Feng, Yuanyuan; Iyer, Gautam; Li, Lei
Scheduling fixed length quarantines to minimize the total number of fatalities during an epidemic. (English) Zbl 07365237 J. Math. Biol. 82, No. 7, Paper No. 69, 17 p. (2021)

Summary: We consider a susceptible, infected, removed (SIR) system where the transmission rate may be temporarily reduced for a fixed amount of time. We show that in order to minimize the total number of fatalities, the transmission rate should be reduced on a single contiguous time interval, and we characterize this interval via an integral condition. We conclude with a few numerical simulations showing the actual reduction obtained.

MSC:
37N25 Dynamical systems in biology
92-10 Mathematical modeling or simulation for problems pertaining to biology

Keywords:
SIR system; compartmental model; epidemiology

Full Text: DOI

References:


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