

# Outliers

Course: Statistics 1

Lecturer: Dr. Courtney Pindling



# Outliers

- Unusually large or small values
- Values not belonging to data distributions
- Data values incorrectly recorded
- Incorrect data included in distribution
  - Example: Outlier, 105 for data show

82	83	84	85	85	86	86	87	89	90
----	----	----	----	----	----	----	----	----	----

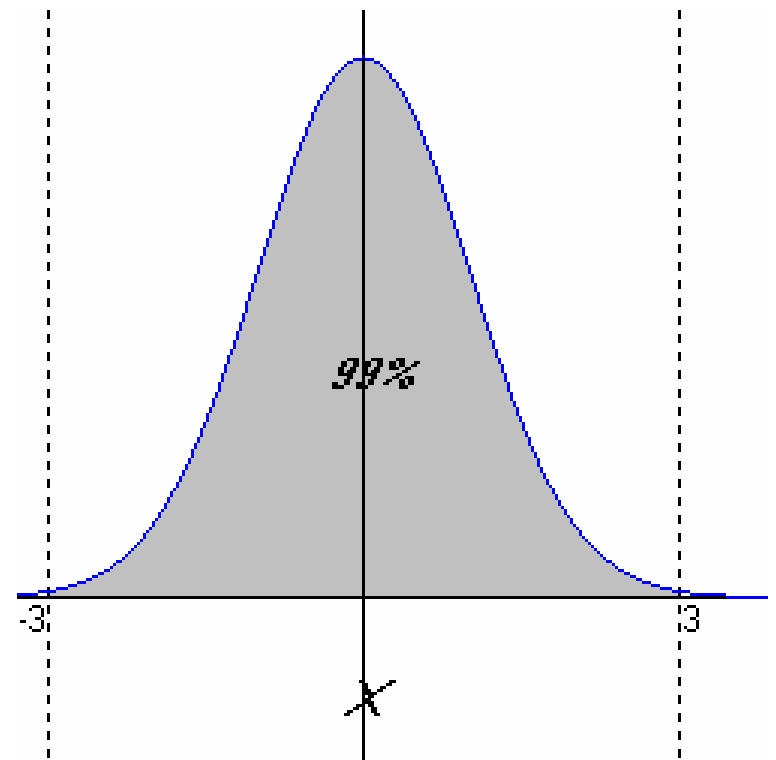
# Techniques for Outliers

- Consider a value an outlier if:
- Normal or **Standard Score**:
  - Outside + or – 3 standard deviations from mean
- **Boxplot Diagram**
  - Outside  **$Q1 - 1.5IQR$**  or  **$Q3 + 1.5IQR$**

**Q1** is 25 percentile, **Q3** is 75 percentile and **IQR** is Interquartile Range (**Q3 – Q1**)

# Outliers – z-scores

- Outliers well outside the  $\pm 3$  SD from mean
- $M = 85.7$  and  $SD = 2.5$
- Bounds  
*78.2 to 93.2*



# Boxplot

- Outlier Outside
  - Lower:  $Q1 - 1.5IQR$
  - Upper:  $Q3 + 1.5IQR$
- $Q1 = 83.75$  and  
 $Q3 = 87.5$
- $IQR = Q3 - Q1 = 3.75$
- Bounds  
*80 to 91.25*

