

# $R_0$ and other applications of linear algebra to mathematical epidemiology

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## **Abstract**

Some notion of a basic reproduction number has been discussed in demography and epidemiology since the late 1870's. This notion was not given firm mathematical footing until the late 20th century. We will survey this approach as well as linear algebra results due to Hermite, Gersgorin, Perron, Frobenius and Hurwitz and apply them to a metapopulation model of infection on a network of arbitrarily (but finitely) many patches.