

Section
2.6PART
IV

Data Exploration - Boxplots & Outliers

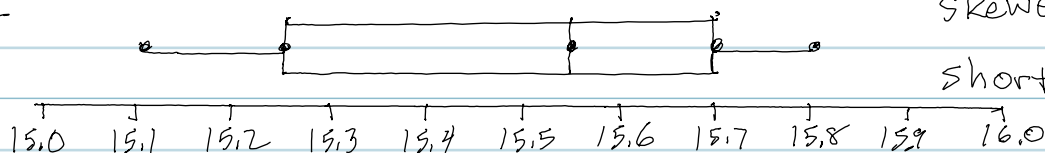
SAMPLE SKEWNESS & KURTOSIS

Amounts of Juice in 8 bottles (oz):

{15.1, 15.2, 15.3, 15.5, 15.6, 15.7, 15.7, 15.8}

5 pt. Summary: $\underline{\text{Min}} = 15.1$, $\underline{Q_1} = 15.25$, $\underline{\bar{x}} = 15.55$, $\underline{Q_3} = 15.7$, $\underline{\text{max}} = 15.8$

Boxplot



x	$x - \bar{x}$	$(x - \bar{x})^2$	$(x - \bar{x})^3$	$(x - \bar{x})^4$	$\bar{x} = \frac{\sum x}{n} = \frac{123.9}{8}$ $= 15.4875$ $n = 8$
15.1	-.3875	.1502	-.0582	.0225	
15.2	-.2875	.0827	-.0238	.0068	
15.3	-.1875	.0352	-.0066	.0012	
15.5	.0125	.0002	.0000	.0000	
15.6	.1125	.0127	.0014	.0002	
15.7	.2125	.0452	.0096	.0020	
15.7	.2125	.0452	.0096	.0020	
15.8	.3125	.0977	.0305	.0095	
Total $\rightarrow$ 123.9	0.0000	.4691	-.0375	.0442	
	$\uparrow \sum(x - \bar{x})$	$\uparrow \sum(x - \bar{x})^2$	$\uparrow \sum(x - \bar{x})^3$	$\uparrow \sum(x - \bar{x})^4$	

$$\text{sample skewness} = \frac{\sqrt{n} \sum (x - \bar{x})^3}{(\sum (x - \bar{x})^2)^{3/2}} = \frac{\sqrt{8} \cdot (-.0375)}{.4691^{3/2}} = -0.3301$$

↑ ↑ ↑

$$\text{sample kurtosis (Pearson's)} = \frac{n \sum (x - \bar{x})^4}{(\sum (x - \bar{x})^2)^2} = \frac{8 \cdot (.0442)}{.4691^2} = 1.6069$$

↑ ↑ ↑

