Simpon's paradox

Chapter 12

1. minimize var
   0) $Var < \infty$
   1) optimization
   2) conditioning
   3) correlation : $Var(X+Y) = Var(X) + Var(Y) + 2Cov(X,Y) < Var(X) + Var(Y)$ if $Cov(X,Y) < 0$

2. stratified sampling

3. size biasing
   $X \geq 0$, $IE\, X > 0$
   f_X - pdf $\rightarrow f_Y(y) = \frac{y f_X(y)}{F(x)}$ - pdf
   $\rightarrow$ Y is called size-biased version of X

$$X \sim P(\lambda) \iff Y \overset{d}{=} X+1$$