

Multi-Defect Bridge Asset Management



Background

Bridges are made up of several components which degrade by different modes, at different rates. The overall condition of the structure is determined by the aggregate condition of all its components as well as any applied maintenance strategy.

Objectives

- To improve the parametric statistical inference techniques applied to the Network Rail bridge inspection records.
- Propose a predictive deterioration Petri net model across multiple defect modes.
- Optimise inspection intervals using the predicted multiple defect deterioration profiles as well as determine optimal opportunistic maintenance strategies.
- Identify Local Environmental Factors that cause accelerated bridge deterioration.

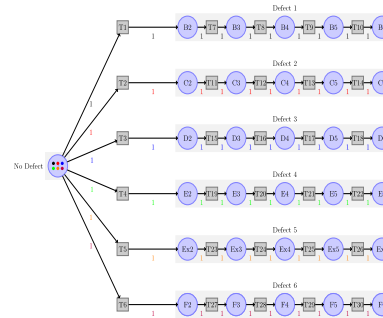


Figure 1

The multiple defect, Petri net deterioration model (Fig. 1) is used to simulate predicted deterioration profiles for each defect mode for constituent bridge elements. (Fig. 2).

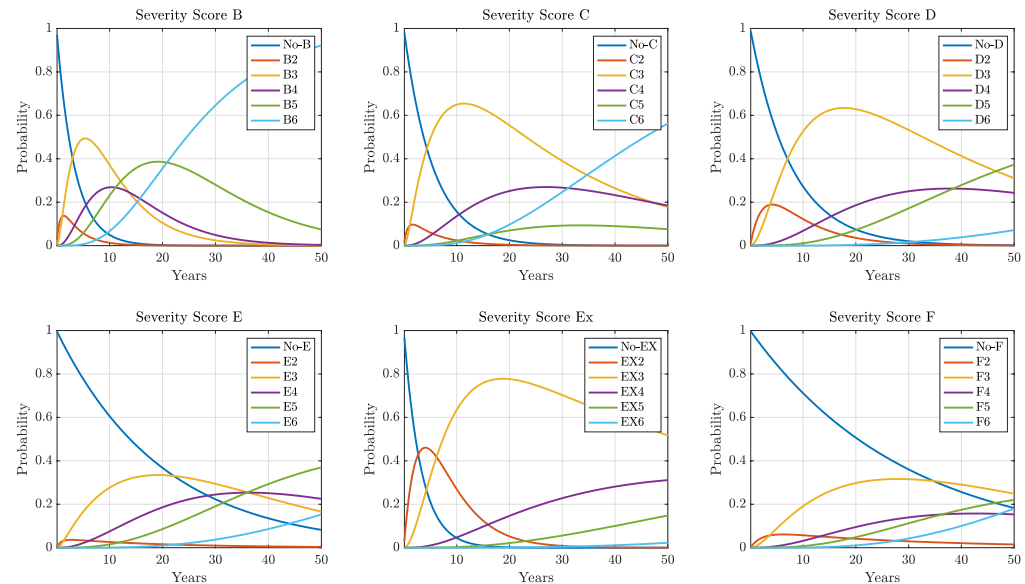


Figure 2