FOUNDATIONS OF STATISTICS: – ASSIGNMENT – 1

Name: SYED OMAIR MAQDOOM MOHIUDDIN ID: 102873768

QUESTION 1:

The distribution of employee's responses to the statement "I enjoy my work" for a random sample of 1500 Australian public sector employees is displayed in Figure 1. The majority employees agree that they enjoy their work [56.9%] followed by those who strongly agree [26.5%]. Whilst 10.8% reported that they neither agree nor disagree, 4.1% reported that they disagree and very few [1.7%] reported that they strongly disagree.

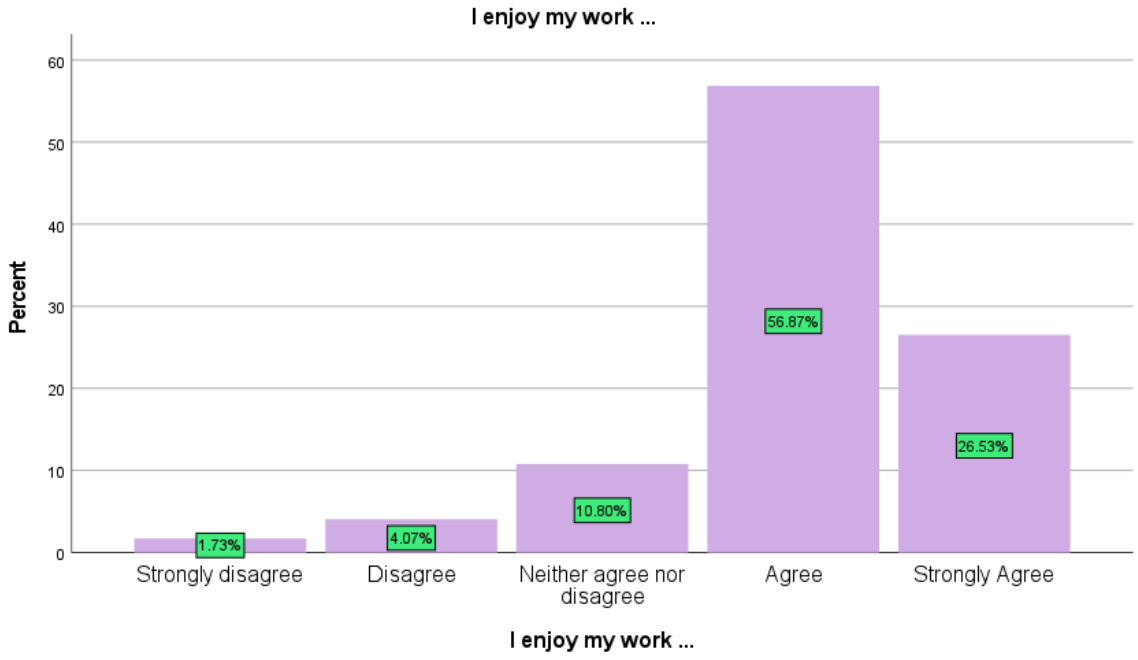


Figure 1: Distribution of responses of employees to the statement "I enjoy my work"

Additional Output:

I enjoy my work ...

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly disagree	26	1.7	1.7	1.7
	Disagree	61	4.1	4.1	5.8
	Neither agree nor disagree	162	10.8	10.8	16.6
	Agree	853	56.9	56.9	73.5
	Strongly Agree	398	26.5	26.5	100.0
	Total	1500	100.0	100.0	

QUESTION 2:

The distribution of employee's level of engagement with their job for a random sample of 1457 Australian public sector employees is displayed in Figure 2. The distribution is negatively skewed with 50% level of engagement of employees being 16.00 or less. Typically, level of engagement was between 13.00 and 18.00 with half of the level of engagement of employees with their job falling with this range. There were some extremely low levels of engagement of employees with their job below 1.00, with the lowest being 0.00. 10% of level of engagement was 9.00 or more, with the lowest being 0.00.

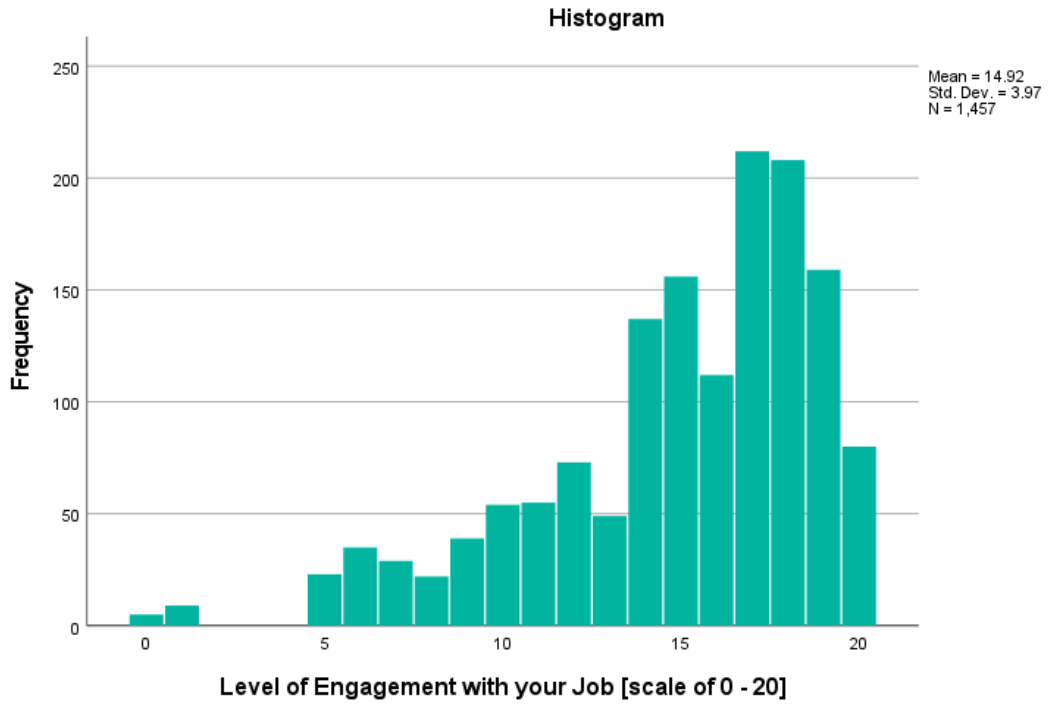


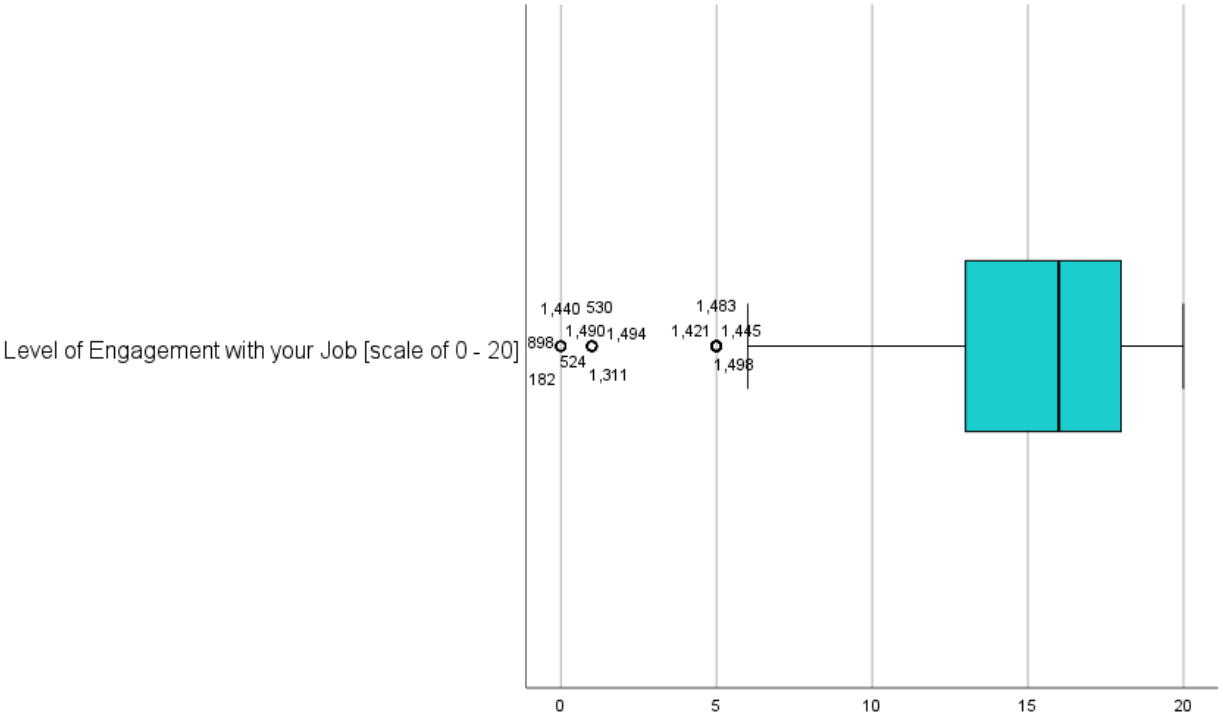
Figure 2: Distribution of Level of Engagement of Employees with their job

Additional Output:

Descriptives

			Statistic	Std. Error
Level of Engagement with your Job [scale of 0 - 20]	Mean		14.92	.104
	95% Confidence Interval for Mean	Lower Bound	14.72	
		Upper Bound	15.13	
	5% Trimmed Mean		15.21	
	Median		16.00	
	Variance		15.762	
	Std. Deviation		3.970	
	Minimum		0	
	Maximum		20	

	Range	20	
	Interquartile Range	5	
	Skewness	-1.107	.064
	Kurtosis	.919	.128



Percentiles

		Percentiles						
		5	10	25	50	75	90	95
Weighted Average (Definition 1)	Level of Engagement with your Job [scale of 0 - 20]	6.90	9.00	13.00	16.00	18.00	19.00	20.00
Tukey's Hinges	Level of Engagement with your Job [scale of 0 - 20]			13.00	16.00	18.00		

Question 3:

The distribution of level of engagement of employees with their Agency/Department for a random sample of 1496 Australian public sector employees is displayed in Figure 3. The distribution is approximately symmetric, with the average level of engagement being 8.38 (s = 3.04). Typically, the average level of engagement was between 6.00 and 11.00, with half of the level of level of engagement falling within this range.

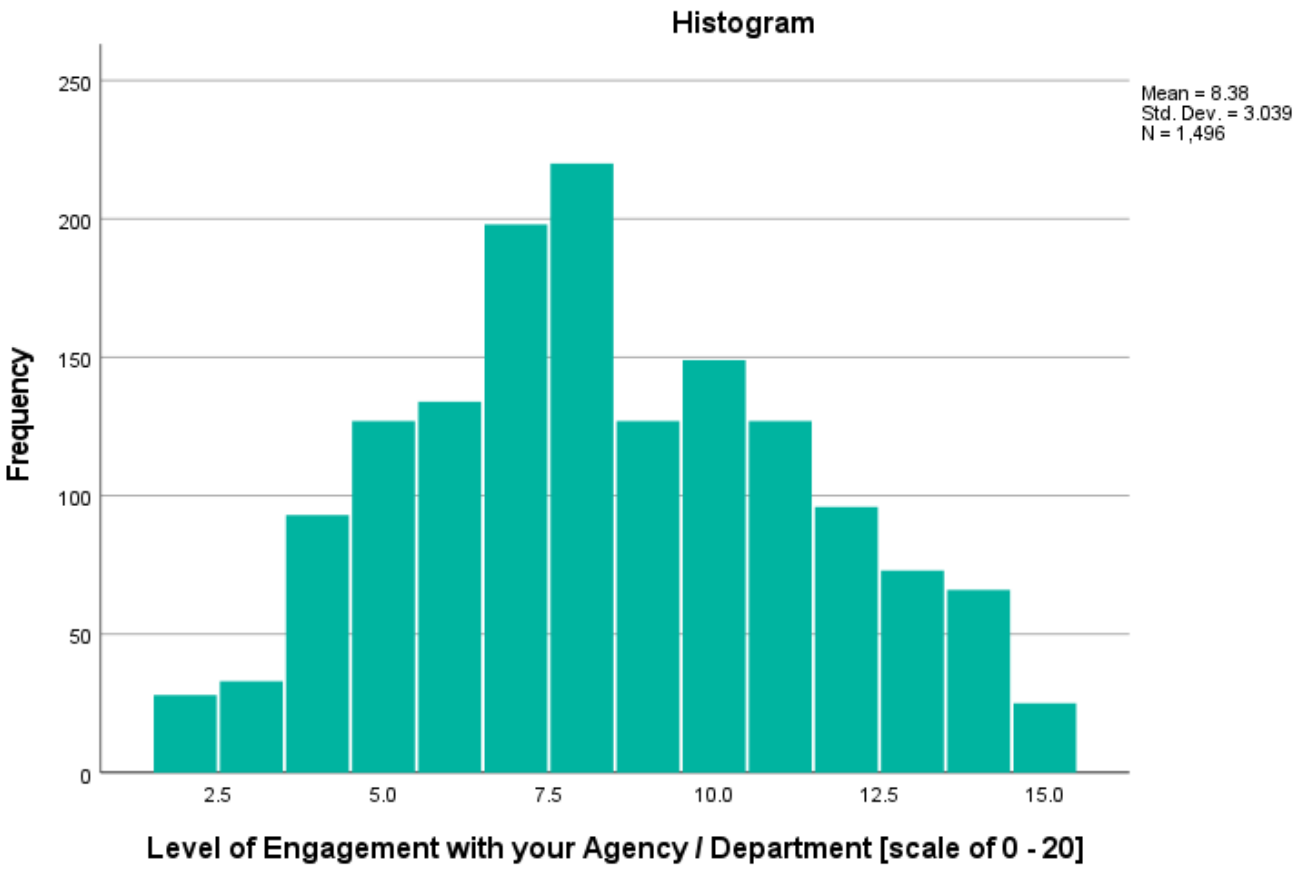


Figure 3: Distribution of level of Engagement of employees with their Agency/department

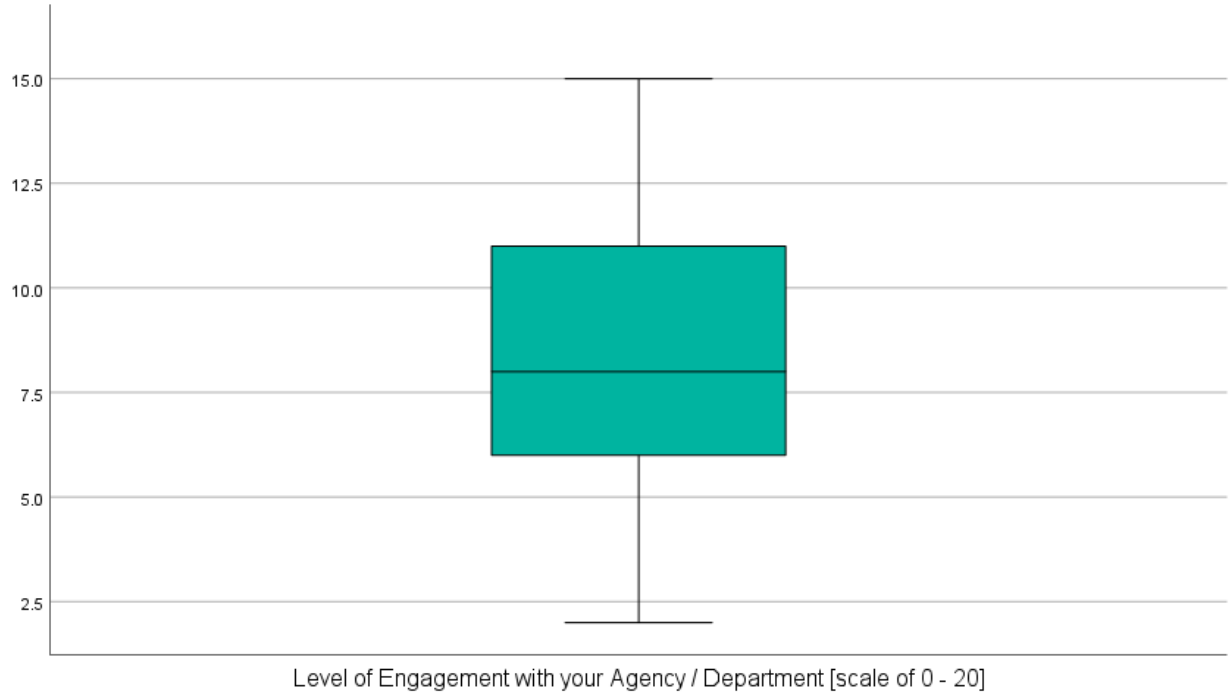
Additional Output:

Descriptives

			Statistic	Std. Error
Level of Engagement with your Agency / Department [scale of 0 - 20]	Mean		8.38	.079
	95% Confidence Interval for Mean	Lower Bound	8.23	
		Upper Bound	8.54	
	5% Trimmed Mean		8.36	
	Median		8.00	
	Variance		9.235	
	Std. Deviation		3.039	
	Minimum		2	
	Maximum		15	
	Range		13	
	Interquartile Range		5	
	Skewness		.144	.063
	Kurtosis		-.640	.126

Percentiles

		Percentiles						
		5	10	25	50	75	90	95
Weighted Average (Definition 1)	Level of Engagement with your Agency / Department [scale of 0 - 20]	4.00	4.00	6.00	8.00	11.00	13.00	14.00
Tukey's Hinges	Level of Engagement with your Agency / Department [scale of 0 - 20]			6.00	8.00	11.00		



QUESTION 4:

To find that if john is unusually slow compared to other posties in the following routes, we need to find out z score for each route.

Z = Data value – Mean / standard deviation

Route 1

Given Mean = 60 minutes and Standard deviation = 20

So, z score = 110 – 60 / 20 = 2.5

Z score = 2.5

For this distribution, a test score of 110 is an unusual/unlikely, score. It sits more than 2 standard deviations above the mean.

James would be considered unlikely slow when compared with other posties on this route.

Route 2

Given Mean = 120 minutes and Standard deviation = 10

So, z score = 110 – 120 / 10 = -1

Z score = -1

For this distribution, a test score of 110 is not an unusual/unlikely, score. It sits within 2 standard deviations of the mean.

James would not be considered unusually slow when compared with other posties on this route.

Route 3

Given Mean = 100 minutes and Standard deviation = 10

So, z score = 110 – 100 / 10 = 1

Z score = 1

For this distribution, a test score of 110 is not an unusual/unlikely, score. It sits within 2 standard deviations of the mean.

James would not be considered unusually slow when compared with other posties on this route.

Route 4

Given Mean = 140 minutes and Standard deviation = 15

So, z score = 110 – 140 / 15 = -2.0

Z score = -2.0

For this distribution, a test score of 110 is not an unusual/unlikely, score. It sits within 2 standard deviations of the mean.

James would not be considered unusually slow when compared with other posties on this route. Although, he would be considered faster when compared to other posties on this route.

QUESTION 5:

a.

The population that we draw conclusion about in this study is the mid-sized tinned nectarines produced by the Tinned Fruit company in the month of July. It is because the consumer organisation randomly selected 1500 tins of nectarines produced in July by Tinned Fruit company and recorded the weight of these tins.

b.

The highlighted section represents the frequency of the sample size of 1500 where the average[mean] IQ was 199.5, where the frequency was 15.

c.

It is unusual/unlikely that it belongs to the sampling distribution. The mean of our sample was more than 2 standard errors above the mean of the sampling distribution of sample means, it falls in the critical/unlikely region. It has a standard error of 2.6 [rounded to two digits], which is more than 1.96.

d.

Based on the above discussion we can conclude that the mean weight of the tins containing nectarines is now greater than 200g.