Teens Drivers: What Are the Real Risks?

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Recent reports have depicted teenage drivers as unacceptably dangerous and proposed severe restrictions, or even outright bans, on driving by persons under 18, 21--or even 25, some suggest. A study released in January 2006 by the American Automobile Association's Foundation for Traffic Safety, entitled "Teen Crashes: Everyone Is at Risk," stated that drivers ages 15-17 were "involved in...fatal crashes that claimed the lives of 30,917 people" from 1995 through 2004. The report accused teen drivers of killing "husbands, mothers, brothers, children, and grandmothers... everyone is at risk."[1]

News stories on teen drivers, and companion stories on adolescent brain development, pronounced teens as inherent risk-takers, cognitively incapable of good driving decisions. Experts and reporters variously labeled teens as "reckless," "stupid," "irrational," "crazy," even "alien."[2] In raw numbers, teenaged drivers are involved in more traffic crashes, including fatal ones, per driver and per mile driven than older drivers.[3] Authorities have attributed this discrepancy mainly to adolescents' allegedly innate immaturity, which produces more recklessness and inability to perceive and manage dangerous situations; [1,2,4] some also cite lack of driving experience.[4,5] Nearly all states have implemented restrictions on driving by persons under age 18 or 20, such as graduated drivers' licensing (GDL) laws, which have been reported to reduce teenage traffic accidents, injuries, and fatalities.[1,4] Even more severe restrictions have been proposed. Persons under 25 shouldn't hold drivers' licenses or vote, Jay Giedd of the National Institute of Mental Health and Laurence Steinberg of Temple University declared. Teens should not be allowed to drive short trips to the store even once, a Washington safety expert said.[2]

Despite the strong, often inflamed commentary, media reports, safety experts, and studies on teen driving risks[4] have failed to examine two crucial factors that provide alternative explanations for the greater traffic accident rate among teens and young adults:

1. **The lower socioeconomic status of adolescents and young adults compared to older adults**. Socioeconomic status--the levels of poverty, income, wealth--are routinely assessed when comparing the behaviors of different population groups such as races or ethnicities. Yet, researchers have not controlled for socioeconomics when comparing adults and adolescents. In practice, researchers have assumed that teens as a demographic drive under conditions reasonably identical to those of older adults. This is not the case. The percentage of teenagers and young adults living in households with incomes below federal poverty guidelines is two to three times higher than for middle-aged adults. Further, middle-aged adults live in households with incomes twice as high, and total net worths five times higher, compared to those teenagers and young adults occupy. Low-income status has been linked to higher risks of fatality, including traffic fatality. Poorer populations drive older, less safe vehicles,[6] drive on less well-maintained roads, and access lower-quality medical care. If poverty is a factor in traffic crash risk, we would expect to see higher rates of traffic fatalities among both teens and adults per mile driven

in poorer areas compared to richer ones.
2. **The benefits of teens gaining realistic experience with adult behaviors while young to reduce the risks they later face as adults**. This factor has been acknowledged but largely discounted in the current climate of discussion.[1,2,4] Called "learning by doing," this theory holds that it is not teens' immaturity or innate risk-taking, but their lack of practical driving experience, that produces higher rates of traffic fatality.[5] Teenagers who drive more may be more at risk of accidents, but the experience they gain will reduce their accident rates as young adults even more. If this is the case, we would expect to see, (a) teens experiencing lower rates of traffic fatality in areas in which teens drive more miles, and (b) higher rates of traffic fatalities among young adults who, as teens, were restricted from driving, as by severe GDLs. If this theory is correct, studies that have measured the lives saved by GDLs and other restrictive laws by comparing teenage fatality trends to those of young adults suffer from serious methodological flaws that would strongly exaggerate these laws' effects.

This study's hypothesis, then, is the null one: **There is little or no intrinsic difference between teen and adult driving risk; the apparent difference in risks is due to differing conditions, not age.**

Method

Data sources (see References at end of report)

Fatal traffic accident involvements. This study utilizes police records of all 34,848 fatal traffic crashes in California, involving 100,978 people, posted by the Fatality Analysis Reporting System (FARS) for the 10-year period, 1995 through 2004. A fatal motor vehicle crash is a traffic accident involving a car, truck, motorcycle, or other motor vehicle that results in at least one fatality; persons may be involved in such crashes as drivers, vehicle passengers, or non-motor-vehicle occupants such as pedestrians or cyclists. Most of this analysis focuses on drivers' involvements. Variables examined from FARS tabulations include driver's age, residence by county (determined from zip code), and driver's license status.

Traffic fatalities. The Center for Health Statistics, California Department of Health Services, provides tabulations of all 41,000 deaths from motor vehicle accidents by age, county of residence, birth date and death date of deceased, and year of death for 1995-2004.

Population and drivers' license statistics by age and county. California's Department of Finance provides detailed estimates and projections, of populations by age and county for all years, 1995-2004. The Department of Motor Vehicles' Research and Development Branch provided drivers' license statistics by county and age for the year 2000 through a special data run.

Vehicle-miles driven (VMD) by age and county of driver. Estimates of vehicle-miles traveled (VMT), gasoline sales, and total fuel sales by county for 1995, 2000, and 2005 are available from the California Department of Transportation, Transportation System Information Program. Contact with CalTrans indicates that no estimates of VMT by age of driver are available. To convert gross VMT by county to vehicle-miles per driver (VMD), three calculations are made. First, gross VMT is reduced by the proportion of gasoline to total fuel sales by county to provide an approximation of personal travel. Second, this estimate of gross personal travel miles per county is prorated according to the proportion of licensed drivers by age for each county to produce an estimate of gross VMD by age of driver. However, teenaged drivers do not drive as much per driver as adult drivers, and so a third adjustment is made. Using National Household Travel Survey estimates of miles driven by age group divided by each age group's total population, California's gross VMD by age group is adjusted proportionally using California population totals by age to reflect the fewer miles driven per teen driver.

The results this estimation technique for vehicle miles driven (VMD) per day by age of California driver in the 24 most populous counties in 2000 yields are very similar to those of the 2001 National Household Travel Survey[6] (Table 1). Although the use of gasoline sales may slightly underestimate Californians' driving, since some personal vehicles now use other fuels, the estimation technique does not appear to produce biases with regard to the relative proportions of driving by each age group, the main interest of this study.

Table 1. **Comparison of estimates of driving by age in California's 24 most populous counties with National Household Travel Survey estimates**

	Average vehicle-miles driven/day	
Age	California*	U.S.**
15-19	11.1	12.2
20-24	25.6	28.1
25-54	32.0	35.0
55-64	27.1	29.7
65+	15.5	17.0
Total	26.8	29.1

*Estimates resulting from proration technique used for drivers in California's 24 most populous counties, using California Department of Transportation estimates, 2000 base year. See Data Sources.
**Actual VMD/day estimate from National Household Travel Survey, 2001.[6]

Populations, poverty rates, and median household income by county and age group are from the U.S. Bureau of the Census, 2000, American FactFinder. California's 24 most populous counties (those with populations of 200,000 or more in the 2000 census) account for 93% of the state's population, 91% of its licensed drivers, 90% of its VMT, and 87% of its fatal traffic crashes. Table 2 shows the counties by population, licensed drivers, estimated vehicle-miles traveled, traffic deaths, and poverty levels.

Table 2. **Characteristics of California's 24 most populous counties**

	Average annual counts, 1995-2004				
County	Population 000	Traffic fatalities	Licensed drivers 000	Miles driven per day (avg)	Poverty rate 1999
Alameda	1,450	320	948	22.6	11.0%
Contra Costa	948	175	653	20.2	7.6
Fresno	814	401	447	18.4	22.9
Kern	673	296	377	20.3	20.8
Los Angeles	9,755	1,825	5,523	19.3	17.9
Marin	248	27	187	27.2	6.6
Monterey	398	123	233	20.4	13.5
Orange	2,843	436	1,899	21.7	10.3
Riverside	1,571	524	932	20.2	14.2
Sacramento	1,233	329	786	20.2	14.1
San Bernardino	1,734	569	1,003	21.7	15.8
San Diego	2,869	557	1,877	22.1	12.4
San Francisco	784	103	513	12.2	11.3
San Joaquin	580	209	330	19.7	17.7
San Luis Obispo	247	64	172	24.2	12.8
San Mateo	717	101	502	24.6	5.8
Santa Barbara	407	78	265	20.3	14.3
Santa Clara	1,703	271	1,176	21.8	7.5
Santa Cruz	255	56	174	19.5	11.9
Solano	398	94	251	24.5	8.3
Sonoma	455	121	323	19.0	8.1
Stanislaus	455	191	274	17.1	16.0
Tulare	375	215	200	16.8	23.9
Ventura	761	156	510	20.4	9.2

Sources: California Department of Finance, California Center for Health Statistics, California Department of Motor Vehicles, California Department of Transportation, U.S. Bureau of the Census. See Data Sources.

Analysis

Rates of fatal crash involvement per billion vehicle-miles driven are compared for each age group and for age group of drivers involved for those ages 15-64 who are residents of California's 24 most populous counties for the 1995-2004 period (Table 3). Table 4 shows the regressions of age, poverty, income, VMD, and urbanization on motor vehicle drivers' fatal crash involvements by county.

Table 5 shows the motor vehicle fatality rates for cohorts of California teens licensed 30 months before and 30 months after the state's graduated driving law (GDL) took effect. The "before" cohort consists of California residents born from January 1, 1980, through June 30, 1982, all of whom would have turned 16 before the state's GDL took effect on

Table 3. **Poverty rates and driver involvement in fatal traffic crashes by age and county, 1995-2004**

	Percent in poverty, by age, 1999					
County	15-17	18-24	25-34	35-44	45-54	55-64
Alameda	14.7%	22.0%	10.1%	8.5%	7.5%	7.4%
Contra Costa	9.9	12.7	8.3	6.3	4.6	4.6
Fresno	27.0	29.9	22.8	18.7	13.2	13.0
Kern	23.9	25.6	21.6	17.4	12.2	13.9
Los Angeles	23.0	23.6	17.7	15.1	11.6	11.8
Marin	10.4	13.7	8.9	6.1	5.2	4.4
Monterey	17.4	20.4	14.4	12.1	7.6	7.1
Orange	13.8	17.6	10.9	8.2	6.0	6.4
Riverside	18.1	19.4	14.9	11.9	9.1	10.8
Sacramento	18.3	19.9	13.7	11.7	9.2	9.2
San Bernardino	18.6	19.6	16.1	13.3	9.6	11.4
San Diego	16.1	21.3	12.3	9.9	7.6	7.8
San Francisco	16.4	21.6	9.1	9.7	9.0	10.8
San Joaquin	22.5	24.5	18.1	14.4	11.2	10.8
San Luis Obispo	11.1	39.3	13.2	7.9	6.9	7.4
San Mateo	8.0	11.6	6.2	4.8	4.1	4.4
Santa Barbara	16.9	35.7	14.3	10.3	7.1	6.6
Santa Clara	11.2	14.7	7.6	5.7	4.8	5.2
Santa Cruz	13.9	28.5	12.7	9.0	7.4	6.8
Solano	10.4	11.4	8.9	6.6	5.3	5.7
Sonoma	9.4	15.8	9.2	6.5	6.1	6.2
Stanislaus	19.8	20.9	17.0	13.5	11.0	10.1
Tulare	29.8	27.4	25.6	20.6	13.4	13.5
Ventura	12.3	14.0	10.2	7.9	5.0	6.1

Source: US Bureau of the Census, 1999. See Data Sources.

July 1, 1998. The "after" cohort is corresponding youth born from July 1, 1982, through December 31, 1984, all of whom turned 16 after the law took effect. Motor vehicle fatalities for each cohort are divided by the population of that cohort to produce rates. These cohorts' respective motor vehicle fatality rates are traced from ages 16 through 19 (the years 1996 through 2004).

This analysis is conservative in that it "stacks the deck" in two ways against its null hypothesis that young age is not a major factor in traffic fatality risk. First, drivers 65 and older are excluded from the regression because their higher crash rates per mile driven obscure any effects of age for those under age 65. Second, the analysis compares teen-driver risk not to that of all adult drivers or adult ages of highest risk (say, 20-24), but to

Table 3 (continued). **Licensed driver involvement by age in fatal traffic crashes per billion miles driven**

	15-19	20-24	25-34	35-44	45-54	55-64
Alameda	27.2	21.3	11.8	9.5	8.6	7.9
Contra Costa	30.0	24.2	16.3	12.2	10.2	11.4
Fresno	63.8	50.3	39.5	33.6	27.0	26.0
Kern	67.1	38.4	33.5	27.8	24.0	25.0
Los Angeles	36.6	25.9	14.2	11.2	10.1	10.9
Marin	10.0	11.0	8.7	4.7	6.0	4.9
Monterey	40.3	30.2	19.7	19.3	14.3	17.9
Orange	26.0	19.2	10.7	8.8	7.7	8.5
Riverside	53.2	39.3	27.5	21.1	18.1	17.7
Sacramento	56.0	36.7	20.1	16.2	14.1	14.2
San Bernardino	45.3	30.5	22.6	19.8	16.9	21.0
San Diego	37.6	25.3	12.0	11.0	10.0	11.4
San Francisco	49.3	42.6	16.8	11.4	11.9	14.2
San Joaquin	55.0	34.2	26.6	25.0	20.7	22.0
San Luis Obispo	34.7	15.2	15.0	18.1	13.9	15.1
San Mateo	17.1	13.8	8.1	6.8	6.3	10.0
Santa Barbara	35.7	19.1	12.4	11.9	12.3	9.1
Santa Clara	29.9	20.3	11.1	8.5	7.5	7.3
Santa Cruz	31.3	32.4	16.2	15.3	15.3	10.7
Solano	29.3	17.9	15.9	13.1	9.0	13.4
Sonoma	49.3	35.2	21.3	20.0	16.3	17.5
Stanislaus	73.1	50.3	36.9	35.6	26.3	23.3
Tulare	76.2	56.9	42.9	45.8	37.8	34.0
Ventura	37.3	29.5	16.7	12.3	9.7	14.1
Average	42.1	30.0	19.9	17.5	14.8	15.3

Average fatal crash involvement per billion VMD, by poverty ranking

Fatal crash rate	age 15-19	20-24	25-34	35-44	45-54	55-64
0.0 - 7.9% in poverty	n.a.	n.a.	9.6	12.0	10.5	11.4
8.0 - 14.9%	29.3	19.6	16.1	17.1	20.7	20.8
15.0 - 24.9%	49.9	28.7	28.9	29.6	n.a.	n.a.
25%+	70.0	40.9	42.9	n.a.	n.a.	n.a.

Sources: Fatality Analysis Reporting System (1995-2004); California Department of Motor Vehicles, Department of Transportation. See Data Sources. "n.a."= no counties in this category.

the *safest category* of adult drivers (ages 45-64). This choice of comparison groups maximizes the difficulty of accepting this study's null hypothesis that there is no difference between risks posed by teen versus adult drivers attributable to age.

Results and Discussion

1. **Even without considering additional factors, the practical risk difference between teenage and adult drivers has been vastly exaggerated**. In the 24 California counties studied for 1995-2004, drivers ages 15-19 were involved in 42 fatal crashes per billion miles driven, compared to 15 for drivers aged 45-64. This three-fold higher risk for teen drivers is widely cited as proof that teens and adults think and approach driving in radically different ways.

However, a very different perspective emerges when the fact that serious motor vehicle accidents and fatalities are **very rare events** is considered. In practice, if an average teen and average 45-64 year-old driver each drove from Los Angeles to San Francisco and back 75,000 times (770 miles round trip each, a task which would take a minimum of five lifetimes), the teen would be expected to be involved in crashes causing one additional fatality and three more serious injuries. This is a maximum estimate; the gap between teen and adult drivers ages 20-44, or 65 and older, would be narrower.

2. **Teen driving risks, overwhelmingly, result from greater poverty and the interrelated factor of driving inexperience, not innate risk-taking**. The risks of a teen driver being in a fatal crash are far from uniform; per mile driven, they vary by a staggering 750% from California's richest to poorest counties. When multiple factors are examined, younger age explains only a small fraction of the difference between teen and middle-agers, the safest category of adult drivers (Table 4). Even though poverty, income, and VMD are highly intercorrelated, each shows up in the regression as a separate, strong predictor of motor vehicle fatality risk for all ages.

Together, these three variables are associated with two-thirds of the variation in risks of involvement in a fatal motor vehicle accident. Age is associated with around 13% of the risk, with the remainder attributable to unknown and residual factors. Thus, each 1% increase in poverty, decrease of one mile driven per day, and decrease of $1,000 in income is associated with 1.8 more fatal crash involvements per billion miles driven; each one year increase in age, just 0.2 fewer crashes. The narrowing of fatal crash risk differences at all age levels as economic conditions are equalized is striking (Tables 3, 4).

Passenger involvements in fatal crashes show a more pronounced effect for young age than driver involvements (Table 4). This is unexpected, since it indicates that young people are at more disproportionate risk of fatal accident involvement due to their ages when they are passengers than when they are drivers. This may be because younger people are more likely to occupy crowded vehicles (whether the driver is a teen or an adult), raising the passenger toll per crash. Poverty and low-income status remain significant risks for passenger involvement in fatal traffic accidents as well. The regression coefficients for all and for passenger involvements are not strictly comparable to those for drivers, since driver involvements are calculated per 100,000 drivers (rather than population) and include a VMD variable.

Table 4. **Association of risk factors with fatal traffic crash involvement, California's 24 largest counties**

Teen (age 15-19) and middle-aged (45-64) drivers' fatal crash involvement rates, unadjusted vs. equalized poverty rates

Fatal crashes/billion miles driven	Teen	Middle-age	Risk gap
All drivers, all poverty levels	42.1	15.0	+2.81
Equalized poverty rates (8-14%)	29.3	20.8	+0.41

Regression of multiple factors on involvement in fatal crashes (weighted), ages 15-64

Fatal crashes**	Age	VMD/day	Income	Poverty	Urbanization
All involvements	-0.356*	n.a.	-0.386*	0.378*	n.s.
Driver involvements	-0.199*	-0.466*	-0.381*	0.216*	n.s.
Passenger involvements	-0.507*	n.a.	-0.227*	0.320*	n.s.

*p < .001; "n.s."= not significant (p >.05)
**All involvements include drivers, passengers, non-vehicle occupants (cyclists, pedestrians), and unknown-position persons in fatal motor vehicle accidents, whether killed or not, per 100,000 population by age and county. Driver involvements are per 100,000 licensed drivers by age and county; Passenger involvements are per 100,000 population by age and county. VMD are not available for non-drivers. County (zipcode) data are not available for pedestrians, cyclists, and others involved in fatal crashes. Sources: FARS, California Department of Transportation, Department of Motor Vehicles, Department of Finance, Center for Health Statistics. See Data Sources.

3. **Where teens drive a lot, they quickly improve--so much so that teens who drive a lot are actually safer on an absolute basis than teens who drive very little**. Higher-income teens are safer than low-income teens not just due to their access to safer vehicles, driving conditions, medical care, and other benefits, but because *they drive many more miles per day*. In fact, despite driving more miles, teens in several more affluent counties are at lower *absolute* risk of deadly crashes than both teens and adult drivers of all ages in the poorest counties (Tables 3, 4). Driving conditions and experience, not age, best predict fatal crash propensities.

4. **Where teen and adult drivers experience similar conditions, their driving risks are similar as well**. When compared straight across, the risk of teen drivers' involvement is fatal traffic crashes is nearly three times higher than for middle-aged drivers. However, when poverty rates are equalized, a different picture emerges (Table 4). In California's 24 largest counties, the poverty rate among California's older teenagers ranges from 8% to 30%; for middle-agers, from 4% to 13%. When teen and middle-aged driving experience are examined in counties in which teen and middle-aged poverty rates each range from 8% to 14%, the fatality risk gap between teens and middle-agers narrows dramatically.

That is, **equalizing socioeconomic conditions shrinks the risk gap** between teen and adult drivers by 85%. In fact, under equal conditions, teens are no riskier than drivers over age 65 (29.5 fatal crashes per billion miles driven, poverty rates 8-14%). The most

California's extremes of teen driving risk...

San Mateo is a hilly, affluent coastal county on the west side of San Francisco Bay, where median household incomes approach $60,000 and only 8% of youth live in poverty. **Stanislaus** is an impoverished Central Valley and Sierra foothill county dominated by the city of Modesto, with household incomes averaging just $23,000 per year and youth poverty rates nearly triple those of San Mateo.

San Mateo's 18,000 teenage drivers motor an average of 15 miles per day in a county crowded with 120,000 cars and trucks. Stanislaus's 14,000 teen drivers drive just 10 miles per day in a county with 95,000 motor vehicles.

If teenage driving risk lies in innately immature thinking and risk-proneness**, we would expect San Mateo's youth, who drive much more, to be substantially more at risk** than Stanislaus teens. **In fact, Stanislaus teen drivers are involved in 4.3 times more fatal motor vehicle crashes per mile** driven than San Mateo's. So large is the risk gap that, despite driving 1,700 more miles per year, San Mateo youth are at less than one-third the overall risk of fatal crashes during their teenhoods compared to Stanislaus youth.

An even more extreme risk gap divides **Marin** and **Tulare** teens. Collectively, wealthy Marin's teen drivers drove some 460 million miles on their coastal county's winding, mountainous roads over the last decade, yet were involved in just 13 fatal crashes. Tulare County youth, the state's poorest, drove 370 million miles on their county's dusty, poorly maintained Central Valley roadways, getting into 121 fatal crashes--a rate six times higher per driver and eight times higher per mile driven. Even though the average Marin teen drives more than twice as many miles as the average Tulare teen, Marin youth are far more likely to make it to age 20 without suffering a fatal crash.

Dramatically illustrating the dangers of poverty and beneficial effects of teens' gaining more driving experience, Marin and San Mateo **teens** are substantially **less** likely to be involved in fatal crashes per mile driven than are Stanislaus and Tulare **middle-aged** drivers.

important factor predicting teen risk is driving experience, here operationalized as miles driven per day. Where teens drive a lot, they quickly improve--so much so that teens who drive a lot are actually safer on an absolute basis than teens who drive very little (see sidebar). A second, interrelated factor predicting low teen driving risk is low poverty and high income levels. Higher-income teens both drive more and are safer than low-income teen drivers--in fact, are at lower risk than older adults in high-risk counties.

5. **If experience and conditions are key factors in reducing risk, California's graduated licensing law (GDL) restricting teen drivers would not save lives. In fact, the only question is whether it has cost lives**. Teenagers who began driving before the GDL law took effect have lower fatality rates by age 20 than teens who were subject to the law's restrictions. The reason is that **increased traffic death rates among 18-19 year-olds after the law more than offset lowered rates among 16-17 year-olds**. After the law took effect, traffic fatalities fell by 16% among 16-17 year-olds licensed under its restrictions. But this was more than offset by the 23% increase in fatalities when they later turned 18 and 19 compared to 18-19 year-old drivers licensed before the law took effect (Table 5).

Table 5. **Change in traffic fatality rates per 100,000 population by age cohort, before and after California's Graduated Driver's Licensing law took effect**

Age	Before law*	After law*	Change
16	15.1	10.8	-28.4%***
17	18.5	17.5	- 5.4
18	22.3	28.8	+28.9 ***
19	24.2	28.3	+17.0 **
16-17	16.8	14.2	- 15.7 **
18-19	23.2	28.5	+22.6 ****
Total	20.1	21.5	+ 7.1
All 16+	13.5	13.7	+ 2.1

*"Before" cohort is California residents born 1/1/1980 through 6/30/1982; "After" cohort is California residents born 7/1/1982 through 12/31/1984.
**p < .05 ***p < .01 ****p < .001
Sources: California Center for Health Statistics, California Department of Finance. See Data Sources.

Overall, **traffic death rates rose by 7.1% among teens subjected to the law**, triple the 2.1% increase in traffic death rates among all California residents 16 and older during the same period. This represents a net teen fatality increase of 5% after rates are adjusted for population changes and changes in traffic death rates among all Californians 16 and older during the period. Statistically significant changes in opposite directions were recorded for ages 16-17 and 18-19 affected by the GDL law compared to all ages 16 and older not affected by the law during the period (X^2= 5.72, p<.05, for affected ages 16-17; X^2= 14.00, p<.001, affected ages 18-19). While the fatality increase among all drivers ages 16-19 affected by the GDL law approaches significance (X^2=2.36, p <.15), it cannot be said at this time that the law has resulted in a statistically significant increase in deaths.

These results validate the concern expressed by California Department of Motor Vehicles analysts that the "increase…in total crashes for 18-19 year-olds" suggests that "GDL programs may have unintended negative consequences for this and possibly other age groups." In fact, the DMV report concluded, "it is recommended that 18-19 year-olds not be used as a comparison group for evaluations of GDL programs because it appears that drivers in this age group are impacted by such programs."[7] Unfortunately, most studies finding beneficial effects of GDLs rely on exactly that flawed comparison.[4] A similar "see-saw" effect has been found for legal alcohol purchase ("drinking") ages: when these were raised from 18 or 19 to 21 in many states during the 1970s and 1980s, traffic fatalities declined among drivers ages 18-20 but rose even more among drivers ages 21-23.[5]

6. **A transition period from non-driver to driver status remains warranted, but not just for teens**. The less experience a driver has, the greater his/her odds of being involved in traffic accidents per mile driven. However, new drivers who drive a lot under

favorable conditions gain experience and become safer drivers remarkably rapidly--so much so that teens in high-driving counties have fatal accident rates far below those of teens in low-driving areas, and below those even of middle-aged drivers in many poorer counties. The question for policy makers is to balance the need to minimize the risks for novice drivers while allowing them to gain experience on the road.

California's teen driving law should be changed to scrap the arbitrary, complicated, lengthy restrictions in favor of requiring all new drivers, regardless of age, to complete intensive on-the-road driver training by professional instructors, subsidized for low-income applicants. Research should focus on which real-life factors reduce the dangers experienced by new drivers, especially teens in wealthier counties who (despite their greater driving) have much lower fatality rates compared to those in poorer counties.

7. **Obsession with teen drivers is obscuring more crucial safety issues**. California's motor vehicle death rate and rate of driver involvement in fatal crashes both declined sharply from their 1979-80 peaks among all ages to record lows in 2000; since then, rates have increased substantially (see Appendixes A and B). A big reason appears to be increased drunken driving. Over the last five years, the number of California 15-17 year-old drivers involved in fatal crashes in which driving after drinking or using drugs was a factor nearly doubled, from 45 in 1999-2001 to 86 in 2002-04. Three-fourths of that increase was caused by a **130% jump in teens being victimized by alcohol- or drug-impaired adult drivers**. Increased victimization of teens by intoxicated adult drivers mirrors an overall increase in California's DWI deaths. From 1999 to 2004, the number of legally intoxicated (blood alcohol content of 0.08% or higher) adult drivers over age 21 causing fatal crashes leaped almost 30%, from 748 to 974. Drug-related fatal crashes (possibly reflecting more testing) among drivers over age 21 nearly doubled, from 271 in 1999 to 540 in 2004. This neglect of serious issues by traffic policy experts is part of the "dramatic failure of U.S. safety policy" that has accompanied America's plunge from safest among Western nations per mile driven in 1978 to 16th today.[9]

Conclusion

Teenage drivers are far less dangerous, and the differences between teen and adult drivers much less extreme, than indicated in the inflamed rhetoric issued by commentators (including, unfortunately, a number described as "experts") in media stories and lobbying reports. Further, when examined in their full context, the risks posed by teen drivers (40% greater fatal crash rate per mile driven than the safest adult drivers under reasonably equalized conditions) are well within those society accepts for rare events. For example, male drivers are 77% more likely (per mile driven) to be in fatal crashes than are women drivers; doctors and lawyers as occupations are 95% more accident-prone than farmers and firefighters; drivers in Washington, DC, get into 140% more wrecks than drivers in Milwaukee; Mississippians and Montanans are 250% more at risk of fatal traffic accidents than residents of Connecticut and Massachusetts;[3,8] drivers 75 and older suffer fatal crash rates 1.8 times those of middle-agers. Yet, evidencing the political power of adult age groups compared to teens, no one is proposing

severely restricting or banning men, doctors, Southerners, or federal government officials and lobbyists from driving. Traffic safety measures should target risky conditions, not the political powerlessness of younger population groups.

Preventing teens from driving under realistic conditions brings more risks later as inexperienced drivers enter the adult driving world at age 18 or older. Learning to drive at ages 18-19 appears to entail more hazards than learning to drive at age 16, when family influences remain strong and the learning curve is more rapid. Both the safety of California's wealthier, heavy-driving teens, and the sharp increases in fatalities among 18-19 year-olds after the state's GDL restricted 16-17 year-olds, testify that it is not young age and immaturity, but poverty and lack of experience that raises teen driver risk. Put bluntly, the problem isn't adolescents' underdeveloped brains, but older generations' underdeveloped ethics in failing to share resources equitably to prevent youth poverty and in providing rationally-based transitions that allow youth to gain experience with adult behaviors.

Finally, more respectful, fair, and accurate treatment of teenagers in the press, by experts, and by institutions than is now afforded is crucial to establishing more sensible policies. **Researchers and experts should adopt higher standards for comparing teen and adult risks commensurate with those afforded when comparing adult population groups**. Media reporters should observe higher ethical standards when covering youth issues than simply featuring, in one-sided fashion, the most inflammatory allegations sources provide.

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Appendix A. **California motor vehicle fatalities per 100,000 population by age group, 1975-2004**

Year	15-19	20-24	25-29	30-34	35-39	40-44	45-49	50-54	55-59	60-64	65+
1975	35.0	41.6	30.1	23.6	19.0	17.0	15.9	17.8	19.7	17.2	28.4
1976	38.3	42.6	28.7	24.1	20.5	17.4	17.3	17.5	16.2	18.3	30.4
1977	45.2	51.5	31.0	23.5	19.2	18.5	16.7	18.4	18.8	21.0	28.2
1978	43.2	52.8	36.6	26.0	23.3	20.2	20.0	19.3	21.1	19.2	31.9
1979	49.3	51.7	36.9	27.1	23.2	22.4	19.7	18.6	20.0	20.8	28.0
1980	44.4	50.2	35.3	27.2	22.8	22.0	21.9	19.9	18.7	20.5	26.1
1981	36.3	44.7	35.6	27.3	24.0	19.4	19.4	17.1	19.3	17.8	25.9
1982	32.6	42.7	25.9	22.8	19.2	18.1	18.4	15.9	14.8	19.7	24.8
1983	30.2	38.5	27.8	22.0	18.6	16.6	16.9	14.8	15.8	17.6	24.0
1984	33.5	42.8	30.5	24.0	18.7	17.5	16.1	17.1	17.6	19.1	24.9
1985	32.5	38.4	27.4	20.2	18.7	17.9	15.8	14.5	15.6	15.7	24.9
1986	33.2	38.4	29.5	21.1	19.6	17.8	15.3	15.8	15.4	14.6	24.6
1987	34.2	36.7	29.5	23.5	20.7	17.5	16.9	16.5	17.3	20.1	24.7
1988	31.0	36.8	25.8	21.4	17.8	17.9	16.6	16.1	17.5	17.9	27.5
1989	33.2	35.1	27.2	19.7	19.2	18.4	14.3	15.6	14.0	16.5	26.1
1990	27.5	35.9	25.5	18.6	17.9	15.3	15.1	15.7	16.5	15.7	23.0
1991	27.5	31.1	21.9	18.6	15.8	12.2	14.9	14.0	11.9	12.9	21.5
1992	21.9	25.2	17.7	14.9	14.2	12.3	12.4	13.5	13.1	11.2	20.4
1993	20.4	24.9	16.4	15.9	13.2	13.9	10.8	11.4	12.5	14.3	21.6
1994	21.4	22.0	18.0	14.9	13.3	12.2	12.0	14.2	12.5	15.0	23.6
1995	19.6	23.8	16.8	14.8	14.6	11.7	13.6	13.9	13.7	14.0	21.7
1996	18.2	21.5	15.5	13.3	14.6	13.9	13.6	12.5	14.9	15.7	22.2
1997	18.0	18.2	13.0	11.8	10.3	11.9	12.7	11.4	13.5	13.5	22.2
1998	16.7	17.8	11.7	11.0	10.5	11.5	9.7	11.2	14.3	12.0	19.1
1999	16.8	19.9	12.9	11.2	10.5	11.3	11.2	10.7	12.2	12.6	18.2
2000	13.4	17.0	11.6	9.1	10.4	10.0	10.9	11.1	10.8	8.4	17.5
2001	17.8	21.8	14.9	11.4	11.9	12.4	12.1	12.4	11.8	13.0	17.8
2002	20.4	22.7	14.0	11.6	12.3	12.6	13.0	11.8	11.4	13.8	17.3
2003	20.4	23.3	15.8	11.8	13.0	13.3	13.0	12.9	13.2	13.6	18.9
2004	18.9	22.3	16.8	12.8	12.8	12.9	13.1	13.8	11.2	13.6	17.2

Sources: California Center for Health Statistics; California Department of Finance. See Data Sources.

Appendix B. **California driver involvement in fatal crashes per 100,000 licensed drivers, 1975-2004**

Year	15-19	20-24	25-29	30-34	35-39	40-44	45-49	50-54	55-59	60-64	65+
1975	74.8	64.6	44.6	42.4	29.2	29.7	25.8	25.4	27.8	22.0	27.0
1976	87.1	63.9	44.6	38.2	31.6	29.4	28.0	26.7	24.1	24.4	28.2
1977	101.8	74.8	48.6	35.2	33.0	33.3	26.8	25.3	25.9	24.1	28.2
1978	102.7	75.2	52.7	42.8	36.6	32.1	31.6	28.9	24.8	24.4	28.5
1979	114.2	78.1	53.8	43.0	35.6	33.1	31.4	26.2	26.7	25.4	28.0
1980	98.4	74.0	51.6	42.9	35.4	36.6	32.8	30.1	27.2	22.9	27.1
1981	85.2	66.8	54.7	41.1	34.2	31.9	28.2	24.7	24.4	23.9	26.1
1982	78.0	63.1	39.3	36.0	30.2	27.1	23.9	22.1	18.8	22.4	26.1
1983	80.6	61.5	43.6	34.3	31.2	26.3	23.9	23.5	20.9	20.7	22.8
1984	93.0	68.3	48.1	37.7	29.8	28.7	26.3	24.1	24.5	21.7	25.1
1985	101.5	68.5	44.2	35.8	29.9	26.2	24.3	23.5	24.8	19.5	23.1
1986	97.1	66.5	46.1	35.9	33.7	27.6	25.6	24.3	22.8	18.7	26.2
1987	95.1	69.0	49.9	36.5	32.8	28.6	28.2	24.6	23.8	26.0	24.5
1988	93.6	66.3	46.4	38.7	30.4	30.8	24.4	23.4	25.8	23.2	26.1
1989	90.0	64.3	44.7	34.0	31.3	26.8	25.6	26.5	21.4	22.4	25.4
1990	85.3	58.9	43.1	33.9	29.9	25.0	23.1	22.4	20.6	20.9	24.5
1991	79.8	57.3	39.0	30.0	25.1	23.4	21.9	22.2	17.4	18.3	22.0
1992	68.7	47.9	32.5	27.0	22.9	22.9	21.4	20.4	19.5	15.7	21.1
1993	66.9	44.9	30.8	27.3	24.4	22.0	18.5	17.4	19.4	17.0	22.2
1994	70.2	45.3	34.9	29.9	23.5	23.0	20.2	20.8	18.5	20.1	23.0
1995	65.5	49.3	32.7	29.6	27.1	22.9	20.9	20.5	19.2	18.8	22.3
1996	61.5	44.5	29.0	26.2	24.6	21.9	21.0	18.8	19.0	21.1	21.8
1997	59.3	33.2	25.0	20.9	19.4	19.4	18.0	16.7	18.1	17.2	22.9
1998	50.5	35.5	23.6	20.8	20.3	19.0	17.9	16.2	17.1	13.3	17.5
1999	54.2	35.3	24.4	21.9	18.6	18.3	15.6	14.3	15.3	14.7	17.7
2000	55.0	40.1	26.5	21.3	21.0	19.8	17.6	17.4	15.4	15.5	19.4
2001	59.7	42.0	26.6	23.1	20.8	19.4	18.4	18.0	16.4	15.8	23.5
2002	65.8	41.7	28.2	21.3	21.7	20.1	19.3	16.7	17.1	15.8	23.3
2003	57.6	41.2	28.1	20.3	20.8	20.6	19.9	18.0	17.7	18.1	25.5
2004	56.6	40.4	28.4	23.5	23.9	21.6	19.5	18.9	14.7	15.3	23.2

Source: California Department of Highway Patrol, Department of Motor Vehicles. See Data Sources.

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