Pair Assignment 1 Revision

Summary of dataset

The dataset 'ChickWeight' has 578 number of observations and 4 different variables, which provides information as follows:

weight: The body weight of the chick (gm) - numeric

**Time**: The number of days since birth when the measurement was made - numeric

Diet: which experimental diet the chick received - factorial

Chick: levels 18 < ... < 48 giving a unique identifier for the chick - ordered factor

Central Tendency

Dataset shows variation in weight of chicks, from day 0 to day 20 for 4 different diets. Thus, Weight is an important numeric feature in this dataset, so we will show central tendency of weight.

The average weight of chick is 121.82 gm, for all days and diets, where range of weight is between 35 and 373.
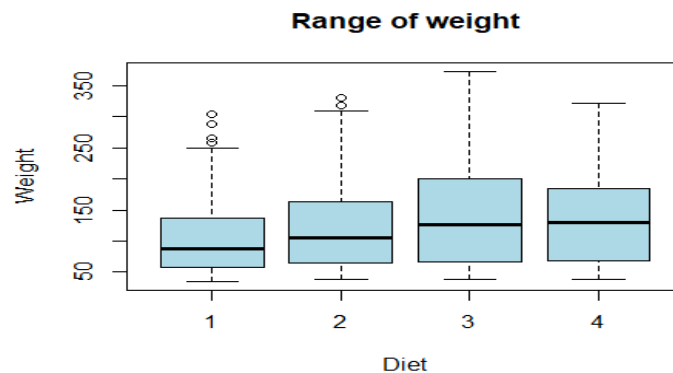
Central tendency measure, range, and outliers for feature 'weight'(diet-wise) is shown in above plot. As the outliers are close to range, we can ignore its effect on dataset.

Confidence Interval

A confidence interval, in statistics, refers to the probability that a population parameter will fall between a set of values for a certain proportion of times. Confidence intervals measure the degree of uncertainty or certainty in a sampling method. They can take any

number of probability limits, with the most common being a 95% or 99% confidence level. (Reference: Investopedia)

In this assignment, we have used 95% confidence level.

CI at Day 0

Diet	n	Mean weight	Lower value	Upper value
1	20	41.4	40.9	41.9
2	10	40.7	39.6	41.8
3	10	40.8	40.1	41.5
4	10	41.0	40.2	41.8

For Day 0, diet 1 has highest mean weight 41.4, with 95% confidence, the population parameter is between 40.9 and 41.9. Mean weight of diet 4 is close to diet 1 with overlapping confidence interval. Whereas mean weight of diet 2 and 3 is considerably lower than diet 2 and 3.

CI at Day 20

Diet	n	Mean weight	Lower value	Upper value
1	17	170	142	199
2	10	206	155	256
3	10	259	212	306
4	9	234	205	263

After 20 days, the mean weight of diet 3 is the highest with 95% confidence, population parameter is between 212 and 306. Whereas mean weight of diet 1, which was highest on day 0, is lowest on day 20 compared to other diets.
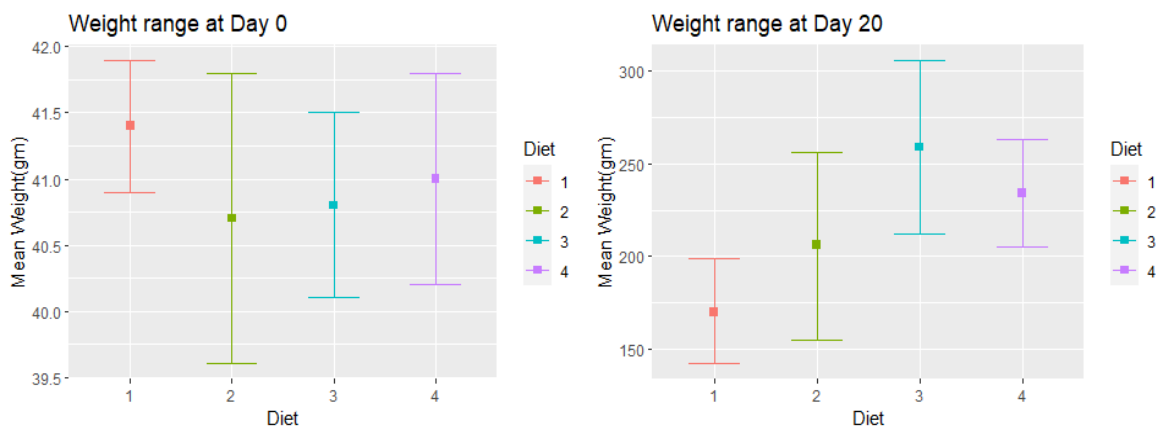
Conclusion

Overall weight of all chickens has increased over the time of 20 days. However, Diet 3 has been most effective in increasing weight of chicks compared to diet 1,2 and 4. Also, Diet 1 is less effective. So, one should go with Diet 3 to feed their chicks.