

Problem 1)

The average purchases in 95% confidence interval lies is 1003.2048335195564 with the intervals being (958.9391813321109, 1047.4704857070017). This means that I am 95% confident that the CRM **should not provide an aggressive promotion** as the sample mean is less than 1050 and that I am 95% confident the true population mean is also less than 1050 as the population mean is within (958.9391813321109, 1047.4704857070017) with 95% confidence. Furthermore, when conducting hypothesis test where:

$H_0: \mu \leq 1050$

$H_1: \mu > 1050$

the null hypothesis states that the average is less than or equal to 1050 while the alternative hypothesis states that the average is above 1050. When conducting a one-tailed Z-test, as the sample size of 8950 is more than 30, with a Type 1 error of 5% (since confidence interval is in 95%), I accept the null hypothesis, concluding that the average mean is less than 1050 and that the CRM **should not provide an aggressive promotion**.

Problem 2)

The average illicit drug use death for the part data in 95% confidence interval is 935.6884735202492 with intervals being (537.7779681051004, 1333.598978935398) while the average illicit drug use death for the total data in 95% confidence interval is 410.1196096946805 with the intervals being (357.2291821909638, 463.0100371983972). This shows that the part data average is more than that the total data average, as there is a 5% confidence that the sample mean collected lies outside the true population mean outside the intervals of (357.2291821909638, 463.0100371983972), with this sample being an example of lying outside the intervals. Thus, this sample mean is not representative of the whole population.