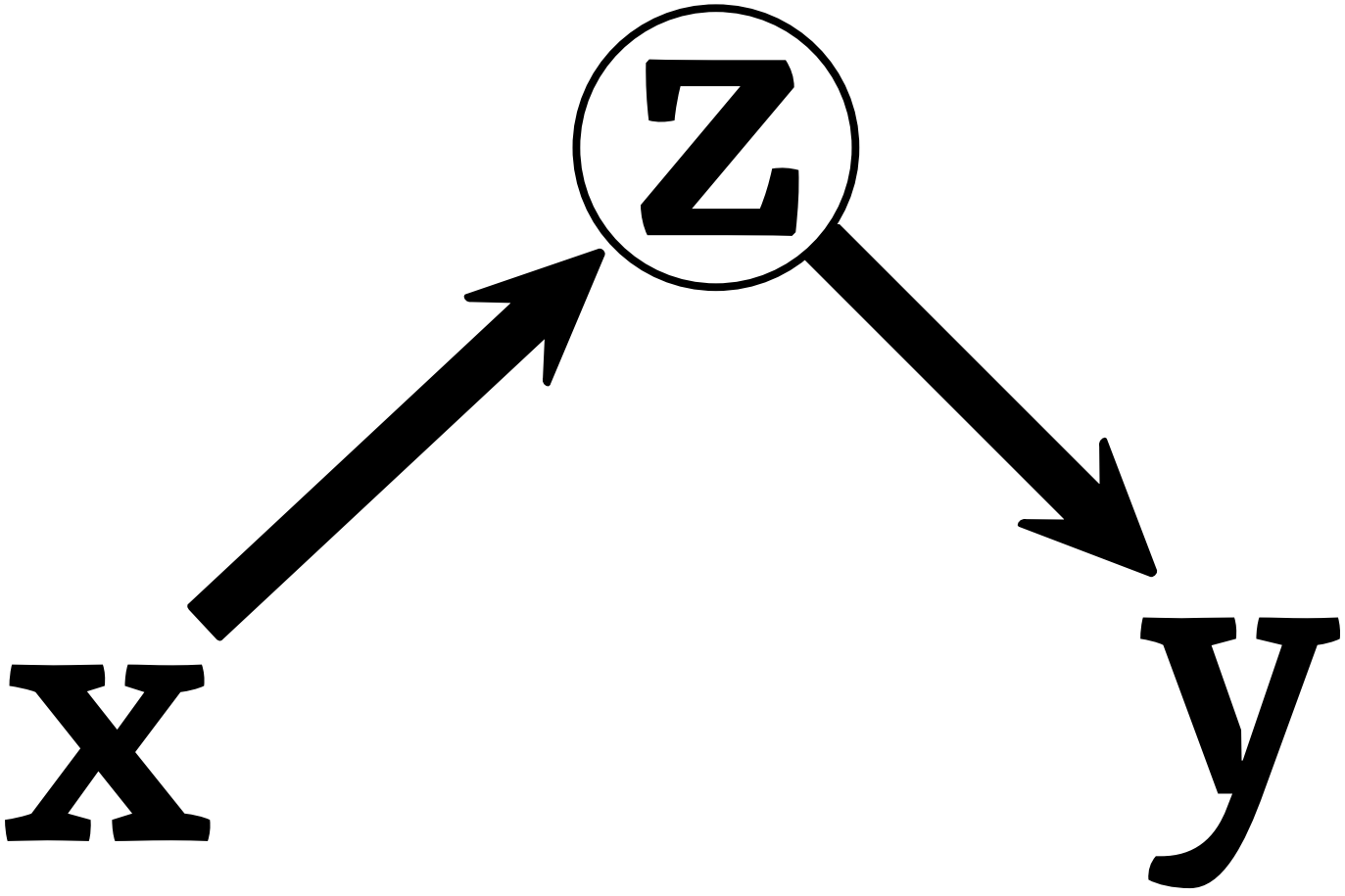






ALL THE EFFECT ONLY IS MEDIATED BY Z



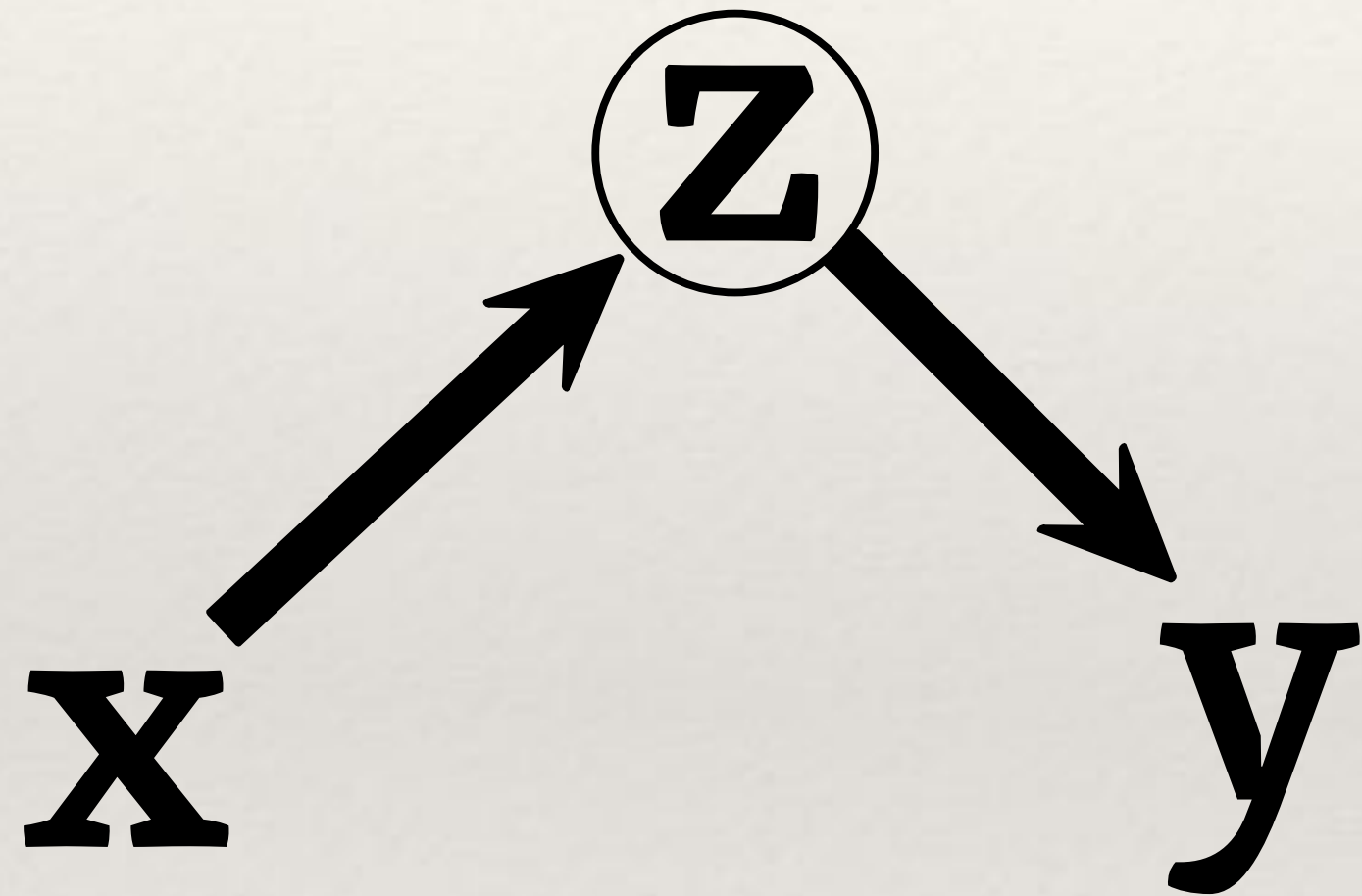
# Math

$$y \sim \text{Normal}(\alpha_y + \beta_{yz}z, \sigma_y)$$

$$z \sim \text{Normal}(\alpha_z + \beta_{zx}x, \sigma_z)$$

$$x \sim \text{Normal}(\alpha_x, \sigma_x)$$

# ALL THE EFFECT OF X ON Y IS MEDIATED BY Z



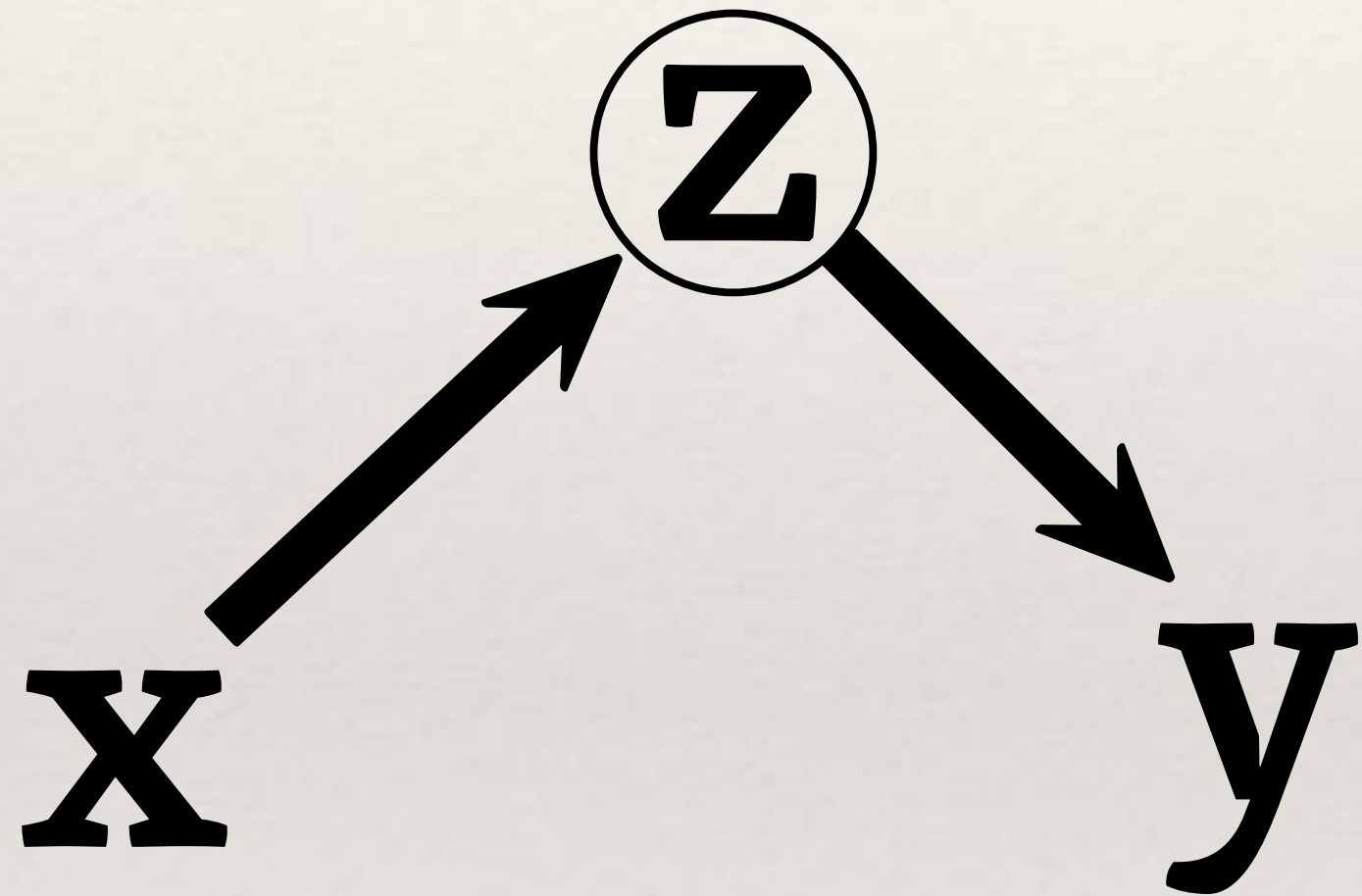
## Math

$$y \sim \text{Normal}(\alpha_y + \beta_{yz}z, \sigma_y)$$

$$z \sim \text{Normal}(\alpha_z + \beta_{zx}x, \sigma_z)$$

$$x \sim \text{Normal}(\alpha_x, \sigma_x)$$

# MODEL WITHOUT THE MEDIATOR



```
set.seed(1)
N = 100
x = rnorm(N)           # x ~ normal(0, 1)
z = rnorm(N, 1 + x)    # z ~ normal(1 + x, 1)
y = rnorm(N, 1 + z)    # y ~ normal(1 + z, 1)

m1 = ulam(alist(
  y ~ normal(a + bx*x, sigma),
  a ~ normal(0, 0.3),
  bx ~ normal(0, 0.3),
  sigma ~ exponential(1)),
  data = list(y = y, x = x),
  iter = 1000, chains = 4, cores = 4)
```