

Regional Training Course on
Agricultural Cost of
Production Statistics
23– 27 April 2018

Session 3.3: Survey Design Considerations: Review of Basics of Sampling

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Introduction

- * Rules
 - * Participate in the activities
 - * Respect others
 - * Keep phones silent

Outline

Sampling within GSBPM

Activity: Sampling

Definitions and formulas

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GSBPM

Quality Management / Metadata Management							
Specify Needs	Design	Build	Collect	Process	Analyse	Disseminate	Evaluate
1.1 Identify needs	2.1 Design outputs	3.1 Build collection instrument	4.1 Create frame & select sample	5.1 Integrate data	6.1 Prepare draft outputs	7.1 Update output systems	8.1 Gather evaluation inputs
1.2 Consult & confirm needs	2.2 Design variable descriptions	3.2 Build or enhance process components	4.2 Set up collection	5.2 Classify & code	6.2 Validate outputs	7.2 Produce dissemination products	8.2 Conduct evaluation
1.3 Establish output objectives	2.3 Design collection	3.3 Build or enhance dissemination components	4.3 Run collection	5.3 Review & validate	6.3 Interpret & explain outputs	7.3 Manage release of dissemination products	8.3 Agree an action plan
1.4 Identify concepts	2.4 Design frame & sample	3.4 Configure workflows	4.4 Finalise collection	5.4 Edit & impute	6.4 Apply disclosure control	7.4 Promote dissemination products	
1.5 Check data availability	2.5 Design processing & analysis	3.5 Test production system		5.5 Derive new variables & units	6.5 Finalise outputs	7.5 Manage user support	
1.6 Prepare business case	2.6 Design production systems & workflow	3.6 Test statistical business process		5.6 Calculate weights			
		3.7 Finalise production system		5.7 Calculate aggregates			
				5.8 Finalise data files			

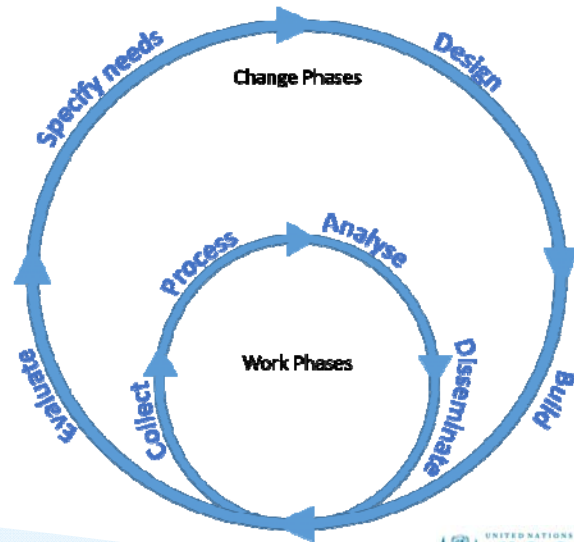
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GSBPM

- * Generic Statistical Business Process Model
- * Not a linear process
- * Not every step is required
- * Many steps are iterative

- * Work Phases are undertaken quickly and frequently
- * Change Phases are undertaken less often



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GSBPM

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Activity

- * We are trying to determine average word length. Circle 10 words in the text and calculate the average length of these 10 words.
- * Plot your results on the board

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Activity

- * Use a random number generator to select 10 words and calculate the average length of these 10 words.
- * Plot your results on the board

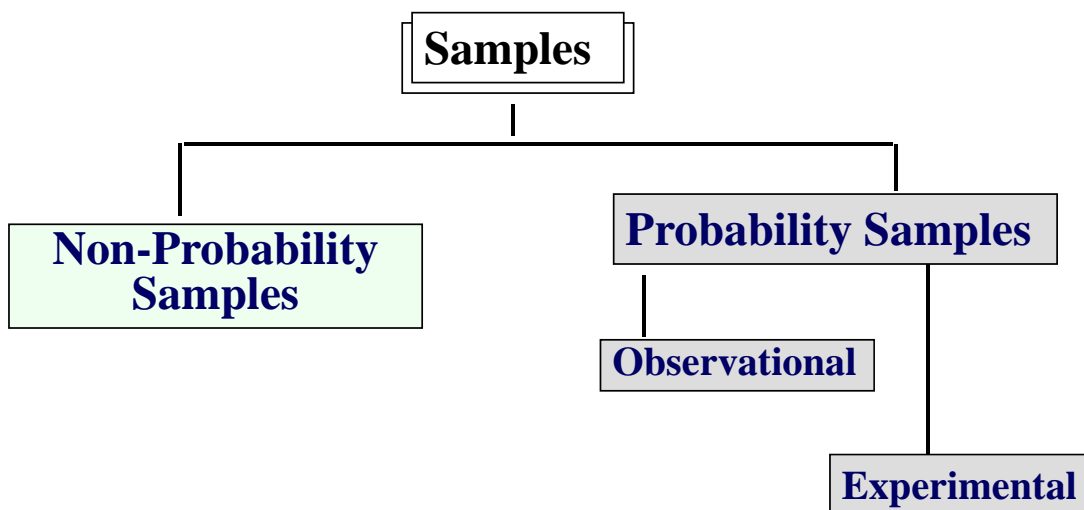
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Activity Discussion

- * What happened?
- * Which method was better?
- * Relate this to Cost of Production surveys

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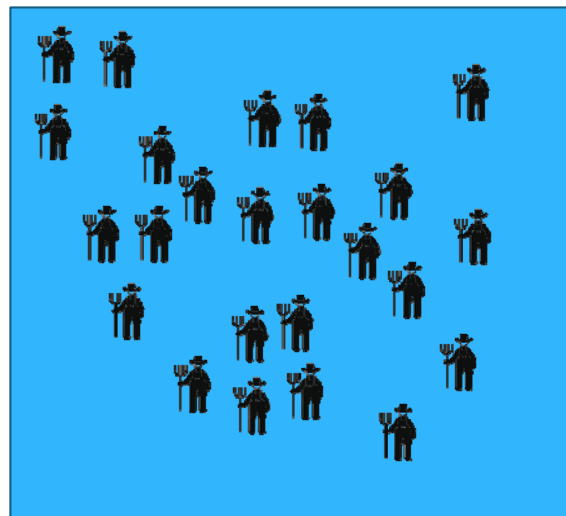
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Definitions

- * **Sample survey** – sampling from a finite population to estimate characteristics of the population
- * **Finite population** - a collection or an aggregate of units such as people, households, cities, districts, countries, states or provinces
- * **Census** – a 100% sample
- * **Sampling Unit** – The unit contained in the sampling frame
- * **Inference** – drawing conclusions about the population based on a sample

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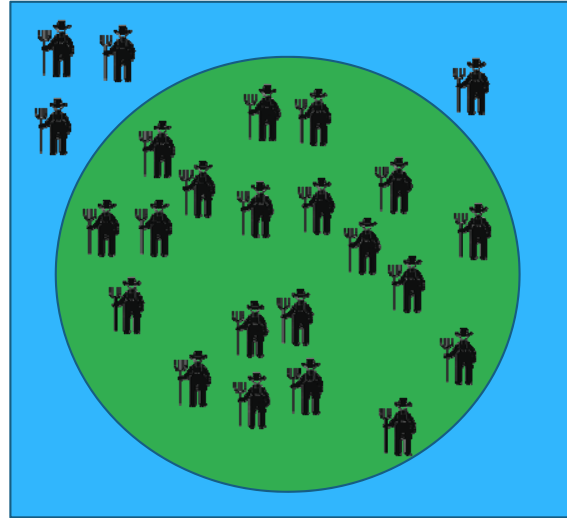
- * Population
- * Sample Frame
- * Sample
- * Observation
- * Inference (+/- sampling error)



 **Sampling Unit**

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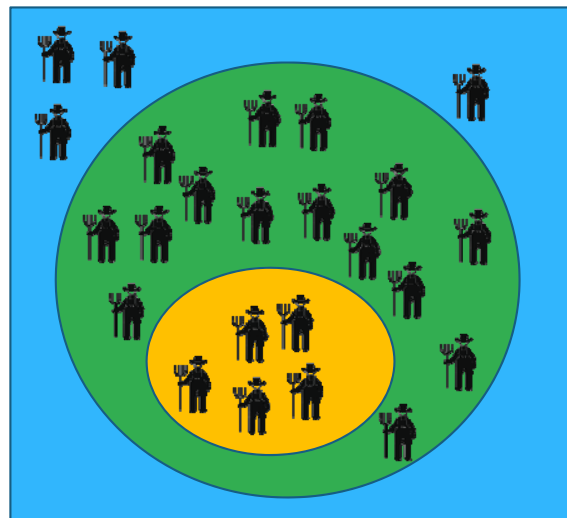
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 **Sampling Unit**

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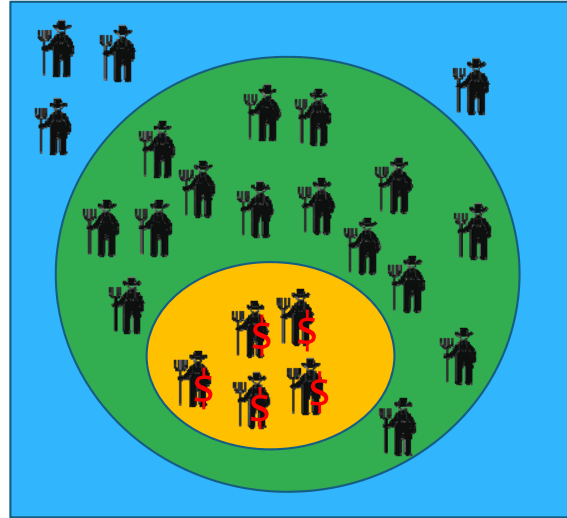
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 **Sampling Unit**

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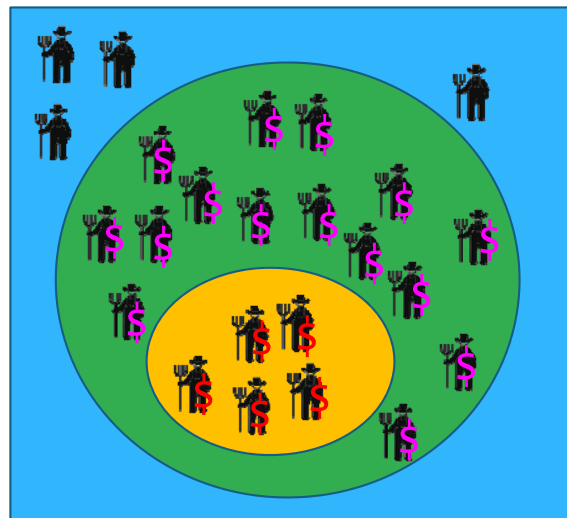
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 **Sampling Unit**

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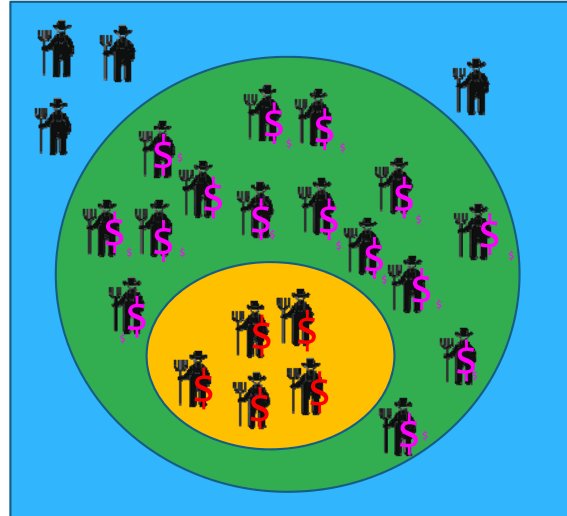
- * Population
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 **Sampling Unit**

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- * Population
- * Sample Frame
- * Sample
- * Observation
- * Inference (+/- sampling error)



 Sampling Unit

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More definitions

- * **Statistic** - property of a sample
- * **Parameter** - property of a population
- * **Bootstrap sample** – a sample drawn with replacement from another sample
- * **Sample Distribution** – the distribution of the statistic for all possible samples from the population of a given sample size
- * **Sample Error** – The difference between a sample statistic and the actual (but unknown) population parameter

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A Few Questions

Which of the following are *random* or *probability* samples?

- A. From a class of 50 students, a sample consisting of those with roll numbers that are multiple of 7?
- B. From the same class, a sample of those with roll numbers same as first seven random numbers drawn by you?
- C. In a ranch with 35 grazing cows, a sample of the first five cows that you come across as you walk in?
- D. A ladle full of rice being cooked (in the traditional way) in a pot , after having stirred its contents well?
- E. A random sample of holdings from a randomly selected sample of villages?



References

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- Amstrup, S. C., McDonald, T. L., & Manly, B. F. J. (2005;2010;2006;). *Handbook of capture-recapture analysis*. Princeton, N.J: Princeton University Press.
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