# IMPERIAL



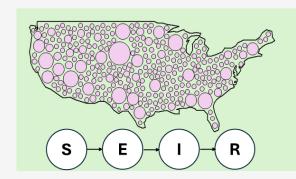
### February 2024 - Mystery Disease in Cattle

April 2024 – It's H5N1...



### Data available for modelling:

- US Cattle populations: ~36,000 herds across the US
- USAMM cattle movement data.



Every dairy herd in the US simulated as an SEIR model.

Language	Model Fitting Run-time
R	1.8 years
Stan	God knows.
dust2/monty	1 month
	https://github.com/mrc-ide/cowflu

## **Answer questions on:**

- Where might we see outbreaks next?
- What effect have interventions had?
- How much under-reporting is there?

#### Date of First Outbreak Detection Wisconsin Vermont New Hampshire Maine 1.00 -0.75 0.50 0.25 0.00-New York Washington Michigan Idaho Montana North Dakota Minnesota Illinois Massachusetts 1.00-0.75 0.50 0.25 0.00-Oregon Wyoming South Dakota Ohio Pennsylvania Rhode Island Nevada Iowa Indiana New Jersey Connecticut 1.00 -0.75 0.50 0.25 Eirst Outbreak Detected West Virginia Virginia California Utah Delaware Colorado Nebraska Missouri Kentucky Maryland Arizona New Mexico Kansas Arkansas Tennessee North Carolina South Carolina 0.50 0.25 Legend Oklahoma Louisiana Mississippi Alabama Georgia DataModel simulation 0.75 -0.50 0.25 -0.00 -Texas Florida 1.00 0.75-0.50 -0.25 Week Beginning