

# Sampling and Estimation

## Biases in Sampling

## Confidence Interval

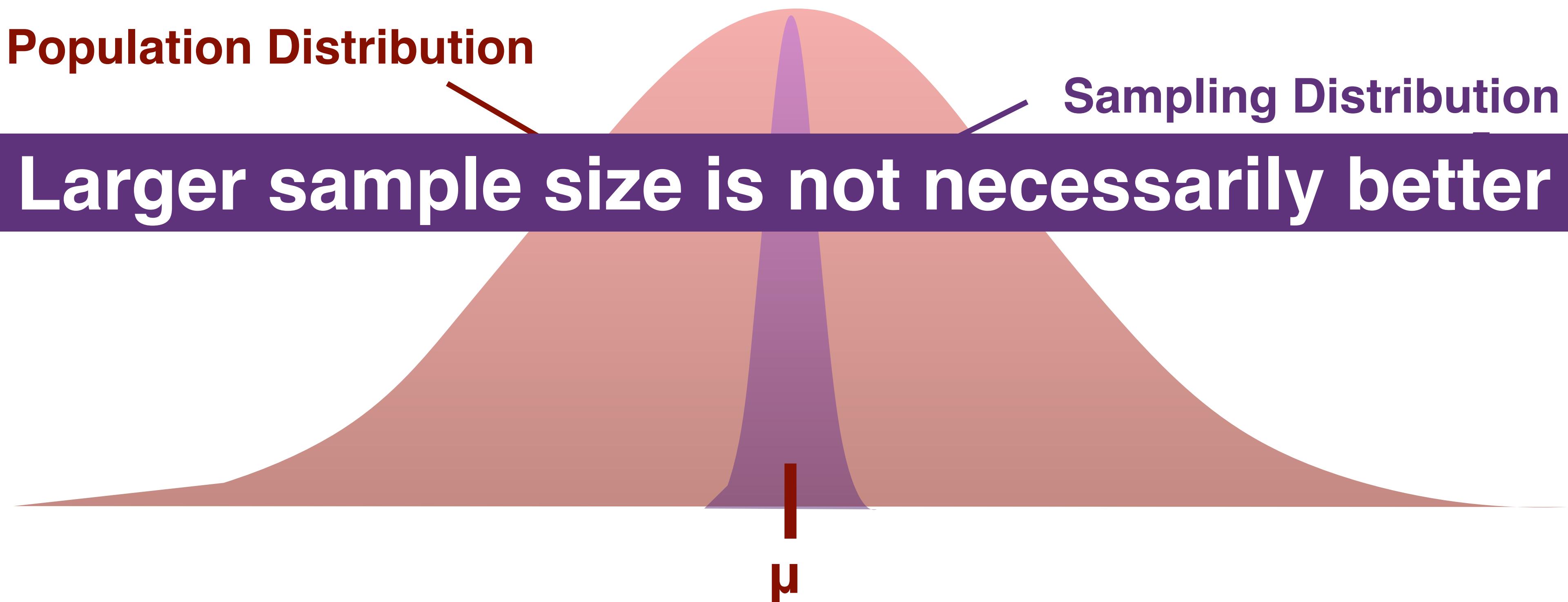


*Confidence intervals are narrower when the sample size ↑*

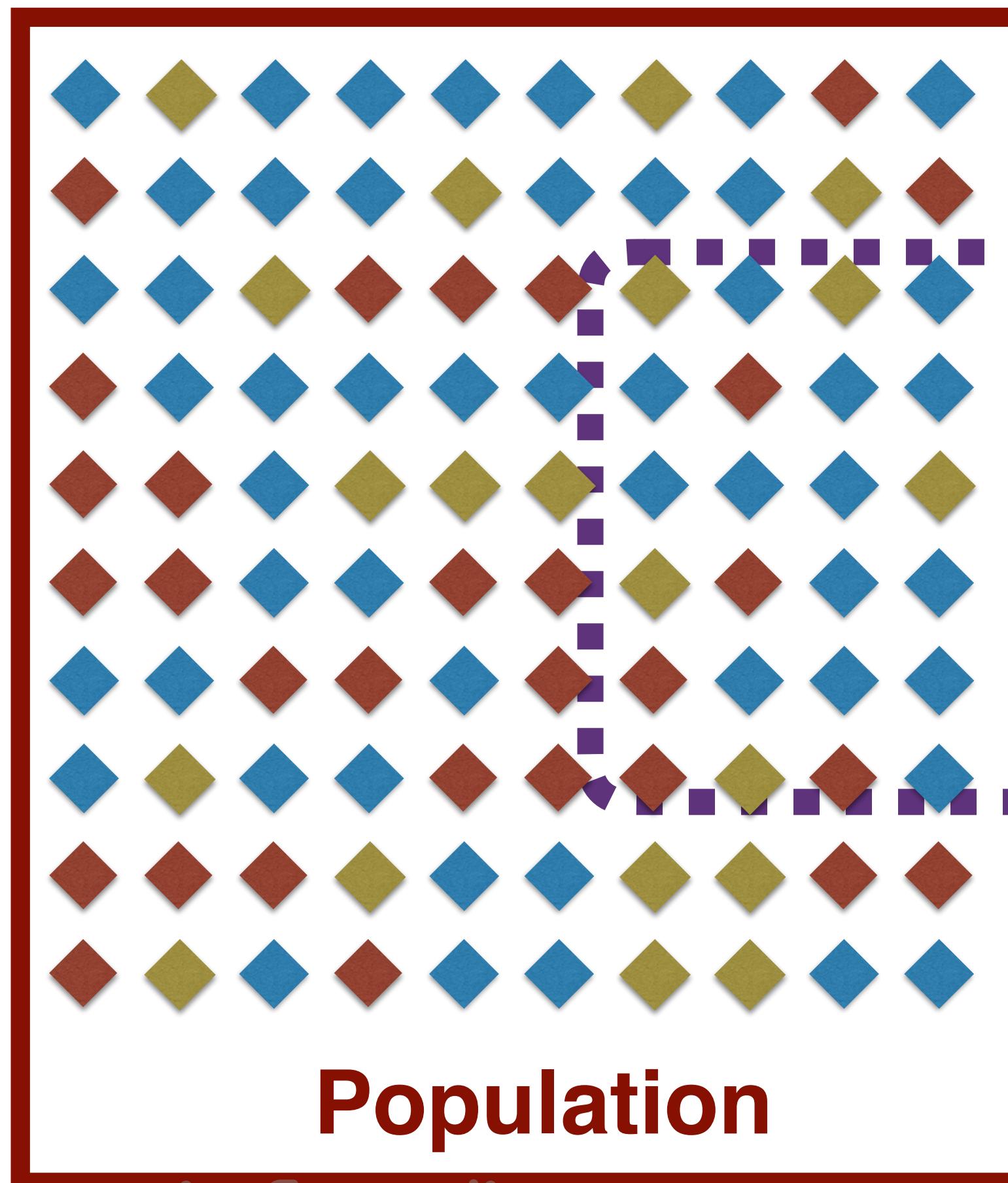
**Population Distribution**

**Sampling Distribution**

**Larger sample size is not necessarily better**

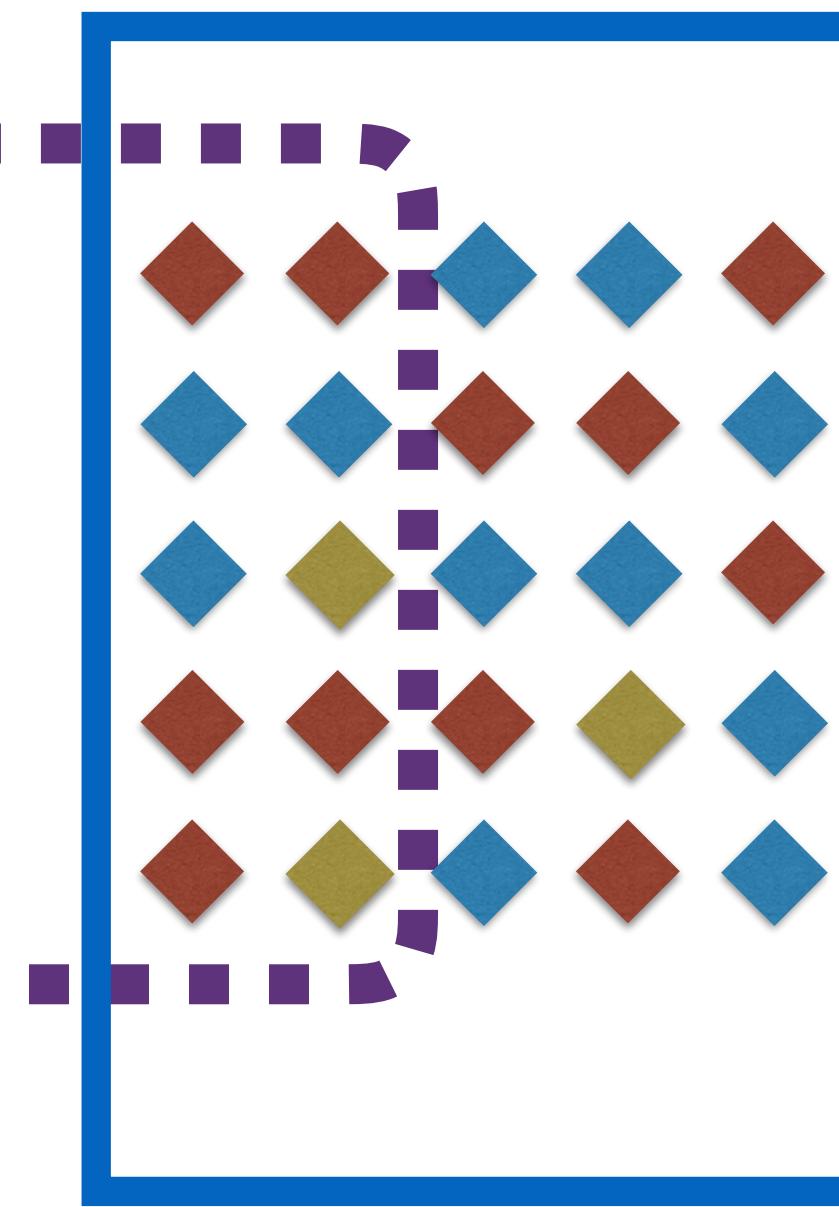


## Larger sample size is not necessarily better



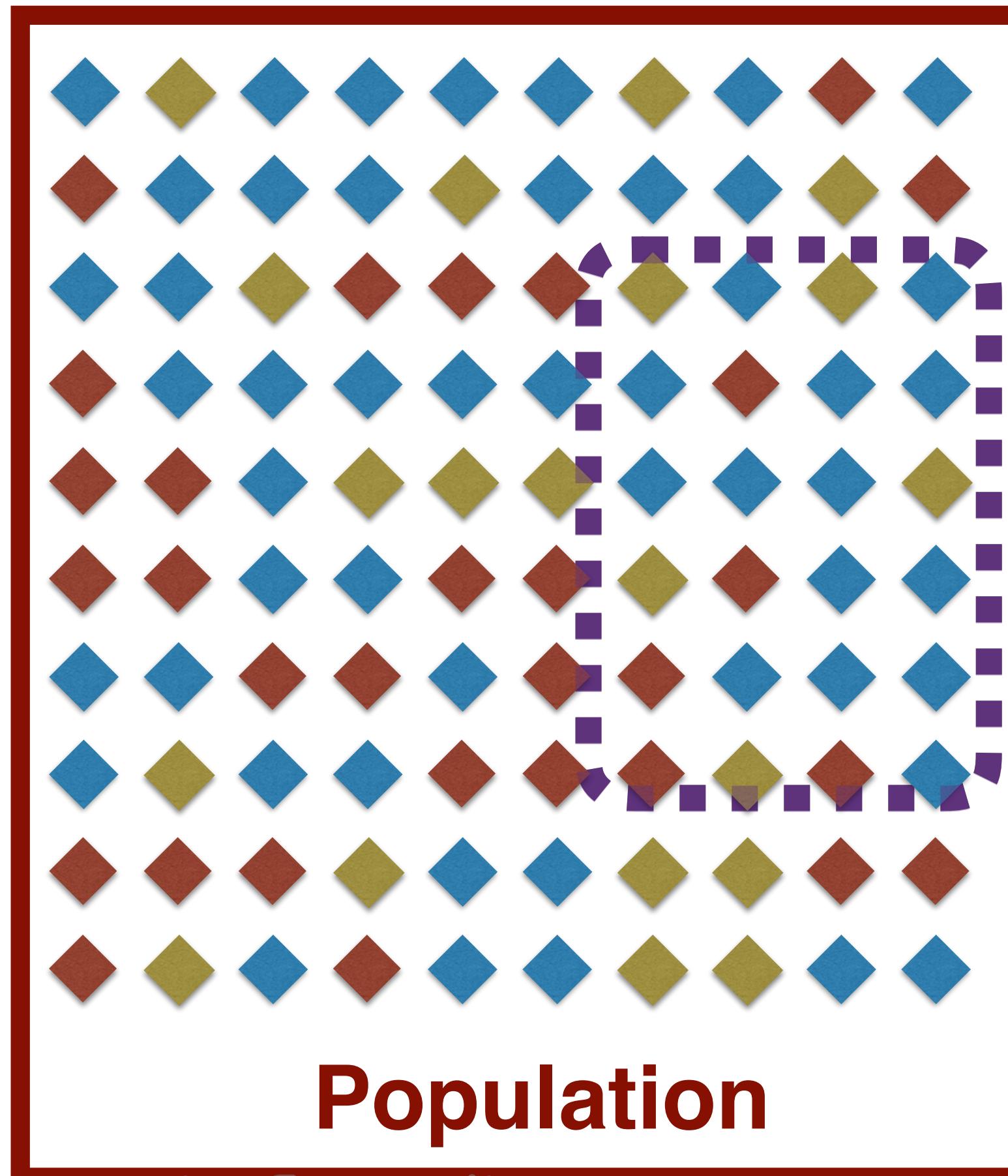
Biases in Sampling

*may contain observations from a different population with different characteristics*



Population 2

## Larger sample size is not necessarily better

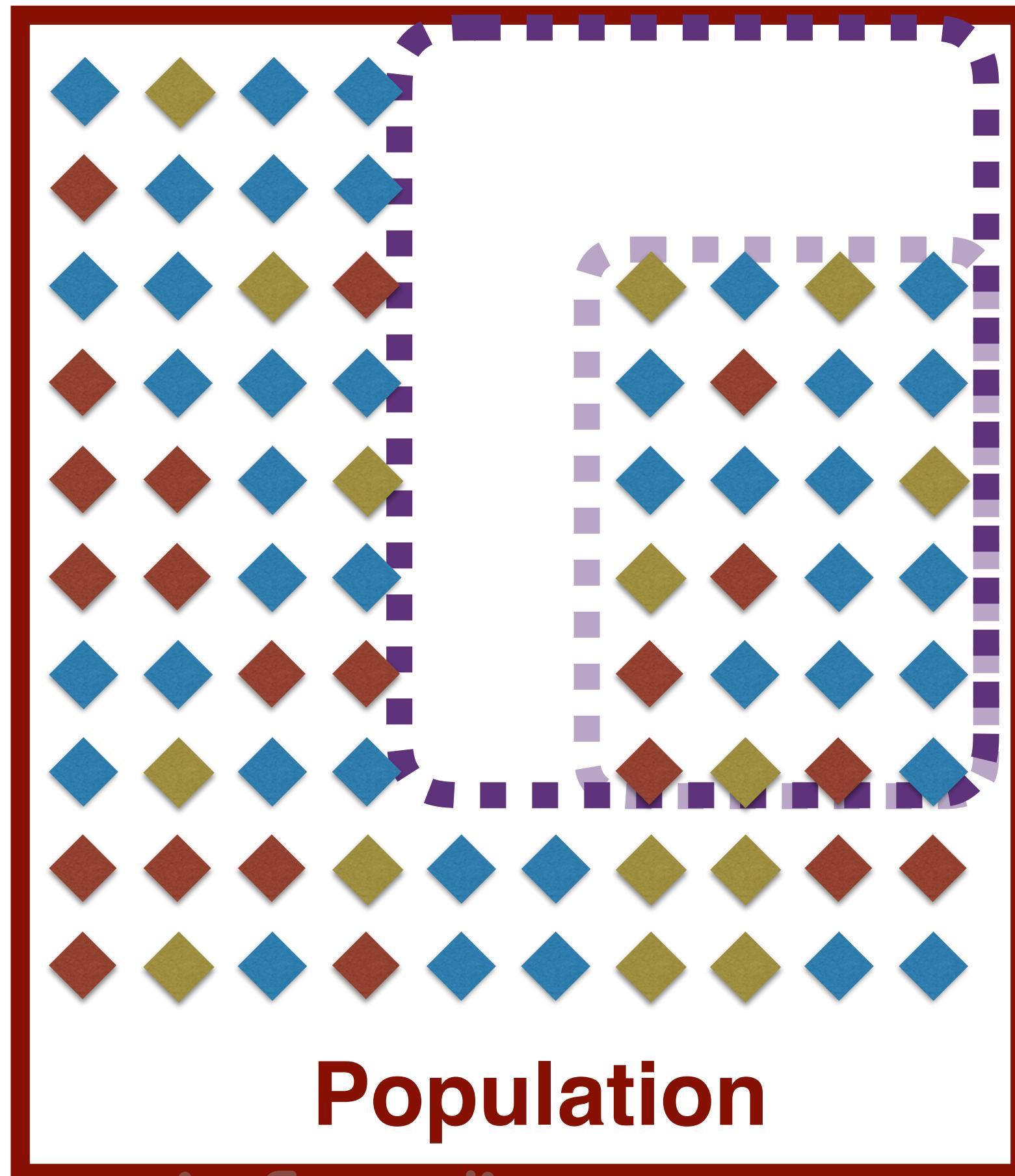


Biases in Sampling

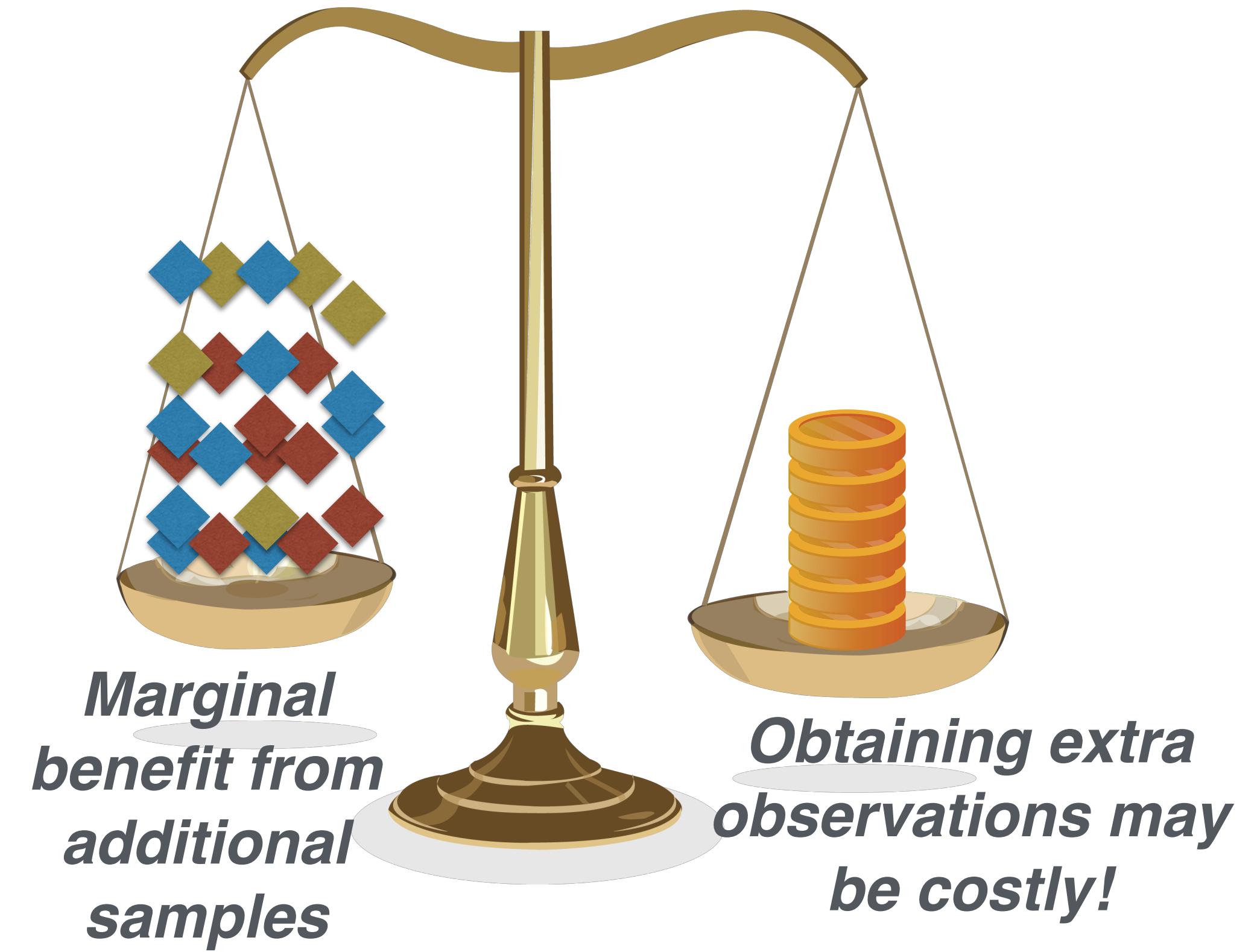
*Obtaining extra  
observations may  
be costly!*



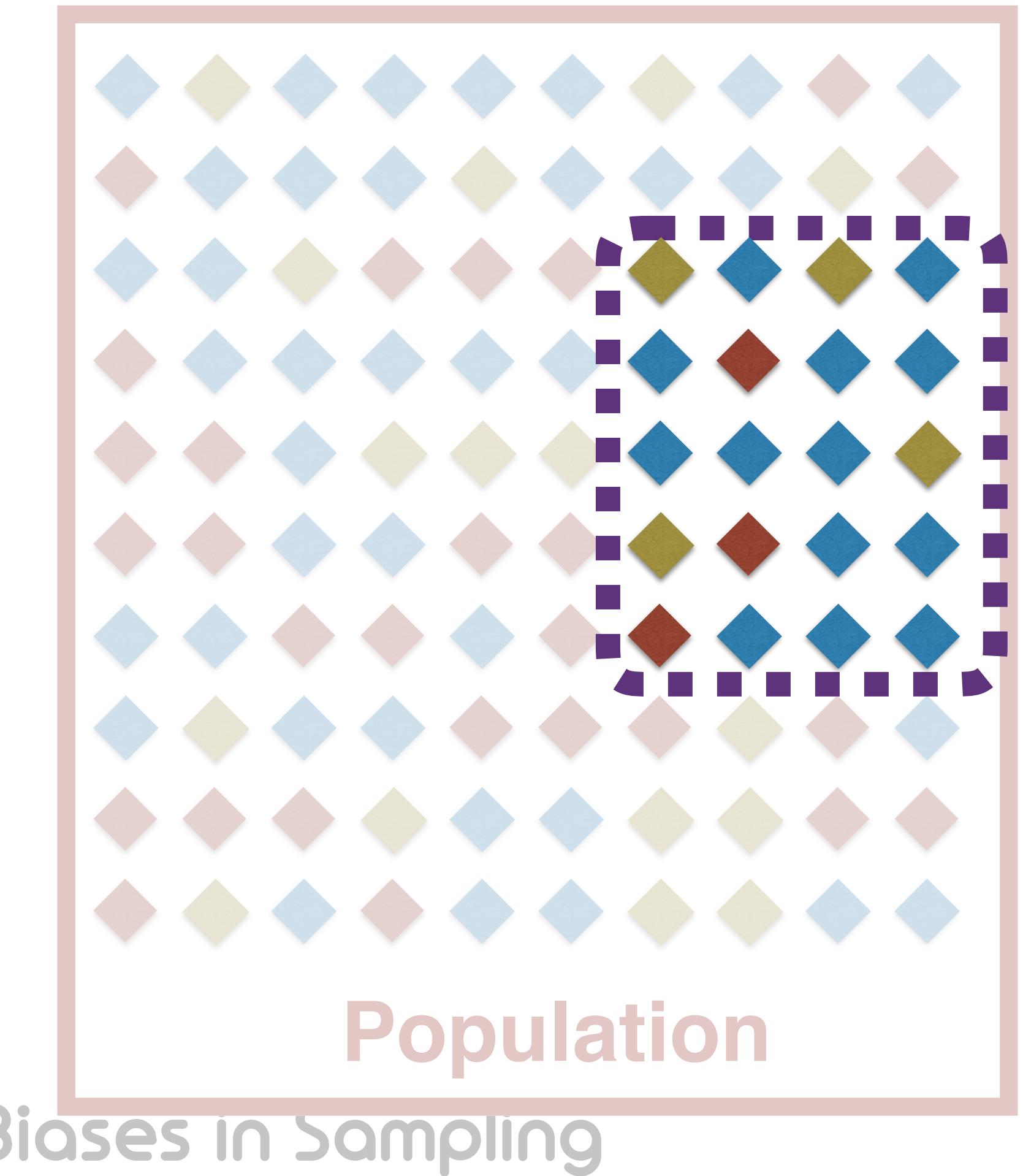
## Larger sample size is not necessarily better



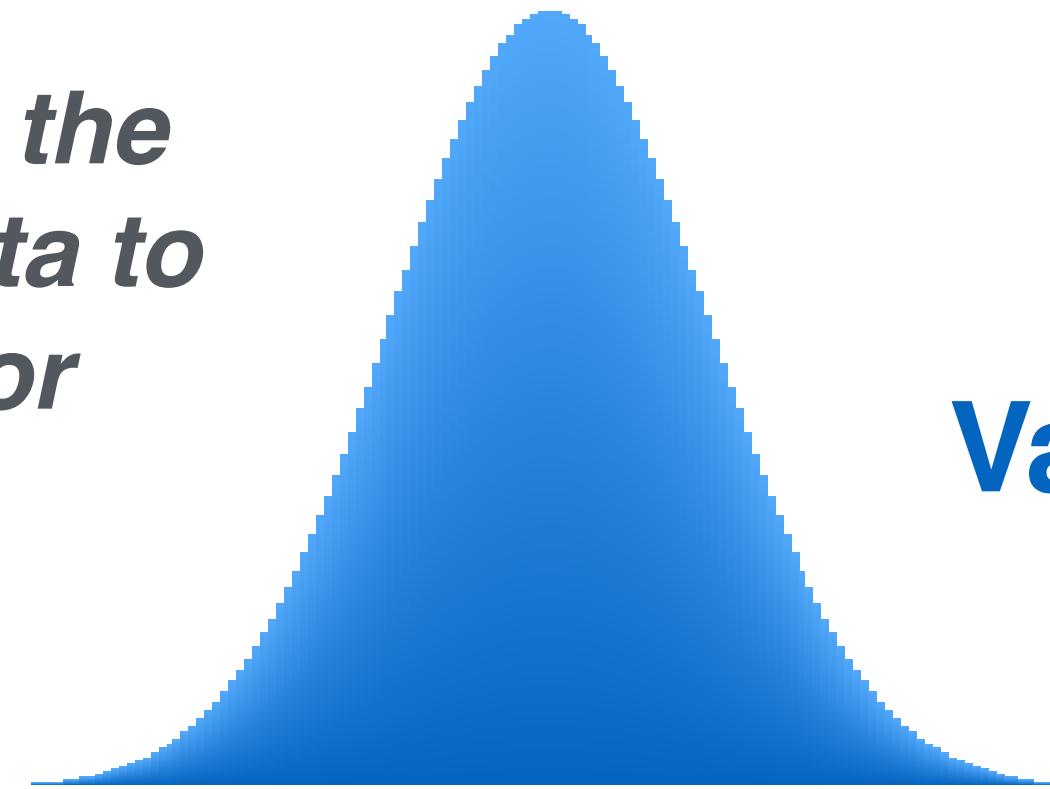
Biases in Sampling



## Data Mining Bias



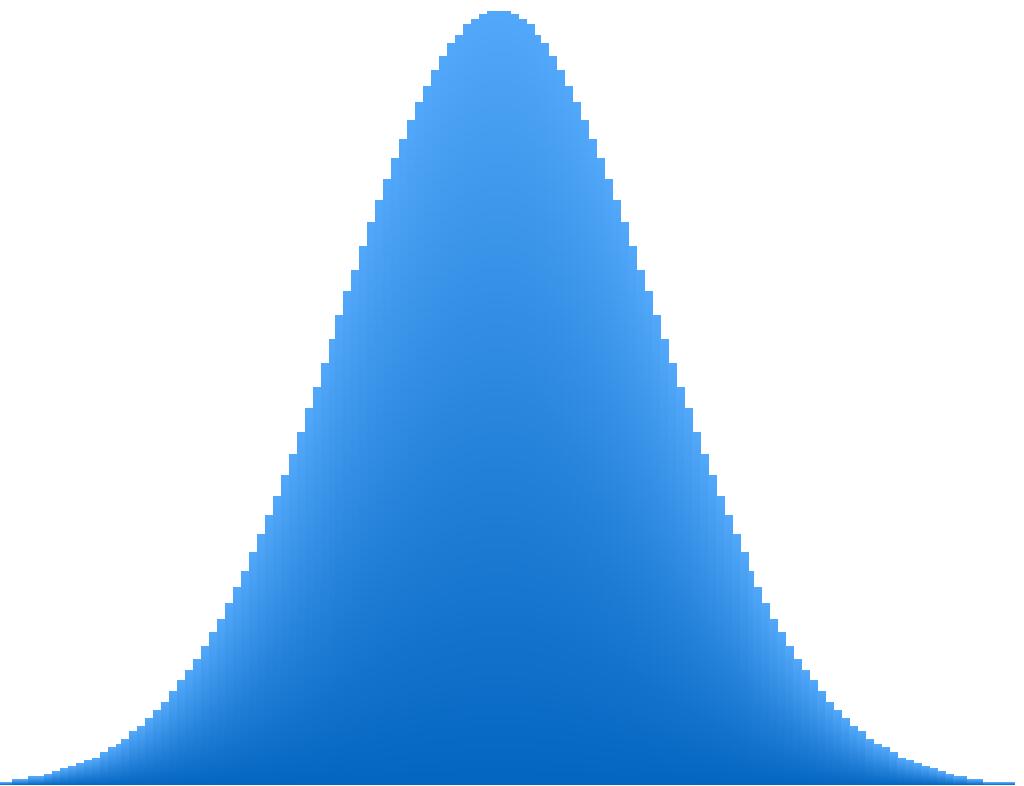
*Overuse the  
same data to  
search for  
patterns*



*Look closely at  
the wordings*

I  
noticed  
that....

## Data Mining Bias

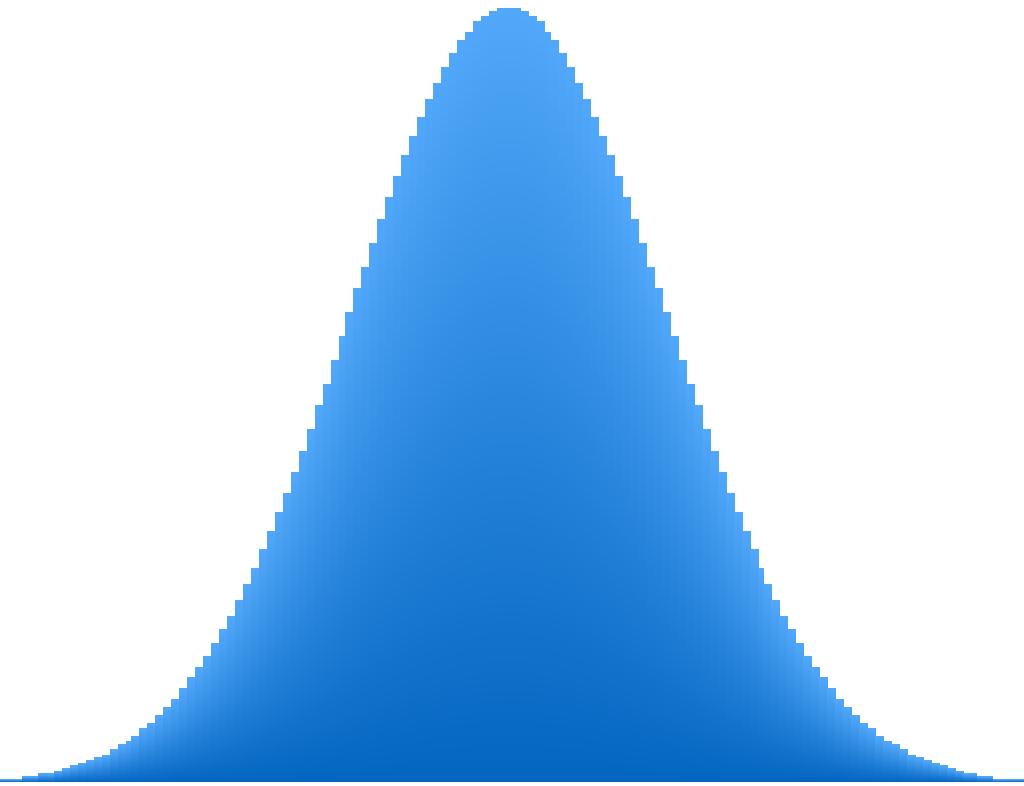


Biases in Sampling

Is there a  
plausible economic  
rationale for this?



## Data Mining Bias



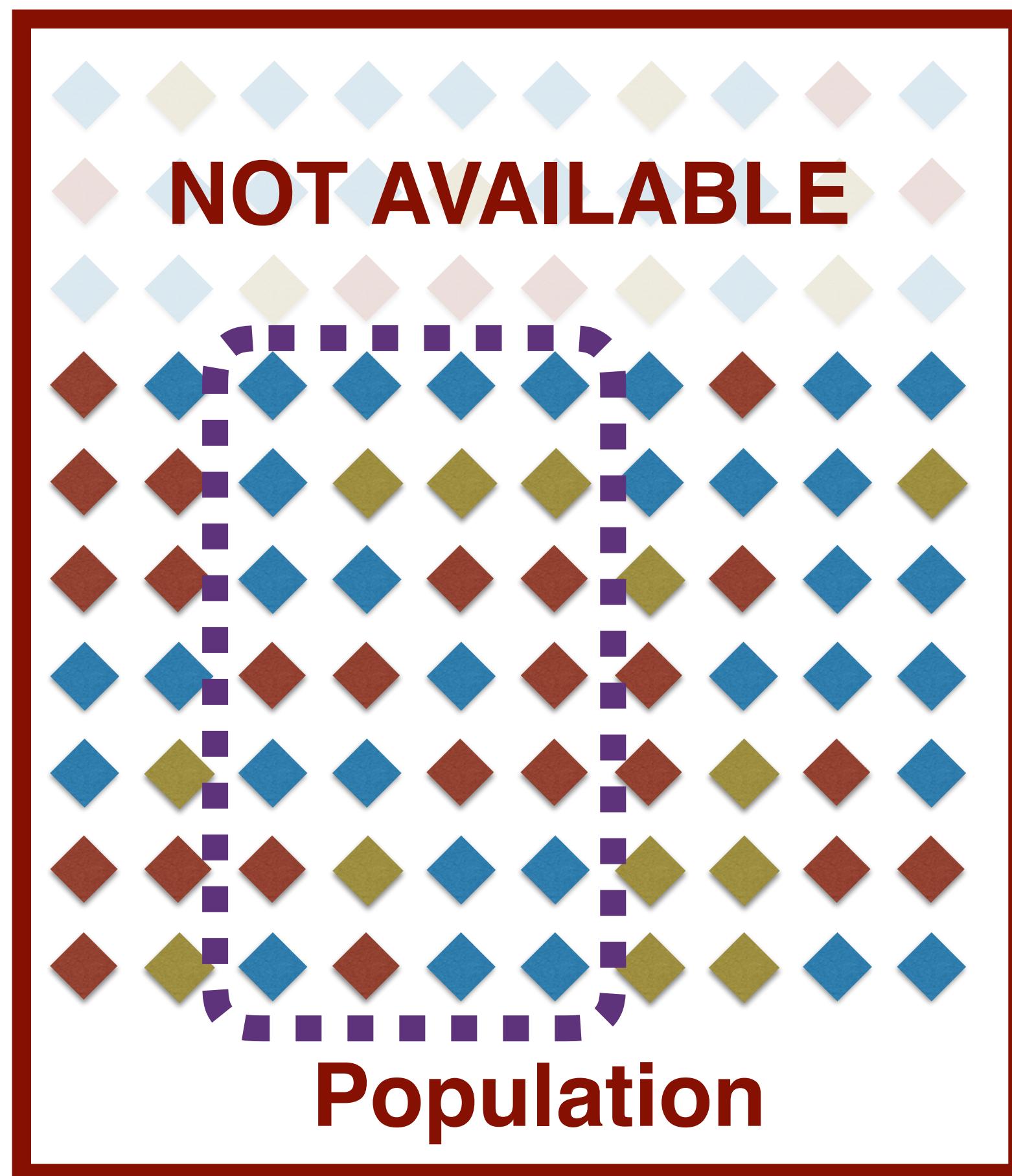
## Sample Selection Bias

*Sample is  
non-random  
→ Flawed  
conclusions*



Biases in Sampling

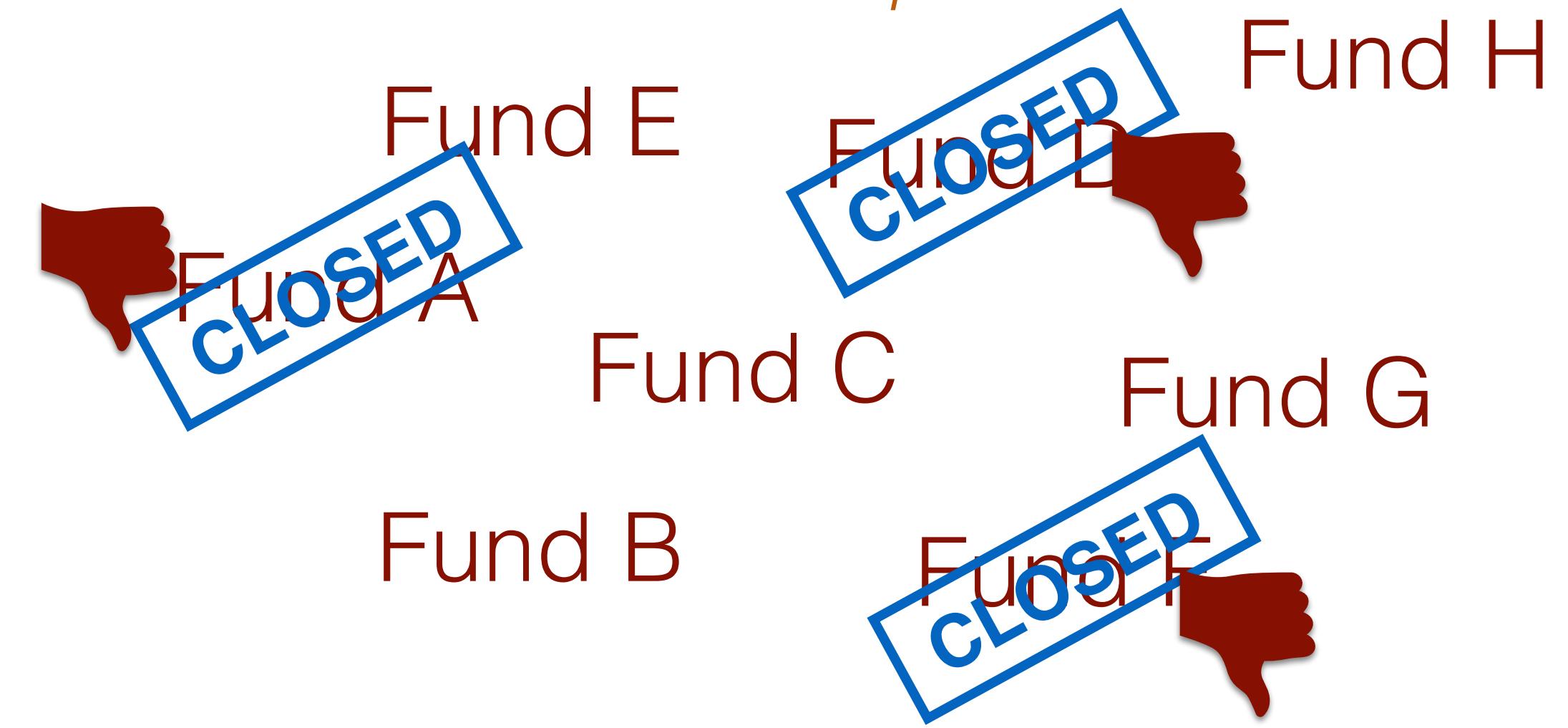
## Sample Selection Bias



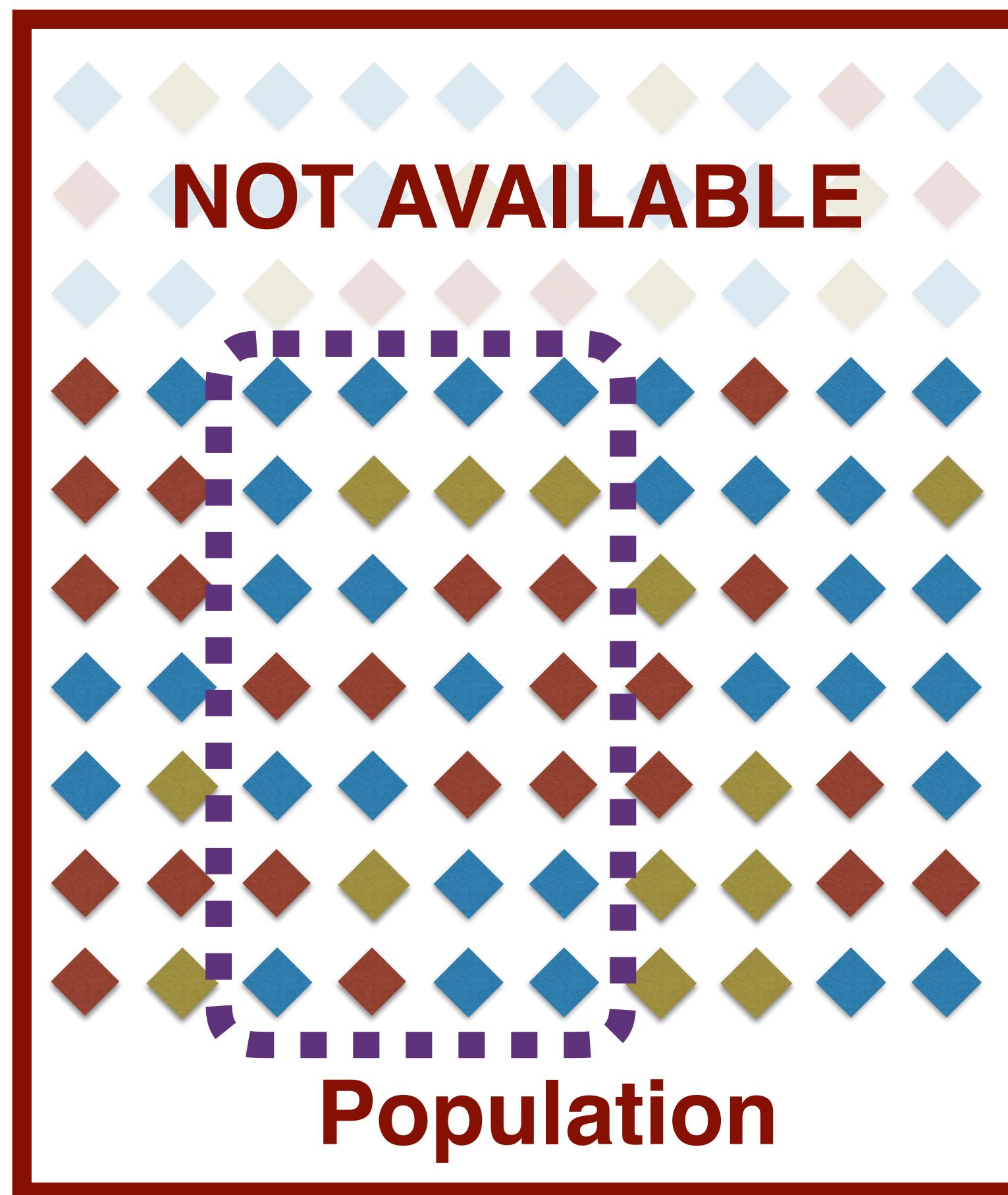
Biases in Sampling

## Survivorship Bias

*in mutual fund performance*

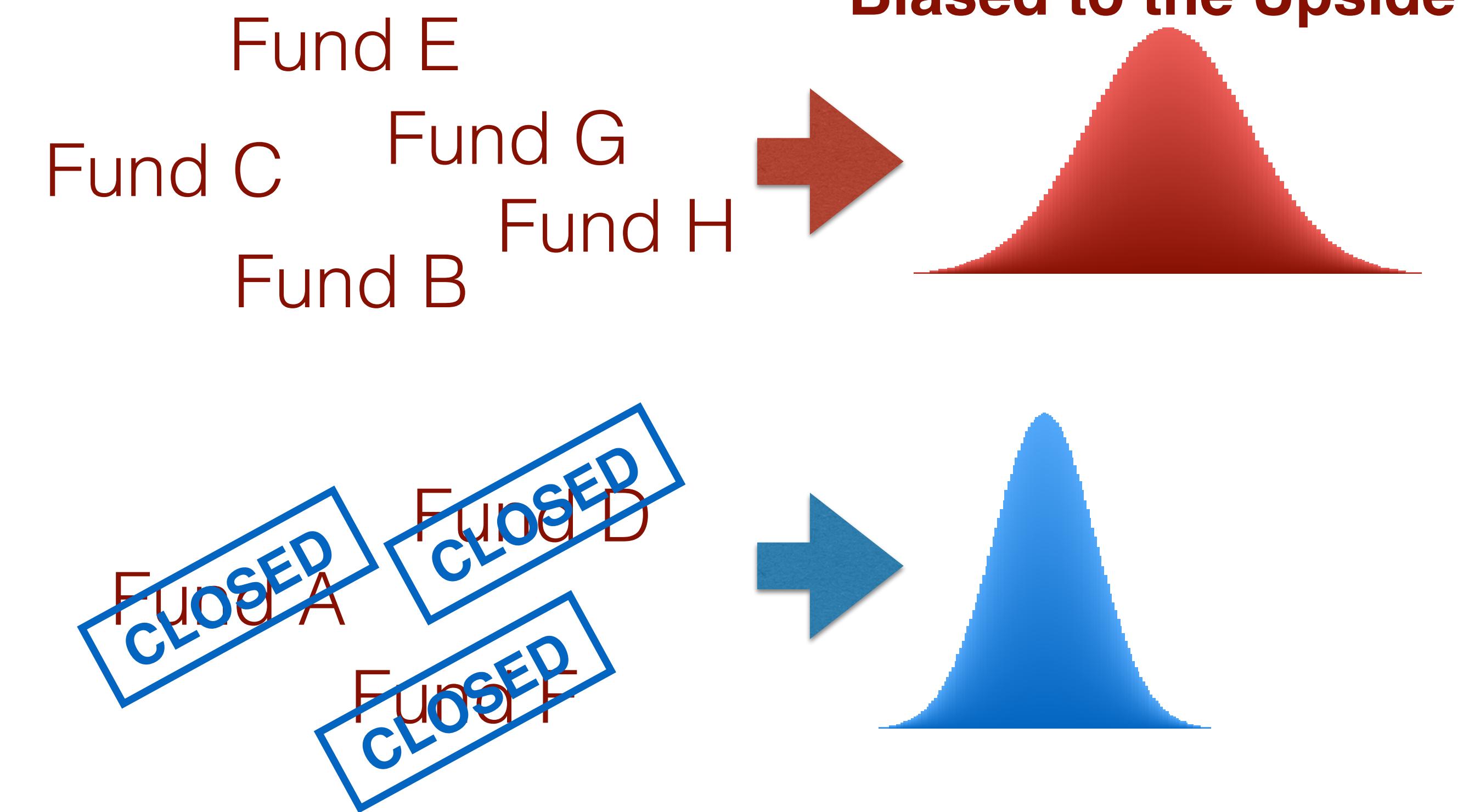


## Sample Selection Bias



Biases in Sampling

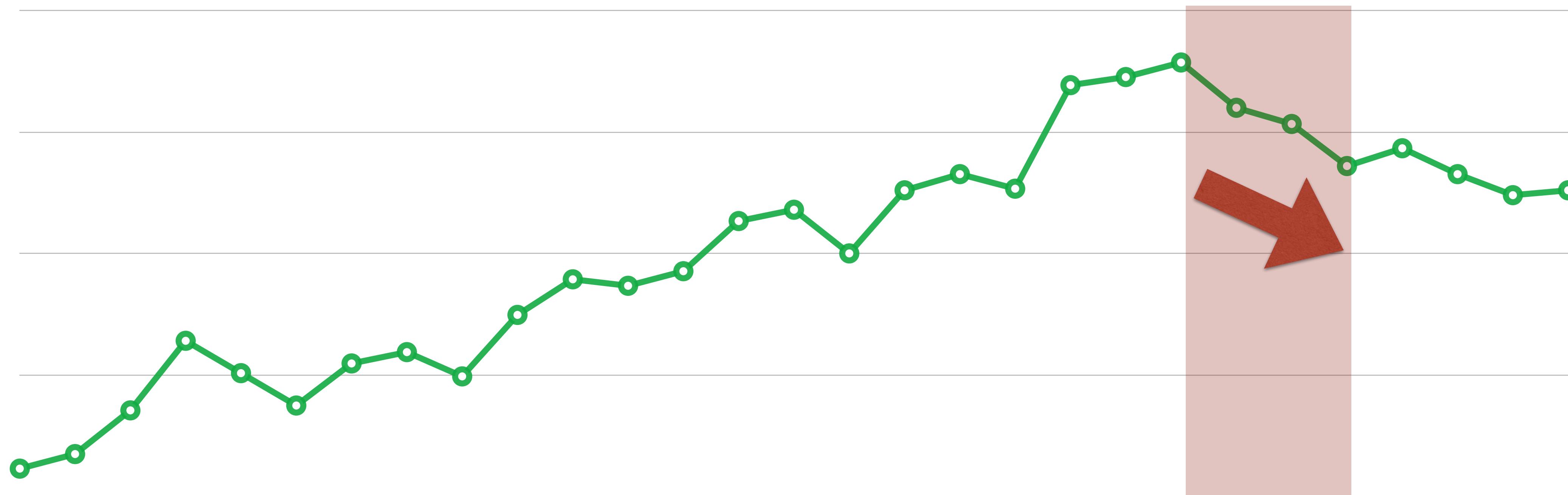
## Survivorship Bias



## Time Period Bias

Short time period

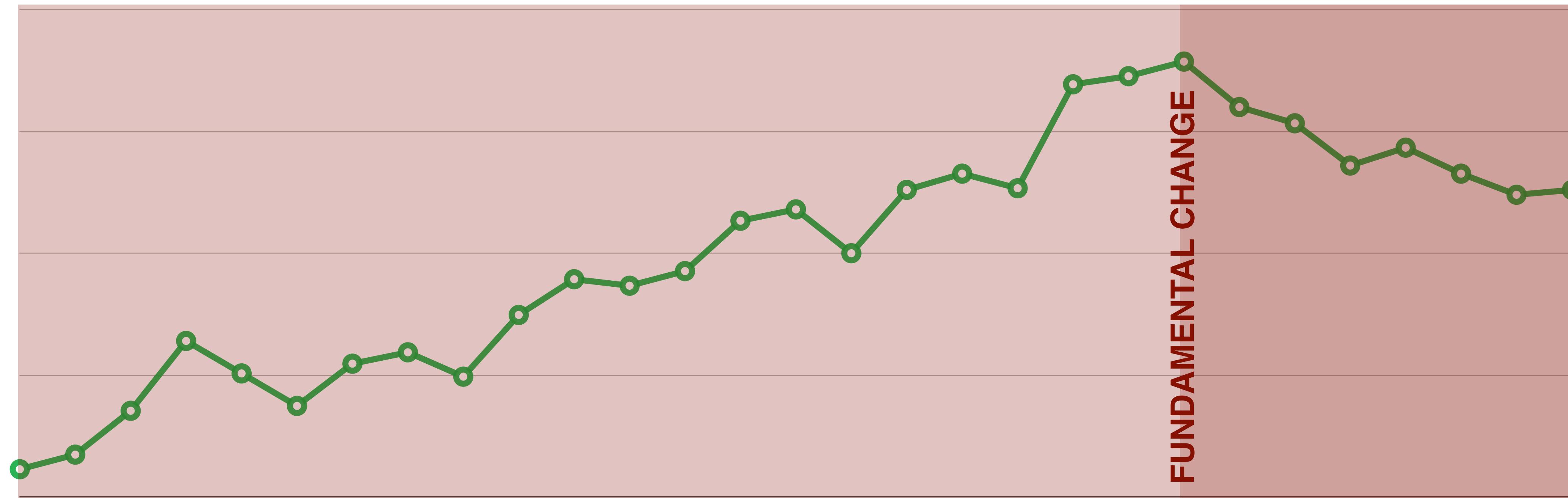
*May not reflect the longer term trend*



## Time Period Bias

Long time period

*May cover periods where there have been a fundamental change*





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