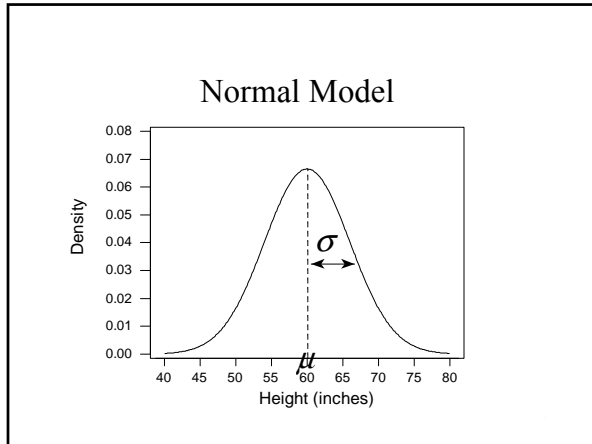


Stat 104 – Lecture 17



Normal Model

- Height
- Center:
 - Mean, $\mu = 60$ in.
- Spread:
 - Standard deviation, $\sigma = 6$ in.

2

68-95-99.7 Rule

- 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.

3

Stat 104 – Lecture 17

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 $60 + 18 = 78$.

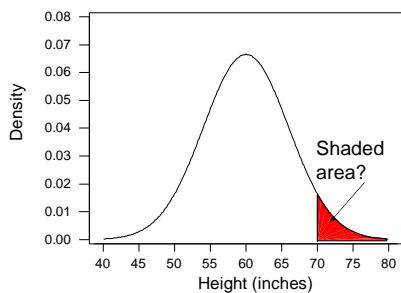
4

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?

5

Normal Model



Stat 104 – Lecture 17

Standardizing

$$z = \frac{y - \mu}{\sigma}$$
$$z = \frac{70 - 60}{6} = 1.67$$

7

Standard Normal Model

- Standard normal table handed out in class.
- Table A: Appendix A in your text.
- http://davidmlane.com/hyperstat/z_table.html

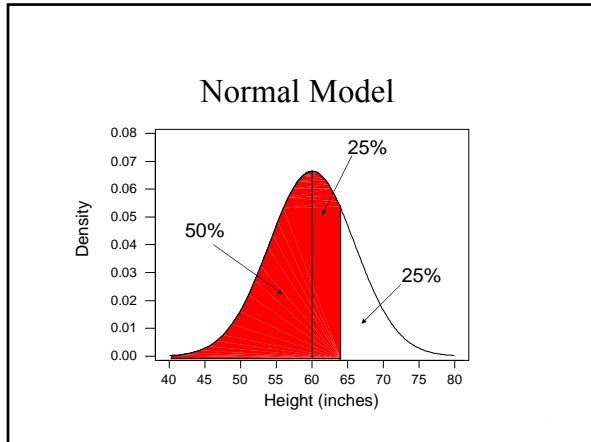
8

From Percentages to Heights

- What height corresponds to the 75th percentile?
- Draw a picture.
- The 75th percentile is how many standard deviations away from the mean?

9

Stat 104 – Lecture 17



Standard Normal Model

- Standard normal table handed out in class.
- Table A: Appendix A in your text.
- http://davidmlane.com/hyperstat/z_table.html

11

Reverse Standardizing

$$z = \frac{y - \mu}{\sigma}$$

$$0.67 = \frac{y - 60}{6}$$

$$y = (6 * 0.67) + 60$$
$$= 64.02 \text{ inches}$$

12
