Science MATTERS! ... IN CONNECTICUT

NIE ACTIVITY

Science Matters! is a series presented in collaboration with the **Connecticut Academy of Science and Engineering.** For more information, visit www.ctcase.org or call 860.571.7143.

You Don't Need to be a Doctor to Save Lives. Be an Engineer!

Eric Jackson, Director, Connecticut Transportation Safety Research Center, University of Connecticut

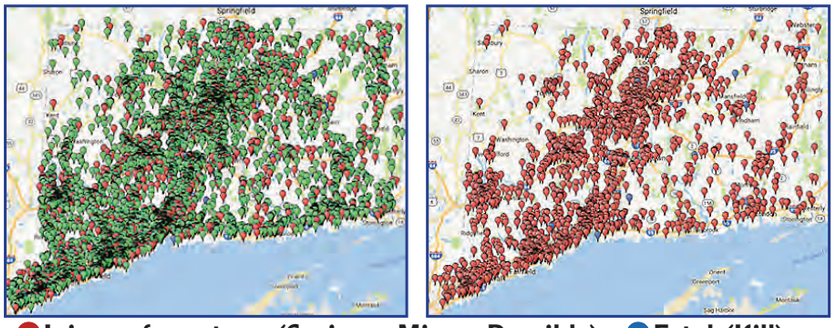
Have you ever witnessed or been involved in a car crash? If not, consider yourself lucky. There are over 300 motor vehicle **crashes** every day in Connecticut. This results in nearly 300 deaths on Connecticut roads each year. In the early 2000's over 30 teens a year died in traffic crashes. By 2015 that number dropped to less than 15 a year. But how many deaths are acceptable? Everyone would agree that even one death is too many. So how do we stop the deaths, and crashes, on Connecticut roadways?

I spend the majority of my time researching trends in car crashes and developing web tools to help understand these trends. Crash frequency and density are tools we use to help identify crash hot spots. A high crash density indicates there is a potential safety issue in that area. These areas are called "locations with promise," or locations that may benefit the most from a safety treatment. Once an area is identified, a study is conducted to determine which treatment would be most beneficial. Treatments range from – a new signal, turn lane, or road rebuild – to low cost treatments like trimming trees or adding a new sign.

As transportation engineers, our goal is to prevent the loss of life, or significant injury, while also providing people with an efficient means of travel. We help develop new laws and policies to increase safety for all road users. One such law, adopted in 2007, is the Graduated Driver Licensing Law (GDL). New teen drivers are generally at higher danger for motor vehicle deaths and crashes because they are less experienced and **exhibit risk taking behavior**. For this reason, they face restrictions like no driving between the hours of 11 p.m. and 5 a.m. and no passengers, apart from a parent or guardian, during the first six months of driving. Because of the GDL, teens are safer on Connecticut roads. But how do we save even more lives?

The answer may be more advanced technologies. One of the next major challenges facing transportation engineers is how do we plan for self-driving cars? OR cars that avoid crashes altogether using land assist, automated braking, or blind spot monitors. Are they safe and can we depend on this technology? How do our cities and infrastructure need to change to accommodate this new technology? Technology often moves faster than we can research and understand its potential impacts. Self-driving cars are being viewed as the solution. Only time will tell.

Teen Driver Crashes in 2016



Injury of any type (Serious, Minor, Possible) Fatal (Kill)
Property Damage Only

MEET THE SCIENTIST

I am currently the Director of the Connecticut Transportation Safety Research Center (CTSRC) at UConn. The CTSRC assisted in the complete overhaul and modernization of crash data and safety analysis in the state. Lately my research has focused on improving the crash data collection process in Connecticut, as well as providing public access to crash data and transportation safety analysis tools. My dream to become an engineer started in 5th grade, with a publication very similar to this one, where I was introduced to engineers that built rollercoasters. I was fascinated by a job that could be challenging and fun at the same time. I still love rollercoasters, but enjoy helping improve safety for our state.

SKILLS AND KNOWLEDGE

A degree in civil engineering opens the doors to a large variety of job opportunities in fields such as materials science, construction, surveying, environmental, structural, transportation, and coastal engineering, just to name a few. A transportation engineer designs and builds roads, railroads, subway systems, and airports. Others, like me, conduct research and evaluate new technologies.

Car crashes:
Transportation engineers do not call car crashes accidents, because that term implies no fault or wrong doing. 94% of crashes are due to human error.

Risk Taking Behavior:
Ill-advised practices and actions that are potentially detrimental to a person's health or general well-being. I.e. Distracted Driving, Drunk or Drugged Driving, not wearing a seatbelt.

Hyperlinks:

CT Crash Data Repository: www.ctcrash.uconn.edu
CT Transportation Safety Research Center: www.ctsrc.uconn.edu
UConn School of Engineering: www.cee.engr.uconn.edu
National Highway Traffic Safety Administration: https://www.nhtsa.gov
CT DMV Teen Driving Restrictions: http://www.ct.gov/dmv/cwp/view.asp?a=805&q=424252

For Students and Teachers Making Curriculum Connections, see the following:

Next Generation Science Standards: Scientific and Engineering Practices
- Asking questions and defining problems
- Developing and using models
- Planning and carrying out investigations
- Analyzing and interpreting data
- Using Mathematics and computational thinking
- Constructing explanations and designing solutions
- Engaging in argument from evidence
- Obtaining, evaluating, and communicating information

Connecticut State Department of Education (CSDE)
Common Core State Standards (CCSS): Mathematics
- CCSS.Math.Practice.MP1 Make sense of problems and persevere in solving them
- CCSS.Math.Practice.MP3 Construct viable arguments and critique the reasoning of others
- CCSS.Math.Practice.MP5 Use appropriate tools strategically

NIE NEWS IN EDUCATION

- Scientific inquiry is a thoughtful and coordinated attempt to search out, describe, explain and predict natural phenomena
- Scientific inquiry progresses through a continuous process of questioning, data collection, analysis and interpretation
- Scientific inquiry requires the sharing of findings and ideas for critical review by colleagues and other scientists