

The North Carolina Graduated Driver Licensing System:

Urban - Rural Differences

**University of North Carolina
Highway Safety Research Center
730 Airport Road
Chapel Hill, NC 27599-3430**



This project was funded in part by the National Highway Traffic Safety Administration under cooperative agreement no. DTNH22-94-H15148. The opinions, findings, and recommendations contained herein are those of the authors, and do not necessarily represent those of the NHTSA.

February, 2001

The North Carolina Graduated Driver Licensing System: Urban - Rural Differences

As states consider implementing comprehensive graduated driver licensing systems to help reduce the unacceptably high rate of teen driver crashes, injuries and deaths there are relatively few objections. The approach makes good sense to most casual observers as well as to law enforcement officials, public health advocates and injury prevention researchers. However, there is often a concern among legislators representing more rural areas that some of the central elements of GDL may place an undue burden on residents who live outside urban areas.

The critical provision that young beginning drivers must spend an initial period of at least six months driving only with an adult supervisor in the vehicle before they are allowed to drive on their own sometimes causes concern. Depending on the particular configuration of a GDL system, this provision can have the effect of delaying the age at which young persons can begin assisting with family farm work, although it often does not do so. Although exceptions for such driving are often included in GDL systems, the perception may persist that GDL represents a threat to the economic interests of living in more rural areas.

A critical provision of the second stage in the graduated licensing process, which limits young drivers' unsupervised nighttime driving to the early evening hours, also sometimes produces greater concern among legislators representing more rural areas. Finally, provisions that prohibit inexperienced teen drivers from transporting teen passengers or young children until they have amassed several months unsupervised driving experience also produce concern.

There appear to be three main reasons that these restrictions during the initial two phases of a comprehensive GDL system are met with less enthusiasm from rural legislators. In addition to beliefs about the need for young persons to begin driving early in order to contribute economically to families, there is the fact that in rural areas, teens have far fewer alternative modes of transportation than in suburban and urban areas. There is no mass transit, walking or bicycling is rarely feasible, and friends or other alternative drivers may live too far away to provide essential transportation. Hence, in rural areas it is felt that GDL may result in a greater inconvenience for teens and their families than is the case in areas with greater population densities. Either trips have to be foregone completely, or parents and other family members have to continue to transport their children to school, work, and other important activities. Finally, there is a widespread perception that rural roads are safer than those in more urbanized areas. This can give rise to a belief that GDL will force teens in rural areas to endure a more thorough and extensive licensing process that is mainly needed by teens driving in more heavily populated areas with more heavily traveled and more dangerous roads.

This report addresses some of the concerns mentioned above, using data obtained as part of an evaluation of the North Carolina Graduated Driver Licensing System. North Carolina is a largely rural state. Despite having a population of more than 7 million, a substantial proportion of North Carolinians live in small towns and rural areas. According to census data for July, 1999 less than half the population lives in one of the 191 municipalities with 2,500 residents or more. Only six municipalities have a population of 100,000 or more. This affords an ideal opportunity to examine the effects of the NC GDL program in areas that are heavily populated, those that are less so, and those that are quite rural (29 of the states' 100 counties have fewer than 25,000 residents; 14 have fewer than 15,000).

The North Carolina Graduated Driver Licensing System

On December 1, 1997 North Carolina became the second state – following Michigan – to enact a comprehensive Graduated Driver Licensing (GDL) system. The North Carolina GDL program is a three-tier licensing system. The conditions and restrictions for each level are briefly summarized below. The NC system embodies three elements that often cause concern for legislators who represent less populous regions of their states. First, it involves a long initial period (12 months) when only supervised driving is allowed. Second, there is an early nighttime driving restriction that lasts at least until age 16 ½. Finally the requirement of a completely clean driving record for 6 continuous months at each stage in order to progress to the next level of licensure can delay the age at which unrestricted driving is allowed. There is no explicit passenger restriction although the requirement for all occupants to wear a seat belt limits the number of passengers to 4 in most automobiles and two in pickup trucks. In view of recent research on passenger effects (Chen et al., 2000; Preusser et al., 1998), this is unlikely to produce meaningful safety benefits via a reduction in passenger effects.

Level 1 (Limited Learner permit)

Minimum age 15

Must have completed Driver Education and passed written, sign and eye tests

Must be supervised by parent, guardian or other approved adult at all times when driving

May only drive between 5 a.m. and 9 p.m. during initial 6 months, any time of day after that

All vehicle occupants must wear seat belts

Number of passengers limited to number of available, working seat belts

Must spend at least 12 months at this level

Final 6 months must be violation-free to advance to Level 2

Level 2 (Limited provisional license)

- Minimum age 16
- May drive unsupervised between 5 a.m. and 9 p.m.
- Must be supervised by parent, guardian or approved adult when driving between 9 p.m. and 5 a.m.
- All vehicle occupants must wear seat belts
- Number of passengers limited to number of available, working seat belts
- Must spend at least 6 months at this level
- Final 6 months must be violation-free to advance to Level 3

Level 3 (Full provisional license)

- Minimum age 16 ½
- All vehicle occupants must wear seat belts
- Number of passengers limited to number of available, working seat belts

Preliminary Evaluation

An evaluation of the effects of the NC GDL program on crashes among 16 year-old drivers found dramatic results (Foss, 2000). Adjusting for changes in in population, between 1997 and 1999 the number of crashes involving 16 year-old drivers decreased by 29%. More serious crashes, involving a death or serious injury to the 16 year-old driver, decreased similarly (32%). Finally, in clear response to the nighttime driving restriction, crashes occurring between 9 p.m. and 5 a.m. declined by 49%. During this same period, crashes among older drivers, which would reflect general changes in crashes due to economic factors, greater enforcement efforts or other factors, remained essentially unchanged – crashes increased by 1%, more serious crashes declined by 2%.

Urban - Rural differences in the effects of GDL

The focus of this report is on how the new graduated licensing system affected the crash experience of drivers across the spectrum of driving conditions that are found when moving from more to less urbanized areas. In addition, we will report some findings from a telephone interview survey conducted with nearly 2,000 parents and teens throughout North Carolina to learn their opinions about, and experience with, the graduated licensing system.

To distinguish more and less rural areas, the 100 counties in North Carolina were ranked by the proportion of the county population living in a municipality with 2,500 residents or more. These counties were then grouped into quartiles from most to least urban. We believe this measure captures the ‘ruralness’ of driving better than simple population, or population density, though these are clearly related. Given that residences outside a municipality will, almost by definition, be geographically dispersed, this measure seems to better reflect whether homes are spread out or more concentrated within a small geographic region than either simple population counts or population density.

Figure 1 shows both the proportion of the population living in a municipality for each of the four quartiles and the proportion of the state population living in each of the quartiles. Whereas 61% of

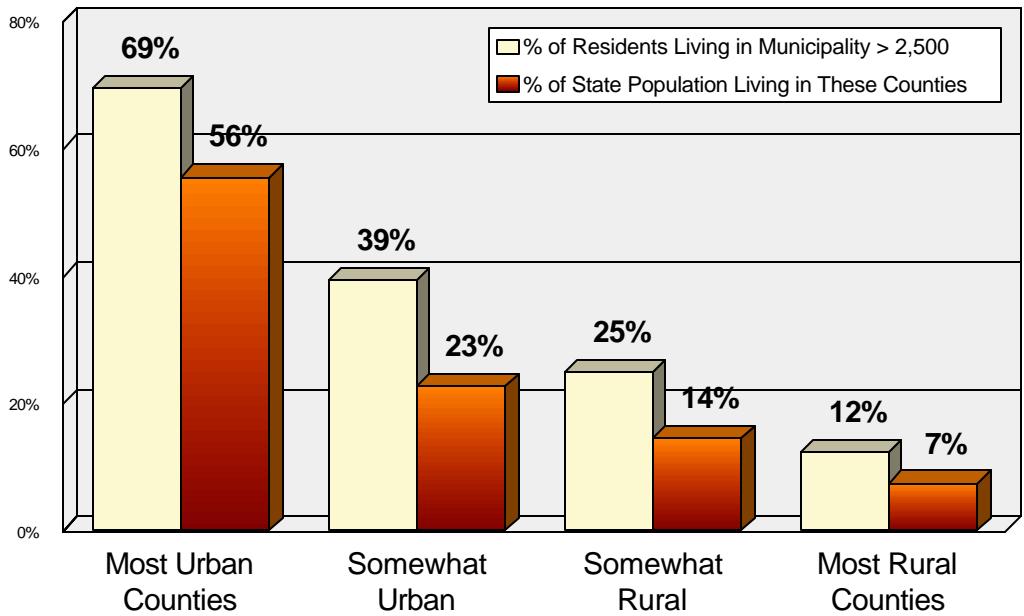


Figure 1 Population distribution in North Carolina counties by degree of urbanization

persons in the most urban counties live in a municipality and, therefore, within relatively close proximity to schools, businesses and one another, only 11% of persons in the most rural quartile live in a municipality. Not surprisingly, a much greater proportion of the state's residents (65%) live in the 25 most urban counties than in the more rural areas.

Figure 2 shows serious crash rates (involving a fatality or incapacitating injury to the driver) per 10,000 residents for each of the county groupings. Although rural roads are less heavily traveled, it is clear that serious crashes are more common in the more rural areas of the state. Fatal and serious injury

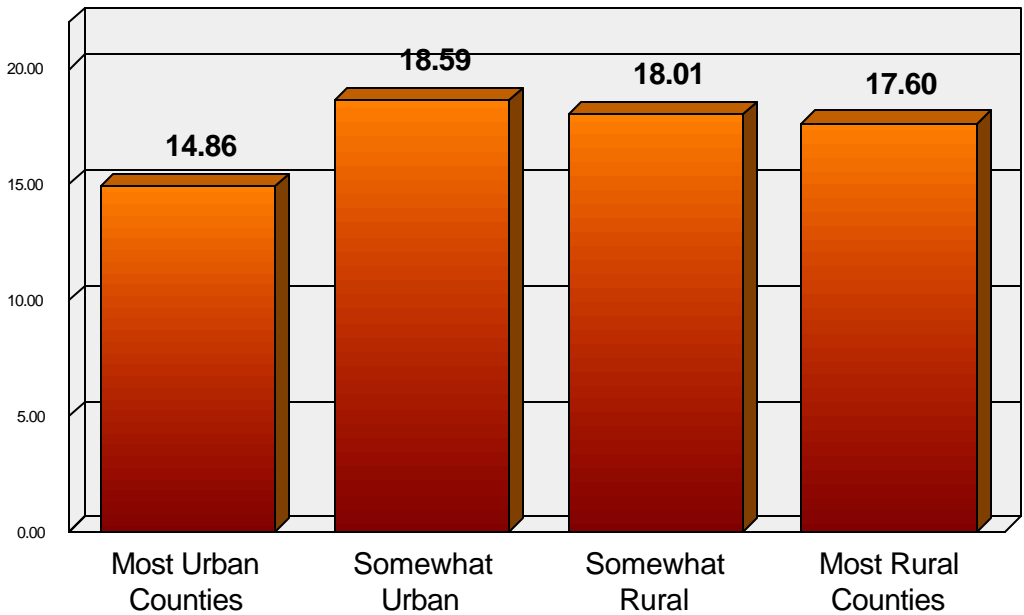


Figure 2 Fatal & serious injury crash rates per 10,000 population by degree of county urbanization, North Carolina - 1999

crashes were anywhere from 18 to 21 percent more likely in the more rural counties than in the most urban counties of North Carolina during 1999. This is an important matter for policy makers to recognize as they debate the possible need for a variety of traffic safety measures, including GDL. A number of studies have documented the greater dangers associated with driving in more rural areas (Baker et al., 1992). There are numerous reasons for the greater rate of more serious crashes in more remote areas. Although the opportunity to collide with another vehicle is less in a rural area, the roads tend to be older, less well-maintained, and less safely designed, travel speeds are generally higher (increasing both the likelihood and seriousness of crashes), lighting is worse at night, emergency rescue services are more widely dispersed and crashes are less likely to be reported immediately after they occur, especially if they involve only one vehicle (which is also more likely in a rural area).

Figure 3 shows the change in crashes for 16 year-old drivers in North Carolina from 1997 to 1999

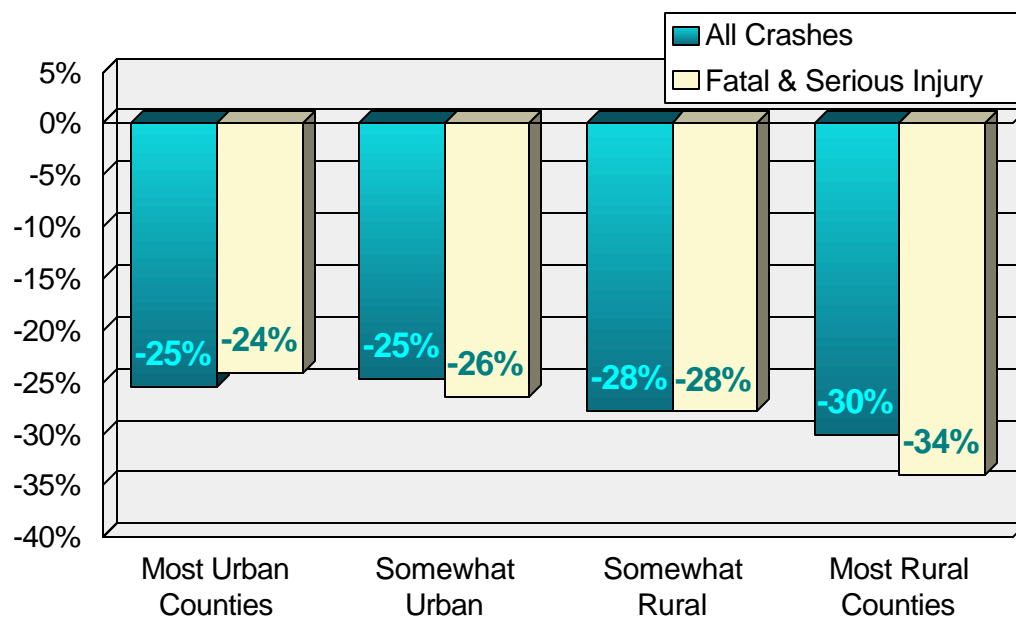


Figure 4 Decrease in 16 year-old driver crashes by severity and degree of urbanization, North Carolina - 1999

for the most to least urban counties. For comparison, crashes declined 29% statewide and serious crashes decreased 32%. It is clear that the overall effects of the NC graduated driver licensing system were quite similar regardless of how urban or rural a county might be. If anything, there were slightly greater safety gains in the most rural counties. Whereas crashes declined by about 25% in the most urban counties, they declined by 30% in the most rural counties; more serious crashes declined by 34% in the more rural counties.

Figure 4 indicates that similar benefits of the nighttime driving restriction were achieved regardless of how urban or rural a county is. Again, if anything, slightly greater benefits were realized in the most rural

counties. The decline in nighttime crashes was about double the decline in daytime crashes across the state. However, whereas nighttime crashes declined by about 46% in most of the state, they declined by 52% in the most rural 25 counties. Comparing changes from 1997 to 1999 for older drivers (21 and above) it is clear that none of the changes reported above are due to general increases in safety or decreases in driving. Regardless of how urban or rural counties were, crash rates increased slightly in for drivers older than 21 while they declined dramatically for 16 year-old drivers.

Opinions of rural vs. urban residents

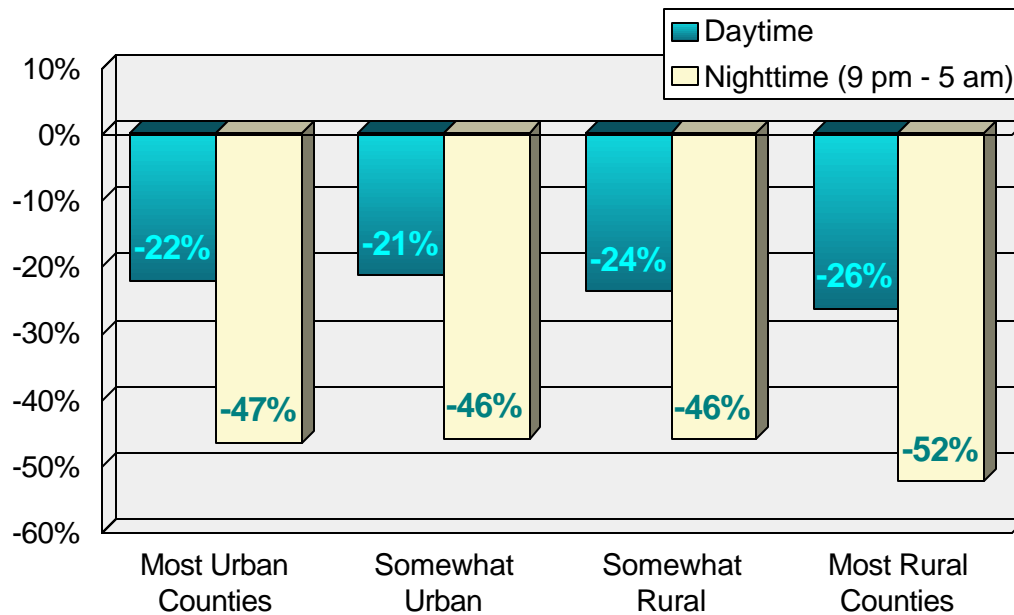


Figure 4 Change in sixteen year-old driver crashes by time of day and degree of urbanization, North Carolina - 1999 vs 1997

During the spring of 1999 we conducted telephone separate interviews with nearly 900 randomly sampled North Carolina teens (ages 15, 16 and 17) and one of their parents to gauge experience with the new licensing system as well as opinions about the new limitations. For the present analysis, results for only those teens (and their parents) who had some experience with the new licensing system are reported. That is, responses were analyzed for only those families where the teen had obtained at least a Level I driving permit. Excluding those who had not yet begun the licensing process leaves a sample of 600 teens and 600 parents.

Parents¹ were asked their opinions about the graduated licensing system as a whole. In addition, they were asked about three specific elements of the GDL system: Whether they thought the initial 12 month supervised driving period was too long, whether they agreed with the 9 p.m. to 5 a.m. driving restriction

¹ Parents included 25 stepparents and 6 grandparents.

for teens in the second level of GDL and whether they approved of the requirement to maintain a clean driving record for six months in order to move to the next level of licensing. For these interviews, individuals were specifically asked whether they lived in an urban, suburban or rural area. For the present analyses, 'urban' and 'suburban' were combined into a single category as there are relatively few truly urban areas in North Carolina. As can be seen in Table 1, there were few differences between parents living in rural and urban/suburban areas. Although overall strong approval of GDL was slightly less in rural areas (67% vs 77%), there were no differences in opinions about the three main elements.²

² The slight difference in approval of the night driving restriction is not statistically significant.

Table 1 Parents' opinions of graduated driver licensing and specific provisions of the North Carolina graduated driver licensing system.

Question:	Residential Location	
	Urban/Suburban	Rural
Do you approve of graduated licensing? (N = 576)		
Highly approve	77%	67%
Somewhat approve	20	29
Disapprove*	4	4
Is the requirement of 12 months supervised driving too long? (N = 572)		
Too long	6	7
About right	86	83
Too short	9	11
How do you feel about the nighttime driving restriction for the first six months with a Level II driver's license? (N = 570)		
Strongly agree with it	44	41
Agree with it	44	45
Disagree with it*	12	14
How do you feel about the requirement to maintain six months ticket-free driving? (N = 576)		
Strongly agree with it	61	53
Agree with it	36	44
Disagree with it*	3	3

* Strongly disapprove/strongly disagree were combined with disapprove/disagree; less than 1% expressed strong disapproval/disagreement on any of the four items.

In addition to questions asking directly for opinions about GDL, we also asked parents whose teen was in the first level, requiring their supervision to driver, whether they had difficulty finding time to supervise their son or daughter's driving. Fully 95% found it to be either very easy (44%) or moderately easy (50%) to find time to do this. Although this question does not directly address the issue of needing to continue transporting a child for a longer period of time, it does suggest that by an overwhelming margin parents don't find the additional time required of them by the GDL system to be a particularly large intrusion into a busy schedule. Since this added duty inescapably does increase parents' workload,

we suspect that lack of complaint about the system in general, or its various elements, reflects parents' acceptance that this is something they should do and, indeed, perhaps enjoy doing. Focus group discussions we recently held with parents revealed this sentiment among a number of parents, even those who initially were not looking forward to the GDL process.

Another indication that parents did not feel unduly burdened by their added duties under the GDL system is that those whose teen had progressed completely through level 1 were no less likely to approve of the GDL program than those whose teen was at level 1 and who may have just begun their experience with GDL. This pattern held for both urban/suburban parents and rural parents. Finally, those parents whose teen had progressed to Level 2 and were under the night driving restriction were more likely to strongly agree with it than were parents whose teen had not yet gotten to that stage (46% vs. 38%).

Teens

Teen respondents were asked only two opinion questions: General opinion about GDL and what they thought about the nighttime driving restriction. Table 2 presents the results for urban/suburban and rural teens separately. It is clear that teens have a less positive opinion of GDL and the night driving restriction than parents do. On the other hand it is also apparent that overall, they are favorably disposed to this new licensing program; 80% approve. The difference between teens and their parents is in the degree of approval. Whereas more than 70% of parents highly approve, only about 20% of teens highly approve.

Table 2 Teens' opinions of the North Carolina graduated driver licensing system and the nighttime driving restriction.

Question:	Residential Location	
	Urban/Suburban	Rural
Do you approve of graduated licensing? (N = 576)		
Highly approve	19%	22%
Somewhat approve	62	58
Somewhat disapprove	13	15
Highly disapprove	5	4
How do you feel about the nighttime driving restriction for the first six months with a Level II driver's license? (N = 576)		
Strongly agree with it	10	10
Agree with it	46	53
Disagree with it	29	21
Strongly disagree with it	14	14

There is also a slight preponderance of approval for the 6 month night driving restriction among teens, with nearly 60% approving. Finally, it is noteworthy that despite the variety of differences between urban/suburban driving, and life conditions in general, there is no meaningful difference in teens' opinions about GDL or the night restriction. Their responses to GDL in general are almost identical. Those teens living in rural areas appear to be somewhat more favorably disposed to the night driving restriction (63% vs 56%), although this small difference is not statistically meaningful.

Summary & Conclusions

Although there are clear differences in travel between rural and urban/suburban areas, there do not appear to be many differences in how North Carolinians from these different areas react to the graduated driver licensing system implemented in late 1997. Whether primarily rural or primarily urbanized, counties throughout the state experienced nearly identical declines in 16 year-old driver crashes after the new system had been in effect for about one year. Serious crashes, minor crashes, nighttime crashes and daytime crashes alike all declined similarly among drivers affected by the GDL system. In contrast, crashes increased slightly for drivers age 21 and older, who would not have been affected by the GDL system.

The new system garnered similar reactions from both parents and teens who experienced the effects of the program. Although there is often concern among legislators that families will be inconvenienced by some of the provisions of GDL that are designed to reduce risks to young novice drivers, there is little evidence that any such disruptions were sufficient to provoke negative attitudes toward the system among those persons most likely to be inconvenienced: parents. Moreover, there were virtually no differences in the opinions between urban/suburban and rural residents among either parents or teens. Hence, it appears that the concern that a comprehensive GDL system may result in great inconvenience for rural residents is unfounded. At the same time, it is clear that the crash reductions experienced as a result of GDL benefit rural residents as much, if not more, than those living in more urbanized areas.

References

Baker SP, O'Neill B, Ginsburg MJ, Li G. (1992) *The Injury Fact Book* (2nd Ed.) New York, NY: Oxford Press.

Chen L-H, Baker SP, Braver ER, Li G (2000) Carrying passengers as a risk factor for crashes fatal to 16- and 17-year-old drivers. *JAMA*, 283, 1578-1582.

Foss RD (2000) *Preliminary Evaluation of the North Carolina Graduated Driver Licensing System: Effects on Young Driver Crashes*. Chapel Hill, NC: University of North Carolina Highway Safety Research Center.

Preusser DF, Ferguson SA, Williams, AF (1998) The effect of teenage passengers on the fatal crash risk of teenage drivers. *Accident Analysis and Prevention*, 30(2), 217-222.