

Logistics:

- Install R/Rstudio

<https://cloud.r-project.org>

<https://rstudio.com/products/rstudio/download/#download>

- Install Epimdr-package

<https://CRAN.R-project.org/package=epimdr>

- Bookmark:

<https://rseek.org>

<https://github.com/objornstad/epimdr2>

- Optional download

<https://link.springer.com/book/10.1007/978-3-031-12056-5>

(If U Ghana is not inside springer paywall I'll share a secret)

At the population level we see **several distinct incidence patterns** (that reflects distinct patterns of prevalence)

1) Closed epidemic

Defintions:

Epidemic A rapid increase in the levels of an infection. Typical of the microparasitic infections (with long lasting immunity and short generation times) an epidemic is usually heralded by an exponential rise in the number of cases and a subsequent decline as susceptible numbers are exhausted.

Epidemics may arise from the introduction of a novel pathogen (or strain) to a previously unexposed (naive) population or as a result of the regrowth of susceptible numbers following the end of a previous epidemic.

e.g. 2014/15 Ebola

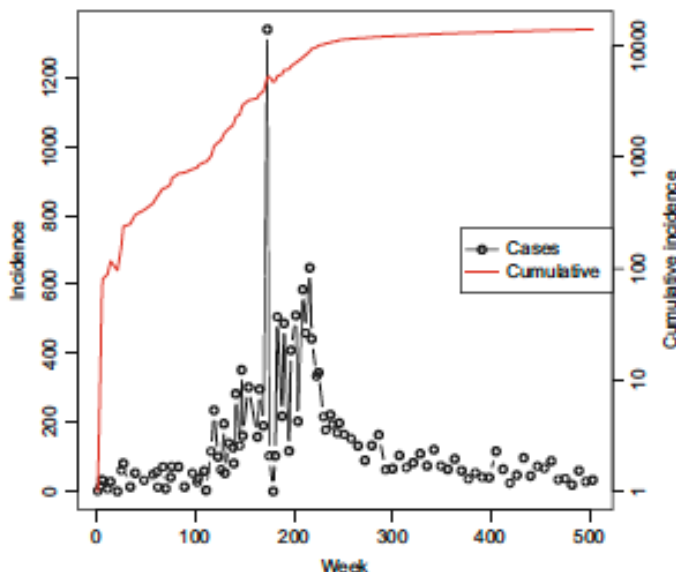


Fig. 3.6 Incidence and cumulative incidence of ebola during the 2014-2015 outbreak in Sierra Leone

Patterns of endemicity

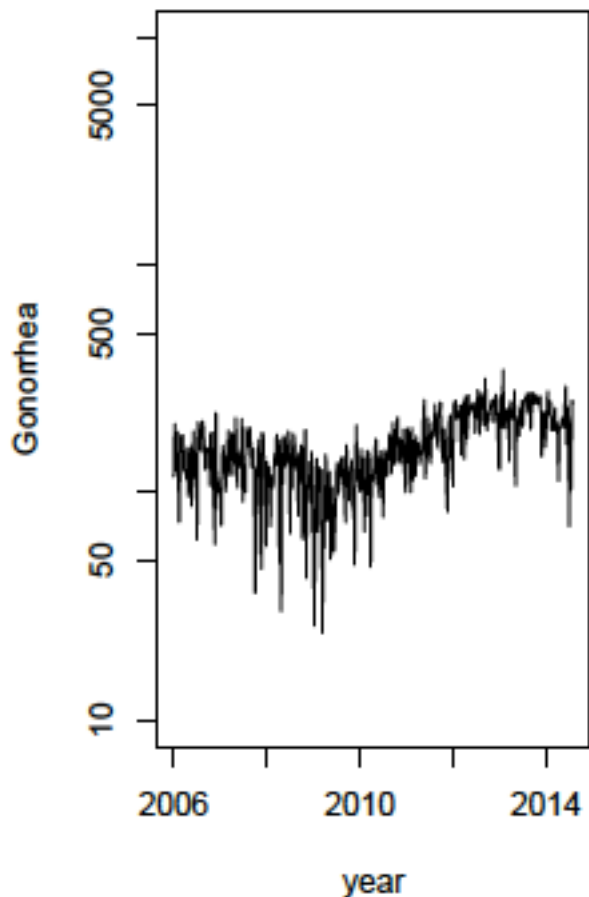
2) Stable endemism

Defintions:

Endemic A term to describe levels of infection which do not exhibit wide fluctuations through time in a defined place.

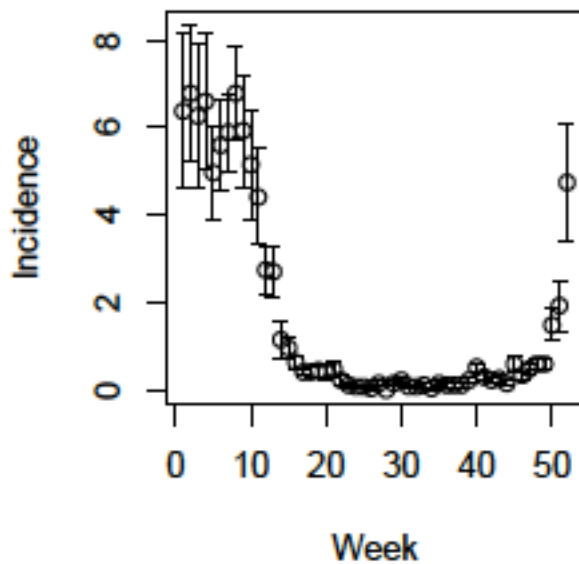
Stable endemicity is where the incidence of infection or disease shows no secular trend for increase or decrease.

For example Gonorrhea in
Pennsylvania

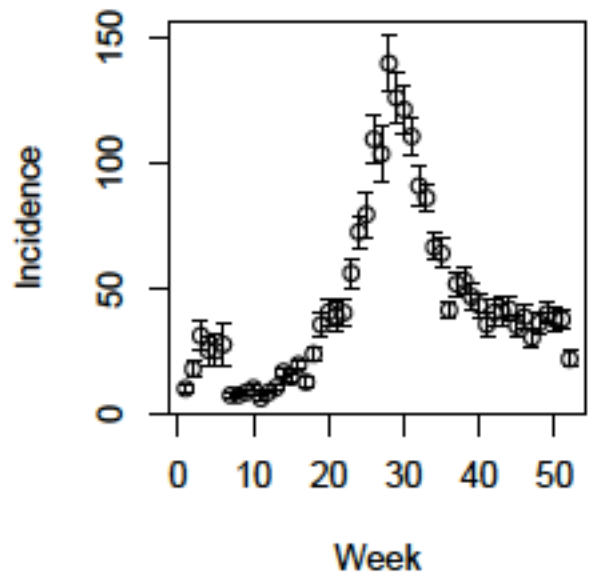


3) Seasonal endemism (Pennsylvania data from Tycho)

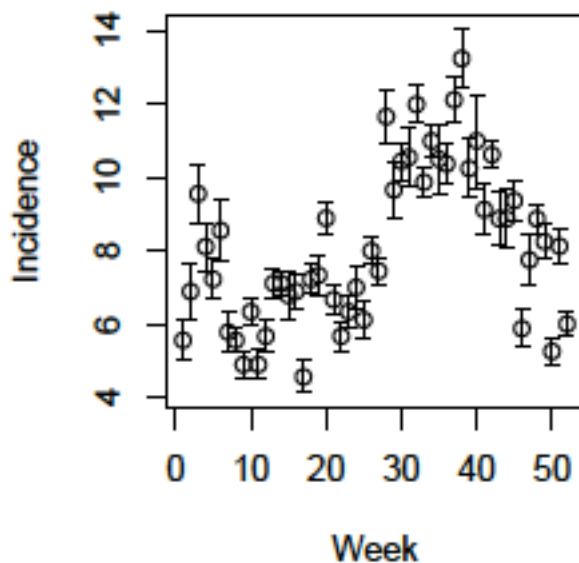
ILI mortality (1972-98)



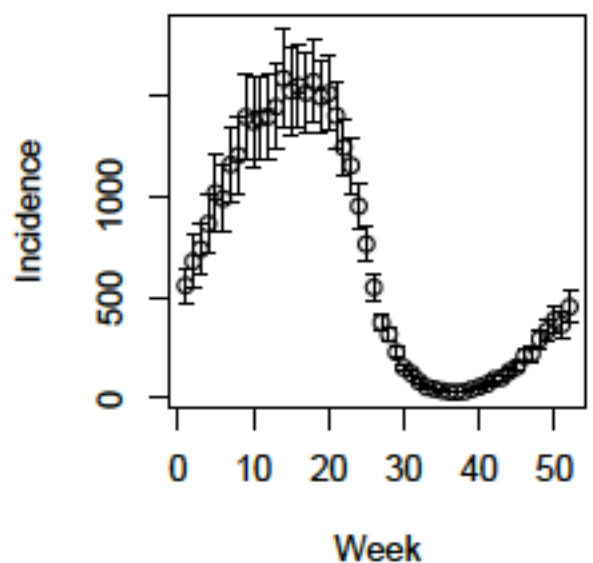
Lymes (2006-14)



Giardia (2006-14)

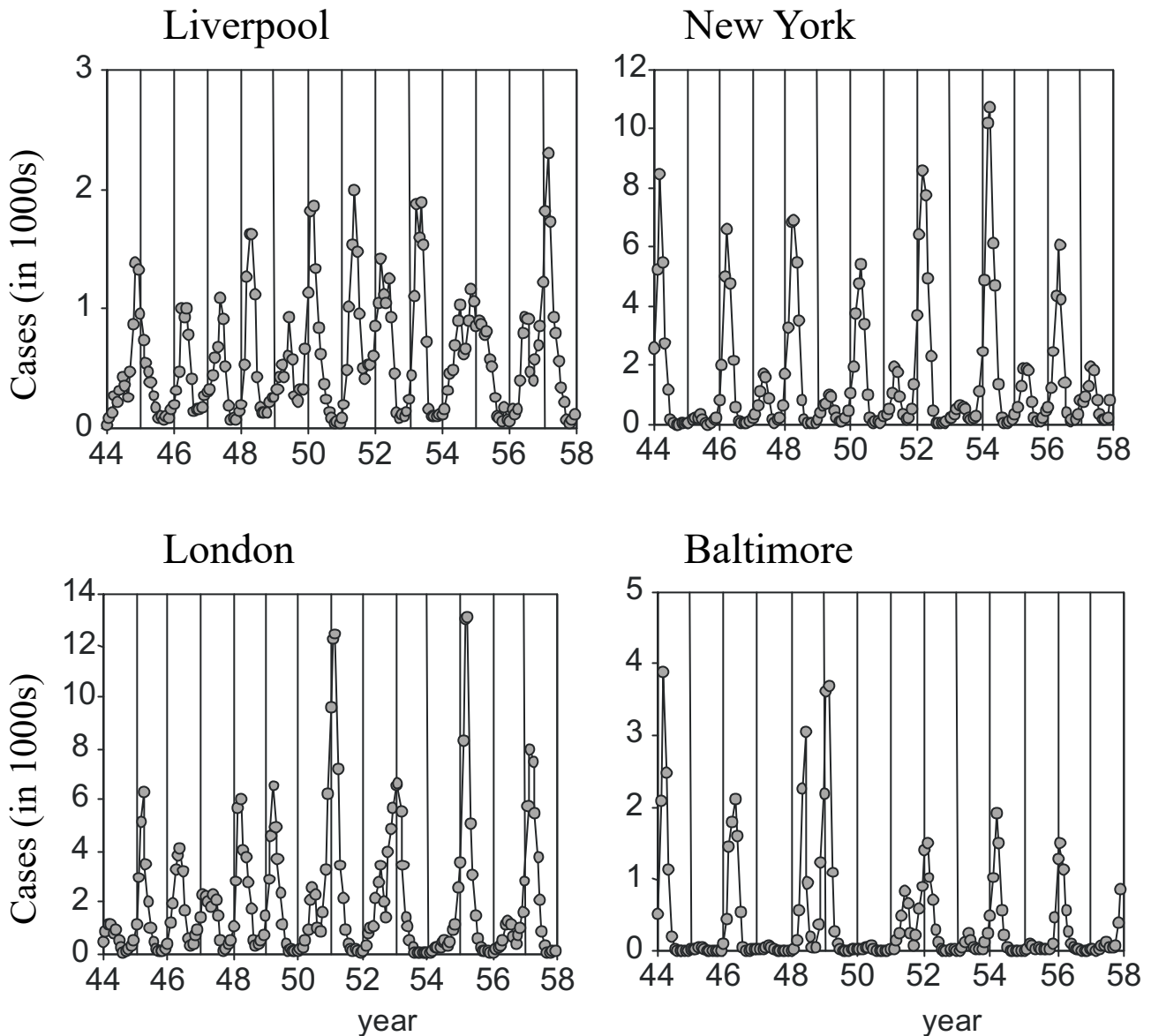


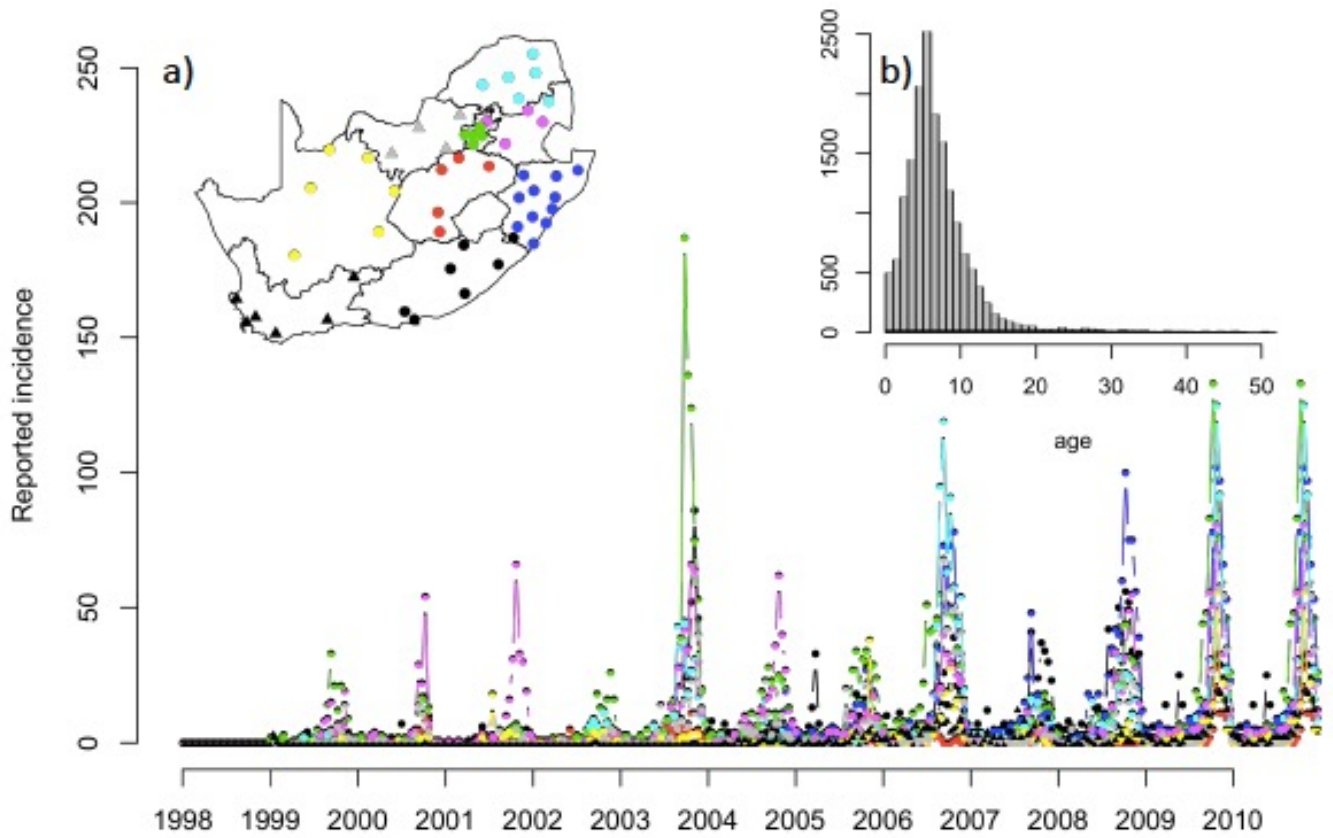
Measles (1928-69)



4) Recurrent epidemics

Ex. Measles historically exhibited more or less periodic epidemics with a variety of inter-epidemic periods





Rubella in Kenya

