

# A Bridge Not Too Far: Toward Efficient Asset Management and Maintenance



There are over **617,000** bridges in the US

**42%** are at least 50 years old

**46,154** bridges (**7.5%**) are considered structurally deficient, meaning in poor condition



In ASCE's 2021 Report Card for America's Infrastructure, the Bridges category scored a 'C'

## The Federal Infrastructure Bill was recently passed



### Infrastructure Investment and Jobs Act

Contains both a 5-year surface transportation reauthorization that increases investments, as well as an additional **\$40 billion** in investments for the nation's bridges

It is crucial to assist stakeholders and state Departments of Transportation (DOTs) in asset management and bridge maintenance to maximize use of this funding

## ASCE collection of studies focused on bridge maintenance and management

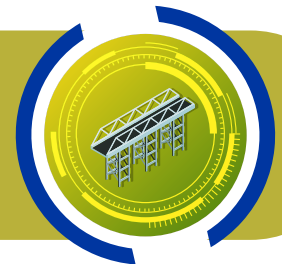


### Effect of stakeholders' behavioral patterns

- Risk perception
- Risk attitudes
- Time preference

### Bridge testing and inspection

- Review on the state-of-the-practice of bridge load testing
- Load rating planning framework using deep reinforcement learning

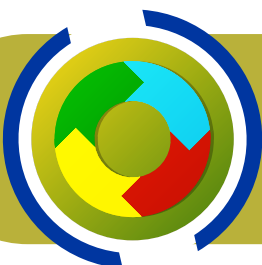


### Climate change

- Understanding increased risks due to more frequent extreme weather events
- Incorporating climate change in the decision-making process

### Decision-making frameworks

- Network-level analysis
- Cost-benefit analysis
- Budget and performance constraints
- Managing uncertainty



### Life-cycle management (LCM)

- Risk/reliability indices
- Overview of LCM for infrastructure networks
- Planning and optimization

### Case study

- Rehabilitation/replacement of approach spans of I78 bridge at Hamburg, PA



These studies will help decision-makers and engineers working on designing, managing, and rehabilitating bridges, leading to

- Safer infrastructure
- Higher bridge resilience and sustainability
- Smarter spending by minimizing life-cycle cost and maximizing bridge performance
- Optimal life-cycle inspection, monitoring, maintenance, and management



State DOTs and engineering firms need to be prepared for asset management, and this collection of studies will help them achieve better infrastructure maintenance