

Building interpretable methods to analyze bridge health, deterioration, and maintenance

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Motivation and Background

Over 600,000 Bridges

4 out 10 are over age 48

Design life of a bridge is 50 years

9.1 % of US bridges are structurally deficient

\$123 billion in Bridge Rehabilitation



It looks pretty flimsy, but I'm a gentleman:
After you dear...

Research Question

What are the most influential factors in determining bridge maintenance?

Data

1. Data

National Bridge Inventory + Precipitation + Freeze thaw + Snowfall

A total of over 17 million records of over 600,000 bridge from 50 states from 1992 to 2020

2. Data Source:

National Bridge Inventory - Federal Highway Agency

Precipitation - Center of Disease Control and Prevention

Freeze thaw and Snowfall - LTBP Infobridge

Data Collection and Storage

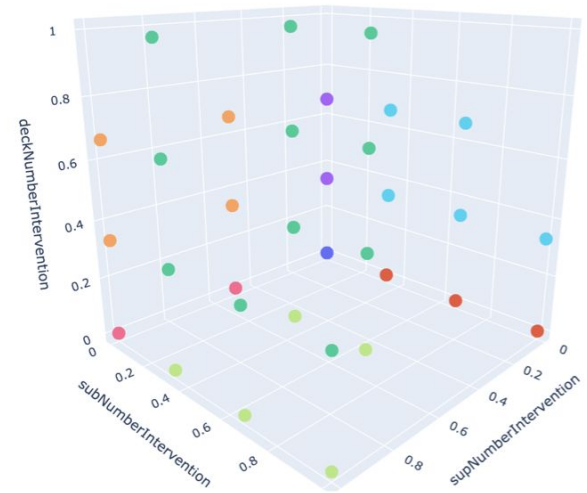
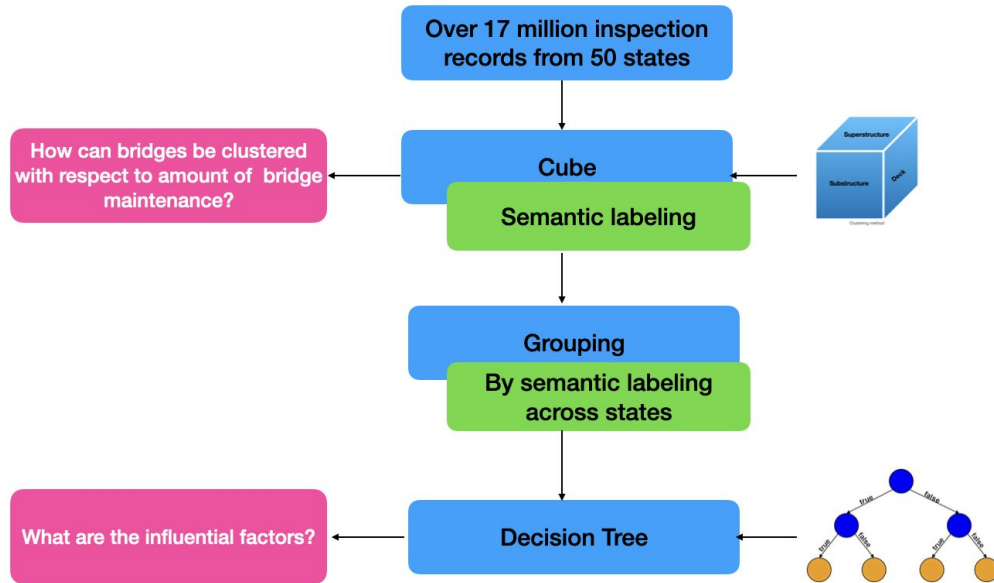
1. Data Collection

- A python web crawler that scrapes the csv files from the source, and converts them into JSON.
- Performs cleaning, transformation, integration, and population into a MongoDB database.

2 . Data cleaning and transformation

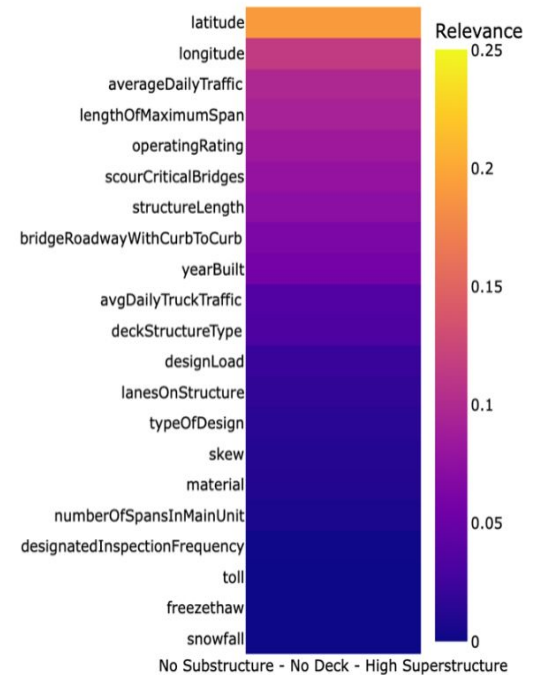
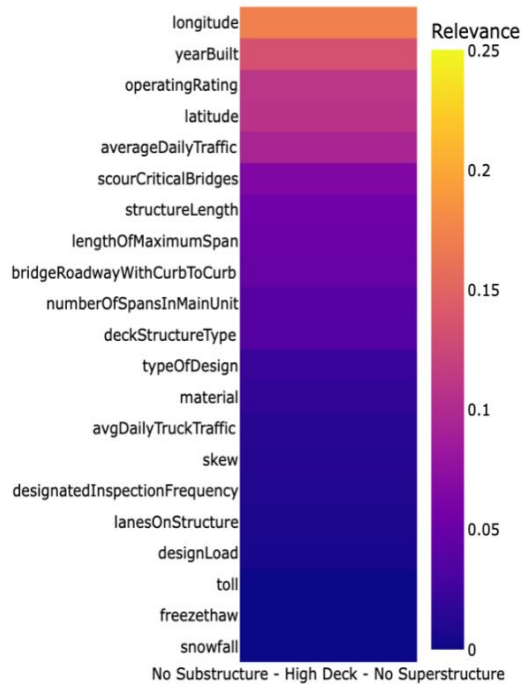
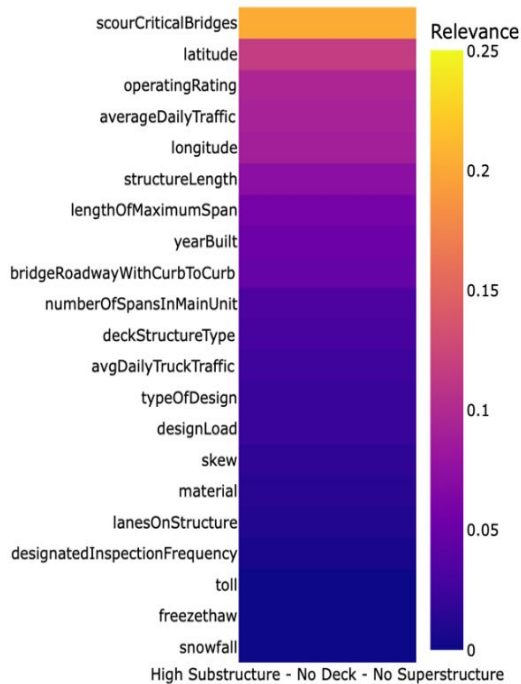
- Discarding missing values and outliers

Modeling bridge maintenance



What are the most influential factors in determining bridge maintenance?

Nebraska



Thank you.
Questions?