

**REPORT TO THE TWENTY-SEVENTH LEGISLATURE
STATE OF HAWAII
2011**

**PURSUANT TO SECTION 12 OF ACT 72, SESSION LAWS OF HAWAII 2005,
RELATING TO DRIVER LICENSING, REQUIRING THE DEPARTMENT OF
TRANSPORTATION AND THE DEPARTMENT OF HEALTH TO DETERMINE THE
EFFECTIVENESS OF THE GRADUATED PROVISIONAL LICENSING PROGRAM IN
REDUCING TRAFFIC FATALITIES AND ACCIDENTS IN THE STATE.**

**PREPARED BY:
STATE DEPARTMENT OF HEALTH
STATE DEPARTMENT OF TRANSPORTATION
December 2010**

Summary:

The enactment of Act 72, Hawaii's graduated licensing (GDL) program in 2005 was associated with significant decreases in the numbers of 16 and 17 year-olds with driver's licenses from 2006 to 2008. There was also a significant decrease in the proportion of automobile drivers involved in crashes who were 16 years-old, from 1.5% during pre-GDL periods to 1.2% in 2008. This small change represents an estimated reduction of 55 fewer 16 year-old drivers involved in crashes each year. The decrease was statistically significant only among drivers in Hawaii and Kauai counties. The proportion of crashes involving 17 year-old drivers also decreased, although to a statistically significant degree only in 2007. Reductions in teen-aged automobile drivers involved in night time crashes and crashes involving the transport of multiple minor-aged passengers were also described. The GDL program was also associated with a significantly lower proportion of 16 and 17 year-old driver involvement in fatal crashes.

Introduction:

Hawaii's graduated licensing (GDL) program, as stipulated by Act 72, took effect on January 9, 2006. GDL changed both the license application process for 16 and 17 year-olds, and restricted the times and conditions under which they can drive. This evaluation examines trends in the number and proportion of crashes involving teen-aged drivers, using data from pre- and post-GDL time periods.

Methodology:

Prior to GDL, an applicant could obtain a full driver's license at 15 (before 2001) or 16 years of age (2001 and later). GDL instituted a phased process to obtaining a license, so that a resident younger than 18 years of age must obtain in sequence: an instructional permit, a provisional license, and finally a full license. Applicants must be at least 15 years and 6 months of age to receive a permit, at least 16 years old for the provisional license, and at least 17 years old to receive a full driver's license. GDL further prohibits those with a provisional license from transporting more than one other person below age 18 at any time, and from driving between 11:00pm and 5:00am unless accompanied by the driver's parent or guardian. (There are some exemptions to the latter restriction, based on documented need to drive to work or school-authorized activities.)

This report examines annual trends in the number and proportion of crashes involving teen-aged drivers over the 6-year period of 2003 to 2008. The number of all crashes was derived from the Motor Vehicle Accident Report (MVAR) form which is completed at crash scenes by police officers in all counties and submitted to the Hawaii State Department of Transportation (DOT). Table 1 shows the annual number of crashes documented by the MVAR system for each county. (Note: The totals in Table 1 do not reflect the number of crashes ultimately included in this evaluation, due to exclusions for type of crash and missing data.) Data from the Fatal Analysis Reporting System (FARS) of the National Highway Traffic Safety Administration was also used to describe traffic crashes involving a fatality. Data on the annual number of licenses was provided by the Hawaii Motor Vehicle & Licensing Division, and data on traffic citations was provided by the Hawaii State Judiciary.

Table 1. Annual number of traffic crashes documented by MVAR, by county, 2003-2008.

County	2003	2004	2005	2006	2007	2008
Hawaii	2350	2516	2173	2400	2152	1716
Honolulu	7024	6930	6817	6375	5823	5064
Kauai	767	730	650	554	605	567
Maui	1145	825	950	930	953	906
state	11286	11001	10590	10259	9533	8253

There are several limitations to consider in using MVAR data for evaluation. First, there is no place to note a driver's possession of an instructional permit, so this evaluation will only examine the crash rates of drivers aged 16 years and older. Secondly, MVAR is unable to distinguish possession of a provisional license from a full license, so this evaluation cannot assess compliance of those terms of GDL. (This information will become available through MVAR, starting in 2009.) Thirdly, while MVAR collects age and demographic information on most of the occupants involved in a crash, there is no information on their relationship to the driver. MVAR data therefore cannot establish whether a passenger was a parent or guardian of a teen-aged driver (as stipulated by GDL under certain conditions) or some unrelated person. This evaluation therefore considers the presence of any passenger aged 32 or older in a car operated by a 16 or 17 year-old to be a proxy for a parent or guardian. This assumption was required to determine compliance with the GDL stipulations of a parent or guardian present in the transport of more than one passenger under 18 years of age, or a provisional licensee operating between 11:00 pm and 5:00 am. Finally, data relevant to this evaluation is sometimes missing from MVAR. Table 2 shows the magnitude of missing data for some MVAR elements needed for this evaluation. The time of the crash was missing for 2% of the crashes that involved at least one automobile. Age was missing for about 8% of the drivers of automobiles, and driver gender was missing for 5%. Missing data will be excluded from analyses in this report, since there was no trend over time in the proportion of records with missing information.

Table 2. Summary of missing data from key elements of MVAR, by year.

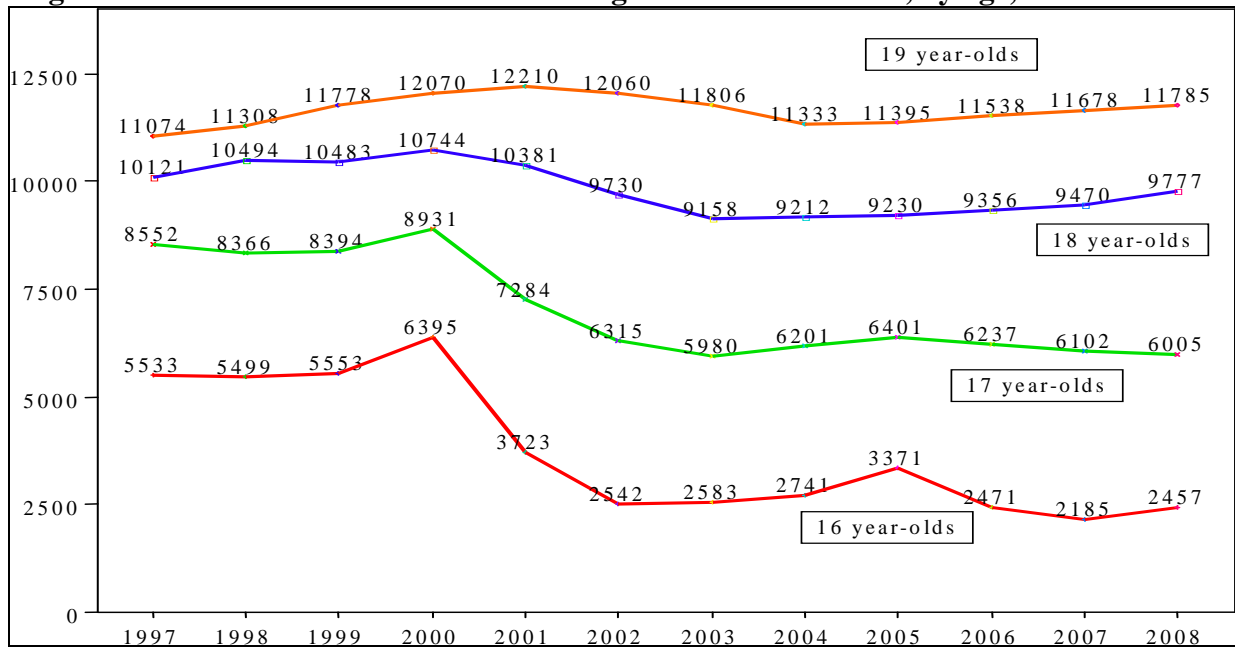
	2003	2004	2005	2006	2007	2008	6-yr. ave
Crashes involving at least one automobile*							
number of crashes	10845	10524	10107	9800	9016	7726	9670
missing time of crash	2.2% (235)	2.6% (277)	1.5% (156)	2.0% (195)	1.7% (153)	1.6% (127)	2.0% (191)
Drivers of automobiles* involved in crashes							
number of drivers	17548	17092	16458	15758	14339	12138	15556
missing driver age	8.2% (1442)	8.1% (1391)	7.8% (1290)	7.8% (1235)	7.6% (1091)	7.4% (903)	7.8% (199)
missing driver gender	4.9% (858)	4.8% (830)	5.1% (841)	5.3% (834)	5.2% (744)	4.3% (526)	5.0% (772)

*Automobile includes passenger cars, pick-up trucks, vans, and sport utility vehicles. Excludes crashes involving only motorcycles, mopeds, buses, and other specialized vehicles.

Results:

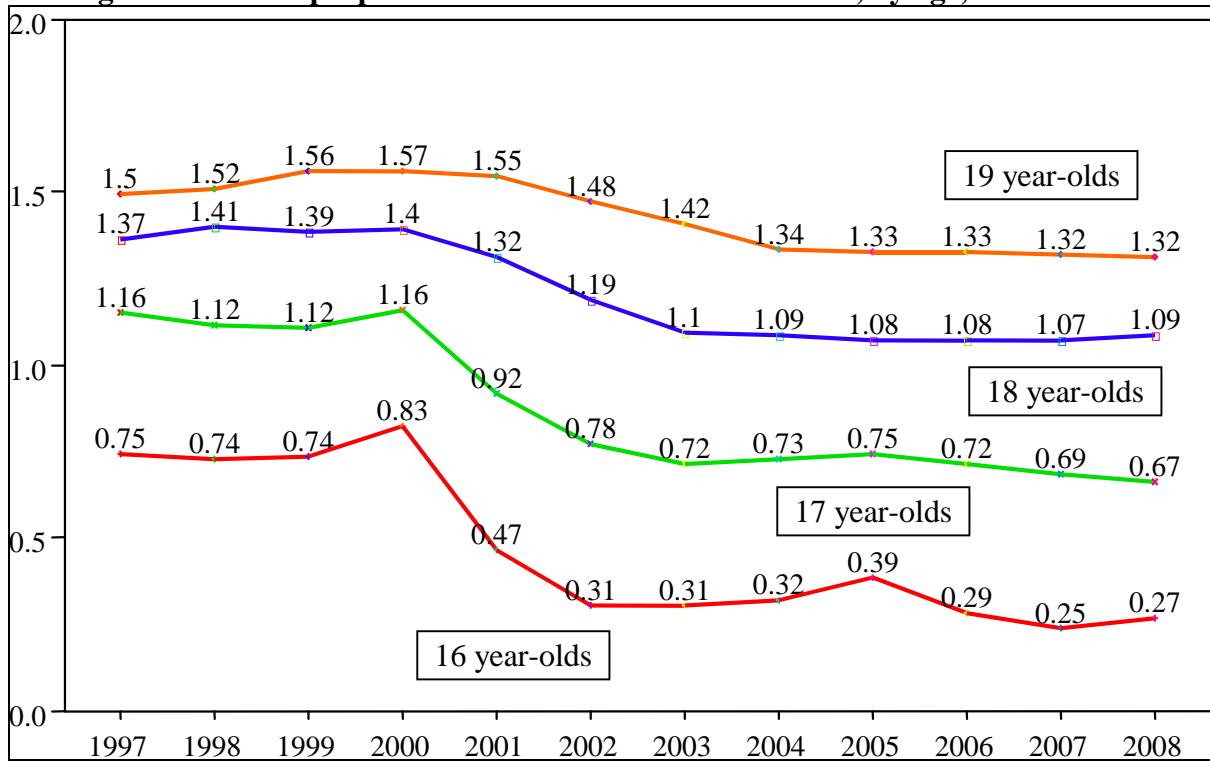
Figure 1 shows the number of 16 year-old licensees has decreased twice in recent years: first in 2001, after the implementation of Act 175 which required driver license applicants under age 18 to complete a certified driver education program and a behind-the-wheel driver training course, and secondly in 2006 after the implementation of GDL. (Note the increases in licenses in 2000 and 2005, possibly in anticipation of these two programs.) There was also a corresponding decrease in the number of 17 year-old licensees from 2005 to 2008, although the decrease in 2006 was much less than for 16 year-olds. The number of 18 and 19 year-old licensees had stabilized a few years after Act 175, and gradually increased over the 2003 to 2008 period. .

Figure 1. Annual number of licensed teen-aged drivers in Hawaii, by age, 1997-2008.



Similar trends were seen in the proportion of licensed drivers who were 16 or 17 years of age (Figure 2): a sharp decrease in 2001 after Act 175, followed by stable levels from 2002 to 2004, and a decrease in 2006 and later, particularly among 16 year-olds. These patterns were consistent across each of the four counties. The proportion of licenses to 16 year-olds in the post-GDL period decreased significantly in all counties when compared to the proportion averaged over the 3-year period of 2003 to 2005. For the state overall, the proportion of licensees who were 16 years old decreased 31% from 2005 (0.39%) to 2008 (0.27%). Figure 1 shows this translated into an average of 1000 fewer 16 year-olds with licenses in the post-GDL period, compared to 2005. The decrease in the proportion of 17 year-old licensees in the state between the two periods was also statistically significant for all counties, with the exception of Maui County (0.74% during pre-GDL vs. 0.76% during post-GDL).

Figure 2. Annual proportion of licensed drivers in Hawaii, by age, 1997-2008.



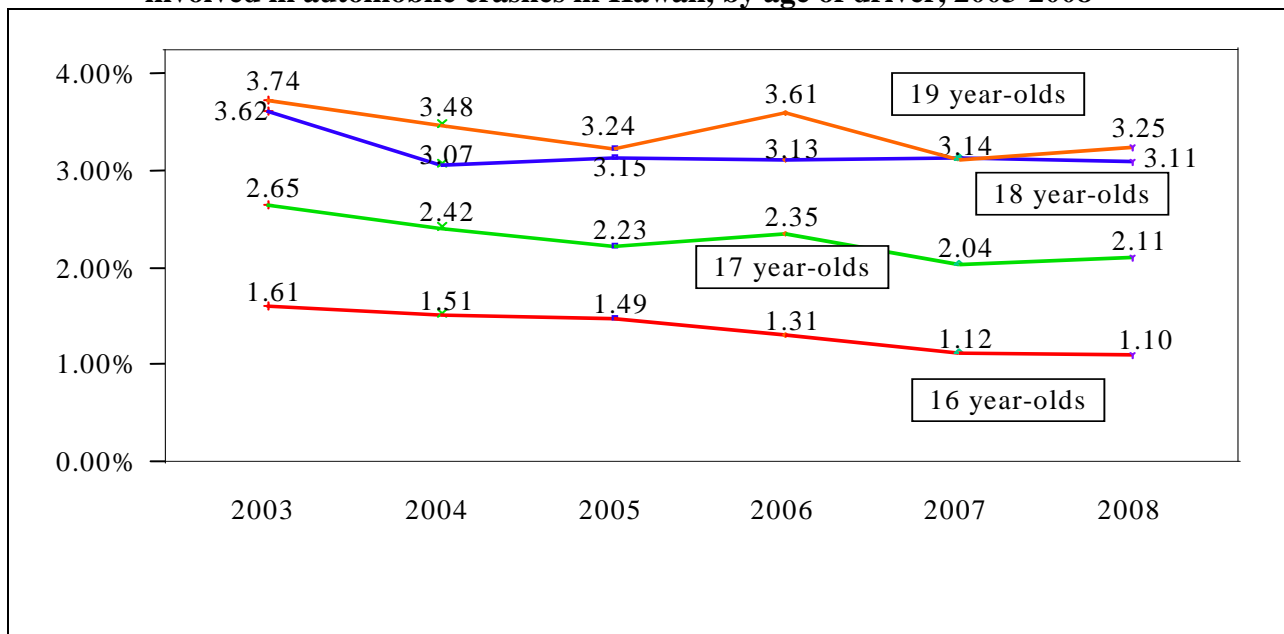
There was a statistically significant decrease in the proportion of automobile crashes that involved a 16 year-old driver during the post-GDL period (years 2007, 2008 or the post-GDL average), when compared to the average proportion over the 2003 to 2005 period (Table 3 and Figure 3). In the post-GDL period, only 1.19% of drivers involved in crashes were 16 year-olds, an 23% decrease from 1.54% over the 2003 to 2005 period. Using the 2003 to 2005 annual average of 241 drivers of this age, this decrease would translate into 55 fewer 16 year-old drivers who were involved in crashes in the state each year in the post-GDL period. There was also an 11% decrease in the proportion of 17 year-old drivers, although this represented a significant reduction only in 2007. The decrease among 17-year-old drivers would translate into 41 fewer drivers involved in crashes in the post-GDL period. There were few other significant differences for drivers of other ages.

Table 3. Annual number and percent of drivers involved in automobile crashes in Hawaii, by age of driver, 2003-2008.

Age	Quantity	2003	2004	2005	2003-2005 ave	2006	2007	2008	2006-2008 ave
16y	number of drivers	259	237	226	241	190	149	124	154
	% of all drivers	1.61	1.51	1.49	1.54	1.31	1.12*	1.10*	1.19*
17y	number of drivers	427	380	339	382	342	270	237	283
	% of all drivers	2.65	2.42	2.23	2.44	2.35	2.04*	2.11	2.18
18y	number of drivers	583	482	478	514	455	416	349	407
	% of all drivers	3.62	3.07	3.15	3.28	3.13	3.14	3.11	3.13
19y	number of drivers	603	547	491	547	525	415	365	435
	% of all drivers	3.74	3.48	3.24	3.49	3.61	3.13	3.25	3.35
20-29y	number of drivers	4299	4115	4112	4175	3905	3478	3009	3464
	% of all drivers	26.69	26.21	27.11	26.67	26.89	26.25	26.78	26.64
30-44y	number of drivers	4583	4468	4231	4427	3978	3710	3029	3572
	% of all drivers	28.46	28.46	27.89	28.27	27.39	28.00	26.96*	27.48
45-64y	number of drivers	4091	4167	4115	4124	3960	3719	3154	3611
	% of all drivers	25.40	26.54	27.13	26.34	27.27	28.07*	28.07*	27.77*
65-74y	number of drivers	737	748	675	720	671	601	567	613
	% of all drivers	4.58	4.76	4.45	4.60	4.62	4.54	5.05	4.71
75+y	number of drivers	524	557	501	527	497	490	401	463
	% of all drivers	3.25	3.55	3.30	3.37	3.42	3.70	3.57	3.56

*Denotes statistically significant difference in proportion, compared to the average proportion for the 2003-2005 period.

Figure 3. Annual proportion of teen-aged drivers involved in automobile crashes in Hawaii, by age of driver, 2003-2008



County-specific analyses showed the significant decrease in the proportion of 16 year-old drivers was evident only in Hawaii and Kauai counties (Tables 4 and 6, respectively). There was little change in this proportion among drivers in Maui (Table 7) and especially Honolulu counties (Table 5). These relationships are summarized graphically in Figure 4. Apart from 16 year-olds, county-specific analyses were consistent with those for the state as a whole, in that there were few significant changes in the distribution of driver age in the post-GDL period, compared to the 2003 to 2005 period.

Table 4. Annual number and percent of drivers involved in automobile crashes in Hawaii County, by age of driver, 2003-2008.

Age	Quantity	2003	2004	2005	2003-2005 ave	2006	2007	2008	2006-2008 ave
16y	number of drivers	90	82	66	79	56	48	35	46
	% of all drivers	2.55	2.19	2.05	2.27	1.61*	1.55*	1.52*	1.57*
17y	number of drivers	119	115	95	110	102	73	69	81
	% of all drivers	3.37	3.07	2.95	3.13	2.93	2.36	3.00	2.75
18y	number of drivers	147	132	142	140	143	112	87	114
	% of all drivers	4.17	3.52	4.41	4.01	4.11	3.62	3.78	3.85
19y	number of drivers	137	159	129	142	148	95	85	109
	% of all drivers	3.88	4.24	4.00	4.05	4.25	3.07*	3.69	3.69
20-29y	number of drivers	861	933	812	869	841	759	593	731
	% of all drivers	24.40	24.89	25.19	24.82	24.15	24.55	25.75	24.70
30-44y	number of drivers	942	959	803	901	862	777	589	743
	% of all drivers	26.70	25.59	24.91	25.75	24.76	25.13	25.58	25.10
45-64y	number of drivers	922	1041	929	964	1047	972	655	891
	% of all drivers	26.13	27.77	28.82	27.55	30.07*	31.44*	28.44	30.12*
65-74y	number of drivers	168	184	145	166	160	153	110	141
	% of all drivers	4.76	4.91	4.50	4.73	4.60	4.95	4.78	4.77
75+y	number of drivers	142	143	102	129	123	103	80	102
	% of all drivers	4.02	3.82	3.16	3.69	3.53	3.33	3.47	3.45

*Denotes statistically significant difference in proportion, compared to the average proportion for the 2003-2005 period.

Table 5. Annual number and percent of drivers involved in automobile crashes in Honolulu County, by age of driver, 2003-2008.

Age	Quantity	2003	2004	2005	2003-2005 ave	2006	2007	2008	2006-2008 ave
16y	number of drivers	106	98	97	100	92	69	64	75
	% of all drivers	1.08	1.01	1.01	1.03	1.04	0.88	0.94	0.96
17y	number of drivers	225	201	178	201	170	138	106	138
	% of all drivers	2.30	2.07	1.85	2.07	1.92	1.75	1.56*	1.76
18y	number of drivers	324	280	271	292	232	232	201	222
	% of all drivers	3.31	2.89	2.82	3.01	2.63	2.94	2.96	2.83
19y	number of drivers	356	320	303	326	307	246	218	257
	% of all drivers	3.64	3.30	3.15	3.36	3.48	3.12	3.21	3.28
20-29y	number of drivers	2843	2681	2743	2756	2539	2190	1921	2217
	% of all drivers	29.07	27.62	28.50	28.40	28.74	27.79	28.26	28.28
30-44y	number of drivers	2793	2858	2740	2797	2505	2272	1867	2215
	% of all drivers	28.56	29.45	28.47	28.83	28.36	28.83	27.46	28.26
45-64y	number of drivers	2389	2482	2533	2468	2256	2100	1822	2059
	% of all drivers	24.43	25.57	26.32	25.44	25.54	26.65	26.80*	26.27
65-74y	number of drivers	441	456	429	442	423	341	347	370
	% of all drivers	4.51	4.70	4.46	4.56	4.79	4.33	5.10	4.73
75+y	number of drivers	302	329	331	321	310	293	252	285
	% of all drivers	3.09	3.39	3.44	3.30	3.51	3.72	3.71	3.64

*Denotes statistically significant difference in proportion, compared to the average proportion for the 2003-2005 period.

Table 6. Annual number and percent of drivers involved in automobile crashes in Kauai County, by age of driver, 2003-2008.

Age	Quantity	2003	2004	2005	2003-2005 ave	2006	2007	2008	2006-2008 ave
16y	number of drivers	42	32	33	36	14	13	12	13
	% of all drivers	3.87	3.41	3.81	3.70	1.78*	1.48*	1.43*	1.56*
17y	number of drivers	35	41	26	34	30	21	30	27
	% of all drivers	3.23	4.37	3.00	3.53	3.81	2.40	3.57	3.23
18y	number of drivers	57	40	22	40	38	33	19	30
	% of all drivers	5.25	4.26	2.54	4.12	4.83	3.77	2.26*	3.59
19y	number of drivers	44	31	22	32	25	31	25	27
	% of all drivers	4.06	3.30	2.54	3.36	3.18	3.54	2.97	3.23
20-29y	number of drivers	226	198	209	211	181	204	189	191
	% of all drivers	20.83	21.11	24.11	21.90	23.00	23.29	22.47	22.92
30-44y	number of drivers	307	238	239	261	208	259	232	233
	% of all drivers	28.29	25.37	27.57	27.13	26.43	29.57	27.59	27.92
45-64y	number of drivers	290	270	241	267	235	227	249	237
	% of all drivers	26.73	28.78	27.80	27.72	29.86	25.91	29.61	28.39
65-74y	number of drivers	53	47	41	47	29	45	51	42
	% of all drivers	4.88	5.01	4.73	4.88	3.68	5.14	6.06	4.99
75+y	number of drivers	31	41	34	35	27	43	34	35
	% of all drivers	2.86	4.37	3.92	3.67	3.43	4.91	4.04	4.15

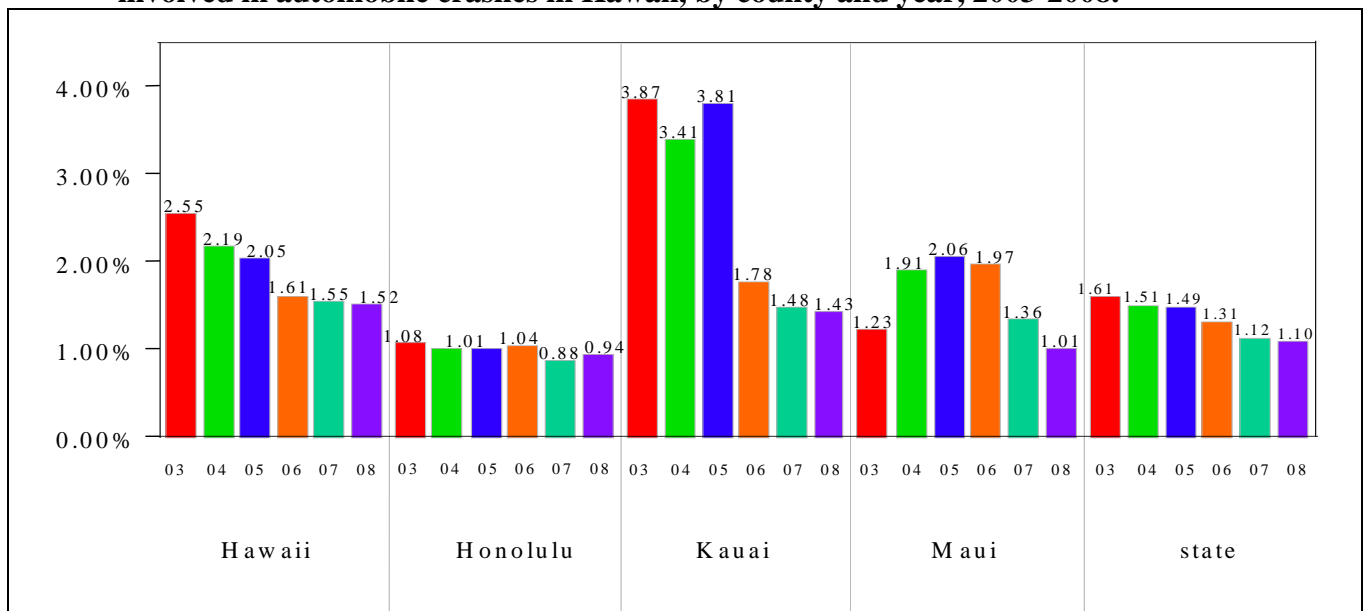
*Denotes statistically significant difference in proportion, compared to the average proportion for the 2003-2005 period.

Table 7. Annual number and percent of drivers involved in automobile crashes in Maui County, by age of driver, 2003-2008.

Age	Quantity	2003	2004	2005	2003-2005 ave	2006	2007	2008	2006-2008 ave
16y	number of drivers	21	25	30	25	28	19	13	20
	% of all drivers	1.23	1.91	2.06	1.70	1.97	1.36	1.01	1.46
17y	number of drivers	48	23	40	37	40	38	32	37
	% of all drivers	2.80	1.76	2.75	2.48	2.82	2.72	2.47	2.68
18y	number of drivers	55	30	43	43	42	39	42	41
	% of all drivers	3.21	2.29	2.96	2.86	2.96	2.79	3.25	2.99
19y	number of drivers	66	37	37	47	45	43	37	42
	% of all drivers	3.85	2.82	2.55	3.13	3.17	3.07	2.86	3.04
20-29y	number of drivers	369	303	348	340	344	325	306	325
	% of all drivers	21.53	23.13	23.95	22.78	24.23	23.23	23.67	23.71
30-44y	number of drivers	541	413	449	468	403	402	341	382
	% of all drivers	31.56	31.53	30.90	31.34	28.38	28.73	26.37*	27.87*
45-64y	number of drivers	490	374	412	425	422	420	428	423
	% of all drivers	28.59	28.55	28.36	28.50	29.72	30.02	33.10*	30.89
65-74y	number of drivers	75	61	60	65	59	62	59	60
	% of all drivers	4.38	4.66	4.13	4.38	4.15	4.43	4.56	4.38
75+y	number of drivers	49	44	34	42	37	51	35	41
	% of all drivers	2.86	3.36	2.34	2.84	2.61	3.65	2.71	2.99

*Denotes statistically significant difference in proportion, compared to the average proportion for the 2003-2005 period.

Figure 4. Proportion of 16 year-old drivers involved in automobile crashes in Hawaii, by county and year, 2003-2008.



An average of nineteen 16 year-old drivers and forty-six 17 year-old drivers were involved in crashes between 11:00pm and 5:00am without an adult passenger (ages 32 years and older) in the car during the post-GDL period (Table 8). The fifteen 16 year-olds comprised about 1.1% of all drivers who were involved in crashes during this time period (“night time crashes”), which was 45% lower than the proportion over the 2003 to 2005 period (2.0%). There was a significant change in that proportion only when considering all 16 year-old drivers in the state; the sample sizes may have been too small to detect significant changes within counties. Reductions in this proportion were noted for 16 year-old drivers in all counties except Maui. There were no statistically significant changes in the proportion of 17 year-old drivers who were involved in night time crashes, although reductions were noted for all counties except Maui.

Almost all (99%) of the teen drivers involved in nighttime crashes were not accompanied by an adult-aged (32 years old or older) passenger during either the pre-GDL (100%, or 1 of 292) or post-GDL periods (97%). Therefore the overall decreases described in Table 8 reflect a decrease in the frequency of 16 and 17 year-old drivers involved in crashes, with little influence of the presence or absence of adult passengers. Among 16 year-old drivers, for example, the proportion involved in a crash (regardless of the presence or absence of passengers 32 years or older) decreased from 2.0% (average of 37 crashes) during the pre-GDL period to 1.1% during the post-GDL period (average of 20 crashes). These numbers and proportions are essentially the same as those for “unaccompanied” drivers in Table 8.

Table 8. Annual number and percent of unaccompanied[#] teen-aged drivers involved in night time crashes in Hawaii, by age of driver and county, 2003-2008.

(Night time is defined as between 11:00pm and 5:00am.)

County	2003	2004	2005	2003-2005 ave		2006	2007	2008	2006-2008 ave
<i>16 year-old drivers</i>									
Hawaii	17 (4.59%)	6 (1.59%)	15 (3.63%)	13 (3.27%)		4 (0.86%)*	8 (1.83%)	5 (1.49%)	6 (1.37%)
Honolulu	21 (1.59%)	13 (1.11%)	11 (0.94%)	15 (1.23%)		12 (1.01%)	4 (0.39%)*	8 (0.86%)	8 (0.76%)
Kauai	5 (3.70%)	8 (6.84%)	6 (5.04%)	6 (5.12%)		2 (2.02%)	1 (0.90%)	2 (1.89%)	2 (1.58%)
Maui	1 (0.58%)	5 (4.50%)	4 (2.67%)	3 (2.30%)		4 (2.48%)	4 (2.67%)	2 (1.35%)	3 (2.18%)
state	44 (2.20%)	32 (1.80%)	36 (1.94%)	37 (1.99%)		22 (1.15%)*	17 (0.99%)*	17 (1.12%)*	19 (1.09%)*
<i>17 year-old drivers</i>									
Hawaii	22 (5.95%)	13 (3.44%)	9 (2.18%)	15 (3.79%)		14 (3.00%)	15 (3.43%)	6 (1.79%)	12 (2.83%)
Honolulu	36 (2.72%)	33 (2.83%)	32 (2.73%)	34 (2.76%)		27 (2.27%)	24 (2.36%)	20 (2.14%)	24 (2.26%)
Kauai	4 (2.96%)	13 (11.1%)	5 (4.20%)	7 (5.93%)		6 (6.06%)	6 (5.41%)	1 (0.94%)	4 (4.11%)
Maui	4 (2.31%)	4 (3.60%)	4 (2.67%)	4 (2.76%)		5 (3.11%)	7 (4.67%)	6 (4.05%)	6 (3.92%)
state	66 (3.30%)	63 (3.55%)	50 (2.70%)	60 (3.18%)		52 (2.71%)	52 (3.03%)	33 (2.17%)	46 (2.66%)

[#] Drivers of automobiles with no passenger 32 years of age or older, the proxy for accompaniment by "parent or guardian" for provisional licensees.

*Denotes statistically significant difference in proportion, compared to the average proportion for the 2003-2005 period.

There was a decrease in the proportion of drivers in crashes who were 16 year-olds and transporting 2 or more minor-aged (under 18 years) passengers without a parent or guardian also in the car (Table 9), from 0.24% in the pre-GDL period to 0.14% in the post-GDL period (Table 9). (Again, an adult aged 32 years or older was considered a proxy for parent or guardian in these analyses.) This change was of “borderline” statistical significance ($p=0.06$). This proportion changed the most among 16 year-olds involved in crashes in Honolulu County (from 0.17% to 0.08%), and the least in Hawaii County (from 0.30% to 0.26%). There was relatively little change in this proportion among 17 year-old drivers, with the largest change in 2007 (from 0.17%, compared to 0.28% during the pre-GDL period).

As per teen involvement in nighttime crashes, the proportion of teen drivers transporting multiple minor-aged passengers was not influenced by the presence or absence of putative parents or guardians (passengers 32 years or older). Only 5% of the 16 and 17 year-old drivers who were transporting multiple minor-aged passengers also had a passenger 32 years of age or older. That proportion varied little between the pre- and post-GDL periods (4.3% vs. 5.2%). Analogous to nighttime crashes, compliance with GDL stipulations on multiple minor-aged passengers does not appear to be accomplished through inclusion of a parent or guardian as a passenger.

Table 9. Annual number and percent of unaccompanied[#] teen-aged drivers involved in crashes in Hawaii, with multiple minor-aged passengers, 2003-2008.

County	2003	2004	2005	2003-2005 ave		2006	2007	2008	2006-2008 ave
<i>16 year-old drivers</i>									
Hawaii	11 (0.31%)	12 (0.32%)	9 (0.28%)	11 (0.30%)		8 (0.23%)	8 (0.26%)*	7 (0.30%)	8 (0.26%)
Honolulu	21 (0.21%)	12 (0.12%)	17 (0.18%)	17 (0.17%)		12 (0.14%)	1 (0.01%)*	5 (0.07%)	6 (0.08%)
Kauai	7 (0.65%)	5 (0.53%)	2 (0.23%)	5 (0.48%)		3 (0.38%)	0 (0.00%)*	1 (0.12%)	1 (0.16%)
Maui	4 (0.23%)	7 (0.53%)	5 (0.34%)	5 (0.36%)		4 (0.28%)	3 (0.21%)	3 (0.23%)	3 (0.24%)
state	43 (0.27%)	36 (0.23%)	33 (0.22%)	37 (0.24%)		27 (0.19%)	12 (0.09%)*	16 (0.14%)	18 (0.14%)
<i>17 year-old drivers</i>									
Hawaii	19 (0.54%)	16 (0.43%)	9 (0.28%)	15 (0.42%)		16 (0.46%)	6 (0.19%)	5 (0.22%)	9 (0.30%)
Honolulu	26 (0.27%)	19 (0.20%)	16 (0.17%)	20 (0.21%)		21 (0.24%)	10 (0.13%)	12 (0.18%)	14 (0.18%)
Kauai	2 (0.18%)	6 (0.64%)	4 (0.46%)	4 (0.42%)		4 (0.51%)	3 (0.34%)	4 (0.48%)	4 (0.44%)
Maui	7 (0.41%)	3 (0.23%)	4 (0.28%)	5 (0.31%)		1 (0.07%)	4 (0.29%)	4 (0.31%)	3 (0.22%)
state	54 (0.34%)	44 (0.28%)	33 (0.22%)	44 (0.28%)		42 (0.29%)	23 (0.17%)	25 (0.22%)	30 (0.23%)

[#] Drivers of automobiles with no passenger 32 years of age or older, the proxy for accompaniment by "parent or guardian" for provisional licensees.

*Denotes statistically significant difference in proportion, compared to the average proportion for the 2003-2005 period.

There were no significant pre/post-GDL changes in the number or proportion of 16 and 17 year-olds among drivers of 2-wheeled motor vehicles (Table 10). (These statistics include single vehicle crashes, unlike other data in this report, which include only crashes in which at least one automobile was involved. However, inclusion of only the latter type of crashes gives similar results to those in Table 10.) On the other hand, there was no sign of a decrease of teen drivers of motorcycles and mopeds over this time period, as was apparent for automobiles. However, it should be noted that there was also no commensurate decrease for 2-wheeled drivers of all ages, not just teen-aged drivers. While the number of drivers of automobiles in crashes decreased by 17% between the pre- and post-GDL periods (Table 2), the number of drivers of 2-wheeled motor vehicles (mostly motorcycles and mopeds) increased by 3%, from an annual average of 790 drivers during the pre-GDL period to 815 during the post-GDL period.

While there was not a significant change in the age distribution of drivers of 2-wheeled motor vehicles, the proportion of teens who were driving 2-wheeled motor vehicles did increase within their own age groups. Among 16 year-old drivers involved in crashes with at least one automobile, the percent who were driving a 2-wheeled vehicle increased from 3.09% (23 of 745 drivers) during the pre-GDL period to 4.34% (21 of 484) during the post-GDL period. These proportions increased significantly among 17 year-old drivers, from 1.38% (16 of 1162) to 2.86% (25 of 874), respectively. These increases were only apparent for teens who crashed in Hawaii and Honolulu counties. Similar increases were noted all of the other driver age categories 20 years and older, however. In summary, implementation of GDL therefore did not appear to prompt a switch among teen drivers from automobiles to motorcycles and mopeds, relative to other age groups. The apparent changes in transport mode among 16 and 17 year-old drivers were also seen in most other age groups, which suggests factors other than GDL (e.g. gas prices) may be influencing these patterns.

Table 10. Number and percent* of teen drivers of 2-wheeled motor vehicles involved in crashes in Hawaii, by pre- and post-GDL periods and vehicle type.

Vehicle type	Motorcycles		Mopeds		Motor Scooters		Total	
	pre	post	pre	post	pre	post	pre	post
GDL period								
Age of driver								
16 year-olds	7 (0.5%)	6 (0.5%)	22 (2.7%)	21 (2.2%)	1 (3.1%)	0 (0.0%)	30 (1.4%)	27 (1.2%)
17 year-olds	6 (0.4%)	11 (0.9%)	21 (2.6%)	24 (2.5%)	0 (0.0%)	1 (4.5%)	27 (1.2%)	36 (1.6%)

*Percent of all drivers of 2-wheeled motor vehicles involved in crashes in Hawaii.

According to FARS data, three 16 year-old automobile drivers were involved in a fatal crash in Hawaii during the post-GDL period of 2006-2009, compared to 5 during the pre-GDL period (Table 11). There was also a decrease in the number of 17 year-old drivers involved in fatal traffic crashes, from 10 during the pre-GDL period to 4 in the 4 years since GDL. In terms of proportions, the percentage of automobile drivers who were involved in fatal crashes decreased for 16 year-olds from 1.10% to 0.47% from pre- to post-GDL periods, and for 17 year-

olds from 2.20% to 0.94%, respectively (left side of Figure 5). Neither of these decreases were statistically significant, however, possibly due to the small sample sizes, but there was a significant decrease when comparing the proportions of 16 and 17 year-old drivers combined.

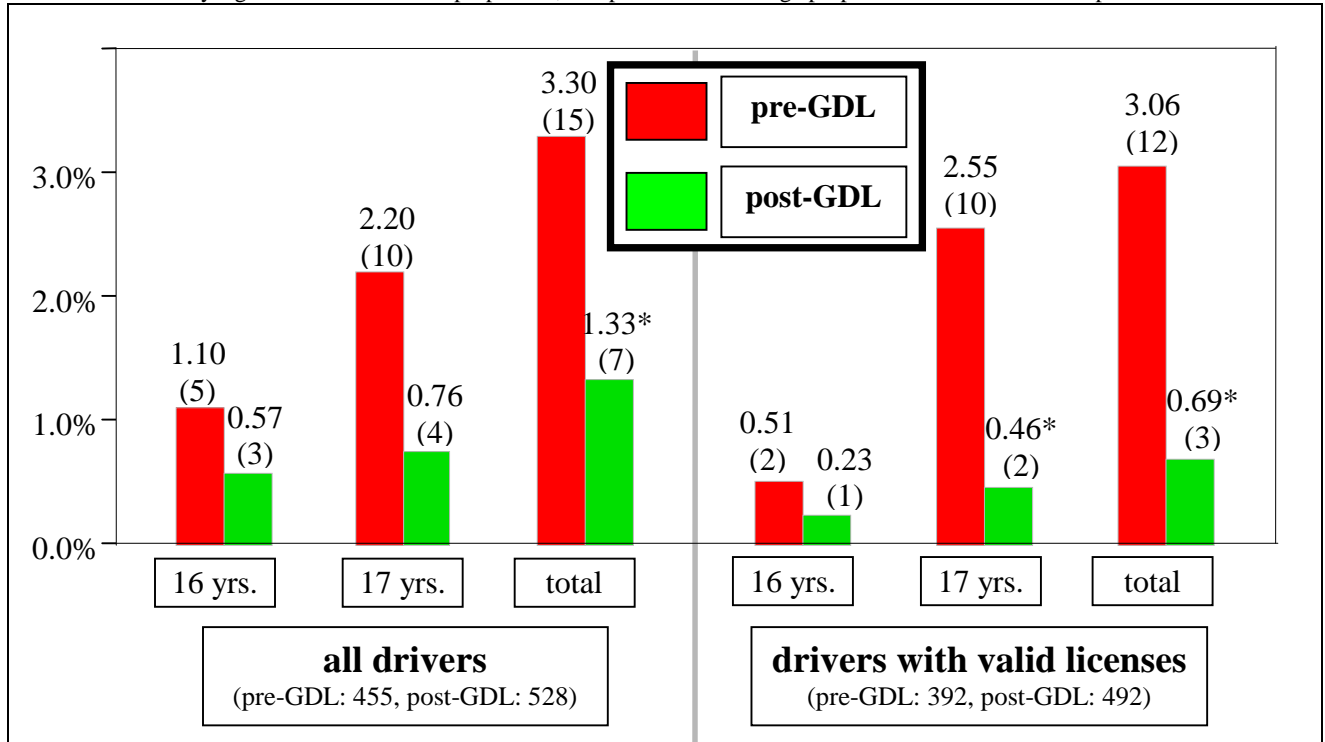
These decreases were more apparent when considering only drivers who had a valid drivers license at the time of the crash, particularly 17 year-olds (right side of Figure 5). If only these drivers are considered, the number of 16 year-old drivers involved in fatal crashes decreased from 2 during the pre-GDL period to 1 during the post-GDL period, and the number of 17 year-old drivers from 10 to 2, respectively. The latter resulted in significant decreases in the proportion of 17 year-old drivers and the combined total of 16 and 17 year-old drivers in fatal crashes.

Table 11. Annual number of teen-aged drivers of automobiles involved in fatal traffic crashes in Hawaii, by age and county, 2003-2009.

County	2003	2004	2005	2006	2007	2008	2009
<i>16 year-old drivers</i>							
Hawaii	0	0	1	0	0	0	0
Honolulu	0	0	0	1	0	0	1
Kauai	0	2	0	0	0	0	0
Maui	1	1	0	0	0	1	0
state	1	3	1	1	0	1	1
<i>17 year-old drivers</i>							
Hawaii	0	2	0	1	0	1	0
Honolulu	2	3	1	0	1	0	0
Kauai	1	1	0	1	0	0	0
Maui	0	0	0	0	0	0	0
state	3	6	1	2	1	1	0
<i>18 year-old drivers</i>							
Hawaii	1	3	0	0	0	1	1
Honolulu	3	2	1	3	1	2	1
Kauai	0	1	0	0	0	1	1
Maui	2	0	1	1	2	0	2
state	6	6	2	4	3	4	5
<i>19 year-old drivers</i>							
Hawaii	1	3	2	1	3	1	0
Honolulu	4	4	4	4	2	3	1
Kauai	2	1	1	0	1	1	0
Maui	1	2	1	1	3	1	1
state	8	10	8	6	9	6	2

Figure 5. Proportion of teen-agers among automobile drivers involved in fatal traffic crashes in Hawaii, by pre- and post-GDL periods, 2003-2009.

*Denotes statistically significant difference in proportion, compared to the average proportion for the 2003-2005 period.



There were relatively few citations issued for violation of GDL in 2006, but more consistent enforcement in following years (Table 12). Teen-drivers are more likely to be charged under the more general violation of “driving without a valid drivers license” (HRS 286-102). Under the GDL sections of the legal code (HRS 286-102.6) about 41% were for general failure to comply with provisional license requirements, 38% for violations of nighttime driving restrictions, and the remaining 22% for transporting more than one minor-aged passenger without an accompanying parent or guardian. Most (72%) of the 1,046 GDL-related violations were issued in Honolulu County, 14% in Hawaii County, 8% in Kauai County and only 6% in Maui County. More than three-quarters (76%) of the violators were males, with that proportion being slightly higher for violations for multiple minor-aged passengers (81% male) and violations of nighttime driving restrictions (78% male).

Table 12. Annual number of violations related to drivers licensing among 16 and 17 year-old drivers in Hawaii, 2003-2009

(Data source: Judiciary Information Management System (JIMS), Hawaii State Judiciary)

Type of charge	2003	2004	2005	2006	2007	2008	2009
<i>16 year-old drivers</i>							
no provisional license	.	.	.	15	89	38	36
multiple minor-aged passengers	.	.	.	1	19	26	38
nighttime driving restriction	.	.	.	1	27	41	47
total GDL-related violations*	.	.	.	17	135	105	121
general licensing violation [#]	257	220	278	247	260	208	163
<i>17 year-old drivers</i>							
no provisional license	.	.	.	16	88	50	53
multiple minor-aged passengers	.	.	.	1	14	50	34
nighttime driving restriction	.	.	.	0	42	100	70
total GDL-related violations*	.	.	.	17	144	200	157
general licensing violation [#]	378	372	370	407	430	407	275

*HRS Code 286-102.6 Provisional license for persons under the age of 18.

[#]HRS Code 286-102, Driving without valid drivers license.

Conclusions:

These analyses showed a statistically significant decrease in the proportion of 16 year-old drivers involved in crashes during the post-GDL period, particularly in 2007 and 2008. However, significant decreases were evident only among 16 year-old drivers in Hawaii and Kauai counties. The proportion of 17 year-old drivers also decreased in the post-GDL period, although to a significant degree only among drivers in Honolulu County in 2008. There were few other significant changes were evident in other age groups, indicating a specific response to GDL among 16 year-old licensees, and to a lesser degree, 17 year-old licensees.

The proportion of 16 year-old drivers involved in nighttime crashes decreased significantly during the post-GDL period for the state and for Hawaii County. There was also a significant decrease in the proportion of 16 year-old drivers who were transporting multiple minor-aged passengers in 2007.

Although smaller in scale, the proportion of 16 and 17 year-old drivers who were involved in fatal crashes decreased significantly between the pre- and post-GDL periods, especially if only drivers with valid licenses are considered.