THE NATIONAL ADVANCED DRIVING SIMULATOR

DRIVING INNOVATION FOR THE FUTURE

February 2018

HAVE YOU EVER **DREAMED** ABOUT WORKING IN A JOB THAT MAKES DRIVING **SAFER**?

Driver error contributes to 94% of US car crashes

WHAT IS HUMAN FACTORS ENGINEERING?

When people think of engineering, they normally think of math and science. They might not think of or even know about human factors engineering.

So what is it? Human factors and ergonomics examines the interaction between systems and the people who use them. It's concerned with the "fit" between the users, equipment, and their environments.

At the National Advanced Driving Simulator, our faculty, staff, and students improve safety by researching the connection between drivers, motor vehicles, and other road users. Of particular interest to us is how road users gather and process information about the road and its environment and how we can design better systems to help reduce driver errors and crashes.

Human factors engineers typically study the human sciences combined with design and analysis principles from industrial engineering and engineering psychology. Many human factors specialists start in the field of psychology and most begin their careers with at least a master's degree.

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MEET OUR TALENTED FEMALE ENGINEERS

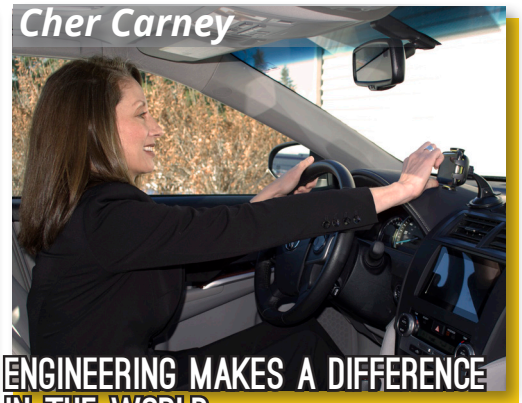
Dawn Marshall

ENGINEERING IS CREATIVE

I have degrees in the fields of business and human factors engineering. Both areas help me design, manage, and conduct research. During the week or even in a single day, I often do many things. A lot of my job is working with others to create the software and hardware that will be used in a research study. First, I might meet with someone about simulator drive specifications, then talk to someone else to collaborate on data analysis. I also write project proposals or reports. Most of my work time is during the typical business day, yet sometimes I get to be present when participants are driving the simulator in the evenings or on the weekends.

All the projects I work on have interesting challenges. One of my favorite activities during a study is testing simulator drives. It's a lot of fun to be one of the first people to drive something that several people have worked together to create. Analyzing the data is also a lot of fun--it's like opening a present to find out what we have!

Cher Carney



ENGINEERING MAKES A DIFFERENCE IN THE WORLD

My interests over my career have ranged from user interface design standards for car GPS systems to driver performance in general. I've been involved in several studies where newly licensed teen drivers had their vehicles equipped with an event-triggered data recorder. When triggered by high g-forces, this system recorded video of what happened outside the vehicle, as well as both audio and video from inside the vehicle. These events were then coded by researchers and feedback was provided on a weekly basis to the teens and their parents.

When feedback was given to these teen drivers, we saw a drastic reduction in the number of safety-relevant events teens were engaging in (like fast cornering, following too closely, not wearing seat belts, and using cell phones). Even after feedback ended for the teens, we continued to see a reduction in these events. Providing this type of mentoring at a time in which teens are most vulnerable has the potential to reduce the likelihood of a crash. It's exciting to make a difference in teen drivers' lives!

Michelle Reyes

ENGINEERING IS ABOUT TEAMWORK

Variety is one of the things I like most about my job. A study I'm beginning now uses a driving simulator to evaluate whether computer-based training programs can help novice drivers develop skills more quickly. My team includes human factors engineers, psychologists, and a scenario designer/artist. Solving problems with such a diverse team is very rewarding. Another team I'm a part of includes public health and injury prevention researchers and electrical engineers. We're designing a device that records videos of other vehicles following and passing farm equipment. Ultimately, the information we learn will be used to create messages that encourage drivers to be safer around farm equipment and prevent crashes.

Another type of research I'm conducting investigates crash rates for younger drivers. This research program is the result of several years of making contacts and building relationships with people at different state agencies. A "perfect" work day for me includes spending time looking at data and discovering something new that no one else has found before!

**Dawn, Cher, and Michelle each have a master's degree in Industrial Engineering from the University of Iowa*