

# Experiments

AP Review

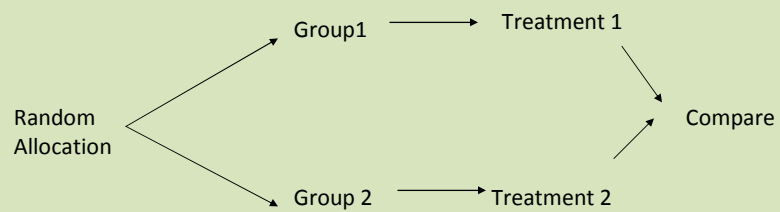
## Experimental Design Principles

- Control effects of possible confounding variables on the response
- Randomize by using impersonal chance assignment
- Use enough subjects to reduce chance variation in the results (replication)

## Showing Your Design

- Diagram the Plan
- Describe in detail your randomization
  - Names in a hat (best)
  - Flip a coin (for all subjects)
  - RNT (for all subjects)

## Diagram to Show General Plan



## **Types of Experimental Design**

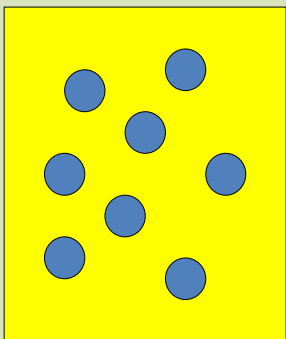
- Completely Randomized
- Randomized Block
- Matched Pair
- Random Pair

## **Confounding**

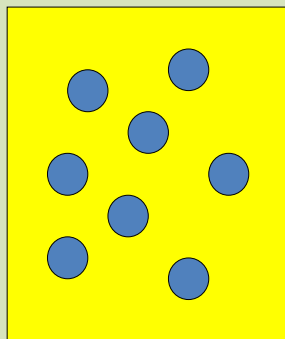
- When the levels of one factor are associated with the levels of another factor and cannot be separated

## Not Confounded

Treatment 1

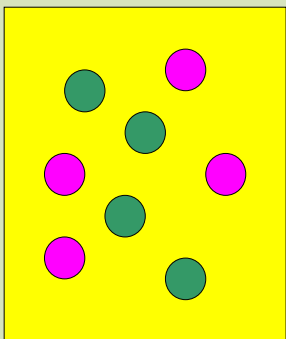


Treatment 2

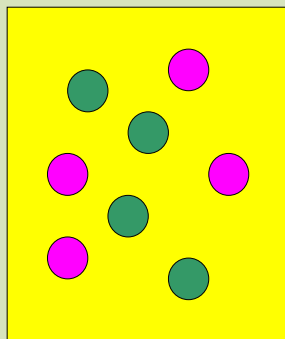


## Not Confounded

Treatment 1

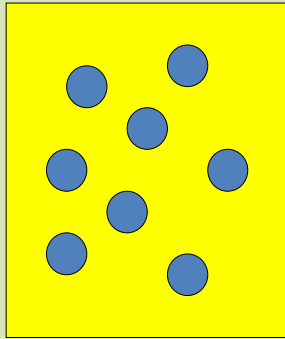


Treatment 2

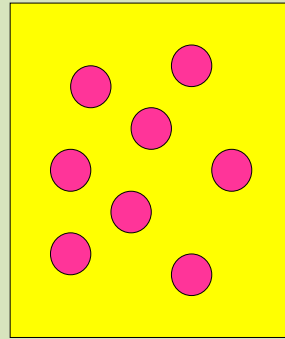


## Confounded

Treatment 1



Treatment 2



Only a well designed  
experiment can  
conclude cause and  
effect.

