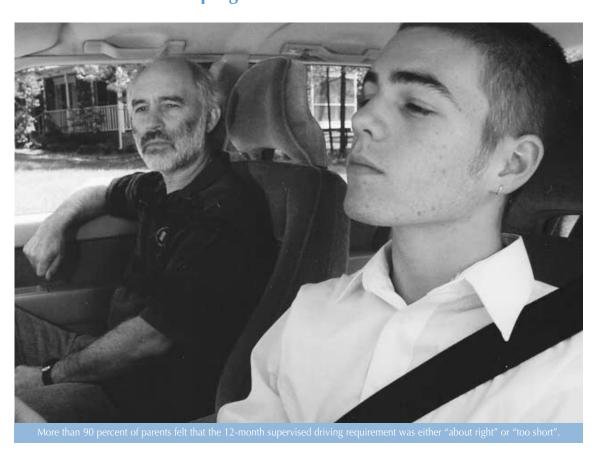




HSRC STUDY SHOWS THAT PARENTS OVERWHELMINGLY APPROVE OF NORTH CAROLINA'S NEW GRADUATED DRIVER LICENSING SYSTEM

Study reveals that teens living in rural areas benefit most from the program



There's no question that North Carolina's new graduated driver licensing system is saving lives. Since the program went into effect on Dec. 1, 1997, motor-vehicle crash rates, injury rates and death rates involving 16-yearold drivers have declined.

There were 25 fewer deaths from motorvehicle crashes involving 16-year old drivers in 1999 than in 1997 in North Carolina. The number of crashes involving 16-year-old drivers that resulted in deaths or serious injuries decreased by 32 percent during that period. Fatal crashes involving 16-year-old drivers between 9 p.m. and 5 a.m. decreased from 13 to only one. And the overall number of crashes involving 16-year-old drivers decreased by 29 percent.

"There's no way you get that amount of change in crashes without something going on and what was going on was the graduated driver licensing program," said Dr. Rob Foss, whose research at the UNC Highway Safety Research Center has focused on teen driver risk for more than seven years.

But just what kind of hardship — if any — does the system known as "GDL" place on parents, especially those living in rural areas of the state? And have crash rates of young drivers in rural areas changed as much as those in urban localities?

An HSRC study completed this February and funded in part by the National Highway Traffic Safety Administration (NHTSA), sheds new light on "rural" and "urban" perspectives on North Carolina's graduated driver licensing system.



"There is often concern among legislators representing more rural areas of states that some of the central elements of GDL may place an undue burden on residents who live outside of urban areas," Foss said. "Teens living in rural areas generally have fewer transportation alternatives than those living in urban and suburban communities. There is also a widespread – but incorrect – perception that rural roads are safer than those in more urbanized areas. This can lead to a belief that teens living in rural areas will not benefit from the structured GDL system."

living in rural areas with those living in urban localities.

Results from a telephone survey of parents and teens conducted in the spring of 1999 were also included in the report. Funded by the N.C. Governor's Highway Safety Program and NHTSA, the phone survey involved interviews with 900 randomly-sampled North Carolina teens ages 15-17, and one of their parents. They were asked how the various components of GDL affected their lives. Only the responses from the 600 teens and 600 parents who had some experience with the GDL process were analyzed for this report.

"We found that North Carolina parents throughout the state overwhelmingly approve of the GDL system," Foss said. Recent studies have reported similar findings in other states.

More than 95 percent of North Carolina parents — regardless of where they live — either "highly approved" or "somewhat approved" of GDL, according to the survey. Similarly, 80 percent of North Carolina teens, regardless of where they live, were found to either highly approve or somewhat approve of the system.

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Rural roads are more deadly

Crushing the myth that rural roads are safer than urban ones, the study found that fatal and serious injury crashes were anywhere from 18 to 21 percent more likely in the more rural counties than in the most urban North Carolina counties during 1999.

"This is an important matter for policymakers to recognize as they debate the possible need for a variety of traffic safety measures, including GDL," Foss said.

In looking at pre-GDL and post-GDL crash rates in urban and rural localities, the HSRC study also found that rural areas benefited equally, if not more so, from the GDL program.

Crushing the myth that rural roads are safer than urban ones, the study found that fatal and serious injury crashes were anywhere from 18 to 21 percent more likely in the more rural counties than in the most urban North Carolina counties during 1999.

Comparing changes from 1997 to 1999, analyses indicate that crash rates declined by 25 percent among 16-yearold drivers living in the most urban counties, while the most rural counties experienced a 30 percent reduction in crash rates among drivers this age.

North Carolina's 25 most rural counties also benefited the most from the GDL protection that prohibits young drivers from driving unsupervised between 9 p.m. and 5 a.m. while they have a "level two" (intermediate) GDL license. Results indicated that from 1997 to 1999, night-time (9 p.m.–5 a.m.) crashes among 16-year-old drivers living in the state's 75 most populous counties declined by about 46 percent. In the 25

most rural counties there was a 52 percent reduction in night-time crash rates among drivers this age.

Strong parental support

North Carolina parents were found to be highly supportive of the night-time driving restriction. More than 85 percent either "agreed" or "strongly agreed" with the restriction regardless of where they lived. Interestingly, parents whose teen had progressed to a level-two GDL license (which includes the nighttime driving restriction) were more likely to agree with this restriction than those whose teen had not yet gotten to that stage.

DRIVER'S ED FOR PARENTS

How to be the best coach you can be



Teaching teens to drive is not as easy as it might ect includes workshops for parents on helping teens become safe drivers. The project is funded To obtain a driver license in North Carolina, teens must spend a full year driving only when there is a parent in the car. Only after doing that, and getting no citations for six months, can they begin driving without an adult supervisor. Consequently, parents these days need to know more and do more than in the past.

"Driving is probably one of the things that we have most over-practiced as adults," said Dr. Ronald Hughes, an applied experimental psychologist and manager of human factors research at the UNC Highway Safety Research Center (HSRC). "Can you think of anything else that you do more often, for a greater period of time — day in and day out — than drive? That's one reason why it's so hard to teach someone else. It's almost second nature to us."

"Many of us learned to drive in such an unstructured environment that we really don't know how to teach someone to drive," Hughes added. But really, the process involves four fundamental principles:



Clear goals during driving lessons



Good communication



Appropriate role modeling



And practice, practice, practice.

"One thing that's characteristic of good instruction is that it instructs you," Hughes said. "You need to know what you want to accomplish when you set out on a driving lesson with your son or daughter and they also need to have some idea what you want to accomplish."

Hughes recommends starting in a safe place like an empty parking lot where your teen can practice smooth acceleration, braking, parking and backing up without worrying about colliding with something. From there, graduate to progressively more difficult situations:



or rural area A quiet residential or rural area



A city business district

During the telephone interviews, parents were also asked their opinion about the initial long period of supervised driving (12 months) that GDL requires during the first level of licensing. They were also asked about the requirement for teen drivers to maintain six months of violation-free driving before they can move up each level of the three-tiered GDL system.

Parents living in urban and rural areas of the state were found to be equally supportive of both restrictions. More than 90 percent of parents felt that the 12-month supervised driving requirement was either "about right" or "too short." And 97 percent of parents either "agreed" or "strongly agreed" with the six-month violation-free driving requirement.

"Of course the million dollar question is does GDL actually make for better drivers?" Foss said.

That answer won't come for another year or so, after more teens have made their way through the GDL system.

"Then we'll be able to compare teen drivers who didn't go through GDL with

those who did and find out just what the crash rate for each group is," Foss said. "At that point we'll have a better sense of whether we've made safer drivers or have just protected them for a year and a half or two with the various restrictions on driving conditions involved in GDL. If all we've done is protect them from greater risks during that time, that's still a grand benefit because we've taken the two most dangerous years of their lives and made them a lot safer."



BAD DRIVERS BEGAT BAD DRIVERS:
A study conducted jointly by HSRC and
the Insurance Institute for Highway Safety
parents had three or more crashes on their
percent more likely to have had at least
parents had no crashes. Likewise children
whose parents had three or more violahad a violation compared with children
tions were 38 percent more likely to have
whose parents had none. The study was



A busy shopping center parking lot



A major highway



An interstate freeway



A situation involving night-driving



And finally an inclement weather situation

"It's important to remember that your teen doesn't have to become an expert overnight," Hughes said. "Be patient and set realistic goals."

How do you know when to move to the next level of difficulty?

Hughes recommends asking two questions: Are you comfortable with how well they're doing? And are they comfortable with how well they're doing? "If the answer to both is yes, then it may be time to move on. Admittedly that is vague, but there's really no totally objective way to say how well you have to park before you can go on and try something more difficult."

BELOW ARE OTHER TIPS TO HELP YOU BE A GOOD COACH:

Encourage, reward and reinforce good driving behavior. "Communication is a problem in a lot of households. When you get behind the wheel to teach someone to drive, it can become even more problematic. It's important to remain calm and positive," Hughes said.

Motivation is a key part of learning. If your teen has it, great! If they don't, try to ignite that spark. "But be careful how you deal with it," Hughes warns. "You can kill their motivation for learning to drive." Many people know about this from experience — a flustered mom or dad just went ballistic on them in the car: "How could you do that? Why didn't you see it? What did you think you were doing?"

"If you use that last phrase," Hughes said, "stop and wait for an answer. It may surprise you. They'll usually tell you exactly what they were thinking and then you can understand what really happened." Remember, they don't know all that you do. And they can't learn it all at once.

Remember that good judgment comes with time and practice. "It's important to remember that good judgment cannot be expected when your teen is at the point where they're just trying to stay on the road. That's why they need months of practice, with you there to help protect them from risks they may not yet be able to recognize." Hughes said. "Be patient. It will come."

Bad drivers beget bad drivers. Set a good example when you drive. Keep your eyes on the road and two hands on the wheel. Drive the speed limit. No eating or drinking while you're driving. Pull over if you need to make a phone call. Use your turn signal. React calmly to aggressive or foolish drivers you encounter. Don't zig-zag around other cars to try to get ahead. Follow at a safe distance. "Remember that your teen is watching you," Hughes said. "If you don't do these things, the indication is that it's not important for them to do them."

apping the road to improved commercial truck safety

HSRC RESEARCH SHOWS THAT INCREASED ENFORCEMENT SAVES LIVES

In 1998, North Carolina was the fourth worst state in the nation in terms of fatal commercial truck-involved crashes. That year, 185 crashes involving heavy commercial trucks on North Carolina roadways took 234 lives.

The following year, the enforcement section of the North Carolina Division of Motor Vehicles began a three-year campaign to increase enforcement in North Carolina's 21 highest truck-crash counties. This resulted in an 18 percent reduction in fatal truck-involved crashes, taking North Carolina's ranking from fourth to eighth in the nation.

While North Carolina still has plenty of room for improvement, the 1999 safety ratings are a step in the right direction, said Dr. Ronald Hughes, manager of human factors research at the UNC Highway Safety Research Center (HSRC). Hughes has been working with the Commercial Motor Vehicle Enforcement section of the North Carolina Division of Motor Vehicles to document and evaluate the effectiveness of the state's commercial truck enforcement activities.

"HSRC's research has shown that enforcement can have a significant impact on the reduction of fatal truckinvolved crashes when specifically applied to those areas having the most significant problems," Hughes said. "With limited enforcement resources, it "HSRC's research has shown that enforcement can have a significant

shown that enforcement can have a significant impact on the reduction of fatal truck-involved crashes when specifically applied to those areas having the most significant problems."

> -Dr Ronald Hughes, HSRC Researcher

is important that we know what kinds of enforcement work best and where that activity should be carried out. From a research standpoint, the interest lies not only in what works, but in the DMV's capacity for carrying out such enforcement programs statewide."

Enforcement was increased by 129 percent in the 21 targeted counties and focused on issuing citations speeding in excess of 15 miles over the limit, following too closely, making erratic lane changes and reckless driving. Nine more North Carolina counties were

recently added to the list of those receiving increased enforcement. It is too soon to tell if this expanded effort is proving effective.

Crashes that kill

Although truck crashes tend to occur more often in more populated counties, HSRC's research shows that fatal truck crashes take place most often in the less populated counties, Hughes said.

"The majority of fatal commercial truck-involved crashes occur on U.S.-or N.C.-numbered highways, not interstates," said Hughes, citing a study he recently completed for the North Carolina Governor's Highway Safety Program that involved analyzing the fatal truck-involved crashes that took place in North Carolina between 1995 and 1999.

"U.S. and N.C.-numbered highways generally tend to be more 'rural.' The wide lanes, paved shoulders and controlled access points that characterize interstate conditions are not typical of non-interstate routes," he said. "Yet vehicle speeds, may approach those on interstates."

"Angle" crashes are more common on these types of roads than on interstates, Hughes added. "These often happen because someone pulls out in front of a truck. People sometimes don't realize that a fully-loaded 80,000-pound tractor trailer can take the length of a football field to stop."

In North Carolina — as in the rest of the United States — the population is continuing to migrate from urban areas to more rural, undeveloped ones. When this happens, it can take time for a road system built to accommodate a sparse population to be modified to serve the needs of a larger population and the increased truck traffic it takes to support that population.

"You typically see intersections in these areas that are governed by nothing more than a stop sign or a yield sign," Hughes said. "In the absence of signalized intersections and controlled access points,

The data show that trucking companies with fewer than 100 vehicles have a higher crash risk than those operating more than 100 vehicles.

the burden for safety is placed more on the ability of the individual driver to make appropriate decisions. We know that drivers underestimate the speed of large approaching objects (like trains. . . like trucks). Driver errors in these cases are often fatal."

HSRC research suggests that more efforts need to be made to educate the driving public about the operational characteristics of large trucks.

HSRC has also focused on the role of truck company size as a factor contributing to increased crash risk. According to Dr. Hughes, the data show that trucking

companies with fewer than 100 vehicles have a higher crash risk than those operating more than 100 vehicles.

"The crash risk, in fact, is twice as high for the smaller carrier," Hughes said. "It may be that smaller carriers are less competitive with respect to the drivers they can hire and keep. Conversely, larger carriers often don't hire young, less experienced individuals, and if someone gets a ticket, they're more likely to be let go.

HSRC research shows that one of the best measures of a trucking company's crash risk is the company's average number of moving violations. Those with more violations tend to have a higher crash risk.

Mapping it out

Working with the North Carolina Center for Geographic Information and Analysis, HSRC researchers are using Geographic Information System-mapping to pinpoint where clusters of crashes are occurring throughout the state.

"People sometimes don't realize that a fully-loaded 80,000-pound tractor trailer can take the length of a football field to stop."

-Dr. Ronald Hughes, HSRC Researcher





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The mapping has proven invaluable in determining where resources should be allocated, said Major Charlie Carden, assistant law enforcement director over uniformed field operations for the state's Motor Carrier Safety Assistance
Program, a part of the North Carolina Division of Motor Vehicles.

"We're able to take these data and send our limited resources to hot spots areas that we know are highly representative for the crashes that we have in North Carolina," Carden said. "We really have moved from being an agency that 'drives data' to an agency that's 'data driven.' I could drive the data simply by putting people out on the highway in areas that may not necessarily be highly represented for crashes. They could write a lot of citations, but what kind of effect would that have on the crash environment? So why don't I put those same resources in areas where we know the crashes and fatalities are occurring and where we can make a major difference."

Beth Evans of the Federal Motor Carrier Safety Administration in Raleigh con-

HSRC's research shows that fatal truck crashes take place most often in the less populated counties.

curred, adding that the Geographic Information System maps allow them to detect anomalies that would normally remain obscure.

"Some of the data show that crashes are occurring along certain (transportation) corridors or in areas that are highly populated," she said. "But then there are clusters of crashes that crop up and there doesn't seem to be any logical explanation as to why they are happening in those locations. It makes you ask more questions. Why is this happening in this particular place? It's not along a major route. Is it a bypass route that the truckers have found to get from one place to another quicker, or to avoid weigh stations?"

"It makes you look at the whole problem in a new way," she said.

Courts & Cops

A new phase of HSRC's work with the Motor Carrier Safety Assistance Program will involve using Global Positioning System (GPS) capabilities to define more precisely where enforcement activities are taking place across the state.

"Officers will be using low-cost, handheld GPS units to collect location data associated with inspection and traffic enforcement activities," Hughes said. "Using GPS to define the location of both crashes and enforcement activities, the DMV will be able to relate the spatial characteristics of the problem with the spatial characteristics of the solution.

"Regarding citation issuance and GPS information," Carden said, "our officers will have to learn to adapt from the old 'on what road,' from what road,' and 'in what direction' language to the new and enhanced methods of collecting and recording finite data and the types of location descriptions they report in digital, coordinate-based terms."

HSRC researchers will also be using Geographic Information System methods to analyze the extent to which citations issued by enforcement personnel are being convicted "as-charged" versus being dismissed or reduced to less serious offenses.

"The adjudication process is key to an effective truck enforcement program," said Carden, "We recognize that tougher truck safety legislation and aggressive enforcement works best when the courts commit to ensuring that commercial vehicle violations exit the court system in the same sense they enter the system; i.e., no reductions, and no plea bargains..."

In defense of the courts, Hughes explained: "The volume of work far exceeds the resources available."

Both Hughes and Carden agreed that enforcement and adjudication need to identify more innovative ways (such as photo-based surveillance and "e-ticketing") that effectively increase the presence of enforcement and the efficiency "HSRC has just brought so much sense to the process. They have taken us from the very elementary level of trying to understand the problem to developing a very comprehensive program to deal with it."

> -Beth Evans, Federal Motor Carrier Safety Administration

of adjudication without adding more "people." It is hoped that the joint focus on the enforcement and adjudication of commercial vehicle traffic violations will unite the courts and law enforcement in the search for more effective ways of doing business.

Understanding & using the data

In summing up HSRC's involvement in researching North Carolina truck safety, Ms. Evans of the Federal Motor Carrier Safety Administration reiterated the value of objective data in bringing together the various stakeholders in a problem. In this case, the trucking industry, those within the state DOT responsible for commercial motor vehicle enforcement, the regulatory components of government, the legislature and the courts are working together on the problem. Through HSRC's ability to facilitate stakeholders' understanding and use of available data, HSRC has played a key role in North Carolina's success in reducing fatal truck-involved crashes.

"HSRC has just brought so much sense to the process," she said. "They have taken us from the very elementary level of trying to understand the problem to developing a very comprehensive program to deal with it."



Pedestrians and drivers are surveyed in new study to identify problematic locations on college campus

A first-of-its-kind pedestrian safety study conducted by researchers at the UNC Highway Safety Research Center and the UNC Department of City and Regional Planning uses "perception" surveys, police crash reports and geographic information system mapping to identify potentially dangerous locations for pedestrians.

Focusing on the campus of the University of North Carolina at Chapel Hill which has experienced an increase in pedestrian crashes over the past several years, researchers used geographic information system (GIS) mapping to plot out where campus pedestrian crashes took place between Oct. 1, 1994, and Sept. 30, 1999.

Then they distributed surveys to drivers and walkers who regularly use the campus to find out where they thought the hot spots were. Their answers were also plotted using GIS.

Combining crash report data and perception survey data in a GIS environment produces valuable information, said Robert Schneider, a graduate student in the UNC Department of City and Regional Planning, who worked on the project for his master's thesis and was the study's principle author. The study was funded through the Pedestrian and Bicycle Information Center housed at the UNC Highway Safety Research Center (HSRC). Dr. Asad Khattak, associate professor in the UNC Department of City and Regional Planning and Charles Zegeer, associate director at HSRC coauthored the study with Schneider.

"The perception survey data compliments the police report data," Schneider explained. "By asking people what problems they have seen while driving or walking on the campus, we've been able to identify locations where problems might occur."

This is information that allows planners to be more proactive in implementing pedestrian facilities in potentially risky locations, he said.

"By asking people what problems they have seen while driving or walking on the campus, we've been able to identify locations where problems might occur."

> -Robert Schneider UNC-Chapel Hill Graduate Student

THE SURVEYS

"Pedestrian crashes occur relatively infrequently and are often spread throughout a particular corridor," Schneider said in explaining the limitations in relying only on police crash reports to identify dangerous locations. "Although pedestrian crashes may occur in clusters, they don't always occur at exactly the same points. So that's where you need some other information to tell you where problems might occur."

The perception surveys do just that.



Schneider distributed 510 driver surveys to a list of people with campus parking permits. The pedestrian surveys — 450 in all — were mailed to a random list of students, faculty and employees.

"The fact that between 21 and 22 percent of people returned the surveys shows the interest in pedestrian safety on campus," Schneider said. "There is real concern over this issue. Nearly 60 pedestrian crashes have occurred on the campus over the past five years."

WORKING TOGETHER

The issue of pedestrian safety was raised to a position of prominence in November of 1999 after a graduate student was killed while trying to cross a campus street. The university responded by establishing a standing pedestrian safety committee to develop a proactive plan of action to make the campus safer for walkers. The committee represents a cooperative effort between the university community, campus law enforcement, the town of Chapel Hill and the North Carolina Department of Transportation.

"It is great to see these agencies working together for the common goal of



improving pedestrian safety," said Schneider who made several presentations to the committee detailing problem areas on the campus that the study had uncovered.

After researching the issue, the committee has recommended that a coordinated education, engineering and enforcement program be implemented throughout the university.

The education awareness campaign is scheduled to start later this year. The increased enforcement initiatives have already begun. And many of the engineering changes that have been or are slated to be put in, are at locations identified in the HSRC study. Crossing islands were constructed in the middle of a major two-lane campus road that had been the location of several pedestrian crashes identified in the study. Fluorescent yellow-green pedestrian warning signs were placed on the islands and in advance of the crossings to warn motorists to watch for pedestrians.

Engineering improvements have also been made in areas near the university hospital — locations that many who filled out the study's perception surveys said were dangerous, although no crashes have occurred there. One of the locations was a road leading to the emergency room of the university hospital. A fence was recently moved back from the road at this location to accommodate a new sidewalk.

POLICE CRASH DATA

Interestingly, the police crash data in the HSRC study turned up two problem areas for pedestrians (where many crashes have

occurred) that the survey respondents did not recognize as particularly risky.

"There was a mis-perception on the part of drivers and pedestrians who filled out the surveys as to how safe these particular areas are," Schneider said. "These are locations where drivers and pedestrians alike need to be educated to watch out for each other."

Pedestrian count-down signals were added recently at one of these locations which is situated at a main intersection in downtown Chapel Hill on the edge of the campus. These signals flash the number of seconds remaining during pedestrian crossing intervals — information that helps walkers better time their crossings.

SHARING THE METHODOLOGY

The study's methodology is one that's suitable for a variety of locations, Schneider said.

"I'd like to see it applied to neighborhoods in large cities as well as small towns and suburbs," he said. "It's something that can be used by city transportation planners, regional transportation planners, engineers, people in neighborhood groups and citizens concerned about pedestrian safety."

Schneider may get his wish. Already, he's getting requests from planners and engineers in other cities for copies of the surveys.

"Someone from the streets division in Philadelphia recently contacted me for a copy and I've gotten calls from several other people as well," he said with a smile. "That's a good sign."

Pedestrian safety awareness campaign to be implemented on college campus

The UNC Highway Safety Research Center and the UNC Department of Public Safety are developing an information awareness campaign geared toward making the campus of the University of North Carolina at Chapel Hill a safer place to walk and bicycle.

"There's nothing unique about the UNC campus that makes it any more dangerous than any other university of our size and situation," said Dr. H. Douglas Robertson, director of the UNC Highway Safety Research Center (HSRC). "What does make us unique is that we are doing something proactive about the situation."

"College campuses need to be safe places for people to travel," Robertson said. "Pedestrians and bicyclists are being hit and experiencing near misses on the UNC campus. Something needs to be done about this."

Chief Derek Poarch, director of the UNC Department of Public Safety concurred. "This is a problem that has evolved over a number of years as the university has grown and the campus has experienced more construction and congestion," he said. "It's something that beginning in 1999, we've begun to look at more aggressively. From our standpoint, education and awareness are important keys to saving lives and improving the situation on campus."

The awareness campaign is scheduled to be implemented in several stages, the first of which will be in the fall of 2001.





International Walk to School Day set for Oct. 2, 2001

Last year more than 2.5 million parents, children and community leaders from six countries walked to school together on International Walk to School Day to promote safety, health, physical activity and concern for the environment. This year even more are expected to participate. In the United States, go to www.walktoschool-usa.org to register by state. Other countries go to www.iwalktoschool.org to see if your country is already participating or to sign your country up.

PRIVATE CONTRIBUTIONS WELCOMED

The UNC Highway Safety Research Center depends on grants and private donations to further its research and public service outreach. Some of our current projects are spotlighted in this edition of Directions. To find out about other areas of research at the Center and ways you can become a contributor, please contact Center Director Dr. Doug Robertson via phone at (919) 962-8703 or e-mail him at doug_robertson@unc.edu . He can also be reached by FAX at (919) 962-8710 or by snail mail at 730 Airport Road, Suite 300, Campus Box 3430, Chapel Hill, N.C. 27599-3430.



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