

Motor Vehicle Crash Injury Data Linkage Project

Stakeholder Meeting & Feedback Summary

June 22, 2020 (9:30 am – 11:30 pm)

Meeting Location: Zoom



Prepared by:

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Submitted to:

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Department of Emergency Medicine

The University of North Carolina at Chapel Hill

Date:

August 27, 2020

A. Background

On June 22, 2020, team members from the University of North Carolina at Chapel Hill, Carolina Center for Health Informatics (CCHI) conducted the fourth stakeholder meeting, via Zoom, for the **Motor Vehicle Crash (MVC) Injury Data Linkage Project**, funded by the North Carolina Governor's Highway Safety Program (NC GHSP) ([Appendix A](#)). The first stakeholder meeting was held on April 6, 2017; the second meeting was held December 12, 2017; and the third meeting was held March 19, 2019.

A total of 35 participants, representing project staff and a diverse group of motor vehicle crash (MVC) injury and health data stakeholders, attended the meeting ([Appendix B](#)). The two-hour meeting was held online from 9:30 am to 11:30 am. Planning and meeting facilitation assistance was provided by team members from the Department of Health Behavior (Healthy Solutions), UNC Gillings School of Global Public Health, Dr. Carolyn Crump, Mr. Robert J. Letourneau, MPH, and James Emery, MPH.

To plan the stakeholder meeting, the UNC Healthy Solutions Team members conducted several conference calls with project staff between January and March 2020. After the meeting's postponement from March 30, 2020 to June 22, 2020 due to the COVID-19 pandemic, the UNC Healthy Solutions Team facilitated several additional planning calls in May through June 2020. The meeting agenda was organized into seven parts ([Appendix C](#)).

The main purposes of the meeting were to:

- Review progress made since the March 2019 stakeholder meeting
- Discuss the future of crash-health data integration in NC, including the following questions:
 - *What death and emergency department data could inform NC Vision Zero's efforts?*
 - *Who are potential users of an interactive data dashboard?*
 - *How can data linkage activities address disparities in MVC injury and fatality?*
- Begin the process to develop a Health Data Research Advisory Board

B. Meeting and Outcomes Summary

At the start of the meeting, Dr. Anna Waller welcomed attendees, shared reminders about navigating the Zoom platform, reviewed the agenda, and acknowledged the funding source for the project (NC GHSP). Facilitator Carolyn Crump announced a poll question that attendees used during introductions. The poll question asked that attendees state their name, organization they represent, and a bike riding or walking anecdote.

Dr. Katie Harmon provided a brief overview to summarize project accomplishments since March 2019. The PowerPoint summary was sent to attendees prior to the meeting by the project manager, Erika Redding.

Drs. Waller and Harmon reviewed the MVC Injury Data Linkage Project timeline and described planning underway for the future and sustainability of crash-health data integration in North Carolina, work currently funded by the North Carolina Governor's Highway Safety Program and the Centers for Disease Control and Prevention. This was followed by two speakers sharing their agency perspectives on the future of MVC injury data linkage: Mr. Alan Dellapenna, Injury and Violence Prevention Branch Lead at the NC Division of Public Health; and Mr. Mark Ezzell, NC GHSP.

Alan described challenges in NC to link health data from a privatized system and crash data via FARS and how this project has methodologically approached trying to link the data through demonstration projects that show linkage is possible. He also shared that with future effort, this project can allow us to answer other lingering questions (e.g., about injury severity, costs to maintain a data linkage system, and from where funds to support those costs can be obtained). Echoing Alan's vision,

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Mark emphasized the GHSP's ongoing interests in this project, particularly the public health aspects of traffic safety; with better studies using data linkage, including studies regarding the cost benefits of crash prevention, we can develop better traffic safety policies and initiatives. Mark shared his hope that future linkage project efforts will identify creative ways to keep MVC injury data linkage sustainable.

Carolyn Crump facilitated questions submitted via the chat screen for Alan and Mark. This included comments and questions about: analyzing cost data; modernizing how and what crash data are collected; electronic crash reporting (optional v. required); and revisions to the form DVM-349 for injury data.

Following a break, meeting attendees separated into four breakout rooms to conduct structured reflection and discussion about stakeholder member roles in the future for MVC injury data linkage in NC. Each breakout room's facilitator led discussion about, and an assigned note-taker documented ideas for, the following questions:

1. *What death and emergency department outcomes data could benefit North Carolina Vision Zero's efforts in the next two years to reduce roadway deaths and injuries using data-informed prevention strategies?*
2. *Who are the potential users (e.g., specific community advocacy groups, trauma regional advisory committees) of an interactive data dashboard that provides emergency department and death data (e.g., by county, by community)?*
3. *How can our data linkage activities be enhanced to address environmental, social, racial, and/or economic disparities in MVC injury and fatality?*

Following breakout room discussions, Carolyn Crump facilitated a large group discussion, providing participants the opportunity to share their breakout room discussions with the larger group. Each breakout room facilitator shared their top two ideas for each question discussed within their small groups. A summary of the breakout room discussions is provided in [Appendix D](#).

Drs. Waller and Harmon summarized next steps to form a Health Data Research Advisory Board and encouraged meeting attendees to complete an online survey to nominate board members, via a link provided on screen and in the chat box. Carolyn Crump encouraged meeting attendees to complete a brief online meeting feedback survey via a link provided in the chat box.

C. Summary of Meeting Feedback

Following the stakeholder meeting, UNC Team members summarized results of a seven-question meeting feedback survey ([Appendix E](#)). Of the 31 meeting attendees (excluding key project team members), 12 responded to the survey (Response Rate = 39%). Table 6 lists the average response and standard deviation (SD) for five closed-end questions (all questions used a 6-point Likert scale of 1=not effective to 6=very effective).

Questions	Avg.	SD
1. Overall, how effectively did this meeting increase your understanding about the MVC Injury Data Linkage Project ?	5.3	0.6
2. How effectively did this meeting provide a description of project accomplishments ?	5.3	0.6
3. How effectively did this meeting increase your understanding of two state-agency visions (i.e., Injury and Violence Prevention Branch and Governor's Office of Highway Safety) for MVC injury data linkage in NC ?	4.7	0.8
4. How effectively did the small group discussions at this meeting provide an opportunity to collect your ideas about the future vision for MVC injury data linkage in NC ?	5.3	1.0

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Questions	Avg.	SD
5. How effectively did this meeting provide a description of plans to form a Health Data Research Advisory Board?	5.0	1.0

When asked **what they liked best** about the meeting (Q6), verbatim responses by category included:

Meeting Facilitation/Organization/Planning (n=4)

- I enjoyed Carolyn's ability to facilitate through the various technology uses and keep the meeting productive and on time. Also enjoyed the biking survey and respondents' individual feedback. Great tool to help attendees to relax and familiarize themselves with the Zoom tools.
- Stayed on schedule.
- Tight! Well run!
- Very well organized.

Online Platform (n=3)

- Being online.
- The Zoom meeting went very smoothly.
- Time and platform.

Discussion and Participation (n=2)

- Breakout group time.
- Discussion.

When asked **what they liked least** about the meeting (Q7), verbatim responses, by category, included:

Nothing or N/A (n=5), including the following comments:

- I think everything went great. Thanks for this.

Clarity of Vision (n=3)

- A bit unclear on the vision - planning to try to link some or all related datasets? What datasets are missing?

Online Platform (n=3)

- Miss seeing participants in Person.

Project Title

Linking Crash Reports to Medical Data in North Carolina: A Strategic Implementation Plan

Project Sponsor

Governor's Highway Safety Program

Project Background

The ability to integrate safety information from a variety of sources has the potential to improve highway safety outcome research and inform subsequent policy and program decisions. The North Carolina Traffic Records Coordinating (TRCC) has a goal of establishing a statewide motor vehicle crash related injury surveillance system and supports conducting a demonstration project that links injury outcomes data with crash data.

In this project, we seek to advance TRCC's overall objective of linking crash data with health outcome data. Crash data provide detailed information about the circumstance and events of the crash, but very little on the injuries sustained in the crashes and nothing on the costs for treating those injuries; of particular significance are costs of treating injuries that are borne by the state of North Carolina (NC) itself and other taxpayer-funded sources. For example, one publication demonstrated that the presence of a universal motorcycle helmet law saves the state of NC between 9.5 million and \$11.6 million annually in averted hospital charges for traumatic brain injury [Naumann et al, NCMJ 2015:76:70-5] Currently, generating statistics such as these requires extraordinary effort by researchers. Routine incorporation of medical and crash data into a consolidated surveillance database will facilitate highway safety decision-making in the state.

Project Overview

Over the past four years (October 2016 to September 2020), our team has worked to link health outcome data with motor vehicle crash data in NC. This project builds on the foundation of two prior pilot study efforts, each of which identified recommendations for future linkage of crash and health outcome data, including pros and cons of various options and needed data improvements to optimize linkage efforts.

Our current data linkage project builds on the lessons learned from these prior projects. The project focuses on identifying and overcoming barriers to linking health outcomes data to crash report data through the engagement of key stakeholders, demonstration projects to test the acquisition and linkage of key data sources, the development and testing of successful data linkage methods, and making reports using linked crash and health outcomes data available online for our stakeholders and other users.

Year 1 of this project began in October 2016 with initial efforts to build a coalition of stakeholders and conduct planning meetings with this group to determine the best way forward, given the information available from existing studies. In addition to stakeholder meetings, two small demonstration projects were completed exploring data linkage with various health outcomes data sources (EMS and North Carolina Healthcare Association (NCHA) hospital encounter data). The outcomes from the stakeholder planning meetings held in Year 1 and early in Year 2 and the demonstration projects completed in Year 1, informed an implementation plan for data linkage.

In Year 2 of this project, the implementation plan was initiated. We worked with the North Carolina Division of Motor Vehicles (DMV) and NCHA to obtain the necessary permissions and data use agreements to access their data for linkage demonstration. Unfortunately, personnel changes at NCHA and resource limitations at DMV led to delays in the data acquisition process. Eventually, crash data were obtained from the UNC Highway Safety Research Center (HSRC) and new NCHA collaborators worked with us to link a year of crash and hospital encounter data (emergency

department and inpatient) for pedestrians and bicyclists struck by motor vehicles. However, recommended improvements to the data linkage methods were not utilized and the resulting linked data provided by NCHA did not include all the data elements we had anticipated. Even with these limitations, however, we were able to evaluate the linked data and have begun to post reports online using these linked data.

During Year 2 of this work, we also completed demonstration projects assessing data linkage with EMS data and trauma registry data. Results of these efforts led to recommendations to: 1) work with the NC Trauma Registry (NCTR) to link a year of motor vehicle crash injured patients in the NCTR to corresponding crash report data and 2) delay further linkage efforts with EMS data until the transition to the National EMS Information System (NEMSIS) v.3 is completed in North Carolina and the new EMS data have been evaluated and determined to be stable and relatively complete. NEMSIS is a national effort to standardize the data collected by EMS agencies for inclusion in a national database of EMS data. North Carolina has been transitioning all EMS providers from using NEMSIS v.2 to v.3 since late 2017.

During Year 3 of this project, we continued to build and expand on the work of the preceding two years. In addition to working with NCTR, we linked NC DETECT emergency department visit and police crash report data for pedestrians and bicyclists. NC DETECT is North Carolina's timely, electronic data system used for public health surveillance. We also explored the potential of linking crash report data with death certificate data from North Carolina Vital Statistics. This linkage can provide additional details about MVC fatalities than what are currently available in the Fatality Analysis Reporting System (FARS), particularly for pedestrians and bicyclists killed in crashes. During this year we also explored the crash reported KABCO scores with measures of health outcomes in the health data sources, as well as other descriptive measures of crash characteristics and health outcome relationships; however, none of the health data sources explored included information about healthcare costs.

We are currently in year 4 of this project, and have collaborated with the Cecil B. Sheps Center to link one full year of crash data with one full year of NC Medicaid data. Due to the complexity of the linkage, we limited our analyses to pedestrian, bicycle, and motorcycle crashes. In comparison to other health outcome data sources available in NC, the NC Medicaid data are unique in that the data contain detailed information the type of healthcare provider, and cost(s) of treatment, and sociodemographic characteristics of the patient. The primary limitation of NC Medicaid data is that less than 20% of the North Carolina population is enrolled in the Medicaid program. At the end of this project year, we will have conducted initial demographic, costs, and injury severity analyses with our linked dataset, as well as developed an initial report of our findings.

We submitted a proposal for a fifth year of funding from GHSP which has been approved and we expect to be funded. If funded we plan to 1) expand the number of years of data linked between crash report and key health outcomes data sources, based on our demonstration project results in years 1-4; 2) initiate the design, development, and implementation of a public facing, interactive Web-based dashboard (MVC Injury Data Dashboard); 3) create a Motor Vehicle Crash and Health Data Advisory group; 4) establish a coordinated effort with the UNC NC Vision Zero Team to ensure synergistic and complementary efforts; and 5) maintain the data documentation we have compiled, updating as needed. By expanding the number of years of linked data, we will be able to begin to analyze trends, which has been an area of interest of our stakeholders. The multiple years of linked data will also be used as the basis for the development of an interactive data dashboard. The MVC Injury Data Dashboard will allow stakeholders and other users to access aggregated information from health outcomes data and linked crash-health data, generate their own tables, graphs and fact sheets, as well as easily access the reports and other products we are producing in our project work.

Project Goals

We will build on prior efforts through the following project goals:

1. Identify key stakeholders to participate in the Motor Vehicle Crash and Health Data Advisory Group and inaugurate this group, which will meet quarterly.
2. Design, develop, and implement a public facing, interactive Web-based dashboard (MVC Injury Data Dashboard).
3. Coordinate efforts with the UNC NC Vision Zero team.
4. Continue to work towards the establishment of an integrated statewide MVC injury surveillance system under the advisement of project stakeholders.

Key Project Staff

<i>Project Director, PI</i>	Anna Waller, ScD Carolina Center for Health Informatics (CCHI) anna_waller@med.unc.edu
<i>Co-PI</i>	Katie Harmon, PhD, MPH Highway Safety Research Center (HSRC) harmon@hsrc.unc.edu
<i>Project Managers</i>	Erika Redding, MSPH CCHI eredding@live.unc.edu Kathy Peticolas, MPS, PMP CCHI Kathy_peticolas@med.unc.edu
<i>Project Advisors</i>	Alan Dellapenna, MPH (NC Division of Public Health) Steve Marshall, PhD (Injury Prevention Research Center) Amy Ising, MSIS (CCHI) Seth LaJeunesse, CAGS, MCRP (HSRC) Nancy Lefler, MCRP (HSRC) Eric Rodgman, MPH (HSRC) Laura Sandt, PhD, MRP (HSRC) Sharon Schiro, PhD (North Carolina Trauma Registry) Libby Thomas (HSRC)
<i>Data Quality Manager:</i>	Clifton Barnett, MSIS (CCHI)
<i>Information Security Officer/ Database Administrator:</i>	Dennis Falls (CCHI)
<i>Reports Specialist:</i>	Meichun Li, MSIS (CCHI)
<i>Project Facilitators:</i>	Carolyn Crump, PhD (UNC Department of Health Behavior) Robert J. Letourneau, MPH (UNC Department of Health Behavior)

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Appendix B -- Meeting Attendee and Non-Attendee Summary

ATTENDEES (n=35, including 4 primary team members noted in bold)	
<i>Name</i>	<i>Organization</i>
1. Lindsay Bailey	UNC Trauma Center
2. Clifton Barnett	CCHI
3. Lori Brown	MADD
4. Alan Dellapenna	IVPB, NC DPH
5. Mark Ezzell	GHSP
6. Zach Faigen	Communicable Disease, NC DPH
7. Dennis Falls	CCHI
8. Mike Fliss	IPRC
9. Sandra Greene	Sheps
10. Kella Hatcher	NC Child Fatality Task Force
11. Katie Harmon	CCHI
12. Amy Ising	CCHI
13. Ed Johnson	Pedestrian & Bicycle Division, NC DOT
14. Bevan Kirley	HSRC
15. Mary Bea Kolbe	Healthy Communities, NC DPH
16. Suzanne LaFollette-Black	AARP Wilmington and the Coast
17. Nancy Lefler	HSRC
18. Steve Marshall	IPRC
19. Meg Miller	NHTSA - Region 3
20. Tom Mitchell	NC OEMS
21. Brian Murphy	Traffic Safety Systems, NC DOT
22. Kathy Peticolos	IVPB, NC DPH
23. Randa Radwan	HSRC
24. Erika Redding	CCHI
25. Lisa Riegel	AARP
26. Eric Rodgman	HSRC
27. Laura Sandt	HSRC
28. Sharon Schiro	NC Trauma Registry
29. Tricia Smar	Duke Trauma Center
30. Warren Smith	GHSP
31. Roger Smock	Rail Division, NC DOT
32. Anna Stein	IVPB, NC DPH
33. Libby Thomas	HSRC
34. Shawn Troy	Traffic Safety Systems, NC DOT
35. Anna Waller	CCHI

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Appendix B -- Meeting Attendees and Invitees

NON-ATTENDEES (n=28)	
<i>Name</i>	<i>Organization</i>
1. Tracy Anderson	ITRE
2. Matt Avery	SCHS
3. Ed Bellamy	NC DMV
4. Suzanne Black	AARP
5. Lauren Blackburn	VHB
6. Shannon Bullock	SafeKids
7. Lana Deyneka	Communicable Disease, NC DPH
8. Amy Douglas	NC Trauma Registry
9. Kim Eccles	VHB
10. David Ezzell	NC OEMS
11. Greg Ferrara	ITRE
12. Daniel Findley	ITRE
13. Burke Foley	ITRE
14. Kendall Knuth	IVPB, NC DPH
15. Seth LaJeunesse	HSRC
16. Chuck Lewis	NC OEMS
17. Brian Mayhew	Traffic Safety Unit, NC DOT
18. Sara Merz	Advocates for Health in Action
19. Alison Miller	NC OCME
20. Jackie Mitchell	GHSP
21. Bill Naff	NHTSA - Region 3
22. Becky Naumann	IPRC
23. Anne Phillips	Durham MPO
24. RJ Porter	VHB
25. Scott Proescholdbell	IVPB, NC DPH
26. Harriet Southerland	SADD
27. Jeff Williams	Wake County EMS
28. Tripp Winslow	NC OEMS
29. Tracy Anderson	NCSU
30. Shannon Bullock	NCDOI
31. Suzanne Black	AARP

<i>Time</i>	<i>Topic</i>
9:30 am	Welcome, Meeting Reminders, and Introductions
9:45 am	<p>Project Overview and Future Perspectives</p> <ul style="list-style-type: none"> • Project accomplishments (<i>refer to PPT files sent prior to meeting</i>) • Future of crash-health data integration in NC (Anna Waller) • Injury and Violence Prevention Branch future perspectives (Alan Dellapenna) • Governor’s Highway Safety Program future perspectives (Mark Ezzell) • Large Group Q&A (<i>submit questions via the Chat screen</i>)
10:25 am	Break
10:35 am	<p>Breakout Discussions about Stakeholder Member Roles in Future Vision Breakout group leads will facilitate discussion for the following questions:</p> <ol style="list-style-type: none"> 1. What death and emergency department outcomes data could benefit North Carolina Vision Zero’s efforts in the next two years to reduce roadway deaths and injuries using data-informed prevention strategies? 2. Who are the potential users (e.g., specific community advocacy groups, trauma regional advisory committees) of an interactive data dashboard that provides emergency department and death data (e.g., by county, by community)? 3. How can our data linkage activities be enhanced to address environmental, social, racial, health, and/or economic disparities in MVC injury and fatality?
11:05 am	<p>Large Group Report-Out about Stakeholder Member Roles in Future Vision</p> <ul style="list-style-type: none"> • Breakout group leads will share their top two ideas for each breakout session question • Large group discussion
11:20 am	<p>Next Steps Please complete Health Data Research Advisory Board Membership Recommendations Survey (link provided in the meeting’s chat box and will be emailed following the meeting).</p>
11:25 am	<p>Meeting Wrap-Up Please complete Meeting Feedback Survey (link will provided in the meeting’s chat box and will also be emailed to attendees following the meeting).</p>
11:30 am	Meeting End

Introduction: This appendix provides a summary of the discussion occurring in breakout group discussions, as reported during the post-break out large group discussion.

1. What death and emergency department outcomes data could benefit North Carolina Vision Zero's efforts in the next two years to reduce roadway deaths and injuries using data-informed prevention strategies?

- **Group 1:** Enumeration of mortality outcomes for ped/bike injuries.
- **Group 2:** ED data contributed a lot from the bike/ped perspective.
- **Group 3:** Severity & space-based questions, including spatial breakdowns of linkage "success" / crash record coverage. Sufficient data access, including hospital discharge and community-reported data.
- **Group 4:** Develop a needs of understanding or agreement with the statewide health care management groups who have all the data to assure them that if they share the unidentified data, we could share a lot with the state about injuries and costs.

2. Who are the potential users (e.g., specific community advocacy groups, trauma regional advisory committees) of an interactive data dashboard that provides motor vehicle crash, emergency department, and death data (e.g., by county, by community)?

- **Group 1:** Creating a way that people could contribute information to the dashboard (near injuries, etc.) – stipulations/cautions regarding this idea are described above.
- **Group 2:** In addition to other ideas suggested, we discussed local health departments and substance misuse and treatment organizations.
- **Group 3:** Just running down list... Besides list, remind about focusing on legislation-relevant questions and providing relevant data / reports for download.
- **Group 4:** We went back to main contacts (i.e., law enforcement, schools and education programs, health departments). We should consider more the insurance industry and automobile manufacturers, given that vehicle safety is changing so quickly.

3. How can our data linkage activities be enhanced to address environmental, social, racial, health, and/or economic disparities in MVC injury and fatality?

- **Group 1:** Including meaningful framing of health disparities in dashboard that is created.
- **Group 2:** We brought up census tract and health disparities data (these offer an additional lens not available).
- **Group 3:** Enhance with (1) sufficient data governance support and policy change to support good linkage, (2) allow crowd/sourced, self- and anonymous reporting to address equity issues and fear of reporting to police. Join in small area denominator estimation to support, for example, bike/ped rates. Make sure linkage project spit out spatial layers ready for joining / viz, not just linked datasets. Conversation about standardization of fields (e.g. hospital names) and fixing data upstream.
- **Group 4:** If you want to know the racial component, you have to have good information on the people and the location. If you can link people to the crash, the crash report has good information for location identification. You can then explore the information (and fatalities) on variables to identify hot spots.

Breakout Group Participants:

Group 1

- *Facilitator: Steve Marshall*
- *Note-Taker: Erika Redding*
- Dennis Falls (CCHI)
- Tom Mitchell (NC Office of EMS)
- Kella Hatcher (NC Child Fatality Task Force)
- Meg Miller (NHTSA - Region 3)
- Lisa Riegel (AARP)
- Laura Sandt (HSRC)
- Bevan Kirley

Group 2

- *Facilitator: Alan Dellapenna*
- *Note-Taker: Kathy Peticolas*
- Mark Ezzell
- Ed Johnson
- Mary Bea Kolbe
- Nancy Lefler
- Alison Miller
- Anna Stein
- Shawn Troy

Group 3

- *Facilitator: Amy Ising*
- *Note-Taker: Mike Dolan Fliss*
- Suzanne Black (AARP)
- Randa Radwan (HSRC)
- Sharon Schiro (NCTR)
- Libby Thomas (HSRC)
- Tricia Smar (Duke Trauma Center)
- Brian Murphy (DOT)
- Not in attendance: Lana Deyneka (NC DPH CD), Chuck Lewis (NC OEMS), Alison Miller (NC OCME), Jackie Mitchell (GHSP)

Group 4

- *Facilitator: Eric Rodgman*
- *Note-Taker: Clifton Barnett*
- Tracy Anderson
- Lindsay Bailey
- Lori Brown
- Greg Ferrara
- Mary Bea Kolbe
- Scott Proescholdbell
- Warren Smith
- Roger Smock

