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Sample Surveys

Sample surveys made it possible to study a much broader range of issues and to accumulate quantitative descriptions of the social world, which were unthinkable at a time when the observation techniques were limited to censuses and monographs.

From: International Encyclopedia of the Social & Behavioral Sciences (Second Edition), 2001

Related terms:

Census, Anomie, Research Workers, Questionnaires

Survey Sampling and Weighting

R.L. Williams, in Encyclopedia of Health Economics, 2014

Introduction

A sample survey is a method for collecting data from or about the members of a population so that inferences about the entire population can be obtained from a subset, or sample, of the population members. As an example, it may be desired to know the average length of stay in a hospital for surgical versus nonsurgical stays in the US and its territories for the 2012 calendar year. In this situation, a sample of hospital discharges would be obtained along with the duration of stay for each discharge. Then estimates of the average length of stays for surgical and nonsurgical discharges would be calculated and compared. A properly conducted sample survey will support inference from the sample that is scientifically valid about the population. This article focuses on probability sampling and weighting to support such inference.

The discussion is organized around four major steps: (1) survey requirements, (2) sampling design, (3) weighting, and (4) design effect. Although these steps are presented as a linear process progressing in order, in practice much iteration between the steps will occur while planning a sample survey. For example, the initial requirements may prove to be financially infeasible when determining the sample design and compromises will need to be made in the requirements.

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Rainforest Loss and Change

Karndeo D. Singh, in Encyclopedia of Biodiversity (Second Edition), 2013

Multidate Remote Sensing Survey

The sample survey of forests in the tropics was designed using multidate high-resolution satellite images, close to years 1980 and 1990, to estimate forest changes on a reliable basis. The tropical region was divided into 10 geographic and three forest cover strata using the forest cover and ecological zone maps. In all 117 satellite images, each covering approximately 3 million ha, were randomly selected and distributed to various strata. The study, covering nearly 10% of the area of the tropics, was conducted in a very systematic manner under a controlled environment. The two images at each sample site were of comparable quality, taken during the same season and interpreted by the same person under a central quality control. The interdependent image-interpretation procedure enabled assessment of changes with a much lower standard error compared to the independent interpretation of the two images.

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Statistical Identification and Estimability

G.M. Kaufman, in International Encyclopedia of the Social & Behavioral Sciences, 2001

2 Example 1

A sample survey is conducted to determine attitudes of individuals in a population toward a particular subject. The sample frame consists of N individuals, each of whose response is classified as either 'Favorable' or 'Unfavorable.' This sample yields $N_{R.}$ respondents and $N_{S.}=N-N_{R.}$ non-respondents. Of the $N_{R.}$ respondents, N_{FR} are classified as 'Favorable' and $N_{UR}=N-N_{FR}$ are classified as

'Unfavorable.' In the absence of information bearing directly on the fraction of non-respondents who would be classified as 'Favorable,' statistics available for inference are N_{FR}, N_{UR}, $N_{S.}$ subject to $N_{FS}+N_{US}=N_{S.}$ and to $N_{FR}+N_{UR}+N_{S.}=N$. Suppose that the process generating data about both respondents and non-respondents is modeled as a double dichotomy with probabilities p_{FR}, p_{UR}, p_{FS} and $p_{US} > 0$ and $p_{FR}+p_{UR}+p_{FS}+p_{US}=1$ as shown in Table 1. Table 2 shows the corresponding tables for the model of observed data.

Table 1.

Table 2.

The probability distribution for observations N_{FR}, N_{UR} and $N_{S.}$ in Table 1 is proportional to

$$(p_{FS} + p_{US})^{N_{S\cdot}} p_{FR}^{N_{FR}} p_{UR}^{N_{UR}}$$

Observations N_{FR}, N_{UR} and $N_{S.}$ are sufficient for joint inference about $p_{S.}=p_{FS}+p_{US}$, p_{FS} and p_{UR} but even an infinite sample will not lead to knowledge of p_{FS} and p_{US} with certainty: p_{FS} and p_{US} are not identifiable in the presence of non-response as an infinite sample yields knowledge only that p_{FS} and p_{US} satisfy $p_{FS}+p_{US}=p_{S}$.

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Statistical Identification and Estimability

Gordon M. Kaufman, in International Encyclopedia of the Social & Behavioral Sciences (Second Edition), 2015

Example 1

A sample survey is conducted to determine the attitudes of individuals in a population toward a particular subject. The sample frame consists of N individuals, each of whose response is classified as either 'Favorable' or 'Unfavorable.' This sample yields $N_{R\cdot}$ respondents and $N_{S\cdot} = N - N_{R\cdot}$ nonrespondents. Of the $N_{R\cdot}$ respondents, N_{FR} are classified as 'Favorable' and $N_{UR} = N - N_{FR}$ are classified as 'Unfavorable.' In the absence of information bearing directly on the fraction of nonrespondents who would be classified as 'Favorable,' statistics available for inference are N_{FR}, N_{UR}, $N_{S\cdot}$ subject to $N_{FS} + N_{US} = N_{S\cdot}$ and to $N_{FR} + N_{UR} + N_{S\cdot} = N$. Suppose that the process generating data about both respondents and nonrespondents is modeled as a double dichotomy with probabilities p_{FR}, p_{UR}, p_{FS}, and $p_{US} > 0$ and $p_{FR} + p_{UR} + p_{FS} + p_{US} = 1$ as shown in Table 1. Table 2 shows the corresponding tables for the model of observed data.

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Nonsampling Errors

Elizabeth A. Stasny, in International Encyclopedia of the Social & Behavioral Sciences (Second Edition), 2015

Abstract

Data from sample surveys are subject to both sampling and nonsampling errors. The latter include errors from the sampling frame, the questionnaire, the interviewer, and the respondent. The article defines and sets out ways to deal with various errors. Sampling frame errors may be overcome by random digit dialing for telephone surveys or dual-frame sampling. Response error (incorrect answers) may be dealt with by randomized response techniques, while nonresponse errors may be minimized by weight adjustments and imputation methods. Panel rotation and survey mode errors are also briefly considered.

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Statistical Systems: Censuses of Population

L. Kish, in International Encyclopedia of the Social & Behavioral Sciences, 2001

3.4 Sample Surveys

Generally, sample surveys differ greatly from complete censuses; they are much smaller; they are much cheaper, but they also lack detail in spatial (geographic) and other domains. But periodic samples yield much needed temporal detail, and also have other advantages. They can yield much richer data, especially because the content and the methods can be focused on specific contexts. Also because that greater concentration can be achieved for the questionnaires, for the interviewers and for the respondents as well.

'Representative sampling' was first proposed by F. N. Kiaer in 1895 in Norway, for replacing censuses. The fundamental concept requires a careful, scientific method for selecting a sample from the population and then estimating the population variables from the sample statistics. Many statisticians, academic and practical, in many journals and in the International Statistical Institute for about 50 years, opposed sampling as a substitute for complete enumeration. Meanwhile probability samples came into use for social surveys, notably for unemployment rates and then for the famous quarterly surveys of the labor force, which became the Current Population Surveys of the US Bureau of the Census (1978). All countries in the European Union and many others now have quarterly or monthly surveys of the national labor force. These surveys, mostly of 5,000 to 100,000 households, are financed because governments need current monthly or quarterly data on (un)employment and its periodic fluctuations. National statistical offices generally conduct many other samples every year, some of them only once, some repeatedly, and some periodically. Some of the censuses are also produced by sampling methods and the Food and Agriculture Agency (FAO) has been in the forefront of promoting agricultural censuses by means of sample surveys (see *Social Survey, History of*).

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Sample Surveys: Cognitive Aspects of Survey Design

Judith M. Tanur, in International Encyclopedia of the Social & Behavioral Sciences (Second Edition), 2015

Background and History

While a sample survey of human beings can be of good and measurable accuracy only if it is accomplished through probability sampling (*Sample Surveys: The Field* and *Sample Surveys: Methods*), probability sampling is only the first step in assuring that a survey is successful in producing results accurate enough for use in predicting elections, for gauging public opinion, for measuring the incidence of a disease or the amount of acreage planted in a crop, or for any of the other myriad of important uses that depend on survey data. Questions must be worded not only in ways that are unbiased, but also understandable to respondents and convey the same meaning to respondents as was intended by the survey's author. If the questions refer to facts about the past, they must be presented in ways that help respondents to remember the facts accurately and report truthfully. And interviewers must be able to understand respondents' answers correctly to record and categorize them appropriately.

These and other nonsampling issues have been of concern to survey researchers for many decades (e.g., Payne, 1951). Researchers were puzzled by the fact that changing the wording slightly in a question, sometimes resulted in a different distribution of answers and sometimes did not; worried that sometimes the context of other questions affected answers to a particular question, and sometimes did not; concerned that sometimes respondents were able to remember things accurately and sometimes were not. In the late 1970s and early 1980s, as survey data came to be used ever more extensively for public policy purposes, concerns for the validity of those data became especially widespread.

These concerns led to a cross-disciplinary research endeavor that would bring the insights and methods of the cognitive sciences, especially cognitive psychology, to bear on the problems raised by surveys, and that would encourage researchers in the cognitive sciences to use surveys as a means of testing, broadening, and generalizing their laboratory-based conclusions. Since then, work in the field has incorporated theories and viewpoints from disciplines not usually classified as the cognitive sciences, notably linguistics, conversational analysis, anthropology, and ethnography.

Described below are some of the practical and theoretical achievements of the movement.

These include methodological transfers from the cognitive sciences to survey research, especially so-called cognitive interviewing, the broad establishment of cognitive laboratories in governmental and nongovernmental survey research centers, theoretical formulations that account for many of the mysteries generated by survey responses, and practical applications to the development and administration of ongoing surveys. Some references appear at the close describing these achievements more fully and speculating on the future course of the field. Perhaps surprisingly, there is little to report on the hoped-for use of surveys to generalize the findings of the cognitive sciences, despite the encouragement of such authors as Wright and Loftus (1998).

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Technology and Customer Relationships in Thai Financial Services

Rapeeporn Srijumpa, ... Mark Speece, in The Globalisation of Executives and Economies, 2006

The Insurance Survey

In the survey sample, women represented slightly more than half of the sales rep respondents (56.3 percent). Among the sales reps, about three quarters (74.7 percent) were in the 26-45 age range, and nearly two-thirds (63 percent) had 3-10 years of selling experience. Most of them were well educated with a bachelor's degree or higher. A total of forty percent had personal monthly income 20,001-50,000 Baht; and slightly over 40 percent had incomes over 50,000 Baht, which is fairly high by Thai standards. Over sixty percent had SFA technology experience of more than 3 years. More than half of the customer sample was female. A majority (73 percent) were university graduates, indicating a well-educated customer base in the sample, consistent with the industry. Almost fifty percent had personal monthly income of 20,001-50,000 Baht. These sample characteristics appear to be representative of middle class customers in Bangkok, who are the target customers in life insurance service.

The survey investigated a simple model: intensity of technology usage and degree of technology integration lead to satisfaction with salespeople; degree of technology integration and satisfaction with salespeople drive customer satisfaction. Intensity of SFA usage and how integration of the technology into the customer interaction affected sales rep satisfaction were investigated, as well as how sales rep satisfaction and integration of the technology into the customer interaction affected customer satisfaction. Table 3 indicates that the average sales rep uses the SFA system sometimes, as most means are near or slightly above the mid-point of the scale in measuring usage. The standard deviation is fairly large on each question, indicating a wide range in how much different sales reps use the SFA systems.

Table 3. Intensity of Technology Usage Questions (from sales reps); Note: Five-point Likert scale, 1 = never, 5 = always.

ITEMS	MEAN	STANDARD DEVIATION
Using technology for learning about company's products.	3.69	0.953
Using technology for learning about competitor's products.	2.87	1.050
Using technology for receiving information from company personnel who have something useful for your sales effort.	3.30	1.078
Using technology for participating in displays, exhibits, or group meetings.	3.13	1.009
Using technology for receiving information from, or communicating with, customers.	3.25	1.014

ITEMS	MEAN	STANDARD DEVIATION
Intensity of Technology Usage (mean across items) (Cronbach alpha = 0.7411)	**3.24**	**0.716**

Table 4 shows a similar wide range in terms of how much the sales reps integrate the technology into their interactions with customers. Both reps and customers see a stronger use of the SFA systems for keeping track of previous meetings and preparing the sales presentations. Most other elements are nearer the midpoint of the scale or slightly above. On some elements, sales reps see stronger integration than customers do.

Table 4. Degree of Technology Integration from Rep and Customer Views; Notes: five-point Likert scale, 1 = never use, 5 = use a lot

	Sales People		Customers		
Items: Reps Use the SFA in:	**Mean**	**Std Dev**	**Mean**	**Std Dev**	**Sig.***
Learning about your company's products.	3.66	1.033	3.37	1.047	0.003**
Learning about competitive products in the market.	2.94	1.138	2.80	1.098	0.159
Identifying key opinion leaders within the insurance industry.	3.22	1.098	2.97	1.206	0.013*
Providing information to relevant company personal.	3.18	1.120	2.94	1.246	0.030*
Receiving information from company personal who have something useful for sales effort.	3.28	1.221	2.94	1.239	0.005**
Recording and retrieving info about previous meetings.	4.00	1.107	3.54	1.092	0.000**
Preparing a sales presentation.	4.22	0.886	3.87	1.023	0.000**

	Sales People		Customers		
Items: Reps Use the SFA in:	**Mean**	**Std Dev**	**Mean**	**Std Dev**	**Sig.***
Dealing with difficult problems and objections.	3.33	1.063	3.22	1.178	0.175
Providing information to the customer regarding status of orders.	3.08	1.116	3.16	1.061	0.383
Degree of Technology Integration (mean across items)	**3.43**	**0.720**	**3.20**	**0.758**	**0.001****
(Cronbach alpha = 0.8394 from reps; Cronbach alpha = 0.8448 from customers)					

*

ANOVA significance for difference between salespeople and customers.

The measures of sales rep satisfaction and customer satisfaction similarly had multiple measures. Rep satisfaction overall averaged 3.67 across 13 questions on a 5-point scale (Cronbach alpha = 0.8550). Customer satisfaction averaged 3.36 across 5 questions, (Cronbach alpha = 0.8638). Since this discussion is mainly about the technology issues, not all of the details of measure on rep and customer satisfaction are reported but it may be noted that the standard deviations on the items were somewhat smaller than on the technology questions, indicating less divergence of opinion among reps and customers about these issues. On all four concepts in the simple model proposed above, the reliability was quite high, as measured by Cronbach alpha, indicating that the set of questions to measure the concepts was quite reliable and internally consistent.

The regression results indicate that intensity of technology usage and degree of technology integration both positively influence salespeople satisfaction (sig. = 0.000; R square = 0.309). As shown in Table 5, salespeople who use more technology in their sales process have significantly higher levels of satisfaction. Further, the degree to which salespeople integrate the technology into their interactions with customers also positively influences their satisfaction. Consequently, respondents perceived more satisfaction when they used the technology in their sales process more frequently and when they integrated the technology into interactions with customers. The impact of intensity of technology usage is slightly stronger than that of the degree of technology integration, as indicated by the standardized coefficients (0.318 versus 0.217 respectively).

Table 5. SFA Technology and Satisfaction of Salespeople and Customers.

INDEPENDENT VARIABLES	BETA	T-VALUE	SIGNIFICANCE
Dependent variable: **salespeople satisfaction**; R^2 = 0.309; F = 23.42, sig. = 0.000**			
Intensity of technology usage	0.318	4.106	**0.000****
Degree of technology integration	0.217	2.800	**0.006****
Dependent variable: **customer satisfaction**; R^2 = 0.350; F = 27.28, sig. = 000			
Salespeople satisfaction	0.136	2.277	**0.024***
Degree of technology integration	0.527	9.226	**0.000****

Examining customer satisfaction, the results show that salespeople's satisfaction and technology integration do have an impact on customer satisfaction (sig. = 0.000). The relationship between salespeople satisfaction and customer satisfaction is significant and positive (p = 0.024; standard coefficient = 0.136), indicating that higher salespeople satisfaction contributes to increased customer satisfaction. The degree of technology integration was also a significant predictor and it had a strong positive relationship with customer satisfaction (p = 0.000, standard coefficient = 0.527). The impact of technology integration on customer satisfaction was much stronger than that of sales rep satisfaction, as indicated by the substantially larger standardized coefficient. In other words, customer satisfaction depends considerably on the level of technology integration which salespeople use during interpersonal interaction with customers.

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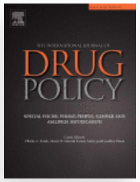

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