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Statistics Summative Assessment

1. Identify and evaluate the study design for this agricultural survey. How was the population sampled? Is the method used appropriate for the application? Are there any sources of bias?

Households were chosen randomly, this sampling method is appropriate given the vast number of participants/farms within that sample space. The large area sampled, across the continent, administrative units, background, crop and farm size also ensures that a more presentative sample is obtained with as little subjectivity as possible. Since interviews are face to face, this may introduce a convenience bias as the interviewers were less likely to go to hard to reach places thus most probably surveyed near by farms and regions only.

2. Develop 2 key questions that can be studied based on the dataset provided.

- a. Livestock birth and death rate – Which part of Africa is the most conducive for Chicken or Cattle farming?
- b. Gender dynamics – food productions in female led and male led small holding farms.

3. Develop a plan for a statistical analysis of the data in response to one of your 2 key questions. What are your null and alternate hypotheses? Which tests would you use and why? Why are they appropriate? How would you determine significance?

Livestock (birth and death rate)

- i. The null hypothesis is the overall mean birth/death rate of livestock across for the whole continent.
- ii. The alternate hypothesis the mean birth/death rate per region,
- iii. Correlation analysis (eg. Birth/death rate vs number of months that animal grazes) and birth/death rate vs region/ large and small holdings
- iv. Correlation analysis is suitable for variable are related. In this case I will study the effects of the environment on population growth.
- v. Significance will be tested by cross refencing with areas of the same conditions with my main variable being the differentiator. E.g. two farmers in the same district with different livestock grazing patterns.

4. How would you interpret your results if: 1) a significant effect resulted or 2) the results were not significant? What conclusion can you make about the population and your research question?

If things like country, district and grazing patterns have no impact on livestock birth and death rate then I would conclude that the mortality rate is not dependent on the country or district where that animal is from.