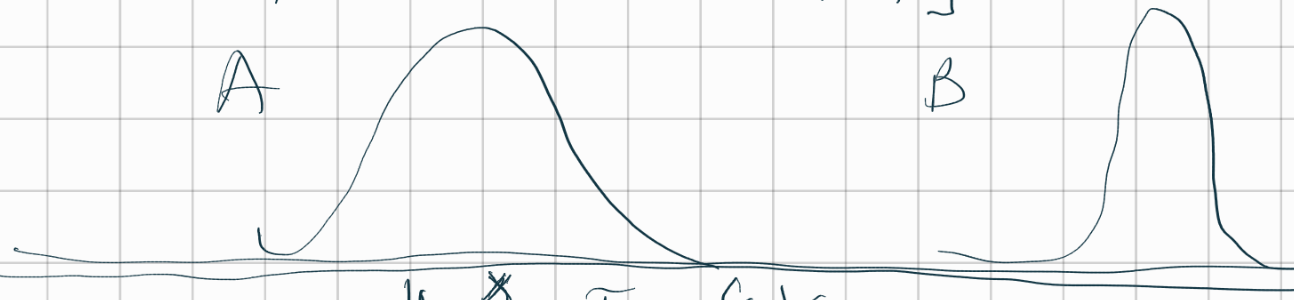
- $E(Y) = \mu_Y$ SUMPRODUCT( )
- $Var(Y) = \sigma_Y^2 = E[(Y-\mu_Y)^2] = E[(Y-E(Y))^2]$



$Var(A) > Var(B)$

$\sigma_A > \sigma_B$

		X: H	X: T	$f(y)$ ← marg. distr.
- Y	H	1/4	1/4	1/2
	T	1/4	1/4	1/2
marginal distr.	$f(x)$	1/2	1/2	1

Conditional

$f(x|y)$

$f(x|y=H) = \frac{1/4}{1/2} = \begin{cases} 1/2 \\ 1/2 \end{cases}$

independence: marginal = conditional i.e. $f(x) = f(x|y)$

- $COV(X,Y) = E[(X-\mu_X)(Y-\mu_Y)]$
- Correlation $= \frac{COV(X,Y)}{\sigma_X \sigma_Y}$

Sampling

- i.i.d.
- $\bar{Y}$ – simple (equal weighted) avg.

mean ↓ var. ↓

- $Y \sim (\mu_Y, \sigma_Y^2) \Rightarrow \bar{Y} \sim N(\mu_Y, \frac{\sigma_Y^2}{n})$

- $\dfrac{\bar{Y} - \mu_Y}{\sqrt{\dfrac{\sigma_Y^2}{n}}} \sim N(0, 1)$ aka std. normal
aka z score

z

- when n small ($n < 30$) $\dfrac{\bar{Y} - \mu_Y}{\sqrt{\dfrac{\sigma_Y^2}{n}}} \sim t_{n-1}$

- z - 95% obs. are between -1.96 σ's and 1.96 σ's
- t - 95% obs are between $-$c.v. and c.v.

$|c.v.| > 1.96$

see statistical table for exact c.v.