NC Traffic Records Assessment Summary Report 2002

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Table of Contents

Page numbers to be corrected

Introduction

The goal of highway safety has and will continue to be to prevent unnecessary death and disability due to motor vehicle crashes on our state's roadways. The economic impact of these crashes is severe resulting in a loss of $9 billion to the economy of North Carolina annually (NC Traffic Crash Facts 2001).

The use and analysis of accurate and timely data associated with these crashes is critical to the development of strategies, policies, and programs which the state can implement to reduce the consequences of these events.

This type of effort requires the collective effort of a wide variety of NC stakeholders working together to maximize the information contained in each agencies data records. Being able to link these data enables all those involved, from traffic engineers to law enforcement to the medical providers to the general public benefits everyone in North Carolina.

This report brings NC up to date in the process of achieving this important goal which started in 1992 with the State of North Carolina Comprehensive Review of Motor Vehicle and Injury Records Systems. This was followed by an effort to formulate a "work plan" which would identify major activities and responsibilities for an in state Safety Management System (SMS). The committees and structure recommended by this report subsequently made it difficult to keep the committees and their mandates operational.

At the time of this latter effort and report, the technology, the software tools, and the better understanding of data quality were really only in their infancy. Though improvements were made following this report, much of the attention of the information community for all these different data systems was focused on the coming "Y2K" problem. Now that NC is well into the 21st century, our attention has now returned to improving the data systems, making them more accessible, and finding mutually agreeable ways to cross link these data systems to broaden our understanding of today's traffic safety problems.

These two original efforts pointed out the deficiencies in state maintained NC data systems which could be upgraded and improved. Today, many of these same issues are still unresolved, but fortunately, there has been significant progress on many fronts. This report will detail the strengths and weaknesses of the majority of these key agencies. It will also note where other agencies not approached as part of this effort should be included and kept abreast of the recommendations and proposals produced by “regular traffic records meetings”.

It is the hope of this effort that the result of this report that a statewide traffic records committee will again be revived and provide an open forum for state agencies to communicate and work together.

Executive Summary

The Traffic Records Coordinating Committee (TRCC) initial members should include at least these agencies and representatives:

Kevin Lacy, NC DOT (recommended as the chair)
Tony Ku, NC DOT
Rosa Gill, NC DOT TR
Mike Bryant, NC DOT TR
L C Smith & Forest Robeson, NC DOT GIS
Wayne Hurder, NC DMV Driver Licensing
Brad Hibbs, FHWA
Scott Lane, Capital Area MPO
Doug Scott, Cary PD
Chris Blue, CH PD
Woody Sandy, NC SHP
George Gray, DMV Enforcement
Susan Dyson, UNC Sheps Center (NC Patient Discharge data)
Greg Mears, UNC PreMIS (NC Ambulance Call Report data)
Sharon Schiro, NC Trauma Registry
Wayne Smoak, NC AOC (motor vehicle crashes & violations)
Don Nail, NC GHSP
Bill Stout NC GHSP
David Harkey, UNC HSRC
Bill Hunter, UNC HSRC
Dwayne Tharpe, UNC HSRC
Eric Rodgman, UNC HSRC.

The first meeting of this committee should include these members. All members will be provided access to the minutes of each meeting via the Internet. The dates of future meetings can also be posted for representatives of additional agencies who may request an opportunity to bring up issues and concerns before the committee.

The overall goal of the committee is to provide a forum for better communication among state data base users and to promote more and better collaboration among these same agencies. Having a big picture overview of all the traffic records related databases is intended to help everyone do a better job of evaluating the issues of their arena.

Background

Motor vehicle crashes are a significant source of trauma in North Carolina. In 2001, 1,530 persons were killed and 134,122 persons were injured in reportable crashes occurring on the publicly maintained roads. According to the NC 2001 Traffic Crash Facts Report, the toll of the crashes represents an average annual cost of over 9 billion dollars.

In an effort to reduce this substantial toll on North Carolina, the Governor's Highway Safety Program challenged the staff of the UNC Highway Safety Research Center to review the state's traffic records data systems and look for ways to improve their usefulness. Kevin Lacy was the instigating force behind this effort while he was on the staff at UNC HSRC. Kevin has returned to NC DOT and has continued being an important resource in completing this project.

The descriptions, opinions and recommendations are expressly those of the authors and not necessarily those of the sponsors. A common theme that was consistently mentioned throughout this project effort was that all the traffic records data reviewed and discussed had to meet the following characteristics:

- accuracy
- timeliness
- consistency
- availability
- completeness
- uniqueness
- linkability

These characteristics were frequently mentioned as required attributes to each database by nearly every one of the managers responsible for their data. The recommendations expressed in this report often direct themselves to meeting, creating or improving these components of the data systems.

The Process

The process involved reviewing previous assessments, interviewing and/or communicating with the key agencies, and documenting the results of each interview. A basic set of discussion questions was prepared to begin each interview and provide a consistent set of topics for each agency to address.

The following basic questions were posed to key representative(s) of each agency interviewed or contacted via email:

1) In your area, list the any and all concerns about your data, its accuracy, who should have access, and how should it be accessed and used.

2) How would you like these concerns addressed?

3) What improvements would like to see done to improve the quality, aid in the usefulness, and facilitate access by all your customers?

4) Where would you like your area to be in 2 years? The barriers?

5) What other areas need to be improved that you sometimes become involved or work with?

6) Have there been any problems from your efforts to make Y2K corrections or updates?

7) Any other issues not mentioned above that you would like to bring up?

All the persons interviewed were provided these questions to assess their current database activity. The results of these interviews are documented in Appendix A.

Current Traffic Records State

NC Crash Data (Crash, Vehicle and Occupant Data)

The last assessment recommended improving the data entry process, using a more common database structure, and developing a better and faster process for updating the crash data.

On January 1, 2000, North Carolina implemented a new DMV 349 crash report and a new Oracle database system to house the data. Both changes were the result of a very long and deliberate process to improve the report form, make it easier to complete, and provide a more universal structure. These data are now up and running and even contain the prior data which has been transformed (as much as possible) to be mapped into the new data variables and tables.

As is sometimes the case, the change to the new form and to the new data system in Oracle has produced several new problems. GHSP sponsored a “Data Mapping Project” which has already reviewed the new crash data and compared it to the old crash data. This effort uncovered a number of questions about the crash data definitions, the business rules applied to conversion and the lack of business rules to insure consistency on related variables.

Examples include: 1) the inconsistencies of person type indicated as pedalcyclist and the vehicle type pedalcyclist – counts appear to be different; 2) matching the driver contributing circumstance(s) to the proper vehicle; and 3) the non-motorist requirement of one per form.

DMV Enforcement

DMV Enforcement is required to track these five serious CDL indicators their office is charged with tracking: 1) speeding 15+ over the speed limit violations, 2) careless & reckless driving violations, 3) any illegal/erratic lane change violations, 4) any improper or illegal passing violations, and 5) any crash involving a commercial vehicle & a fatality. DMV Enforcement is working with NC AOC to track all the CMV citations and their convictions. The concern is with plea bargained cases where the CDL driver gets off with a greatly reduced conviction. DMV would like to see that the conviction category at least be kept in the same family of similar violations (e.g., excessive speeding still be left as a speeding violation of a lesser severity).

In addition, NC AOC is identifying all cases which meet these two criteria: 1) the arrest involves a CMV and/or 2) the arrest was made by DMV Enforcement agent. DMV Enforcement would like to get **all** agencies where the arrest involved a CMV and that may be possible in the very near future. Two key problems are that the arrest citation is not always correctly indicating that the vehicle involved is a CMV, and, in some cases, the vehicle is indicated as a CMV when, in fact, it is not.

Another key problem is the difference in definitions (specifically for trucks and other possible large commercial vehicles in crashes) used by NC and the FARS system. It might be possible/feasible to use a VIN decoding program to properly classify the vehicle and get the GVWR for that type of truck/vehicle

Using laptop computers has demonstrated that this speeds up the entry of data and the accuracy. The pilot effort involving two DMV Enforcement cars will soon be expanded to the entire District III (11 counties). If this is test is successful for a year, the next step would be to expand to the entire state. This includes a GPS system, which can easily be used to map/locate events in a particular area/county/district. ITRE has been a resource for this development. Software developed for tracking spray trucks was modified to help with this effort. NC DOT GIS should also be a great resource for such efforts. Other agencies such as EMS, Safe Communities, and local officials could benefit from these tools/capabilities. DMV has to provide the SafetyNet data on a regular basis – could help with that requirement. The old county/route/milepost location and the GPS x-y coordinates were virtually interchangeable in NC GIS systems.

DMV Enforcement focused on a 21 county special enforcement effort and they observed a decrease in the target area, but a slight increase in other areas. Still, the overall trend was down. The discussion centered around the problem of truly identifying changes (+/-) in patterns -- is it a regression to the mean phenomenon or are enforcement activities helping reduce violations and problems. Some controversy over the reason for these changes – is it the enforcement effort or other factors involved.

NC DOT GIS

The last assessment recommended using GPS/GIS technology to provide additional location data.

The databases involved are the roadway inventory, pavement, bridge, and RR crossing files. These are all being moved into Oracle tables to be maintained by their respective managers. The new LRS (Linear Referencing System) based on GIS will connect these databases and there will only be one version of each file.

Hospital Patient Discharge

The last assessment recommended that the database add the cause of injury E-codes.

PreMIS Ambulance Call Report

The last assessment recommended using a new standard for the data, requiring use of the standard form, and enabling the linkage to other data.

These data are now being collected under the direction of recent legislation mandating that these data be captured. To help with patient tracking, bar code tags are being placed with patients at the scene of a crash.

The problem is that there are no data for many of the issues that are of interest. Probabilistic matching can help, but this does not provide the best solution. There are issues of unmatched data and its influence on any summaries. Issues of growth in certain areas, trends, ages of patients, etc. Without good data, policies and decisions are hard to justify.

There were about 760 EMS units with about 30,000 technicians statewide. Capturing data needs to be as simple as possible to facilitate an accurate and efficient recording of the patient's personal information. The bar codes on the NC licenses do not scan very well.

There is also concern over the state wireless network. The electronic transfer of data would be greatly improved if system were upgraded.

NC Trauma Registry

The last assessment recommended having a link to the ACR data and expanding to include all ED patients.

There are currently 13 trauma centers and 7 Regional Advisory Committees (RAC). The Trauma Registry is also interested in using a bar code reader to track patients and retrieve driver license information on an individual. Their plan is to use this internally.

The biggest problem is the lack of staff and space for the staff. The access standards for the Trauma Registry data are being set by HIPAA guidelines. Meeting these

standards and providing their primary contributors data summaries requires all their current staff time.

NC Driver License Data

The last assessment recommended a redesign of the legacy system using a common database structure.

The NC driver license data system is now completely housed in a DB2 database. This database has all the crash and conviction data stored in it’s files. These data records can be linked using the NC driver license number, person name and date of birth, by AOC transaction number, and crash case number.

Overall Recommendations

It is recommended that the **first meeting take place before the end of the fourth quarter of 2002**. It is recommended that there be at least 2 meetings per year and more as needed or required. The minutes of these meetings should be made available via the web so that members not able to attend the meetings can review the proceedings and that general public can be made ware of the results.

It is recommended that **NC provide a high quality "bar code" readable set of basic driver license descriptors. The current bar coding is not adequate**. At UNC, the PreMIS unit is currently implementing a protocol where it will track an injured person starting at the scene of a crash. An EMT would tag that person with a bar code sticker on the ACR trip sheet if transported by ambulance to the nearest ED. The ED staff would then tag the paperwork as each person enters the ED. If necessary, another tag sticker would be attached to the paperwork if transferred to a rehab facility or regular hospital.

It is recommended that **the crash data business rules for the NC Oracle crash data be made public via the web**. As a result of the "data mapping" project, it has been evident that there are key problems in the way certain data variables have been defined. For example, the age of person (involved in a crash) should be calculated as of the day of the crash.

It is recommended that **the state continue to support a statewide patient discharge database**. These data can and should be made "more available" to the state for use in tracking patients, injury costs, and hospital use trends across the state. If bar code tags can be captured then better follow-up information on the result of motor vehicle crash injuries can be studied.

It is recommended that for better CMV and heavy truck information, **hand held scanners to capture the VIN and driver license number could used to obtain the driver data (driver name, license type, address, vehicle info, etc.**). This would reduce data entry and errors and speed up data entry.

It is recommended that, with new technology, **the E-crash or electronic report form on a laptop microcomputer will speed up the transfer (downloading) and the availability of the DOT crash data**. With a good E-crash form, accuracy and timeliness should both improve. As a result of the findings of the "Data Mapping Project", that

the E-crash form implementation would improve with data variable checks to help the officer enter the data.

It is further recommended that, with a new report form, **NC should provide more and better training for law enforcement**. Additional feedback on the data could help eliminate some of the problems with the current crash data.

It is recommended that, with **new SQL scripts, the creation of fewer and flatter Oracle tables which might more nearly reflect the traditional crash, vehicle, and person files/tables used in many other crash databases (i.e., FARS, NASS-CDS, GES, etc.)**.

It is recommended that **NC DOT DMV bring the support and maintenance completely in-house where NC DOT has more control over corrections, checks and additions**.

It is recommended that, with the Internet, **NC DOT DMV create a web site with information on the new report form**. This would include an instruction manual, examples, tips on how be more efficient, and contacts for further questions. The documentation should be made available via the web. Links to the Justice Academy, HSRC, NHTSA, etc. can easily be made available. Such helpful information as pictures of different roadside barriers could be available for the officers to review for coding them correctly on the crash report.

It is recommended that, with GIS, **to automatically add the GIS x-y coordinates of the crash location directly to the crash report**. A GIS device in the officer's car could also useful for locating law enforcement in case of trouble.

It is recommended that **NC use both GIS and other traditional location descriptions together**. NC can then easily create a special state "intersection" files, etc. These could help with comparisons of traffic safety problems and trends with similar intersections and make it possible to develop solutions which could correct numerous sites at the same time.

It is recommended that the TRACC meet regularly – perhaps twice a year. At these meetings, all the potential stakeholders can be kept aware of current procedures, upcoming changes, and requesting changes helping with their safety efforts.

APPENDICES

Appendix A:

Minutes on the Interviews in chronological Order:

Interview # 1:

Minutes for the Traffic Assessment Meeting on August 16, 2002 at Kevin Lacy's Office in Raleigh.

Attending: Kevin Lacy, Tony Ku, Jeff Rom, Dwayne Tharpe, Bill Hunter, and Eric Rodgman.

Meeting started: 1:30 PM.

Began discussion by addressing the issues indicated in Question 1 of the draft discussion questionnaire.

Question 1 asked, "What were their most important concerns in terms of accuracy and access?" This included mention of the Data Mapping Project which has already reviewed the new crash data and compared it to the old crash data – this effort has uncovered a number of questions about the crash data definitions, the business rules applied to conversion and the lack of business rules to insure consistency on related variables. Examples mentioned: 1) the inconsistencies of person type indicated as pedalcyclist and the vehicle type pedalcyclist – counts appear to be different; 2) matching the driver contributing circumstance(s) to the proper vehicle; and 3) the non-motorist requirement of one per form. Jeff mentioned that additional training for the officers might help. Probably should meet with Law Enforcement to brainstorm about ways to make the data coding cleaner -- maybe the E-crash system would help make this possible. CARE (the computer software consultants from Alabama) was mentioned, but only as a possibility for users who such as local law enforcement, etc. Neither NC DOT nor UNC HSRC is interested in using another front end to the actual data. Another idea under consideration is the idea of creating a flatter set of Oracle tables which might more nearly reflect the traditional crash, vehicle, and person files/tables used in many other crash databases (i.e., FARS, NASS-CDS, GES, etc.).

DOT has approximately 300 crash data users and most of them are DOT employees. Only 15-20 of these access the

TEAAS1 crash data in Oracle. Kevin mentioned it would be smart to review the results of the 1995 assessment to see if the recommendations had been carried out. Kevin asked that one of the interview questions assess how the Y2K changes/corrections have effected different aspects of an agency's data business – any problems, repercussions, etc. from these efforts.

Question 2 in the interview asked, "How will these concerns be addressed?" Keane Consulting has/is working on these corrections – no timeline as to when they will be fixed. For example, the problem of so many 1-year persons in the data compared to previous years and to other ages in the same table? A default date of birth from Oracle is likely the cause of this error.

Question 3 asked, "What improvements could be made to make the data more useful?" The documentation should be made available via the web. They could be made available through the Justice Academy web site. Such helpful information as pictures of different roadside barriers could be available for the officers to review for coding them correctly on the crash report. The problem of duplicate crash case numbers has already been discovered and corrected. It was noted that the law enforcement community should be encouraged to buy into the system – this helps with dedication to accuracy and timeliness. In addition, there is an MPO conference coming up soon – might be a good idea to be present. The pedestrian and bicyclist web site developed by Bill Hunter and Dwayne Tharpe was mentioned as a way to provide a simple, but powerful access to important crash data. That site needed more publicity so potential users would know that it existed.

Question 4 asked, "Where would you like to be in 2 years?" Kevin mentioned that the current database needed to have a GIS connection so that the tools of location information could easily be connected to the crash data itself. A special Oracle to ArchInfo gateway would be required to make this happen (initial estimates make this expensive). The state roadway system has improved over the last few years – the state system now has 50% of all the roads mileposted. This should continue to improve each year. If local areas buy in, then they could help maintain the accuracy of the local roadway inventory and characteristic map coding more correct and up to date. The GPS

coordinates could be added to the database as an additional means for identifying the location, but not replacing the county/route/milepost, which is already there. Location reports have already been set up for select cities. It was mentioned that a great help to the entire system would be the implementation of the E-crash system where officers could enter the crash data directly into an onboard computer with an electronic version of the DMV 349 form available with variables codes, etc. This could save 30 minutes per form. With the state receiving nearly 220,000 crash forms per year – a tremendous savings in time that would mean that the data could be more quickly transferred to DMV in Raleigh. There is also an effort to create a state "intersection" file – this could help with comparing traffic safety problems across similar intersections and generate solutions, which might correct numerous sites at the same time.

Question 5 asked, "What other areas need to be worked on?" It was suggested that the Traffic Assessment Coordinating Committee needed more "clout". In terms of the visibility and leadership, recommendations, and improvements might come more quickly if this were the case. More frequent meetings of the stakeholders would help with keeping everyone informed on updates and changes, increase the sense of buy in, assist with possible linkages between various databases which currently do not exist, and open the door to sharing data with local users across the state. Counties and cities are using GIS mapping tools for tax purposes, bus routing, water distribution, boundaries, and defining community resources such as schools, parks, landfills, and airports.

Meeting was informally adjourned at 3:30 PM.

Thanks to all the participants.
Respectfully submitted,
Eric Rodgman.

Interview # 2

Minutes for the Traffic Assessment Meeting on August 22, 2002 in the UNC HSRC third floor conference room in Chapel Hill.

Attending: Brad Hibbs, Kevin Lacy, Dwayne Tharpe, David Harkey, and Eric Rodgman.

Meeting started: 10:15 AM.

Began discussion by looking over the draft questionnaire for interviewees and the initial list of members to be on the Traffic Records Assessment Coordinating Committee (TRACC).

Brad started the discussion by emphasizing the new goals of the FHWA Safety Management Group. He mentioned that there was a clear goal of expecting all new safety initiatives to focus on evaluating any program or project effectiveness through numbers of crashes, number of fatalities or injuries, etc. Kevin noted that GHSP generally does not evaluate many of its' programs and projects. Brad added that it would be very important to obtain these number measures for reporting back to his colleagues in Washington.

Brad asked the question, "What do you need?" He mentioned the problem of the discrepancies between the FARS NC fatal counts versus the NC DOT and DMV counts. This becomes a public relations problem when agencies have to explain and defend the differences rather than focus on the trends for safety purposes. Brad will be reviewing the GHSP Highway Safety Plan for the coming year very soon. He asked that Kevin review it informally for any suggestions/corrections/comments so he could feed back to GHSP. Examples of data problems included the recent changes in A level injuries from 1999 to 2000 – there was a dramatic drop. Similarly, there was a dramatic increase in driver assessed alcohol use from 1999 to 2000. It was noted that the change in DMV 349 report form, the variables and the values may have influenced these changes. It was noted that GHSP seems to have lost confidence in the crash data.

A very important request from both Brad and Kevin was to restore the statewide Traffic Records Assessment Coordinating Committee to act as a forum for keeping everyone informed and to provide a forum for discussion of the problems and issues that need to be addressed. No one seemed to know when the last "official" meeting occurred.

Brad opened his list of questions with, "Is there a way Federal dollars could help with improving the quality of the NC crash data?" Kevin noted that the problems can

occur at any of several points in the crash data process – at the scene of the crash, within a particular law enforcement agency, with a particular investigating officer, and even at the point where the data is keyed into the computer. He mentioned that earlier problems have occurred when data entry persons didn't properly key in the actual codes – the defaults were imposed incorrectly into these records and were lost. Only when follow up efforts comparing data from FARS to NC were these errors discovered. E-crash was indicated as a way to help reduce the errors and improve the overall accuracy and efficiency of the crash data process.

Brad mentioned that there were "Hazard Elimination Funds" available which could be designated to speed these corrective measures along. He said Georgia and Kentucky were already doing this and he would find out how they have been doing it. Kevin mentioned that they could always use additional funds to expand and upgrade database file servers and storage capacity so they could keep 20+ years of NC crash data available for study and comparison.

Brad asked when the next TRACC meeting would be held – based on this project, it should be held sometime in the last 2 weeks of September. The next question asked was who should chair this committee so that it could have strong leadership to get it started and keep it going for the next year or two. This would be a critical time to insure that the committee could be put back into a part of the regular routine within NC. Possible chairs included Don Nail, Bill Stout, Rosa Gill, Kevin Lacy, or possibly someone from HSRC.

Next was the question about how to address the different numbers indicated by the FARS system and the NC DOT and DMV systems. It was noted that the business rules for each system was different and that these needed to be clearly documented. It is important to be aware of these differences because NC is being compared to other states either fairly or unfairly. Again, it was noted that certain defaults were set in the computer program business rules -- which may be contributing to the discrepancies between the FARS and NC reported data.

Dwayne noted that he has thoroughly documented the results of the "data mapping " project to NC DOT through numerous emails. He compared the 1999 and earlier data to the 2000+

data. He documented every case where there were unusual differences. This does not mean the new data is wrong, but every instance should be investigated. The business rules and data need to be checked and verified so that the differences can be accounted for and documented.

Kevin noted that the Keane, Inc. programmers doing some/all of the DMV Traffic Records Section programming are great Oracle database programmers, but are not greatly familiar with the actual crash data. This causes some problems with results because they do not always know when numbers and \or trends look suspicious. Dwayne noted that he creates a meta file for each SQP+ request so that others could come behind him and reproduce any results he has created.

The final reports for the Data Mapping and Traffic Assessment projects will be due on September 30, 2002. These both will be important for the future of traffic records in NC. This may be an opportunity to jumpstart E-crash. It was mentioned that there ought to be a pre-meeting with Don Nail and Bill Stout before the first TRACC meeting. This would provide an opportunity to let them have input to the format and substance of that first meeting.

Brad mentioned that one goal would be to draft a “mission statement” for the committee. This first TRACC would be an opportunity to discuss the importance and need for E-crash, crash narratives, LRS, PBCAT, CARE, linkages with other databases within NC. Kevin noted that the lack of moving forward on these improvements is clearly costing NC money in lost ability to study problems, make corrections, and respond to the needs of the state.

David noted that the TRACC needs to have the ground rules set out – who are the permanent members, rotating members, and from which organizations should the chair come from (GHSP, DMV, DOT, HSRC, etc.). He suggested that HSRC could act as the executive force behind getting the committee together. It was noted that it seems logical to consider Kevin Lacy for the first chair -- he is interested in doing it and quite familiar with many of the issues/problems. In addition, Brad mentioned that the committee should set up a one-two year agenda of goals to address to help keep the key stakeholders and users involved.

Brad summarized his position with 3 key commitments:
1) share the HS plan report from GHSP with Kevin for comments,
2) to get background information on how to help fund crash data assistance,
3) share a Frank Julian LE video that might prove useful in assisting the committee.

Overall goal is to have the first meeting sometime in the last 2 weeks of September.

Meeting was informally adjourned at 12:00 PM.

Thanks to all the participants.
Respectfully submitted,
Eric Rodgman.

Interview # 3:

Minutes for the Traffic Assessment Meeting on September 4, 2002 in the fourth floor conference room of the DMV Annex Building in Raleigh.

Attending: Captain George Gray, Kevin Lacy, and Eric Rodgman.

Meeting started: 10:05 AM.

The discussion began with an overview of why the interview session was being done.

Captain Gray opened the discussion by emphasizing the five serious CDL indicators their office is charged with tracking: 1) speeding 15+ over the speed limit violations, 2) careless & reckless driving violations, 3) any illegal/erratic lane change violations, 4) any improper or illegal passing violations, and 5) any crash involving a commercial vehicle & a fatality. DMV Enforcement is working with NC AOC to track all CMV citations and adjudications. The concern is with plea bargained cases where the CDL driver gets off with a greatly reduced conviction. DMV would like to see that the conviction category at least be kept in the same family of similar violations (e.g., excessive speeding still be left as a speeding violation of a lesser severity). Surry County was used as a chance to inform the court officials of the

problem of this plea-bargaining where commercial drivers can get convicted of reduced charges or irrelevant charges.

Their office has come a long way with the cooperation of the AOC contacts. AOC is identifying all cases which meet these two criteria: 1) the arrest involves a CMV and/or 2) the arrest was made by DMV Enforcement agent. DMV Enforcement would like to get **all** agencies where the arrest involved a CMV and that may be possible in the very near future. Two key problems are that the arrest citation is not always correctly indicating that the vehicle involved is a CMV, and, in some cases, the vehicle is indicated as a CMV when, in fact, it is not.

Another key problem is the difference in definitions (specifically for trucks and other possible large commercial vehicles in crashes) used by NC and the FARS system. Kevin suggested that it might be possible/feasible to use a VIN decoding program to properly classify the vehicle and get the GVWR for that type of truck/vehicle. The Traffic Records Coordinating Committee could be of great help in recommending that key definitions be made consistent. It was noted that in the case of NAGSHR definition conflict, the definition was actually changed to be consistent.

Using laptop computers has demonstrated that this speeds up the entry of data and the accuracy. The pilot effort involving two DMV Enforcement cars will soon be expanded to the entire District III (11 counties). If this is test is successful for a year, the next step would be to expand to the entire state. This includes a GPS system, which can easily be used to map/locate events in a particular area/county/district. Captain Gray had an example of a GIS map with all the events mapped to the roadway. ITRE has been a resource for this development. Software developed for tracking spray trucks was modified to help with this effort. Kevin suggested that DOT GIS could also be a great resource for such efforts. Other agencies such as EMS, Safe Communities, and local officials could benefit from these tools/capabilities. DMV has to provide the SafetyNet data on a regular basis – could help with that requirement. It was noted that the old county/route/milepost location and the GPS x-y coordinates were virtually interchangeable in NC GIS systems.

Captain Gray mentioned that in their 21 county special enforcement effort, they observed a decrease in the target area, but a slight increase in other areas. Still, the overall trend was down. The discussion was centered around the problem of truly identifying changes (+/-) in patterns -- is it a regression to the mean phenomenon or are enforcement activities helping reduce violations and problems. Some controversy over the reason for these changes – is it the enforcement effort or other factors involved.

Captain Gray and Kevin noted that it would be nice if the VIN and driver license number could be scanned and the needed data (driver name, license type, address, vehicle info, etc.) would be retrieved and automatically inserted into the crash report or the citation form. This would reduce data entry and errors and speed up data entry.

Captain Gray mentioned that they would soon be meeting with DMV Traffic Records and with NC AOC to continue with improving the quality and availability of the data necessary for measuring their activities. It was agreed that the key contact from NC AOC, Basil L. McVey (755-5360), would also be interviewed.

Meeting was informally adjourned at 11:37 PM.

Thanks to the participants.
Respectfully submitted,
Eric Rodgman.

Interview # 4

Minutes for the Traffic Assessment Meeting on September 27, 2002 in the fourth floor conference room of the DMV Building in Raleigh.

Attending: Rosa Gill, Bill Hunter, Kevin Lacy, and Eric Rodgman.

Meeting started: 1:50 PM.

The discussion began with a brief review of the purpose of the meeting.

Rosa mentioned that the NC SHP hoped to be electronically entering their crash report data directly by the end of the

first quarter of 2003. Their data would be transmitted to the SHP central office, checked (data edits) and then transmitted to DMV. Key personnel are working on the necessary connection software and working with the firewall that currently is in place to protect the state site.

The entire group discussed some of the problems that have been discovered about the new crash data. In particular, the age of driver, passenger, etc. has been of some concern. The business rule(s) probably needs an adjustment. It may be that on October 25, 2002 the correction could be implemented. One plan is to use the name to find the driver license number and the date of birth and age retrieved. There was concern about the problem of multiple names on the driver history file not being resolved and that there (in some cases) could be several control numbers each representing the same person.

Next, the discussion centered on the large drop in 2000 and 2001 in total A injuries. Kevin mentioned that there are actually fewer A injuries because of traffic congestion (slower speeds on fast roadways), more safe vehicles in the fleet, the increased statewide seat belt use, the change in the wording (describing injury) on the report form, the change in the codes which now includes an Unknown category. All these phenomena are currently under investigation.

Similarly the driver alcohol assessment variable jumped dramatically in 2000 and 2001. It is suspected that the change in codes and wording for this variable has had an influence on the codes and the counts. The number of pedestrians and bicyclists has also changed in 2000 and 2001. There is no reasonable explanation yet. There are two ways to indicate these person types – through a vehicle type code and through a person type code. It’s possible that this has created some confusion.

Rosa noted that the data entry folks have had to do some work “arounds” to get some data into the system. She noted that the pressure to catch up in the mid-2000 probably hurt the quality of the data entry process. Changes have been made since then and there are more persons doing the data entry. There is still a need to be accurate with capturing the CMV information both for NC and for the SafetyNet people. Rosa mentioned that the FARS people from Atlanta would like to visit NC to learn more about the new NC crash data and the system. At one point, the crash narratives

were not entered to help with catching up. Rosa indicated that it is likely that they would go back and key in these data sometime next year.

Rosa mentioned that Charlotte, Greenville and Winston-Salem are entering their own crash data – it would be nice to get this data transmitted and avoid duplicate data entry. The DMV goal is to have 60% of the crash data transferred electronically in two years. There was concern about having the data available on the web – ambulance chasers could use this information to contact persons involved in crashes. At the same time, the reports should be available to the insurance companies, researchers, and to state agencies.

Kevin mentioned that the new Oracle Database makes it easy to add a new code to a variable and a new variable to the database. From there it is more difficult to use the data for summary and research tasks. He mentioned that they are considering a flat, intermediate database form of the data, which should make it easier to use for investigative purposes. The data would be stored in a Data Warehouse Standard using “cubes” --- based on a SAP Data Warehouse model. Using this standard, the data would be available in an Excel format – a widely accepted and used format.

Additional training for law enforcement would also be necessary. It was suggested that Don Nail and Bill Stout be included in these training sessions. ITRE was mentioned as a possible committee contact. They specialize in GIS. As it is now, the NC GIS representative, L C Smith, will be interviewed in early October.

The email from Tom Yager (the Safety Data Systems Manager, Traffic Safety Analysis Systems & Services, Inc. (T-SASS)) was mentioned – HSRC has since sent Rosa a copy of this email. Mutually agreeable dates for this presentation will be reviewed and set. It was agreed that this meeting would take place after the kickoff meeting for the TR Assessment Committee.

Rosa noted that they’re **overall goal is to capture the crash data accurately and efficiently**.

Meeting was informally adjourned at 3:48 PM.

Thanks to the participants.

Respectfully submitted,
Eric Rodgman.

Interview # 5:

Minutes for the Traffic Assessment Meeting on October 2, 2002 in the conference room of the DMV GIS Building in Raleigh.

Attending: L C Smith, Dwayne Tharpe, and Eric Rodgman.

Meeting started: 9:30 AM.

The discussion began with a brief review of the purpose of the meeting.

LC noted that they were responsible for maintaining the 100 county maintenance maps for the state of NC. In general, their office receives monthly updates. These usually include any corrections to previous information or new information on recently completed roads. He estimated there were some 16, 000 miles of unknown urban miles, which they have no information/data on. They do have estimates of the total urban mileage, but no data on the geometry, ADTS, etc.

LC noted that there might be a possibility of sampling the city streets in the future. He described the process for calculating the estimated vehicle miles driven – this calculation involves local streets and using a default estimate of traffic for these streets. It is a very conservative estimate. The estimate is not based on gas tax revenues.

The inventory database contains the roadway characteristics data. These include roadway pavement roughness, ADT counts, pavement road condition, etc. All their data is being placed under a single LRS (Linear Referencing System) which will connect the speed limit, bridge data, etc. while allowing the individual groups to maintain their own special databases. The intent is to eliminate the redundancy of several sets with the same data in them. The goal for this system to be up and functioning by late summer 2003.

This system is an Oracle database. Don Jerman is overseeing the conversion. This system should increase

retrieval, improve access and use. The goal is to use the Internet to broker this service to the outside world in about 2 years. The system would also provide links to photographs, traffic signal timing data, etc.

Dwayne mentioned that NC DOT TEB will need to have access to these data and there may be some problems making this a seamless connection/conversion for them. He noted that there would need to be an ongoing dialogue between these groups to facilitate the transition and continued capabilities that are required.

Eventually, this system would have a history of each segment/location so that changes could be tracked over time. LC noted that they were already hiring and putting the necessary personnel in place as they proceed.

Meeting was informally adjourned at 10:30 AM.

Thanks to the participants.
Respectfully submitted,
Eric Rodgman.

Interview # 6:

Minutes for the Traffic Assessment Meeting on October 3, 2002 in the office of Dr. Greg Mears in the PreMIS suite in the 6330 Quadrangle Building between Durham & Chapel Hill.

Attending: Greg Mears and Eric Rodgman.

Meeting started: 9:00 AM.

The discussion began with a brief review of the purpose of the meeting.

Greg began by pointing that they are experiencing funding difficulties with the state budget problems, but was happy that their work was largely covered under a Bio-terrorism grant for the next 18 months. The data system has evolved into a very powerful online system using the Internet.

So far they have about 60+ counties up and running. With recent legislation mandating that these data be captured, Greg estimated that they would have nearly everyone on board by the end of April 2004. There is a year

transition period for the EMS units to comply. The legislation grants them authority to collect these data.

Greg mentioned that they have been working hard to get DMV to allow them to tag crash reports with a patient identifier so that patients can be tracked better through the system and back to the crash reports. He met with Rosa Gill and Wayne Hurder almost 3 years ago to discuss but has been unsuccessful in obtaining a meeting with Rosa Gill to formalize a plan to train and implement this process. Calls have not been returned from DMV to Drexdal Pratt at the Office of EMS to move this process any further. They are still hoping to get this implemented through them.

He mentioned that the NC Hospital Association had agreed to work with PreMIS to provide Hospital Discharge data back to PreMIS over 2 years ago but have not followed through and this effort is apparently lost. Efforts are now being made to obtain the data through the State Center for Health Statistics. This would be an important way to track patients from the crash site, via an ambulance, to an ED/ER, and then onto a hospital of care facility.

The problem is that there are no data for many of the issues that are of interest. Probabilistic matching can help, but this does not provide the best solution. There are issues of unmatched data and its influence on any summaries. Issues of growth in certain areas, trends, ages of patients, etc. Without good data, policies and decisions are hard to justify.

Greg explained that they had written a Java based application to facilitate the entry of the data and the creation of reports. The software system is using the ICDR-9 cause of injury coding scheme. In a month or so, he said they plan to test a palm pilot version for the EMS software which would allow them to enter all the same data points at the scene. A software tool from Satellite Forms manages the data capture, the management of the data forms – it can automatically update a palm pilot to the latest data entry screen forms by checking the version of the forms already loaded into the palm pilot. If the version is old, it uploads the latest version.

Greg said that there were about 760 EMS units with about 30,000 technicians statewide. The PreMIS development grant through the Governor’s Highway Safety Program called for

the integration of the DMV drivers license barcode and the Highway Patrol wireless data network into PreMIS. Using the bar code reader to capture a patient's personal data from their NC drivers license and filling in the fields in the EMS electronic forms has been unsuccessful due to the quality of the barcode ink and materials. The bar codes on the NC licenses don't scan very well – need this bar code to be readable. The connection to the state wireless network is very costly from a hardware perspective making the cost prohibitive for EMS at this time. Also, the bandwidth of the network does not allow timely data entry and retrieval. PreMIS is working to use both of these technologies but does not see large scale implementation due to these constraints.

EMS data is key to improving EMS quality of care, educational initiatives, system development, and reimbursement strategies. At the state and national level, EMS has been largely unsuccessful in obtaining any grants or budget allocations to improve services due to lack of data. The majority of the terrorism funding currently targeting first responders and public safety is bypassing EMS and going to fire based EMS services. In North Carolina 80 percent of EMS is not fire based and therefore not receiving any federal funds for terrorism. Data could educate and improve this discrepancy.

Greg mentioned that being able to link the data to other medical data and to NC crash data would help NC be considered a CODES standard state. This could lead to additional opportunities in research.

Meeting adjourned at 10:07 AM.
Respectfully submitted, Eric Rodgman

Interview # 7:

Minutes for the Traffic Assessment Meeting on October 4, 2002 with Dr. Sharon Schiro in the conference room of the PreMIS suite in the 6330 Quadrangle Building between Durham & Chapel Hill.

Attending: Sharon Schiro and Eric Rodgman.

Meeting started: 9:00 AM.

The discussion began with a brief review of the purpose of the meeting.

Sharon mentioned that her group is very small. Funding has been a problem for the Trauma Registry. She noted that they do have at lot of their information about the Trauma Registry and summary reports available on the web. For research requests, all the necessary forms are online.

Sharon noted there were 2 groups: the trauma centers (n=13) and the 7 Regional Advisory Committees (RAC) (eventually = all 100 counties). The plan is to bring all 7 RACs on board.

She also endorsed the idea of using a bar code reader to track patients and retrieve driver license information on an individual. Their plan is to use this internally. The needs are for internal benchmarking, basic information for communities, and for answering questions from the NC legislature.

Their biggest problem now is the lack of staff and space for staff. Sharon noted that it would not make sense to work on marketing/expanding their capabilities until these issues were somehow addressed and solved.

When the RAC data becomes significant, they plan to make a limited version of that data available through the web. Again the access standards are being set by HIPAA guidelines. The software they use is called NTRAC. Like other medical data – being able to link these data to other data is very important. Tracking patients from crash, in ambulance, to a hospital, and then to a trauma hospital would help provide data to review the entire process.

As with EMS data, this opens the door to NC becoming a CODES standard state. At one time, NC was considered, but rejected because NC could not provide NHTSA with a copy of the state medical data.

Meeting adjourned at 10:07 AM.
Respectfully submitted, Eric Rodgman.

Appendix B

Email Response #1

Subject: RE: Traffic Records Assessment interview...
Date: Tue, 27 Aug 2002 15:37:04 -0400
From: "Sandy, Woody" <woody.sandy@ncshp.org>
To: "'Eric Rodgman'" <rodgman@claire.hsrc.unc.edu>
CC: "Clay, Fletcher" <fletcher.clay@ncshp.org>

1) In your area, list the any and all concerns about your data, its accuracy, who should have access, and how should it be accessed and used.

We currently use our own crash and citation data. We capture statistical information from crash reports into our mainframe database and retrieve our citation information from AOC.

2) How would you like these concerns addressed?

Don't have any currently.

3) What improvements would like to see done to improve the quality, aid in the usefulness, and facilitate access by all your customers?

I personally think that DMV should allow Intranet access to crash report via the state's portal to the web using credit card payments for copies. Retrieval and printing of copies is a great manpower burden on our offices, and due to the public records act we cannot charge to recoup our expenses for paper and toner,

4) Where would you like your area to be in 2 years? The barriers?

SHP not storing crash reports in the office, the public, attorneys and insurance companies access the records via the Internet. Lobbyist for these industries will want to keep FREE access to records at our offices.

5) What other areas need to be improved that you sometimes become involved or work with?

I would like to see a statewide GIS application to track our crashes.

6) Have you had any problems or unexpected difficulties as a result of Y2K changes you implemented?

No.

If you prefer talking with us, let's compare calendars and maybe we could set up a time to discuss these questions in an interview.

-----Original Message-----
From: Eric Rodgman [mailto:rodgman@claire.hsrc.unc.edu]
Sent: Tuesday, August 27, 2002 8:37 AM
To: Sandy, Woody
Cc: Dwayne Tharpe
Subject: Traffic Records Assessment interview...

<< File: Card for Eric Rodgman >> Lt. Sandy:
FYI:
Here are the key members of the Traffic Records Assessment
Coordinating
Committee based on Kevin Lacy's initial list:

1) Kevin Lacy, NC DOT
2) Tony Ku, NC DOT
3) Rosa Gill, NC DMV
4) Mike Bryant, NC DMV
5) Forest Robeson, NC DOT GIS
6) Brad Hibbs, FHWA
7) Scott Lane, Capital Area MPO
8) Doug Scott, Cary PD
9) Lt. Woody Sandy, NC SHP
10) Captain. Gray, NC DMV Enforcement
11) Sharon Rhyne, NC EMS (EMS data)
12) Susan Dyson, Sheps Center (Hospital Discharge data)
13) Chris Blue, Chapel Hill PD

Of course, Bill Stout/Don Nail from GHSP are also included.

If you have time to answer these questions via email, you can just email them to both Dwayne and myself.

1) In your area, list the any and all concerns about your data, its accuracy, who should have access, and how should it be accessed and used.

2) How would you like these concerns addressed?

3) What improvements would like to see done to improve the quality, aid in the usefulness, and facilitate access by all your customers?

4) Where would you like your area to be in 2 years? The barriers?

5) What other areas need to be improved that you sometimes become involved or work with?

6) Have you had any problems or unexpected difficulties as a result of Y2K changes you implemented?

If you prefer talking with us, let's compare calendars and maybe we could set up a time to discuss these questions in an interview.

Thanks -- Eric.

Email Interview #2

Subject: Re: NC Traffic Records Assessment Update
Date: Tue, 01 Oct 2002 11:44:30 -0400
From: Susan Dyson <dyson@mail.schsr.unc.edu>
To: Eric Rodgman <rodgman@claire.hsrc.unc.edu>
CC: sgreene@mail.schsr.unc.edu, howard@mail.schsr.unc.edu

Eric,
Thanks for you interest in the NC Hospital Inpatient Discharge Database. A lot has happened since we spoke back in the spring. I will try my best to answer your questions, or provide additional documentation, but wanted to let you know where the Sheps Center, and the discharge data stand.

Our contract with the Division of Facility Services (NCDHHS), the entity that actually buys the data, expired in August. Due to the state's budget, our contract has not been extended to date. Whether or not this will change, we cannot say. Not only is our contract with DFS uncertain, but so is the possibility that the state may no longer continue to receive the hospital discharge data. We are

also currently without a data use agreement for the database - it is being updated with attorneys to become HIPAA compliant.

That said, obviously our concern is to keep the data coming, but that really is not in our hands. Therefore many of your questions really cannot be answered. The push is to keep the data collected, as it exists, and not trying to push for new/better data elements. The North Carolina Hospital Discharge Data is of very high quality. Just last year we began participating in the Healthcare Cost and Utilization Project, and it's family of databases, the National Inpatient Sample, the Kids Inpatient Sample, and the State Inpatient Discharge and Ambulatory Surgery Databases. We have been told by representatives that the quality of the North Carolina
data is extremely good.

If you require any additional information, I will try as best possible to answer them.

Susan

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