For Chapter 1, it introduces the basic knowledge of infectious disease epidemiology, infectious disease control, and how mathematical modeling can play a role in prediction and in finding the optimal control strategy.

I highlighted four papers in this chapter not only because these papers are mentioned, but also because this was one of the first times that models had been used during an epidemic to support the decision-making process.

I planned to refit the model, but due to the sensitivity of the dataset, neither the author nor the UK government is allowed to share the data with me. Therefore, I have retained a basic descriptive analysis, which I believe is sufficient for Chapter 1.

Paper list:

1. Models of foot-and-mouth disease
2. The foot-and-mouth epidemic in Great Britain: pattern of spread and impact of interventions
3. Transmission intensity and impact of control policies on the foot and mouth epidemic in Great Britain
4. Predictive spatial modelling of alternative control strategies for the foot-and-mouth disease epidemic in Great Britain, 2001

A graph on a paper

AI-generated content may be incorrect.

Source: <https://www.nao.org.uk/wp-content/uploads/2002/06/0102939.pdf>

Dataset source:

1. Report about the 2001 UK FAM outbreak: <https://www.nao.org.uk/wp-content/uploads/2002/06/0102939.pdf>
   1. First case: The first outbreak, in Essex, is confirmed on 20th Feb 2001.
2. 1967-68 UK FAM outbreak incidence data

<https://github.com/p-robot/uk1967-68>

1. Stimulate data: <https://www.nature.com/articles/s41598-019-41103-6>
2. fmd from Cumbria UK: package “sparr”