DEVELOPMENT RESEARCH METHODS

Development Research Methods
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Week 5, Lesson 1: Introducing Quantitative Research Methods



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What we will cover in today's lecture

1. The relationship between ideas and evidence
2. The role quantitative data play in substantiating ideas
3. Using quantitative data in advocacy

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The relationship between ideas and evidence

- Twin dangers of upholding ideas without evidence or, more commonly, defending ideas only with evidence which supports them are prevalent in policy analysis.
- Ideas in turn support the nature and direction of public action.
- Evidence consists of both quantitative and qualitative data. Here, the focus is on the role quantitative data can play in choosing between rival ideas

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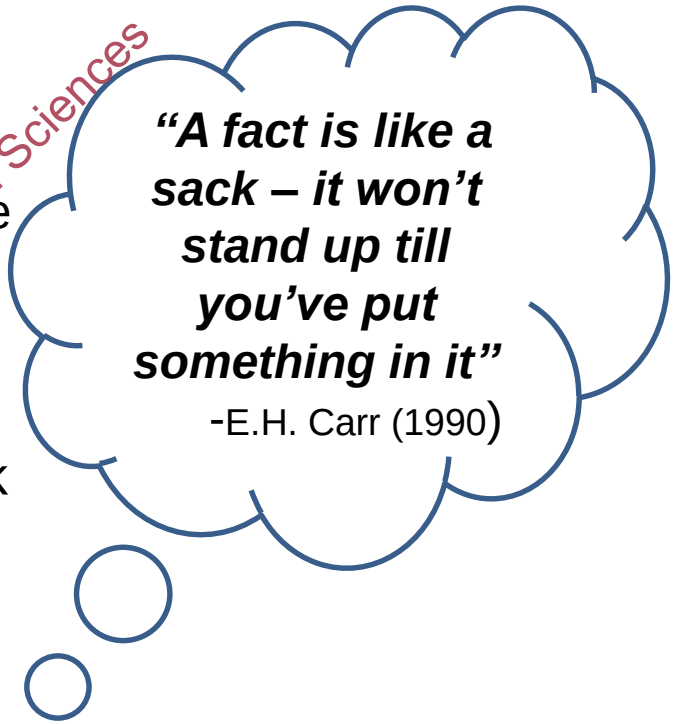
The role quantitative data play in substantiating ideas

- Quantitative data assume a dual role in analysis:
  - **Testing ideas against data**
  - **Getting ideas from data**

Both elements are important and tend to reinforce one another in the process of research

- It is important to acquire numerical literacy to make sense of numbers and be able to unpack quantitative arguments and subject them to scrutiny

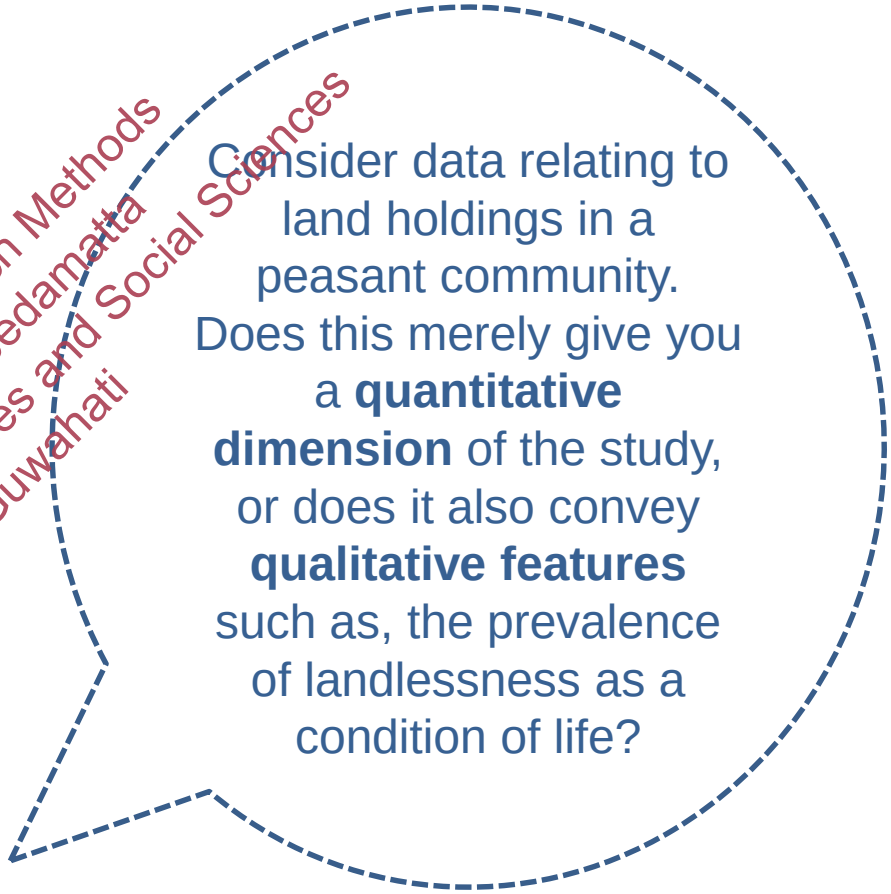
- At the same time, quantitative skills which are not backed up by a sharp conceptualization of the problem at hand may look impressive, but often rest upon shaky foundations



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Nature of inference used in quantitative enquiry

- The fact that quantitative analysis deals with numbers, should not leave one to conclude – that quantitative analysis only deals with quantity and qualitative analysis only with quality.
- They are each **important in their own right**, and **also tend to interact**. Neither qualitative nor quantitative analysts can ignore taking account of both these **dimensions of social reality** – quality and quantity.



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Nature of inference used in quantitative enquiry-2

- **Qualitative analysts adopt a holistic case-oriented approach** in which each case is looked upon within its own terms – its history, its context, and its complexity – against the background of which cases can then be compared.
- In contrast, **quantitative analysts cut across cases rather than remaining within them**. Therefore, they look for patterns in the data and seek to make generalizations from them.
- The **key feature of a quantitative approach is the definition and use of variables**, each of which highlights a specific attribute of the data – like, for example, income, gender, educational achievement, etc.

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Nature of inference used in quantitative enquiry-3

- The fact that quantitative analysis is focused on making generalizations across cases does not mean that case-specificity is ignored altogether.
- **Good practice requires quantitative analysts to look for the exceptions or outliers**: cases that do not fit the general patterns and thus warrant special attention.
- Also, **not all quantitative analysis is variable-oriented** rather than case oriented.
- But, unlike in qualitative analysis, **case-specificity is always looked at from the perspective of patterns first identified across cases**.

An accountant who is looking at the financial data of an NGO will adopt a method of enquiry more akin to that of the qualitative researcher: case oriented, context-specific and with an eye for past history and performance.

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Testing ideas against data Vs getting ideas from data

- Many researchers hold the view that proper scientific analysis consists of testing an idea (hypothesis) against its evidence, however, we shall argue that empirical analysis is essentially contrastive in nature.
- This way, the relative strength of different ideas, their loose ends (that is, evidence which works against them), and their reliance on ad hoc justifications to guard against such loose ends, become more apparent.

Contrastive empirical analysis consists of **assessing rival ideas in the light of the evidence each brings to bear on the problem** to arrive at an explanation which is most plausible in the light of the overall evidence.

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Average land size (acres)	Mean household size	% of households
0.8	3.5	6.6
1.8	3.5	12.3
2.7	4.4	20.5
3.7	5.1	15.0
5.2	5.6	22.5
7.1	6.7	10.9
10.0	7.6	9.4
16.7	9.9	2.8
Source: Collier et al. (1986), cited in Mukherjee and Wuyts (1998)		

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Testing ideas against data Vs getting ideas from data- An Example

- "**Women outlive men**". How would you go about testing this proposition more broadly against empirical evidence?
- One way to do this is to **compare the life expectancies (at birth) of women and men across countries**.
- The scatter diagram (Diagram 1) shows clearly that for the great majority of countries the life expectancy of women exceeds that of men. This simple graph, therefore, presents strong evidence in favor of the proposition: namely, that, on average, women tend to outlive men. **This is an example of testing an idea against the data**

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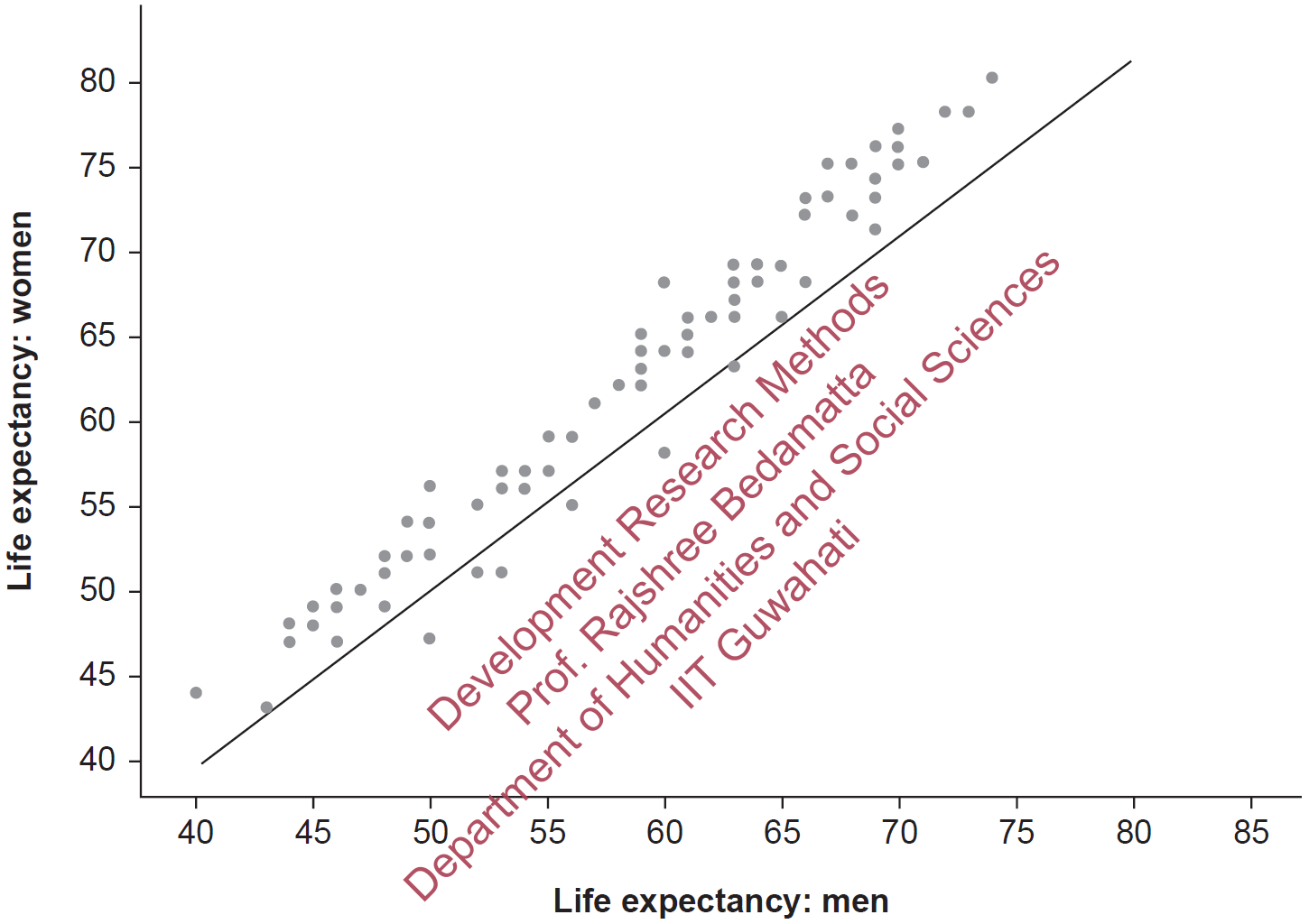


Diagram 1 Female vs. male life expectancy: 99 countries (some circles represent more than one country with similar data)

Source ***Thomas & Mohan, 2007***

Testing ideas against data Vs getting ideas from data- An Example-2

- The fact that we confirmed the initial proposition against the data does not mean that our analysis should stop here.
- There are five data points situated below the line. This means that, in these countries, women's life expectancy is less than that of men: a feature which contrasts sharply with general world-wide patterns.
  - Which countries these might be?
  - Whether or not there is a gender bias against women in these countries?
  - From left to right along the graph, the scatter of points becomes more distanced from the 45° line. Why is this so?

The countries corresponding to these points below the line are, respectively, Bhutan, Bangladesh, Nepal, Pakistan and India. There is quite a debate in the literature whether or not there is a gender bias against women in these countries. From left to right along the graph, the scatter of points becomes more distanced from the 45° line. This means is that the discrepancy between the life expectancies of women and men increases as life expectancy of both women and men increases.

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Getting ideas from data- Some points to remember

- Always be on the **lookout for clues and hints** which point in a different direction or which require you to deepen your analysis.
- Data analysis is akin to an open-ended dialogue. If you do not **ask relevant questions**, you are unlikely to get interesting answers.
- Make sure that your questions are not worded as your own pet answers which you merely seek to confirm with a simple yes or no.
- **Never impose a story on the data**, but equally **do not expect the data to tell a story by themselves**

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The Factuality of Data

- Data always yield a selective view of an aspect of reality and, therefore, what is considered to be a fact depends in part on the criterion which underlies the selection of data.
- Data need to be put into context before they become useful knowledge.
- Facts, therefore, are always theory inspired: **it is theory which renders a piece of information relevant and, hence, accounts for it to be selected as a fact**.

Even though two data sets may be related, this does not mean they are causally related – just because children get taller as they get older and also progressively develop language skills does not mean that getting taller improves language skills or vice versa!

To say that national accounts data are theory inspired means that theory determines which data are deemed to be relevant and informs the way these data are collected and structured into meaningful policy-relevant macro-aggregates such as the gross domestic product, national income, consumption, investment, savings, and so on.

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Factual evidence from primary data

- A time-consuming process, but it allows the researcher greater flexibility in producing evidence for the research questions at hand. It is the researcher who selects them, assesses their relevance, and shapes them as facts within analysis.
- Tend to be case and time specific. Often impossible to verify data or to correct inherent biases in data collection. Hence, it is important to explain the nature of the data and the procedures which went into the collection of the same.
- Some primary data analysis involves fieldwork. Here, researchers generally develop strong local knowledge, acquire a feel of the specificity of the location in question and, as producers of data, tend to be quite aware of the complexity, variability and uncertainty of social data
- Other primary data analysis is based on surveys carried out by the researchers themselves. Such surveys are akin to, but generally smaller in size than, the large-scale surveys carried out by official institutions for the purpose of publishing secondary data
- Survey analysts, unlike field workers, tend to be more distant from local circumstances and knowledge.

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Factual evidence from secondary data

- Produced by specialized (predominantly official) institutions. Generally repeated at regular intervals: national accounts, demographic data, trade data, social surveys, etc.
- Aggregated using formal accounting frameworks which structure the data into predetermined categories. Follows standard procedures and techniques which enhance their consistency over time as well as their comparability.
- But, conversely, aggregation hides the internal variability of the data within each category, and accounting practices often resolve conflicts among data through formal procedures.
- Streamlining the data through aggregation and accounting frameworks extends their reach at the expense of their flexibility in use.

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Some basic principles of using secondary data

Questioning secondary data

- Use the data systematically and creatively
- Take time to look carefully at the structure of the table, its various categories, and the way they are cross-tabulated
- Reflect upon and note down any important conclusions you can draw about the limitations inherent in the data
- Fire questions at the data. Each question approaches the data from a different angle. These questions need to be essentially theory-inspired and motivated by the key components
- Each question gives you a different “handle” on the data. Each handle allows you to look at your data and gain specific insights
- Follow up the questions that look promising
- Collapse the data so that it emphasizes the question we want to pursue. Do not carry around any extra baggage in terms of data overload
- Transform the data appropriately

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Using quantitative data in advocacy

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Making the most of data

- Practical ways of maximizing the impact of your data. There are three golden rules:
  - Understand the positions of all the actors in the debate and how they interact with each other.
  - Constantly reflect critically on your own position and the way to achieve your goal.
  - Seek new ways to influence the debate and define the problem in ways that integrate your views and the data.
- It is important to be careful to focus on where new information is most needed or will have most effect.
  - What do you hope the research will show?
  - What effect will they have on the debate?
  - Is there a better, easier or cheaper way to achieve the same effect?
  - Are you looking at the best parameters?
  - What are the weak points?
  - How will the new evidence lead the debate forward?

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How Good is the evidence?

- Has the evidence been collected and analyzed properly?
- Are the conclusions being drawn from it justifiable?
- What other interpretations of the data are there?
- What are the weak points?
- Should the issue be reconceptualised?

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Where data do not support your arguments

- Don’t announce in advance what your research will show or prove.
- In the light of your data, critically evaluate your policy position.
- Reassess whether you have used the correct methodology and analyzed the data properly.
- Question whether you have collected the most appropriate data.
- Ask whether your data is relevant to the policy debate.

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Problems with using evidence

- Data cannot prove anything. The nature of data and their limitations means that any conclusions always carry an element of uncertainty.
- Research findings may also raise more questions or may not give a complete picture.
- The boundaries implied by a question also make a difference to which conclusions can be drawn.
- The very methodology one users will be open to challenge. If survey methods are used, did these involve use of a representative sample? Were the questions asked openly and how were the data analyzed?
- Even if the framework of data analysis is agreed upon, there is also the issue of uncertainty in the raw data.
- Issue of ignorance. E.g. Before the discovery in 1985 of the ozone hole above Antartica, it was considered rather eccentric to ask questions about the potential effects of ozone depletion on human health.

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References used for this lecture

- Mukherjee, C., & Wuyts, M. (1998). Thinking with quantitative data. Finding out Fast: Investigative Skills for Policy and Development, London: SAGE Publications.
- Mayer, S. (2007).Using evidence in advocacy.Research Skills for Policy and Development: How to find out fast, London: SAGE Publications.
- Thomas, A., & Mohan, G. (2007). Research skills for policy and development: How to find out fast. Sage.

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.

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