

## Discussion

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I was listening to a college professor’s podcast recently on teaching social science to undergraduates. He asked fellow-teachers to imagine on the first day of each course a poster above the lectern with two questions: “Who cares? What difference does it make?”

Surveys and survey research are facing difficult challenges because the statisticians and methodologists in the field fail to communicate who cares about the subject and what difference it makes. Many times it is due to a failure to recognize how important these two questions are in the mind of the student. To the teacher, it is obvious that the university or college cares – it invested to assemble a faculty and set aside space for a department. But students do not see those “obvious” priorities. Teachers today have to present the material in such a way that students are convinced that it is worth their time to take it seriously.

Professor Lohr’s Morris Hansen Lecture is a refreshing assessment of the state of survey statistics and those who care about it – the practitioner and the teacher-practitioner. As with many broad reviews, it raises additional questions that go beyond the insights provided in the lecture.

For example, some argue that survey statistics is part of a broader scientific perspective on the entire survey process. As a result, the survey statistician needs to understand more than the statistical methods used to treat the design and analysis of survey data – even more subject matter ought to be addressed in a survey statistician’s education than the already long list Professor Lohr provides. In addition, I was reminded of how care for a statistician needs also to be translated into saying who cares about these methods and why they matter. These are issues recently raised by Brown and Cass (2009) and Meng (2009) about the definition and teaching of statistics more generally, and the application of statistical methods in diverse fields.

### 1. Survey Statistics and Survey Methodology

Traditionally survey statistics has been viewed as a subfield of statistics, but more recently has emerged survey statistics as an academic field in its own right. There is an extensive survey literature (one that most statisticians are not familiar with) that continues to grow including textbooks presenting fundamental concepts and how to apply them in practice. Survey statistics has a recurring set of topics that Professor Lohr reviews ranging from selection techniques, survey estimation, and nonresponse to a variety of special topics such as small area estimation, disclosure limitation, and weighting methods. There are

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groups of individuals who identify themselves as survey statisticians, and they gather in professional societies to share ideas and results. A literature, textbooks, recurring research topics, and professional identity are strong evidence of an academic field.

Within the last 15 years a science of surveys has emerged that teaches survey statistics but also encompasses a number of other topics. Survey methodology is a new interdisciplinary area with recurring research topics related to the design, execution, and analysis of surveys. It encompasses the design and implementation of survey measurement, particularly in the form of questionnaires; the efficient operation of survey data collection systems; computer assisted measurement; observation and response errors; the role of privacy and confidentiality in the survey process; and other topics. Survey methodology borrows a research paradigm from survey statistics and other disciplines which trades error and cost, seeking solutions with near optimum design features while operating within budget limitations. It too has a large and growing literature and a collection of key textbooks defining the field. There is a growing set of individuals who self-identify as survey methodologists.

This field of survey science has academic institutions awarding graduate degrees and certificates in survey methodology (see, for example, the Joint Program in Survey Methodology 2010). These academic programs include courses that are about survey statistics and about additional topics in survey design and measurement. Additional topics are distinct in disciplinary foundations, relying on principles from psychology, sociology, computer science, and economics adapted to the study of problems in the survey process.

Professor Lohr's review contains a long list of statistical topics that survey statisticians need to be familiar with to be effective practitioners and teachers. Survey statisticians need to examine the kinds of topics being taught to survey methodologists as well. As statistics itself begins to recognize the need to define itself more broadly (see Brown and Cass 2009, and the discussion below), so does survey statistics need to recognize a broader set of challenging statistical issues that delve into the survey process more deeply.

## **2. Recruiting the Next Generations**

The future of survey statistics implicit in Professor Lohr's review will depend on its ability to sustain itself through educating generations of new survey statisticians. It is apparent though from conversation with directors of statistical agencies in the U.S. or Europe today that the most difficult challenges the agency faces is recruiting the next generations of survey statisticians and survey methodologists. Agencies do find bright and able staff, but not in the numbers needed to replace retirements or expand the research needed to develop new and more efficient survey designs, measurement methods, and analytic techniques.

The problem is not one of finding jobs for those with sufficient academic background. The jobs are there now, and for some time into the future. The problem is that survey statistics and survey methodology have difficult times recruiting those next generations because among prospective students these fields are nearly invisible. Survey statistics and survey methodology as fields of study and career choices are simply not even remotely familiar to undergraduates in mathematics or the social sciences. Most recruits to the field

come from those who had no particular academic preparation but took a job in survey research. Some find the field exciting, and want to continue an education in the area.

Some thought has been given to how to raise the visibility of these and other statistical fields. Part of the problem is that statistics in general does not have a reputation for being something that anyone cares about or a field that makes a difference. Brown and Cass (2009) discuss the current state of statistics as a research field, and their conclusion is that “to remain vibrant the field must open up by taking a less restrictive view of what constitutes statistical thinking.” They advocate an approach to research and teaching that requires the statistician to have perspectives that are not those being taught on statistical methods courses today.

Meng (2009) reports on initiatives in educating statisticians and mostly others in “statistical thinking.” He criticizes statistical education that focuses on traditional approaches that emphasize theory and technique, advocating instead that statistics education starts with research problems where statistical thinking is needed. It is of course important that a survey methodologist or statistician understands the theory behind methods, but Meng counsels that if both theory and application must be taught, start with the application. The application will generate the interest, and will teach the student to care about the methods because of the kinds of problems the methods can be used to address.

Broadening the perspective on survey statistics and survey methodology education requires rethinking the classroom experience. Such education begins with graduate students in the classroom, a select and self-selected group. It is beginning, though, to reach into the undergraduate curriculum and draw students not interested in statistics except as a required subject matter. These kinds of students need to be convinced that statistics is valuable because of the kinds of problems that it can be applied to – that it does matter.

The process of recruiting also needs to address audiences of prospective students. These students need to be convinced as well that what survey statistics and survey methodology deal with is important and makes a difference. Department or program web sites, and even the department chair’s door, need to display the “Who cares?” and “What difference does it make?” questions, advertising that the interested person can get answers to these questions here. As Meng observed, “we really have no choice.” We need to do more to make the relevance of these fields visible in the classroom and in public, illustrating through application and argument that survey statistics and survey methodology make a difference.

### **3. The Socialization of Survey Statisticians**

Professor Lohr’s views are consistent with those of Morris Hansen, who also cared about the nurture and well-being of survey statisticians. He often took the time to talk with prospective students and young statisticians, an act of socialization. Lohr rightly emphasizes both the preparation needed to be a survey statistician and the “socialization” of survey statisticians, needed to make them more effective members of the research community. Survey statistics was never an activity done by an individual in isolation from other statisticians. Lohr’s advice recognizes and promotes a social component in which the individual is encouraged and nurtured. Such practice will only improve the

ability to recruit the next generations of survey statisticians and survey methodologists. It will in the longer run lead to the kind of inspired teaching that drew Morris Hansen to the field.

#### **4. References**

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