5	12	16.7%
Grant	12,176	7	190	304	19.9%
Grays Harbor	15,165	4	201	438	26.9%
Island	14,628	4	156	193	22.6%
Jefferson	7,569	1	71	130	27.3%
King	255,531	27	6,176	9,618	19.3%
Kitsap	35,264	4	582	931	21.6%
Kittitas	5,862	3	108	238	17.1%
Klickitat	3,969	0	54	95	22.0%
Lewis	15,290	5	292	479	23.7%
Lincoln	2,498	1	29	46	17.6%
Mason	11,871	4	159	232	22.5%
Okanogan	8,143	1	81	149	18.9%
Pacific	6,549	2	55	109	24.2%
Pend Oreille	2,610	1	17	38	17.8%
Pierce	102,312	24	2,431	3,608	22.7%
San Juan	3,394	1	7	24	19.4%
Skagit	20,442	5	392	558	24.2%
Skamania	1,600	0	15	31	17.9%
Snohomish	79,144	11	1,726	2,590	20.7%
Spokane	69,756	14	1,359	2,284	21.3%
Stevens	7,213	1	75	114	18.3%
Thurston	34,467	7	650	1,070	22.4%
Wahkiakum	915	0	3	11	18.0%
Walla Walla	9,842	5	144	303	26.0%
Whatcom	25,590	4	396	726	20.9%
Whitman	5,500	2	57	138	16.7%
Yakima	34,290	13	641	1,097	21.4%
Total	931,746	177	18,266	29,338	20.9%

Source: WSP

*Percentage of all collisions which involved senior drivers.



VI. Pedestrians

During 1996, there were 1,846 collisions involving pedestrians in Washington State, a decrease of 5.0 percent over 1995. There were 84 pedestrian fatalities in 1996, an increase of 12.0 percent from 1995. In urban areas 49 were killed, compared to 35 killed in rural areas. The vast majority of pedestrian injuries (1,551) occurred in urban areas (Table 6-1).

Table 6-1: Pedestrians killed and injured in traffic collisions

	1996	1995	1994	1993	1992	'96 chg	'92 - '95
						from	avg yearly
Five-year comparison						prev year	change
Clsns involving pedestrians	1,846	1,944	1,904	1,808	1,800	-5.0%	2.6%
Pedestrians killed	84	75	85	80	81	12.0%	-2.2%
Percent of all killed	11.8%	11.5%	13.3%	12.1%	12.4%	2.9%	-2.2%
Pedestrians injured	1,894	1,948	1,916	1,813	1,809	-2.8%	2.5%
Serious injuries	398	390	394	405	431	2.1%	-3.3%
Evident injuries	940	1,012	967	930	894	-7.1%	4.2%
Possible injuries	556	546	555	478	484	1.8%	4.4%
Rural*							
Pedestrians killed	35	33	45	39	33	6.1%	2.3%
Pedestrians injured	343	380	415	387	420	-9.7%	-3.0%
Urban*							
Pedestrians killed	49	42	40	41	48	16.7%	-4.0%
Pedestrians injured	1,551	1,568	1,501	1,426	1,389	-1.1%	4.1%

*Rural =Unincorporated or cities with less than 2,500 population

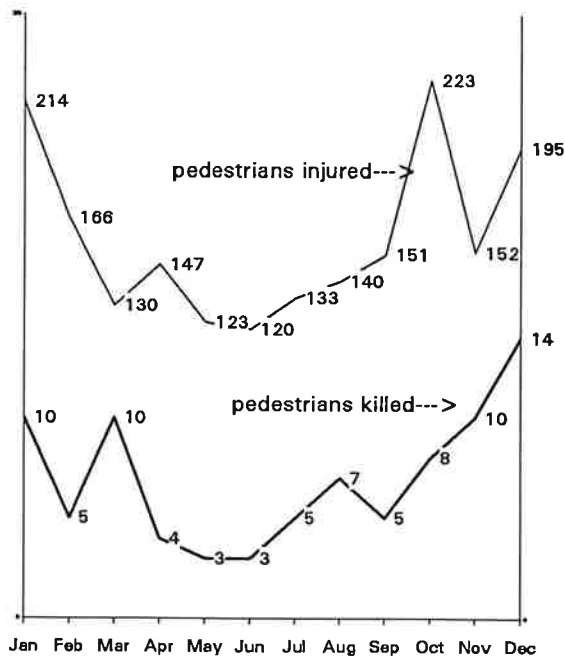
Source: WSP

*Urban =Cities with 2,500 population and greater

VI. Pedestrians

Collisions during 1996 involving pedestrians occurred somewhat less often during the summer months. The highest number of pedestrian injuries occurred in the months of January and October (Figure 6-1).

Figure 6-1:
Pedestrians injured & killed in traffic collisions - by month - 1996



Source: WSP

The age groups with the highest rate of pedestrians involved in traffic collisions was the 15-19 age group with 6.3 pedestrians involved per 10,000 population. The 10-14 age group had the next highest rate with 6.2 (Table 6-2).

Table 6-2: Pedestrians involved in motor vehicle collisions
By age group - 1996

	population*	killed	injured	peds involved	rate**
0-4	408,416	0	69	69	1.7
5-9	433,117	3	185	188	4.3
10-14	410,996	2	251	253	6.2
15-19	376,476	3	235	238	6.3
20-24	336,579	6	149	155	4.6
25-34	832,821	14	246	260	3.1
35-44	954,407	21	252	273	2.9
45-54	709,861	4	155	159	2.2
55-64	417,223	8	84	92	2.2
65-74	348,976	6	85	91	2.6
75 & Older	287,928	17	59	76	2.6
Age not stated	-----	0	80	80	-----
Males	2,744,622	58	1,030	1,088	4.0
Females	2,772,178	28	820	848	3.1
Sex not stated	-----	0	0	0	-----
Total	5,516,800	84	1,850	1,934	3.5

Source: WSP, OFM

* 1995 population by age (breakdown done biannually by OFM).

** Pedestrians injured or killed in traffic collisions per 10,000 population.

Pedestrian actions

Of pedestrians injured in urban areas during 1996, 751 were crossing at an intersection. Of pedestrians who were killed in urban areas, the vast majority were crossing either at or not at an intersection (Table 6-3).

Table 6-3: Pedestrians killed and injured in urban areas *
By age and pedestrian action - 1996

	killed or injured						total injured	total killed
	0-4	5-14	15-24	25-64	65+	n/stat		
Crossing at intersection	7	118	172	344	88	37	751	15
Crossing not at intersection	18	124	90	170	40	22	447	17
Not in roadway	3	7	8	20	1	3	41	1
Standing/working in roadway	0	3	13	45	3	1	61	4
Playing in roadway	2	19	5	2	0	0	28	0
Walking with traffic	1	4	7	22	2	0	34	2
Walking against traffic	0	0	4	4	2	1	10	1
Lying in roadway	0	0	3	3	0	0	5	1
Other & not stated	23	62	23	38	10	4	152	8

*Urban =cities with 2,500 or greater population.

Source: WSP

In rural areas the most frequent pedestrian action was crossing not at an intersection. During 1996, 117 pedestrians were injured and 13 were killed crossing not at an intersection. (Table 6-4).

Table 6-4: Pedestrians killed and injured in rural areas *
By age and pedestrian action - 1996

action	killed or injured						total injured	total killed
	0-4	5-14	15-24	25-64	65+	n/stat		
Crossing at intersection	3	21	18	31	6	0	75	4
Crossing not at intersection	7	48	19	42	9	5	117	13
Not in roadway	0	6	1	17	1	5	27	3
Standing/working in roadway	0	1	7	16	1	0	20	5
Walking with traffic	0	6	5	11	3	1	21	5
Playing in roadway	3	8	1	1	0	1	14	0
Walking against traffic	0	1	4	1	0	0	6	0
Lying in roadway	0	0	1	1	0	0	0	2
Other & not stated	2	13	15	19	1	1	48	3

*Rural =unincorporated areas or cities with under 2,500 population.

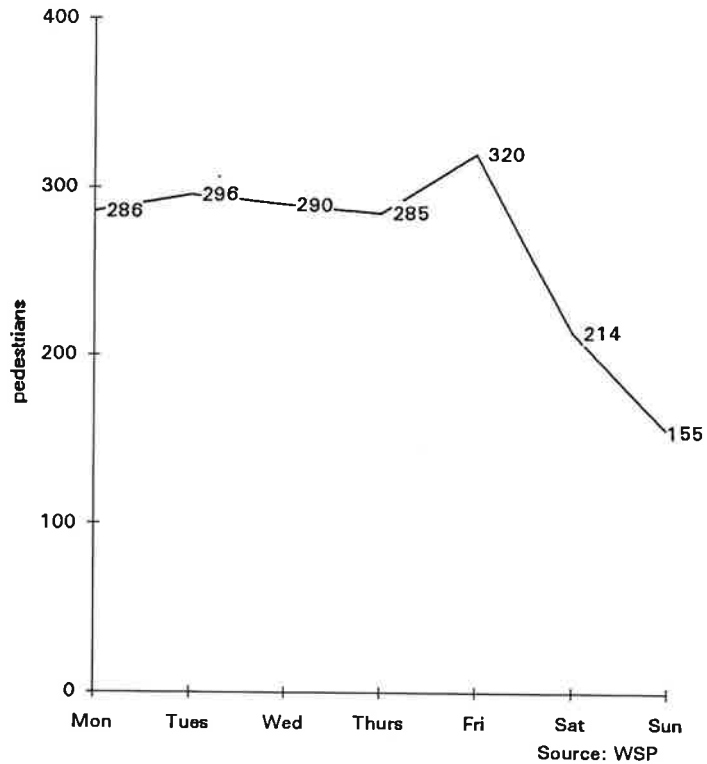
Source: WSP

VI. Pedestrians

Pedestrian collisions by day of week/hour of day

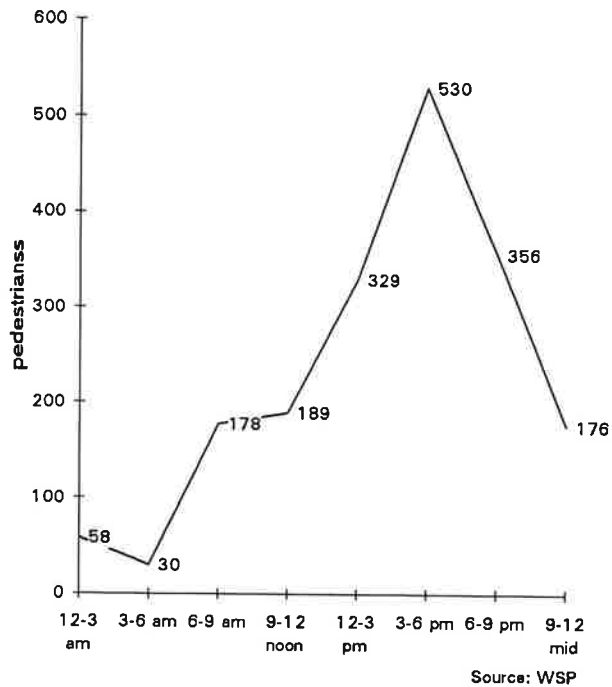
Pedestrians were least likely to be involved in traffic collisions on Saturdays and Sundays. The day with the greatest number of collisions involving pedestrians was Friday with 320 (Figure 6-2).

Figure 6-2:
Vehicle-pedestrian collisions
By day of week - 1996



The majority of pedestrian collisions occurred between 12 noon and 9:00 p.m., peaking during the 3:00 to 6:00 p.m. period (Figure 6-3).

Figure 6-3:
Vehicle-pedestrian collisions
By hour of day - 1996



Pedestrians and alcohol

During 1996, 29 pedestrians age 15 years and older had been drinking when involved in a fatal crash. Pedestrians who had been drinking account for a significant proportion of all pedestrian fatalities over the last nine years (Figure 6-4). Of the pedestrians killed who had been drinking, over half had BAC levels above .20% (Figure 6-5).

Figure 6-4:
Pedestrian fatalities - age 15 and older
Pedestrian drinking vs not drinking

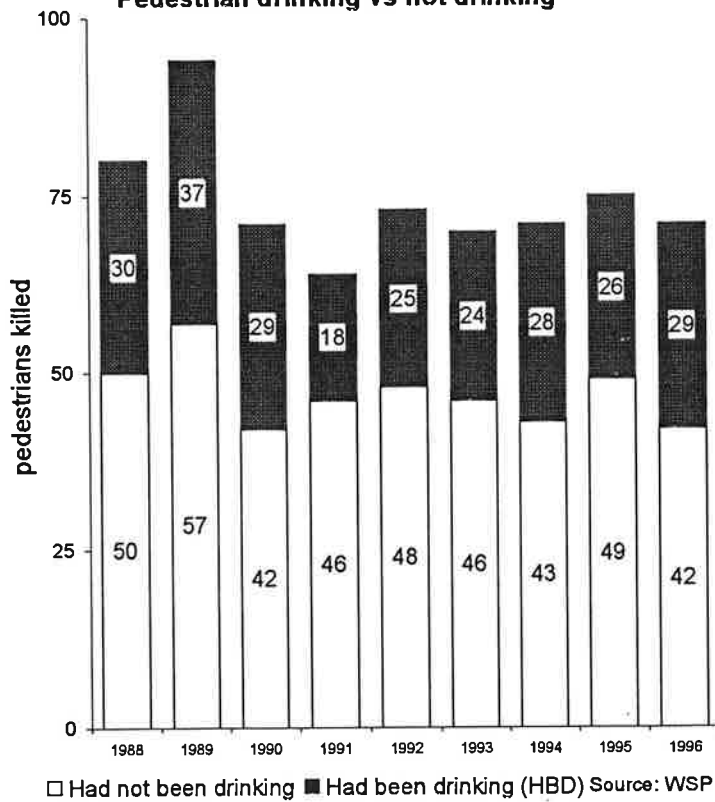
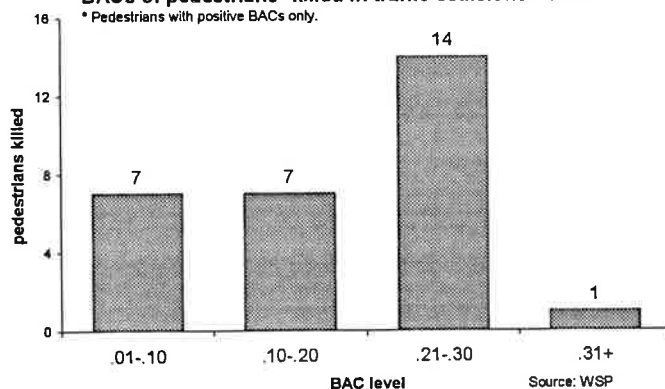


Figure 6-5:
BACs of pedestrians* killed in traffic collisions - 1996
 * Pedestrians with positive BACs only.



VI. Pedestrians

Table 6-5: Pedestrians killed & injured in traffic collisions
By county - 1996

county	population	killed	total injured	peds killed/injured	rate*
Over 1,000,000					
King	1,628,800	29	855	884	5.43
250,000 to 750,000					
Pierce	665,200	11	203	214	3.22
Snohomish	538,100	7	161	168	3.12
Spokane	406,500	4	117	121	2.98
Clark	303,500	7	71	78	2.57
100,000 to 250,000					
Kitsap	224,700	3	65	68	3.03
Yakima	207,600	4	51	55	2.65
Thurston	193,100	0	66	66	3.42
Whatcom	152,800	2	51	53	3.47
Benton	131,000	0	38	38	2.90
50,000 to 100,000					
Skogit	95,500	1	21	22	2.30
Cowlitz	90,800	2	25	27	2.97
Island	70,300	0	11	11	1.56
Grays Harbor	68,200	4	28	32	4.69
Lewis	66,700	0	15	15	2.25
Grant	66,400	2	15	17	2.56
Clallam	65,000	0	18	18	2.77
Chelan	61,300	0	14	14	2.28
Walla Walla	53,400	2	7	9	1.69
25,000 to 50,000					
Mason	46,700	0	9	9	1.93
Franklin	43,700	0	9	9	2.06
Whitman	41,000	0	11	11	2.68
Okanogan	37,500	0	1	1	0.27
Stevens	36,600	0	7	7	1.91
Kittitas	30,800	3	7	10	3.25
Douglas	30,400	0	2	2	0.66
10,000 to 25,000					
Jefferson	25,700	0	3	3	1.17
Pacific	21,100	1	5	6	2.84
Asotin	19,600	1	0	1	0.51
Klickitat	18,700	0	3	3	1.60
Adams	15,400	0	2	2	1.30
San Juan	12,400	0	2	2	1.61
Pend Oreille	11,100	0	0	0	0.00
Under 10,000					
Lincoln	9,800	0	0	0	0.00
Skamania	9,800	0	0	0	0.00
Ferry	7,200	1	1	2	2.78
Columbia	4,200	0	0	0	0.00
Wahkiakum	3,800	0	0	0	0.00
Garfield	2,400	0	0	0	0.00
Total	5,516,600	84	1,894	1,978	3.59

Source: WSP, OFM

*Pedestrians killed or injured per 10,000 population.

Table 6-6: Pedestrian fatalities, injuries & collisions
Cities 10,000 population & greater - 1996

city	population	deaths	injuries	pede killed/inj	rate*
250,000 and over					
Seattle	534,700	11	489	500	9.36
100,000 to 250,000					
Spokane	187,700	1	94	95	5.06
Tacoma	185,000	3	112	115	6.22
Bellevue	103,700	0	38	38	3.66
50,000 to 100,000					
Everett	81,810	2	10	12	1.47
Federal Way	75,240	3	31	34	4.52
Vancouver	67,450	2	37	39	5.78
Lakewood	62,786	1	20	21	3.34
Yakima	62,670	1	33	34	5.43
Kent	60,380	2	40	42	6.96
Bellingham	59,840	0	30	30	5.01
25,000 to 50,000					
Shoreline	48,205	1	25	28	5.39
Kennecook	48,010	0	17	17	3.54
Renton	45,170	0	11	11	2.44
Kirkland	43,160	0	14	14	3.24
Redmond	40,805	0	18	18	4.41
Bremerton	38,370	2	31	33	8.60
Olympia	37,960	0	27	27	7.11
Auburn	36,130	2	17	19	5.26
Richland	35,990	0	16	16	4.45
Edmonds	35,480	2	10	12	3.38
Longview	33,650	0	11	11	3.27
Lynnwood	32,420	0	12	12	3.70
Walla Walla	28,930	1	5	6	2.07
University Place	28,751	1	2	3	1.04
Puyallup	28,660	0	15	15	5.23
Burien	27,830	0	1	1	0.36
Lacey	26,170	0	20	20	7.64
Bothell	25,990	0	3	3	1.15
15,000 to 25,000					
Wenatchee	24,690	0	9	9	3.65
Pullman	24,650	0	9	9	3.65
Sea Tac	23,110	3	15	18	7.79
Des Moines	23,020	1	6	7	3.04
Pasco	22,370	0	8	8	3.58
Mount Vernon	21,820	0	8	8	3.67
Mercer Island	21,490	0	6	6	2.79
Mountlake Terrace	20,160	0	3	3	1.49
Oak Harbor	19,530	0	9	9	4.61
Port Angeles	18,790	0	9	9	4.79
Bainbridge Island	18,530	0	2	2	1.08
Marysville	18,240	0	4	4	2.19
Aberdeen	16,700	1	12	13	7.78
Mukato	15,430	0	5	5	3.24
10,000 to 15,000					
Tukwila	14,880	1	22	23	15.46
Ellensburg	13,210	0	4	4	3.03
Anacortes	13,140	0	3	3	2.28
Moses Lake	13,130	0	7	7	5.33
Centralia	12,860	0	6	6	4.67
Kelso	11,910	0	8	8	6.72
Tumwater	11,790	0	8	8	6.79
Sunnyside	11,720	0	3	3	2.56
Edgewood	10,534	0	1	1	0.95
Enumclaw	10,260	0	2	2	1.95

* Pedestrians killed or injured per 10,000 population. Source: WSP, OFM

VI. Pedestrians



VII. Bicyclists

In 1996, traffic collisions involving bicyclists decreased 5.3 percent over the previous year. There were 14 bicyclists killed and 1,544 bicyclists injured in collisions with motor vehicles in 1996. Bicyclist serious injuries have shown a steady decline over the past five years (Table 7-1). Total vehicle-bicyclist collisions decreased in 1996 after reaching a 10-year high in 1995 (Figure 7-1).

Table 7-1: Bicyclists killed & injured in traffic collisions
Five-year comparison

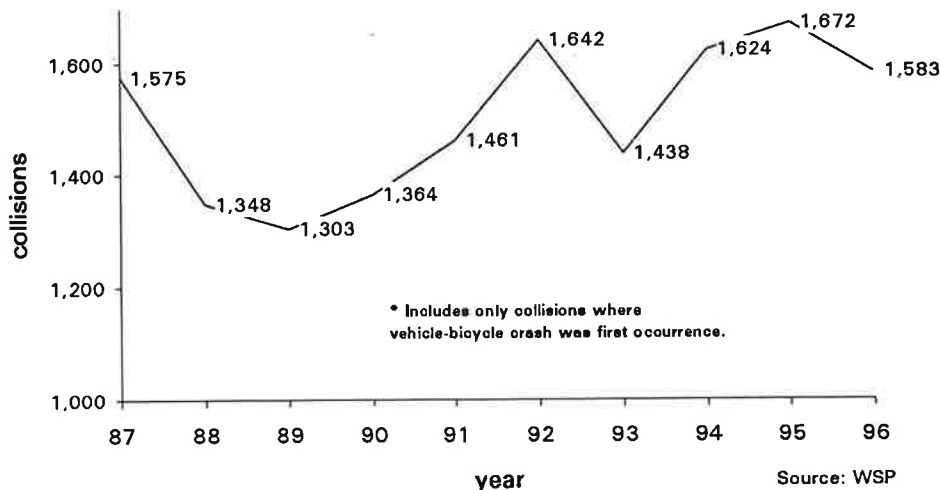
	1996	1995	1994	1993	1992	'96 chg from prev year	'92 - '95 avg yearly change
Collisions inv bicyclists	1,583	1,672	1,624	1,438	1,642	-5.3%	1.2%
Bicyclists killed	14	13	14	8	9	7.7%	18.9%
% of all killed	2.0%	2.0%	2.2%	1.2%	1.4%	-1.1%	19.8%
Bicyclists injured	1,544	1,656	1,607	1,430	1,622	-6.8%	1.2%
Serious injuries	176	187	195	202	224	-5.9%	-5.8%
Evident injuries	1,020	1,102	1,063	889	1,052	-7.4%	2.6%
Possible injuries	369	367	349	339	346	0.5%	2.0%
Urban*injured	1,212	1,239	1,208	1,095	1,208	-2.2%	1.2%
Urban killed	6	7	1	4	4	-14.3%	-----
Rural*injured	332	417	399	335	414	-20.4%	1.5%
Rural killed	8	6	13	4	5	33.3%	-----

*Urban =Cities with population of 2,500 and greater

Rural =Unincorporated or cities with population less than 2,500.

Source: WSP

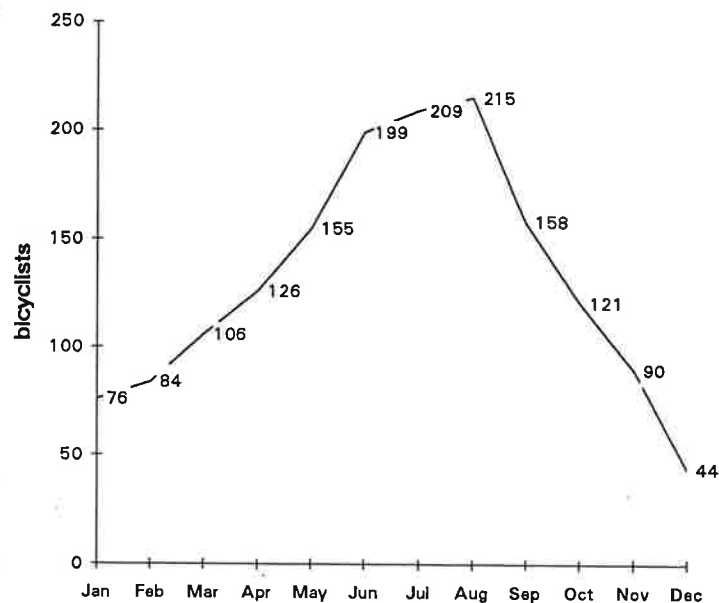
Figure 7-1:
Vehicle-bicyclist collisions*
Ten-year comparison



VII. Bicyclists

The months of June, July and August recorded the highest numbers of bicyclists involved in traffic collisions during 1996. December recorded the least number with 44, and August recorded the most with 215 (Figure 7-2).

Figure 7-2:
Motor vehicle-bicycle collisions
By month - 1996



Source: WSP

Ages of bicyclists involved

In 1996, the age group with the highest rate of bicyclists involved in traffic collisions was the 10 to 14 group, with 9.4 bicyclists per 10,000 population. (Table 7-2)

Table 7-2: Bicyclists killed/injured in motor vehicle collisions
By age group - 1996

	population*	killed	injured	bicyclists	
				killed/inj	rate**
0-4	408,416	0	25	25	0.6
5-9	433,117	4	175	179	4.1
10-14	410,996	4	381	385	9.4
15-19	376,476	0	235	235	6.2
20-24	336,579	0	157	157	4.7
25-34	832,821	0	251	251	3.0
35-44	954,407	3	156	159	1.7
45-54	709,861	1	69	70	1.0
55-64	417,223	1	25	26	0.6
65-74	348,976	0	15	15	0.4
75 & Older	287,928	1	5	6	0.2
Age not stated	-----	0	50	50	-----
Males	2,744,622	12	1,229	1,241	4.5
Females	2,772,178	2	310	312	1.1
Sex not stated	-----			0	-----
Total	5,516,800	14	1,544	1,558	2.8

Source: WSP, OFM

* 1996 population by age (breakdown done biannually by OFM).

** Bicyclists involved in traffic collisions per 10,000 population.

VII. Bicyclists

Bicyclist actions associated with the most deaths and injuries was "crossing/entering traffic" , followed by "riding with traffic" with three killed and 470 injuries (Table 7-3).

Table 7-3: Actions of bicyclists killed & injured*
By severity - 1996

	killed	serious injury	evident injury	possible injury	total killed/inj
Crossing/entering traffic	4	75	465	174	718
Riding with traffic	3	60	296	111	470
Riding against traffic	2	13	124	42	181
Turned into vehicle path - same dir	5	7	62	6	80
Turned into vehicle path - opp dir	0	12	34	14	60
Crossing diagonally	0	6	18	7	31
Fell into vehicle path	0	2	6	4	12
Other & not stated	0	1	4	1	6
Total	14	176	1,009	359	1,558

*Where bicyclist action was noted.

Source:WSP

Bicycle Helmet Use

A statewide survey of bicycle helmet usage was conducted by the WTSC in 1996. The overall statewide rate for bicycle helmet use was 47.1 percent, up from 44.9 percent in 1995. Female showed a higher usage rate than males (Table 7-4).

Table 7-4: Observed bicycle helmet use rates
Three-year comparison

	1996	1995	1994		1996	1995	1994
Overall	47.1%	44.9%	39.5%	Female	52.1%	51.4%	43.2%
Bike lane *	64.6%	61.3%	49.2%	Male	44.8%	42.7%	38.2%
Street w/bike lane	40.6%	44.8%	42.3%	Pre- sch	66.7%	60.0%	47.3%
Street	38.6%	43.2%	41.9%	Child	52.8%	51.9%	36.3%
Other +	28.3%	37.8%	29.0%	Teen	31.5%	25.7%	20.4%
Bike trail**	67.4%	62.2%	47.8%	Adult	50.1%	46.7%	42.7%
Park	40.4%	51.4%	46.6%	Senior	58.3%	41.7%	46.5%
Business	42.7%	42.5%	44.2%	Asian	24.4%	55.8%	42.0%
School	—	54.7%	41.2%	White	49.7%	46.0%	41.8%
College	27.0%	33.2%	32.7%	Black	21.4%	37.3%	35.2%
Resid (high econ)	43.8%	22.1%	31.4%	Hispanic	21.0%	18.5%	7.9%
Resid (mid econ)	34.3%	43.2%	40.0%	Other	40.0%	33.3%	9.1%
Resid (low econ)	35.7%	25.0%	21.6%				

* An area of a roadway specifically designated for bicyclists.

Source: WTSC

+Parking lot, grassy area, off road, etc.

** A path separate from a roadway that is designated for bicyclists and pedestrians.

VII. Bicyclists

Table 7-5: Bicyclists in traffic collisions
By county - 1996

county	population	serious killed	evident injury	possible injury	total injured	total collisions	collision rate *	
Over 1,000,000								
King	1,628,800	0	81	366	164	611	626	3.84
250,000 to 750,000								
Pierce	665,200	1	18	111	30	159	161	2.42
Snohomish	538,100	3	15	90	26	131	132	2.45
Spokane	406,500	0	12	102	38	152	157	3.86
Clark	303,500	1	3	48	15	66	69	2.27
100,000 to 250,000								
Kitsap	224,700	2	5	23	11	39	42	1.87
Yakima	207,600	2	2	33	7	42	44	2.12
Thurston	193,100	0	3	39	14	56	61	3.16
Whatcom	152,800	0	4	32	10	46	48	3.14
Benton	131,000	0	3	14	3	20	20	1.53
50,000 to 100,000								
Skagit	95,500	0	6	12	6	24	24	2.51
Cowlitz	90,800	0	1	31	10	42	41	4.52
Island	70,300	1	1	6	0	7	8	1.14
Grays Harbor	68,200	1	3	16	1	20	21	3.08
Lewis	66,700	1	0	8	2	10	11	1.65
Grant	66,400	0	3	9	3	15	15	2.26
Clallam	65,000	0	0	7	2	9	9	1.38
Chelan	61,300	0	3	9	3	15	14	2.28
Walla Walla	53,400	0	4	6	1	11	12	2.25
25,000 to 50,000								
Mason	46,700	1	2	5	1	8	9	1.93
Franklin	43,700	0	1	3	1	5	5	1.14
Whitman	41,000	0	1	6	1	8	5	1.22
Okanogan	37,500	0	0	2	1	3	3	0.80
Stevens	36,600	0	1	2	1	4	4	1.09
Kittitas	30,800	0	0	9	3	12	12	3.90
Douglas	30,400	0	0	2	1	3	3	0.99
10,000 to 25,000								
Jefferson	25,700	1	0	2	2	4	5	1.95
Pacific	21,100	0	0	3	0	3	3	1.42
Asotin	19,600	0	1	5	1	7	7	3.57
Klickitat	18,700	0	0	4	0	4	4	2.14
Adams	15,400	0	1	3	0	4	4	2.60
San Juan	12,400	0	2	0	0	2	2	1.61
Pend Oreille	11,100	0	0	0	0	0	0	0.00
Under 10,000								
Lincoln	9,800	0	0	1	0	1	1	1.02
Skamania	9,800	0	0	0	0	0	0	0.00
Ferry	7,200	0	0	0	0	0	0	0.00
Columbia	4,200	0	0	0	1	1	1	2.38
Wahkiakum	3,800	0	0	0	0	0	0	0.00
Garfield	2,400	0	0	0	0	0	0	0.00
Total	5,516,800	14	176	1,009	359	1,544	1,583	2.87

* Motor-vehicle--bicycle collisions per 10,000 population

Source: WSP, OFM

VII. Bicyclists

Table 7-6: Traffic collisions involving bicyclists
 Cities 10,000 population & greater - 1996

city	population	deaths	injuries	clsns inv bicycles	collision rate*
<i>250,000 and over</i>					
Seattle	534,700	0	313	318	5.95
<i>100,000 to 250,000</i>					
Spokane	187,700	0	119	120	6.39
Tacoma	185,000	0	79	75	4.05
Bellevue	103,700	0	30	31	2.99
<i>50,000 to 100,000</i>					
Everett	81,810	1	49	50	6.11
Federal Way	75,240	0	35	34	4.52
Vancouver	67,450	1	31	32	4.74
Lakewood	62,786	0	10	10	1.59
Yakima	62,670	2	22	25	3.99
Kent	60,380	0	23	23	3.81
Bellingham	59,840	0	35	36	6.02
<i>25,000 to 50,000</i>					
Shoreline	48,205	0	11	11	2.28
Kennewick	48,010	0	9	9	1.87
Renton	45,170	0	16	16	3.54
Kirkland	43,160	0	14	16	3.71
Redmond	40,805	0	17	18	4.41
Bremerton	38,370	0	17	17	4.43
Olympia	37,960	0	23	24	6.32
Auburn	36,130	0	21	21	5.81
Richland	35,990	0	8	8	2.22
Edmonds	35,480	0	9	9	2.54
Longview	33,650	0	28	27	8.02
Lynnwood	32,420	0	11	11	3.39
Walla Walla	28,930	0	9	10	3.46
University Place	28,751	0	4	4	1.39
Puyallup	28,660	0	14	14	4.88
Burien	27,830	0	7	7	2.52
Lacey	26,170	0	17	20	7.64
Bothell	25,990	0	5	6	2.31
<i>15,000 to 25,000</i>					
Wenatchee	24,690	0	10	10	4.05
Pullman	24,650	0	3	3	1.22
Sea Tac	23,110	0	6	6	2.60
Des Moines	23,020	0	3	3	1.30
Pasco	22,370	0	3	3	1.34
Mbunt Vernon	21,820	0	10	10	4.58
Mercer Island	21,490	0	6	7	3.26
Mbuntake Terrace	20,160	0	1	1	0.50
Oak Harbor	19,530	0	4	4	2.05
Port Angeles	18,790	0	5	5	2.66
Bainbridge Island	18,530	0	4	5	2.70
Marysville	18,240	0	15	14	7.68
Aberdeen	16,700	0	7	7	4.19
Mukiteo	15,430	0	2	2	1.30
<i>10,000 to 15,000</i>					
Tukwila	14,880	0	3	3	2.02
Ellensburg	13,210	0	12	12	9.08
Anacortes	13,140	0	1	1	0.76
Moses Lake	13,130	0	5	4	3.05
Centralia	12,860	0	6	6	4.67
Kelso	11,910	0	8	8	6.72
Tumwater	11,790	0	5	5	4.24
Sunnyside	11,720	0	6	5	4.27
Edgewood	10,534	0	1	1	0.95
Enumclaw	10,260	0	8	8	7.80

* Collisions involving bicyclists per 10,000 pop. Source: WSP, OFM

VII. Bicyclists



VIII. Motorcycles

During 1996, motorcycle fatalities increased slightly compared to the previous year, however injuries and collisions continued a downward trend the past five years (Table 8-1).

Table 8-1: Collisions involving motorcycles
Five-year comparison

	1996	1995	1994	1993	1992	'96 chg from prev year	'92 - '95 avg yearly change
Total collisions	1,515	1,788	1,744	1,739	2,044	-15.3%	-4.0%
Fatal	37	35	34	38	48	5.7%	-9.5%
Injury	1,262	1,501	1,473	1,489	1,745	-15.9%	-4.6%
Property dmg only	216	252	237	212	251	-14.3%	0.9%
Persons killed**	41	36	35	39	49	13.9%	-9.3%
Percent of all killed	5.8%	5.5%	5.5%	5.9%	7.5%	4.6%	-9.4%
Persons injured**	1,493	1,780	1,752	1,810	2,112	-16.1%	-5.3%
Serious injury	308	417	406	439	533	-26.1%	-7.5%
Evident injury	814	902	889	909	1,073	-9.8%	-5.3%
Possible injury	371	461	457	462	506	-19.5%	-3.0%
MC drivers killed	36	34	32	35	42	5.9%	-6.3%
MC passengers killed	5	2	3	3	6	150.0%	-27.8%
MC drivers injured	1,227	1,452	1,419	1,452	1,699	-15.5%	-4.8%
MC passengers injured	162	213	209	211	253	-23.9%	-5.2%
MC drivers involved	1,495	1,771	1,726	1,742	2,031	-15.6%	-4.2%
MC endorsements	258,593	216,852	223,195	225,230	225,316	19.2%	-1.3%
Registered motorcycles	94,285	95,103	97,075	96,609	98,131	-0.9%	-1.0%
Collision rate*	16.07	18.80	17.97	18.00	20.83	-14.5%	-3.0%
Fatality rate*	0.43	0.38	0.36	0.40	0.50	14.9%	-8.3%

*Motorcycle collisions/fatalities per 1,000 registered motorcycles.

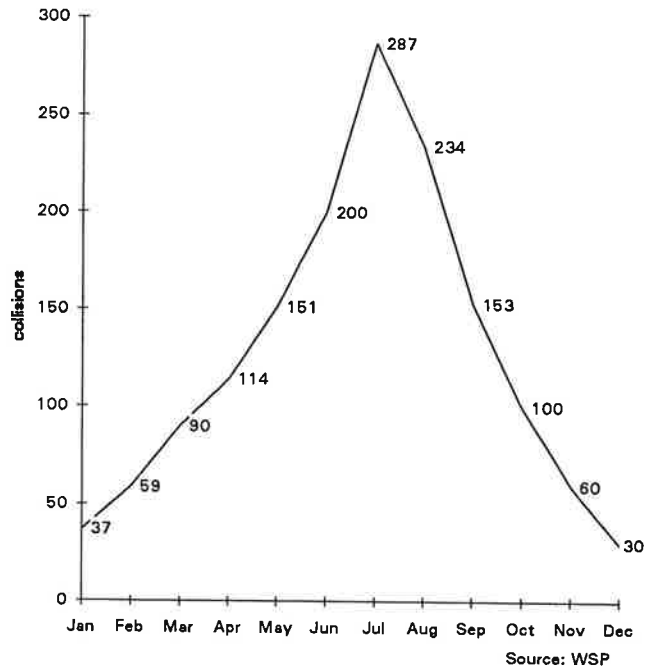
Source: WSP, DOL

**includes occupants of other vehicles, pedestrians/pedalcyclists.

VIII. Motorcycles

As illustrated in Figure 8-1, the summer months of July and August experienced the greatest number of motorcycle collisions with 287 and 234, respectively. Relatively few collisions involving motorcyclists were reported in winter months (Figure 8-1).

Figure 8-1:
Motorcycle collisions
By month - 1996



As shown in Table 8-2, motorcycle collisions have generally decreased after peaking in 1979. Fatalities have also shown decreases since 1980. Motorcycle registrations peaked in 1981 and have declined through 1996.

Table 8-2: Motorcycle collisions, fatalities and injuries 1971 to 1996

year	registered m'cycles	collisions	m'cycles involved	rate* rate*	total fatalities	m'cyclsts killed	total injuries	m'cyclsts injured
1971	74,574	1,957	1,972	26.2	54	51	2,107	1,934
1972	81,200	1,893	1,937	23.3	48	43	2,076	1,932
1973	91,782	2,200	2,235	24.0	38	35	2,406	2,230
1974	110,024	2,605	2,657	23.7	60	58	2,764	2,583
1975	110,130	2,518	2,556	22.9	57	51	2,664	2,459
1976	111,211	2,761	2,807	24.8	61	61	2,978	2,752
1977+	115,454	3,093	3,230	26.8	76	75	3,432	3,230
1978	106,212	3,282	3,350	30.9	117	115	3,610	3,416
1979	129,641	3,992	4,054	30.8	121	119	4,350	4,128
1980	135,899	3,914	3,985	28.8	129	119	4,201	3,991
1981	139,931	3,727	3,796	26.8	105	101	3,920	3,752
1982	131,667	3,376	3,424	25.6	109	108	3,341	3,289
1983	127,950	3,312	3,362	25.9	77	77	3,555	3,351
1984	126,703	3,477	3,527	27.4	75	72	3,656	3,434
1985	125,224	3,699	3,762	29.5	85	82	3,884	3,632
1986	122,751	3,508	3,562	28.6	81	80	3,673	3,427
1987	124,215	3,379	3,443	27.2	90	90	3,497	3,288
1988	117,155	2,773	2,813	23.7	77	77	2,896	2,737
1989	110,617	2,516	2,557	22.7	75	69	2,724	2,511
1990@	103,537	2,167	2,198	20.9	62	60	2,223	2,061
1991	100,970	2,048	2,087	20.3	44	43	2,114	1,965
1992	98,131	2,044	2,078	20.8	49	48	2,112	1,952
1993	96,609	1,739	1,778	18.0	39	38	1,810	1,663
1994	97,075	1,744	1,774	18.0	35	35	1,752	1,628
1995	95,103	1,788	1,814	18.8	36	36	1,790	1,665
1996	94,285	1,515	1,535	16.1	41	41	1,493	1,389

*Collisions per 1,000 motorcycles registered

Source: WSP, DOL

@Repeal of the Mandatory Helmet Law effective 9/27/77

@Mandatory Helmet Law Reinstated 6/30/90

Location of motorcycle collisions

City streets recorded the highest number of total collisions involving motorcycles with 810. County roads recorded 20 fatalities, followed by city streets with 11. On county roads 4.8 percent of collisions were fatal collisions (Table 8-3).

Table 8-3: Location of motorcycle collisions
By severity - 1996

location	persons killed	persons injured	fatal clsns	injury clsns	pty dmg* only clsns	total clsns	pct fatal
City streets **	11	779	12	656	142	810	1.5%
County roads	20	349	17	303	32	352	4.8%
State route- rural	5	221	5	177	24	206	2.4%
Interstate	1	110	1	100	17	118	0.8%
Other trafficways ***	2	34	2	26	1	29	6.9%
Total	39	1,493	37	1,262	216	1,515	2.4%

* Property damage only collisions (no deaths or injuries) - damage over \$500. Source: WSP

** Including U.S. and state routes in cities

*** Includes parks/forest service roads. Does not include all-terrain-vehicle trails.

Overtuning was the most frequent motorcycle collision type with 379. Of multiple-vehicle motorcycle collisions, the most frequent was approaching from an angular direction (Table 8-4).

Table 8-4: First harmful event in motorcycle collisions *
Single & multiple collisions - 1996

	fatal	injury	ppty drng only	total collisions
Single motorcycle collisions				
Overtuned	6	350	23	379
Struck fixed object	11	159	16	186
Motorcycle-animal	0	44	1	45
Motorcycle-pedestrian	0	8	0	8
Non-collision	1	1	1	3
Struck other object	0	8	1	9
Motorcycle-bicyclist	0	7	0	7
Struck parked vehicle	0	18	36	54
Total single motorcycle	18	577	42	637
Multiple vehicle clsns (w/mc)				
Angular direction	4	156	28	188
Enter/leave driveway	4	136	40	180
Rear-end	1	136	40	177
One left/one straight-opp dir	4	87	9	100
Sideswipe (same or opp dir)	5	61	14	80
One turning/same dir	0	46	8	54
Same dir-all others	0	20	5	25
Opp dir-all others	0	8	3	11
Head-on	1	9	0	10
Enter/leave parked position	0	5	1	6
Both turning-opp dir	0	2	0	2
Total multiple vehicle	19	666	148	833
Total motorcycle collisions	37	1,243	190	1,470
Pct single-vehicle collisions	48.6%	46.4%	22.1%	43.3%

* First three vehicles involved only.

Source: WSP

VIII. Motorcycles

Motorcycle drivers, ages 25-29 were involved in the greatest number of total and injury collisions. Male motorcycle drivers recorded three fatal collisions per every 100 collisions involved (Table 8-5).

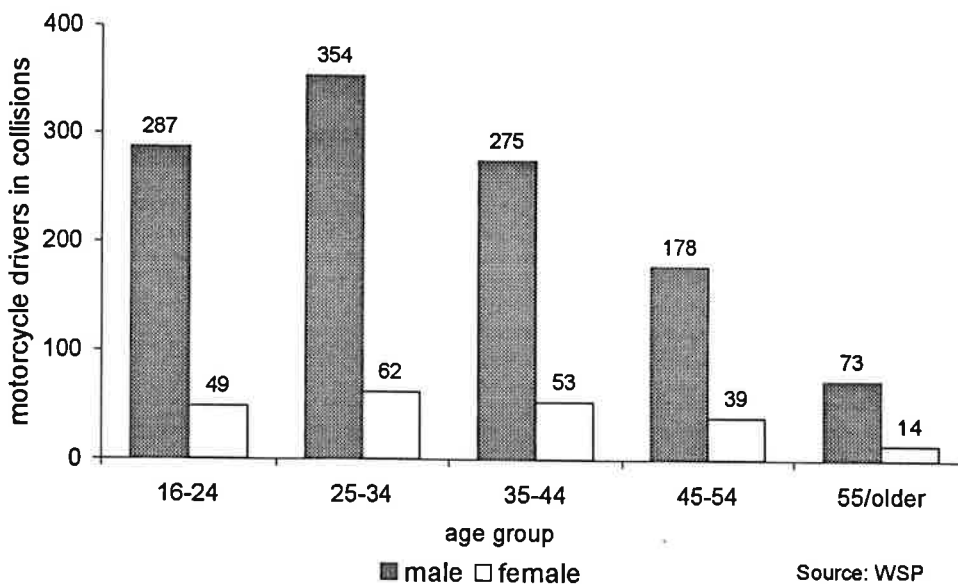
Table 8-5: Motorcycle drivers in collisions*
By age group - 1996

age	motorcycle drivers in			mc dvrs in	pct fatal
	fatal clsns	injury clsns	PDO clsns	total clsns	
Under 16	2	30	2	34	-----
16	0	5	0	5	0.0%
17-18	0	35	2	37	0.0%
19-20	1	85	3	89	1.1%
21-22	4	93	5	102	3.9%
23-24	5	86	12	103	4.9%
25-29	6	188	24	218	2.8%
30-34	8	173	17	198	4.0%
35-39	2	162	21	185	1.1%
40-44	2	121	20	143	1.4%
45-54	6	189	22	217	2.8%
55-64	1	55	5	61	1.6%
65/over	1	18	7	26	3.8%
Not stated	0	33	44	77	-----
Males	38	1,066	150	1,254	3.0%
Females	0	204	21	225	0.0%
Sex not stated	0	8	48	56	-----

* First three vehicles in each collision only.

Source: WSP

Figure 8-2:
Motorcycle drivers in collisions by age and sex - 1996



Source: WSP

Motorcyclist violations in collisions

As shown in Table 8-6, speeding was the most-reported motorcyclist violation in fatal, injury and property-damage-only collisions. DUI was the second most-reported motorcyclist violation.

Table 8-6: Motorcyclist violations in collisions*
By collision severity - 1996

violation	fatal	injury	pply dmg only	total violations
Speeding	26	362	39	427
Other violations	0	169	19	188
D.U.I.	15	119	5	139
Following too closely	0	56	9	65
Failed to yield	1	46	13	60
Defective equipment	0	47	3	50
Improper passing	2	45	11	58
Disregd signs/signals	2	27	4	33
Over center line	4	22	2	28
Total	50	893	105	1,048

* Investigated collisions only.

Source: WSP

Helmet use in collisions

In 1996, there were 1,236 motorcyclists in collisions wearing a helmet, and there were 79 in collisions while not wearing a helmet. Among the helmeted riders, 2.5 percent were killed. Among unhelmeted riders, 5.1 percent were killed (Table 8-7, Figure 8-3).

Table 8-7: Motorcyclist injuries and helmet use*
By severity - 1996

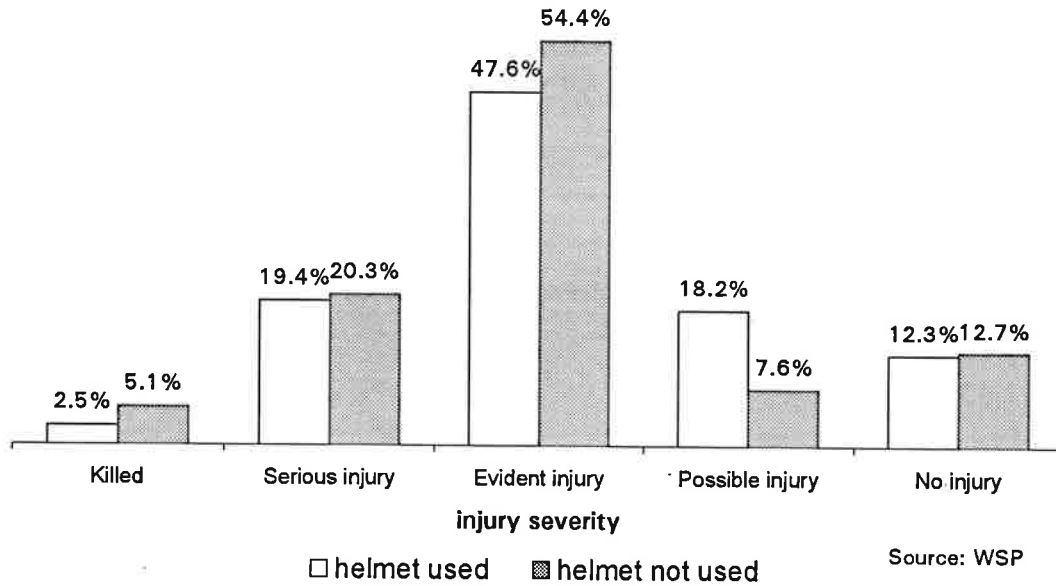
	killed	serious injury	evident injury	possible injury	no injury	total	pct fatal
Helmet used	31	240	588	225	152	1,236	2.5%
Helmet not used	4	16	43	6	10	79	5.1%
Pct used*	88.6%	93.8%	93.2%	97.4%	93.8%	94.0%	-----
Total	35	256	631	231	162	1,315	2.7%

* Not including unknown injury or unknown helmet use.

Source: WSP

VIII. Motorcycles

Figure 8-3:
Severity of motorcyclist injuries
Percentage by helmet use - 1996



Observed motorcycle helmet use

WTSC's 1996 observational survey of motorcycle helmet use revealed a 98.5 percent use rate. Approved helmets were worn by 89.9 percent of motorcyclists, and non-approved helmets were worn by 8.6 percent.

VIII. Motorcycles

Table 8-8: Motorcyclists killed and injured
By severity and county - 1996

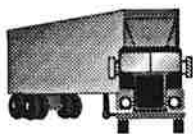
county	registered m/cycles	killed	injured *	collisions	collision rate*
Adams	169	0	1	1	5.9
Asotin	306	0	2	3	9.8
Benton	2,334	1	28	31	13.3
Chelan	1,818	0	24	22	12.1
Clallam	1,260	1	10	11	8.7
Clark	4,138	5	58	65	15.7
Columbia	102	0	1	1	9.8
Cowlitz	1,487	0	31	29	19.5
Douglas	694	0	5	5	7.2
Ferry	103	0	6	4	38.8
Franklin	575	0	4	4	7.0
Garfield	22	0	1	1	45.5
Grant	1,055	0	17	17	16.1
Grays Harbor	1,081	0	16	17	15.7
Island	1,184	1	10	13	11.0
Jefferson	656	0	3	4	6.1
King	28,155	8	446	502	17.8
Kitsap	4,408	0	76	82	18.6
Kittitas	837	0	9	9	10.8
Klickitat	319	0	8	6	18.8
Lewis	1,155	0	27	24	20.8
Lincoln	140	0	0	0	0.0
Mason	866	1	20	20	23.1
Okanogan	801	0	17	13	16.2
Pacific	272	0	3	6	22.1
Pend Oreille	185	1	3	4	21.6
Pierce	9,217	7	132	150	16.3
San Juan	344	0	5	5	14.5
Skagit	2,263	0	38	41	18.1
Skamania	162	0	4	4	24.7
Snohomish	10,077	5	130	137	13.6
Spokane	6,639	3	88	91	13.7
Stevens	573	0	8	7	12.2
Thurston	3,958	4	61	60	15.2
Wahkiakum	31	0	1	1	32.3
Walla Walla	815	0	10	12	14.7
Whatcom	2,854	1	53	59	20.7
Whitman	524	1	9	9	17.2
Yakima	2,706	2	43	45	16.6
Total	94,285	41	1,408	1,515	16.1

Source: WSP, DOL

* Collisions involving motorcycles per 1,000 motorcycles registered

* Includes 12 peds or bicyclists injured in motorcycle collisions

VIII. Motorcycles



IX. Heavy Trucks

During 1996 there were 7,500 collisions involving heavy trucks (in excess of 10,000 pound gross weight), up 12.3% from the previous year. The heavy truck collision rate (collisions per 100 million miles traveled) was also up 12.3 percent from the previous year (Table 9-1).

Table 9-1: Traffic collisions involving heavy trucks (10,000 lbs & greater)

Five-year comparison

	1996	1995	1994	1993	1992	'96 chg from prev year	'92 - '95 avg yearly change
Collisions involving heavy trucks	7,500	6,676	6,364	5,816	5,530	12.3%	6.5%
Fatal collisions	69	60	55	62	49	15.0%	8.1%
Injury collisions	2,310	2,108	2,081	1,853	1,650	9.6%	8.6%
Property damage only clns	5,121	4,508	4,228	3,901	3,831	13.6%	5.6%
Persons killed	77	75	58	71	60	2.7%	9.8%
Percent of all traffic fatalities	10.8%	11.5%	9.1%	10.7%	9.2%	-5.7%	9.1%
Persons injured	3,394	2,996	2,883	2,695	2,335	13.3%	8.8%
Serious injuries	301	294	244	234	279	2.4%	2.9%
Evident injuries	1,134	889	954	953	810	27.6%	3.6%
Possible injuries	1,959	1,813	1,685	1,508	1,246	8.1%	13.5%
Heavy truck miles traveled*	4,236.7	4,234.8	4,111.4	3,971.8	4,458.3	0.0%	-1.5%
Fatality rate**	1.8	1.8	1.4	1.8	1.3	2.6%	12.4%
Collision rate**	177.0	157.6	154.8	146.4	124.0	12.3%	8.5%
Heavy trucks registered +	135,877	138,700	133,000	130,000	132,300	-2.0%	1.6%
Heavy-truck drivers involved	7,624	6,743	6,447	5,884	5,546	13.1%	6.8%
Heavy trucks involved	7,823	6,916	6,590	6,029	5,683	13.1%	6.8%

* In millions

Source: WSP, DOL, DOT

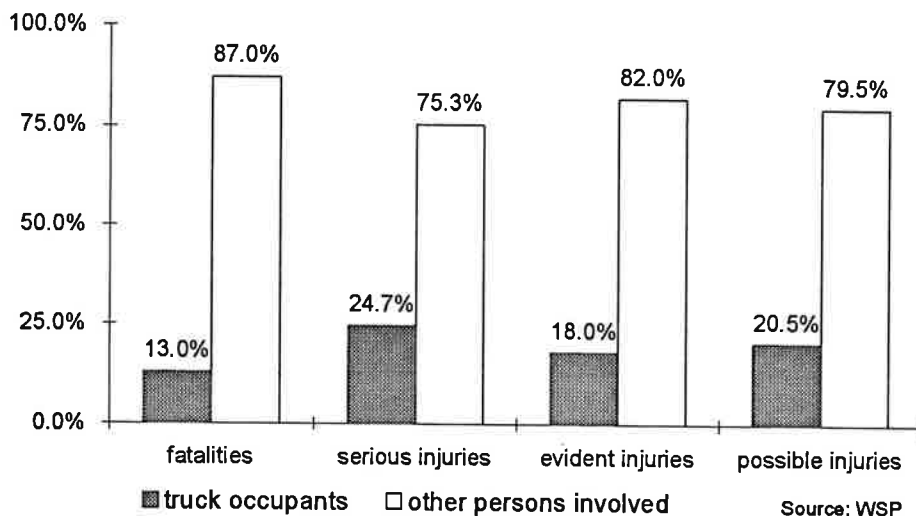
** Fatalities/collisions per 100 million heavy truck miles traveled.

+ Estimated by WTSC based on previous estimates by WSDOT and DOL.

IX. Trucks

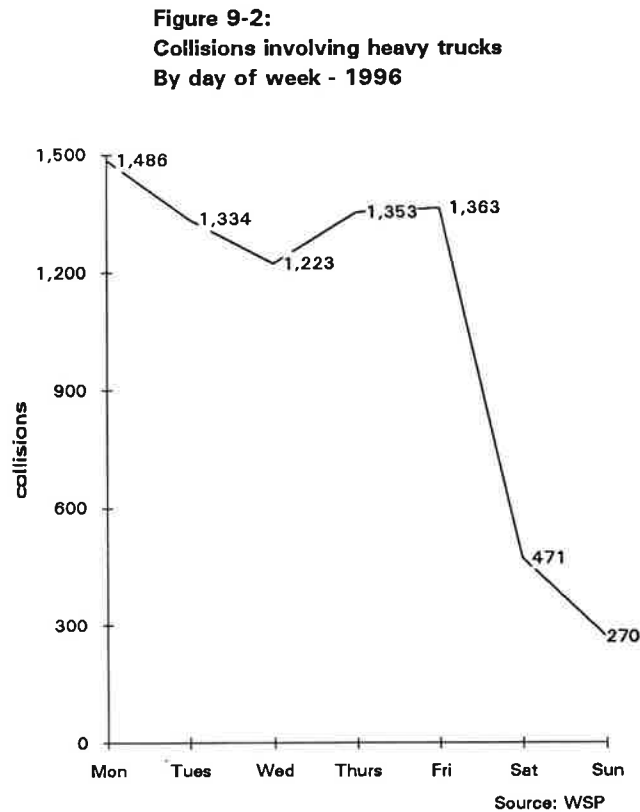
Figure 9-1 shows that occupants of heavy trucks are far less likely to be killed or injured than the occupants of other vehicles involved in collisions with heavy trucks.

**Figure 9-1:
Persons involved in heavy truck collisions
By severity and status - 1996**

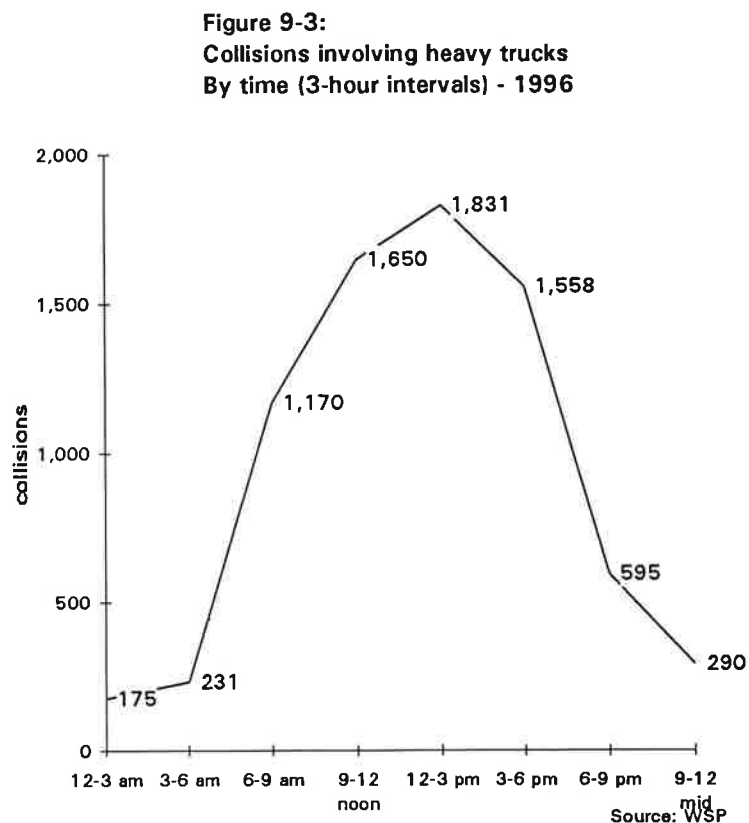


Heavy truck collisions by day of week and hour of day

By day of week, the number of collisions involving heavy trucks were roughly equivalent for weekdays during the year. Saturday and Sunday were dramatically lower (Figure 9-2).



In 1996 the number of heavy truck collisions was highest during the 12:00 noon to 3:00 p.m. time period, with 1,831. The majority of collisions occurred between 9 a.m. and 6 p.m. (Figure 9-3).



IX. Trucks

During 1996, heavy trucks were involved in 5,634 collisions involving other moving motor vehicles, including 46 fatal crashes. In addition, heavy trucks were involved in 780 collisions with fixed or other objects, and 475 collisions with a parked vehicle (Table 9-2).

Table 9-2: First harmful event in collisions involving heavy trucks
By collision severity - 1996

type of collision	fatal	injury	ppty dmg only	total collisions
Clsn w/other moving motor veh	46	1,851	3,737	5,634
Collision with fixed/other object	8	157	615	780
Collision with parked vehicle	2	89	384	475
Overturning	7	147	189	343
Other non-collision	0	27	156	183
All other collisions *	6	39	40	85
Total	69	2,310	5,121	7,500
Pct clsns w/other moving m/veh	66.7%	80.1%	73.0%	75.1%

*Pedestrians, pedalcyclists, RR train & animal.

Source: WSP

In 1996, exceeding legal and safe speed was the leading violation among heavy-truck-drivers in collisions, with 924 violations noted. Failure to yield the right of way and driver inattention were the next most frequent violations. Speed and operating defective equipment were the violations associated with the highest percentage of fatal collisions (Table 9-3).

Table 9-3: Heavy truck driver violations in collisions
By collision severity - 1996

	fatal	injury	ppty dmg only	total truck violations	percent fatal
Exceeding legal or safe speed	12	403	509	924	1.30%
Failure to yield right of way	5	244	516	765	0.65%
Driver inattention	3	162	540	705	0.43%
Improper turning	0	35	382	417	0.00%
Following too closely	1	207	215	423	0.24%
Operating defective equipment	12	119	229	360	3.33%
Disregarding traffic sig./signs	0	51	112	163	0.00%
Apparently asleep	1	21	24	46	2.17%
Crossing over the center line	5	30	50	85	5.88%
Improper passing	0	7	27	34	0.00%
Driving under the influence	1	23	17	41	2.44%
All other circumstances +	1	45	360	406	0.25%
Total	41	1,347	2,981	4,369	0.94%

Source: WSP

+Includes fail to signal, imprp signal, imprp parking, fail to dim headlights.

Heavy truck defects

Defective brakes were noted for 148 heavy trucks in collisions, including nine in fatal collisions. Worn or smooth tires and puncture or blow out were noted for 56 defects in heavy truck collisions (Table 9-4).

Table 9-4: Defects of heavy trucks in collisions
By collision severity - 1996

	fatal	injury	ppty dmg only	total
Defective brakes	9	70	69	148
Worn or smooth tires	1	19	16	36
Puncture or blowout	1	8	11	20
Defective rear lights	1	4	13	18
Defective steering	0	2	4	6
Defective headlights	1	2	1	4
Other defects	5	53	147	205
Total defects	18	158	261	437
No defects noted	56	1,993	4,260	6,309
Percent with defects noted	32.1%	7.9%	6.1%	6.9%
Total	18	158	261	437

Source: WSP

IX. Trucks

Table 9-5: Collisions involving heavy trucks
By county - 1996

county	centerline miles *	fatal	injury	ppty dmg only	total collisions	collision rate **	pct of total clsns +
Adams	2,601.0	1	31	57	89	3.42	17.5%
Asotin	594.4	0	1	10	11	1.85	4.1%
Benton	1,892.6	3	47	91	141	7.45	5.1%
Chelan	2,308.0	0	24	64	88	3.81	5.7%
Clallam	1,059.3	2	14	33	49	4.63	4.3%
Clark	2,635.0	2	99	196	297	11.27	4.7%
Columbia	838.2	0	4	10	14	1.67	11.5%
Cowlitz	1,171.6	4	45	110	159	13.57	6.2%
Douglas	3,125.8	1	15	33	49	1.57	8.8%
Ferry	1,812.3	0	2	7	9	0.50	5.3%
Franklin	1,710.1	1	32	46	79	4.62	7.9%
Garfield	565.2	0	2	9	11	1.95	15.3%
Grant	3,750.0	3	38	76	117	3.12	7.7%
Grays Harbor	1,575.1	0	24	63	87	5.52	5.3%
Island	1,362.2	1	6	17	24	1.76	2.8%
Jefferson	936.0	0	6	16	22	2.35	4.6%
King	7,271.9	12	826	1,965	2,803	38.55	5.6%
Kitsap	1,674.9	0	33	92	125	7.46	2.9%
Kittitas	2,464.4	2	58	138	198	8.03	14.2%
Klickitat	1,487.3	1	20	41	62	4.17	14.4%
Lewis	1,780.9	2	59	76	137	7.69	6.8%
Lincoln	2,525.3	0	12	27	39	1.54	14.9%
Mason	980.4	2	26	23	51	5.20	4.9%
Okanogan	3,470.8	2	15	37	54	1.56	6.8%
Pacific	740.3	0	3	11	14	1.89	3.1%
Pend Oreille	1,614.6	0	6	11	17	1.05	8.0%
Pierce	3,731.7	7	271	477	755	20.23	4.8%
San Juan	342.2	0	1	2	3	0.88	2.4%
Skagit	1,488.5	1	33	82	116	7.79	5.0%
Skamania	876.1	0	4	12	16	1.83	9.2%
Snohomish	3,775.5	8	161	388	557	14.75	4.4%
Spokane	4,577.4	2	134	297	433	9.46	4.0%
Stevens	2,344.4	2	11	43	56	2.39	9.0%
Thurston	1,551.2	5	74	154	233	15.02	4.9%
Wahkiakum	187.9	0	0	1	1	0.53	1.6%
Walla Walla	1,274.1	2	20	42	64	5.02	5.5%
Whatcom	1,810.9	0	52	123	175	9.66	5.0%
Whitman	2,420.2	2	10	50	62	2.56	7.5%
Yakima	3,228.3	1	91	191	283	8.77	5.5%
Total	79,555.7	69	2,310	5,121	7,500	9.43	5.3%

Source: WSP

*Total length of all public roadways in miles, regardless of number of lanes.

**Collisions involving heavy trucks per 100 miles of roadway.

+Percentage of all collisions which involved heavy trucks.



X. Light Trucks and Vans

Table 10-1 displays a five-year comparison of collisions involving light trucks (pickup trucks, vans and panel trucks with a gross weight of under 10,000 pounds). There were 71,393 collisions during 1996 involving light trucks, an increase of 8.5 percent compared to the previous year. The number of persons killed in collisions involving light trucks was 377, a 30.4 percent increase from 1995.

Table 10-1: Traffic collisions involving light trucks *
Five-year comparison

	1996	1995	1994	1993	1992	'96 chg from prev year	'92 - '95 avg yearly change
Collisions involving light trucks	71,393	65,817	62,041	57,757	56,270	8.5%	5.4%
Fatal collisions	328	253	281	249	266	29.6%	-1.2%
Injury collisions	27,920	26,728	25,210	22,866	21,892	4.5%	6.9%
Property damage only clns	43,145	38,836	36,550	34,642	34,112	11.1%	4.4%
Persons killed	377	289	335	289	292	30.4%	0.4%
Percent of all traffic fatalities	52.9%	44.2%	52.4%	43.7%	44.9%	19.8%	0.6%
Persons injured	42,605	40,845	38,800	34,868	33,384	4.3%	7.0%
Serious injuries	2,509	2,471	2,474	2,453	2,742	1.5%	-3.3%
Evident injuries	12,548	11,470	11,570	10,830	10,330	9.4%	3.6%
Possible injuries	27,548	26,904	24,756	21,585	20,312	2.4%	9.9%
Total light trucks involved	85,857	78,264	73,584	67,967	65,896	9.7%	5.9%
Light trucks registered **	1,101,621	1,080,000	1,076,694	1,053,200	1,092,900	2.0%	-0.4%
Fatal collision rate +	3.0	2.3	2.6	2.4	2.4	27.1%	-0.9%
Collision rate +	648.1	609.4	576.2	548.4	514.9	6.3%	5.8%

* Pickups, panel trucks, delivery trucks/vans, passenger vans <10,000 lbs.

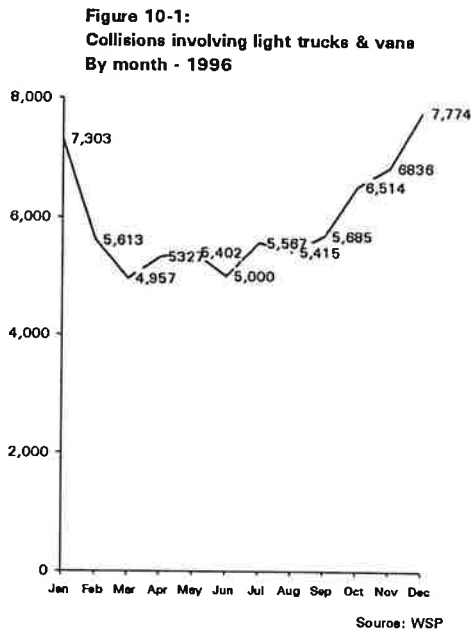
Source: WSP, DOL, DOT

** Estimated by WTSC based on previous estimates by WSDOT and DOL.

+Fatal collisions / collisions per 10,000 registered trucks

X. Light Trucks and Vans

Figure 10-1 shows that the months of October, November, December and January accounted for most of the collisions for light trucks



Crash types in collisions involving light trucks

By collision type, most collisions involving light trucks were with other moving motor vehicles. In light-truck collisions involving overturning, 1.3 percent resulted in at least one fatality (Table 10-2).

Table 10-2: First harmful event in collisions involving light trucks
By severity - 1996

type of collision	fatal	injury	ppty dmg only	total collisions	pct fatal
Clsn w/other moving motor veh	168	18,073	32,537	50,778	0.3%
Total single-moving-vehicle clsns	158	9,676	10,540	20,374	0.8%
Collision with fixed/other object	78	2,722	4,341	7,141	1.1%
Vehicle-bicycle	8	4,554	12	4,574	0.2%
Collision with parked vehicle	3	551	3,994	4,548	0.1%
Overturning	37	1,234	1,476	2,747	1.3%
Vehicle-animal	1	75	590	666	0.2%
Vehicle-pedestrian	28	507	1	536	5.2%
Other non-collision	0	26	117	143	0.0%
Vehicle-train	3	7	9	19	15.8%
Total	326	27,749	43,077	91,526	0.4%

Source: WSP

*Pickups, panel trucks, delivery trucks/vans, passenger vans <10,000 lbs.
Includes only first three vehicles involved in each collision.

X. Light Trucks and Vans

Exceeding legal or safe speed was the most frequent driver violation for drivers of light trucks, followed by failure to yield the right of way and following too closely. Driving while under the influence was the leading violation in fatal crashes (Table 10-3).

Defective brakes and defective tires were the two leading vehicle defects in light truck collisions (Table 10-4).

Table 10-3: Violations of light truck drivers in collisions *
By severity of collision - 1996

	fatal	injury	ppty dmg only	total violations	pct fatal
Exceeding legal or safe speed	120	7,173	8,508	15,801	0.8%
Failure to yield right of way	35	5,049	8,329	13,413	0.3%
Following too closely	8	5,110	5,280	10,398	0.1%
Driver inattention	28	2,905	5,173	8,106	0.3%
Driving under influence-alcohol/drugs	137	2,265	1,649	4,051	3.4%
Disregarding traffic signal/sign	35	2,010	2,187	4,232	0.8%
Improper turning (inc "U" turn)	6	447	1,633	2,086	0.3%
Operating defective equipment	13	641	1,067	1,721	0.8%
Crossing over the center line	71	770	690	1,531	4.6%
Improper backing	0	90	1,229	1,319	0.0%
Improper passing	8	379	769	1,156	0.7%
Apparently asleep	11	402	298	711	1.5%
All other circumstances +	7	369	795	1,171	0.6%
Total	479	27,610	37,607	65,696	0.7%

Source: WSP

*Pickups, panel trucks, delivery trucks/vans, passenger vans <10,000 lbs.

+Includes fail to signal, impr signal, impr parking, fail to dim headlights.

Table 10-4: Defects of light trucks in collisions *
By collision severity - 1996

	fatal	injury	ppty dmg only	total
Defective brakes	4	307	362	673
Worn or smooth tires	10	233	239	482
Puncture or blowout	1	52	92	145
Defective rear lights	1	54	81	136
Defective steering	0	37	62	99
Power failure	2	31	53	86
Other lights/reflectors insufficient	0	19	19	38
Defective headlights	1	18	19	38
Other defects	8	320	698	1,026
Total	27	1,071	1,625	2,723

Source: WSP

*Pickups, panel trucks, delivery trucks/vans, passenger vans <10,000 lbs.

X. Light Trucks and Vans

Table 10-5: Collisions involving light trucks *
By county - 1996

county	fatal	injury	ppty dmg only	light truck collisions	% of all collisions**
Adams	4	100	146	250	49.2%
Asotin	0	49	112	161	59.6%
Benton	9	500	1,007	1,516	54.6%
Chelan	5	340	627	972	62.5%
Clallam	5	219	401	625	54.7%
Clark	14	1,470	1,889	3,373	53.0%
Columbia	0	17	41	58	47.5%
Cowlitz	7	490	872	1,369	53.6%
Douglas	4	122	200	326	58.6%
Ferry	3	38	64	105	62.1%
Franklin	6	184	387	577	58.0%
Garfield	0	8	26	34	47.2%
Grant	17	294	513	824	54.0%
Grays Harbor	14	319	582	915	56.2%
Island	6	174	253	433	50.7%
Jefferson	5	84	159	248	52.1%
King	50	9,454	14,076	23,580	47.2%
Kitsap	8	880	1,346	2,234	51.8%
Kittitas	14	212	479	705	50.6%
Klickitat	2	78	142	222	51.4%
Lewis	4	390	681	1,075	53.1%
Lincoln	3	49	82	134	51.3%
Mason	3	244	300	547	53.1%
Okanogan	2	171	294	467	59.2%
Pacific	2	77	152	231	51.3%
Pend Oreille	1	38	81	120	56.3%
Pierce	39	3,487	4,484	8,010	50.4%
San Juan	0	30	31	61	49.2%
Skagit	7	442	725	1,174	50.9%
Skamania	0	36	65	101	58.4%
Snohomish	20	2,732	3,877	6,629	52.9%
Spokane	19	2,223	3,642	5,884	54.8%
Stevens	4	131	234	369	59.1%
Thurston	13	970	1,463	2,446	51.1%
Wahkiakum	0	16	22	38	62.3%
Walla Walla	4	182	409	595	51.0%
Whatcom	6	632	1,146	1,784	51.3%
Whitman	0	102	304	406	49.0%
Yakima	28	936	1,831	2,795	54.6%
Total	328	27,920	43,145	71,393	50.9%

Source: WSP

*Pickups, panel/delivery trucks/vans, passenger vans <10,000 lbs.

**Percentage of all collisions which involved light trucks.



XI. Pupil Transportation

During the 1995-1996 school year, there were 419 school bus collisions reported in which 283 persons were injured. Of the injured, there were 120 pupils, 29 school bus drivers, and 14 other occupants of school buses. No school bus occupants have been killed during the last five school years. The eight fatalities during the last five years were pedestrians, bicyclists or occupants of other vehicles. Four school bus occupants received serious injuries during the 1995-1996 school year and 159 occupants received less serious injuries (Table 11-1).

Table 11-1: Collisions involving school buses
Five-year comparison

Severity, exposure & rates	95-96	94-95	93-94	92-93	91-92	95-96 chg prev 4-yr	
						from prev year +	avg yearly change +
Total collisions	419	468	366	402	348	-10.5%	11.5%
Fatal collisions	5	1	0	2	0	-----	-----
Injury collisions	122	137	124	108	92	-10.9%	14.2%
Property damage collisions	292	330	242	292	256	-11.5%	11.1%
Total persons killed	5	1	0	2	0	-----	-----
Pupils	0	0	0	0	0	-----	-----
School bus drivers	0	0	0	0	0	-----	-----
Other occupants of school bus	0	0	0	0	0	-----	-----
Pedestrian/bicyclist	1	1	0	1	0	-----	-----
Occupants of other vehicles involved	4	0	0	1	0	-----	-----
Total persons injured	283	290	262	237	192	-2.4%	14.9%
Pupils	120	132	130	104	85	-9.1%	16.3%
School bus drivers	29	24	23	26	20	20.8%	7.6%
Other occupants of school bus	14	2	1	2	2	-----	-----
Pedestrian/bicyclist	5	6	12	4	3	-----	-----
Occupants of other vehicles involved	115	126	96	101	82	-8.7%	16.5%
Injuries to school bus occupants *	163	158	154	132	107	3.2%	14.2%
Serious injuries	4	4	0	5	0	-----	-----
Evident injuries	9	32	9	34	16	-----	-----
Possible injuries	150	122	145	93	91	23.0%	14.1%
School bus registration@	8,234	7,947	7,672	7,534	7,349	3.6%	2.6%
Collision rate **	50.9	58.9	47.7	53.4	47.4	-13.6%	8.5%
Miles traveled (in thousands)@	92,000.0	90,983.6	90,302.2	87,691.4	87,972.7	1.1%	1.1%
Collision rate by mileage ***	0.46	0.51	0.41	0.46	0.40	-11.5%	10.4%

* Includes school bus passengers and driver

Source: WSP, SPI

** Collisions per 1,000 registered school buses.

*** Collisions per 100,000 miles traveled.

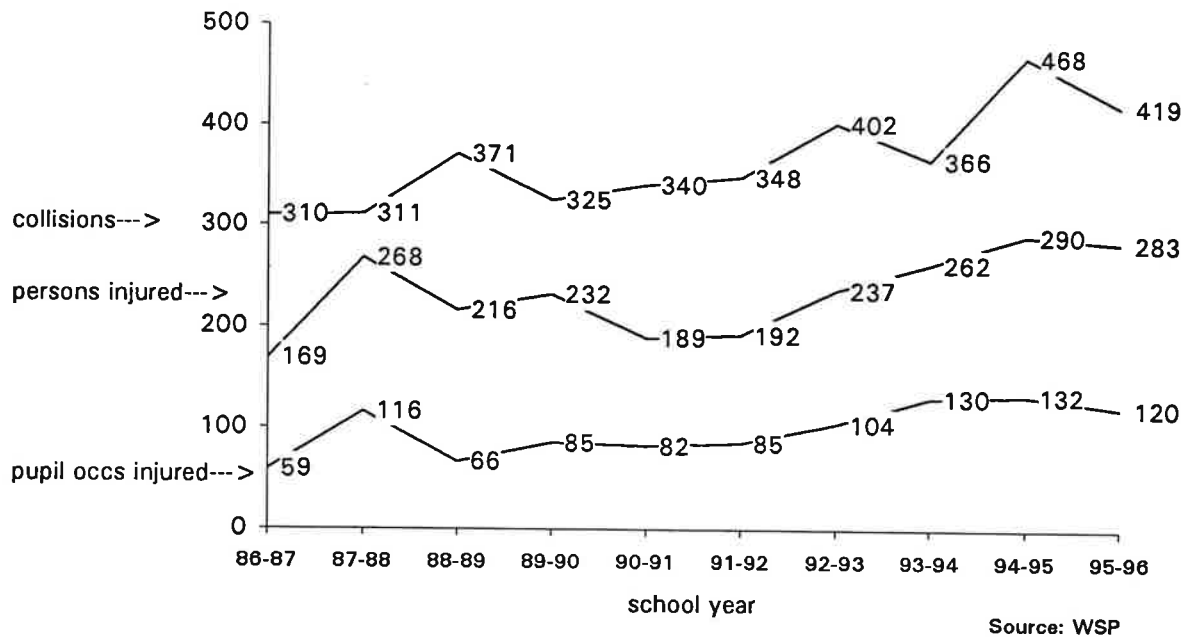
@ Registration and mileage are preliminary for 95-96.

+ Calculations not performed for smaller numbers because of statistical unreliability.

XI. Pupil Transportation

Figure 10-1 displays an eleven-year trend of school bus collisions, persons injured and pupil occupants injured. There has been an overall upward trend in these three categories.

**Figure 11-1:
School bus collisions and injuries
Ten-year comparison**





Glossary

Collisions

- Collision** A crash involving one or more motor vehicles on a public roadway which results in personal injury or death, or damage to any one person's property to an apparent extent of \$500 or more.
- Fatal collision** A traffic collision where one or more persons are killed or die within 30 days as a result of the collision.
- Investigated collision** A collision that has been investigated by a law enforcement officer. Data relating to alcohol involvement, contributing circumstances (driver violations), vehicle defects and safety-restraint use are collected from investigated collisions.

Injury classes

- Fatal injury / fatality** A motor-vehicle, traffic-related injury that results in death within 30 days of the collision.
- Serious injury** An injury other than fatal that prevents the injured person from continuing normal activities; an "incapacitating" injury.
- Evident injury** Any injury not incapacitating but evident to others at the scene.
- Possible injury** Any injury reported or claimed other than the above; includes momentary unconsciousness, limping, complaint of pain, nausea or hysteria.

Death/injury rates

- Vehicle miles traveled** Traffic deaths/injuries per 100 million vehicle miles of travel (travel is estimated by WSDOT).
- Registered vehicles** Traffic deaths/injuries/collisions per 10,000 registered vehicles; 1,000 for motorcycles and school buses.
- Population** Traffic deaths/injuries/collisions per 10,000 population.
- Licensed drivers** Traffic deaths/injuries/collisions per 10,000 licensed drivers.

Calculation of economic loss

The calculable costs of motor vehicle collisions include wage loss, medical expense, legal and insurance administration costs, and property damage. Costs are per person for deaths and injuries and per crash for property damage only collisions. The National Safety Council estimated average 1996 costs are as follows:

Death	\$790,000
Serious injury	\$ 41,200
Evident injury	\$ 13,900
Possible injury	\$ 7,900
Property damage only	\$ 6,000

Persons Involved in Collisions (Status)

Occupant	Any person who is within or upon a motor vehicle. Occupants include drivers and passengers.
Driver	An occupant who is in actual physical control of a motor vehicle in transport.
Passenger	Any occupant of a motor vehicle other than the driver.
Bicyclist	Any rider of a bicycle in transport. Bicycles include bicycles and tricycles. Motor-driven cycles are not included.
Pedestrian	Any person who is not an occupant or a bicyclist.

Location

Urban area	Incorporated areas with population of 2,500 or greater.
Rural area	Unincorporated or incorporated areas with population less than 2,500.
Roadway	Any public roadway or highway used for motor vehicle travel.

Alcohol Involvement

Drinking driver collision

A collision in which one or more drivers had some level of alcohol in their system; includes DUI.

DUI / driving under the influence

Driving or in physical control of a motor vehicle while under the influence of alcohol (BAC of .10 and over) and/or when the investigating officer determines that the driver's driving ability was impaired by alcohol.

HBD / had been drinking

The investigating officer has determined that the driver had consumed some amount of alcohol and/or BAC test results greater than zero.

Vehicles

Motorcycle	Does not include mopeds, motorized bicycles, or motorized wheelchairs.
Heavy truck	10,000 pounds or more gross weight.
Light truck	Under 10,000 pounds gross weight; includes pickup trucks and passenger vans.

Milestones in Washington Traffic Safety

- 1905:** Car owners required to register vehicles.
- 1921:** Driver's license required.
- 1933** Driving test required for driver's license.
- 1959** Director of DOL given the power to suspend or revoke driver's licenses.
- 1963** Driver Education Act requiring new drivers under 18 to take a driver class.
- 1967:** Creation of Washington Traffic Safety Commission.
Mandatory motorcycle helmet law.
Minimum driver's license age raised from 16 to 18 (16 with driver education).
- 1968:** Implied consent law.
- 1971:** Habitual traffic offender law.
- 1973:** Speed limit reduced to 55 mph.
- 1975:** Negligent homicide statute.
Deferred prosecution statute.
- 1977** Motorcycle helmet law repealed.
- 1979:** DUI law modified to make .10% BAC illegal per se.
Mandatory day in jail for first DUI offense.
- 1982:** Alcohol assessment and education/treatment required for DUI.
- 1983:** Vehicular homicide and assault statute.
Open container law for alcoholic beverages.
- 1984** Mandatory child restraint law for children less than age 1 (effective 1/1/84).
- 1985:** Deferred prosecution procedures made more stringent.
- 1986:** Mandatory seat belt law.
- 1987:** Speed limit increased to 65 mph (60 mph for trucks) on rural interstate highways.
Motorcycle helmets required for persons under 18 years of age.
Children under 5 years of age prohibited from riding on motorcycles.
- 1989:** DUI youth (under 19) lose license for 90 days or until age 19, whichever is longer.
- 1990:** Mandatory insurance required.
Mandatory motorcycle helmet law for all ages.
- 1991:** Mandatory installation of crossing arms on school buses.
- 1992:** DUI victim panels authorized as a sentencing option.
Children less than age 2 required to ride in child safety seats (effective 7/1/93).
- 1993:** Enhancement of pedestrian crosswalk law.
Vehicle confiscation for second DUI conviction.
- 1994:** Omnibus Drunk Driving Act of 1994 - stiffer penalties for higher BAC/repeat offenses and zero tolerance (.02% BAC for drivers under age 21).
Child safety seats required for children less than age 3 (effective 6/9/94).
Primary seatbelt enforcement for children less than age 10.
- 1995:** Law enforcement authorized to take blood sample when driver is suspected of DUI-drugs.

Traffic Safety Data Resource Material

Accident Facts

National Safety Council
Statistics Department
444 N. Michigan Ave., Chicago, IL 60611
- Includes a section on motor vehicle traffic collisions.

Annual Traffic Report

Washington State Department of Transportation
Planning, Research and Public Transportation Programs.
Transportation Building, P.O. Box 47372, Olympia, WA 98504-7372
- Contains traffic volumes on state highways.

Caseloads of the Courts of Limited Jurisdiction of Washington

Office of the Administrator for the Courts
1206 S. Quince St., P.O. Box 41170, Olympia, WA 98504-1170
- Includes DUI citation and disposition information.

Crime Trends in Washington Jurisdictions

Washington Association of Sheriffs and Police Chiefs (WASPC)
P.O. Box 826, Olympia, WA 98507
- Includes statistics on DUI arrests.

Fatal Accident Reporting System

National Highway Traffic Safety Administration (NHTSA)
US Department of Transportation (USDOT).
National Transportation Systems Center, DTS-44
Kendall Square, Cambridge, MA 02142
- Statistics on nationwide traffic fatalities.

Population Trends for Washington State

Office of Financial Management (OFM), Forecasting Division.
300 Insurance Building, P.O. Box 43113, Olympia, WA 98504-3113

Washington State Highway Accident Report

Washington State Department of Transportation
Planning, Research and Public Transportation Division
Transportation Building, P.O. Box 47372
Olympia, WA 98504-7372
- Accident rates for state highway sections.

Washington State Reportable Motor Vehicle Traffic Collision Statistics

Washington State Patrol
Accident Records Section
4242 Martin Way, P.O. Box 42628
Olympia, WA 98504-2628

Documents listed above are updated annually.

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Values & Traffic Safety; Social & Economic Sciences Research Center, WSU; October, 1985

Identification of High Risk Traffic Accident Populations in Washington; Thomas Galdabini Marketing Research & Planning; December 1987, July 1988.

Washington State's Second Offender Laws for Driving While Intoxicated: Results of Two (Three, Four and Six) Years of Evaluation; Jeanne Kleyn, Gina Beretta, Brent L. Baxter, Alcohol and Drug Institute, UW; February 1988, May 1989, May 1990, August 1992.

An Examination of Factors Associated with the Conviction of Offenders for DUI; Elise Lake, Jeanne Kleyn; Alcohol and Drug Institute, UW; March 1988.

A Report on Driving While Intoxicated Among Asian Americans, African Americans, Hispanic Americans, & Native Americans; Center for Study & Teaching of At-Risk Students (C-STARS); October 1990.

Safety Restraint Usage and Survivability in Fatal Motor Vehicle Crashes; William Cooper, Philip Salzberg, Ph.D.; April 1991.

Motorcycle Helmet Use, Injury Outcome, and Hospital Costs: A Population-Based Study of Motorcycle Crash Victims; Philip Salzberg, Ph.D.; Frederick Rivara, MD, MPH; Jefferson Rowland, MS; June 1991.

Safety Restraint Usage Rates in Washington, 1991; Philip Salzberg, Ph.D.; Richard Thurston; October 1991.

Uninsured Driving in Washington State: A Report to the Legislature on Substitute Senate Bill 5499 (1989 Legislative Session); Philip Salzberg, Ph.D.; November 1991.

Vehicle Registration Cancellation for Driving with a Suspended Drivers License, An Evaluation of Substitute House Bill 196 (1987 Legislative Session); Philip Salzberg, Ph.D.; November 1991.

Deferred Prosecution of DUI Cases in Washington State: An Evaluation of Offender Characteristics and Recidivism; Brent Baxter, Ph.D.; Philip Salzberg, Ph.D.; Jeanne Kleyn, Ph.D.; February 1992.

Safety Restraint and Motorcycle Helmet Usage Rates in Washington State; Philip Salzberg, Ph.D.; Richard Thurston; August 1992, December 1993, updated December 1994, July 1995, July 1996.

Public Policy Preferences on Traffic Safety Issues: Results of a Statewide Survey (1992-1993); Bill Schreckhise, Ruth Self, Jami Anderson, Nicholas Lovrich; April 1993.

The Effectiveness of Deferred Prosecution in Reducing DUI Recidivism: An Update; Brent L. Baxter, Ph.D.; Philip M. Salzberg, Ph.D.; Jeanne E. Kleyn, Ph.D.; December 1993.

High-BAC DUI Arrestees: Distinguishing Characteristics and Risk of Recidivism and Crashes; Brent L. Baxter, Ph.D.; October 1994.

Drug and Alcohol Use in Fatally Injured Drivers in Washington State; Barry K. Logan Ph.D., Eugene W. Schwilke; February 1995.

Alcohol-Related Fatal Collisions in Washington State: Driver and Crash Characteristics; William Cooper, Philip Salzberg, Ph.D.; March 1995.

Observational Survey of Driver Compliance with the Pedestrian Crosswalk Law, Charlie Saibel; Philip Salzberg, Ph.D.; Richard Thurston; March 1995, October 1995, February 1996.

Observational Survey of Safety Restraint and Car Safety Seat Use for Children; Charlie Saibel; Philip Salzberg, Ph.D.; Richard Thurston; June 1995, September 1995.

Bicycle Helmet Survey; Charlie Saibel; Philip Salzberg, Ph.D.; Richard Thurston; August 1995, October 1995.

Appendix

Motorcycle Helmet Use and Injury Outcome and Hospitalization Costs from Crashes in Washington State; Jefferson Rowland, MS, Frederick Rivara, MD, MPH, Phillip Salzberg, PhD, Robert Soderberg, Ronald Maier, MD, Thomas Koepsell, MD, MPH; American Journal of Public Health, January 1996, Vol. 86, No. 1.

Public Opinion Survey on Traffic Safety Issues; Philip M. Salzberg, Ph.D.; WTSC; February 1996

The Effect of Seatbelt Use on Injury Severity in Motor Vehicle Collisions: A Paired-Comparison Study; Charlie Saibel; Philip Salzberg, Ph.D.; November 1996.



The Counties of Washington State