Diane Coffey, 2011

Demographic Data Collection

Course summary

This course is intended to introduce students to the main types of demographic data, and prepare them to successfully collect their own data. There is a focus on collecting data in developing countries.

We will look at surveys and other instruments that are commonly used to collect demographic data. For each, we will look at the indicators that are commonly collected using those instruments. We will consider what constitutes and what impacts data quality. Data quality can be affected by the research design (e.g. prospective longitudinal data are threatened by attrition), the instrument (e.g. how to phrase questions on a household survey questionnaire) or with the indicator (e.g. whether or not to rely on parental reports of children's heights). We will also try to build several "skills" needed for demographic data collection—sampling, preventing and analyzing attrition, writing survey questions, designing a form, interviewing, and survey management. The discussion and development of these skills will be woven throughout the course. For several of the sessions, we will look at data collection projects from the developing world as case studies, meant to stimulate discussion about the topics covered in the class.

Assignments

The assignments are due on the days of each meeting for which they are listed.

The final project is to design a study for which you would have to collect data. Your project will include:

1) 7 - 10 page paper that includes
    a. Background about the research questions
    b. How you will choose the sample
    c. How you will manage the survey/data
        i. How you will recruit the surveyors/staff
        ii. How you will train the surveyors/staff
    d. Justification of the question wording, questionnaire formatting & survey/data management decisions
2) A survey form
3) Survey manual that you would give to interviewers

Grading

15% class participation
45% assignments
15% draft of background & survey form due at mid-term
25% final project

1. Introduction – part 1

Objectives:

1. Summarize the content of the course
2. Convey expectations of students/professor
3. Introduce household surveys and administrative records
4. Convey that attention to detail in collection and interpretation is needed in order to make credible claims from data

Required readings:

Bryan, Thomas & Robert Heuser. (2004). "Collection and Processing of Demographic Data." Chapter 3 in *The Methods and Materials of Demography*. 2nd edition. Seigel, Jacob & David Swanson, eds. Elsevier Academic Press: San Francisco, CA. pgs. 43-63.

Thomas, Duncan. (2008). "Household surveys." In: *The New Palgrave Dictionary of Economics,* Second edition. Steven Durlauf and Lawrence Blume (eds.), MacMillan.

Chamie, Joseph. (1994) "Population databases in development analysis." *Journal of Development Economics*, v. 44 i. 1, pp. 131-146.

Srinivasan, T.N. (1994) " Data base for development analysis: An overview." *Journal of Development Economics*, v. 44 i. 1, pp. 3-27.

Deaton, Angus. (1997). "Chapter 1: The Design and Content of Household Surveys." *The Analysis of Household Survey: A microeconometric approach to development policy.* pg. 7 – 9 & 22 - 40.

Assignment (due at the beginning of class 1)

Write a one page response to the Chamie and Srinivasan articles. Did these articles change the way you will think about demographic data? How?

(If they did not change the way you think about demographic data, then use the one page response to prioritize the data problems the authors talk about. Which should we care about first, and who should do what about it?)

Recommended readings:

Casley, D. J. and D.A. Lury. (1981) *Data Collection in Developing Countries*, Oxford, Claredon.

This book is a complete and practical guide for the "surveyor," someone who wants to both collect and analyze survey data. Some of its most important contributions to the study of collecting demographic data are a discussion of sampling and non-sampling errors, discussion of

the types of surveys and their relative strengths and weaknesses, and careful consideration of questionnaire design, the roles of people involved in the survey and data processing, editing and capturing.

Justification for required readings

Bryan & Hauser: This chapter presents important background and definitions for the study of demographic data collection. The focus is on censuses, surveys and vital registration. It concisely covers issues such as sampling, enumerators, measurement error and processing demographic data. I've assigned it to help achieve the objective of introducing students to household surveys and administrative data.

Thomas: This short article outlines the history of survey research and the types of surveys (cross sectional, longitudinal and cohort) using well-known surveys as examples. It briefly discusses types of error (sampling error, coverage error, non-response) and ways to address them. Though brief, the article is a nice introduction to topics that will be covered later on in this course. This reading is intended to help introduce students to household surveys.

Chamie: This article discusses how definitions, methods and data quality impact interpretation of three important demographic variables – population counts, life expectancy at birth and infant mortality. It pays special attention to the role of governments in collecting demographic data and stresses the need for more complete and accurate population data.

Srinivasan: In addition to highlighting some of the difficulties of collecting basic demographic data, this article reviews the availability and quality of datasets typically used in development economics. Macroeconomic indicators are considered, as are microeconomic ones, including nutrition/calorie intake, labor force participation, morbidity and agricultural data.

Deaton: The selected sections of this book provide an overview of the content of household surveys and address some important quality concerns (individuals vs. households, reporting periods, consumption vs. income). They also provide a concise history of the LSMS.

Lecture outline:

I will lecture for the first 45 minutes of the class on the following topics:

- Course summary
- Course expectations: reading, participation, assignments
- Cross-sectional vs. longitudinal research designs
- Longitudinal research designs
    - Repeated cross section
    - Retrospective longitudinal
    - Prospective longitudinal
- Modes of data collection

    - Who is the respondent?
    - How does the data collection take place?
        - Rich countries
            - In person
            - On the phone
            - On the web
            - By mail
        - Poor countries
            - In person
            - On cell phone
- Types of instruments/studies we will cover; summarize why we might want to collect/use this data for each
    - Household surveys
    - Administrative records
    - Community surveys
    - DHS/WFS
    - DSS
    - Cohort study
- Use of technology in data collection
- Instruments can be used in one or more types of research design (pass out Handout 1 – see Appendix)
- Indicators we'll study (pass out Handout 2 – see Appendix)
- Data quality issues—why are they important and which will we study?
- Skills that we will try to build in this course
- Case studies—what I expect from these discussions

- Introduction to household surveys and administrative records

Discussion:

The discussion will last 45 minutes.

First, we will discuss the students' responses to the Chamie & Srinivasan pieces. Those who answered the first question – how did these articles change the way you think about demographic data? – will be invited to answer first.

Then, those who prioritized ways to improve demographic databases will be invited to share. If no one did, then we will brainstorm priorities together.

Finally, we will talk about the readings on household surveys – what are the most common goals of a household survey? What can we learn about collecting demographic data from Deaton's discussion of consumption & income?

2. Introduction – part 2

Objectives:

1) Discuss the remaining types of survey instruments that we will cover in the course – community level surveys, demographic & health surveys, demographic surveillance sites and cohort studies
2) Discuss which instruments are best for which types of questions
3) Consider the conflicts that arise around data collection and funding

Required readings:

Rutsetin, Shea Oscar & Rojas, Guillermo. (2006). "Guide to DHS Statistics." Demographic & Health Surveys: ORC Macro. pgs. 1 – 14. Available online: http://www.measuredhs.com/pubs/pdf/DHSG1/Guide_DHS_Statistics.pdf

Sankoh, Osman A. & Binka, Fred. (2005.) *Indepth Network: Generating empirical population and health data in resource-constrained countries in the developing world.* In: Health research in developing countries: A collaboration between Burkina Faso & Germany. Becher, Heiko & Kouyaté, Bocar. Eds. Springer: Germany. pgs. 21 -32.

Van Ginneken, Jeroen K, Muller, Alex S. & Omondi-Odhiambo. "Design, results and comments on the Machakos Project in Kenya." (1997). In: *Prospective community studies in developing countries*. Das Gupta Monica, Aaby Peter, Garenne Michel, Pison Gilles, eds. Oxford: Clarendon Press. pgs. 189 – 212.

Chandramohan D, Shibuya K, Setel P, Cairncross S, Lopez AD, Murray CJ, et al. (2008). "Should data from demographic surveillance systems be made more widely available to researchers?" *PLoS Medicine*. Vol. 5, Issue 2, pgs. 0169 – 0173.

Barros, Fernando, Cesar Victoria, & J. Patrick Vaughn. (1900). "The Pelotas (Brazil) Birth Cohort Study 1982 – 1987: Strategies for following up 6000 children in a developing country." *Paediatric & Perinatal Epidemiology*. 4, 205 – 220.

Assignment (post your answers on Blackboard 24 hours before class):

First identify at least four areas of conflict regarding data collection and use mentioned in the readings. You should touch on each of the four types of instruments that we will be discussing today—community surveys, DHS, DSS and cohort studies.

For each of the areas of conflict that you identified, could this also be a source of conflict for one of the other instruments? If yes, why (or how), and if not, why don't you think so?

Justification for required readings:

Rutstein & Rojas: I asked students to read only the introductory section of this guide. It provides a very basic but nonetheless important introduction to the MEASURE DHS program. It briefly outlines the history of the program, its objectives and which indicators it collects. Finally, it provides interested students with a list of the manuals that are available to them, and an overview of DHS reporting and data files.

Sankoh & Binka. This short article is recommended for students who have not been introduced to demographic surveillance sites or the Indepth Network. It gives a basic overview of the purposes of a DSS, the different DSS that participate in the Indepth Network and the data generating priorities of these sites.

Van Ginneken et al. This article is part of an edited volume about demographic and health surveys in developing country communities that have a longitudinal component, and thus are much like the studies that take place in demographic surveillance sites. Because of the authors' frank description of how the project was carried out from beginning to end, students will be able to identify many of the conflicts that arise when collecting demographic data, to help accomplish objective 3. This article in particular discusses relationships between participants, community leaders, enumerators and researchers in the context of a study about maternal and child health in Kenya.

Chandramohan et al. This brief article consisted of an exchange between developed country researchers and developing country researchers about the availability of health data. The developed country researchers were advocating more public access to DSS data, while developing country researchers wrote of need for more support for managing and disseminating data, as well as the need to protect incentives for researchers in developing countries to do the work of data collection.

Barros et al. This article presents a cohort study carried out in Brazil in the late 1980s. It talks about some of the challenges of doing a cohort study in a developing country setting. It will also introduce the students to some of the indicators that they will be studying in later classes. Finally, it discusses the advantages of longitudinal design for the kinds of questions (mostly health-related) that the study seeks to answer.

Lecture outline:

- This lecture will probably last 45 minutes
- Powerpoint on each of the 6 types of surveys
    - Household surveys
    - Administrative data
    - Community surveys
    - DHS

    - DSS
    - Cohort studies
- Presentation would include information on
    - "history" of each type of instrument
    - Which indicators are usually associated with that type of instrument
        - Why that type of instrument is good for collecting that data
    - Current data collection initiatives for each instruments (perhaps showcasing the data sets that were used by papers presented at PAA in the last couple of years)

Discussion:

The discussion will be based on the assignment and last 45 minutes. By survey instrument we will identify the possible conflicts that can arise in data collection and data use, with special attention to those brought up in the articles.

Then, we will discuss whether any of these conflicts apply to other instruments.

Finally, students will be asked to reflect on how the conflicts compromise data quality and how to address them in the design of data collection initiatives.

3. Household surveys (1): Indicators & Data quality

Objectives

1) Identify the indicators most commonly used in household surveys, and the LSMS in particular
2) Identify the stages at which survey quality may be compromised
3) Apply what has been learned about survey quality to consumption surveys

Required reading

Grosh, Margaret & Paul Glewwe. (2000). "Chapter 1: Introduction." *Designing Household Survey Questionnaires for Developing Countries: Lessons from Ten Years of LSMS Experience*. Vol. 1. Grosh, Margaret & Glewwe, Paul. (eds.) World Bank: Washington, DC. pgs. 5 – 20.

Groves, R., Fowler, F., Couper, M., Lepkowski, J., Singer, E., & Roger Tourangeau. (2009). Sections 2.3 – 2.6 in *Survey methodology*. 2nd edition. Wiley: NJ. pgs. 49 – 63.

Deaton, Angus & Grosh, Margaret. (2000). "Chapter 5: Consumption." *Designing Household Survey Questionnaires for Developing Countries: Lessons from Ten Years of LSMS Experience*. Vol. 1. Grosh, Margaret & Glewwe, Paul. (eds.) World Bank: Washington, DC. pgs. 91 – 134.

Assignment

There is no written assignment for this class. Please do the reading thoroughly and be prepared to apply what you learned in the Groves reading to the Deaton reading.

Justification for required readings

Grosh & Glewwe: This chapter gives an introduction to the purpose, history, coverage and core modules of the Living Standards Measurement Surveys. In particular, the chapter provides student with a brief description of each indicator that the LSMS collects. This reading will help students achieve objective 1, and help students pick an indicator for their class presentation when we do the case study of the LSMS on the last day of our discussion of household surveys.

Groves et al.: This reading first presents a diagram of the different stages of design and execution of a survey, and then introduces the types of error that can influence the survey's quality at every stage. Some key concepts include the difference between constructs and measures, measurement error, processing error, coverage error, sampling error, non-response error and adjustment error. The last section presents some "nonstatistical notions of survey

quality." The reading helps lay the groundwork for future discussions of survey quality, and helps achieve objective 2.

Deaton & Grosh: This chapter on collecting a consumption module in a household survey seems more developed than the chapters on other modules. Not only did it cover the content of consumption surveys, but also the conceptual issues involved in measuring consumption as well as the available evidence on the best practical ways to collect data. Among other things, recommendations were made concerning whom to interview, recall periods, reporting errors and questionnaire formats. This reading will help achieve objective 3 because students will be asked to apply ideas from Groves et al. to the collection of consumption data.

Outline of lecture

- Household surveys (from Grosh & Glewwe)
    - Purposes
    - Indicators
        - Household membership (definitions of a household)
        - Consumption
        - Education
        - Health
        - Employment
        - Anthropometry
        - Transfers
        - Housing
        - Fertility
        - Migration
        - Household enterprises
        - Agriculture
        - Savings
        - Credit
        - Time use
    - Tradeoff between comparability and accuracy

- Life cycle of a survey from a quality perspective (from Groves et al.)
    - Review Figure 2.5 (pasted below), defining the following concepts
        - Construct: the underlying concept we are trying to measure with the survey
        - Validity: "the extent to which the measure is related to the construct"; we can imagine it as the ratio of the correlation between the measure and the construct divided by the product of their standard deviations
        - Measurement error: departure from the true value of the measure (due to response bias or random error)
        - Processing error: Errors that arise from coding or other surveyor related mistakes
        - Coverage error: undercovering the target population or including ineligible units

        - Sampling error: Error that arises when there are units in the target population that have no probability of being included are, or just the uncertainty associated with a sample rather than the population
        - Non-response error: arises from refusals or being unable to contact a unit
        - Adjustment error: Errors arise from data cleaning or the use of weights
        - Total survey error: The sum of all of these errors
    - Non-statistical notions of quality
        - Fitness for use
        - Credibility
        - Relevance

Discussion

1. What are some of the problems faced by researchers trying to conceptualize and measure consumption?
2. Which of the aspects of quality described by Groves are Deaton & Grosh most concerned about in consumption surveys?
3. How do they map on to the Groves et al. definitions of different types of error?
4. What does the research on collecting consumption data suggest are the best ways to minimize error?

4. Household surveys (2): Choosing enumerators, obtaining consent & working with human subjects

Objectives

1) To understand the important qualities of different members of a survey team and consider how to recruit such a staff
2) To understand informed consent and practice writing appropriate consent scripts
3) To take the online course on protecting human subjects and consider how the material applies to a developing country setting

Required reading

Groves, R., Fowler, F., Couper, M., Lepkowski, J., Singer, E., & Roger Tourangeau. (2009). Sections 11.5 – 11.7.1 in *Survey methodology*. 2nd edition. Wiley: NJ. pgs. 276 – 290.

Casley, D. J. and D.A. Lury. (1981). "Chapter 8: The Team." *Data Collection in Developing Countries,* Oxford, Claredon. pgs. 115-129.

National Institute of Health, Office of Extramural Research. "Protecting Human Research Participants: Online Course." Available online: http://phrp.nihtraining.com/users/login.php

[Complete the NIH online course about protecting human research subjects. Be sure to budget at least an hour for this course. As you do the course, keep in mind how the suggestions and recommendations might fit into the context of a developing country setting.]

Recommended Reading:

National Institute of Health. "NIH Data Shaing Policy & Implementation Guidelines. Available online: http://grants.nih.gov/grants/policy/data_sharing/data_sharing_guidance.htm [Focus on: Human Subjects and Privacy Issues]

Students should take a look at this reading if they have time because it gives some instructions for keeping data confidential. Since confidentiality is something that it is customary to promise respondents, students should consider how they can accomplish this goal and share their data widely.

Assignment

Write a consent script for each of the following surveys and post your scripts online 24 hours before the start of class. Please put your names on a separate page at the end of the document, so that I can print out all but the last pages and give them to our guest speaker from the University's Institutional Review Board (IRB) so that he or she can give feedback anonymously.

1) A nationally representative cross sectional telephone survey done in the US about smoking and perceptions of smokers. The US Department of Health and Human Services is sponsoring the study.
2) An 8 hour family life survey representative of Indonesian households. RAND Corporation and Duke University sponsor the study.
3) For your dissertation, you are doing a two wave panel exploring the birth process among pregnant women in Nairobi. The women are recruited at health clinics, interviewed about their plans and expectations for the births of their children and then followed up after the births. You hope to collect blood samples to test for anemia.

Justification for required readings

Groves et al.: This section of the Groves et al. textbook is an essential introduction to the legal and ethical obligations of researchers toward survey participants. It describes the role of IRBs and the three principles of conduct for researchers outlined in the Belmont Report—beneficence, justice and respect for persons. Finally, it discusses the "essential elements" of informed consent and research about ways of obtaining consent.

Casley & Lury: This chapter from the book *Data Collection in Developing Countries* describes the responsibilities of each member of a traditional survey team, as well as the qualities he/she should have. This frank picture of what it is like to be an enumerator, or to supervise enumerators should allow students to identify some of the conflicts that take place in the data collection phase that may compromise data quality.

Discussion

I will invite a guest speaker from the University's IRB to speak to the class about what she or he looks for when evaluating whether a consent script has achieved informed consent. He or she will also be asked to comment on the students' proposed consent scripts for the three studies.

Read the consent scripts aloud and discuss how well they achieve informed consent, while also being brief and non-threatening.

Review what Casley and Lury believe to be the most important qualities of interviewers and supervisors. Then, break into 3 groups. Each group has to come up with a plan for how to hire appropriate interviewers for each of the three surveys described above.

If there is time, we will also discuss students' ideas about how material from the training course can be applied to work in developing countries.

5. Household surveys (3): Question writing & Questionnaire formatting – part 1

Objectives

1) To consider why question writing is an important skill
2) To learn what research has to say about how to write precise, appropriate questions that produce accurate, easy to interpret answers
3) To consider how questionnaire format influences survey quality

Required reading

Massey, Douglas & Ilana Redstone. (2004). "Coming to Stay: An Analysis of the Census Question on Year of Arrival." *Demography.* 41:721-38.

Iarossi, Giuseppe. (2006). "Chapter 3: How easy it is to ask the wrong question." In: *The Power of Survey Design: A User's Guide for Managing Surveys, Interpreting Results, and Influencing Respondents*. The World Bank.

Groves, R., Fowler, F., Couper, M., Lepkowski, J., Singer, E., & Roger Tourangeau. (2009). Section 7.4 in *Survey methodology*. 2nd edition. Wiley: NJ. pgs. 242 – 252.

Grosh, Margaret, Glewwe, Paul & Juan Muñoz. (2000). "Chapter 3: Designing modules and assembling them into survey questions." *Designing Household Survey Questionnaires for Developing Countries: Lessons from Ten Years of LSMS Experience*. Vol. 1. Grosh, Margaret & Glewwe, Paul. (eds.) World Bank. pgs. 43 – 74.

Assignment

Each student will be responsible for giving a 10 minute presentation on each of the following topics related to question writing. Use the assigned readings as a base, but feel free to discuss research or give examples from surveys not discussed. Be sure to define the topic, tell us why we should be concerned about it, and then how research suggests it should be handled.

1) Question wording—brevity & objectivity
2) Question wording—simplicity & specificity
3) Question style & coded response placement
4) Open ended response vs. coded response
5) Retrospective questions
6) Rating scales and opt-out options
7) Question sequence
8) Sensitive questions

9) Attitude questions
10) Questionnaire length
11) Questionnaire layout

Justification for required readings

Massey & Redstone: This article highlights the importance question wording. It examines the case of the US census question about immigrants' year of arrival in the US, which has been used to test theories of assimilation. It shows that the census question, "What year did this person come to the US?" does not accurately reflect individuals' first or last trips. The authors discuss what this question may mean to different kinds of immigrants.

Iarossi: The chapter has many practical suggestions for writing questions, and reviewed experiments that have been done to illustrate certain biases in survey questions. The chapter also covered the use of show cards, response categories and scales, as well as discussing recall problems and methods to address them. Finally, it covered question sequence, questionnaire length and layout.

Groves et al.: This section lists and describes suggestions for writing four types of questions that can be difficult for researchers to write. These are nonsensitive questions about behavior, sensitive questions about behavior, attitude questions and questions on self-administered questionnaires.

Grosh et al.: This chapter provides a review of some of Iarossi's key points in the context of the LSMS survey. It is also the main reading covering questionnaire layout. In particular it discusses ordering the modules, formatting questionnaires, and putting together survey booklets.

Discussion

First half hour: Discuss the main findings of the Massey & Redstone paper.

Last hour: 5 or 6 students do their 10 minute presentations about the 6 topics in question writing for this week.

6. Household surveys (4): Question writing & Questionnaire formatting – part 2

Objectives

1) To learn what research has to say about how to write precise, appropriate questions that produce accurate, easy to interpret answers
2) To consider how questionnaire format influences survey quality
3) To learn how to test one's own questions

Required reading

Finish the reading you did not finish for last week.

Groves, R., Fowler, F., Couper, M., Lepkowski, J., Singer, E., & Roger Tourangeau. (2009). Section 8.1 - 8.8 in *Survey methodology*. 2nd edition. Wiley: NJ. pgs. 242 – 252.

Assignment

Those who did not present last class will present this class. Other than that there is not additional assignment.

Justification for required readings

Groves et al.: Recognizing that even the best efforts to adhere to question writing precepts may sometimes fail to achieve desired results, these sections discuss the ways that researchers can test their questions. The methods described are expert review, focus groups, cognitive interview, field pretests and behavior coding, and split ballot experiments. The authors also review the research that has been done about each of these methods.

Discussion

Finish the 5 or 6 presentations we did not get to last week.

Discuss the Groves reading and students will be invited to reflect on which of the methods for testing questions (expert review, focus groups, cognitive interview, field pretests and behavior coding, and split ballots) would be best for the three surveys for which they previously wrote consent scripts.

7. Household surveys (5): Sampling, part 1

Objectives

1) To learn how to chose a sample to allow inference about a population
2) To think about how sample design affects the calculation of basic statistics about a population

Required reading

Grosh, Margaret & Muñoz, Juan. (1996). "Chapter 4: Sampling." In: *A Manual for Planning and Implementing the Living Standards Measurement Study Survey.* World Bank. pgs 53 – 82.

Iarossi, Giuseppe. (2006). "Chapter 4: A practical approach to sampling." In: *The Power of Survey Design: A User's Guide for Managing Surveys, Interpreting Results, and Influencing Respondents*. The World Bank. Read pages 95 – 104 & 110 – 115.

Deaton, Angus. (1997). Chapter 1: The Design and Content of Household Surveys." *The Analysis of Household Survey: A microeconometric approach to development policy.* pg. 9 – 22 & 40 – 61.

Reichman, Nancy, Irwin Garfinkel, Sara McLanahan, and Julien Teitler. "The Fragile Families: Sample and Design." *Children and Youth Services Review*. 23 (4/5): 303-326.

Assignment

Please read the required reading carefully. Then submit 2 – 3 questions about what you didn't understand from the readings via Blackboard. I will try to answer them in the lecture.

Justification for required readings

Grosh & Muñoz: This chapter provides a good introduction to sampling error, sampling units and weights. Reading this first will make reading Iarossi and particularly Deaton easier for students.

Iarossi: This reading proves a simple introduction to sampling. The selected pages define simple random sampling (SRS) vs. stratified sampling and provide formulas for determining sample size under each strategy. It gives formulas for common parameter estimates (sample and population means and variances). I would have the students skip the section on how to carry out

the sampling, since the information is a bit outdated (it assumes people choose their samples by hand). The second part of the reading deals with sample frame issues.

Deaton: This reading is the one we would spend the most time on in class. It seems to condense other work that I read on sampling without oversimplifying. It covers sample frames, coverage problems, strata and clusters, weights and inflation factors, and measurement error in panel studies. In addition, it discusses computing descriptive statistics from survey data. Finite population corrections and the superpopulation approach are discussed. Several formulas for means and variances from different types of surveys are presented. The chapter helps to build intuition about the statistics of survey data.

Reichman et al: This reading is included to get students thinking practically about how to use the tools described in the first three readings. In particular, I would want students to pay attention to how the researchers chose their sample and stratification procedure.

Outline of lecture

Sample frame:

- The "master list" of individuals or HH from which you select your respondents
- Sample frames in developing countries
    - Census
    - Voter lists
    - Multi-stage sampling with own listing
- The inference of a survey is only as good as the frame
    - LSMS don't claim to be able to say anything about nomads
    - Other examples of frame problems

Sample size/design:

- There is a tradeoff in the cost of collecting data precision of an estimate
- If we only wanted to find out one thing in a survey (say the mean no. of calories people eat) then we could design a survey for that project that had an informed tradeoff between sample size and precision
- But this isn't going to be the same tradeoff for all of the variables we're collecting
- The 100^{th} observation gets you a lot more precision than the 1000^{th}
- So often it is better to put more weight on practicality concerns
    - Keeping a design simple helps it get implemented properly in the field

How to choose respondents from frame:

- Expensive to run all over the country
    - Especially important for HH to be close to one another if you want to visit twice
    - Or if you want to back check the surveyors' work
- Might want to have supplementary community level data
    - Prices, facilities, etc.
- First stage sampling

    - Chose clusters of households to make it easier to interview them
    - These are called primary sampling units
    - How to chose PSUs by hand
        - Make a list of PSUs
        - Find a sampling interval (SI)
            - SI = # of HH/#of PSUs to be selected
            - Get a random number between 1 and SI (called RS- random start)
            - Write a sequence of #s by starting with the RS and continually adding the SI to it until you have as many numbers as PSUs needed
            - Select PSUs that have that numbered individual in the cumulative population count
- Then chose the respondents from censuses of the primary sampling units selected
    - Often the HH in the chosen clusters have to be listed
- A self-weighting design is one in which all of the HH have an equal chance of being included
    - Do that by choosing clusters with probability proportional to size.

Stratification

- Means choosing several samples, one for each subgroup
- If we know something about the subgroups we can eliminate between group variance, thus stratification improves the efficiency of estimates of statistics about the population
- Requires you to have good data about the populations ahead of time
- Stratification will reduce variance the most when stratum means are very different from each other, or there is not a lot of within strata variation
- Reduces the DEFF
- Deff: design effect
    - Ratio of the variance of an estimate to the variance that it would have under SRS
    - You can ask for this if you commission a survey
    - But it will be different for different indicators
- You stratify when you want to learn about a subgroup in the population, but if you were to randomly sample, the sample you get of the subgroup would be too small to say anything about
    - Stratification can also increase precision
        - Go over mean income example on pages 13 and 14

Weights:

- We use weight to account for differential selection probability
    - It can come from the design or deviations from the design
- How many people does this person stand for in the population?

$W_k=(N_k/n_k)$ where N is the total # of HH in domain K, and n is the # if HH sampled in domain K

- Should we adjust for PSU size after the fact?

Clustering:

- Refers to the upward adjustment of standard error of an estimate in order to account for autocorrelation of observations
- When there are clusters, or primary sampling units, each observation doesn't provide as much data as it would if there were randomly selected (give the "clones" example from Deaton reading)
    - Always needed when you have multi-stage sampling

Discussion

I will try to answer the students' questions about the material that we've covered

We will discuss how the Fragile Families study implemented some of the sampling techniques that were presented in the lecture.

8. Household surveys (6): Sampling, part 2

Objectives

1. To continue our discussion of sample design
2. To consider how sample design affects regression analysis and learn how to set up the survey data commands in Stata

Required Readings

Reread Deaton Chapter 1.

Deaton, Angus. (1997). "Chapter 2: Survey Design and Regressions." *The Analysis of Household Survey: A microeconometric approach to development policy.* [Please read the following sections: 2.1, 2.2, 2.3 through "Calculating quantile regressions" (Skip the technical note.) 2.7 through "Panel data from successive cross sections"]

StataCorp. (2011). "Introduction." Stata Survey Data Reference Manual: Release 12. College Station: Texas. [Please read pages 1 – 8 and then skim the rest of the introduction.]

Assignment

There is no assignment other than to read the readings carefully and bring any questions that you have to class.

Justification for required readings

Deaton 1997: This chapter discusses the implications of survey design for regression analysis. It will be a difficult read, I think, but it is worth taking a look at. I want the students to focus on the first few sections as an introduction to the thinking about whether and how regression analysis should account for survey design. The discussion of quantile regression provides important insights about what regression does, and illustrates how survey data can be analyzed in interesting ways.

StataCorp 2011: I would like the students to read the first part of the introduction to the Stata manual about using Survey Data. Not only will they then know where to go with questions about using Stata to analyze survey data, they will also have a sense of the level at which they need to understand the Deaton material in order to be able to successfully analyze survey data in Stata. In the assigned pages, StataCorp describes how to set up an analysis of survey data and then provides some examples.

Outline of lecture

This lecture will be based on the Deaton readings.

- Descriptive statistics from survey data
    - Finite populations and superpopulations
    - Description vs. modeling
    - Statistics vs. econometrics
- Calculating means
    - Probability weighted mean
- Calculating variance of a mean
    - Variance with probability weights
- Formulas for means and variances with stratification

* The students aren't expected to understand all of the formulas, but to develop some intuition about what Stata is doing in the survey mode, and to realize how difficult it might be to compute even basic statistics.

- The bootstrap
    - What is it?
    - Why might we want to use it?
- Weighting in regressions
- Regressions with clustered standard errors (focus on understanding table 2.1)
- Heteroskedasticity and quantile regressions
    - What is heteroskedasiticity
    - What is a quantile regression
        - Why might they be useful with survey data
- Cohort vs. panel data

Discussion

After the lecture, I will take whatever questions students have about the material.

Then, if there is time, we will talk about one of the examples from the Stata book. We will just practice setting up the data for use as survey data. The Stata website, http://www.stata-press.com/data/r12/svy.html, has these datasets available for download.

9. Household surveys (7): LSMS Case Study

Objectives

1) To practice the skills that we have learned in the question writing, questionnaire formatting and sampling classes

Required reading

Living Standards Measurement Survey—UP & Bihar Household Questionnaire. (1997-8). Available online: http://microdata.worldbank.org/lsms/index.php/ddibrowser/27

Schaffner, Julie Anderson. (2000). "Chapter 9: Employment." *Designing Household Survey Questionnaires for Developing Countries: Lessons from Ten Years of LSMS Experience*. Grosh, Margaret & Glewwe, Paul. (eds.) World Bank. pgs. 217 – 249.

Glewwe, Paul. (2000). "Chapter 6: Household Roster." *Designing Household Survey Questionnaires for Developing Countries: Lessons from Ten Years of LSMS Experience*. Grosh, Margaret & Glewwe, Paul. (eds.) World Bank. pgs. 135-141.

Assignment

After reading the UP & Bihar household questionnaire, write a one paragraph description of how you imagine one might draw the sample of 2,000 households that commonly take part in an LSMS survey. Then, for each section, critique the question writing and questionnaire formatting. What did the authors do well, what could have been done better? Your response should be no more than 3 double spaced pages.

Please post your answers to Blackboard 24 hours before class.

Justification for required readings

LSMS questionnaire: This questionnaire will be considered and critiqued by the class in their assignment and discussion. It includes a household roster, employment section, income section, housing section, facilities access questions, health questions, women's status questions, assets, and consumption.

Schaffner: This article is intended to help students critique the employment section of the LSMS Bihar and UP survey. It discusses the policy related reasons for collecting different kinds of employment data (many of which are included in this survey). It also discusses some question writing issues specific to employment, such as recall period and multiple sources of employment.

Students should not read this chapter uncritically, however, since it seems that not everything the author says applies well to the UP and Bihar LSMS.

Glewwe: This chapter will help students critique the household roster section of the assigned survey. It discusses how to decide upon and implement a definition of household membership.

Discussion

The students will first be invited to discuss sampling strategies (whether and how to use PSUs, whether to stratify, etc.) then to discuss their critiques of question wording and questionnaire formatting.

If there is time, we will talk about writing a consent script for this survey and choosing and training enumerators.

10. Community surveys (1): Indicators & Interviewing

Objectives

1) To become familiar with and evaluate ways of collecting community price data
2) To become familiar with and evaluate ways of collecting facilities data
3) To develop interviewing skills useful for interviewing community officials or training interviewers to do so

Required reading

Frankenburg, Elizabeth. (2000). "Chapter 13: Community and Pricing Data." *Designing Household Survey Questionnaires for Developing Countries: Lessons from Ten Years of LSMS Experience*. Grosh, Margaret & Glewwe, Paul. (eds.) World Bank. pgs. 315-338.

Singleton, Royce A. & Bruce C. Straits. (2005). "Interviewing." *Approaches to Social Research*. 4th edition. Oxford University Press: New York. pp. 251-257.

Patton, Michael Quinn. (1990). "Chapter 7: Qualitative Interviewing." *Qualitative Evaluation and Research Methods*. 2nd Edition. Sage Publications: Newbury Park, CA. [Read 277 – 290. Skim 291-324.]

Groves, R., Fowler, F., Couper, M., Lepkowski, J., Singer, E., & Roger Tourangeau. (2009). Sections 9.1 – 9.6 in *Survey methodology*. 2nd edition. Wiley: NJ. pgs. 291 – 314.

Recommended reading

Chambers, Robert. (1994). "The Origins and Practice of Participatory Rural Appraisal." *World Development*. Vol. 7 No. 22 pp. 953-969.

This reading is suggested for this week because students should be exposed to participatory rural appraisal, a common method for collecting community level data in developing countries. While we will not discuss it at length, it is good for those who collect data in developing countries to know about PRAs, since they are often used by governments, non-profits and research organizations to learn about community level phenomena.

Assignment

Imagine you are part of a team investigating the income elasticity of micronutrient intake in a small, developing city in India. (The income elasticity of micronutrient intake can be thought to answer the following question: What is the percent change in intake of micronutrient X

associated with a 1% difference in income?) In a response of no more than 2 pages, answer the following questions:

- What household level data would you collect to estimate this elasticity?
- Would community level data be helpful? What sort of data might you collect?
- What if your team thought that the income elasticity of micronutrient intake depended on spatial availability of fruits and vegetables? How might you test this hypothesis using "facilities" data?

Justification for required readings

Frankenburg: This chapter discusses why we might want to collect price data at the community level, and presents the challenges associated with this type of data collection. The author suggests both asking respondents of household surveys for prices of items in the consumption list, and surveying shopkeepers using standardized containers and scales. She also suggests asking household survey respondents where they shop in order to make the results of the market surveys more representative of the people in the household survey. The reader gets the impression that there has been little systematic research on the best ways to collect price data and that its collection depends in large part on how the data are going to be used. This reading also covers the collection of data about facilities, such as which facilities should be visited, and how information about those facilities should be gathered.

Singleton & Straits: This excerpt presents basic rules (courtesy, dress, confidentiality), and procedures (how to initiate the interview and ask questions). These authors take the position that interviewers should stick to a pre-formulated questionnaire with which they are thoroughly familiar, and that they should ask questions exactly as worded. They say that this reduces "response effects." In addition, the authors also mention the possibility of "interviewer cues" and of the importance of the setting of the interview.

Patton: Though this chapter describes several types of interviews in detail, it seems to advocate a less structured interview that that described by Singleton & Straits. In particular, the author feels that a less structured interview may help the researcher discover something he or she had not anticipated ahead of time. The chapter ends with tips for working with focus groups and in cross-cultural settings, which I am asking the students to skim.

Groves et al.: The Groves et al. reading discusses the role of the interviewer, interviewer related bias and interviewer variance. It also reviews the research on interviewer effects. Like Singleton & Straits, these authors argue fairly vigorously for standardized interviewing, though they do review "the controversy about standardized interviewing." Unfortunately, they make no special mention of interviewing community leaders.

Discussion

This class will not have a lecture. Rather, we will discuss the assignment. For each section, a student will offer to share his/her research plan, and the class will critique the plan.

For the time remaining, we will discuss the seeming paucity of research surrounding the collection of community data. We will try to identify possible problems with collecting such data (using the Frankenburg reading as a jumping off point). Then we will try to design experiments or other investigations that could fill these gaps in knowledge about collecting community level data. In particular we will consider:

1) How do we define a community? Why does it matter?
2) What constitutes a community level fact? When might we want to average household level responses? When might we want to take a different approach?
3) How is interviewing a community leader differ from interviewing a household?
4) How should we identify community leaders? How do the "leaders" change depending on the research topic?

The Singleton & Straits and Patton pieces will mainly be discussed in the next class, but I wanted students to begin reading them for this one in order to inform some of the conversation about interviewing.

11. Community surveys (2): The Mexican Migration Project Community Survey Case Study

Objectives

1) To discuss the MMP community survey in light of the Singleton & Straits and Patton readings
2) To apply what was learned about question writing, questionnaire formatting and interviewing to the MMP community survey

Required reading

"Mexican Migration Project: Data Inventory at the Community and Municipio Level." Available online: http://mmp.opr.princeton.edu/databases/pdf/comquest1999_eng.pdf

Massey, Doug. (1987). The Ethnosurvey in Theory and Practice. *International Migration Review*. Vol. 21, No. 4, Special Issue: Measuring International Migration: Theory and Practice. pp. 1498-1522.

Please also consult the website for the Mexican Migration Project to get a bit more background about the study, its design and objectives. This will help you complete the assignment. The site is: http://mmp.opr.princeton.edu/

If you have not already done so, please do the readings on interviewing from last class.

Assignment

Half the class will write a 1 page memo to the MMP investigators suggesting a switch from the current interview guide to a standardized community survey that words interviewer questions exactly. The other half the class will be assigned to write a 1 page memo defending the instrument in its current form. Feel free to cite the readings or look for additional readings to back up your claims.

On a separate page, discuss how you would train the interviewer to interview a municipal president about a small pueblo (the "community") in his municipality on the type of instrument you advocated for in the previous assignment. How might your training change if the interviewer were to speak with a delegate to the municipal council in the pueblo, or "community" that he/she represented. (Refer to the Wikipedia page on Mexican municipalities for more information about how municipalities fit into the governance system in Mexico: http://en.wikipedia.org/wiki/Municipalities_of_Mexico)

Please post your assignments at least 48 hours prior to the start of class.

Justification for required readings

MMP questionnaire: This questionnaire contains questions about the communities and the municipalities of people who took part in MMP household survey. Basically, it covers information about agriculture in the community, as well as other employment. It also seeks to gather information about "facilities" such as schools, health centers, markets, places of worship, athletic facilities and transportation.

Massey: This reading reviews the theory behind the ethnosurvey and the history of the Mexican Migration project. It should help students prepare their assignments to review it.

MMP website: Students are to browse the MMP website to help prepare them for the discussion.

Justifications for the other readings are provided above.

Discussion

The first part of the discussion will resemble a friendly debate between the group that argued for a standardized questionnaire and the group that advocating keeping the interview guide.

As an exercise, the students will be asked to turn some sections of the community survey into a standardized questionnaire. Students will be divided into groups, such that they are writing questions to be asked by more and less experienced interviewers to more or less local community leaders.

Thirdly, we will discuss the students' ideas for training surveyors on the two types of questionnaires.

Finally, we will briefly pick up the discussion from the previous class about what sort of research we could do that might help us decrease bias and reduce variance on the case study questionnaire.

12. Administrative records (1): Uses & Data quality issues

Objectives

1) To understand the importance of administrative records to social science research and to policy making
2) To develop an awareness of the potential data quality pitfalls of using administrative records in developing countries
3) To consider the transition to electronic records

Required reading

World Bank. (2000). *Managing records as the basis for effective service delivery and public accountability in development: An introduction to core principles for staff of the World Bank and its partners.* Available online: http://siteresources.worldbank.org/EXTARCHIVES/Resources/Core%20Principles.pdf [No need to read this document, skimming will give you the idea.]

Imbert, Clement & John Papp. (2011). "Estimating inflation in administrative figures using household survey data." Forthcoming in a book about the National Rural Employment Guarantee. Oxford University Press.

Khera, Reetika. (2011). "Trends in Diversion of Grain from the Public Distribution System." *Economic & Political Weekly*. Vol. XLVI No. 21 pp. 106 – 114.

Ellison GT, Richter LM, De Wet T, Harris HE, Griesel RD, McIntyre JA. (1997). "The reliability of hand-written and computerised records of birth data collected at Baragwanath hospital in Soweto." *Curationis*; (1):36-40.

If you have time, take a look at the following photo gallery, keeping in mind that the people in the pictures are the source of the administrative records that social scientists use in their research. http://www.janbanning.com/gallery/bureaucratics/

Assignment

Administrative records are a popular source of data with social scientists because they are often easier to obtain than survey data, or because they can be used to construct a sample frame for a survey. Referring to the readings, please write a two page response to the following questions and post your responses 48 hours before class begins.

1) What are some of the risks of using administrative data to evaluate social programs?
2) Suppose you were considering using electoral rolls at a sample frame to learn about seasonal labor migration in northwest India. What are some the pitfalls you anticipate?

How might you convince yourself that they were or weren't problematic for your analysis?

Justification for required readings

World Bank: Students should skim this reading. The paper was written by the International Records Management Trust in collaboration with the World Bank to serve as a primer about the importance and state of administrative records in developing countries. Basically, I think it will communicate to students the poor state and status of record keeping in poor countries, and introduce them to reasons why electronic management will not be a magic bullet.

Imbert & Papp: This reading compares participation in the National Rural Employment Guarantee Scheme, a rural public employment program in India, as reported in the administrative records of the scheme to reports of scheme participation in a nationally representative household survey. There are many ways to compare the figures from the two ways of reporting participation; the authors say that between 34% and 64% of the days of work reported in the administrative data shows up in the survey data. This should lead students to reflect on the possible errors and biases in both forms of data.

Khera: This reading is intended to provide another example of how records are often poorly kept, if at all. Khera tries to estimate diversion of grain from the public distribution system, a national food distribution program in India. This is difficult to do because many states do not keep accurate records of the grain that entered the system from different sources. Doing the best she can with central government data, Khera finds significant "diversion" of grain from the program, and heterogeneity among states.

Ellison et al.: This article based on researchers' experience with birth records in the Birth to Twenty longitudinal study of South African children and youth, makes two important points. The first is that administrative records are much like survey questions, in that simple information is much easier to collect and maintain that complicated information. The second is that computerized records will suffer from many of the pitfalls of handwritten records, and that during transition from one record system to another, additional error may arise in data entry.

Discussion

We will first review students' responses to the assignment. If there is time, we will also discuss the following questions:

- Let's further explore the introduction of electronic records systems. Looking at our list of "indicators" from handout 2, are there certain administrative records that would benefit from a quicker transition from paper to computer in poor countries? A slower transition?
- Both Papp and Khera suggest that corruption can be estimated by seeing how well survey data matches administrative data. Do you agree with this premise?

13. Longitudinal data (1): Introduction

Objectives

1) To introduce students to the purposes, designs and challenges of longitudinal research
2) To consider how collecting longitudinal data may be different in poor countries than rich countries

Required readings

Menard, Scott. (2002). *Longitudinal Research: Second Edition.* Sage Publications. pp. 1 – 50.

Harpham T, Huttly S, Wilson I, De Wet T. (2003). Linking public issues with private troubles: Panel studies in developing countries. Journal of International Development; 15(3):353-63. [Read pp. 1 – 21 in the copy we have.]

Assignment

Students will be asked to make, either individually or in groups, 5 – 7 minute presentations about the following topics based on the Menard reading:

1) How does Menard define longitudinal research, and what does he see as the purposes of using longitudinal data?
2) What are age effects? Cohort effects? Period effects?
3) How can/can't longitudinal data help us identify age, period and cohort effects?
4) What does Menard say is necessary for a causal relationship? What is Granger causality?
5) Contrast the "longitudinal panel" design with what Menard calls "not-quite-longitudinal" designs
6) What does Menard mean by prediction vs. genesis?
7) What are retrospective panels? Prospective panels? What are their associated pitfalls?
8) What are some problems/challenges associated with longitudinal data collection that don't apply to cross sectional work?

Justifications for required readings

Menard: This book will be the focus of the discussion. The author does a good job of explicating the main purposes for conducting a longitudinal study, separating age period and cohort effects and establishing causal relationships. He also discusses the types of longitudinal data (prospective panel, retrospective panel, repeated cross section, etc.), and the relative strengths and weaknesses of each.

Harpham et al.: This article presents a brief introduction to longitudinal studies in the context of developing countries. It does a good job of explaining some of the differences between collecting longitudinal data in poor vs. rich countries (choice of site, way of enrolling participants, follow-up, etc.).

Discussion

After hearing the presentations, we will discuss any questions raised by the presentations. If there is still time, we will discuss the Harpham reading. In particular, we will ask the question: How is longitudinal data collection in developing countries different than in wealthy countries?

14. Longitudinal data (2): Recall problems in longitudinal data collection

Objectives

1. To consider the possible biases that arise from recall problems in surveys
2. To help students identify and reduce recall problems

Required reading

Thomas, Duncan & James P. Smith. (2003). "Remembrances of things past: Test-retest reliability of retrospective migration histories", *Journal of the Royal Statistical Society*, Part A, 166.1:23-49.

Das, Jishnu, Jeffrey Hammer & Carolina Sánchez-Paramo. (2011). "The impact of recall periods on reported morbidity and health seeking behavior." *Journal of Development Economics*. Forthcoming.

Goldman, Noreen, Barbara Vaughan, and Anne R. Pebley. 1998. The Use of Calendars to Measure Child Illness in Health Interview Surveys. *International Journal of Epidemiology* 27:505-512.

Assignment

Pick one of the two scenarios and write a 1 – 2 page reflection about it. We will discuss them in class.

1) Imagine you are collecting data about respiratory infections among children under 5 in rural Northeast Brazil. You believe that the median woman in your sample will have 5 years of education. What reporting period should you use? Will your survey instrument include a calendar? Why or why not? What will your calendar/questions look like?
2) Imagine you are collecting data about migration from a slum in the Dominican Republic. You know that many people travel to the US, Puerto Rico and Spain, and that there is a lot of circular migration. How would you find respondents for this survey? What time window would you use? How might you help reduce recall problems?

Justifications for required reading

Thomas & Smith: This unique paper matched retrospective life history data collected from individuals who had also participated in two waves of the Mexican Family Life Survey. They found that recall of migration was better for the better educated and for more salient moves. Data about migration improves when surveyors link it to salient events. The authors have

specific recommendations for collecting retrospective migration data, including separating questions about long trips and short trips, linking migration to employment for men and family events for women, and asking whether the person was accompanied.

Das et al.: The authors find that reporting of illness differs depending on recall period among the residents of New Delhi, India. In particular, people report less illness if they are asked to report on their health over the past month than over the past week. There is a difference the week vs. month discrepancies by wealth; indeed poor people appear sicker than rich people when a week period is used, and healthier than rich people when a month is used. The authors suggest that in this case, a week period is the superior reporting period, and that the results of their analysis suggest that the poor suffer disproportionately from illness, see the doctor more, and pay proportionately more for health care, despite its poor quality.

Goldman et al.: The authors suggest the use of calendars as a tool for collecting better data about childhood diarrhea. They find that mothers interviewed about their child's health using the calendar method reported one more symptom in the last two weeks on average. The authors believe that there are still memory problems associated with this tool. Nor is it clear how the calendars work to improve reporting.

Discussion

After asking students to summarize the main findings of each of the articles, we would discuss the students' assignments. Other students would be asked to comment on the strengths and weaknesses of their classmates' designs.

15. Longitudinal data (3): Attrition from panels

Objectives

1) To understand the challenges posed by attrition, the possible responses to attrition and the consequences of those responses
2) To be able to convincingly defend for a strategy to deal with attrition

Required reading

Thomas, Duncan, Frankenburg, Elizabeth & Smith, James P. (2001) "Lost but not forgotten: Attrition in the Indonesian Family Life Survey." *Journal of Human Resources*, 36(3): 556-592.

Thomas, Duncan, Andrea Velasquez, Maria Genoni, Luis Rubalcava and Graciela Teruel. (2010) "Attrition in longitudinal surveys: Evidence from the Mexican Family Life Survey," Working Paper. Available: http://mitsloan.mit.edu/neudc/papers/paper_322.pdf *Please read the conclusion and look at the tables.*

Thomas, Duncan, Firman Witoelar, Elizabeth Frankenberg, Bondan Sikoki, John Strauss, Cecep Sumantri & Wayan Suriastini. (2011). "Cutting the costs of attrition: Evidence from the Indonesia Family Life Survey", forthcoming in *Journal of Development Economics*.

Assignment

You are helping to design the Ecuadorian Family Life Survey, modeled after the Indonesian and the Mexican Family Life Surveys. Funders from the World Bank, and the government of Ecuador, think it is too expensive to track people who have moved out of the study villages. Using evidence from the readings, write a 1 – 2 page memo arguing that the study should budget for tracking.

Justifications for required reading

Thomas et al. 2001: This article discusses the attrition between the first two waves of the Indonesian Family Life Survey (IFLS). It describes the protocols the survey managers set up for tracking respondents and the observable determinants of baseline non-response, moving between the waves, and attriting. Throughout this paper the authors stress the importance of tracking individuals who move out of the study site, and the benefits it has for the validity of conclusions relative to the costs of tracking. In the study and time period in question, tracking caused a 72% reduction in attrition, and only cost 15-20% more than a second interview with someone who had not moved.

Thomas et al. 2010: This article is a study of attrition in the Mexican Family Life Survey. I would only have the students read the conclusion and the tables for this paper, since there is a lot of repetition from the previous work, and the novel points are best illustrated in the tables. In

particular, the authors find that attrition from the MexFLS was not random, and that adjusting for factors that are normally observed in the baseline will not correct the problem. The authors use some attitudinal variables (how safe do you feel, how much are you worried about being robbed) to show that movers and non-movers are likely to be different on more dimensions than the ones that are normally observed.

Thomas et al. 2011: This paper illustrates the importance of interviewer and interview characteristics to the problem of attrition. The authors show that certain characteristics of the interviewer and the baseline interaction are significant predictors of attrition or refusal in subsequent waves. This is a nice extension of the idea that attriters and non-attriters are different on a wide range of characteristics. An important finding is that there is a positive and significant relationship between length of baseline interview and probability of retention in the study, but controls for age make this effect disappear.

Discussion

First, we will discuss the memos students have written. If there is time, we will discuss the following questions:

- What steps can be taken during the set up and first wave of a survey to minimize attrition?
- Discuss the role of surveyors and survey staff in minimizing attrition.
- If the budget of the Ecuador Family Life Survey were fixed, how much sample size would you be willing to give up to have the money to track movers? Even if we can't answer this question now, how would we begin to think about it? How else, other than sample size reduction, might you be able to save money?
- Suppose you are collecting a panel of households (as in, say, the India Human Development Survey). How does the definition of a household affect your attrition, and how do you think about "tracking movers" in this case? [Consider that India is a country with a lot of patrilocal marriage, and large, joint families.]

16. Longitudinal Data (4): Health Surveys—Indicators & Data Quality

Objectives

1. To understand some of the challenges to data quality in longitudinal health data
2. To consider which tools—questionnaire formats, focus groups, surveyor training or monitoring—might improve data quality for the indicators (contraception and birth weight) studied

Required reading

Goldman, Noreen, Ansley J. Coale and Maxine Weinstein. (1979). "The Quality of Data in the Nepal Fertility Survey." World Fertility Survey Scientific Report No. 6.

Goldman, Noreen, Lorenzo Moreno and Charles F. Westoff. (1989). "Collection of Survey Data on Contraception: An Evaluation of an Experiment in Peru." *Studies in Family Planning* 20(3): 147-157.

Moreno, Lorenzo and Noreen Goldman. (1990). An Assessment of Survey Data on Birthweight. *Social Science and Medicine* 31(4): 491-500.

Robles, Arodys and Noreen Goldman. (1999). "Can Accurate Data on Birthweight be Obtained from Health Interview Surveys?" *International Journal of Epidemiology* 28:925-931.

Assignment

Students will be assigned to discuss one of the following three papers in 2 pages: Goldman et al., 1989, Moreno & Goldman, 1990 or Robles & Goldman, 1999. Answer the following questions in the write-up:

1. Summarize the main claims of the paper
2. Do you find the authors' claims convincing based on the evidence they present
3. If you could go back and collect more/different data to support the authors' arguments, what data would you collect?

Please post your answers 24 hours before class.

Justification for required reading

Goldman et al., 1979: Both for its content and "historical" value, this is an important reading for the course. The authors, who worked to develop the World Fertility Surveys, which later

became the Demographic and Health Surveys, assess the quality of data in the 1976 Nepal Fertility Survey. They give evidence for three types of quality problems—misreporting of age and duration, displacement of vital events and omission of vital events—in the marriage and fertility data they've collected. They also discuss some post-collection analysis tools (such as the use of the SMAM statistic) to deal with some of these quality-related problems.

Goldman et al., 1989: This article presents an experiment in which some respondents to the 1986 Peru DHS were randomly assigned the standard DHS questionnaire, or an experimental questionnaire. One of the differences between the two questionnaires was that the experimental questionnaire used a calendar to help respondents and interviewers remember and record information about contraception. The authors found that women who used the experimental questionnaire reported more kinds of contraception, and heaped the duration of their contraception use less.

Moreno & Goldman, 1990: The authors ask whether subjective retrospective maternal assessments of a child's birth size can help determine the incidence and correlates of low birth weight. They find using numerical weights when there is a lot of missing data, as there often is in poor countries where many deliveries take place outside of clinics, leads to biased estimates of low birth weight incidence and its correlates. Using the limited data they have, they argue for collecting subjective retrospective maternal reports of size.

Robles & Goldman, 1999: This paper is an excellent addition to the class because it illustrates ideas discussed in previous classes. The authors examine the plausibility of birth weight data from Latin America from the 1990s. They find that mean birth weights are implausibly high, and suggest reasons for the bias. The article brings up important points about comparability of surveys, and the need for focus groups and field tests of survey questions, and suggests the need for close survey management by scholars.

Discussion

The students will break into three groups, based on the papers that they wrote about in their assignments. They will discuss their critiques of the articles with one another, and then present their responses to the class. The other groups will be expected to ask questions about the presenters' assessments of the research and suggestions for improvement.

17. Longitudinal data (5): Introduction to Measuring Nutrition

Objectives

1. To understand that there are many ways to assess nutrition depending upon the question of interest
2. To understand which tools are available to assess nutrition based on the question of interest
3. To understand some of the challenges associated with using each tool
4. To consider measuring the nutrition of individuals

Required readings

Gibson, Rosalind. (2005). "Chapter 1: Introduction." *Principles of Nutritional Assessment*. Oxford University Press: New York. pp. 1 – 26.

Gibson, Rosalind. (2005). "Chapter 3: Measuring Food Consumption of Individuals." *Principles of Nutritional Assessment*. Oxford University Press: New York. pp. 41 – 64.

Gibson, Rosalind. (2005). "Chapter 4: Assessment of Nutrient Intakes from Food Consumption Data." *Principles of Nutritional Assessment*. Oxford University Press: New York. pp. 65 – 68.

Gibson, Rosalind. (2005). "Chapter 5: Measurement Errors in Dietary Assessment." *Principles of Nutritional Assessment*. Oxford University Press: New York. pp. 105 – 128. [Please skim this chapter.]

Steyn NP, Senekal M, Norris SA, Whati L, Mackeown J, Nel JH. (2006). "The development and testing of two-dimensional drawings and 3-dimensional food models to estimate food portion size in 12-13 year old children in the Birth to Twenty cohort in Johannesburg." *Asia Pacific Journal of Clinical Nutrition*. 15:35-42

Assignment

Students will be pre-assigned to do a 10 – 12 minute mini-lectures on each of the following topics:

1. Discuss the four types of assessment systems the author describes in Chapter 1, and which of the four "methods" (dietary, laboratory, anthropometric and clinical) for assessing nutrition are appropriately used with which assessment systems.
2. In nutritional assessment, what is meant by the following terms: validity, reproducibility, accuracy? Be sure to highlight how validity is different from accuracy. Also, discuss ways to improve how a measure performs on these qualities.

3. In nutritional assessment, what is meant by the following terms: sensitivity, specificity, prevalence, predictive value? How do cutoff points affect sensitivity and specificity? Explain the relationship between prevalence and predictive value.
4. In nutritional assessment at the population level, what is the purpose of a reference distribution? How are they made? How are reference limits different from cutoff points? What is an ROC curve?
5. Discuss the methods of assessing individual food intake presented in section 3.1. What sorts of questions is each method designed to answer? What are the challenges associated with each method?
6. What technologies can be used to help improve measurement of individual food intake? Discuss the methodology and findings of the Steyn et al. reading. Do you think their evidence supports their conclusions?
7. Discuss the four "levels" of objectives Gibson describes in section 3.3 (mean nutrient intake in a group, proportion of a population that is "at risk", ranking nutrient intakes of individuals in a group, using intake data for correlation or regression analysis). What sort of data is needed to collect each of these "levels" of information? Be sure to touch on some of the research the author discusses.
8. Discuss the advantages and disadvantages of each way of assessing nutrient composition of food intake that the author describes in the assigned pages of Chapter 4.
9. Pretend that you are giving a presentation to employees of the Ministry of Public Health in the Dominican Republic about a nationally representative dietary assessment you are leading in that country to learn about the quality of the population's diet. Based on your reading of Chapter 5, how will you design your survey to minimize measurement error.

Justification of required readings

Gibson 2005, Chap 1: Gibson's book, Principles of Nutritional Assessment, is an excellent resource for students considering collecting nutritional data. In the first chapter, she discusses four types of nutrition assessment "systems," as well as different methods of collecting nutritional data. She also highlights some of the aspects of data quality that both producers and users of nutritional data should consider.

Gibson 2005, Chap 3: This chapter talks about how to collect food intake data from individuals, with a focus on the 24-h recall method. The author highlights some of the "technologies" available to improve the quality of 24-h recall surveys, and some of the special issues to consider when doing 24-h recall surveys in poor countries. Finally, readers are encouraged to consider which kinds of individual intake data are best used to answer which types of questions.

Gibson 2005, Chap 4: I've only assigned a few pages of this chapter on assessing nutrient content of food intake surveys. While this reading certainly would not fully prepare students to do nutrient content analysis (indeed, in some cases this can only be done by trained chemists), it at least gets students to question which method(s) was/were used when working with nutritional data, and to understand some of the possible pitfalls of those methods.

Gibson 2005, Chap 5: The author discusses some important sources of measurement error in nutritional assessment, with a focus on individual intake surveys. Students are asked to skim this

chapter because many of the sources of measurement error discussed (non-response bias, interviewer bias, social desirability bias) also pertain to other types of surveys that we have studied.

Steyn et al. 2006: This study tested whether South African adolescents were able to select correct dietary aid portion sizes after being show a real plate of food. The authors find that black adolescents perform equally well using graduated models or photographs, but that white adolescents perform better when using food models. The short article is an example of research that could have informed the Gibson textbook.

Discussion

We will do 6 or 7 of the mini-lectures during this class.

18. Longitudinal data (6): Measuring Nutrition II

Objectives

1. To draw a distinction between "nutrition" and "food security"
2. To consider how national level food production and consumption data might be collected
3. To consider the usefulness of aggregate food production/consumption statistics for studying the health of populations

Required readings

Gibson, Rosalind. (2005). "Chapter 2: Food Consumption at the National and Household Levels." *Principles of Nutritional Assessment*. Oxford University Press: New York. pp. 27 – 40.

Barrett, Christopher. "Chapter 40: Food Security and Food Assistance Programs." Handbook of Agricultural Economics, Volume 2. Gardener, B & G. Rausser, eds. pp. 2013 – 2190. [Please read sections 1 – 2.1, pp. 2013 – 2019.]

Evenson, Robert E. & Pray, Carl E. (1994). "Measuring food production (with reference to South Asia)." *Journal of Development Economics*, Vol. 44. Issue 1. pp. 173-197.

Smith, Lisa. (1998). "Can the FAO's measure of chronic undernourishment be strengthened?" *Food Policy*. Vol. 23 No. 5. pp. 425 – 445.

Recommended reading

Svedberg, Peter. (2000). "Characterization and measurement of undernutrition: Controversies and consensus." Chapter 2 in *Poverty and undernutrition: Theory, measurement and policy*. Oxford University Press: Oxford, England.

This chapter contrasts the two main indicators for malnutrition that we will discuss, calorie/food availability based estimates and anthropometric measures. It also introduces the "genetic potential paradigm" and the "adjustment and adaptation paradigm" of undernutrition. I didn't want to require it because there is already a lot of reading for the nutrition section, but for folks interested in measuring undernutrition, it is well worth looking at this book.

Assignment

There is no assignment for this class, other than to be prepared to discuss the new readings, and to make your presentation if you have not yet done so.

Justification for required readings

Gibson 2005, Chapter 2: This chapter discusses nutrition assessment on a societal or national level. It reports on the FAO's construction of food balance sheets and the errors inherent therein. It also discusses total diet surveys, used to look at intake of toxins or chemicals, and market based surveys used to look at the diets of particular groups of people. There is also a section on measuring food consumption at the household level.

Barret: I assigned the first few pages of this *Handbook of Agricultural Economics* chapter because the author clearly outlines the conceptual issues that students will have to struggle with as they consider how to measure nutrition. The author discusses the difference between food security and malnutrition and invites readers to reflect of which indicators of each are most useful and easy to obtain.

Evenson & Pray 1999: The authors begin by outlining the accounting relationship that holds for food production, namely that production, imports and stocks of a given food in a given year equals that amount of food in household consumption, feed, seed, industrial uses and waste. They go on to discuss the difficulties of measuring these indicators in developing countries, and the history of their collection in South Asia. In particular, the authors call attention to the need for objective methods of measuring production, since local officials often have strong incentives to misreport production in their regions.

Smith 1998: This article explains the Food and Agriculture Organization's (FAO) estimate of the number of chronically undernourished people in the world. The author suggests that the FAO's methods are lacking in that they rely only on production estimates (which Evenson and Pray have explained are often questionable), reflecting food availability, rather than people's access to or consumption of food. I think this article provides a good application of some of the ideas brought up in Barrett 2002.

Discussion

We will finish the presentations that we did not get to in the last class. This should take 40 – 45 minutes.

Then, we will discuss the readings for this class, guided by the following questions:

1. Describe how the FAO makes food balance sheets and some of the challenges therein. How do these challenges differ in poor and rich countries?
2. What distinctions does Barrett draw between nutrition and food security? How is measuring one different from measuring the other?
3. Based on your reading of Evanson & Pray, how could statistics bureaus in South Asian countries improve the quality of their production data?
4. Suppose we believe Smith that food availability-based measures of undernourishment are inadequate for international comparisons. Which measures should we prefer?

19. Longitudinal data (7): Measuring Nutrition III

Objectives

1. To consider the usefulness of anthropometric indicators for assessing population health, particularly in developing countries
2. To learn how to collect indicators of body size
3. To consider what sources of error or bias might arise in making these measurement

Required readings

Gibson, Rosalind. (2005). "Chapter 9: Anthropometric Assessment." *Principles of Nutritional Assessment*. Oxford University Press: New York. pp. 234 - 244.

Gibson, Rosalind. (2005). "Chapter 10: Anthropometric Assessment of Body Size." *Principles of Nutritional Assessment*. Oxford University Press: New York. pp. 245 - 257.

Gibson, Rosalind. (2005). "Chapter 13: Evaluation of Anthropometric Indices." *Principles of Nutritional Assessment*. Oxford University Press: New York. pp. 335 -352.

Alderman, Harold. (2000). "Chapter 10: Anthropometry." *Designing Household Survey Questionnaires for Developing Countries: Lessons from Ten Years of LSMS Experience*. Vol. 1. Grosh, Margaret & Glewwe, Paul. (eds.) World Bank: Washington, DC. pgs. 251 – 272. [Please skim this reading.]

Thomas, Duncan & John Strauss. (1996). "Measurement and mismeasurement of social indicators", *American Economic Review*, 86.2:30-34.

Assignment

A NGO is planning to open a health clinic for mothers and children in a slum of New Delhi. They are hoping to be able to address widespread malnutrition in these populations. In no more than 2 pages, describe how you would design a study that would help them plan the programs for the clinic. Which anthropometric indicators would you collect, which indices would you construct and how would you explain them to program staff?

Justification for required readings

Gibson 2005, Chapter 9: This chapter covers the basics of collecting anthropometric indicators. The author discusses types of measurement error that are specific to anthropometric indicators and defines indicators of quality such as the "technical error of measurement" and the "coefficient of reliability." The chapter also covers how to best use a team of surveyors to collect anthropometric data and describes some of the important debates around reference data.

Gibson 2005, Chapter 10: This chapter presents the most important anthropometric indicators of body size, including head circumference, gestational age, recumbent length, height, knee height, leg length, arm span, weight and elbow breadth. It also discusses the main indices that can be constructed from this data, such as weight for age, weight for height and height for age, as well as the interpretations of these indices.

Gibson 2005, Chapter 13: This chapter goes into greater detail about anthropometric indices. It describes how they can be expressed in terms of Z scores, percentiles, or as percent of a median. The author also talks about how the indices can be used in clinical settings or in public health or populations studies applications.

Alderman 2000: This chapter on the Living Standards Measurement Surveys does not give as much detail as the Gibson book, but looks at the task from the perspective of someone collecting data in poor countries, for the purpose of understanding what is happening in the population. For this reason, it is worth skimming. The chapter also suggests data that should be collected alongside anthropometric indicators in order to analyze nutritional status in poor countries.

Thomas & Strauss 1996: This short article presents some of the challenges of collecting demographic data. It briefly touches on comparability of surveys and how respondents' interpretations of survey questions differ by socioeconomic status. Then, the authors focus on a discussion of parent-reported vs. measured anthropometric indicators amongst US children. The authors suggest that it will not always be possible to take anthropometric measures and suggest more research into the fallibility of self-reports.

Discussion

For the first half hour, I will lecture on the more technical ideas from the Gibson readings, and will touch on the following topics:

- Measurements and common errors following table 9.1 and 9.2 on pgs. 235 & 236.
- Calculating the following measures of precision:
    - Technical error of the measurement
    - Percentage technical error
    - Coefficient of reliability
- What is reference data and debates surrounding it
- Percentiles, z-scores, percent of median as ways of interpreting indices
- Interpretations of
    - Weight for height
    - Height for age
    - Weigh for age
- Interpreting combinations of anthropometric indices, following table 13.6 on page 347

Then, students will discuss their assignment, with the goal of reaching consensus about how to undertake the study. Finally, if there is time, we will discuss how the Thomas and Strauss piece questions the "objectivity" of anthropometric indicators, and whether it is true that, as the authors suggest, we often have to rely on self-reports.

20. Longitudinal data (8): Biomarkers and self-reported health

Objectives

1. To learn what biomarkers are and which have been successfully collected for use in population based research
2. To consider the difficulties of interpreting the biomarkers we collect
3. To consider how self reports, others' reports and biomarkers can contribute to our understand of health in human populations

Required readings

Lindau, Stacy Tessler & Thomas McDade. (2008). "Minimally invasive and innovative methods for biomeasure collection in population-based research" *Biosocial Surveys.* James Vaupel, Maxine Weinstein & Kenneth Wachter (eds.) National Academies Press: Washington, D.C. pp. 251 - 277.

West-Eberhard, Mary Jane. (2008). "Are Genes Good Markers of Biological Traits?" *Biosocial Surveys.* James Vaupel, Maxine Weinstein & Kenneth Wachter (eds.) National Academies Press: Washington, D.C. pp. 175 - 193.

Thomas, Duncan & Elizabeth Frankenburg. (2008). "Collecting and utilizing biological indicators in social science surveys" *Biosocial Surveys.* James Vaupel, Maxine Weinstein & Kenneth Wachter (eds.) National Academies Press: Washington, D.C. pp. 149-56.

Thomas, Duncan et al. (2004). "Causal effect of health on labor market outcomes: Evidence from a random assignment iron supplementation intervention." California Center for Population Research Online Working Paper Series. Available online: http://escholarship.org/uc/item/1h66k92r

Smith, Kimberly and Noreen Goldman. (2011) "Measuring Health Status: Self-, Interviewer- and Physician-Reports of Overall Health." *Journal of Aging and Health.* vol. 23 no. 2. pp. 242 – 266.

Recommended reading:

Bearman, Peter. (2008). "Introduction: Exploring genetics and social structure." *American Journal of Sociology*. vol. 114 Supp. pp. v – x.

This article is the introduction to the AJS' special issue on genetics in sociology research. It lays out the purpose of the special issue and talks about each of the papers. Students interested in this topic may want to look at this issue to learn more.

Assignment

There is no assignment for this class. Just come to class having read the assigned readings and prepared to discuss them.

Justification for required readings

Lindau & McDade 2008: This article provides students with an introduction to what biomarkers are, why they might be interested in collecting them, and how to collect common biomarkers. The authors argue that many biomarkers are relatively easy to collect in the field given a well trained survey team and available technology. The authors use anthropometrics, grip strength for muscle strength, accelerometry for measuring physical fitness, and dried blood spots, urine and saliva for disease screening and measurement of cortisol levels, as examples of biomarkers that have already been successfully collected in the field.

West-Eberhard 2008: This article calls into question what it means for humans to have a "gene for" something. It is an important reading for social scientists interested in working with biomarkers because it illustrates the complexity of thinking about genes and their correlates. The article describes circumstances under which it is likely that an analysis looking at gene – trait correlations will be successful and the circumstances under which it may not be.

Thomas & Frankenburg 2008: This article is optimistic about the prospect of including biomarkers in population surveys. It describes a randomized trial of iron supplementation done in Indonesia that reportedly found wages of self-employed men to increase among those who received supplementation. The next reading on the list is the paper that came out of this study.

Thomas et al 2004: The authors claim to have found a causal effect of iron supplementation on labor productivity. The authors describe a careful experiment in which participants were given iron supplements in an observed setting for a long period of time (controls were given placebo pills). Despite the scale of the study, a close look at the results suggests that the impacts of the supplementation were surprisingly small, with mean hemoglobin levels of treatment and control groups not statistically significantly different from one another eight months after the start of the study. This study suggests to me that the collection of biomarkers by social scientists must be treated with care, as there is still a lot that is not understood about human biology.

Smith & Goldman 2010: This paper illustrates how reports of health (whether by a physician, respondent or interviewer) are based on the information that the person reporting has at hand. Because of this, respondent, interviewer and physician reports of health seem to capture different aspects of health. In particular, the authors argue that interviewer reports of health would be an easy and useful question to add to most surveys that collect self reported health.

Discussion

1. According to Eberhard, what does it mean that someone has a "gene for a trait"? What are the criteria that need to be satisfied before Eberhard considers there to be a

"dependable single-locus genetic marker for a phenotypic trait"? Do social scientists have any business collecting information about and talking about genes?

2. Discuss the Thomas et al. experiment. Assess their supplementation protocol. What do you make of their finding that wages increased among self-employed males who were self-employed? What questions does this study raise about the challenges of using biomarkers in social science research? Be sure to make reference to the graphs and tables in the article.
3. Describe Smith and Goldman's main findings. Do you agree with them that interviewer assessments of health are particularly useful given their low cost? Do you think interviewers could give a good assessment of respondents' mental health?
4. Suppose you wanted to study the effects of Medicaid provision on participants' health. What sorts of indicators would you collect—biomarkers? Self reports? Others' reports?

21. Longitudinal data (9): Case studies of cohort studies

Objectives

1. To critically evaluate a cohort study in terms of its objectives, study design, questionnaires, how it dealt with a attrition and ethical challenges

Required readings

***** Please read your group's readings thoroughly and skim through the other group's readings so you will be prepared to ask them questions.

Group 1:

Yach D, Cameron N, Padayachee N, Wagstaff L, Richter L, Fonn S. (1991) Birth to ten: child health in South Africa in the 1990s. Rationale and methods of a birth cohort study. Paediatric and Perinatal Epidemiology; 5(2):211-33.

Norris SA, Richter LM, Fleetwood SA. (2007) "Panel studies in developing countries: case analysis of sample attrition over the past 15 years within the Birth to Twenty Cohort in Johannesburg, South Africa." *Journal of International Development*. 19:1143-1150

"Birth to Twenty: Delivery Form." University of Witwatersrand & Department of Pediatrics and Child Health, South Africa. Available online: www.wits.ac.za/birthto20

"Birth to Twenty: 3 Months Growth Data Collection Form." University of Witwatersrand & Department of Pediatrics and Child Health, South Africa. Available online: www.wits.ac.za/birthto20

"Birth to Twenty: Year One – Core Questionnaire." University of Witwatersrand & Department of Pediatrics and Child Health, South Africa. Available online: www.wits.ac.za/birthto20

"Birth to Twenty: Five Year Questionnaire." University of Witwatersrand & Department of Pediatrics and Child Health, South Africa. Available online: www.wits.ac.za/birthto20

Group 2:

Shepherd, Peter. (1995). "An Introduction to the Origins of the Study and the Methods of Data Collection." NCDS User Support Group Working Paper 1. Social Statistics Research Unit – City University.

"Perinatal Mortality Survey 1958." National Child Development Study, Centre for Longitudinal Studies. Available online: http://www.cls.ioe.ac.uk/studies.asp?section=00010002000300120001

"NCDS 1 1965." National Child Development Study, Centre for Longitudinal Studies. Available online: http://www.cls.ioe.ac.uk/studies.asp?section=00010002000300120001

"NCDS 2 1969." National Child Development Study, Centre for Longitudinal Studies. Available online: http://www.cls.ioe.ac.uk/studies.asp?section=00010002000300100001

Assignment

Read the assigned materials carefully and come to class prepared to discuss the following topics:

1. What do the authors of the overview papers claim are the objectives of the study?
2. Discuss the study design and the questionnaires. How well do you think their study design and questionnaires help researchers achieve their objectives?
3. How do the researchers try to prevent attrition? Should they have done anything differently?
4. What ethical challenges did the researchers face in designing and implementing this cohort study? Would you have suggested they do something differently?
5. What do you think this study did particularly well? Can you suggest any improvements to the questionnaires or study design that would help the researchers better achieve their goals?

Justification for required readings

Yach et al.: This paper discusses the origins of the birth to ten study in Soweto, Johannesburg. In particular, this reading stresses the hypotheses that researchers working on the study wanted to investigate. The reading highlights the importance of doing a lot of background research before establishing a longitudinal study and of having a "theory of change."

Norris et al.: This reading is intended to provide a contrast to the Thomas et al. readings in that it is a cohort study, not a household survey, and the attrition in this study is much higher. In addition, it makes a nice distinction between periodic and absolute attrition, the consequences of which will depend on the research question.

Birth to Twenty questionnaires help the students complete the assignment.

Shepherd: This reading is meant to bring the panel study to life. It is a discussion of the origins, objectives and methods of data collection for the British Cohort Studies, with a particular focus on the 1958 cohort. There is a lot of detail about what types of questions were asked and by whom. The reading also talks some about the politics of running a longitudinal study.

NCDS questionnaires help the students complete the assignment.

Discussion

For the first half hour, students will plan their discussion with their groups. Then, each group will have an hour to report on the answers to the questions asked, and the other group will have the opportunity to ask questions.

22. Introduction to vital records & cause of death data

Objectives

1. To understand the availability of vital records and mortality and cause of death information around the world
2. To understand the methods by which one could obtain mortality and cause of death information in poor countries & the pros and cons of these methods

Required readings

Cleland, John. (1996). "Demographic data collection in less developed countries 1946 - 1996." *Population Studies*. vol. 50 i. 3 pp. 433 – 450. [Focus on parts about vital statistics.]

Mahapatra, P., K. Shibuya, A.D. Lopez, F. Coullare, F.C. Notzon, C. Rao, and S. Szreter. (2007). "Civil Registration Systems and Vital Statistics: Successes and Missed Opportunities." *Lancet*. vol. 370 i. 9599 pp. 1653 – 1663.

Reniers, Georges, Masquelier, Bruno & Gerland, Patrick. (2011). "Adult mortality trends in Africa." *International Handbook of Adult Mortality*. Springer. Forthcoming.

Mahapatra, P. & P.V. Rao. (2001). "Cause of death and reporting systems in India: A performance analysis." *National Medical Journal of India*. vol. 14 i. 3 pp. 154 – 162.

Mathers, Colin D., Ma Fat, Doris, Inoue, Mie, Rao, Chalapati, Lopez, Alan. (2005). "Counting the dead and what they died from: an assessment of the global status of cause of death data." Bulletin of the World Health Organization. 83: 171-177. [Skim focusing on cause of death.]

Recommended reading

Hill, Kenneth. (2001). "Methods for Measuring Adult Mortality in Developing Countries: A Critical Review." Submitted for publication.

This paper will illustrate to students how the different kinds of data discussed in the other readings could be used to calculate adult mortality. The author tries to calculate adult mortality in a variety of ways from Guatemalan data and suggests combining methods to best estimate adult mortality.

Obermeyer, Zaid; Rajaratnam Julie Knoll; Park, Chang H.; Gakidou, Emmanuela; Hogan, Margaret C.; Lopez, Alan D.; Murray, Christopher J. L. (2010). "Measuring Adult Mortality Using Sibling Survival: A New Analytical Method and New Results for 44 Countries, 1974–2006." PLoS Medicine. April 2010.

This paper is intended to further expose students to uses for adult mortality data. In particular, the authors use the sibling survival method in a new way to measure adult mortality.

Assignment

The Republic of South Sudan has received a large grant from the World Bank to produce adult mortality and cause of death estimates. You have been asked to help the statistics bureau decide how to produce the estimates. Write a memo of no more than 2 pages outlining the pros and cons of the following options:

1. Model fitting from infant and child mortality data
2. Using the sibling survival method in a household survey
3. Using the sibling survival method in the next census
4. Setting up a sample registration system
5. Starting a universal vital registration system

Justification for required readings

Cleland 1996: This article describes the state of demographic data collection in the late 1940s in the developing world and goes on to talk about how little has changed in those systems in the past 50 years. Readers are reminded of the ways that vital events data could be collected, and different countries' strategies for trying to collect this data are discussed.

Mahapatra et al. 2007: This paper provides an assessment framework to help readers think about how to evaluate a country's vital registration system. In particular, table 1 does a nice job of laying out what "quality" means in vital statistics, and panel 1 provides a nice glossary of terms. Table 2 and table 3 present summary statistics about vital registration systems around the world.

Reniers et al. 2011: This paper's contribution to the course is to both outline the different data used to calculate adult mortality in sub-Saharan Africa, where complete vital records do not exist, and to describe the most probable trends in adult mortality in the region in the last 30 years. Our class discussion will focus on the different methods of estimating adult mortality, including the Brass method, the sibling survival method and the corrected sibling survival methods, and their data requirements.

Mahapatra & Rao 2001: The authors report on the state of the sample registration system (SRS) in India. Unlike Cleland, whose review of the system was very positive, these authors claim that the SRS is in sore need of improvement. They find poor coverage of cause of death data and long delays in publication. They suggest improving the training of medical staff, giving more responsibility to the states and levying fines against those states that do not produce high quality data.

Mathers et al. 2005: The authors discuss the poor coverage of vital registration systems around the world and the poor quality and quantity of cause of death data. They suggest that more countries which lack the resources to maintain a full scale death registration system follow the lead of India and China and set up sample registration systems. At the end of the article, the

authors provide a table that summarizes the availability and quality of death and cause of death data by country and year.

Discussion

We will discuss the following questions:

1. Describe Cleland's review of the state of vital statistics systems in the developing world. What does he think are the most promising ways of improving the coverage and quality of vital registration?
2. Discuss Mathers et al.'s framework for assessing vital statistics systems? Are all of the qualities they mention equally important? Are their tradeoffs to be made between any of these qualities? Which should we preference in the case of poor countries with almost no vital statistics information?
3. Describe Mahapatra and Rao's assessment of India's SRS. What are the main flaws the authors find? How do they suggest the system be improved? Why do you think they came to such different conclusions than Cleland?

Then, we will discuss the assignments.

23. Vital records: Case study on verbal autopsy and demographic surveillance sites

Objectives

1. To learn about the verbal autopsy method of ascertaining cause of death, in particular, how it is carried out in the field, how COD is assigned and what the associated ethical issues are
2. To critique a verbal autopsy form
3. To consider whether verbal autopsy at DSS can/should stand in for national cause of death data

Required readings

Soleman, Nadia, Chandramohan, Daniel, Shibuya, Kenji. (2006). "Verbal autopsy: current practices and challenges." *Bulletin of the World Health Organization*. 84: 239-245.

Kahn, Kathleen, Stephen M. Tollman, Mark A. Collinson, Samuel J. Clark, Rhian Twine, Benjamin D. Clark, Mildred Shabangu, Francesc Xavier Gómez-Olivé, Obed Mokoena & Michel L. Garenne. (2007). "Research into health, population and social transition in rural South Africa: Agincourt Health and Demographic Surveillance System." *Scandinavian Journal of Public Health*. 35:8 – 20.

Agincourt Demographic Surveillance Site—Verbal Autopsy Questionnaire. (2008). Available online: http://www.agincourt.co.za/DataSection/DataCollection.htm

Assignment

There is no assignment for this class. Come prepared to discuss the readings and the verbal autopsy form.

Justification for required readings

Soleman et al.: This article introduces students to the verbal autopsy methodology and to its data requirements, data problems and other challenges associated with assigning cause of death in places where people tend not to die under the supervision of a doctor in a hospital. In particular, it talks about types of questionnaires, classification systems for causes of death, and using algorithms vs. physician reviews to assign cause of death. It also touches briefly on issues of language, recall bias, and interviewers and respondents.

Kahn et al 2007: This article describes the goals and methods of the work done at the Agincourt Demographic Surveillance Site in South Africa. In particular, the authors describe the enumeration of families, the demographic and health data collected and the cause of death

determination through verbal autopsy. The authors argue that the study can make an important contribution to health research and policy considering the lack of other reliable data sources about cause of death.

Agincourt VA form: The Agincourt verbal autopsy form is included to give students an example of a questionnaire that is being used to ascertain cause of death in a South Africa DSS. It illustrates the issues of language, and open vs. closed ended questions discussed in the Soleman article. Based on our previous readings about formatting and question writings, as well as the Soleman article, we will analyze the form to see if there are ways it could be improved.

Discussion

We will discuss the following questions:

1. Describe Soleman et al.'s findings with regard to the standardization of VA questionnaires, their cause of death classification, their use of algorithms to assign cause of death and their selection of interviewers, respondents and recall period.
2. According to Soleman, what are the advantages and disadvantages of using physician review vs. algorithms to assign cause of death?
3. What do you think of using medical records in validation studies of VA? Can you describe a validation study that would help test whether physician review or an algorithm performed better?
4. What are some of the ethical issues that researchers face in doing verbal autopsies?
5. Critique the layout and wording of the verbal autopsy form. Is there anything you think could be omitted or consolidated without losing information? Are there any questions you feel should be added?
6. How optimistic should we be able the ability of DSS verbal autopsies to stand in for absent national level cause of death data? Should the researchers at Agincourt be directing their energies elsewhere—i.e. how should we think about the tradeoff between collecting high quality detailed data in a small geographic area vs. collecting less detailed nationally representative statistics in places with little money and fewer demographers?

24. New technologies for demographic data collection

Objectives

1. To consider the possibilities for using new technology, like cell phones and internet based surveys, to collect demographic data
2. To wrap up the course

Required readings

Burke Lefever, Jennifer et al. (2008). *Cell phones and the measurement of child neglect: The validity of the parent-child activities interview.* Child Maltreatment. V13. No4. pgs. 320 – 333.

Barber, Jennifer S., Kusunoki, Yasamin & Gatny, Heather. (2010). *Design and implementation of an online weekly survey to study unintended pregnancies: Preliminary results.* Population Studies Center Research Report 10-705.

Hindin, Michelle, Mitali Thakor & Socorro A. Gultiano. (2011). "Using mobile phones to collect daily diary data on sexual activity among young people in the Philippines: Accuracy and consistency of reporting." Mimeo. Presented at PAA 2011. Available online: http://paa2011.princeton.edu/download.aspx?submissionId=110365

Assignment

Make sure that the worksheets you were given on the first day of class are filled out.

Justification for required readings

Burke Lefevre et al. 2008: This paper provides a nice balance to the readings on designing a questionnaire, as it serves as a reminder that asking people questions by reading them off a piece of paper is not always the best way to collect data. In this study, interviewers have phone conversations with teen mothers in order to learn about child neglect.

Barber et al. 2010: This paper provides another example of an "alternative" way to collect data. Researchers recruit young women to participate in an online study about unintended pregnancy. The study involves self-administered questionnaires, diary entries, and small monetary incentives to keep respondents interested.

Hindin et al. 2011: This article presents the results of a pilot study that tested mobile phone based survey questions about sexual activity among young adults in the Philippines. Though the sample size is small, the authors believe that the technology holds promise for obtaining higher quality data about sensitive questions in developing country settings.

Discussion

For the first 45 minutes of class, we will discuss the following questions related to the readings.

1. How did technology improve data collection in the three studies we read about? Can you think of any ways in which the technology used did not constitute an improvement over pen and paper face-to-face surveys?
2. Under what circumstances could PDAs, cell phones and internet based surveys be used productively in the developing world?
3. Consider the DHS surveys we have discussed in this class. Could additional use of technology improve their collection? How could you test whether an improvement had been made?

For the last 45 minutes, we will discuss the worksheets students filled out throughout the course. I will also take final questions about the final project.

Appendix

Handout 1: Which types of surveys could follow which designs?

Type of Survey ↓	**Type of Design** →			
x denotes that the survey instrument could be used in that type of design	Cross sectional	Longitudinal		
		repeated cross section	retrospective longitudinal	prospective longitudinal
Household survey				
Community survey				
Administrative records				
Demographic & Health Survey				
Demographic Surveillance Site				
Cohort Study				

Handout 2: Which indicators could be collected on which surveys?

Indicator ↓	**Type of Survey** →					
x denotes that the indicator could in principle be collected using that instrument	*Household survey*	*Community Survey*	*Administrative records*	*Demographic & health survey*	*Demographic surveillance site*	*Cohort Study*
metadata						
household membership						
consumption						
assets						
education						
employment						
community level resources						
prices						
mortality						
cause of death						
population count						
health service use						
production						
contraceptive use						
fertility						
anthropometry						
health						
social program participation						
birth weight						
biomarkers						
diet						
sexual behavior						