Evolving booster vaccination strategies

Maria Riolo

PhD Student
Applied & Interdisciplinary Math
Complex Systems Certificate Program
University of Michigan

With pertussis incidence on the rise in many countries, a variety of booster vaccination strategies have been proposed. However, complex mixing patterns among age groups and the possibility of waning vaccine-derived immunity make it unclear who should be vaccinated to most effectively control pertussis. Is it most effective to give booster vaccinations to adults, whose immunity is more likely to have faded? Or maybe to school kids, whose high contact rates with their peers make them effective transmitters of disease? I use a genetic algorithm to explore the space of pulse vaccination strategies and present some preliminary results comparing strategies for a vaccine conferring long-lasting immunity and one whose protection wanes rapidly.