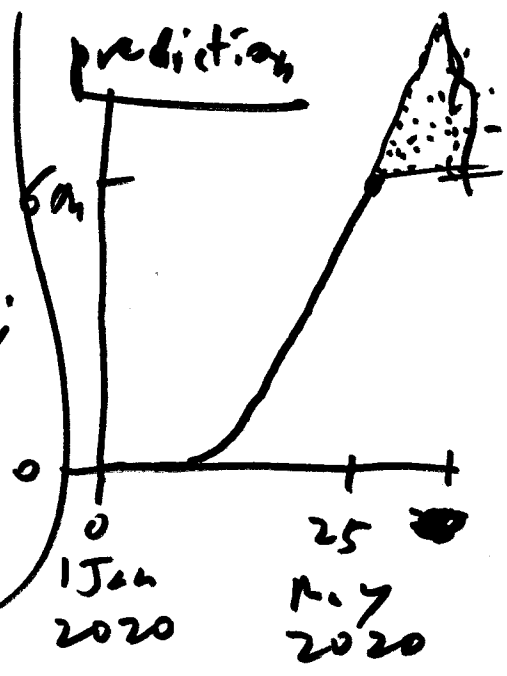
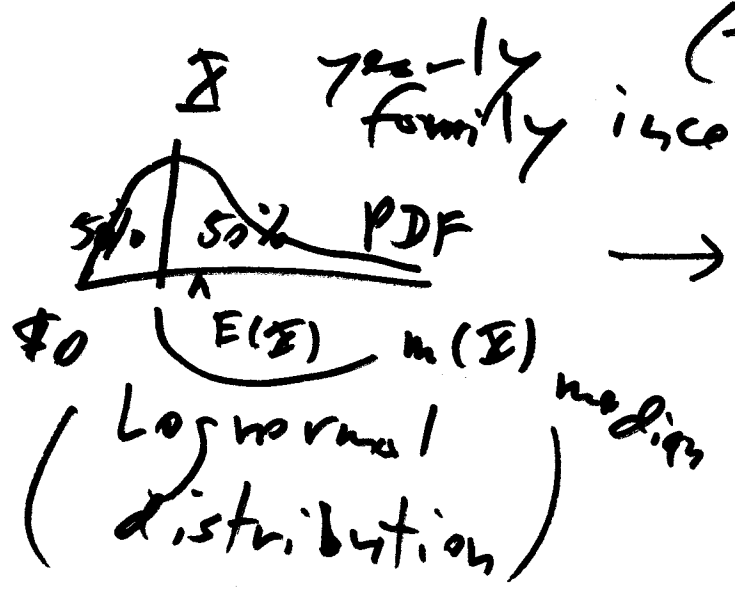


This conditional
 time: expectation
 next & variance;
 time: special
 distributions

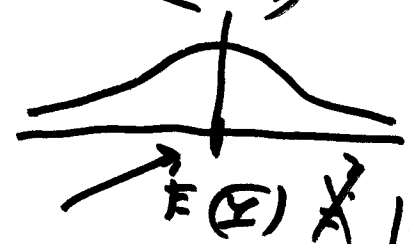


STAT 131
 26 May 20
 (lecture)

Confirmed
 COVID-19
 cases
 worldwide



(+ transformation)



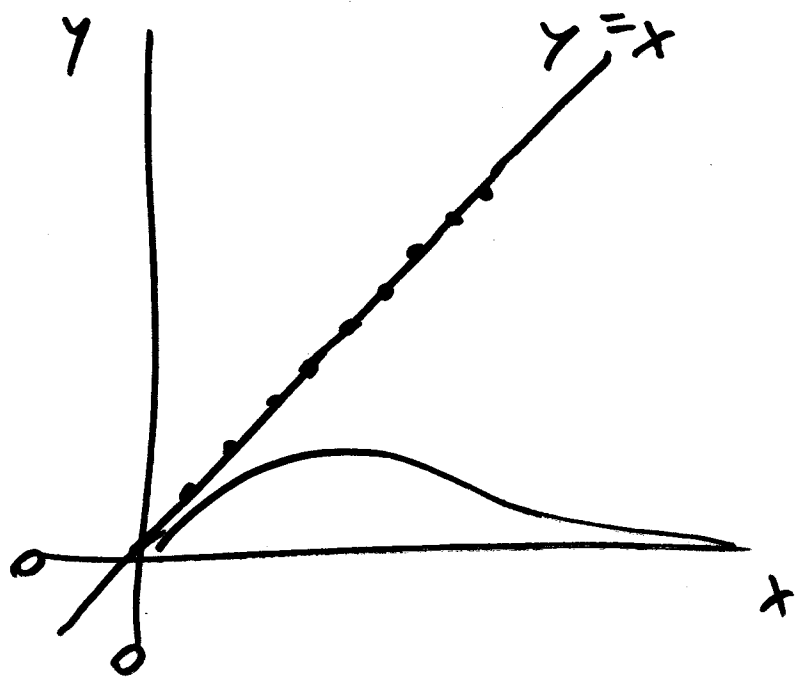
$Y = h(X)$
 $= \log(X)$

$E[\log(X)] \neq \log[E(X)]$

$m[\log(X)] = \log[m(X)]$

X continuous
 PDF $f_X(x)$
 support \mathcal{S}_X

$E(X) = \int_{x \in \mathcal{S}_X} x \cdot f_X(x) dx$



$$\underline{\underline{Y = aX + b}} \quad (2)$$

$$\rho(X, Y) = +1 \quad (a > 0)$$

$$\rho(X, Y) = -1 \quad (a < 0)$$

if X, Y
independent

$$V(X+Y) = V(X) + V(Y)$$

in general

$$V(X+Y) =$$

$$V(X) + V(Y) + \underline{\underline{2Cov(X, Y)}}$$

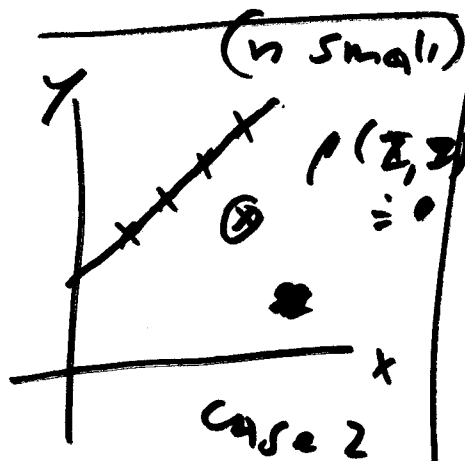
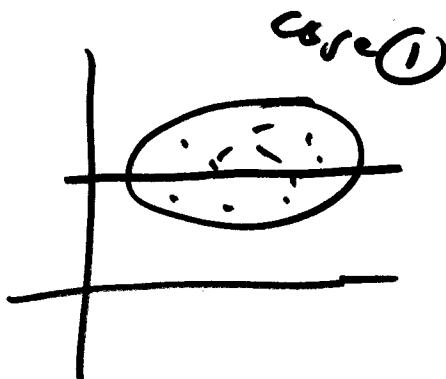
$$\rho(\bar{X}, \bar{Y}) = -1$$



$$y = ax + b$$

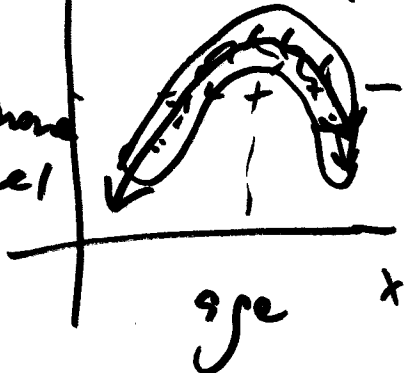
(a < 0)

$$\rho(\bar{X}, \bar{Y}) = 0$$



$$\rho(\bar{X}, \bar{Y}) = 0$$

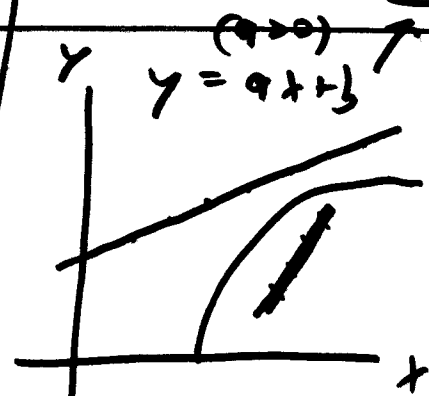
hormone level



strong
non-linear
association

rv data 3

$$\rho(\bar{X}, \bar{Y}) = +1$$



all points on
line with
positive slope

