Finding Average Chicken weight

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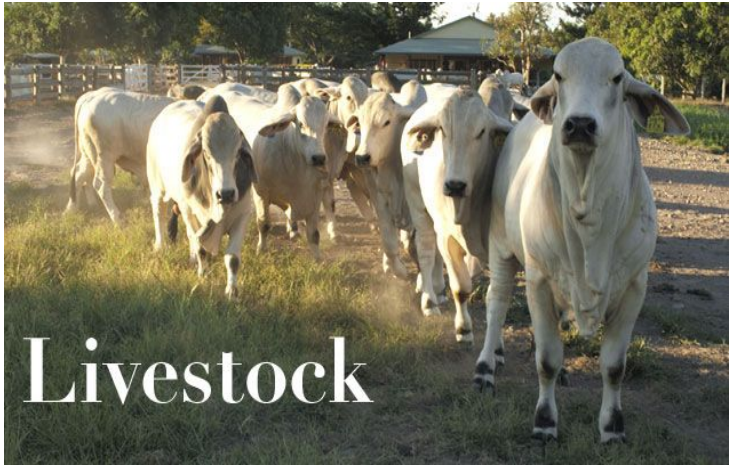


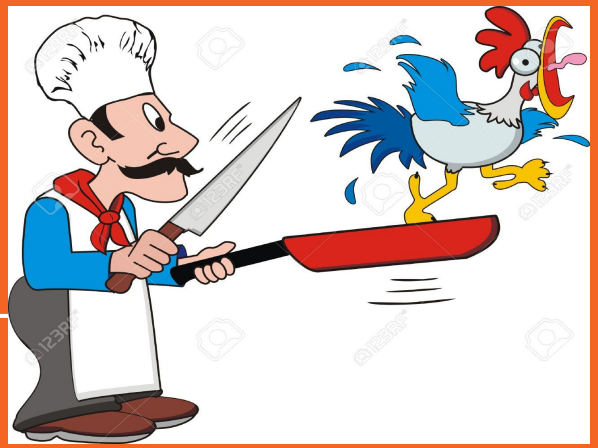
Background

Facts on cows

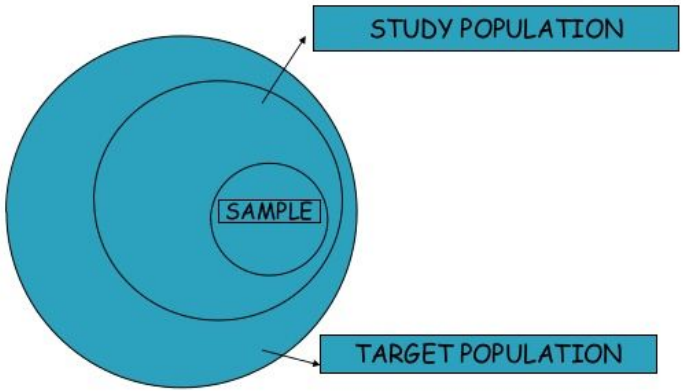
- Cows release Methane during consumption of the food. (Bad for climate !!!!)
- They take more land

Goal

Find the average weight of the chicken…..



SAMPLING.....



Sample size of 138 chickens were studied to find their average weight.

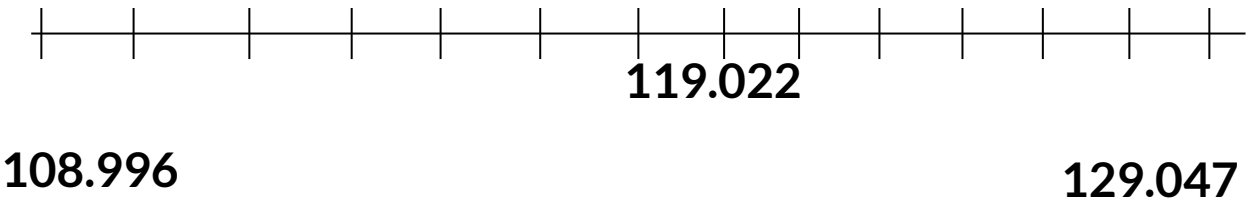
Techniques

- Simple Random Sampling
- Stratified Random Sampling
- Ratio Estimation
- Regression Estimation
- Domain
- Clustering

Calculation of Sample Size

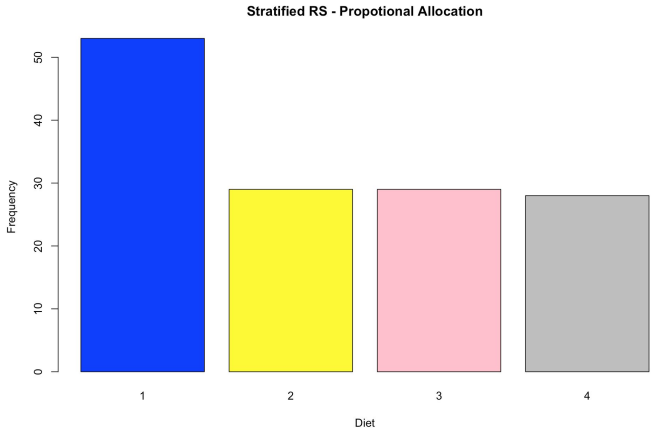
- Standard deviation = 3
- Error = 0.5
- Significant value was taken for 95%
- Sample size was calculated as 138

Simple Random Sampling



Stratified Random Sampling

- **Proportional Allocation**
- **Neymar Allocation**

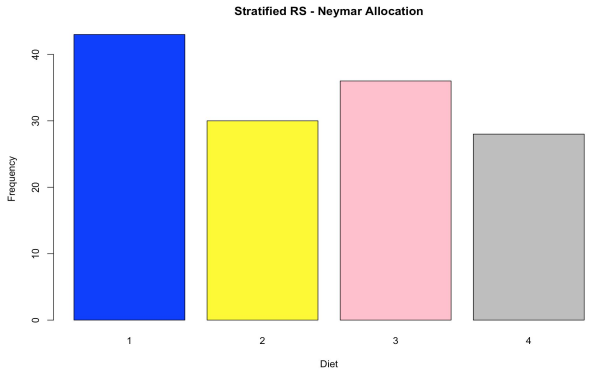


Stratified - Proportional Allocation

119.287

109.533

129.041



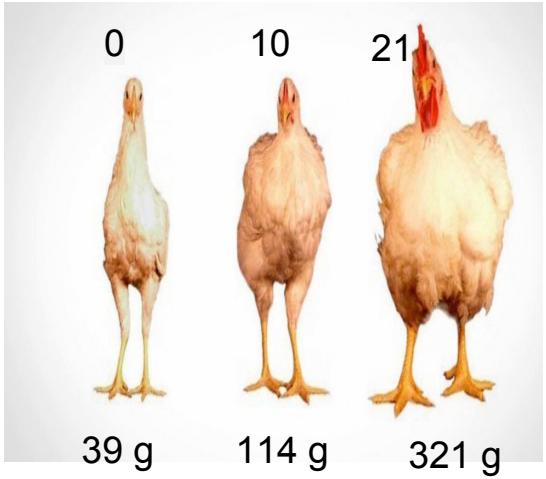
Stratified - Neymar Allocation

122.272

114.704

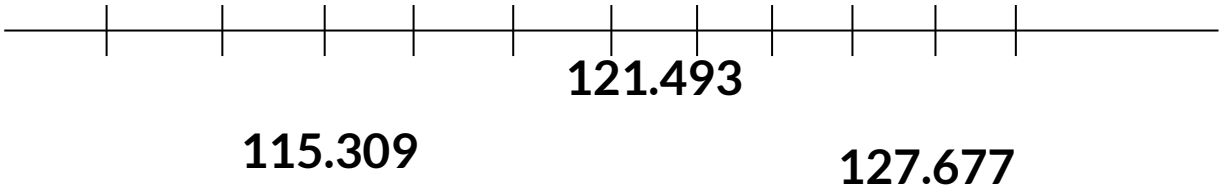
129.041

Ratio Estimates

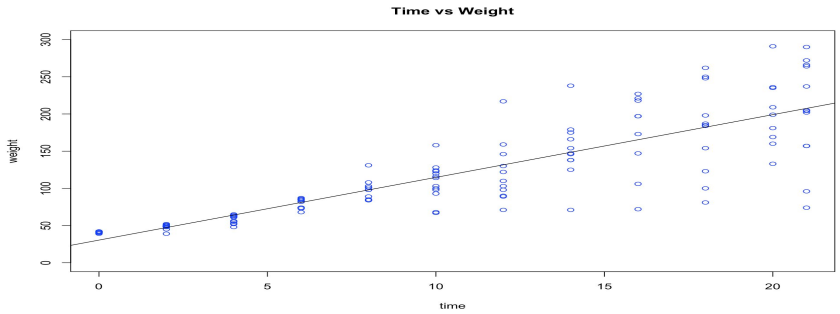


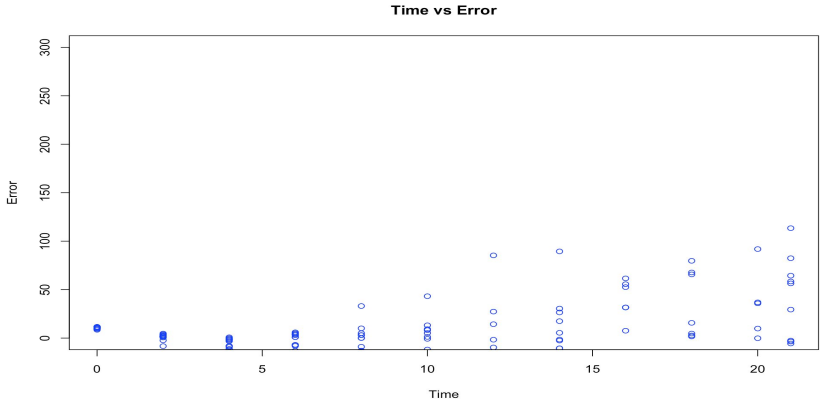
- Time is the auxiliary variable.
- Correlation between weight and Time is 0.837.
- CV(x)/2*CV(y) = 0.563
- R > CV(x)/2*CV(y)
- Ratio of avg chicken weight over avg time is 11.3354

Ratio Estimates



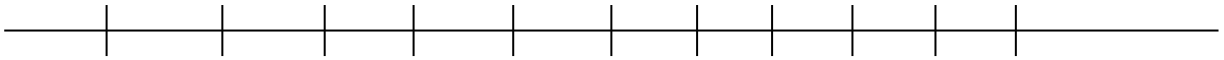
Regression Estimates





- There is a statistical relationship between time and weight
- Relationship between time and weight can be seen as regression line.
- weight = 8.4363*time + 30.444

Regression Estimates



119.022

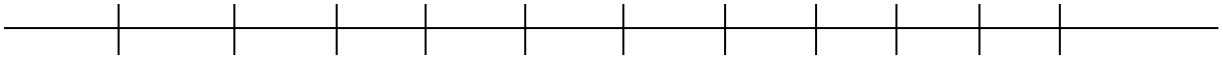
113.553

124.49

Domain Estimates

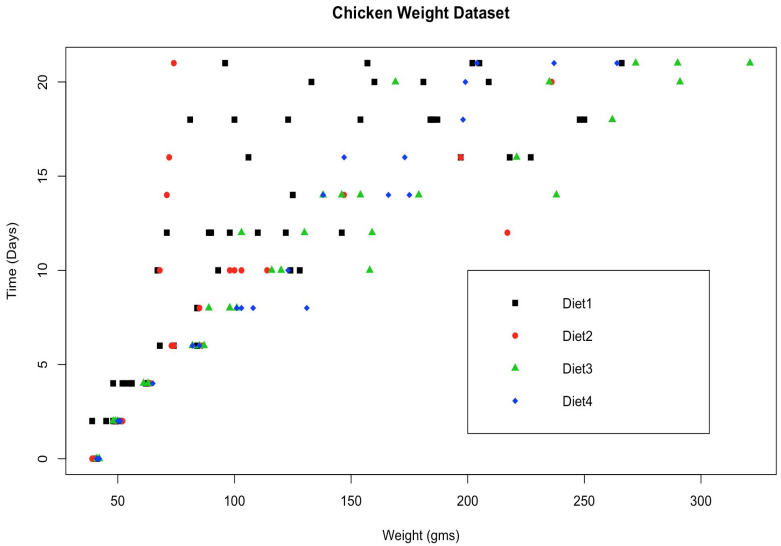
- Each unit in the population falls into one of the 4 Diets.
- Diet1 is our domain .
- Average weight it calculated taking the average weight of the chickens in Diet1 .
- Number of chickens of Diet1 is a random variable.

Domain Estimates



99.33 113.586 127.842

Cluster Estimates



- Cluster Sizes

Diet 1	Diet 2	Diet 3	Diet 4
58	22	35	23

Analysis Table

Technique	Avg Weight	Lower Limit	Upper Limit
Simple Random	119.022	108.996	129.047
Stratified - Proportional	119.287	108.093	130.48
Stratified- Neymar	119.649	110.026	129.272
Ratio	121.493	115.309	127.677
Regression	119.022	113.553	124.49
Domain	113.586	99.258	127.915

Conclusion

- Ratio estimates is better choice for this dataset as we have narrow confidence intervals.
- Average weight of the chicken is **121.493**

Thank You !!