Civil & Environmental Engineering (CEE) | College of Engineering

Transportation Research Overview: University of Iowa

IOWA TRANSPORTATION COMMISSION

November 12, 2025

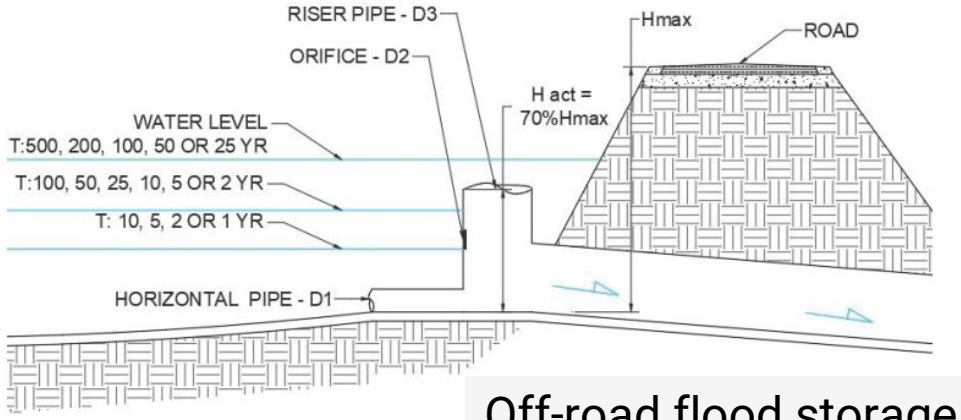
Allen Bradley, Department Chair, Civil & Environmental Engineering

College of Engineering

Transportation Research Overview

CEE Faculty researchers at the University of Iowa have been active in IHRB projects

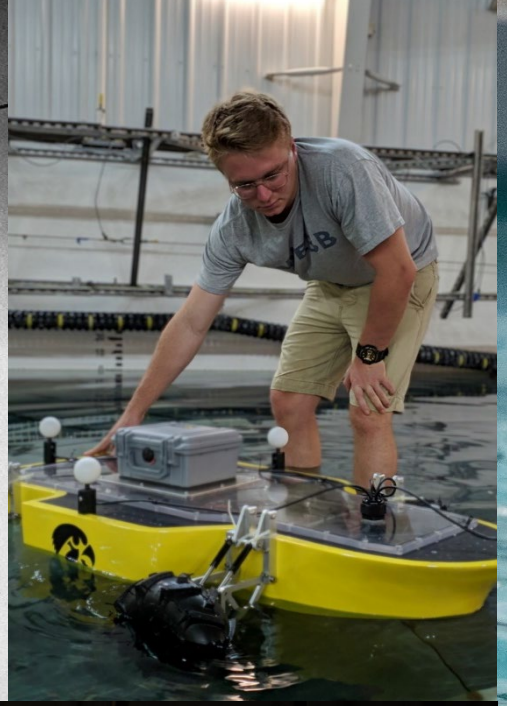
Snow fence design



Off-road flood storage

Self-cleaning culverts

Wind loads on traffic signage



IOWA

IIHR—Hydroscience and Engineering

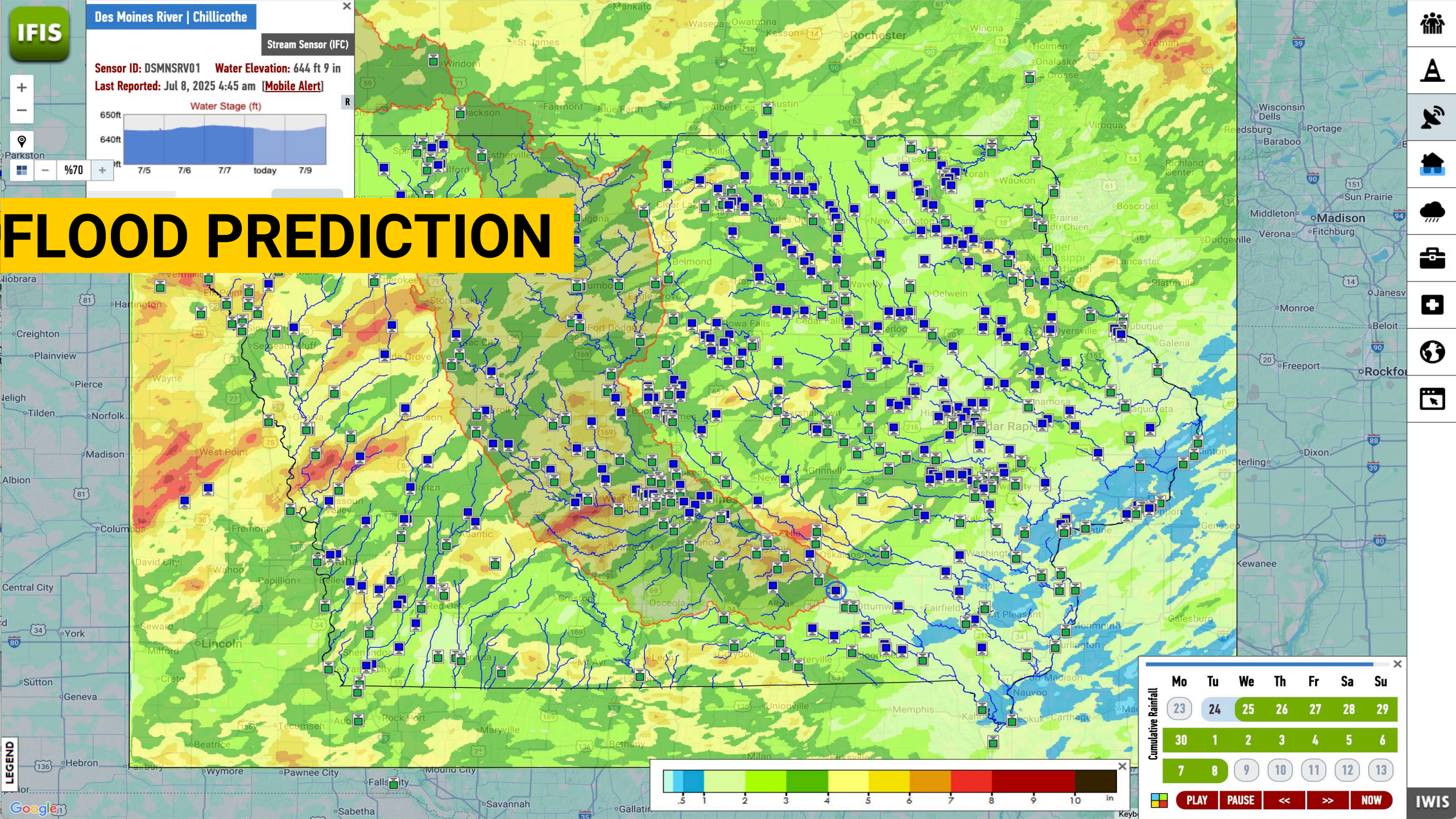
IOWA

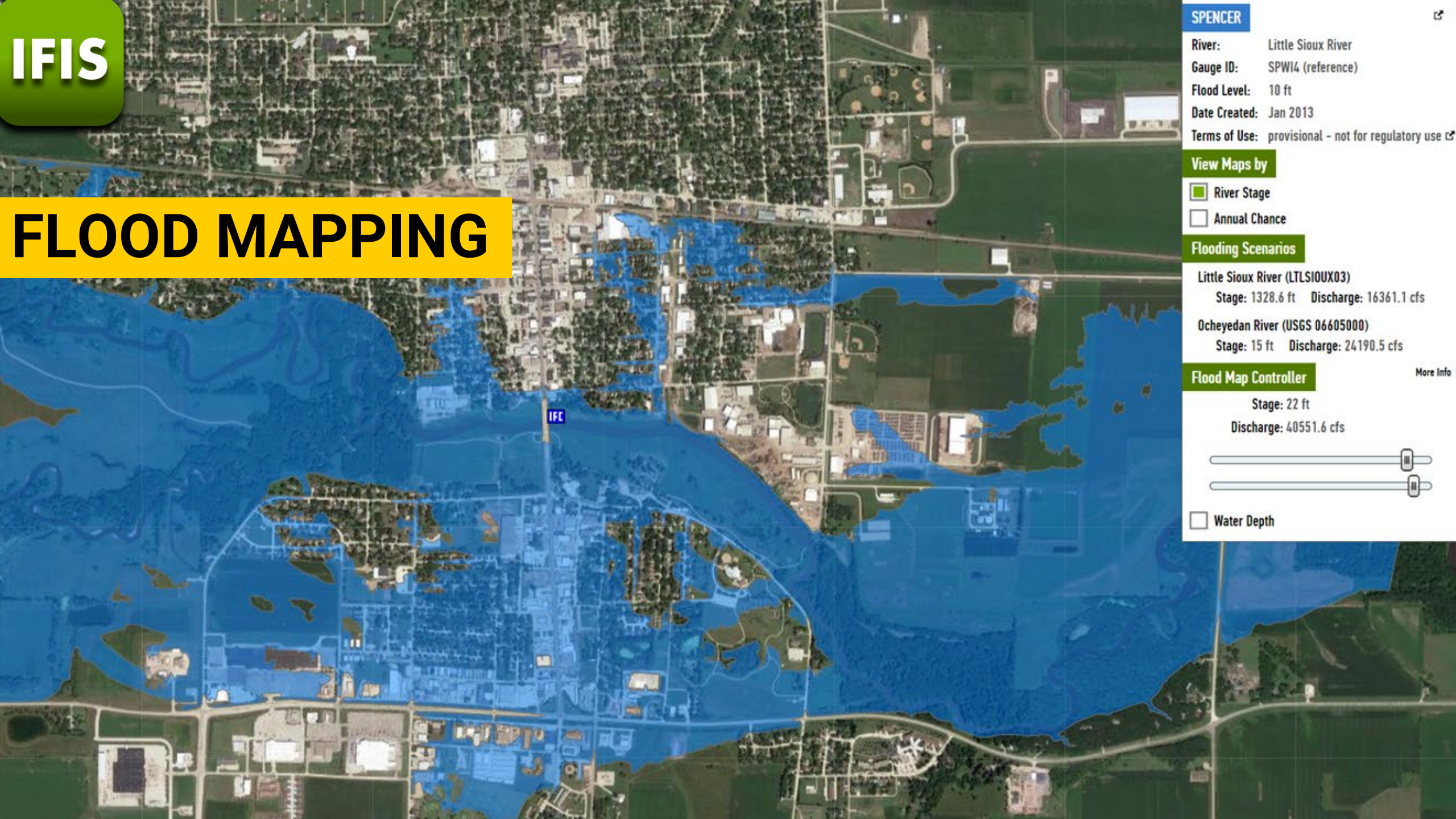
Serving Iowans

Iowa Flood Center

A Replicable Model for Building Community Resilience


FLOOD MONITORING
NATIONAL WEATHER SERVICE
IOWA HOMELAND SECURITY AND EMERGENCY MANAGEMENT
DNR
IOWA DOT
SILVER JACKETS
Be Risk Aware!


IFIS
Des Moines River | Chillicothe
Stream Sensor (IFC)
Sensor ID: DSMNSRV01 Water Elevation: 644 ft 9 in
Last Reported: Jul 8, 2025 4:45 am [Mobile Alert]
Water Stage (ft)
650ft
640ft
7/5
7/6
7/7
today
7/9
%70
FLOOD PREDICTION
LEGEND
.5 1 2 3 4 5 6 7 8 9 10 in
Cumulative Rainfall
Mo Tu We Th Fr Sa Su
23 24 25 26 27 28 29
30 1 2 3 4 5 6
7 8 9 10 11 12 13
PLAY PAUSE << >> NOW
IWIS
Google


IFIS
FLOOD MAPPING
SPENCER
River: Little Sioux River
Gauge ID: SPWI4 (reference)
Flood Level: 10 ft
Date Created: Jan 2013
Terms of Use: provisional - not for regulatory use
View Maps by
River Stage
Annual Chance
Flooding Scenarios
Little Sioux River (LTLSIOUX03)
Stage: 1328.6 ft Discharge: 16361.1 cfs
Ocheyedan River (USGS 06605000)
Stage: 15 ft Discharge: 24190.5 cfs
Flood Map Controller
More Info
Stage: 22 ft
Discharge: 40551.6 cfs
Water Depth
IFC

IIHR engages in outreach and education in Iowa and the Nation

40
K-12 Events & Trainings

29
Community Events

12
Conference Appearances

20
Visits to IIHR

4
Legislative Engagements

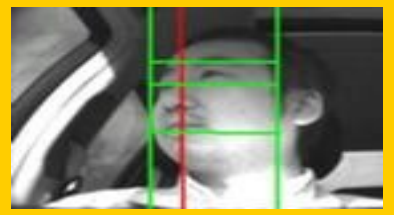
IOWA

College of Engineering

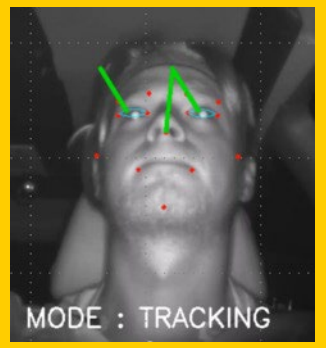
Driving Safety Research Institute

Dan McGehee
Professor and Director

Drugged, distracted, & drowsy driving



Human factors, cognitive modeling, behavior



Connected & automated driving

Novice and older drivers, mobility

IOWA

Driving Safety Research Institute

ADS FOR RURAL AMERICA

Funding:
$7M U.S. DOT grant

Only place in the world doing automated driving on unmarked and rock roads

Improve safety on our nation's roadways with ADS

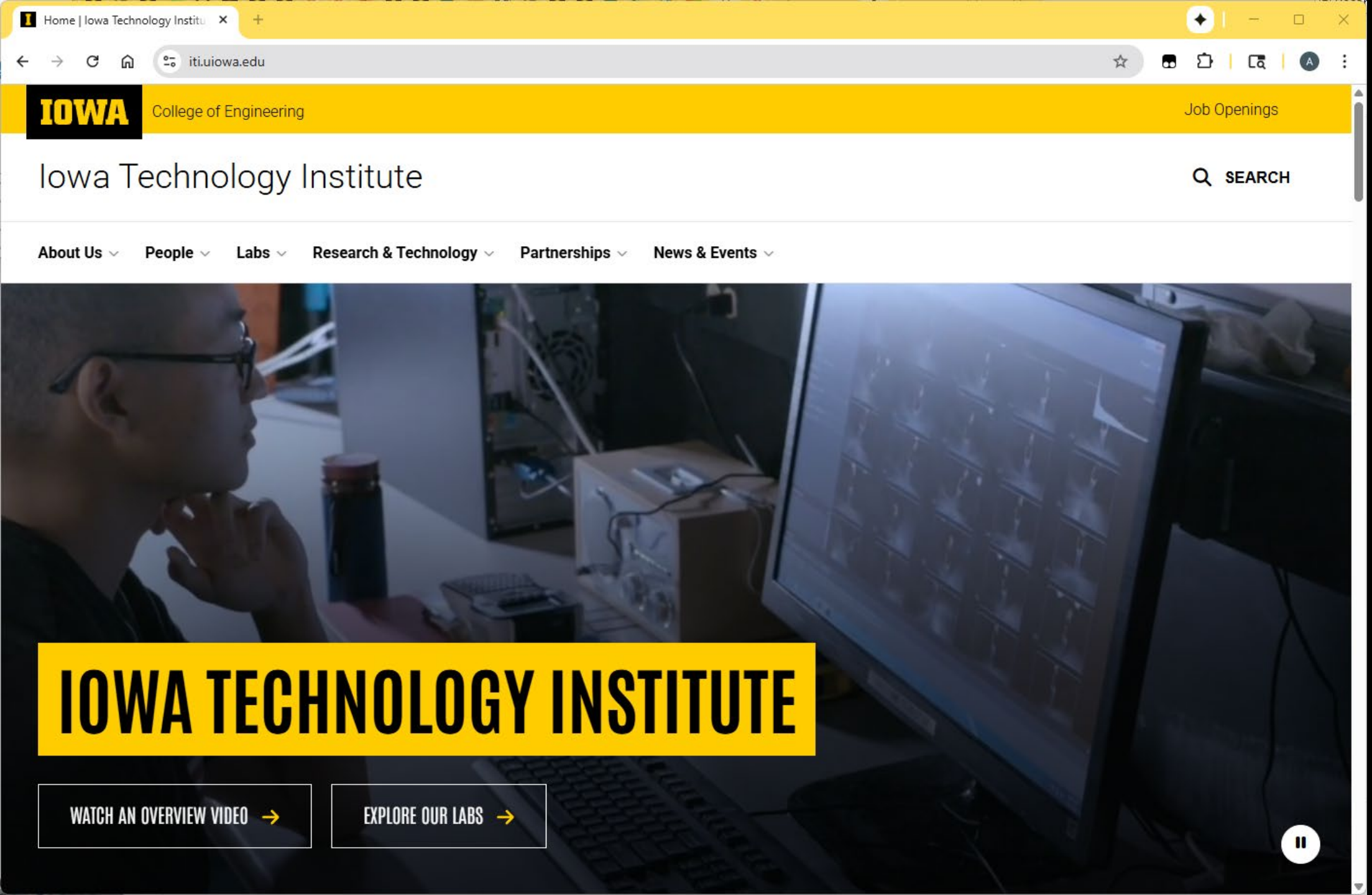
Represent **rural roads** in ADS testing

Enhance mobility

Provide data

IOWA

ADSforRuralAmerica.uiowa.edu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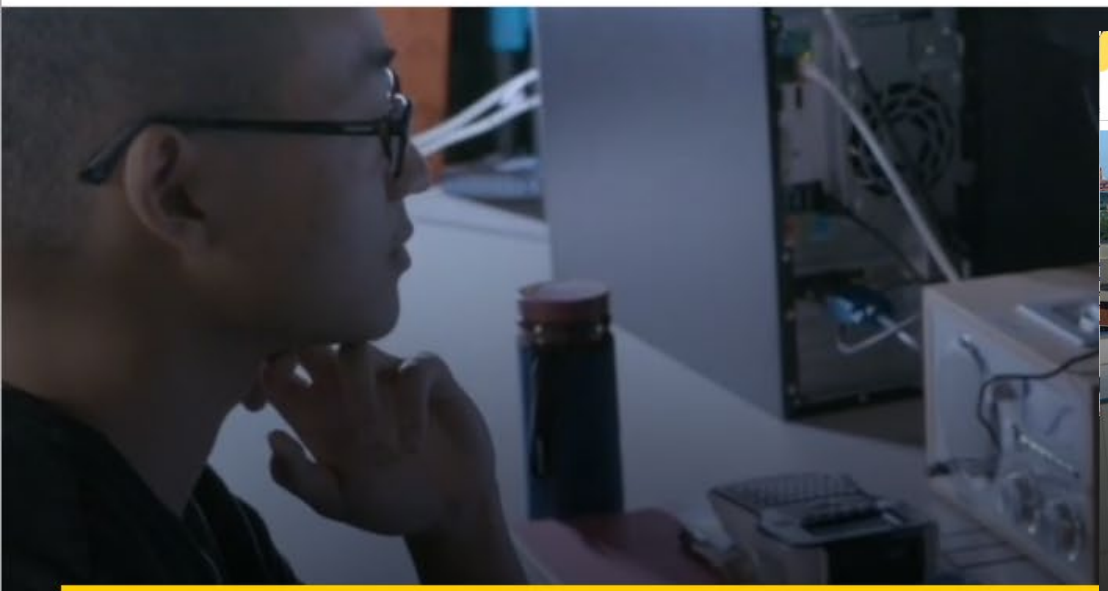


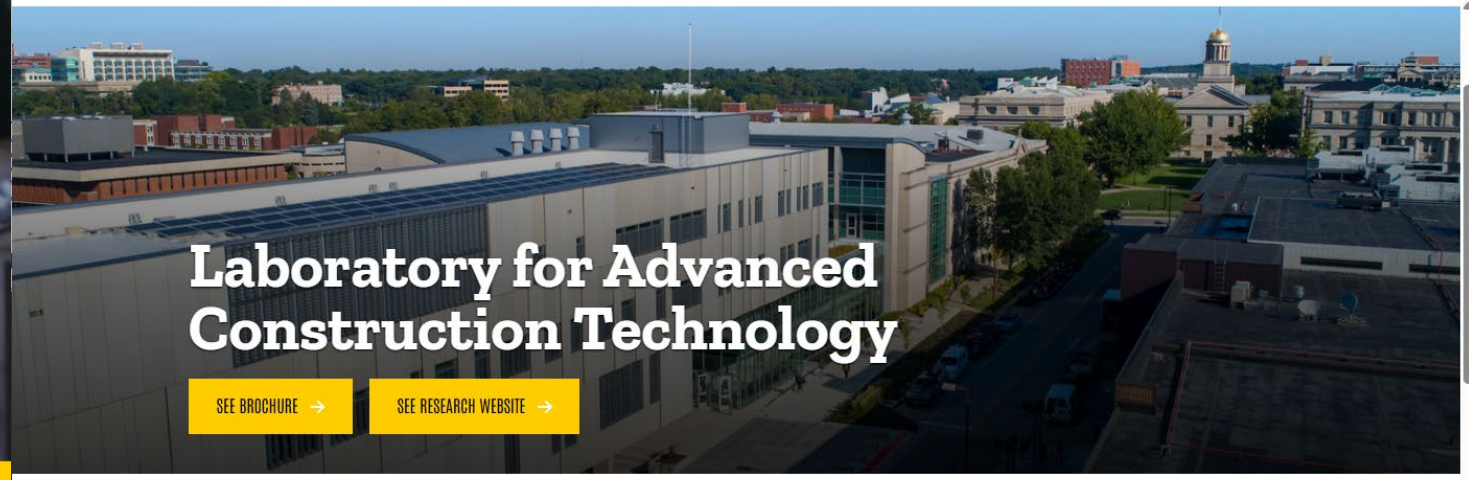
IOWA TECHNOLOGY INSTI

WATCH AN OVERVIEW VIDEO →

EXPLORE OUR LABS →

Laboratory for Advanced Const

iti.uiowa.edu/labs/laboratory-advanced-construction-technology



Laboratory for Advanced Construction Technology

SEE BROCHURE → SEE RESEARCH WEBSITE →

Mission Area

- Advanced Manufacturing and Materials

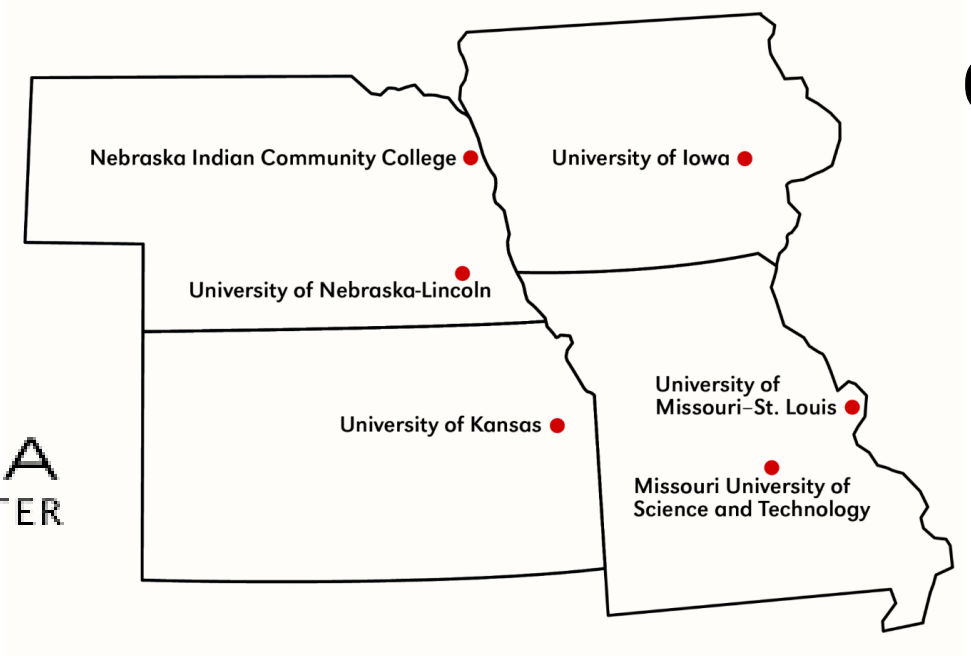
Research Topic

- Construction materials

The Laboratory for Advanced Construction Technology was established with support from the Korea Institute of Construction Technology, the Asphalt Paving Association in Iowa, and other private companies. The main purpose of LACT is to help member institutes and companies develop and implement their innovative new construction technologies in practice by performing objective laboratory testing and field evaluation.

The University of Iowa is a partner in the Mid-American Transportation Center

MID-AMERICA
TRANSPORTATION CENTER



Cross-Campus Strengths

Hydrology & Hydraulics

Structural Health & Materials

Systems & Data Science

Sustainability & Adaptation

Human & Economic Dimensions

Supporting the US DOT Strategic Plan goals of safety, economic strength, and transformation and innovation.

College of Public Health

Transportation Research Overview

IOWA

College of Public Health

Transportation Research and Injury Prevention Safety (TRIPS) Lab

trips.lab.uiowa.edu

Cara Hamann, PhD, MPH

Lab Director

TRIPS has created the Iowa Crash Outcomes Data Evaluation System (CODES)

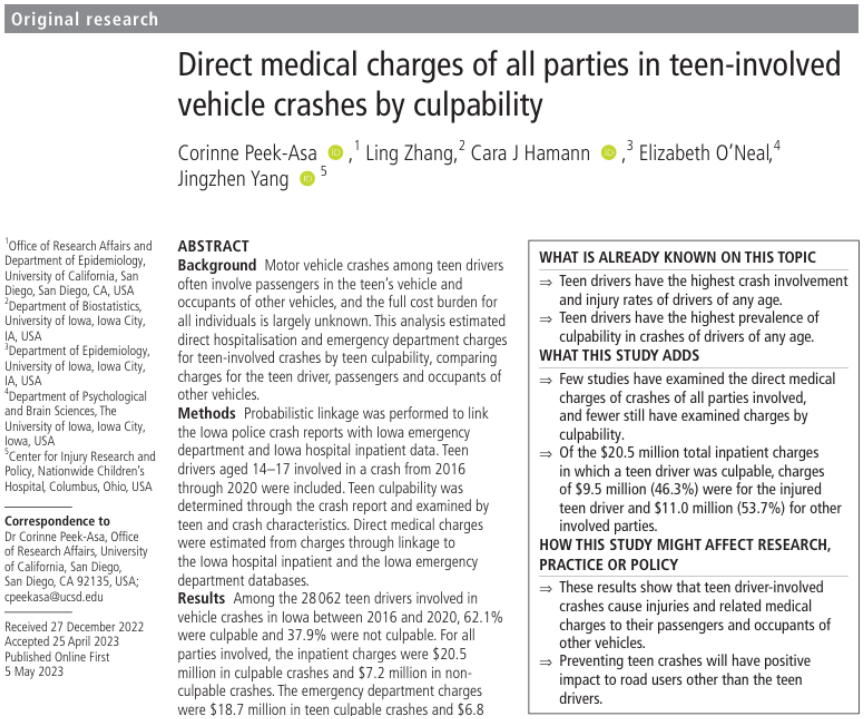
IOWADOT
SMARTER | SIMPLER | CUSTOMER DRIVEN

Crash Data
Death Data (FARS)

H·CUP
HEALTHCARE COST AND UTILIZATION PROJECT

Statewide Inpatient Database (SID) Statewide Emergency Department Database (SEDD)

Estimate the medical and financial outcomes of motor vehicle crashes



Original research

Direct medical charges of all parties in teen-involved vehicle crashes by culpability

Corinne Peek-Asa [1], Ling Zhang,[2] Cara J Hamann [3], Elizabeth O'Neal,[4] Jingzhen Yang [5]

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Received 27 December 2022
Accepted 25 April 2023
Published Online First 5 May 2023

ABSTRACT

Background Motor vehicle crashes among teen drivers often involve passengers in the teen's vehicle and occupants of other vehicles, and the full cost burden for all individuals is largely unknown. This analysis estimated direct hospitalisation and emergency department charges for teen-involved crashes by teen culpability, comparing charges for the teen driver, passengers and occupants of other vehicles.

Methods Probabilistic linkage was performed to link the Iowa police crash reports with Iowa emergency department and Iowa hospital inpatient data. Teen drivers aged 14–17 involved in a crash from 2016 through 2020 were included. Teen culpability was determined through the crash report and examined by teen and crash characteristics. Direct medical charges were estimated from charges through linkage to the Iowa hospital inpatient and the Iowa emergency department databases.

Results Among the 28 062 teen drivers involved in vehicle crashes in Iowa between 2016 and 2020, 62.1% were culpable and 37.9% were not culpable. For all parties involved, the inpatient charges were $20.5 million in culpable crashes and $7.2 million in non-culpable crashes. The emergency department charges were $18.7 million in teen culpable crashes and $6.8

WHAT IS ALREADY KNOWN ON THIS TOPIC

⇒ Teen drivers have the highest crash involvement and injury rates of drivers of any age.
⇒ Teen drivers have the highest prevalence of culpability in crashes of drivers of any age.

WHAT THIS STUDY ADDS

⇒ Few studies have examined the direct medical charges of crashes of all parties involved, and fewer still have examined charges by culpability.
⇒ Of the $20.5 million total inpatient charges in which a teen driver was culpable, charges of $9.5 million (46.3%) were for the injured teen driver and $11.0 million (53.7%) for other involved parties.

HOW THIS STUDY MIGHT AFFECT RESEARCH, PRACTICE OR POLICY

⇒ These results show that teen driver-involved crashes cause injuries and related medical charges to their passengers and occupants of other vehicles.
⇒ Preventing teen crashes will have positive impact to road users other than the teen drivers.

The Injury Prevention Research Center supports efforts to prevent injuries and violence

Research and Practice Action Teams (RPATs)

- Trauma Care
- Older Adult Falls
- Road Safety
- Adverse Childhood Experiences
- Drug Overdose
- Firearm Safety

Tippie College of Business

Transportation Research Overview

Researchers use advanced data-driven methods to optimize urban mobility and logistics efficiency

Multimodal Transit Systems
Last Mile Delivery
Supply chain network design and contracts
Car Sharing
Multimodal Transit
Capacitated hub location
Multi-stakeholder freight transportation systems
Attended home delivery
Product development and pricing
Last Mile in Rural Communities
Delivery network planing
Ride-Pooling
Smart City Operations and Mobility Systems
Applications in the areas of transportation and logistics
Facility Location and Supply Chain Systems
On Demand Transit Systems
15 Minute Cities
Planning and scheduling of production and service operations

Transportation Research Overview: *University of Iowa*

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