

Second Regional Training Course on Sampling Methods for  
Producing Core Data Items for Agricultural and Rural Statistics

**Module 5: Sampling Methods for Livestock Surveys**  
**Session 5.2: Estimation methods**

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## Back to scenario A

- ✓ **Sampling design:** Two stage stratified sampling
  - ✓ **First stage:** villages/towns stratified in each province based on **livestock unit (LU)** at census night. Then selected with **SRSWOR**.
  - ✓ **second stage:** holdings are further stratified in two groups; **large & Small**
    - **All large holdings** are surveyed in selected PSU (in town directly from frame, in village after listing)
    - **Small holdings:** SRSWOR in selected towns and Systematic in selected villages

## Sampling weights in each stratum

\* 1<sup>st</sup> Stage:

$$w_{1h} = \frac{N_h}{n'_h}$$

\*  $N_h$ : Total number of villages/towns in stratum  $h$

\*  $n'_h$ : Total number of *surveyed villages/towns* in stratum  $h$

## Sampling weights in each stratum

\* 2<sup>nd</sup> Stage:

$$w_{2hip} = \frac{M_{hip}}{m'_{hip}}$$

$M_{hip}$ : # of holdings of type  $p$  (large/small) in the  $i^{th}$  village/town in stratum  $h$

$m'_{hip}$ : # of *surveyed holdings of type  $p$*  in the  $i^{th}$  village/town in stratum  $h$

## Estimation

\* Estimate of characteristic  $X$  in each province

$$\hat{X} = \sum_{h=1}^L \sum_{i=1}^{n'_h} \sum_{p=1}^2 w \times x_{hip}$$

$$w = w_{1h} \times w_{2hip}$$