5. ***The 2015 average life expectancy for the total population is reported for 10 countries. Calculate the appropriate measures of central tendency and variability for both European countries and non-European countries <u>by hand</u>. Is there more variability in life expectancy for European countries or non-European countries?***

Country	Life Expectancy at Birth
European Countries	
France	81.8
Germany	80.6
Netherlands	81.2
Spain	81.6
Turkey	74.6
Non-European Countries	
Japan	84.7
Australia	82.1
Mexico	75.7
Iceland	83.0
Israel	82.3

European Countries.

1. Mean = $\bar{x} = \frac{\Sigma x}{N}$

$$\frac{81.8 + 80.6 + 81.2 + 81.6 + 74.6}{5}$$

Average life expentancy = $\frac{399.8}{5}$

$= 79.96$

$= 80.0$

2. Range of the European Countries
(Difference of the smallest and highest value.

$81.8 - 74.6$

$= 7.2$

3. Variance = $S^2x = \frac{\Sigma(x - \bar{x})^2}{N-1}$

Mean $(\bar{x}) = 80$

$(x - \bar{x})$

$(74.6 - 80.0) = (-5.4)$
$(80.6 - 80.0) = (0.6)$
$(81.2 - 80.0) = (1.2)$
$(81.6 - 80.0) = (1.6)$
$(81.8 - 80.0) = (1.8)$

$(-5.4)^2 + (0.6)^2 + (1.2)^2 + (1.6)^2 + (1.8)^2$

$29.16 + 0.36 + 1.44 + 2.56 + 3.24$

$= 36.76$

$(N-1) = (5-1) = 4$

$S^2x = \frac{36.76}{4}$

$= 9.2$

4. Standard Deviation

$Sx = \sqrt{S^2x}$

$\sqrt{9.2}$

$= 3.0$

Non - European Countries.

1. Mean: $\bar{X} = \frac{\Sigma X}{N}$

$$\frac{84.7 + 82.1 + 75.7 + 83.0 + 82.3}{5}$$

$$= 81.56$$

Average life expectancy $= 81.6$

2. Range

(Difference) $(84.7 - 75.7)$

$= 9.0$

3 Variance

$$S^2x = \frac{\Sigma (X - \bar{X})^2}{N-1}$$

Mean $= 81.6$

$(X - \bar{X})$

$(75.7 - 81.6) = (0.59)$

$(82.1 + 81.6) = (0.5)$

$(82.3 - 81.6) = (0.7)$

$(83.0 - 81.6) = (1.4)$

$(84.7 - 81.6) = (3.1)$

$(X - \bar{X})^2 = (0.59)^2 + (0.5)^2 + (0.7)^2 + (1.4)^2 + (3.1)^2$

$= 34.81 + 0.25 + 0.49 + 1.96 + 9.61$

$= 47.12$

$N = 5 - 1 = 4$

$$\frac{47.12}{4}$$

$= 11.78$

4. standard deviation

$Sx = \sqrt{S^2 x}$

$\sqrt{11.78}$

$= 3.43$

$= 3.4$

References

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