DEVELOPMENT RESEARCH METHODS

Week 5, Lesson 3: Field Surveys and Inventories

Development Research Methods
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What we will cover in today's lecture

- What is Survey Research
- Survey Design and Sampling
- Field surveys and Inventories
- Use of Field surveys and Inventories in Development Research

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Survey Research

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A background

- The major impetus for development and refinement of survey methods came from the fields of Sociology and Political Science, but over the years different disciplines have embraced survey research methods
- Resistance to survey methods from Economics and Psychology, however with time, practitioners, administrators and researchers in the field seem to have caught on.
- By now there is a long history of survey research methods owing to its widespread use.
- However survey methods are still not very well understood and properly executed.
- Conducting a rigorous survey research is more complicated than it appears, and many researchers make fundamental errors in study design, sampling procedures, or instrument construction that undermine confidence in the validity or representativeness of survey results.

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What is survey research?

- Some writers define survey as a method of data collection, a tool to aid in gathering of information. In this view, survey research is a broader term designating all methods of research that incorporate any type of survey.
- Others bypass definitional issues completely and focus on types and methods
- There is also a view that while survey research has much in common with other research methods, particularly at the design and data analyses stages, there is a special character, a logic to survey research methods that make them unique and that warrant consideration of survey methods
- A focused definition of survey research would be: "a method of collecting standardized information by interviewing a sample representative of some population" McGraw and Watson (1976)

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A useful way to begin looking at survey research methods

- The choice of a **survey design**
- The selection of **a representative sample**
- **Interview**, **questionnaire design** and **administration**

The major disciplines that make frequent use of survey research methods

1. Sociology
2. Political Science
3. Psychology
4. Economics
5. Social anthropology
6. Education
7. Social work
8. Public health & Medicine

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Time as a key dimension in quantitative research

- Cross-sectional studies

  Observations of a sample or 'cross-section' of a population (or of other phenomena) are made at one point in time – most surveys are cross-sectional.
  → This leads to a common criticism of survey research: that it is ahistorical/unsuited to the examination of social processes.

- Longitudinal studies

  These permit observations of the same population or phenomena over an extended period of time.
  → These enable analysis of change. They may also facilitate more credible assertions relating to causality.

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Types of Longitudinal Study

1.Trend studies – these examine change within a population over time (e.g. the Census).

2.Cohort studies – these examine over time specific subpopulations or cohorts (often, although not necessarily, the same individuals) e.g. a study might interview people aged 30 in 1970, 40 in 1980, 50 in 1990 and 60 in 2000.

3.Panel study – These examine the same set of people each time (e.g. interview the same sample of (potential) voters every month during an election campaign.

Three types of surveys

1. Self-administered questionnaires

1) Mail(ed) surveys (or e-mail surveys)
2) Web-based surveys
3) Group surveys (e.g. in a classroom)

2. Interview surveys

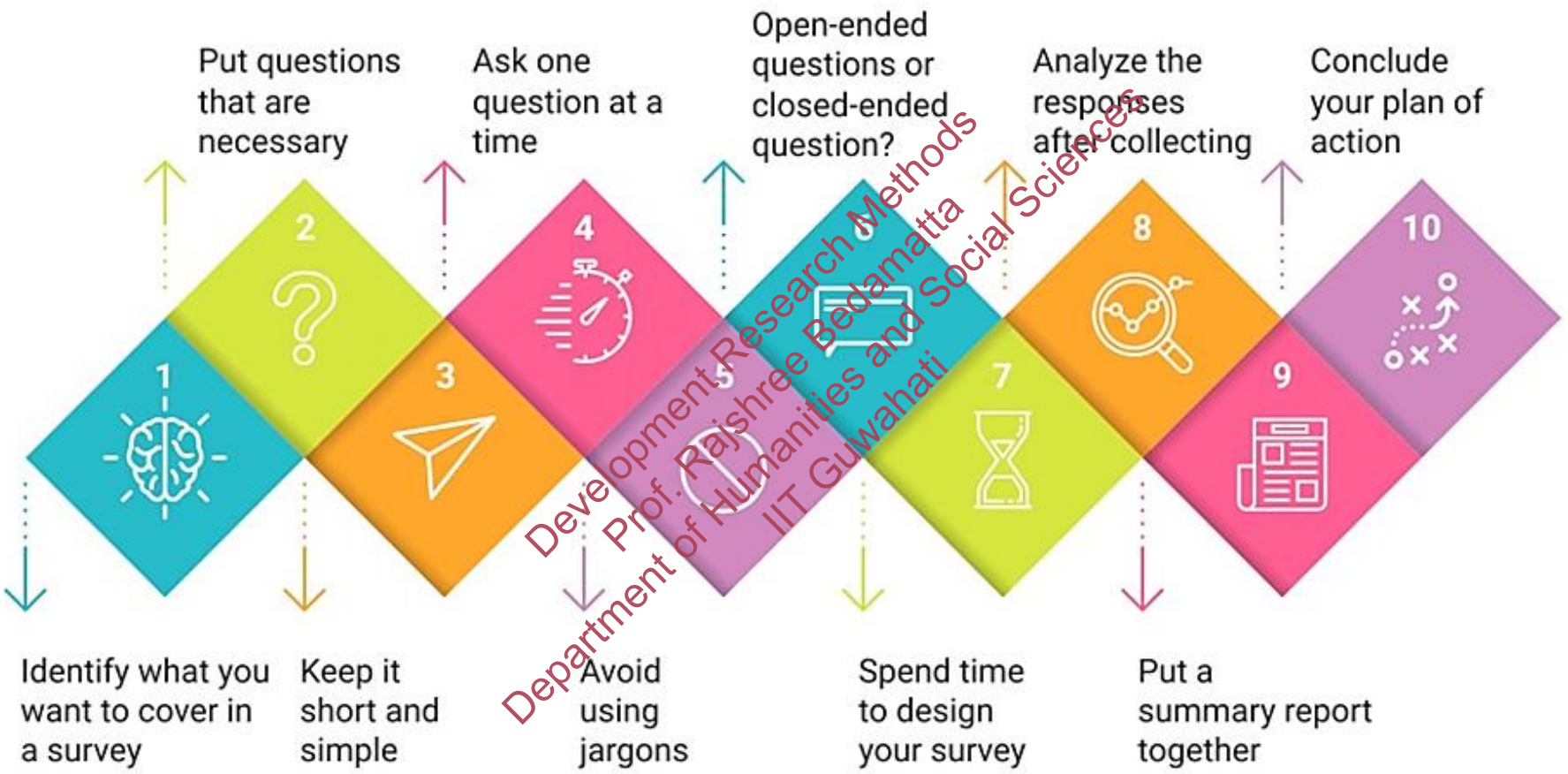
3. Telephone surveys

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Method	Advantages	Disadvantages	Tips to Remember
Self-completion	•Cheap •Cover wide area •Anonymity protected •No Interviewer bias •People can take their time	•Low response rate (and possible bias from this) •Questions need to be simple •No control over interpretation •No control over who fills it in •Slow	•Simplify questions •Include covering letter •Include stamped addressed response envelope •Send a reminder
Telephone survey	•Can do it all from one place •Can clarify answers •People may be relatively happy to talk on the phone •Relatively cheap •Quick	•People may not have home phones/be ex-directory •You may get wrong person or call at wrong time •May be a bias from whose name is listed/who's at home •Easy for people to break off •No context to interview	•Because you rely totally on verbal communication – questions must be short and words easy to pronounce •Minimize number of response categories (so people can remember them)
Face-to-face interview	•High response rate •High control of the interview situation •Ability to clarify responses	•Slow •Expensive •Interviewer presence may influence way questions are answered •If there is more than one interviewer, they may have different effects	•Interviewer should be non-threatening •Interviewer can clarify questions, but should be wary of elaborations that affect the content •Ask questions in a clear, standardized way •If the list of possible responses is long, show them to the respondent for them to read while the question is read out

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10 Steps to a Good Survey Design



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Survey Design: How to Design a Survey that people will love to Answer? Retrieved July 14, 2019, from https://www.questionpro.com/features/survey-design/

An introduction to Sampling

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Sample and Population

- Sampling theory is a study of relationships existing between a population and samples drawn from the population.
- It is useful in estimating unknown population quantities (such as population mean and variance), often called population parameters or briefly parameters, from a knowledge of corresponding sample quantities (such as sample mean and variance) often called sample statistics or briefly statistics
- A range of statistical analyses of a sample can be carried out, including descriptive analyses.
- However, the topic of interest/research question is typically focused on some feature of the population (e.g. whether, on average, women in India earn more or less than men – as opposed to whether the women in the sample in question earn more on average than the men).

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Elementary Sampling Theory

- In general, a study of the inference made concerning a population by using samples drawn from it, together with indication of accuracy of such inferences by using probability theory, is called statistical inference.
- In order that the conclusions of sampling theory and statistical inference be valid, samples must be chosen so as to be representative of a population.
- One way in which a representative sample may be obtained is by a process called random sampling, according to which each member of a population has an equal chance of being included in the sample.
- For each sample, we can compute a statistic (such as the mean and standard deviation) that will vary from sample to sample. In this manner we obtain a distribution of statistic that is called its sampling distribution.
- For each sampling distribution, we can compute the mean, standard deviation, etc. Thus we can speak of the mean and standard deviation of the sampling distribution of means, etc.

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Sampling Error

- Most pieces of quantitative social research rely on samples, but the most carefully designed sample will never provide a perfect representation of the population from which it was selected.

There will always be some sampling error!

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- However, the term is used in a specific way in quantitative social research. If the sampling approach used, or patterns of non-response, result in some degree of **bias** in the results, this is labelled as **non-sampling error**, as it reflects a deficiency in the *sampling approach*, rather being an inevitable consequence of examining a *sample*.

Sampling error or bias?

- A parameter is a quantity relating to a given variable for a population (e.g. the average (mean) adult income in India).
- When researchers generalize from a sample they use sample observations to estimate population parameters.
- The sampling error for a given sample design is the degree of error that is to be expected in making these estimations.
- So the parameter estimates generated by quantitative research are equal to the population parameters, plus a certain amount of sampling error, plus any bias arising from the data ‘collection’ process.

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Response rate

- You must keep track of the response rate, calculated as the proportion of people who are selected to take part in the survey (i.e. who are part of the 'desired' sample) who actually participate.
- For example, if you receive 75 questionnaires back from a sample of 100 people, your response rate is 75%.
- A more detailed example:
  - You are studying women over 50. You stop women in the street, ask their ages, and, if they qualify, you ask to interview them.
  - If you stop 30 women, but 20 are under 50 and only 10 over 50, your starting point (those qualified to take part) is thus 10.
  - If 5 of these are willing to talk to you, you have achieved a 50% response rate (5/10)
  - Note: it is irrelevant that you originally stopped 30 women, hence your response rate is NOT 17% (5/30) – you ignore those people who do not qualify when calculating the response rate.

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Increasing Response Rate

1. Get someone who knows the area to help.
2. If necessary, get approval from community leaders or officials. Get introduced around at the beginning of the study.
3. Explain exactly who you are, what you are doing and why
4. Have proper identification, preferably with a photo
5. Try to appear similar to the people you are interviewing.
6. Try not to dress with ‘attitude’ (for example, T-shirts with slogans that might prejudge answers to interview questions).
7. Explain that all the information will be confidential.
8. Do not be bossy.
9. If people are not immediately available, arrange a time to come back later.
10. Offer feedback on findings
11. Do not just take any substitute or replacement if the required person cannot be found or house is empty, this will introduce a non-random element into the sampling.
12. Remember that the people do not have to answer any questions.

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Probability and non-probability sampling

- **Probability samples ('Random samples')**

  A probability sample has a mathematical relationship to the (study) population: we can work out mathematically what the likelihood (probability) is of the results found for the sample being within a given 'distance' of what would be found for the whole population (if we were able to examine the whole population!)

→ Such a sample allows us to make **inferences** about the population as a whole, based on the sample results.

- **Non-probability samples**

→Formally, these do not allow us to make inferences about the population as a whole.

However, there are often pragmatic reasons for their use, and, despite this lack of statistical legitimacy, inferential statistics are often generated (and published!)

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The Logic of Probability Sampling

- **Representativeness:**

  A sample is **representative** of the population from which it is selected to the extent that it has the same aggregate characteristics (e.g. same percentage of women, of immigrants, of poor and rich people…)

- **EPSEM (Equal Probability of Selection Method):**

  Every member of the population has the same chance of being selected for the sample.

- **Random sampling:**

  Each element in the population has a known, non-zero chance of selection. 'Tables' or 'lists' of random numbers are often used (in print form or generated by a computer, e.g. in SPSS).

- **Sampling frame:**

  A list of every element/case in the population from which a probability sample can be selected.

  In practice, sampling frames may not include every element. It is the researcher's job to assess the extent (and nature) of any omissions and, if possible, to correct them.

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A Population of 100

44 white women
6 African American women

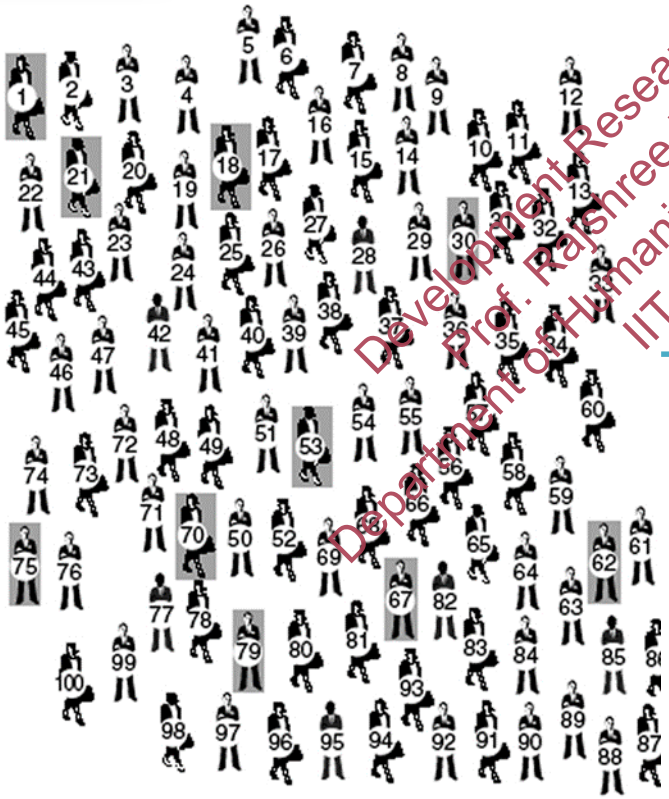
44 white men
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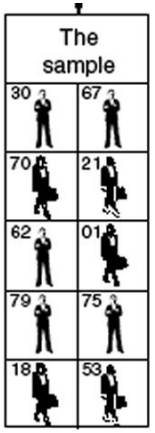
Types of Probability Sampling

- Simple Random Sample
- Systematic Random Sample
- Stratified Sampling
- Multi-stage Sampling



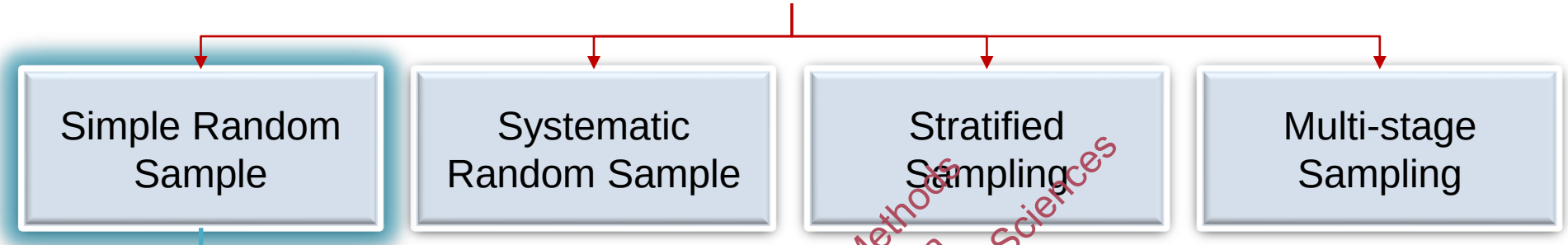
Appendix B
Table of Random Numbers

10480	15011	01536
22368	46573	25595
241 30	48360	22527
421 67	93093	06243
375 70	39975	81837
779 21	06907	11008
995 62	72905	56420
963 01	91977	05463
895 79	14342	63661
854 75	36857	53342
289 18	69578	88231
635 53	40961	48235
09429	93969	52636



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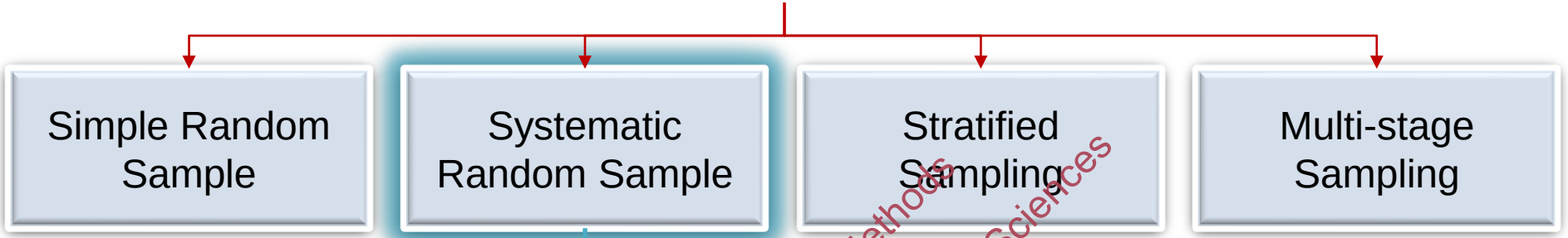
Types of Probability Sampling



- Feasible only with the simplest sort of sampling frame (a comprehensive one).
- The researcher enumerates the sampling frame, and randomly selects people.
- Despite being the 'purist' type of random sample, in practice it is rarely used.

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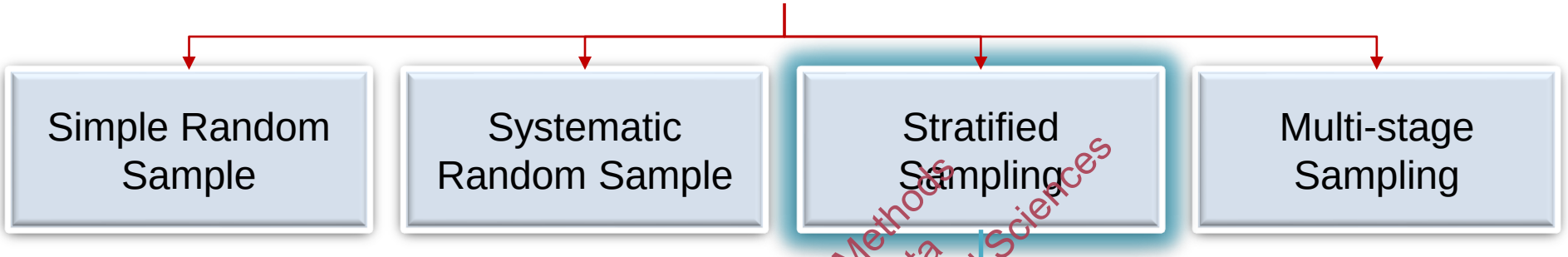
Types of Probability Sampling



- Uses a random starting point, with every kth element selected (e.g. if you wanted to select 1,000 people out of 10,000 you'd select every 10th person: such as the 3rd, 13th, 23rd…).
- The arrangement of cases in the list can affect representativeness (e.g. if k is even, when sampling pages from a book with chapters starting on odd-numbered pages).

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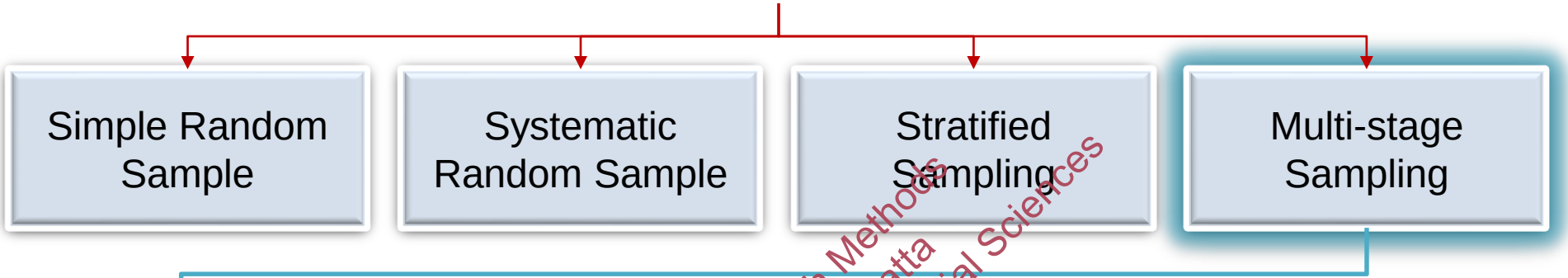
Types of Probability Sampling



- Rather than selecting a sample from the overall population, the researcher selects cases from homogeneous subsets of the population (e.g. random sampling from a set of undergraduates, and from a set of postgraduates).
- This ensures that key sub-populations are represented adequately within the sample.
- A greater degree of representativeness in the results thus tends to be achieved, since the (typical) quantity of sampling error is reduced.

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Types of Probability Sampling



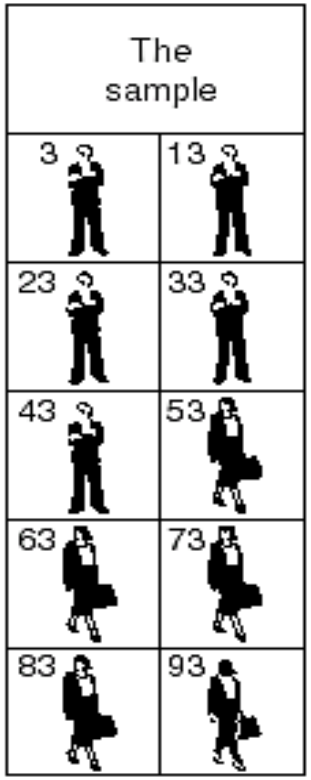
- This is often used when it is not possible or practical to create a list containing all the elements within the target population.
- It involves the repetition of two basic steps: creating lists of sampling units and sampling from them.
- It can be highly efficient but less accurate.

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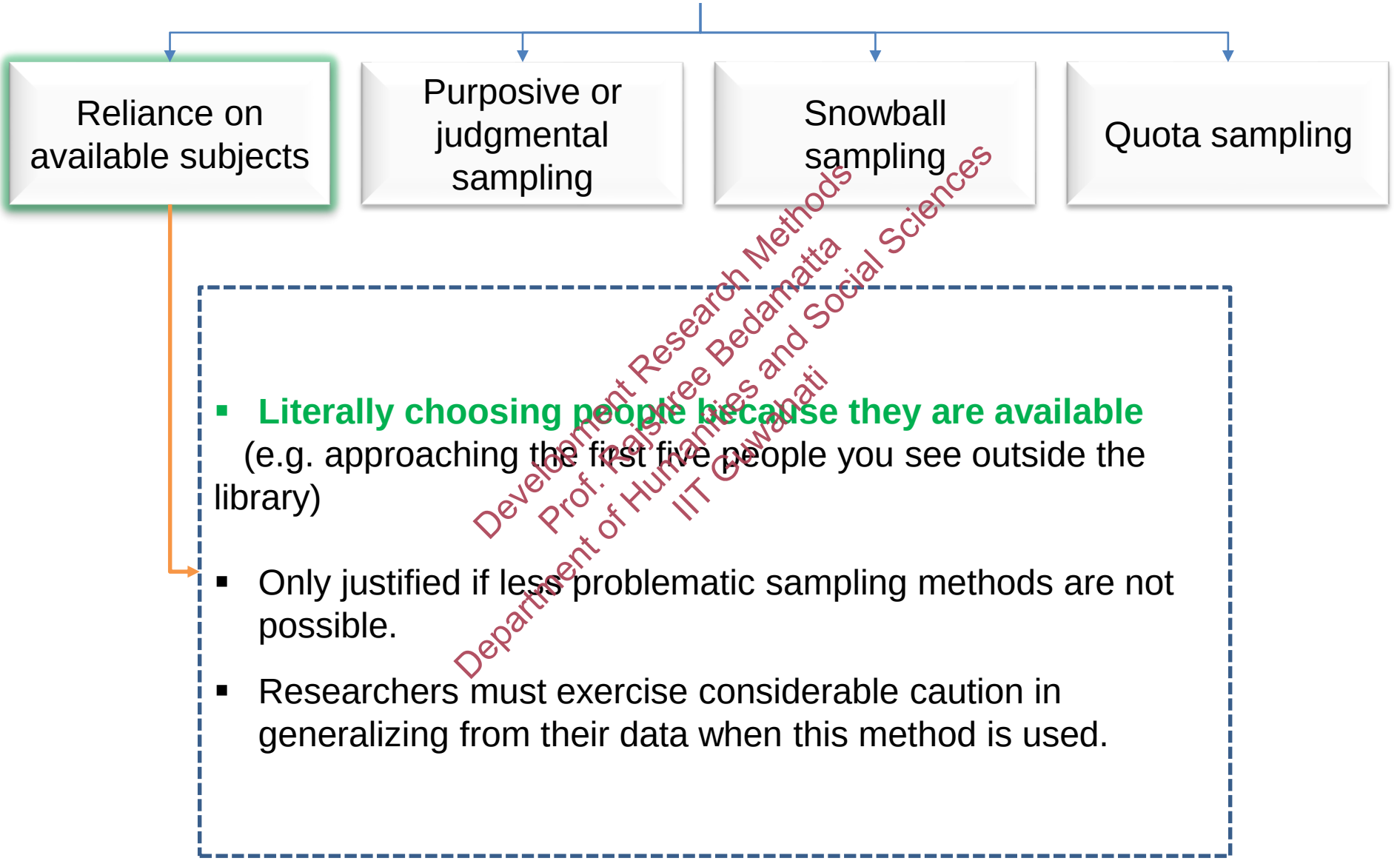
A Stratified, Systematic Sample with a Random Start



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Types of Non-probability Sampling



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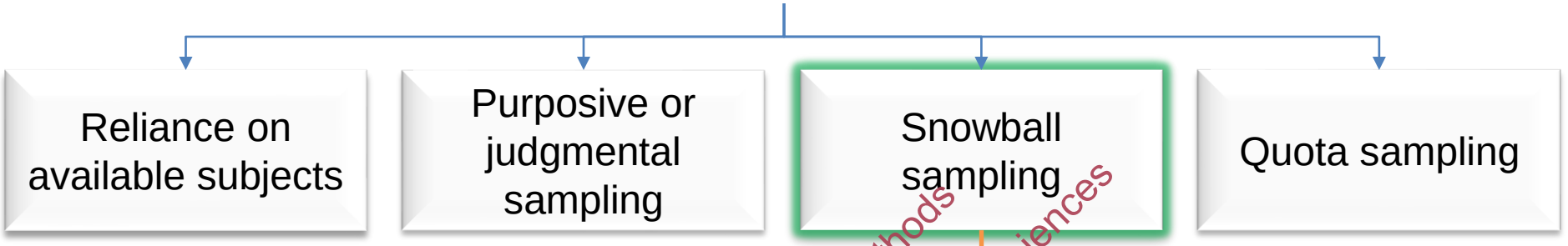
Types of Non-probability Sampling

- Reliance on available subjects
- **Purposive or judgmental sampling**
- Snowball sampling
- Quota sampling

- **Selecting a sample based on knowledge of a population, its elements, and the purpose of the study**. Selecting people who would be 'good' informants (individually/collectively).
- Used when field researchers are interested in studying cases that do not fit into regular patterns of attitudes and behaviours (i.e. when researching 'deviance').
- Relies totally on the researcher's prior ability to determine 'suitable' subjects.

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Types of Non-probability Sampling



- **Researcher collects data on members of the target population s/he can access, and uses them to help locate other members of the population.**
- May be appropriate when members of a population are difficult to locate (and/or access).
- By definition, respondents who are located by snowball sampling will be connected to other respondents, thus respondents are more likely to share similarities with each other than with other members of the population.

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Types of Non-probability Sampling

- Reliance on available subjects
- Purposive or judgmental sampling
- Snowball sampling
- Quota sampling

- Begin with a matrix of the population (e.g. assuming it is 50% female and 9% minority ethnic, with a given age structure).
- Data is collected from people matching the defining characteristics of each cell within the matrix.
- Each cell is assigned a weight matching its proportion of the population (e.g. if you were going to sample 1,000 people, you would want 500 of them to be female, and hence 45 to be minority ethnic women).
- The data thus provide a representation of the population.
- However, the data may not represent the population well in terms of criteria that were not used to define the initial matrix.
- You cannot measure response rates.
- And, crucially, the selection process may be biased.

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Example of Multi-stage Sampling

Sampling households

Make a list of all blocks in a district

Randomly select (sample) 5 blocks

Make a list of all panchayats in each selected block

Randomly select (sample) 2 panchayats in each block

Make a list of all households in each selected panchayat

Select 100 families by social group criteria [‘Cluster’ sampling!]

Make a list of all families by each social group

Randomly select (sample) one family each from each social group to interview.

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Strengths of survey research

- Useful for describing the characteristics of a large population.
- Makes large samples feasible.
- Flexible - many questions can be asked on a given topic.
- Has a high degree of reliability (and replicability).
- Is a relatively transparent process

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Weaknesses of survey research

- Seldom deals with the context of social life.
- Inflexible – cannot be altered once it has begun (therefore poor for exploratory research).
- Subject to artificiality – the findings are a product of the respondents' consciousness that they are being studied.
- Sometimes weak in terms of validity.
- Can be poor at answering questions where the units of analysis are not individual people,
- Usually inappropriate for historical research.
- Can be particularly weak at gathering at certain sorts of information, e.g. About:
- Highly complex or 'expert' knowledge
- People's past attitudes or behaviour
- Subconscious (especially macro-social) influences
- Shameful or stigmatized behaviour or attitudes (especially in the context of a face-to-face interview) – although survey research may nevertheless be able to achieve this in some circumstances.

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Field Surveys and Inventories

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Use of Field Surveys and Inventories in Development Research

- Field surveys and inventories in developmental research are used in conjunction with other data collection methods, especially questionnaire surveys, in-depth interviews, focus groups and ethnographic techniques.
- While doing research, you may be required to integrate socio-economic data with environmental and ecological data.
- In developing countries, it is frequently necessary to create and improvise a sampling frame prior to data collection in order to conduct a proper random sample because no suitable, published sampling frame is available.
  - E.g. A farmers' register may be hopelessly out of date or a potential sampling frame may be frustratingly incomplete. In such cases, field survey methods can be used to compile and create an up-to-date base map.

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Field Surveys and Inventories

Basic Ideas and Concepts

- Field Mapping
  - The process of compiling a map while working in the field.
  - Data collection is in situ, and the data are depicted in map form.
  - The format may be a sketch map of land use, or a map of relevant features in the human and/or physical landscape (buildings, infrastructure, erosion features, water sources, etc.).
  - A field map illustrates layout and key aspects of the spatial organization of the phenomena you are studying.
  - Field mapping techniques require patience and attention to detail rather than highly developed cartographic skills.
- Field Inventories
  - A field inventory is a checklist of items or phenomena you are likely to encounter in the field.
  - The technique enables you to record presence or absence, and/or other properties and attributes of specific items you observe in the field.
  - The items may be human features of the landscape (houses, shops, roads) or physical features (hillsides, landslides, beaches).
  - Field inventories are pre-designed in the same way a questionnaire is prepared before the data are collected.
  - Data recording sheets often have the physical appearance of a table or matrix.

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Field Surveys and Inventories

Examples of Use of Field Surveys and Inventories in Development Research

Urban Field Surveys

- In the postcolonial period, small market towns grew rapidly without any formal town planning to regulate the pattern of physical development.
- Urban fabric has a distinctive spatial layout, reflecting the convergence of local and global economic, social and cultural forces in the development process.

- Urban land use mapping- fine tuned to the local cultural context. Categories of business establishment recorded directly on sketch of the street pattern, resulting in a land use map
- Field reconnaissance to familiarize the spatial extent of study area helps form an impression of its vitality, and suggests potential problems you may encounter later.
- Good photographs provide an accurate visual record of cultural variations in architectural styles and other features of urban morphology

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Field Surveys and Inventories

Examples of Use of Field Surveys and Inventories in Development Research

Farming, Food Production and Land Management Surveys

- Questionnaire interviews and participant observation with farmers, however, can be usefully complemented by field mapping and field inventories for data collection
- Two topics where field mapping play a more pivotal role in research design is discussed here

- Home Gardens- (Figure 1).
- Land Degradation- to collect information on soil erosion problems and on soil conservation methods. A combination of asking questions and recording field observations can be used.
- Research may focus specifically on the physical environment and land management practices, so detailed data on the geographical extent and severity of soil erosion may be required, at the scale of the farm and wider rural community, or for an individual hillside and a broader drainage basin.

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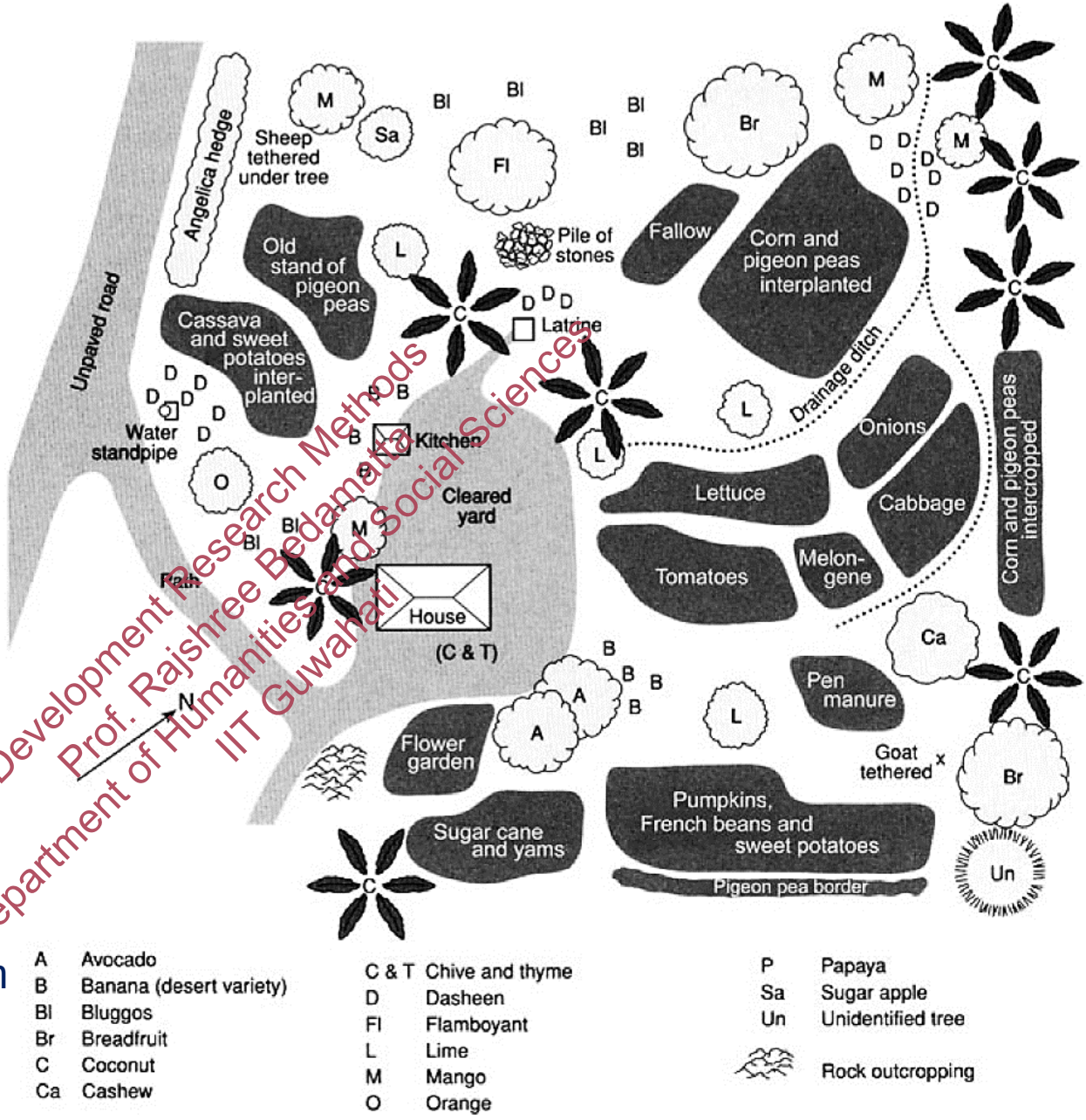
Figure 1

Plan of a Kitchen Garden

The map should depict land use and include building structures and the location of all major food and shade trees.

The spatial organization of other crop areas are sketched as zones, and symbols are used to depict mapped items using an appropriate key.

The land use map should include other features such as paths, drains and irrigation trenches, ponds, terraces and boundary fences



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Source: Brierley (1985) As *used in* Barker, D. (2006)

Field Surveys and Inventories

Examples of Use of Field Surveys and Inventories in Development Research

Natural hazards and disaster impacts survey

Disaster-related projects tend to combine socio-economic data with environmental data, and employ a range of data collection methods to buttress standard interview surveys. Field surveys, field mapping and inventories are useful in this type of development research when the focus is on local impacts of disasters at the community level.

- Hazard maps are prepared by using a combination of field mapping and secondary data from topographic and geological maps, and meteorological and hydrological data.
- Hazard maps identify vulnerable populations and communities at risk from particular hazards. On the other hand, field mapping is useful in the aftermath of a disaster too, for example, to identify the spatial extent of a flash flood or disruptions to transport caused by severe landslides.

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For a comprehensive literature on the topics covered in this lecture it is also suggested that students go through the reference list of the above cited papers.