

$$x \sim N\left(\begin{matrix} 0 \\ 1 \end{matrix}, \Sigma\right)$$

$$z \sim N\left(\frac{1}{2}, 1\right)$$

any distribution in  $(0, \infty)$

$$y_1 = \frac{x_1^2}{x_1^2 + z^2}$$

Corr( $x_1, x_2$ )

$$y_2 = \frac{z^2}{x_2^2 + z^2}$$

at  $z=0$   
 $y=1$   
 at  $z \rightarrow \infty$   
 $y=0$

$$W = x + y$$

$$V = x + z$$

$x, y, z$  are independent

$W$  &  $V$  are correlated