Driving Among Urban, Suburban and Rural Youth in California

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Improving safety among young drivers depends partly on a full understanding of the experiences and needs of those young people. Driving practices and experiences may vary significantly between rural, suburban and urban youth, but these differences have been little explored. The availability of public transportation, travel distances, demographic differences and other factors could lead to variations in driving behaviors among urban, suburban, and rural youth. This descriptive analysis examined differences in driving experiences and behaviors between youth who live in large metropolitan communities compared with those living in suburbs and rural areas. Results showed that urban youth were significantly less likely to be licensed than youth in suburban or rural areas, and that was associated with significant variation both in reported amount of time driving and in the likelihood of driving unlicensed. In general, rural and suburban youth reported spending more time behind the wheel, and were also more likely than urban youth to report risk behaviors associated with driving such as reckless driving or driving after using alcohol. These results provide support for targeted education and enforcement measures to improve safety among young drivers.

Youth driving has been a focus of research and regulation for several decades. Each year, more than 4,000 teenagers are killed in car accidents; these young people represent between 28 and 30 percent of the total cost of vehicular accidents, although they are only 14 percent of the population (Centers for Disease Control and Prevention, 2008). A number of factors combine to affect the risks of young people driving. One of these factors which has been relatively little researched is the impact of urbanicity of the environment on youth driving safety and behaviors.

Urban, suburban, and rural youth experience differing road conditions and in some cases, differing reasons to drive. Urban youth are likely to have greater access to public transportation and shorter distances than rural or suburban youth. Rural and suburban youth tend to use cars for travel more than urban youth do (Jones, Davis, & Eyers, 2000). In addition, the differing environmental circumstances of driving in a city or town compared with a rural area, where there are fewer driveways and other physical obstructions as well as fewer vehicles on the road, may impact the challenges perceived by the driver.

Driving experiences vary by place, which could cause variations in youth driving behaviors across geographic contexts. The urbanicity of the driving context has been shown to be associated with the difficulty of driving with respect to cognitive load on the driver (Harms, 1991); driving in an urban area tends to be more cognitively taxing, and that more challenging experience is associated with lower driving speed. Driving in rural areas also imposes fewer demands on the driver's visual attention than driving in urban areas (Lansdown, 2003). Youth who drive in urban areas therefore can expect a more demanding driving experience cognitively. The continued growth of urban centers – urban sprawl – also increases the amount of miles driven and the potential for accidents among teens (Trowbridge & McDonald, 2008).

However, despite the less cognitively challenging environment, rural youth may experience excessive risk due to driving speed. Speed is a strong predictor of the impact of injury on car passengers, and rural areas tend to have higher driving speeds. Data show that fatalities and hospitalizations for children and youth related to automotive crashes are significantly higher in rural areas than in urban ones (Kmet & Macarthur, 2006).

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In addition to speed, a risk associated with driving that has been demonstrated to vary significantly across urban, suburban and rural youth is driving after alcohol use. Rural youth have been reported in a number of studies to have higher rates of driving after drinking (Pruitt, 2009; Muilenberg, Johnson, Usdan, Annang & Clayton, 2007; Greggo, Jones, & Kann, 2005). This finding parallels research that generally shows alcohol use, particularly binge drinking, to be more common among rural than among urban adolescents (e.g., Cronk & Sarvela, 1997).

Some research also indicates that cultural differences may underlie differing risk taking behaviors in rural, suburban, and urban areas. Dunkley (2004) found that rural communities had a higher tendency to encourage risk taking behaviors, particularly among boys. In addition, compared with urban drivers, rural drivers have a greater tendency to underestimate risk perceptions of behaviors such as failing to wear seatbelts, and have lower appreciation for governmental interventions with respect to road safety (Rakauskas, Ward, & Gerberich, 2009).

This study used survey data from high school seniors in several urban, rural, and suburban areas in California to examine behavior and risk differences among youth from varying driving contexts.

METHOD

For this analysis, urban was defined as cities of at least 75,000; rural or small town comprised areas with populations under 10,000; and suburbs were towns of 10,000 to 75,000. High school seniors at twelve high schools in California were surveyed for this study. The 488 urban students in the sample were drawn from three large, inner-city public high schools in each of three California cities. The study also included 1,052 youth surveyed whose four high schools were located in suburban areas, and 400 youth who attended five high schools in rural areas. Counties from which data were collected for this study included Sacramento; Yolo; Fresno; Madera; Tulare; Kern; and Los Angeles.

Seniors at each of these schools were surveyed in their English classes during 2006 about their driving patterns and behaviors. The survey was developed following a review of current literature about issues in teen driving and included information about licensure, driving experiences and behaviors, and driver education, as well as family rules around driving. A Spanish version of the survey was provided for those students who wanted or needed to take the survey in Spanish, although the vast majority of surveys were completed in English. Parents were allowed to opt students out of participation, but only 12 parents did so. Surveys were tabulated using Excel and analyzed in SAS (SAS Institute, 2004). *P*-values for differences among urban, suburban, and rural groups were calculated using Mantel-Haenszel chi-squares in SAS.

RESULTS

Demographics

Demographic characteristics for urban, suburban, and rural youth in this sample are displayed in Table 1. Approximately half of urban youth were Latino, similar to the rural sample, but higher than the percentage for suburban youth who were sampled. Urban youth were more likely to be Asian/Pacific Islander or African American and less likely to be white than were suburban or rural youth. Most urban youth attended a low-income school (a school with at least half of students receiving free- or reduced-price meals); 18 percent attended a moderate-income school (with between 20 and 49 percent of students receiving free- or reduced-price meals), and no urban students attended a higher-income school (with fewer than 20 percent of students receiving free- or reduced-price meals), which contrasted sharply with the suburban students, about 39 percent of whom attended a high-income school.

Driver Education and Training

Learning to drive is an important milestone for many adolescents, and involves a sequence of events, typically including in-class driver education, in-car driver training, and often practice with parents in the family car. Adolescents who are learning may rely on a variety of resources in the learning process, including parents or other family members, teachers, friends or others. This survey included a question about the resource the student perceived as being most important to them when learning to drive. Across all three groups of youth (urban, suburban, and rural), parents were most frequently reported as the most important resource

TABLE 1
Demographics

	Urban n=488	*Suburban n=1052*	*Rural n=400*	*p-value*
Race/Ethnicity				
Latino	49.0	32.0	54.1	< .0001
White	11.2	52.3	36.2	
Asian/Pacific Islander	21.2	10.4	3.0	
African American	16.8	2.7	2.5	
Native American	1.9	2.5	4.1	
Gender				
Male	52.1	50.3	53.2	.7942
Female	47.9	49.8	46.8	
School income level				
High-income school	0.0	38.9	26.3	< .0001
Moderate-income school	17.8	61.1	32.3	
Low-income school	82.2	0.0	41.5	

for young people in learning to drive. Driver training, the in-car component of driving education, was reported as the most important resource for 30 percent of suburban youth and 21 percent of rural youth, but only 13 percent of urban youth (although differences across the three groups were statistically nonsignificant). Driver training is required for obtaining a license in California, but is also expensive, typically several hundred dollars for the six hours of professional training in a car that is required for receiving a driver's license before age 18. Since most of the urban youth in this sample attended low-income schools, many of them may come from families unable to afford driver training, which may contribute to the lower perceived importance of driver training as an important resource.

Driving Characteristics and Experiences

Respondents' driving characteristics and experiences are shown in Table 2. Urban students were far less likely than suburban or rural students to report having a driver's license or permit; almost two-thirds of urban students had neither of these. Despite reporting having no license or permit, most urban youth (as well as most youth in other places) did report driving on occasion. Comparing responses on driving to responses on licensure allowed us to examine the legality of driving among youth in this sample. In urban areas, about 28 percent of young people reported driving even though they had neither a permit nor a license. This value was higher than among youth in suburban or rural areas. Urban youth were significantly less likely than youth in rural or suburban areas to be driving legally, and were more likely to be nondrivers.

Respondents who did not have a permit or a license were asked why not. Youth gave a wide range of reasons. However, despite the higher rate of nonlicensure among urban youth, the reasons for not obtaining a license were similar across urban, suburban, and rural youth. Not having access to a car and the cost of insurance or obtaining a license were predominant reported factors across all three groups, as was just not being interested in or wanting a license, waiting to turn 18, or not being allowed to obtain one. Many youth in all areas also reported being too busy to obtain a license, or that the driving rules for teens were too restrictive. Urban youth were significantly less likely than rural or suburban youth to report being an undocumented immigrant as a reason for not having a license.

Among youth who were driving, most reported getting to school as a primary reason for driving, although this was more common in suburban areas than in urban or rural ones. Rural schools likely have better school bus coverage than other areas, while urban schools are less likely to have available parking for students. Suburban youth were also more likely than urban or rural youth to report driving to their own activities such as clubs or sports practice; otherwise, urbanicity was not associated with reasons for driving.

Rural youth reported driving slightly more hours per week than urban or suburban youth. Urban respondents were less likely than other youth to report driving after 11:00 pm, which is the legal curfew for youth with fewer than 12 months post-licensure.

Fewer than one in five youth reported having been in a crash as a driver, but among those who had been in a crash, urban youth (30 percent) were more likely than suburban youth (12 percent) or rural youth (9 percent) to say someone was hurt in the crash. Urban youth were also more likely (48 percent) to

TABLE 2
Driving Characteristics (Percentages, except hours per week)

	Urban	*Suburban*	*Rural*	*p-value*
Licensure status				
Have a license	23.5	64.5	50.5	< .0001
Have a permit	13.3	9.7	15.5	
Neither license nor permit	63.2	25.8	34.0	
Driving and legality				
Driving legally	36.8	74.2	66.0	< .0001
Driving illegally	28.5	5.8	17.0	
Not driving	34.7	20.1	17.0	
Mean hours per week driving	9.9	8.4	11.7	.0014
Main reasons for driving (among drivers)				
To get to school	58.5	76.4	66.1	.0366
To get to work	36.9	45.2	35.2	.6307
Run errands or help with family responsibilities	39.1	37.4	38.8	.9421
Go to clubs, sports practice or other activities	19.4	34.8	26.7	.0441
Go out with friends	30.8	45.0	34.9	.2984
Drive after 11:00 pm	54.9	73.0	66.0	.0033
Have been in a crash as a driver	16.7	21.2	18.6	.5505

say they had been in a crash as a passenger than were rural youth (32 percent); half of suburban youth reported having been in a crash as a passenger.

Family Rules

Parent involvement in adolescents' lives, such as with education, tends to be associated with positive outcomes. We examined parental rules about driving, shown in Table 3. For the most part, urban, suburban, and rural adolescents reported a similar likelihood of having various parental rules. However, rural youth were less likely than youth in urban or suburban areas to report paying for insurance or for gasoline, while urban youth were less likely than suburban or rural youth to report having to run errands. An item of interest is the last rule on the list, driving with friends in the car. At the time of this survey, adolescent drivers with less than 12 months driving experience were not allowed to transport young passengers unless an adult was in the car. However, very few youth (between 10 and 16 percent, depending on the area) reported that they were not

TABLE 3
Rules About Driving (Percentages)

	Urban	*Suburban*	*Rural*	*p-value*
I have to pay for my own insurance.	24.8	22.2	16.2	.0078
I have to pay for my own gas.	55.6	53.4	47.7	.0447
I have to buy my own car.	17.9	18.2	16.5	.6438
I have to maintain the car.	42.4	51.4	47.4	.2354
I have to run errands.	31.8	39.6	40.7	.0243
I have a curfew.	30.8	46.5	37.3	.1283
I have to drive others around.	14.6	17.0	16.5	.5363
I have to keep my grades up.	42.1	47.9	44.7	.5467
I can't drive with my friends in the car.	15.9	15.1	10.4	.0448

allowed to drive with friends in the car. Urban and suburban youth were somewhat more likely to report this rule than rural youth; it is possible that the difficulty of finding alternative transportation in rural areas may affect parents' willingness or ability to comply with state laws around driving with adolescent passengers in the car.

Risk Behaviors

Adolescents in this survey also reported on risky behaviors around driving, shown in Table 4. Suburban youth were slightly more likely than urban or rural youth to report having been distracted by a passenger's behavior, while urban youth were least likely to report this, although the significance of the difference was marginal ($p < .10$). Among those who reported having been distracted by a passenger, text describing reasons for the distraction was coded. Some commonly reported reasons included passengers talking or yelling (about half of distracted youth reported this), general fooling around (28 percent), playing music or dancing in the car (about 16 percent), pointing something out (8 percent), accidental distractions such as spilling something (4 percent), and deliberate distractions such as poking or tickling the driver, or moving the rear view mirror (10 percent of distracted youth). There were no significant differences among rural, suburban, or urban youth on reasons for reported distractions.

Youth driving dangerously when they have friends in the car was a commonly reported occurrence among respondents in this sample. Between 51 and 63 percent of youth in each area had been a passenger when a friend was driving dangerously, although this was significantly less common among urban youth than rural or suburban ones; the more frequent driving with friends reported among the latter two groups could account for the difference in this question. Driving after alcohol use was also more commonly reported among suburban and rural youth (each about 20 percent) than among urban young people (13 percent), confirming previous research; for driving after drug use, the proportion was again smaller for urban youth but the difference was not statistically significant. Substantial fractions of young people reported that they had been a passenger of a driver who had been drinking or using drugs. These differences did not vary across urban, suburban, or rural areas, and indeed was identical in each area (28 percent) for being a passenger of a driver who had been using drugs.

Summary of Differences Across Geographic Areas

Urban, suburban, and rural youth reported many of the same driving experiences and behaviors, but there were some significant differences among the areas.

Demographics varied across the three groups. Urban youth were less likely than youth in other areas to be white and were more likely to attend a low-income school. Suburban youth were more likely to be higher-income and white than rural or urban youth. In many cases rural youth reported behaviors that were intermediate between the suburban and the urban, perhaps reflecting the intermediate socioeconomic status and ethnicity of rural youth relative to the other groups.

Rural youth were generally less likely than urban or suburban youth to report having family rules around driving; it is possible that the greater

TABLE 4
Driving Risk Behaviors (Percentages)

	Urban	*Suburban*	*Rural*	*p-value*
Have been distracted by a passenger's behavior	29.7	41.0	36.5	.0996
Been a passenger when a friend was driving dangerously	51.1	63.0	60.1	.0043
Driven after drinking alcohol	13.4	20.0	19.8	.0399
Driven after using drugs	11.9	16.9	15.9	.1662
Been a passenger of a driver who had been drinking	45.6	35.9	47.7	.7199
Been a passenger of a driver who had been using drugs	28.4	27.6	28.3	.9080

necessity for driving in rural areas reduces the likelihood of parents to restrict a young person's driving

Licensure varied greatly from place to place. Urban youth were much more likely than youth in other areas to have no license or permit, and to be driving without a license or permit. Suburban youth had the highest rates of licensure.

Urban youth drove less than young people in other areas, including reporting fewer hours per week driven and lower probabilities of driving at night or driving to school. Suburban youth were the most likely to report driving to school, work, sports or other activities as well as driving to go out with friends and in the evening.

Risk behaviors varied somewhat across areas. Urban youth were less likely than others to report having driven after alcohol use, having been distracted by passengers while driving, or having been a passenger of a reckless driver. Suburban youth reported higher rates of some risk behaviors: being the passenger of a reckless driver and driving after alcohol use. Rural youth reported the highest rates in this study of having been a passenger of a driver who had been drinking.

DISCUSSION

Urban, suburban, and rural youth in California experience different conditions in their driving, and these varying conditions were associated with some of the differences in behaviors observed in these surveys.

Urban youth were significantly less likely to report having a driver's license or permit than suburban or rural youth, and they reported driving fewer hours. These findings may have several causes. Shorter distances and greater availability of public transportation may mean that urban youth are the least likely to need to drive. In addition, geographic disparities in family income and ability to pay for licensing and insurance are additional factors that likely affect these results. Urban youth in this study were more likely than young people in other areas to attend a school with a high proportion of students receiving free- or reduced-price meals. In addition, the research findings on the greater cognitive load of urban driving could suggest that urban youth may be less interested in driving simply because of the greater challenge of urban driving. This finding may be of particular interest to schools and driving education programs, as well as law enforcement, in urban areas. Those who work with teens in urban areas on driving issues may not be aware of the extent of unlicensed driving among urban adolescents.

Suburban youth were the most likely of respondents in this study to attend a higher-income school, and the financial costs associated with driving are on the whole less of a barrier to driving for them. Suburban youth were the most likely of the three groups to report driving to school and to other activities, and at night out with friends. The findings on reckless driving with friends and alcohol use among drivers of teen passengers may be of particular interest to parents of suburban young people.

For rural youth, although many are of relatively low incomes, driving is likely more of a necessity, since public transportation is infrequent and distances between home, school and work or other activities can be long. Not surprisingly, rural youth reported the highest number of weekly driving hours, on average. In addition, rural youth were less likely than other young people to report having parental rules around driving; this could also be an outcome of the greater necessity of having young people drive in rural areas. Rural teens more often reported having to run errands, and were less likely to report having to pay for gas or insurance; these data suggest that parents in rural areas are perhaps more likely than other parents to rely on rural adolescents as driving members of the family.

Urban youth appear to drive less than their suburban or rural counterparts, and in some cases this is a protective factor against driving risk behaviors. The lower numbers of urban youth who reported driving or having a license, as well as the lower percentage who reported driving at night, may be a factor in the lower frequency of urban respondents who reported having been a passenger of a friend who was driving dangerously. In addition, it may be a reason for the lower rates of urban youth reporting having driven after drinking alcohol as well as the relatively few who had driven after drug use. The lower frequency of alcohol and drug use among nonwhite youth compared with white adolescents (Wallace, Bachman, O'Malley et al., 2003), could also play a role in these findings, since urban youth were the least likely to be white (just 11 percent of urban respondents were

white) among the three groups.

How can teens become safer drivers? Increasingly states are moving toward adopting graduated driver licensing rules (GDL) that allow teen drivers to practice driving under relatively safer conditions, such as daylight hours and without young passengers in the car, under the supervision of an adult. GDL allows novice drivers to develop their driving skills over time, by incorporating restrictions on driving such as restrictions on hours the driver is allowed to be on the road and restrictions on passengers allowed in the vehicle; some states include additional restrictions such as cellphone use or seatbelt provisions. GDL has been evaluated and demonstrated to be associated with a lower crash rate for new teenage drivers (Shope & Molnar, 2003). California has also recently outlawed talking on cell phones and texting while driving, both of which have been demonstrated to be associated with crashes and may be more common among teenage drivers.

Another solution to preventing teenage crashes could lie with helping peers become positive influences on teen driving (Allen & Brown, 2008). Teen socialization can impact their driving behaviors to the extent that youth who are actively engaged with peer social groups are continually striving to please peers even while driving; teens who are driving with other teens in the car are constantly trying to balance their social status with the peer group with the necessity of paying attention to ensure safety when driving (Allen & Brown, 2008). The current evidence suggests that messaging and media may also play a role in the distractions that teens experience while driving (Henk & Fette, 2009).

Teen driving is also impacted by culture and values to which they are exposed. Young people model the driving behaviors of parents and respond to the rules and guidelines parents employ to structure their teen's driving behavior. Teens whose parents exhibit healthy and appropriate driving behaviors and have those same expectations of their teen drivers tend to be involved in fewer accidents (García-España, Ginsburg, Durbin, Elliott & Winston, 2009).

CONCLUSION

Urban, suburban, and rural youth in this study all reported high-risk driving behaviors, including driving without a license or permit, driving after alcohol or drug use, and driving with friends in a high risk manner. Risks were not at a uniform prevalence from place to place, but the risks existed at some level in each of the three areas. The high level of unlicensed driving among urban youth – more than one in four urban respondents was driving without a license or permit - was a particular concern identified in these data, and likely associated with the socioeconomic status of urban youth. If enforced by parents, graduated driver licensing rules could help reduce risks for urban, suburban, and rural youth in California. In addition to unlicensed driving, when questioned about rules specific to California's GDL rule, including driving after 11:00 at night and driving with friends in the car, many youth in this survey reported that their parents did not enforce these rules. More education of parents about teen risk behaviors and driving rules through the media might help to reinforce the graduated driver licensing rules which have helped to reduce crash fatalities among young people in California and other states.

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