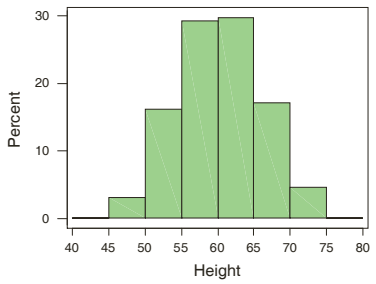
Stat 101L: Lecture 8

Normal Models

- Our conceptualization of what the distribution of an entire population of values would look like.
- Characterized by population parameters: μ and σ.

1



Describe the sample

- Shape is symmetric and mounded in the middle.
- Centered at 60 inches.
- Spread between 45 and 75 inches.
- 30% of the sample is between 60 and 65 inches.

3

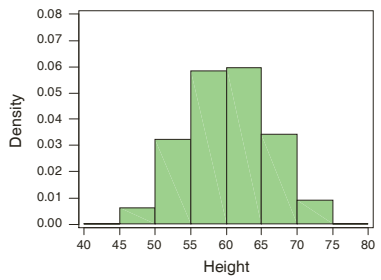
Stat 101L: Lecture 8

Normal Models

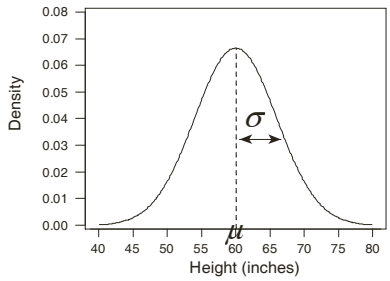
- Our conceptualization of what the distribution of an entire population of values would look like.
- Characterized by a bell shaped curve with population parameters
  - Population mean = μ
  - Population standard deviation = σ.

4

Sample Data



Normal Model



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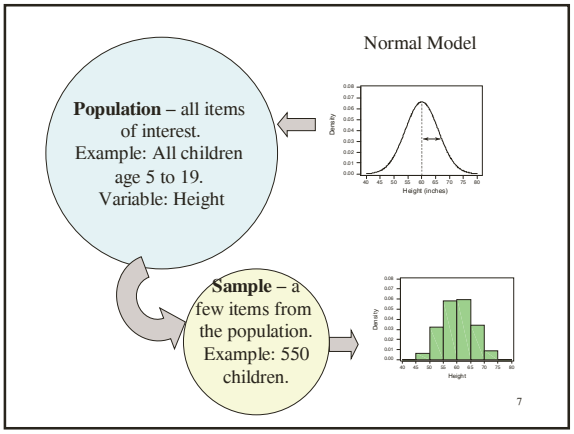

Normal Model

- Height
- Center:
  - Population mean, $\mu = 60$ in.
- Spread:
  - Population standard deviation, $\sigma = 6$ in.

8

68-95-99.7 Rule

- For Normal Models
  - 68% of the values fall within 1 standard deviation of the mean.
  - 95% of the values fall within 2 standard deviations of the mean.
  - 99.7% of the values fall within 3 standard deviations of the mean.

9

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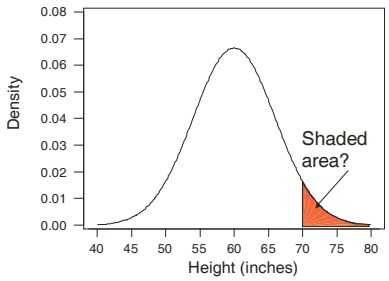
Normal Model - Height

- 68% of the values fall between
  60 – 6 = 54 and 60 + 6 = 66.
- 95% of the values fall between
  60 – 12 = 48 and 60 + 12 = 72.
- 99.7% of the values fall between
  60 – 18 = 42 and 60 + 18 = 78.

10

From Heights to Percentages

- What percentage of heights fall above 70 inches?
- Draw a picture.
- How far away from the mean is 70 in terms of number of standard deviations?

11

Normal Model