

## Survey Techniques for Coastal Livelihood Studies

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## Some General Issues in Primary Survey

- Population for your study
- Unit of analysis
- Availability of secondary information
- Sample size and sampling frame
- Simple random sampling or stratification
- Stratification across time
- Equal proportionate sampling (?)
- Multistage sampling
- Selection at different stages

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## Sampling frame

- If your observations are stationary (HHs, SHGs, land parcels), then a complete list of population units is often necessary – that's your sampling frame
- A readily available sampling frame – great!
- If not – invest a little time and find out how to generate it. An available but erroneous sampling frame may lead to great trouble afterwards (e.g. a backdated landholding record)

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### Sampling without a frame

- Sometimes you have to do without a sampling frame (e.g. tourists)
- Then randomize your selection on the basis of some criteria that is unrelated to your study variables
- Do it innovatively:

*Example 1: systematic...every k-th person arriving at the entrance gate;*

*Example 2: first tourist who comes out from a bus safari trip;*

*Example 3: the tourists who sit on a particular (pre-decided) bench in a park*

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### Simple random vs Stratification

- Within a village of, say 300 households, you want to select 30 HHs
- Stratify the HHs according to some criteria (e.g. landholding, distance from an water body, having access to electricity etc.) that is expected to have effect on your outcome variable
- Reason for stratification: With a given sample size (budget constraint), precision of your parameter estimates are more with larger variation in explanatory variables

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### Stratification...(continued)

- Stratification within the same location is a little trick (with no extra logistical requirement) to ensure such variability
- Stratification can be useful w.r.t. time, if there is variation in explanatory variables over time (season, days of the week)  
*[Also, lunar cycles for Crab/fish catching]*
- Note: For stratification, you need a set of prior information on each population unit (e.g. Landholding information for HHs)  
*– is it available? Can it be constructed with a fairly little cost?*

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### Stratification..Caution!

- DO NOT stratify on the basis of your outcome variable: It will result in biased parameter estimates

Example if you are wanting to estimate how the MFF\_SHF programme is affecting income of the beneficiaries, then do not stratify on the basis of income level of the survey population

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### Proportionality

- Stratified random sample : Is it desirable to maintain same proportion for each strata?

Ans:

*Depends on the prevalence/rarity of the outcome variable*

- If the outcome variable has a reasonably fair (uniform) distribution over all stratum (stratification is done in terms of some explanatory variable), go for equal proportionate sampling from each strata

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### Proportionality...(continued)

- If the outcome variable has very skewed distribution over stratum, then go for oversampling from the strata/stratum where the outcome variable occur less frequently
- e.g. If you are explaining 'forest dependence' by HH level characteristics and stratified your population by caste, and if forest dependence is very rare in a particular caste, then you should rather go for oversampling from that caste.
- Caution: keep a record on sampling proportions (weights) for population predictions

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### Multistage Selection

- Population to sample units : narrow down in stages (multistage)
- From population (e.g. a district) to immediate lower subgroups (subdivisions/blocks): choice is generally purposive with the help of secondary information on such units (also logistical convenience)
- Further lower grouping of population elements (villages/clusters) can be purposive or random.

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### Stages.....(continued)

- However, logistical convenience matters. No harm in purposive choice of villages so far you can justify your selection  
*"--- I chose village xx from block YY because secondary information shows that all the villages in block YY are similar w.r.t. my variables of interest"*
- Choice of households/plots within a cluster/village: -- usually random
- You might think of complete enumeration if population is small (and might purposefully discard extreme cases)  
*[WTP study on shrimp farmers in Coxbazar? ]*

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### Cautions: Code of Conduct in Field

- Appearance / Dress
- Your image/position that you would like to project
- Your motivation/intention you would like to convey
- Talk in a language that locals understand clearly

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### Survey Logistics

- Taking local leaders / stakeholders into confidence
- Caution about period/season of survey
- Manpower planning
- Least cost logistical plan (accommodation and stay for enumerators)
- Knowledge of local prices and wages
- Innovative payment structure for hired personnel

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### Practical Way Sample Selection: Example-1

Study objective: **Livelihood coping after cyclone Aila**

Study Period: **2010-2012**

Investigator: **Santadas Ghosh** (Visva-Bharati, Santiniketan)

Sponsor: **SANDEE** Host: **SHODH** (Nagpur)

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**Research Questions**

**RQ#1:**  
What were the immediate coping strategies of households after the cyclone?  
What determined their choice of immediate coping strategies?

**RQ#2:**  
What coping strategies are being used in the medium and long term and what are the outcomes of different coping strategies?

**RQ#3:**  
To what extent do natural resources (forest/river) provided 'natural insurance'? Who gains from these resources?

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### Study Design

- Field survey: 800 household's - repeat visitation of three rounds over two years
- Households chosen from (i) 2 administrative blocks (ii) 20 villages from each block (total=40 villages)
- Selection of blocks : purposive
- Selection of villages: purposive
- Selection of households : 20 from each village, stratified random, based on landholding (total = 800 HH)

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### Stage-I: Choice of Blocks

#### Objectives

- Most damaged
- Differential remoteness
- Differential exposure to natural resources

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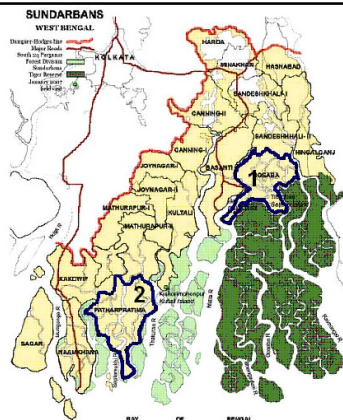
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### The Two Sample Blocks

1. GOSABA (in north-east, adjacent to reserve forest).
2. PATHARPRATIMA (in south, facing the sea, away from the reserve forest)



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### Local Administrative structure

- A block is subdivided into several Gram Panchayets (GP)
- Each GP has several 'Booths area' (typically 10-15)
- 'Booth's are the lowest administrative units (=villages)
- There is one elected representative for every 'booth' (Panchayet Elections)
- One among such elected representatives of booths in a GP area is elected as a 'Panchayet Pradhan' (Panchayet Head)

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### Two blocks at a glance

(Source: District Census Handbook of South 24 Parganas, 2008)

	1. Block Gosaba	2. Block Patharpratima
Total number of Gram Panchayets (GP: local administrative bodies)	14	15
Total number of villages (polling booths)	147	187
Total number of Households	37,042	40,753

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### Stage-II: Selection of 40 villages

- Village = polling booth area (one elected Panchayet member)
  - Variation ensured following three independent criteria
1. Extent of damage to agriculture  
*Indicator:* % of area left uncultivated after Aila
  2. Remoteness:  
*Indicator:* time taken from the village to travel to the Block administrative office by usual mode of transport
  3. Endowment of natural resources:  
*Indicator:* length of embankment in the village (for proximity of river)

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### Village (booth) selection

Each of the 334 elected booth (village) representatives were asked to provide the following information:

1. (on Aila damage):

In what percentage of cultivable area in the village, in your opinion, cultivation was possible after Aila? (please put  $\surd$ )

0% (code=1)	Less than 25% (code=2)	25% - 50% (code=3)	50%-75% (code=4)	More than 75% (code=5)	100% (code=6)
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### Booth selection (continued)

2. (on remoteness)

What in your opinion is the average time taken to reach the BDO office from the village by usual mode of transport? (please put  $\surd$ )

Less than 1 Hour (code=1)	1-2 hours (code=2)	2-3 hours (code=3)	More than 3 hours (code=4)
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3. (for river proximity)

(a) The length of embankment within your booth area:

\_\_\_\_\_km\_\_\_\_\_mt

(b) Number of voters in your booth area following the latest electoral roll: \_\_\_\_\_(No.)

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### Ensuring variation

• For each block, number of possible combinations of these three independent indicators is=

6 (damage) x 4 (remoteness) x 5 (river proximity) = 120

• Number of booths to be selected = 20

• So, selection was purposive, looking at the indicator codes.

• Also, it was ensured that:

(i) Each GP has at least one booth selected (29 GPs)

(ii) Each island has at least one selected booth on it (18 islands)

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### Stage-III: Selection of HHs

Stratification:

Sampling frame:

Building up a sampling frame:

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### Selection of Sample Households

- For each of the 40 selected booths, all households were listed (sampling frame) with information on their
  - Current landholding
  - Number of family members
  - Primary occupation
- Number of listed households:  
7,626 (Gosaba) + 6,341 (Patharpratima) = 13,967 (Total)
- Stratified random sample of 20 HHs from each booth was selected. (with A list and B list)
- Stratification was done purely on the basis of landholding

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### Distribution of households' landholding across blocks (bigha=local unit for landholding=0.33 acre)

Household Landholding	% of HHs in Gosaba Block	% of HHs in Patharpratima Block	No. of selected hhs per booth (Gosaba)	No. of selected hhs per booth (Patharpratima)
Nil (landless)	28%	21%	6	4
0-2 bigha	41%	50%	8	10
2-5 bigha	22%	21%	4	4
More than 5 bigha	9%	8%	2	2

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