EPI 266

Notes 2/16/18 - MMC

AR1 process: auto correlation of order 1

$Z(\tau+1) = |\alpha| < 1$

$\tau = 0, 1, 2, \ldots$

$\alpha\ Z(\tau) + X(\tau)$

Def.: **linear recurrence**:

$f(\tau+1) = A\, f(\tau) + B$

anything of the form whereby the next time point is a linear relationship to the previous time point.

Def.: **Sub-Critical**: extinction occurs with probability=1, or "almost surely" will become extinct.

- That is to say that it is possible for it to never end, not a fallacy to keep going, however the probability of this occuring is also zero.

alt. ex.: Probability $(x=0)$ in standard normal with mean $=0$ is zero as has to be 0.0000000... but it can still happen.

Def.: **Super-Critical**: $R_0 > 1$

- however super critical infections may still die out due to "bad luck" from disease's point of view

Geometric Process:

$N(\tau+1) = k\,N(\tau)$

* when $k=1$ this is the Critical case when there is no change.

Super-spreaders:

$E[u^x]$

where $P(x=0) = 0.001$

$P(x=1) = 0.998$

$P(x=100{,}000) = 0.001$

$$E[u^x] = 0.001 + 0.998u + 0.001u^{100{,}000}$$