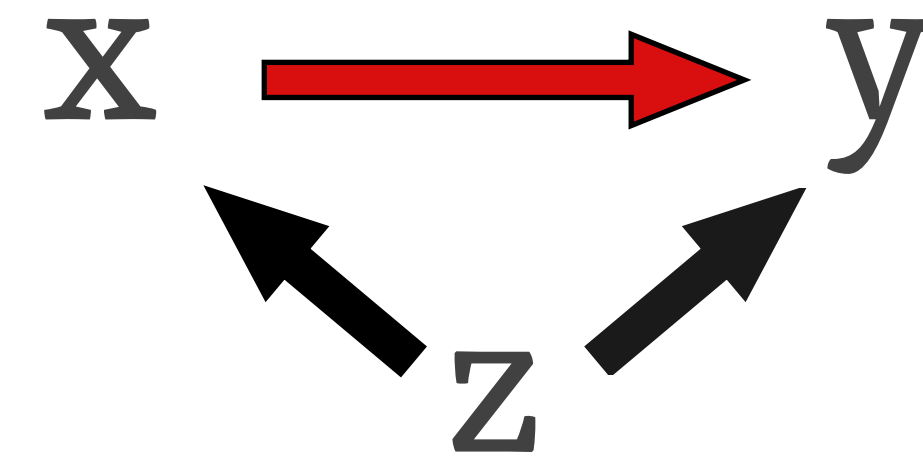


# Examples of forks or confounders

- This is the quintessential “control” variable.
- Most variables are included in the model under the assumption that they are confounders and need have their effects taken into consideration.
- Conditioning on  $z$ , the causal effect of  $x$  on  $y$  can be estimated without bias



# Smoking and Cancer

Famously, R. A. Fisher was not convinced that smoking caused cancer, and proposed that an unobserved propensity variable caused both cancer and smoking

