

# the Survey Statistician

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# Letter from the President

Dear Colleagues,

The 2011 ISI World Statistical Congress (WSC), Dublin is nearly upon us, and I hope a number of you will be able to make it along both to participate in the meetings and meet up with your statistical colleagues in the IASS and also across the many fields of statistics covered by the ISI.

As well as a rich program of invited paper meetings at the WSC, there will be a number of short courses held before the Congress proper. These courses provide a substantial development opportunity for members, both in terms of their content, and in the opportunity they provide for building networks with other survey statisticians. I encourage you all to have a look at the program (<http://isi-web.org/root/wsc2011-iass-short-courses>) and register for courses of interest as soon as possible.

Another item of interest at the WSC will be the awarding of the Cochran Hansen Prize for the best paper by a young statistician from a developing country. This year the prize has gone to Dr Solange Correa Onel for her paper addressing bias in modelling complex data for small area estimation. The application of the method to estimate measures of poverty in Brazil is currently being studied.

The IASS General Assembly will be held as one of the administrative meetings during the WSC, on Monday from 13:30 – 15:00. Look out for location details on your program, and come along if you can.

An agenda for the meeting should by now have been sent to all members. One item of interest will be new administrative arrangements necessary for IASS. After providing valuable support to the Association over a number of decades, INSEE has reluctantly decided that financial pressures on the organisation are such that it can no longer continue to provide IASS Office support. We are very grateful to INSEE for their substantial support over many, many years, providing continuity in administration and allowing the IASS to operate with very low membership fees.

As the most recent Executive Director, Catherine Meunier has been particularly helpful in her support, as has Daniel Malaquin, the Treasurer, and I would like to take this opportunity to formally thank INSEE for their ongoing support over the years, and Catherine and Daniel for their particular support during my period as president.

The IASS is currently in discussions with the ISI Office about the provision of administrative support, for a fee. ISI already provides such support to a number of ISI sections. The costs associated with this would have an impact on the membership fees set for IASS, with a rise in fees being necessary. Members will receive more details on this prior to the General Assembly.

On a different front, I am pleased to be able to report some progress in relation to improving the IASS web site. As those of you who visit it know, the website is starting to look somewhat old and tired. In part this is due to the inflexibility in arrangements around the current web site, which is hosted on the CBS website,

and for sound security reasons in relation to a National Statistical Office, this substantially limits the extent to which we can take advantage of open source software that would facilitate a number of interactive functions.

A paper on business requirements of the web site, and a companion paper on possible approaches to providing the required functionality in a cost effective way, are being finalised, and will be available to members shortly. It is intended that these papers form the basis for Council discussions and decisions on a way forward at the Council Meetings in Dublin.

At the end of the day however, the value of any new approach to a web site will be dependent on people wanting to use the new functionality to share information and participate in discussions. If you are interested in being involved in the future of our website, please contact the President-Elect, Ray Chambers. Ray's email address is ([ray.chambers@internode.on.net](mailto:ray.chambers@internode.on.net)).

In the meantime, we have taken some steps in updating the content of the current website, and you will shortly find a lot of past material from our 'Ask the Experts' column now categorised and included on the web site. Our list of conferences and workshops has been expanded to all those of relevance to IASS, and is being kept up to date. If you have details of any conferences or workshops that you think should be included on the website, please send them to Edith D. de Leeuw ([edithl@xs4all.nl](mailto:edithl@xs4all.nl)).

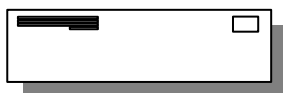
An ongoing challenge for the IASS is to keep up our network of Country Representatives, and encourage the sharing of information through the country reports. We will shortly be adding a list of country representatives to the web site. Have a look at who the country representative is for your country. If there isn't one there, and you would like to be the representative, please contact Linda Hewitt ([linhew@trinidad.net](mailto:linhew@trinidad.net)).

The IASS is always keen to welcome new members, both individual and institutional. The registration form for individual members can be found on the website. For those wishing to enquire about institutional membership, please contact the Executive Director, Catherine Meunier ([catherine.meunier@insee.fr](mailto:catherine.meunier@insee.fr))

I'm looking forward to seeing as many IASS members as possible at our General Assembly in Dublin. The IASS will have an office at the WSC. For those who want to bring themselves up to date with payment of fees, or make advance payment for the coming year, feel free to come along. Someone will be at the office every lunch time except Monday, when the General Assembly will be held,

Susan Linacre

President IASS



## Letter from the Editors

This issue of the IASS *The Survey Statistician* contains some exciting new developments in survey sampling and analysis. In the New and Emerging Methods Section (edited by Leyla Mohadjer and Andrea Piesse), Rebecca Andridge and Rod Little have contributed an article on 'Proxy Pattern-Mixture Analysis for Survey Nonresponse' where they propose a method for the measurement of, and adjustment for, nonresponse in a single continuous variable subject to missing values. In addition, Robert Clark has addressed the question of sampling rare and difficult to reach populations in the Ask The Experts Section (edited by himself). We wish to thank the authors and editors of these sections for their important contribution on behalf of the IASS community. Please let Leyla Mohadjer ([leylamohadjer@westat.com](mailto:leylamohadjer@westat.com)) know if you would like to contribute to the New and Emerging Methods Section in the future. If you have any questions which you would like to be answered by an expert, please send your questions to Robert Clark ([rclark@uow.edu.au](mailto:rclark@uow.edu.au)).

As in the past, this issue of *The Survey Statistician* includes a letter from the President, Susan Linacre. The results of the 2011 IASS Elections are also published. We congratulate the incoming officers and council members of the IASS and wish them a productive and fruitful term. In addition, it has been announced that the next Chair of the Hong Kong 2013 Programme Committee is Eric Rancourt ([eric.rancourt@statcan.gc.ca](mailto:eric.rancourt@statcan.gc.ca)).

The Country Report Section has always been a central feature of the IASS newsletter. We ask all country representatives to please submit articles and share information on current activities, research and applications in survey methods in your countries. All articles should be sent to the editor of this section, Pierre Lavallée ([pierre.lavallee@statcan.gc.ca](mailto:pierre.lavallee@statcan.gc.ca)). In the previous issue, we published a list of the current country representatives in order to update the list but received little response. Therefore, to avoid having to impute, we are publishing the list again in this issue. Please contact Linda Hewitt ([linhew@trinidad.net](mailto:linhew@trinidad.net)) if you are currently serving as your country representative or alternatively can suggest a new representative.

Unfortunately, we have not had volunteers to contribute to the section on 'Books and Software Review'. If you are interested in writing a book review or software review, please get in touch with the editor of the section, John Eltinge ([eltinge.john@bls.gov](mailto:eltinge.john@bls.gov)). For this issue, we have provided a list of recently published books in the area of Survey Methods and Sampling from several publishing houses and hope that the IASS community find this information useful.

This issue of *The Survey Statistician* also includes the Tables of Contents from recent journals and advertisements received for upcoming conferences and workshops. If you would like to advertise in *The Survey Statistician*, please send your adverts to the editors: [frank.yu@abs.gov.au](mailto:frank.yu@abs.gov.au) and [n.shlomo@soton.ac.uk](mailto:n.shlomo@soton.ac.uk).

We wish to thank Victoria Leaver, Jennifer Marley and Henry Chiem of the Australian Bureau of Statistics for their invaluable assistance in putting together this issue of the newsletter, all of the Section Editors, Susan Linacre for her continuing support, the IASS Executive Director, Catherine Meunier and IASS Secretariat Évelyne Coutant and Rolande Charette and Sebastian Jarvoll for the translations into French.

*The Survey Statistician* is also available for downloading from the IASS website at <http://isi.cbs.nl/iass/allUK.htm>.

We hope you will enjoy this July 2011 issue of *The Survey Statistician*. Please send us your feedback and comments on how we can make improvements. *The Survey Statistician* depends on the commitment and contributions from the IASS membership so please help us make the IASS newsletter relevant and interesting to us all.

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### **Update on the IASS programme for the ISI World Congress in 2013**

I know we are now in 2011 and our eyes are on the ISI meeting in Dublin, but it is already the time to think about the 2013 ISI in Hong Kong. Indeed, as chair of the IASS program, I would like let you know that the IASS usually has room to organize about a dozen invited paper meetings during the ISI. To this end, a committee was formed to work on the program. Members are Martin Balepa ([martin.balepa@afristat.org](mailto:martin.balepa@afristat.org)), Yves Berger ([y.g.berger@soton.ac.uk](mailto:y.g.berger@soton.ac.uk)), Takis Merkouris ([merkouris@aueb.gr](mailto:merkouris@aueb.gr)), Jean Opsomer ([jopsomer@mac.com](mailto:jopsomer@mac.com)), and Xiuhua Tian ([tianxh@stats.gov.cn](mailto:tianxh@stats.gov.cn)).

However, your help is also sought! Should you be interested in organizing an invited paper session or simply if you have ideas for topics to be considered, then please contact me ([eric.rancourt@statcan.gc.ca](mailto:eric.rancourt@statcan.gc.ca)).

Your suggestion will be considered as we are hoping to have a strong list of topics coming to Dublin in August. Hopefully, little adjustment will subsequently be needed.

Thank you,

Eric Rancourt

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## Contact Information for IASS Country Representatives

<u>Name</u>	<u>Country</u>
Mr. Nacer-eddine Hammouda	Algeria
Ms. Alicia Masautis	Argentina
Mr. Paul Sutcliffe	Australia
Dr. Camille Vanderhoeft	Belgium
Mr. Walter Castillo Guerra	Bolivia
Mr. Moffat Malepa	Botswana
Mr. Marcel de Toledo Vieira	Brazil
Mr. François Ilboudo	Burkina Faso
Mr. John Kovar	Canada
Ms. Maria de Lurdes Lopes	Cape Verde
Mr. Juan Eduardo Munoz	Chile
Mr. Huang Langhui	China
Mr. Mhadji Nailane	Comoros
Mr. Cakpo Benjamin Zanou	Côte d'Ivoire
Mr. Luis Carlos Silva	Cuba
Mr. Vaclav Cermak	Czech Republic
Mr. Peter Linde	Denmark
Dr. Imbi Traat	Estonia
Mr. Jean-Marc Museux	Eurostat (Europe)
Mr. Paavo Väisänen	Finland
Mr. Benoît Riandey	France
Mr. Jean-Pierre Zima Mefe	Gabon
Dr. Ralf Münnich	Germany
Mr. Anastassios Iliakopoulos	Greece
Mr. David Fitch	Guatemala
Ms. Fatoumata Danfaca	Guinea
Mr. Emmanuel Charles	Haiti
Mr. Zoltán Csereháti	Hungary
Dr. Gayatri V. Singh	India
Ms. Luisa Kadun Burck	Israel
Prof. Claudio Quintano	Italy
Dr. Ryoza Yoshino	Japan
Mr. Martins Liberts	Latvia
Prof. Bechara Hanna	Lebanon
Dr. Danutė Krapavickaitė	Lithuania
Mr. Antonio Baigorri Matamala	Luxembourg
Ms. Julia Rachel Ravelosoa	Madagascar
Dr. Suresh Chandra Babu	Malawi
Mr. Aziz Mohammad	Malaysia
Mr. Lamine Diop	Mali
Mr. Sidna Ould N'dah	Mauritania

<b>Mr. Miguel Cervera</b>	Mexico
<b>Dr. Rudra Suwal</b>	Nepal
<b>Mr. Shyam Upadhyaya</b>	Nepal
<b>Mr. Jos de Ree</b>	Netherlands
<b>Ms. Diane Ramsey</b>	New Zealand
<b>Mr. John Créquer</b>	New Zealand
<b>Mr. Adetoun Aribiki Imolehin</b>	Nigeria
<b>Dr. Mark Griffin</b>	Pacific Islands
<b>Mr. Faisal Awartani</b>	Palestine
<b>Ms. Leonara Laguna</b>	Peru
<b>Mr. Gervacio G. Selda, Jr.</b>	Philippines
<b>Dr. Tomasz Zadło</b>	Poland
<b>Mr. Paulo Jorge Gomes</b>	Portugal
<b>Mr. Alexis Lukaku Nzinga</b>	D. R. Congo
<b>Dr. Inho Park</b>	Republic of Korea
<b>Innocent Ngombe Bibemo</b>	Central African Republic
<b>Mr. Matar Gueye</b>	Senegal
<b>Ms. Dolores Lorca Lopez</b>	Spain
<b>Mrs. Anjeles Iztueta Azkue</b>	Spain-Basque Region
<b>Mr. Christina Prado Valle</b>	Spain-Basque Region
<b>Mr. Philippe Eichenberger</b>	Switzerland
<b>Mr. Peter Lundquist</b>	Sweden
<b>Dr. Ibrahim Ali</b>	Syria
<b>Mr. Vitalis Eustach Muba</b>	Tanzania
<b>M. Ouagadjio Bandoumal</b>	Chad
<b>Prof. Oztas Ayhan</b>	Turkey
<b>Dr. Olga Vasylyk</b>	Ukraine
<b>Prof. Peter Lynn</b>	United Kingdom
<b>Mr. Howard Hogan</b>	United States
<b>Mr. Federico Segui</b>	Uruguay
<b>Dr. Nguyen Quoc Anh</b>	Vietnam



## **IASS Incoming Council Elected**

The results of the IASS elections for the incoming Council are now available. The new Council that will take over following the General Assembly in Dublin will be as follows:

<b>President (2011-2013)</b>	Ray Chambers (Australia)
<b>President-Elect:</b>	Danny Pfeffermann (Israel)
<b>Vice-Presidents (2011-2013)</b>	Denise Britz do N. Silva (Brazil) Steven Heeringa (USA)
<b>Scientific Secretary (2011-2013)</b>	Ineke Stoop (The Netherlands)
<b>Council Members serving (2011-2015)</b>	Christine Bycroft (New Zealand)  Ka-Lin Karen Chan (China) Olivier Dupriez (Belgium/USA) Natalie Shlomo (UK) Marcel de Toledo Vieira (Brazil) Alvaro Gonzalez Villalobos (Argentina)
<b>Council Members serving (2009-2013)</b>	Mike Hidiroglou (Canada)  Edith D. de Leeuw (The Netherlands) Monica Pratesi (Italy) Mick P. Couper (USA) Eva Elvers (Sweden) Yves Tille (Belgium)

Congratulations to the new members of Council, and many thanks to the Nominations Committee that provided an excellent list of candidates. The Nominations Committee was chaired by David Marker, with members: Frank Nolan, Lars Lyberg, Dalasay Maligalig, Denise Lievesley, Pedro de Silva and Jairo Arrow.

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## Ask the Experts

### How should Samples be Designed for Difficult to Reach Populations?

#### Discussion: Robert Clark

Populations may be hard to reach for several reasons:

- i. They may tend to live in remote locations. For example, 24% of the Australian Indigenous population live in areas classified as “very remote”, compared to only 3% of the general population (Rogers and Brent, 2008).
- ii. They may be only a small proportion of the general population. For example, the indigenous populations of Australia, Canada and New Zealand make up 2.4%, 3.3% and 12.1%, respectively, of the general population (Clark, 2009).
- iii. There may be no frame or list available of the population of interest, or the list may be incomplete, out of date or inaccurate.
- iv. The population may be geographically dispersed, as opposed to being concentrated in particular areas.
- v. The population of interest may be mobile, reluctant to participate in surveys, or have a first language differing from the population majority.

It is not unusual for all five of these challenges to coincide.

The hard to reach population will be referred to as a subpopulation, to distinguish from the general population of which it is part. Subpopulations of interest can include indigenous populations, particular ethnicities, migrants, homeless people, people with a disability, or sufferers of particular medical conditions.

Good field procedures, instrument design, interviewer training and effective communication with respondents and communities are the most important elements of a successful survey of a hard to reach population. An effective sample design is also essential. This review will describe some of the sample design approaches available.

The Symposium on Innovative Methods for Surveying Difficult-to-Reach Populations (Statistics Canada, 2004) is a great source of further information. The 2012 Conference on Survey Methods for Hard to Reach Populations ([www.amstat.org/meetings/h2r/2012](http://www.amstat.org/meetings/h2r/2012)) will further advance the field.

### *Sample Designs when there is a High Quality List of the Sub-Population*

In this case, no special techniques are needed. A frame is available for the subpopulation, which can then be sampled using standard methods.

### *Sample Designs when there is a Useful but Imperfect List of the Sub-Population*

There are several possibilities:

- A frame can be compiled of the general population, with an indication of whether each person is a member of the subpopulation or not. This could be achieved by merging a list of the subpopulation and a list of the population, provided a suitable merging key is available. The indication may be in error, so that even apparent non-members of the subpopulation should be sampled, albeit at a lower rate.
- There may be separate frames for the population and subpopulation, which cannot be readily merged. In this case, dual frame methods can be used. A crucial issue is to avoid over-representing people who appear on both frames. See for example Lohr (2000), and for some recent developments, Elliot et al (2008) and Metcalf and Scott (2009).

### *Sample Designs when there is No Usable List of the Sub-Population*

This is a common situation. There may be no list at all, lists may be inaccessible due to privacy or legislative restrictions, or lists may be of such poor quality as to be not worth using. In this case, there may be no alternative but to survey the general population in order to collect data on the usually small proportion that belongs to the subpopulation.

A crucial step is to determine which respondents belong to the subpopulation, a process referred to as screening. Subpopulation members are then subjected to the full survey. Screening should be done as cheaply as possible, while discriminating accurately enough (Kalton and Anderson, 1986): this is easier said than done. Typically, the cost of screening is a very substantial proportion of the total cost of the survey.

Clearly, it is desirable to maximise the proportion of the sample that belongs to the subpopulation, to reduce the cost of screening. This can be done if there is information on which areas (or other population subdivisions) are likely to contain a higher proportion of subpopulation members. A common source of design information is area-level population sizes from the most recent general population census.

Kalton and Anderson (1986) discussed sample design for subpopulations, where the population is stratified by region (or other strata) with population and subpopulation size assumed known for each region. They found that the stratum sampling fractions should be proportional to

$$(1) \quad \sqrt{P_h / (P_h + R)}$$

where  $P_h$  is the proportion of the population in stratum  $h$  who belong to the subpopulation, and  $R$  is the ratio of the cost of screening a person to the cost of conducting a full interview. This design minimises the variance of subpopulation

means subject to a cost constraint, under simplifying assumptions. In many cases,  $P_h$  is much smaller than  $R$ , so that sampling fractions are approximately proportional to  $\sqrt{P_h}$ .

□ In practice, many subpopulations are reasonably geographically dispersed. This, and the use of the square root in Kalton and Anderson's design, means that sampling is only gently disproportionate. It is often disappointing and counter-intuitive that only a relatively small boost to subpopulation sample sizes is achieved. It is then tempting to assign a higher sampling fraction to strata with high subpopulation proportions than indicated by (1). This results in a larger subpopulation sample, but it is counter-productive: the variability in the probabilities of selection leads to more variable weights for respondents in the sample, which leads to higher variances.

In multi-stage sampling, a sample of small geographic areas called clusters is selected, followed by a sample of households or people within selected clusters. Clark (2009) extended the designs of Kalton and Anderson (1986) to allow targeting at cluster level.

### *Snowball Sampling*

Responding subpopulation members are asked to identify their acquaintances in the subpopulation, with contact details. There are significant challenges in successful implementation: individuals who are very networked within the subpopulation may be over-represented (this can be corrected for to some extent); identification of others' ethnicity may be inaccurate; respondents may be unwilling to provide their acquaintances' contact details. In some cases, snowball sampling and other adaptive methods have the potential to give very substantial efficiency gains. Statistics Canada (2004) describes a range of adaptive approaches. In other cases, snowball sampling may give only indicative results (see McKenzie and Mistiaen, 2009, for an evaluation of snowball sampling and other methods of surveying the Japanese-Brazilian population).

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## Ask the Experts - Call for Questions

If you'd like to ask the experts a question, please contact Robert Clark [rclark@uow.edu.au](mailto:rclark@uow.edu.au).

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## Australia

### **The Australian Health Survey**

In March 2011 the Australian Bureau of Statistics commenced the first Australian Health Survey (AHS), the biggest health survey ever conducted in Australia surveying 50,000 people right across the country. The survey builds on previous health surveys allowing comparisons of health information over time such as obesity, smoking, health conditions and how we manage our health.

The survey will collect new information about what Australians eat and drink, how active they are and biomedical measures. These new biomedical measures will reveal new insights into heart and kidney disease, diabetes and other chronic conditions by examining health risk factors such as cholesterol, glucose and sodium levels. The survey will be able to compare these biomedical risk factors with aspects of our lifestyle for those that are healthy and those who are not.

While the biomedical component of the survey is voluntary, participation is encouraged as this information will help Australians to be more knowledgeable and healthy as a nation, through better understanding of how our lifestyles and diets impact on our health.

The first wave of the survey will be conducted over 2011-12 with results available in late 2012 and will be used by a wide range of health researchers, public health advocates, government, clinicians and community health organisations. The information will be used to identify health issues, design and evaluate new health programs and understand what affects our health.

Further information and detailed questions and answers are available on the ABS website at [www.abs.gov.au/australianhealthsurvey](http://www.abs.gov.au/australianhealthsurvey)

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## **Canada**

### **Census / National Household Survey**

The 2011 Census of Population and Housing is now under way in Canada. May 10, 2011 was Census day and Statistics Canada is pushing further with data collection strategies first adopted in 2006: mailout was extended to about 80% of dwellings and about 40% of responses are expected via Internet. In a major change the Census has contacted dwellings in a series of waves designed to maximize response via Internet while minimizing non-response. In the first wave of contact, 60% of dwellings received a letter inviting response via Internet while the remainder received questionnaire packages (including the Internet response option). This was followed as required by subsequent waves of non-response follow-up via reminder cards, questionnaire packages and personal visit.

In a second major change, the Census will use only a short questionnaire collecting data on household composition as well as demographic and language variables. The long form questionnaire, administered in prior Canadian Censuses to 20% of dwellings, is eliminated from the Census. For 2011 it is administered via the National Household Survey (NHS), a voluntary survey of about 33% of dwellings in the country. The survey is being conducted concurrently with the Census, taking advantage of the same collection and processing infrastructure.

The first releases of data from the Census and NHS will occur in February 2012 and spring 2013, respectively.

For more information please contact David Dolson (613 951-4783, [david.dolson@statcan.gc.ca](mailto:david.dolson@statcan.gc.ca)) or Marc Hamel (613 951-2495, [marc.hamel@statcan.gc.ca](mailto:marc.hamel@statcan.gc.ca))

### **Consumer Price Index**

The Canadian Consumer Price Index (CPI) is a measure of changes in retail prices paid by consumers for goods and services in a predetermined basket of commodities. It is the most widely used indicator of price changes in Canada. To better reflect the increasing complexity of the Canadian economy, a gradual five-year enhancement project was initiated in 2010-2011. Improvements are focussed in four areas: sampling; basket updates; price measurements; and data processing infrastructure.

In practice, the project involves improving the representativeness of the sample both in terms of product consumed and outlets visited by the Canadians. The size of the sample will also be increased as the number of price quotes is expected to double by the time the project is completed. Weights from the basket of commodities will be updated more frequently --from every 4 years to at least every second year. Price measurement methods, in particular when related to quality change, will also be reviewed and improved as needed. Finally, the processing systems and infrastructure will be adapted and modernized.

There are many interesting activities in a project of this scope for methodologists. For the first year of the project, emphasis was put on the sample itself and the challenges related to the use of a non-probabilistic sample, as is typically the case in CPI surveys.



For more information, contact Richard Evans ([richard.evans@statcan.gc.ca](mailto:richard.evans@statcan.gc.ca)), Consumer Price Division, or Susie Fortier ([susie.fortier@statcan.gc.ca](mailto:susie.fortier@statcan.gc.ca)), Business Survey Methods Division, Statistics Canada, Ottawa, Ontario, K1A 0T6.

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## **France**

In 1999, France conducted its final comprehensive census of population. In 2004, the census was replaced with an annual survey covering 14% of the population: a five-year rotating census of small municipalities and an annual survey of 8% of the dwellings in large municipalities. The threshold between the two types of survey — a population of 10,000 — divides France's population into two equal halves. In each year *n*, the statistics agency publishes detailed results representing the situation in year *n*-3 using data from the last five annual waves (*n*-5 to *n*-1).

The move away from a comprehensive census raises questions about the quality of the demographic estimates. For previous censuses, INSEE estimated that the undercount was 1.8% and double counting was 0.8%, which amounted to net undercoverage of 1%. How could an equivalent estimate be produced for the 8% survey of large municipalities?

The survey of large municipalities is based on a comprehensive inventory of dwellings carefully maintained by INSEE in conjunction with the municipal administration. The result is a thorough area survey of dwellings that includes only primary residences. A non-response report prepared by the census representative primarily with information collected from the neighbourhood provides excellent coverage, eliminating or minimizing omissions.

Consequently, the only risk is that of double counting. One of the aims of the family and dwellings survey associated with the 2011 census is to help measure the risk of double counting in the census by providing information about certain multi-residence situations that could involve double counting. The concept of primary residence can lead to ambiguities. First, children of separated parents who split their time between their parents' residences could be reported by both parents, despite explicit instructions. There are many other multi-residence situations in which residents may respond to the census at each of their dwellings [OR more than one dwelling]. Conventional censuses covered all residences at once, forcing residents to choose their primary dwelling. With the new census method, however, this very seldom happens. The family and dwellings survey is used to identify multi residence situations for adults and children. It is a four-page report added to the census file for a sample of collection areas, which amounts to an expected sample of about 350,000 adults. Unlike previous surveys, it is voluntary, just as the family history survey associated with the 1999 census was. As in 1999, the voluntary nature of the survey is due to some of the subjects it covers (the 2011 family and dwellings survey explores the various types of couple relationships, including same-sex couples). The 2011 survey is voluntary also because of the way it is administered. This year, the census and survey are being conducted by the municipalities, and their participation in the survey is also optional (since the survey is not covered by the census law). There is, of course, a price to pay in terms of non-response, or selective non-response. The 1999 survey had a non-response rate of 20%, while previous surveys enjoyed much lower rates. On the other hand, the concurrent census provides many variables that can be used to study and adjust for non-response. Careful consideration must always be given to the costs and benefits of making surveys

associated with the census voluntary. We are aware that this is a hotly debated issue in other countries.

The survey results are expected in 2013. In the meantime, enquiries may be addressed to survey manager Pascale Breuil ([pascale.breuil@insee.fr](mailto:pascale.breuil@insee.fr)).

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## **India**

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India

Almost every country in this world has its own statistical agencies or bureaus. The apex body of the official statistical system in India is the Department of Statistics in the Ministry of Statistics and Programme Implementation (MOSPI). This department acts as the nodal agency for the planned development of the country's statistical system. It comprises the Central Statistical Organization (CSO), the National Sample Survey Organization (NSSO) etc. This body also administers the Indian Statistical Institutes - the most prestigious statistical studies institutes in the country. MOSPI conducts training every year on different aspects (further details can be access at [http://mospi.nic.in/Mospi\\_New/upload/nasa\\_training\\_calendar\\_2011-12.pdf](http://mospi.nic.in/Mospi_New/upload/nasa_training_calendar_2011-12.pdf)). MOSPI attaches considerable importance to coverage and quality aspects of statistics released in the country.

Today, the discipline of statistics in India can blow your own horn of a separate ministry in the central government (Ministry of Statistics and Program Implementation), a separate arm of bureaucracy (Indian Statistical Service), a world class set up for information gathering called National Sample Survey Organization (NSSO), several specialized research institutes (Indian Statistical Institute (ISI), Indian Agricultural Statistics Research Institute (IASRI), Institute for Research in Medical Statistics), nearly a dozen journals, about 100 educational centers that offer trainings at Masters and Doctorates and perhaps a thousand or more colleges with degree programs. In this era of outsourcing, many pharmaceutical industries have established centers for statistical analysis of their data, in Mumbai. Similar centers for business intelligence use statisticians for analytics (stock market, retail sales management etc.) This is a very creditable list for any country.

Two founding fathers of statistics in India, namely P C Mahalanobis and P V Sukhatme, both recognized and emphasized the role of statistical sample surveys. India became well known for achievements in theory and practice of sample surveys. Eminent statistician C.R. Rao has been named for India's top science award in recognition of his distinguished services to the country. The India Science Award, instituted by the Union government under the science and technology department in 2006, carries Indian Rupees 2.5 million cash prize, a citation and a gold medal. The award is announced and presented every year at the Indian Science Congress (ISC) to an outstanding scientist.

MOSPI organizes Statistics Day-India every year at the national level. In recognition of the notable contribution made by Prof. Prasanta Chandra Mahalanobis in the fields of economic planning and statistical development in the post independent era, the Govt. of India has decided to designate 29th June of every year, his birth anniversary, as Statistics Day in the category of special day.

Indian Agricultural Statistics Research Institute is another apex body. It leads all statistics groups in agricultural universities and ICAR institutes. The International Institute for Population Sciences (IIPS), Mumbai serves as a regional Institute for Training and Research in Population Studies for the ESCAP region. Besides teaching and research activities, the Institute also provides consultancy to the Government and Non-Government organizations and other academic institutions. IIPS organizes once every two years an International conference focusing on policy or issues of current importance and one workshop on Technical and methodological advances. IIPS is conducting short term training programs on various aspects every year (details can be seen in site [http://www.iipsindia.org/short\\_term\\_courses.htm](http://www.iipsindia.org/short_term_courses.htm)).

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## **Malaysia**

The Regional Conference on Statistical Sciences 2010(RCSS10) was held in Kota Bharu in the north eastern state of Kelantan on 13-14 June 2010. It was jointly organized by MARA University of Technology (UiTM) and the Malaysian Institute of Statistics (ISM). The conference was attended by students, researchers and academics, including a few from other countries.

The papers presented cover a broad range of topics which include directional statistics, statistical modeling, quality control, data mining, decision sciences, robust statistics, Bayesian methods, educational statistics, survival analysis, sampling and measurement, forecasting, design of experiments, multivariate analysis, time series, structural equation modeling and financial forecasting.

Further details concerning the conference and the papers presented can be obtained from ISM's website at <http://www.instatmy.org.my>

The Malaysian Institute of Statistics (ISM), was officially registered in August 17, 1984 as a non-profit making body. Its vision is to be a leading organization in promoting the proper practice, propagation, and dissemination of statistical knowledge for the benefit of society.

Besides the RCSS10, ISM's recent activities include organizing the World Statistics Day at the University of Malaya on 9 October 2010.

More information on ISM is available on <http://www.instatmy.org.my>. For further details of upcoming events please contact: Ibrahim Mohamed ([secretary@instatmy.org.my](mailto:secretary@instatmy.org.my) or [imohamed@um.edu.my](mailto:imohamed@um.edu.my)).

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## **New Zealand**

### **The New Zealand Health Survey – Unified Survey Design.**

The New Zealand Health Survey (NZHS) is an important data collection tool for monitoring the health of the population and forms part of the Programme of Official Social Statistics. This programme was established by Statistics New Zealand to

develop and co-ordinate official social statistics across government. The NZHS is funded and managed by the New Zealand Ministry of Health, with the fieldwork contracted out to a private research agency.

Previously the NZHS has consisted of individual surveys conducted once every three or four years. The wider survey programme has also included Adult and Child Nutrition Surveys, Tobacco, Alcohol and Drug Use Surveys, Te Rau Hinengaro (the New Zealand Mental Health Survey) and an Oral Health Survey (Ministry of Health 2009).

From 2011 the NZHS and the various surveys that are part of the wider survey programme will be integrated into a single survey which will be in continuous operation. The sample design and mode of data collection will be similar to the 2006/07 NZHS (Ministry of Health 2008).

The survey will comprise a set of core questions combined with a flexible programme of rotating thematic/topic modules. The questionnaire will be administered (face-to-face and computer assisted) to adults aged 15 years and older as well as to children aged 0 to 14 years, generally through their primary caregiver who acts as a proxy-respondent. Consideration will also be given to collecting some information directly from school-aged children.

The rationale for moving to an integrated survey that will be in continuous operation is to make more effective use of available resources and improve the monitoring of the health of the New Zealand population and associated health inequalities. In particular the new approach allows for greater flexibility of content and more frequent updating of information. The ability to add survey questions on a range of topics of emerging policy interest, and to monitor outcomes before and after any period, will enhance the survey's contribution to the evidence base for health policy.

### **The Impact of the Christchurch Earthquake on Statistics New Zealand's Outputs.**

The February 22<sup>nd</sup> 2011 earthquake in Christchurch (Canterbury Region) has had a major effect on Statistics New Zealand's information releases, following damage to the building in the city centre where many of our statistical releases are prepared and approximately 200 of our staff work. Much of our work on business indicators like building consents, trade surveys and manufacturing surveys are based in Christchurch, as is work on population measures like migration. These disruptions lead to the cancellation of the 5-yearly 2011 Census of Population.

In order to meet the challenges presented, Statistics New Zealand has taken a number of steps, including:

1. Focussing resources on the core outputs of Gross Domestic Product (GDP), Consumers Price Index, Balance of Payments (BoP), Household Labour Force Survey and population estimates. In addition, the surveys that 'feed' the above and / or are also considered important indicators in their own right have been given priority.
2. Implementation of an exclusion zone in the wider Canterbury area and, apart from those business surveys posted prior to the earthquake, no survey collection activity has taken place in that zone since February 22. The exclusion zone is currently being reviewed.
3. Questions are to be added to the next Household Labour Force Survey (HLFS) on households with people from Canterbury staying with them. The

collection phase takes place in April. The HLFS has the largest sample of the department's household surveys.

4. A number of longer term issues are being assessed in relation to the future releases of core outputs. These include the availability of staff and facilities in Christchurch; access to data stored and processing systems based in Christchurch; and the ability to survey Christchurch businesses, households and individuals.

Given their experiences, we have made contact with the Australian Bureau of Statistics, the US Bureau of Labour Statistics and the Japanese Statistical Office to assist in determining the best ways of coping with these methodological challenges. The aim is that methods used will be consistent, as far as possible, across our outputs. We will highlight any areas of concern in our releases, and in time will provide a methodological working paper.

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## **Philippines**

### **Proposals to Reorganize the Philippine Statistical System**

The Philippine Statistical System (PSS) is now the subject of thorough review by the country's legislative body. The review was an offshoot of the study made by the 2007 Special Committee to Review the PSS, recommending the reorganization of the country's statistical system to meet the challenges in delivering statistical information requirements to its users in a timely, reliable, relevant and useful fashion, especially for crafting development policies responsive to the needs of the public. The 2007 study took cognizance of the many challenges faced by PSS in meeting statistical information requirements for policy and planning with the current complexities in economic transactions and the changes affecting product mixes. This is due to globalization and new technologies, coupled with increasing data demands especially for statistics required in local development planning. Although the PSS has been positively regarded in the international community and able to meet a number of international specifications, there are many areas for improvements, especially in macroeconomic and subnational statistics.

One key recommendation included in the proposed reorganization bills is the consolidation of primary data collection under one agency to improve responsiveness, coordination, reliability, timeliness, and relevance of information. Currently, the PSS has several statistical agencies undertaking primary data collection. The proposed consolidation is expected to promote efficient statistical operations and effective coordination without increasing the number of human resources presently available among the major statistical agencies and with less maintenance cost for field offices. In general, the proposed reorganization will lead to reduction of the number of MSAs in the PSS from 5 to 2.

The various reorganization proposals are now undergoing technical review and hearings in both the House of Representatives and Senate of the Philippines. The public hearings, as well as the technical working group meetings, are usually attended by heads of the major statistical agencies (MSAs), members of the review committee and other stakeholders. Hopefully, before the middle of this year, a final

version of the reorganization bill will be crafted for submission to the President of the Philippines.

For further information, please contact, Gervacio G. Selda, Jr., Statistical Research and Training Center at [ggseldajr@srctc.gov.ph](mailto:ggseldajr@srctc.gov.ph)

### **The Philippine Statistical Development Program (PSDP) for 2011-2017**

The PSS is now coming up with a successor Philippine Statistical Development Program (PSDP) covering the period 2011-2017. The program sets the directions, thrusts and priorities of the PSS where it determines priority statistical programs and activities to be undertaken in the medium term. It provides vital information support for the Medium-Term Philippine Development Plan (MTPDP) and promotes efficiency of statistical operations through an optimum use of available resources and adoption of cost effective measures. The PSDP will be the blueprint of all programs and activities to be undertaken by the country in the next 6 years. It will also serve as a tool for integrating and coordinating the statistical activities of the government and will enjoin compliance and cooperation among various agencies.

The preparation of the PSDP will take into consideration the guidelines in the design of a National Strategy for the Development of Statistics (NSDS) as formulated by the Partnership in Statistics for the Development in the 21st Century (PARIS21). The NSDS is a strategic approach being advocated by PARIS21 to provide the information requirements and improve the statistical base of the countries in monitoring and evaluating national development programs.

The successor program is envisioned to be more concise than the current 2005-2010 PSDP so as to preserve focus and readability. Prioritization of activities will be made in the context of diminishing resources for statistics. Multi-year plans of major statistical agencies will also be considered in the planning process of the PSDP and due consideration of the need to prepare medium-term expenditure and human resource development program for the PSS.

The formulation of the PSDP was formally launched on February 15, 2011 to solicit support from high-level government officials and other stakeholders and inform them of on-going PSDP activities.

For further information, please contact, OIC-Director Cynthia S. Regalado, National Statistical Coordination Board, at e-mail: [cs.regalado@nscb.gov.ph](mailto:cs.regalado@nscb.gov.ph).

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### **United Kingdom**

Peter Lynn

The 2011 Census of Population took place in March. For the first time, census forms were mailed to all residential addresses, rather than being personally delivered, with recipients having the option of either returning the paper form or completing it on the web. Further information can be found at [www.census.gov.uk](http://www.census.gov.uk). The "Beyond 2011" project is now investigating whether a combination of survey and administrative sources could provide an alternative to the traditional census in future ([www.ons.gov.uk/about-statistics/methodology-and-quality/imps/beyond-2011/](http://www.ons.gov.uk/about-statistics/methodology-and-quality/imps/beyond-2011/)).

Recently-released British Crime Survey Data is the first to have included children aged 10-15. Previously the survey only interviewed persons aged 16 or over. This extension to the coverage of the survey follows recommendations in a report published in 2008 (<http://rds.homeoffice.gov.uk/rds/pdfs08/horr06c.pdf>), which in turn was a response to independent reviews of crime statistics carried out in 2006 (<http://rds.homeoffice.gov.uk/rds/statsrev.html>). In January 2011, a further independent review of the UK government's collection and publication of crime statistics was announced (<http://crimstatsrev.notlong.com>). Any recommendations from the review are scheduled to be implemented from April 2012.

The world's largest Household Panel Survey, "Understanding Society: The UK Household Panel Survey," (<http://www.understandingsociety.org.uk/>) released its first data in December 2010. The survey interviews around 100,000 people each year and includes collection of biomarkers and linkage to administrative data as well as extensive socio-economic questionnaire data. An associated programme of methodological work is addressing a range of issues including mixed mode designs, attrition, and measurement of change (<http://research.understandingsociety.org.uk/publications>). The first Understanding Society research conference was held at the University of Essex in June 2011 (<http://www.iser.essex.ac.uk/understanding-society-bhps-conference-2011>).

In Autumn 2010 Prime Minister David Cameron announced that his government wished to begin publication of indicators of the nation's subjective well-being, to complement existing indicators of financial and material well-being. A broad public debate about the measurement of well-being ensued, involving considerable media coverage of survey measures of well-being, happiness, and related concepts. The Office for National Statistics is carrying out a consultation on what to measure and how to measure it ([www.ons.gov.uk/well-being](http://www.ons.gov.uk/well-being)).

Following major budget cuts announced by the government there was a consultation on the work programme of the Office for National Statistics. The outcomes of the consultation are available at [www.ons.gov.uk/about/consultations/closed-consultations/work-programme-consultation](http://www.ons.gov.uk/about/consultations/closed-consultations/work-programme-consultation).

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# New and Emerging Methods

## Proxy Pattern-Mixture Analysis for Survey Nonresponse

Rebecca R. Andridge<sup>1</sup> and Roderick J. A. Little<sup>2</sup>

### Introduction

Missing data are often a problem in sample surveys, arising when a sampled unit does not respond to the entire survey (unit nonresponse) or to a particular question (item nonresponse). We propose a new method for measurement of, and adjustment for, nonresponse in a single continuous variable  $Y$  subject to missing values, when a set of variables  $Z = (Z_1, Z_2, \dots, Z_p)$  are available for both respondents and nonrespondents. With unit nonresponse, this set of variables is generally restricted to survey design variables, except in longitudinal surveys where variables are measured prior to dropout. With item nonresponse, the set of observed variables can include survey items not subject to nonresponse, and hence is potentially more extensive. With a set of variables  $Y$  subject to nonresponse, our methods could be applied separately for each variable, but we do not consider here methods for multivariate missing data where variables are missing for different sets of cases.

The three major components to consider in evaluating nonresponse are (a) the amount of missing data, (b) differences between respondents and nonrespondents on characteristics observed for the entire sample, and (c) the relationship between these fully observed covariates and the survey outcome of interest. Each facet provides some information about the impact of nonresponse, but no single component completely tells the story.

The response rate is the most common metric for evaluating nonresponse. However, response rates ignore the information contained in auxiliary covariates observed for nonrespondents, and some studies suggest its relationship with nonresponse bias is weak (Groves, 2006). Comparisons of respondents and nonrespondents on known covariates are useful (Federal Committee on Statistical Methodology, 2001). A related approach is to focus on the response propensity, the estimated probability of response given the covariates, which is the auxiliary variable that is most different between respondents and nonrespondents. Schouten, Cobben, and Bethlehem (2009) and Särndal and Lundström (2005, 2008) propose measures based on the propensity to assess the degree of representativeness of the respondents. Though these measures are appealing, they do not capture a key aspect of nonresponse bias, namely the relationship between the propensity and the survey variables of interest.

Wagner (2010) proposed using the fraction of missing information after multiple imputation as a measure of survey quality, and this metric incorporates the value of the auxiliary information in predicting survey outcomes. This approach gives

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appropriate credit to the availability of good predictors of  $Y$  in the auxiliary data as well as a high response rate, but it is more focused on precision than bias, and it assumes the data are missing at random (MAR); that is, missingness of  $Y$  is independent of  $Y$  after conditioning on the covariates  $Z$  (Rubin, 1976, Little and Rubin, 2002). The strength of this assumption depends on the predictive value of the covariates. In contrast to the propensity-based measures, this approach cannot provide a single measure of the impact of nonresponse, since by definition measures are outcome-specific.

### Proxy Pattern-Mixture Analysis

Our proposed method, proxy pattern-mixture analysis (PPMA) integrates the three aspects (nonresponse rate, respondent/nonrespondents differences in auxiliary data, and relationship between auxiliary data and the outcome), in a way which we find intuitive and satisfying. The key to PPMA is the reduction of the multivariate auxiliary data  $Z$  to a single proxy variable  $X$  that has the highest correlation with  $Y$ . This proxy variable is estimated by regressing  $Y$  on  $Z$  using the respondent data, including important predictors of  $Y$ , as well as interactions and nonlinear terms where appropriate. Specifically, values of the proxy are taken to be the predicted values from the model, and because the auxiliary data  $Z$  is available for the entire sample, the proxy  $X$  is available for both respondents and nonrespondents. In practice the regression coefficients that create the proxy are subject to sampling error and hence  $X$  is estimated rather than known, so we use a Bayesian estimation approach that allows incorporation of this uncertainty.

The creation of the proxy  $X$  creates the framework for assessing the potential for bias assessment and adjustment. The information about nonresponse bias for  $Y$  depends on the strength of the proxy and the nonresponse bias in the proxy itself. Strength of the proxy is measured by the estimated correlation  $\hat{\rho}$  between  $Y$  and  $X$  among the respondents. The deviation from missing completely at random (MCAR) in  $X$  is captured by the difference between the mean of the proxy in respondents and nonrespondents,  $\bar{x}_{NR} - \bar{x}_R$ . These two pieces of information, along with the nonresponse rate,  $(n-r)/n$ , are combined to form an adjusted estimate of the mean of  $Y$  of the form,

$$\hat{\mu}_y = \bar{y}_R + \left( \frac{n-r}{n} \right) \left( \frac{\lambda + \hat{\rho}}{\lambda \hat{\rho} + 1} \right) (\bar{x}_{NR} - \bar{x}_R)$$

This estimator is the maximum likelihood (ML) estimate of the mean of  $Y$  for a pattern-mixture model (Little, 2004), which assumes different normal distributions for  $X$  and  $Y$  for respondents and nonrespondents, and a probability of being missing that depends on  $X$  and  $Y$  through an unknown function of  $X + \lambda Y$ . Unfortunately there is no information about the parameter  $\lambda$  in the data – this is generally true for methods that model deviations from MAR. Following Little (1994), we propose a sensitivity analysis, where estimates are generated for a range of values of  $\lambda$  between 0 and infinity, specifically 0, 1 and infinity; the choice of 0 corresponds to MAR, the intermediate choice of 1 implies the standardized bias of  $Y$  is the same as the bias of  $X$ , and the choice of infinity is the most extreme deviation from MAR; estimates for this case have the highest variance. As  $\lambda$  varies between 0 and infinity, the middle factor  $(\lambda + \hat{\rho})/(\lambda \hat{\rho} + 1)$  varies between  $\hat{\rho}$  (when  $\hat{\mu}_y$  is the standard regression estimator of the mean) and  $1/\hat{\rho}$  (when  $\hat{\mu}_y$  is the inverse regression estimator proposed by Brown (1990)). The sensitivity of the estimate to the choice of  $\lambda$  is small

when  $\hat{\rho}$  is close to 1, that is we have a strong proxy variable, and large when  $\hat{\rho}$  is close to 0, that is we have a weak proxy variable.

Note that the adjustment of the respondent mean  $\bar{y}_R$  in this estimate incorporates the three key nonresponse factors we mentioned in the introduction – the nonresponse rate  $(n-r)/n$ , the correlation  $\hat{\rho}$  between auxiliary information and the outcome, and the nonresponse bias in auxiliary data (deviation of  $\bar{x}_{NR}$  from  $\bar{x}_R$ ) in a very simple and intuitive way. The adjustment increases with the nonresponse rate and the deviation of the mean of  $X$  for respondents and nonrespondents.

A convenient way to account for uncertainty in creation of the proxy as well as complex sample design features is to replace ML estimation by a closely related multiple imputation (MI) approach. We create  $K$  complete data sets by filling in missing  $Y$ -values with draws from the posterior distribution, based on the pattern-mixture model mentioned above. Draws from the posterior distribution of  $Y$  for a particular choice of  $\lambda$  are obtained by first drawing the parameters (including regression coefficients) from their posterior distributions, and then drawing the missing values of  $Y$  based on the conditional distribution of  $Y$  given  $X$  for nonrespondents. Details are given in Andridge and Little (2011).

Sample weights and other design variables can be used as auxiliary variables  $Z$  in the creation of the proxy. Complex design features like clustering, stratification and unequal sampling probabilities will also be incorporated in the within-imputation variance component of the MI inference. Once the imputation process has created complete data sets, design-based methods can be used to estimate  $\mu_y$  and its variance.

### Illustration of the Method to NHANES Data

We now briefly illustrate the PPMA sensitivity analysis using data from the Third National Health and Nutrition Examination Survey (NHANES III). Further illustrations of the PPMA method are available in Andridge and Little (2011), including illustration of the impact of  $\hat{\rho}$ ,  $\bar{x}_{NR} - \bar{x}_R$ , and the nonresponse rate as well as a demonstration of the robustness of the PPM model when data arise from a selection model with a range of nonresponse mechanisms.

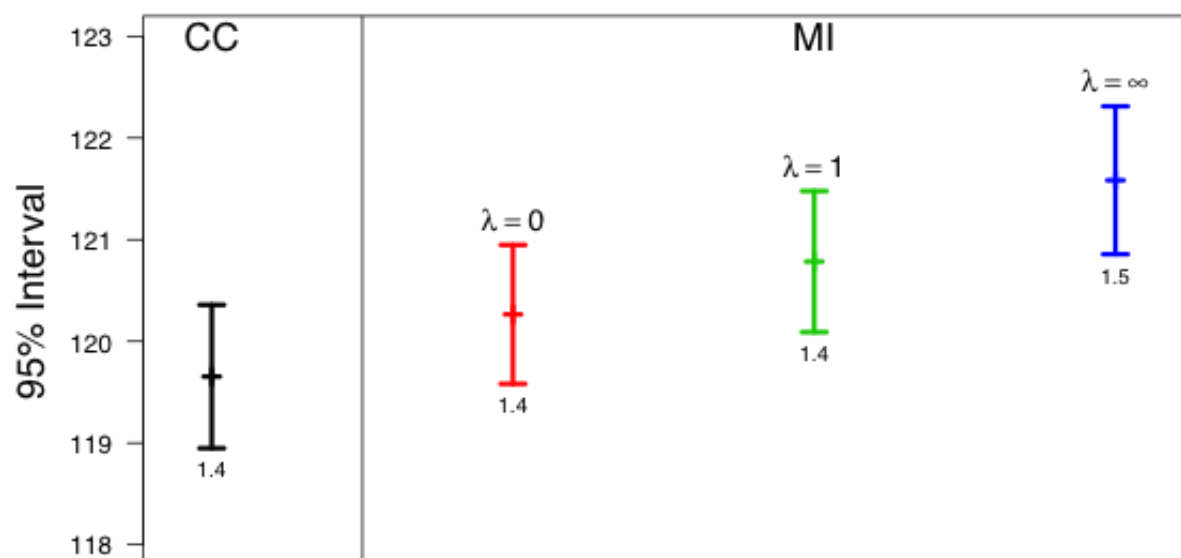
Details of the survey design and data collection procedures for NHANES are available elsewhere (U.S. Department of Health and Human Services, 1994). For the purposes of our example, we focus on adults interviewed in a personal home interview ( $n=20,050$ ). Unit nonresponse was created when a portion of these subjects (9.4%) failed to complete a follow-up physical examination at a mobile examination center, and additional item nonresponse occurred as well. Variables that were fully observed for this sample were limited and included age, gender, race, and household size. The outcome variable for this illustration is systolic blood pressure (SBP), with a 15% missingness rate.

Using linear regression we created the proxy for SBP, using the fully observed variables listed previously as well as the design weight and indicators for strata and primary sampling units. We note that the regression model that created the proxy is unweighted, that is, the design weights are incorporated only through inclusion as covariates. There was both a large correlation between outcome and the proxy ( $\hat{\rho}=0.61$ ) but also a large deviation in the proxy ( $\bar{x}_{NR} - \bar{x}_R = 6.4$ ). We would consider

this the second most desirable situation, as the best-case scenario would be a strong proxy combined with a small value of  $\bar{x}_{NR} - \bar{x}_R$ .

Since NHANES III has a complex survey design, estimates of the mean and confidence intervals for  $\lambda = 0, 1$ , and infinity were obtained using multiple imputation with design-based estimators of the mean using the survey weights. A total of 20 multiply imputed data sets were created for each outcome. Resulting estimates and intervals are shown in Figure 1, along with the complete case estimate. The sensitivity analysis shows that assuming MAR ( $\lambda = 0$ ) results in significantly different mean estimates for SBP than assuming missing not at random. The analysis reveals that, if missingness on SBP is driven by the value of SBP itself, nonrespondents have considerably higher SBP than respondents and thus overall mean increases dramatically under this assumption, especially considering only 15% of the subjects are nonrespondents. Since the proxy is relatively strong, the length of the intervals does not drastically increase even under extreme NMAR ( $\lambda = \text{infinity}$ ).

Figure 1. Estimates of mean Systolic Blood Pressure for  $\lambda = 0, 1$ , and infinity based on NHANES III adult data. Numbers below intervals are the interval length. CC: Complete case; MI: 20 multiply-imputed data sets.



## Discussion

PPMA integrates all the various components of nonresponse noted in the introduction into a single sensitivity analysis. It is easy to implement, since the ML form is simple to compute, and the MI/Bayesian version does not require iterative Markov Chain Monte Carlo methods. PPMA does not assume MAR, an important advantage since MAR is often a strong and questionable assumption, particularly with unit nonresponse. The PPM sensitivity analysis only varies one sensitivity parameter,  $\lambda$ , but still manages to capture the impact on the mean of a range of assumptions about the missing data mechanism. It gives appropriate credit to the existence of good predictors of the observed outcomes, since the sensitivity analysis is less variable in this case. The analysis reinforces the idea that emphasis at the design stage should be on collection of strong auxiliary data to help evaluate and adjust for potential nonresponse, not solely on obtaining the highest possible response rate.

A limitation of PPMA is that by reducing the auxiliary data to the single proxy  $X$ , the coefficient  $\lambda$  is not associated with any particular covariate and hence is difficult to interpret, since the effects on missingness of individual covariates  $Z_j$  are lost. The pattern-mixture model proposed by Daniels and Hogan (2000) in the context of longitudinal data, uses a location-scale parameterization to model differences in the marginal distribution of  $Y$ ,  $Z$  for respondents and nonrespondents. This model is more readily interpretable than our approach, but it is severely underidentified -- even with a single  $Z$  it has three unidentified parameters, and additional specification is needed to limit the number of parameters to be varied in a sensitivity analysis. Our approach trades off interpretability for parsimony, allowing a single parameter to model deviations from MAR.

Another limitation of our analysis is that it focuses only on the mean of a particular outcome  $Y$ , so it is outcome-specific. Thus, in a typical survey with many outcomes, the analysis needs to be repeated on each of the key outcomes of interest and then integrated in some way that reflects the relative importance of these outcomes. This complication seems unavoidable, since nonresponse bias is small for variables unrelated to nonresponse, and potentially larger for variables related to nonresponse. Measures that do not incorporate relationships with outcomes, like the  $R$ -indicators of Schouten et al. (2009) or the  $q^2$  indicator of Sarndal et al. (2008), do not capture this dimension of the problem.

The pattern-mixture model that justifies the proposed analysis strictly only applies to continuous survey variables, where normality is reasonable, although we feel it is still informative when applied to non-normal outcomes. Extensions to categorical variables are possible via probit models, and many other extensions can be envisaged, including extensions to other generalized linear models. PPMA can be applied to handle item nonresponse by treating each item subject to missing data separately, and restricting the covariates to variables that are fully observed. However, this approach does not condition fully on the observed information, and extensions for general patterns of missing data would be preferable. Our future work on PPMA will focus on developing these extensions.

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- Little, R.J.A. (1994), "A Class of Pattern-Mixture Models for Normal Incomplete Data", *Biometrika*, 81, pp. 471-483.

Little, R.J.A. and Rubin, D.B. (2002), *Statistical Analysis with Missing Data*. 2nd edition. Wiley: New York.

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Särndal, C.E. and Lundstrom, S. (2005), *Estimation in Surveys with Nonresponse*. Wiley: New York.

Särndal, C.E. and Lundstrom, S. (2008), "Assessing Auxiliary Vectors for Control of Nonresponse Bias in the Calibration Estimator", *Journal of Official Statistics*, 24, pp. 167–191.

Schouten, B., Cobben, F., and Bethlehem, J. (2009), "Indicators for the Representativeness of Survey Response", *Survey Methodology*, 35, pp. 101–113.

Wagner, J. (2010), "The Fraction of Missing Information as a Tool for Monitoring the Quality of Survey Data", *Public Opinion Quarterly*, 74 (2): 223-243.

U.S. Department of Health and Human Services (1994), *Plan and Operation of the Third National Health and Nutrition Examination Survey, 1988-94*. Technical report, National Center for Health Statistics, Centers for Disease Control and Prevention.

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### **New and Emerging Methods – Call for Volunteers**

If you're interested in contributing an article to the "New and Emerging Methods" section of a future edition of *The Survey Statistician*, please contact Leyla Mohadjer at [leylamohadjer@westat.com](mailto:leylamohadjer@westat.com)

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# Announcements

**Collection des actes des précédents colloques Sondages**

**Tanger, 2010**  
Tremblay M.-E., Lavallée P. et El Haj Tairi M. (dir.)  
"Pratique et méthodes de sondage", Dunod. À paraître en 2011.

**Marseille, 2007**  
Guilbert Ph., Haziza D., Ruiz-Gazen A. et Tillé Y. (dir) (2008)  
"Méthodes de sondage. Enquêtes électorales, enquêtes dans le domaine de la santé, enquêtes dans les pays en développement", Dunod, collection cours et cas pratiques.

**Québec, 2005**  
Lavallée P. et Rivest L.P. (dir) (2006)  
"Méthodes d'enquêtes et sondages : Pratiques européenne et nord-américaine", Dunod, collection cours et cas pratiques.

**Autrans, 2002**  
Ardilly P. (dir) (2004)  
"Échantillonnage et méthodes d'enquêtes", Dunod, collection cours et cas pratiques.

**Bruxelles, 2000**  
Droesbeke J.J. et Lohart L. (dir) (2001)  
"Enquêtes, modèles et applications", Dunod.

**Rennes, 1997**  
Brossier G. et Dussaux A.M. (dir) (1999)  
"Enquêtes et Sondages. Méthodes, modèles, applications, nouvelles approches", Dunod.

Comité scientifique  
Olivier Santory (Président - Insee)  
Philippe Tassi (Vice-Président - Médiamétrie)

Comité d'organisation  
Eric Lesage (Président - Crest - Ensaï)  
Benoît Riandey (Vice-Président - Ined - SFDs)

**Colloque du 05 au 07 novembre 2012**

**Journées de formation**  
les 08 et 09 novembre 2012

dans les locaux de l'Ensaï,  
à Bruz (au sud de Rennes).

**<http://sondages2012.ensai.com>**  
 ADRESSE ELECTRONIQUE [Sondages2012@ensai.fr](mailto:Sondages2012@ensai.fr)

POSSIBILITES DE BOURSES POUR  
LES STATISTICIENS DES PAYS EN DEVELOPPEMENT



# ICESIV



## Fourth International Conference on Establishment Surveys Survey Methods for Businesses, Farms, and Institutions

*June 11–14, 2012, at the Sheraton Centre Montréal in Québec Canada*

The ICES series of conferences serves an important role in the world of survey methodology. Few other conferences focus on methods and applications for establishment surveys.

The first three conferences—held in 1993, 2000, and 2007—were successful, with more than 400 attendees per conference. The conferences covered a spectrum of survey methods for businesses, farms, and institutions. The fourth conference will continue along this path. Examples of potential topics include the following:

- Updating business registers
- Sample design challenges
- Questionnaire design for establishment surveys
- Collecting data electronically from establishment surveys
- Issues of multi-mode data collection
- Factors that affect establishment survey participation
- Generalized survey processing systems for establishment surveys
- Measuring nonresponse bias
- Variance estimation
- Advances in disclosure protection
- Efficient use of administrative data in establishment surveys
- New directions in establishment surveys

The conference will include short courses, a keynote speaker, poster sessions, software demonstrations, and invited and contributed paper sessions.

Online solicitation for invited papers opens December 1, 2010, and will continue until March 1, 2011. Online solicitation for contributed papers will occur June 1, 2011, through August 31, 2011. Inquiries may be directed to [ices4@amstat.org](mailto:ices4@amstat.org).



### **Call for Topic-Contributed Sessions, Contributed Papers, and Posters: Fourth International Conference on Establishment Surveys**

The Fourth International Conference on Establishment Surveys (ICES-IV) will be held in Montréal, Québec, Canada, June 11–14, 2012. ICES-IV will explore the current state of the art of establishment surveys. This will build on the cross-national interdisciplinary research cooperation on the unique features of establishment surveys started at ICES-I in Buffalo, NY in 1993, and continued at ICES-II in 2000 and ICES-III in 2007. Submission of proposals for topic-contributed sessions and abstracts for contributed papers and posters opens on June 1, 2011. The deadline for submission is August 31, 2011. See <http://www.amstat.org/meetings/ices/2012/>.

The conference will include short courses, a keynote speaker, poster sessions, software demonstrations, and invited and contributed sessions. For further information, please send an email message to [ices4@amstat.org](mailto:ices4@amstat.org).

## 2011 International Methodology Symposium



Statistics Canada  
November 1-4, 2011  
Ottawa, ON, Canada

### **Strategies for Standardization of Methods and Tools - How to get there** **Early-bird Registration until September 23<sup>rd</sup>**

Statistics Canada's 2011 International Methodology Symposium will take place at the new Ottawa Convention Centre (located in the heart of downtown Ottawa) from **November 1-4, 2011**.

The Symposium, entitled "**Strategies for Standardization of Methods and Tools – How to get there**", invites members of the community, from private organizations, governments or universities, to attend, particularly those who have a special interest in statistical or methodological issues resulting from the standardization of statistical methods and tools.

Symposium highlights include:

- Full-day **workshops** on Tuesday, November 1<sup>st</sup>
  - a. Statistical Disclosure Control: A Risk-Utility Framework (Natalie Shlomo, University of Southampton)
  - b. Record Linkage Methods: Theory and Application with G-Link (Antoine Chevrette and Abdelnasser Saidi, Statistics Canada)
  - c. Developments in Small Area Estimation: Methods, Applications and Software Development (Mike Hidirolou and Victor Estevao, Statistics Canada and J.N.K. Rao, Carleton University)
- **Susan Linacre**, Australian Bureau of Statistics, as the keynote speaker on Wednesday, November 2<sup>nd</sup>
- **Danny Pfeffermann**, Hebrew University, as the Waksberg Award speaker on Thursday, November 3<sup>rd</sup>

The Symposium also anticipates a stimulating program of more than 60 invited and contributed presentations from Wednesday November 2<sup>nd</sup> to Friday, November 4<sup>th</sup>, on topics including:

- |                                     |                                 |
|-------------------------------------|---------------------------------|
| • Sampling Frames and Sample Design | • Data Processing               |
| • Content and Questionnaire Design  | • Edit and Imputation           |
| • Data collection                   | • Weighting and Estimation      |
| • Time Series                       | • Dissemination and Data Access |
|                                     | • Confidentiality               |
|                                     | • International Surveys         |



# International Conference on Methods for Surveying and Enumerating Hard-to-Reach Populations

October 31–November 3, 2012

Marriott New Orleans at the Convention Center, New Orleans, Louisiana, U.S.A.

## Calls for Submissions

**February–March 2011:**  
Invited Call for Submissions

**April–May 2011:**  
Contributed Call for  
Submissions

The H2R 2012 conference will bring together survey methodologists, sociologists, statisticians, demographers, ethnographers, and other professionals from around the world to present new and innovative techniques for surveying hard-to-reach populations.

Addressing both the statistical and survey design aspects of including hard-to-reach groups, researchers will report findings from censuses, surveys, and other research related to the identification, definition, measurement, and methodologies for surveying and enumerating undercounted populations.

## Identifying, Defining, and Measuring the Hard-to-Reach (HTR)

- Defining HTR populations
- Measuring undercounts for HTR groups
- Improving measurement with administrative records
- Sampling HTR populations

## Techniques and Methodologies

- Recruitment methods
- Targeting the HTR
- Use of social marketing and outreach campaigns
- Overcoming language and literacy barriers
- Use of community-based organizations
- Dealing with complex living and housing situations
- Tracking and tracing HTR populations

## HTR Subpopulations

- Racial minorities
- Immigrant populations
- Indigenous populations
- Highly mobile and migrant populations
- Homeless and refugee populations
- Sexual minorities
- Populations affected by natural disasters
- Populations in zones of armed conflict
- Stigmatized populations
- Cross-cultural similarities and differences in HTR populations
- Linguistic and cultural minorities

For information, visit [www.amstat.org/meetings/h2r/2012](http://www.amstat.org/meetings/h2r/2012) or email [H2R2012@amstat.org](mailto:H2R2012@amstat.org).

**H2R|2012**  
Survey Methods for Hard-to-Reach Populations





# EESW11

## 2011 European Establishment Statistics Workshop 12 – 14 September 2011, Neuchâtel, Switzerland

### Call for papers

We are pleased to invite you to the "2011 European Establishment Statistics Workshop", the second European workshop on methodological issues in the production of statistics regarding businesses and other organisations. It will be held at the Swiss Federal Statistical Office in Neuchâtel, Switzerland, from 12 to 14 September 2011.

EESW11 is an ideal opportunity for official statistics methodologists, academic researchers and practitioners from the business sphere to exchange and learn about best methodological practice for all stages of the statistical production process. Potential subjects are sample design, data collection, editing and imputation, the use of administrative data, estimation, modelling, etc. Statistical methodology is the key resource for producing high quality statistics, especially in times of budgetary pressure.

### We are soliciting contributions that address:

- maintaining and developing business statistics in an era of budgetary reductions,
- creating systems for the production of economic statistics through common methodologies and integration across the statistical production process,
- strengthening integration of national accounts with other components of economic statistics (including topics like micro and macro coherence, systems of statistical units, improving the validation process),
- ensuring consistency between small area, regional, national and European levels.

### Contributions that are addressing other areas are also welcome, for instance:

- survey planning and total survey error in establishment surveys,
- integration of survey data and administrative data (including data quality aspects in registers and their measurement error),
- data collection in establishment surveys,
- advances in sampling for establishments and other skewed populations,
- editing and estimation,
- control of response burden through improvements in survey methodology,
- users' perspective on quality of economic statistics, etc.

*More details concerning the workshop will be posted successively at [www.enbes.org](http://www.enbes.org).*

### Important Deadlines

- Application (see application form): 16 March 2011
- Notification of acceptance: 15 April 2011
- Paper submission ( max 5 pages ): 15 August 2011

Department of Statistics, University of Economics in Katowice

Department of Statistical Methods, University of Łódź

Polish Statistical Association

*Invite for the 7<sup>th</sup> conference*

## ***Survey Sampling in Economic and Social Research***

**September 2011, Katowice, Poland**

Detailed information:

**<http://web.ue.katowice.pl/metoda>**

### **Topics may include:**

1. Estimation of population parameters based on complex samples
  2. Statistical inference based on incomplete data
  3. Small area estimation
  4. Sample size and cost optimization in survey sampling
  5. Sampling designs
  6. Statistical inference using auxiliary information
  7. Model-based estimation
  8. Longitudinal surveys
  9. Practical implementations of sampling methods
  10. Sampling in statistical quality control
  11. Sampling in auditing
- 
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### **Insee Statistical Methodology Conference in 2012**

The eleventh edition of “Les Journées de Méthodologie Statistique” (JMS) organized by the National Institute for Statistics and Economic Studies (INSEE) will be held from Tuesday 24 January to Thursday January 26, 2012.

These Days will be held in the Cité Internationale Universitaire de Paris, 17 boulevard Jourdan, 75014 Paris.

Conditions, deadlines for submission of papers will be detailed in further calls.

Besides the oral presentations organized in plenary and parallel sessions, papers focused on more precise objectives could also be proposed in written form only.

The JMS website (in French) is being updated but it can be visited at the following address :

[http://jms.insee.fr/?php\\_action=&r=1&limite=&liste=&largeur=1440](http://jms.insee.fr/?php_action=&r=1&limite=&liste=&largeur=1440)

The website contains all references of papers since 1991.

The conference is in French but some contributions in English could be accepted.

The possible contacts are :

- [DG75-journees-de-methodologie-statistique@insee.fr](mailto:DG75-journees-de-methodologie-statistique@insee.fr)
  - Marc CHRISTINE or Claudine GASNIER, preferably by email  
([marc.christine@insee.fr](mailto:marc.christine@insee.fr) [claudine.gasnier@insee.fr](mailto:claudine.gasnier@insee.fr))
  - INSEE, Stamp D001, 18 Boulevard Adolphe Pinard, 75014 PARIS
- Le Coordonnateur général des JMS : Marc Christine
- 
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UNITED NATIONS ECONOMIC COMMISSION  
FOR EUROPE  
CONFERENCE OF EUROPEAN STATISTICIANS

EUROPEAN COMMISSION  
STATISTICAL OFFICE OF THE EUROPEAN  
COMMUNITIES (EUROSTAT)

Joint UNECE/Eurostat Work Session on Statistical Data Confidentiality  
(Tarragona, Spain, 26-28 October 2011)

### INFORMATION NOTICE No. 1

The meeting will be held at the Presidence Building, Universitat Rovira i Virgili,  
Carrer Escorxador s/n, Tarragona,  
from 26 to 28 October 2011, starting at 9.30 a.m.

#### I. PURPOSE OF THE MEETING

1. The main objectives of the meeting are to facilitate the exchange of experience and identify the best practices in dealing with technical issues related to statistical data confidentiality in national statistical offices. The meeting is primarily intended for experts from national and international statistical offices as well as invited academics dealing with statistical disclosure limitation. At the kind invitation of the Universitat Rovira i Virgili, the meeting will be held from 26 to 28 October 2011 in Tarragona (Spain).

2. Statistical disclosure limitation is an important issue influencing public perception of official statistics. Statistical confidentiality and protection of respondents' privacy is included in the Fundamental Principles of Official Statistics, which the United Nations Economic Commission for Europe adopted at its 1992 annual session.

#### II. AGENDA OF THE MEETING

3. The work programme of the meeting will consist of the following substantive topics:

- (i) Disclosure risk assessment;
- (ii) Software research and development;
- (iii) Census and other applications;
- (iv) Balancing data quality and data confidentiality;
- (v) Privacy for new types of microdata: sequence data and mobility data;
- (vi) Data integration;
- (vii) Trans-border access to microdata;
- (viii) International projects, groups and forum dealing with data access, release and related methodologies;
- (ix) Statistical disclosure limitation for table and analysis servers: how to make outputs of modern data access infrastructures safe.

4. Detailed explanatory notes on the nature and expected outcomes of topics (i) – (ix) are provided in Section V of this Information Notice.

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# **Polish Statistics Congress**

in the 100th anniversary of **Polish Statistical Society**  
18 – 20 April 2012, Poznań, Poland

## **GENERAL PROGRAMME**

### **DAY 1**

1. ANNIVERSARY SESSION
2. DEVELOPMENT OF POLISH STATISTICAL THOUGHT
3. JAN CZEKANOWSKI, JERZY SPŁAWA NEYMAN

### **DAY 2**

4. STATISTICAL METHODOLOGY
  - Development of statistical methodology
  - Small area statistics
  - Multivariate statistical analysis
  - Data analysis and classification methods
  - Sampling methods
5. Regional Statistics
  - Urban statistics
  - Socio-economic space delimitation problems
  - GIS (Geographic information system)
6. HUMAN POPULATION STATISTICS
  - Census of 2011 – new standards in human population statistics
  - Demographic transformations in Poland
  - Senior citizens quality of life
  - Poland's demographic past

### **DAY 3**

7. SOCIO-ECONOMIC STATISTICS
  - Social statistics
  - Economic statistics
  - Statistics of small and medium enterprises
  - Environmental statistics
  - Agricultural statistics
8. STATISTICAL DATA
  - Use of public registers
  - Globalization and public statistics – how to achieve international comparability
  - Access to statistical data – best European practices
9. STATISTICS OF SPORT, HEALTH AND TOURISM

### **DISCUSSION PANELS**

- Main problems of statistics in contemporary world
- Future of statistics

More information will be available at  
[http://www.stat.gov.pl/pts/index\\_ENG\\_HTML.htm](http://www.stat.gov.pl/pts/index_ENG_HTML.htm)

Dear Colleagues,

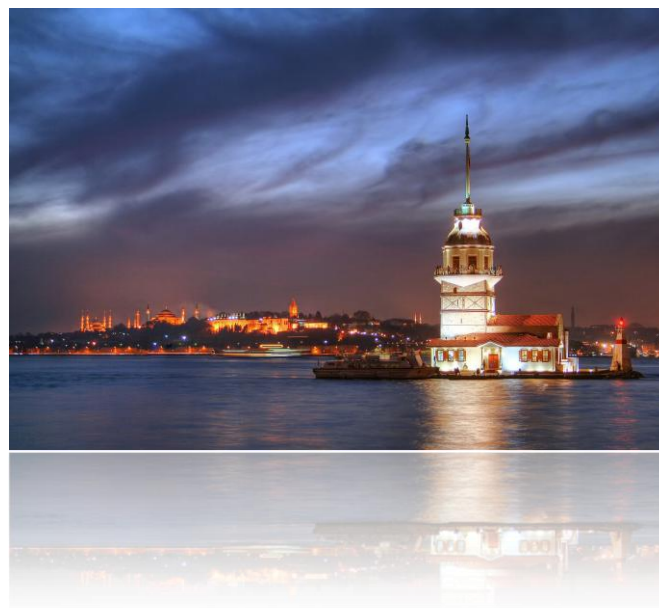
The eighth World Congress in Probability and Statistics will be in Istanbul from July 9 to 14, 2012. It is jointly organized by the Bernoulli Society and the Institute of Mathematical Statistics. Scheduled every four years, this meeting is a major worldwide event for statistics and probability, covering all its branches, including theoretical, methodological, applied and computational statistics and probability, and stochastic processes. It features the latest scientific developments in these fields.

The program will cover a wide range of topics in statistics and probability, presenting recent developments and the state of the art in a variety of modern research topics, with in-depth sessions on applications of these disciplines to other sciences, industrial innovation and society. It will feature several special plenary lectures presented by leading specialists. In addition, there will be many invited sessions highlighting topics of current research interests, as well as a large number of contributed sessions and posters.

The venue of the meeting is Grand Cevahir Hotel & Convention Center located in Istanbul which is a vibrant, multi-cultural and cosmopolitan city bridging Europe and Asia. Istanbul has a unique cultural conglomeration of east and west, offering many cultural and touristic attractions, such as Hagia Sophia, Sultanahmet, Topkapı Palace and Maiden's Tower. On behalf of the Program Committee and the Local Organizing Committee, we invite you to join us in Istanbul for this exciting scientific event. Your participation will ensure that the 2012 World Congress will be a memorable meeting.

Elvan Ceyhan and Mine Caglar,  
(Co-chairs of the Local Organizing Committee)

Arnoldo Frigessi,  
(Chair of the Program Committee)





## Book and Software Review

The Editors of *The Survey Statistician* have gathered a list of books from various publishing houses that have recently been published in the area of Survey Methods. This list is by no means exhaustive. We hope you find it useful.

### WILEY

**Wiley Handbook of Web Surveys** (2011)

Jelke Bethlehem, Silvia Biffignandi

**Handbook of Statistical Data Editing and Imputation** (2011)

Ton de Waal, Jeroen Pannekoek, Sander Scholtus

**Handbook of Nonresponse in Household Surveys** (2011)

Jelke Bethlehem, Fannie Cobben, Barry Schouten

**Latent Class Analysis of Survey Error** (2010)

Paul P. Biemer

**Thinking About Answers: The Application of Cognitive Processes to Survey Methodology** (2010)

Seymour Sudman, Norman M. Bradburn, Norbert Schwarz

**Survey Methods in Multicultural, Multinational, and Multiregional Contexts**

(2010) Janet A. Harkness (Editor), Michael Braun (Editor), Brad Edwards (Editor), Timothy P. Johnson (Editor), Lars E. Lyberg (Editor), Peter Ph. Mohler (Editor), Beth-ellen Pennell (Editor), Tom W. Smith (Editor)

**Agricultural Survey Methods** (2010)

Roberto Benedetti (Editor), Federica Piersimoni (Editor), Marco Bee (Editor), Giuseppe Espa (Editor)

**Improving Survey Response: Lessons Learned from the European Social Survey** (2010)

Ineke Stoop, Jaak Billiet, Achim Koch, Rory Fitzgerald

**Complex Surveys: A Guide to Analysis Using R** (2010)

Thomas Lumley

**Sampling Statistics** (2009)

Wayne A. Fuller

**Survey Methodology, 2nd Edition** (2009)

Robert M. Groves, Floyd J. Fowler, Jr., Mick P. Couper, James M. Lepkowski, Eleanor Singer, Roger Tourangeau

**Applied Survey Methods: A Statistical Perspective** (2009)  
Jelke Bethlehem

**Sampling of Populations: Methods and Applications, 4th Edition Set** (2009)  
Paul S. Levy, Stanley Lemeshow

**Methodology of Longitudinal Surveys** (2009)  
Peter Lynn (Editor)

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#### ELSEVIER

**Handbook of Statistics\_29A Sample Surveys: Design, Methods and Applications** (2009)

**Handbook of Statistics\_29B Sample Surveys: Inference and Analysis** (2009)  
Danny Pfeffermann and C.R. Rao (Editors)

**Essential Methods for Design Based Sample Surveys** (2010)  
Danny Pfeffermann and C.R. Rao (Editors)

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#### SPRINGER

**Synthetic Datasets for Statistical Disclosure Control (Lecture Notes in Statistics, Vol. 201)** (2011)  
Jörg Drechsler

**Statistical Confidentiality, Principles and Practice** (2011)  
George T. Duncan, Mark Elliot, and Juan-José Salazar-González

**Privacy and Anonymity in Information Management Systems, New Techniques for New Practical Problems** (2010)  
Jordi Nin and Javier Herranz (Eds.)

**Privacy in Statistical Databases 2010, Proceedings (Lecture Notes in Computer Science, Vol. 6344)** (2010)  
Josep Domingo-Ferrer and Emmanouil (Eds.)

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#### SAGE

**Conducting Online Surveys, 2<sup>nd</sup> Edition** (2011)  
Valerie M. Sue, Lois A. Ritter

**Sampling Essentials Practical Guidelines for Making Sampling Choices** (2011)  
Johnnie Daniel

**Data Collection Four Volume Set (2010)**

W. Paul Vogt

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**CHAPMAN AND HALL / CRC**

**Applied Survey Data Analysis (2010)**

Steven G. Herringa, Brady T. West and Patricia A. Berglund

**Randomized Response and Indirect Questioning Techniques in Surveys (2010)**

Arijit Chaudhuri

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We are interested in fostering review of books and software in the area of survey methods. This would include standard review of individual books or software packages. This may also include broader reviews of groups of text and monographs in specific sub-areas; or similarly broad reviews of available software. Of particular interest are some of the new R libraries that have been developed recently for survey methods. If you are able to write a review for this section, please contact John Eltinge at [eltinge.john@bls.gov](mailto:eltinge.john@bls.gov).

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## In Other Journals



### Survey Practice

Practical Information for Survey Researchers

[About](#)

[Submit Articles](#)

[Editorial Review](#)

[Guidelines for Authors](#)

[Editorial Board](#)

### Survey Practice April 2011

April 25, 2011 – 1:31 pm

[www.surveypractice.org](http://www.surveypractice.org)

#### **Cost and Productivity Ratios in Dual-Frame RDD Telephone Surveys**

T. M. Guterbock, P.J. Lavrakas, T.N. Thompson, R. ZuWallack

#### **Who are Latino Cell Only Respondents? A Comparative Look**

M. Cerda, I. Basar

#### **Quality Control in Telephone Survey Interviewer Monitoring**

D. Peng, K. Feld

#### **Maintaining and Enhancing Representativeness of State Health Surveys**

D. Grant, S. Scott, N. Breen, J.M. Brick, E.R. Brown

#### **Recent Books and Journals in Public Opinion, Survey Methods and Survey Statistics**

M. Callegaro

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Home > **Vol 5, No 1 (2011)**

## Survey Research Methods

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The journal is edited by Peter Lynn of the University of Essex, UK, and Rainer Schnell of the University of Duisburg-Essen, Germany.

<http://w4.ub.uni-konstanz.de/srm/>

### **Testing for Measurement Equivalence of Individuals' Left-Right Orientation**

W. Weber

### **Personalisation in Advance Letters Does Not Always Increase Response Rates. Demographic Correlates in a Large Scale Experiment**

A. Luiten

### **An Experimental Examination of the Content of Persuasion Letters on Nonresponse Rates and Survey Estimates in a Nonresponse Follow-Up Study**

K. Olson, J.M. Lepkowski, D.H. Garabrant

### **Two Measures for Sample Size Determination**

P. Eichenberger, B. Hulliger, J. Potterat



**Journal of Official Statistics**

<http://www.jos.nu/>

**Current Issue: March 2011, Vol. 27 No. 1**

**Published Date : 14-March-2011**

### **The 2010 Morris Hansen Lecture: Dealing with Survey Nonresponse in Data Collection, in Estimation**

C.E. Sarndal

### **Discussion**

J.M. Brick

### **Discussion**

R. Tourangeau

**Breakoff and Unit Nonresponse Across Web Surveys**

A. Peytchev

**Assessing Mode Effects in a National Crime Victimization Survey using Structural Equation Models: Social Desirability Bias and Acquiescence**

D. Heerwegh, G. Loosveldt

**Designing Input Fields for Non-Narrative Open-Ended Responses in Web Surveys**

M.P. Couper, C. Kennedy., F.G. Conrad, R. Tourangeau

**Using Register Data to Evaluate the Effects of Proxy Interviews in the Norwegian Labour Force Survey**

I. Thomsen, O. Villund

**Linear Regression Influence Diagnostics for Unclustered Survey Data**

J. Li, R. Valliant

**Evaluating the Small-Sample Bias of the Delete-a-Group Jackknife for Model Analyses**

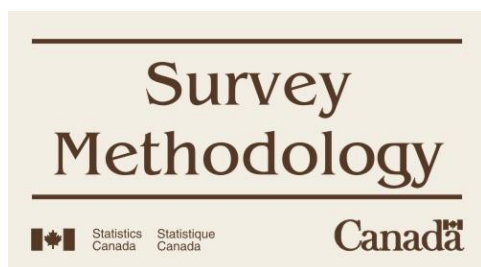
P.S. Kott, S.T. Garren

**Letter to the Editor**

J.R. Knaub

**Book Reviews**

**In Other Journals**



**Survey Methodology**  
**A Journal Published by Statistics Canada**  
**Volume 36, Number 2, December 2010**

<http://www.statcan.gc.ca/ads-annonces/12-001-x/issue-numero/vol36-2-eng.htm>

**Waksberg Invited Paper Series:**

**The Organization of Statistical Methodology and Methodological Research in National Statistical Offices**

I.P. Fellegi



**Regular Papers:**

**Design for Estimation: Identifying Auxilliary Vectors to Reduce Nonresponse Bias**

C.E. Sarndal, S. Lundstrom

**Calibartion Estimation Using Exponential Tilting in Sample Surveys**

J.K. Kim

**Comparison of Survey Regression Techniques in the Context of Small Area Estimation of Poverty**

S.J. Haslett, M.C. Isidro, G. Jones

**Small Area Estimation of the Number of Firms' Recruits by Using Multivariate Models for Count Data**

M.R. Ferrante, C. Trivisano

**Linearization Variance Estimation for Generalized Raking Estimators in the Presence of Nonresponse**

J. D'Arrigo, C.J. Skinner

**Linearization Variance Estimators for Model Parameters from Complex Survey Data**

A. Demnati, J.N.K. Rao

**Statistical Foundations of Cell-Phone Surveys**

K.M. Wolter, P. Smith, S.J. Blumberg

**Short Notes:**

**Collecting Data for Poverty and Vulnerability Assessment in Remote Areas of Sub-Saharan Africa**

R. Witt, D.E. Pemsli, H. Waibel

**Respondent Differences and Length of Data Collection in the Behavioral Risk Factor Surveillance System**

M.G. Qayad, P. Chowdhury, S. Hu, L. Balluz

**An Interesting Property of the Entropy of Some Sampling Designs**

Y. Tille, D. Haziza

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## Journal



### Statistical Journal of the IAOS: Journal of the International Association for Official Statistics

Publisher IOS Press  
ISSN 1874-7655 (Print) 1875-9254 (Online)  
Subject Group [Mathematics](#)  
Subject [Mathematics](#), [Statistics](#) and [Managerial Sciences](#)  
Online Date Friday, August 10, 2007

Volume 27, Number 1-2 / 2011

<http://iospress.metapress.com/content/pu5j38074m73/>

#### **Recent Developments in Price and Related Statistics in Argentina**

E. Berumen, V.A. Beker

#### **Recent Challenges to the Ethics Underlying Official Statistics in New Zealand**

S. Forbes, V. Galvin, A. Hunter, P. Maxwell, W. Wereta

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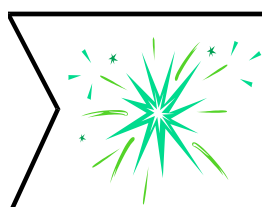
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