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Understanding the impact of climate in seasonal influenza in Australia

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Influenza in humans exhibits a strong seasonal cycle in temperate climates, with a peak of varying intensity appearing each winter. However, the exact cause of this seasonal cycle remains poorly understood. We develop a climate-based SIR modelling framework to understand influenza seasonality, with the transmission rate as a function of climate data. By using a variety of climate-based functional forms of transmissibility from the literature, as well as some new forms, we select the best functional form for climate-dependent transmissibility via modern Machine Learning model selection methods. By analysing a unique dataset comprising ten years of GP-reported influenza-like-illness surveillance data from around Australia, we explore the relationship between influenza transmission and weather in different climate zones.

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