Representing data

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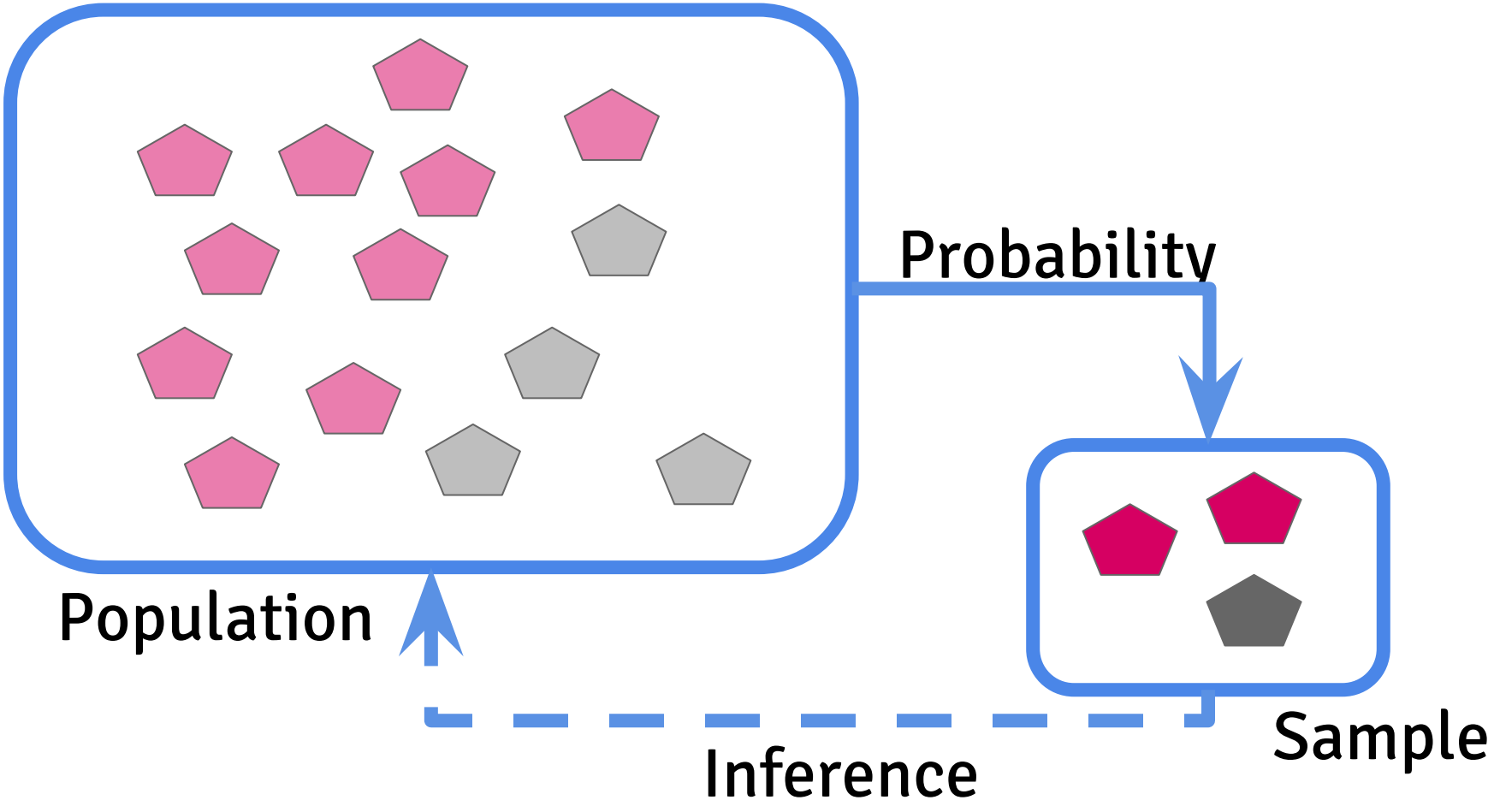
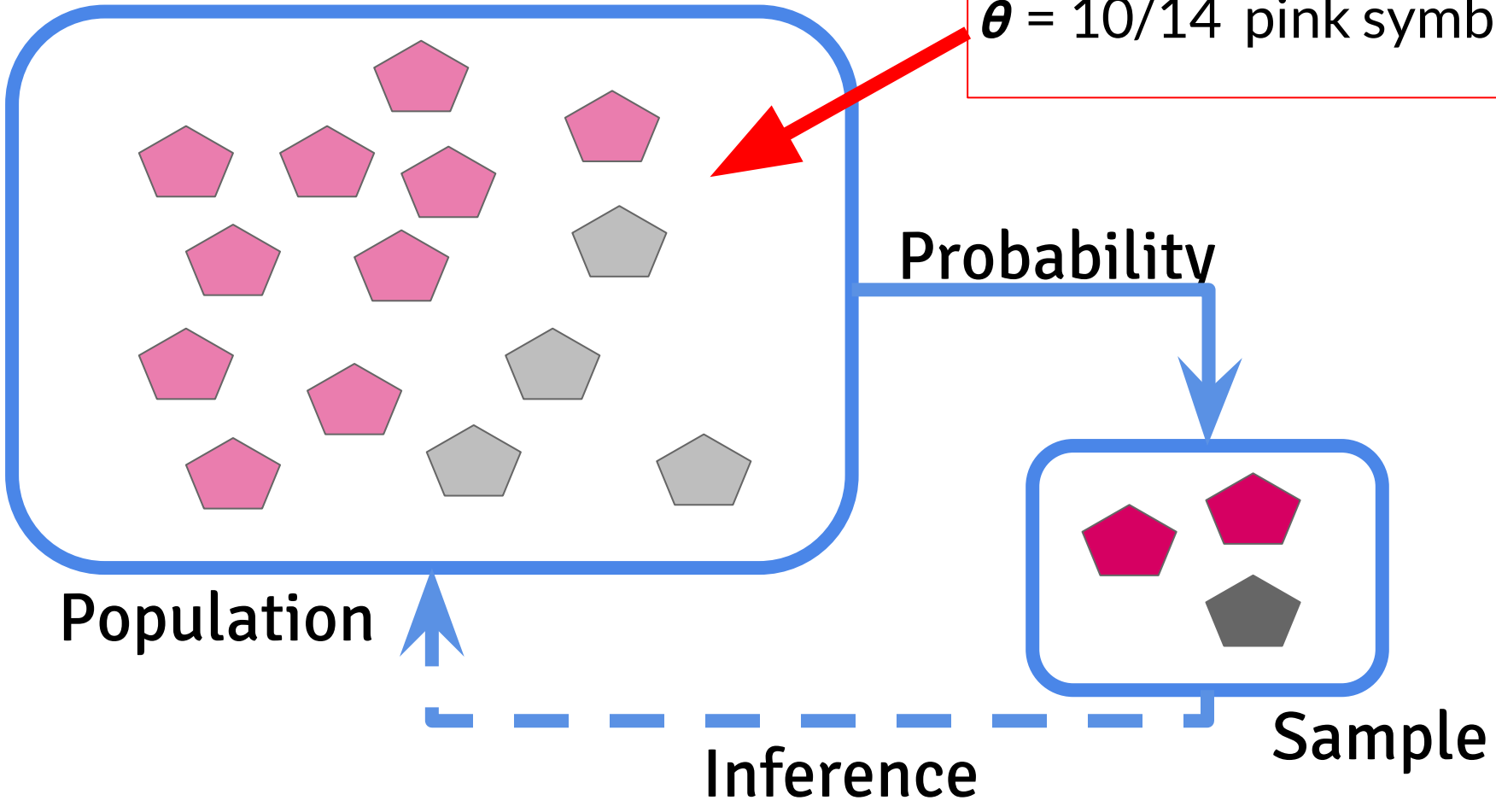
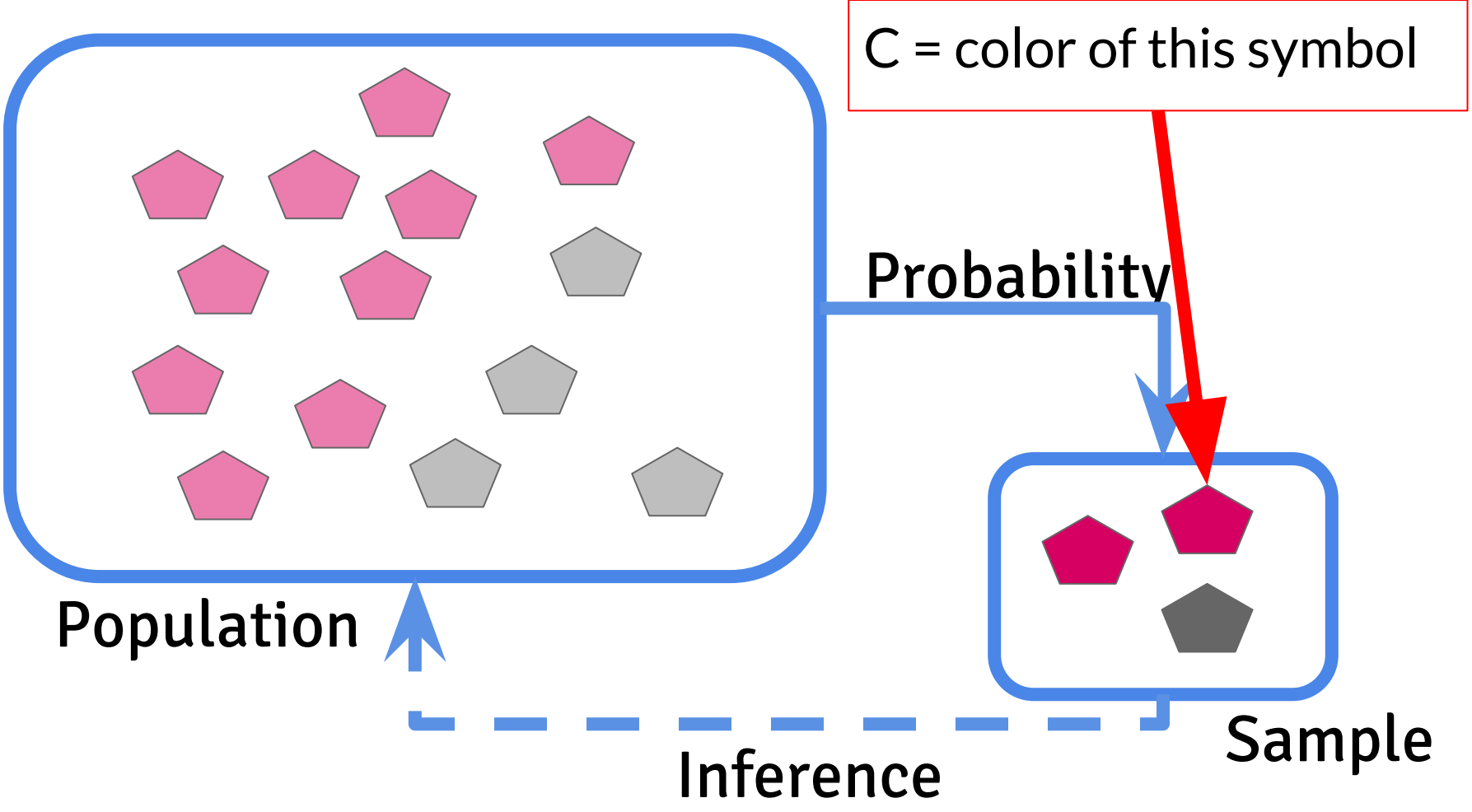
Central dogma of statistics


Probability
Population
Sample
Inference

Parameters are characteristics of the population


θ = 10/14 pink symbols
Probability
Population
Sample
Inference

Data points are values we measure


C = color of this symbol
Probability
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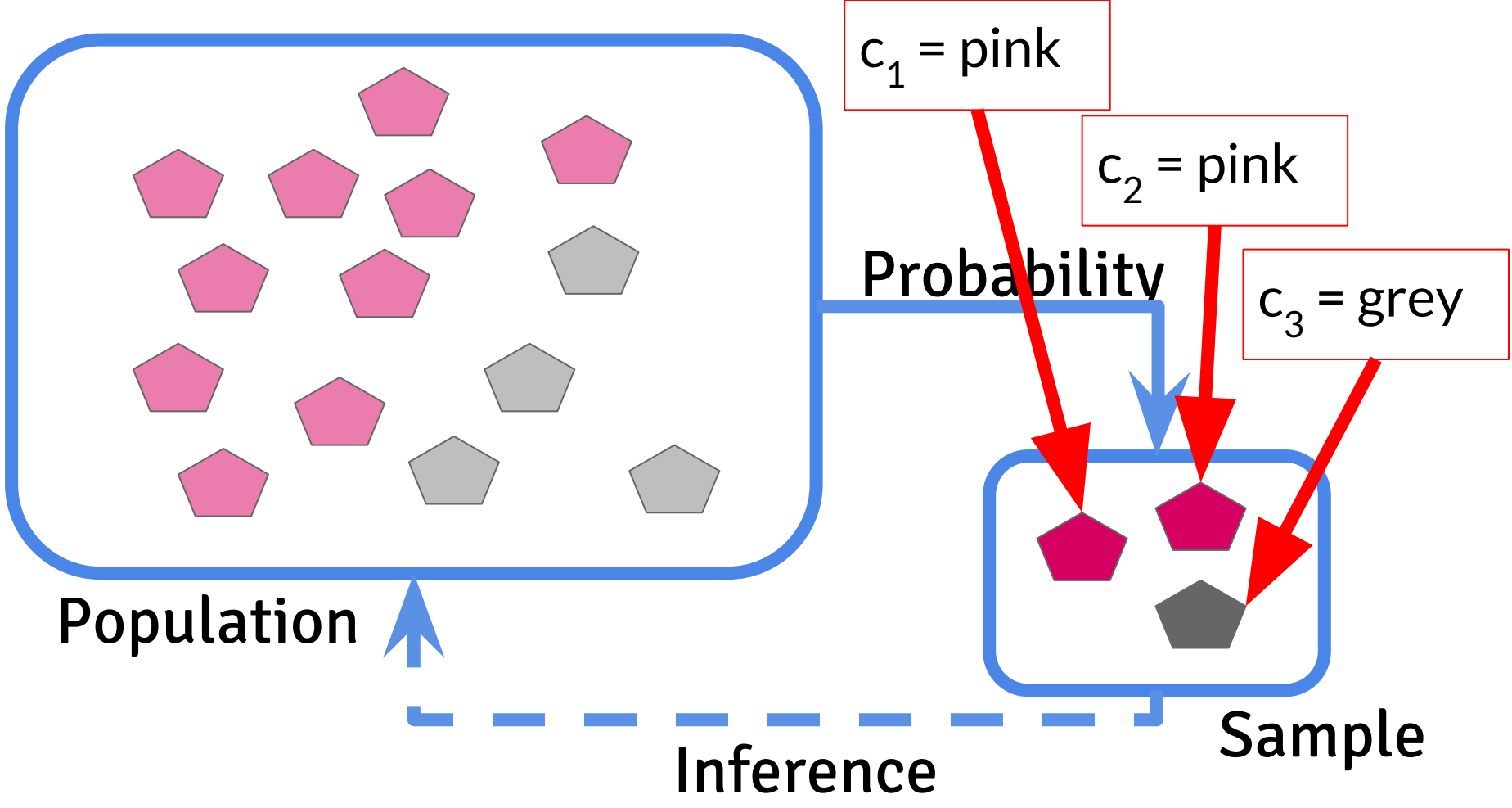
Multiple values have subscripts


c_1 = pink
c_2 = pink
c_3 = grey
Probability
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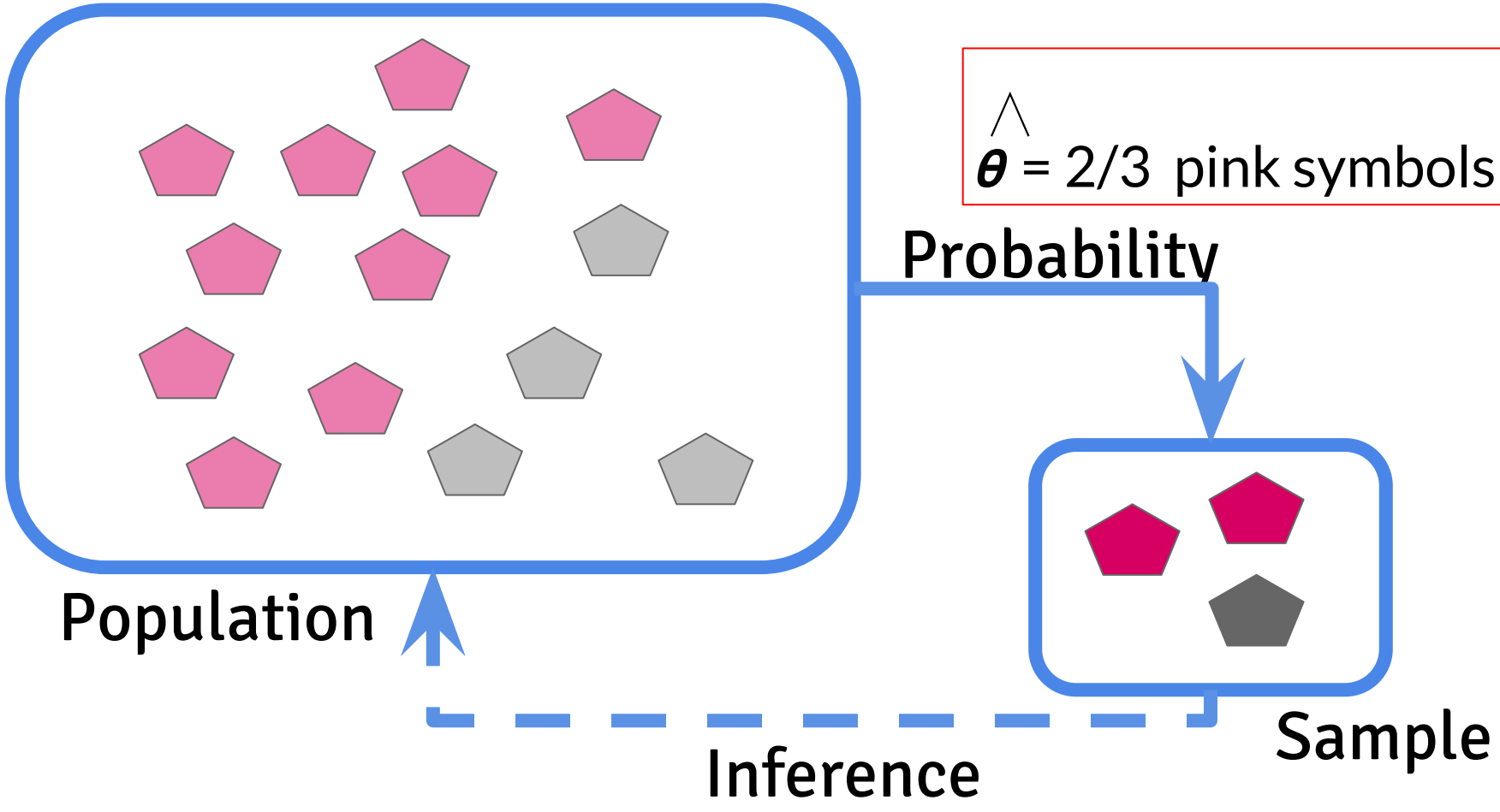
We estimate population parameters with the data


$\hat{\theta}$ = 2/3 pink symbols
Probability
Population
Sample
Inference

Summary of notation conventions

- Data points are represented by letters
  - H for height, W for weight, C for count etc.
- Subscripts are used for different data points
  - C_1, C_2, C_3 are the counts for people 1,2,3
- Sometimes we write X for all values
  - X_1, X_2, X_3 are the counts for people 1,2,3
- We may need another subscript
  - X_{11} for the count for gene 1 on person 1

- Parameters are Greek letters
  - θ is average height in population
- Hats are used for estimates
  - $\hat{\theta}$ is our estimate of average height in population
- Y is usually outcome, X is usually covariate