# Proceedings of the Fifth International Conference on Establishment Surveys

## Tuesday, June 21

*Parallel Sessions*

### 10:40-12:20 Introductory overview lecture: *Questionnaire design and response burden*

**Chair:** Gustav Haraldsen, Statistics Norway

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| *Questionnaire Design for Business Surveys  ([abstract](#))* | **J. McCarthy,** National Agricultural Statistics Service |
| *Response Burden in Business Surveys  ([final paper](#))* | **M. Bavdaz,** University of Ljubljana |

### 10:40-12:20 Invited session: *Methods for Overcoming Challenges in Sampling of Establishments*

**Chair:** Daniell Toth, US Bureau of Labor Statistics
**Discussant:** Dan Hedlin, Stockholm University
**Organizer(s):** Daniell Toth, US Bureau of Labor Statistics

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| *Balanced sampling in surveys ([abstract](#))* | **D. Haziza,** Université de Montréal<br>G. Chauvet, É. Lesage |
| *The Swiss Coordination System for Business Surveys ([abstract](#))* | **Y. Tillé,** University of Neuchatel<br>**L. Qualité,** Swiss Federal Statistical Office |

### 10:40-12:20 Invited session: *Global Value Chains and the measurement of the interconnectedness of economies*

**Chair:** Martin Luppes, Statistics Netherlands
**Discussant:** Axel Behrens, Eurostat Luxembourg
**Organizer(s):** Martin Luppes, Statistics Netherlands

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| *Accounting for firm heterogeneity in Global Value Chains: from micro data to extended international economic accounts ([abstract](#))* | **F. Fortanier,** OECD<br>N. Ahmad |
| *Asymmetries, Micro-Data Linking and Business Registers ([abstract](#))* | **R. Jansen,** United Nations Statistics Division |
| *Measuring international orientation of enterprises – results from an European micro-data linking project ([final paper](#))* | **P. Nielsen,** Statistics Denmark |

| 10:40-12:20 | **Topic contributed session:** *Innovations in nonresponse adjustment methods* |
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**Chair:** Kennon Copeland, NORC at the University of Chicago
**Organizer(s):** Laura Bechtel, US Census Bureau

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| *Handling Nonresponse in Model-Based Cut-off Samples via Prediction-Based Imputation (abstract)* | **S. Adeshiyan,** U.S. Energy Information Administration |
| *Imputations' Reaction to Data: Exploring the Boundaries and Utility of IVEware and Iterative Sequential Regression (ISR) (final paper)* | **D. Miller,** National Agricultural Statistics Service J. Lisic, A. Dau |
| *Exact balanced random imputation (final paper)* | **G. Chauvet,** ENSAI W. Do Paco |
| *Hot Deck Imputation: How Many Times Can or Should a Donor Be Used? (final paper)* | **L. Bechtel,** US Census Bureau K. Thompson, Y. Gonzalez |
| *A discussion of weighting procedures for unit nonresponse (abstract)* | **E. Lesage,** INSEE D. Haziza |

| 10:40-12:20 | **Contributed session:** *Frame creation and maintenance* |
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**Chair:** Paul-André Salamin, University of Applied Sciences and Arts Western Switzerland

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| *Creating and maintaining business registers (final paper)* | **F. Sala,** Institute of Statistics Albania |
| *The French business registers system : How to improve the quality of the statistics by combining different statistical units (final paper)* | **O. Haag,** INSEE |
| *Handling survey feedback in business statistics (final paper)* | **F. Jonsson,** Statistics Sweden E. Elvers, J. Brewitz |
| *The longitudinal aspect of enterprises; continuity on the basis of employees (abstract)* | **W. Kloek,** Eurostat R. Konen |
| *Creating a Statistical Business Register in Mexico (abstract)* | **A. Blancas,** Instituto Nacional de Estadística y Geografía de México S. Pérez |

| | *Parallel Sessions* |
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| 13:40-15:20 | **Introductory overview lecture:** *Use of administrative data in statistical outputs* |
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**Chair:** Daniel Lewis, UK Office for National Statistics

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| *Editing and Imputation of Administrative Data (abstract)* | **J. Hoogland,** Statistics Netherlands |
| *Use of Administrative Data in Statistical Outputs: Survey Estimation (abstract)* | **W. Yung,** Statistics Canada |

## 13:40-15:20 Invited session: *New directions using robust estimation in establishment surveys*

**Chair:** Katherine J. Thompson, US Census Bureau
**Discussant:** David Haziza, Université de Montréal
**Organizer(s):** Mary Mulry, US Census Bureau

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| *Outlier robust small domain estimation via a bounded bootstrap (abstract)* | **R. Chambers,** University of Wollongong<br>P. Mokhtarian |
| *Improved scale estimation for Huber M-quantiles (abstract)* | **J. Dawber,** University of Wollongong<br>N. Tzavidis, N. Salvati |
| *Practical outlier detection in business surveys using robust estimation (abstract)* | **V. Todorov,** United Nations Industrial Development Organization |
| *Setting M-estimation parameters for detection and treatment of influential values (final paper)* | **M. Mulry,** US Census Bureau<br>et al. |

## 13:40-15:20 Invited session: *Sampling, recruitment and interviewing in the development and testing of business survey questionnaires*

**Chair:** Glenn White, National Academy of Sciences - Committee on National Statistics
**Discussant:** Ger Snijkers, Statistics Netherlands
**Organizer(s):** Jacqui Jones, Office for National Statistics, Paul Smith, University of Southampton

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| *Sampling and recruitment in cognitive interview studies for establishment surveys (joint final paper)* | **P. Smith,** University of Southampton<br>R. James, M. Bavdaz |
| *Design of data collection in cognitive interview studies for establishment surveys (joint final paper)* | **D. Moore,** Washington State University<br>et al. |
| *Analyses and reporting in cognitive interview studies for establishment surveys (joint final paper)* | **M. Bavdaz,** University of Ljbubjana<br>et al. |

## 13:40-15:20 Topic contributed session: *Small, large, factoryless, international: Measuring business heterogeneity in the global economy*

**Chair:** Nadim Ahmad, OECD
**Organizer(s):** Mariarosa Lunati, OECD

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| *Addressing users' needs: Statistics on the internationalisation of small and medium-sized enterprises (abstract)* | **M. Lunati,** OECD |
| *Identifying Factoryless Goods Production in the U.S. Statistical System (final paper)* | **W. Mockovak,** US Bureau of Labor Statistics<br>et al. |
| *Data linking and globalisation: Eurostat's project EuroGroups Register (EGR) (final paper)* | **A. Liotti,** Eurostat<br>Z. Volfinger, S. Maus |
| *The Global Legal Entity Identifier System (GLEIS): the approach of INSEE (abstract)* | **P. Schuhl,** INSEE |

## 13:40-15:20 Contributed session: *Sample design and methods*

**Chair:** Desislava Nedyalkova, Swiss Federal Statistical Office

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| *The use of spatial sampling to conduct representative firm surveys (abstract)* | **D. Giuliani,** University of Trento<br>et al. |
| *New sampling design for the Swiss Job Statistics (final paper)* | **J. Nicoletti,** Swiss Federal Statistical Office<br>D. Assoulin |
| *Local Pivotal Methods for Large Surveys (final paper)* | **N. Cruze,** National Agricultural Statistics Service<br>J. Lisic |
| *PPS sampling with panel rotation for estimating price indices on services (final paper)* | **A. van Delden,** Statistics Netherlands<br>S. Scholtus, J. Burger |

**15:50-17:30** | **Introductory overview lecture:** *Adaptive design*

**Chair:** Stephen Kaputa, US Census Bureau

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| *Responsive Design and Paradata: Paradata-Based Quality Indicators* *(abstract)* | **J. Wagner,** University of Maryland |
| *Responsive Data Collection Design: Tailoring Fieldwork Effort (abstract)* | **B. Schouten,** Statistics Netherlands and Utrecht University<br>A. Luiten |

**15:50-17:30** | **Invited session:** *Integration of data sources: processing and estimation*

**Chair:** Beat Hulliger, University of Northwestern Switzerland
**Discussant:** Ton de Waal, Statistics Netherlands & Tilburg University
**Organizer(s):** Ton de Waal, Statistics Netherlands & Tilburg University

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| *Selective editing of multisource data based on latent class models (final paper)* | **M. Di Zio,** Istat<br>U. Guarnera, R. Varriale |
| *How do I-SEE: Integrated Sampling, Editing and Estimation? (abstract)* | **L. Zhang,** University of Southampton, Statistics Norway |
| *Removing the Gap between Annual and Sub-Annual Statistics based on Different Data Sources (final paper)* | **J. Daalmans,** Statistics Netherlands<br>et al. |

**15:50-17:30** | **Invited session:** *Modernizing Statistical Production in Establishment Surveys through Standardization*

**Chair:** Steven Vale, United Nations Economic Commission for Europe
**Discussant:** Daniel Gillman, US Bureau of Labor Statistics
**Organizer(s):** Daniel Gillman, US Bureau of Labor Statistics

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| *Modernization at the US Census Bureau (final paper)* | **W. Hazard,** US Census Bureau |
| *How metadata systems support the modernization of statistical production: the Istat experience (final paper)* | **M. Signore,** Istat<br>et al. |
| *Benefits of the handbook on business statistics; a first assessment (abstract)* | **Á. Andics,** Hungarian Central Statistical Office<br>et al. |

**15:50-17:30** | **Topic contributed session:** *Identifying characteristics of establishment response to inform data collection*

**Chair:** Polly Phipps, US Bureau of Labor Statistics
**Organizer(s):** Polly Phipps, US Bureau of Labor Statistics

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| *Developing Response Metrics for the 2017 U.S. Economic Census (abstract)* | **R. Struble,** US Census Bureau<br>E. Fink, J. Lineback |
| *An Analysis of Business Response Burden and Response Behaviour Using a Register of Data Provision (abstract)* | **B. Lorenc,** Statistics Sweden |
| *Identifying Characteristics of Establishment Nonresponse in a Longitudinal Survey (final paper)* | **M. Earp,** US Bureau of Labor Statistics<br>et al. |
| *Adaptive Design in an Establishment Survey: Targeting, Applying and Measuring 'Optimal' Data Collection Procedures in the Agricultural Resource Management Survey (final paper)* | **T. Wilson,** National Agricultural Statistics Service<br>J. McCarthy, A. Dau |

| 15:50-17:30 | **Contributed session:** *Measuring respondent burden* |
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**Chair:** *Lionel Qualité, Swiss Federal Statistical Office*

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| *Systematic measurement and monitoring of the response burden for business surveys and setting up the database for response burden indicators and standardised reporting on response burden (abstract)* | **E. Belak,** Statistical Office of the Republic of Slovenia<br>D. Oblak |
| *Developments in measuring the burden placed on businesses responding to statistical surveys (abstract)* | **A. Tucker,** UK Office for National Statistics et al. |
| *The Relationship Between Response Burden and the Mode of Data Collection in Business Surveys: Experiences from the Finnish Road Freight Survey (abstract)* | **J. Rouhunkoski,** Statistics Finland<br>P. Godenhjelm |

| 15:50-17:30 | **Contributed session:** *Using the new data environment* |
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**Chair:** Peter Struijs, Statistics Netherlands

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| *BigData techniques supporting a short-term statistics survey (abstract)* | **T. Klimanek, K. Potocki,** Statistical Office in Poznan<br>J. Kowalewski |
| *Opportunities and Challenges for using Big Administrative Data (final paper)* | **D. Talan,** Bureau of Labor Statistics |
| *Primary Care Team Cohesion and Performance Outcomes for CVD Patients as Reflected in the Electronic Health Record (abstract)* | **M. Mundt,** University of Wisconsin-Madison<br>L. Zakletskaia |
| *Incorporating Mobile Mapping Instruments in the June Agricultural Survey Data Collection Effort (final paper)* | **D. Abreu,** National Agricultural Statistics Service et al. |
| *Redesigning surveys and the data collection process using administrative data (abstract)* | **S. Biffignandi,** University of Bergamo<br>A. Bianchi |

## Wednesday, June 22

*Parallel Sessions*

### 08:30-10:10 Introductory overview lecture: *Imputation methods*

**Chair:** Darcy Miller, National Agricultural Statistics Service

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| *Single Imputation* *(abstract)* | **T. de Waal,** Statistics Netherlands |
| *Multiple Imputation (abstract)* | **R. Andridge,** Ohio State University |

### 08:30-10:10 Invited session: *Adaptive Business Survey Design*

**Chair:** Barry Schouten, Statistics Netherlands and Utrecht University
**Discussant:** Daniell Toth, US Bureau of Labor Statistics
**Organizer(s):** Barry Schouten, Statistics Netherlands and Utrecht University

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| *Adaptive Design Strategies for Nonresponse Follow-Up in Economic Surveys (abstract)* | **S. Kaputa,** US Census Bureau<br>K. Thompson, L. Bechtel |
| *Use of nonresponse indicators in the Swedish Turnover in the Service Sector (TSS) (abstract)* | **O. Ståhl,** Statistics Sweden<br>P. Lundquist, A. Lindblom |
| *Aspects of Adaptive Total Design for O*NET (abstract)* | **P. Biemer,** RTI International<br>M. Berzofsky, J. Unangst |

### 08:30-10:10 Invited session: *International Trade & Globalisation*

**Chair:** Steve MacFeely, UNCTAD
**Discussant:** Ronald Jansen, United Nations Statistics Division
**Organizer(s):** Steve MacFeely, Hubert Escaith, Mondher Mimouni, Joint UNCTAD-WTO-ITC proposal

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| *The Challenges of Understanding International Trade in the Developing World (abstract)* | **A. Nicita,** University College Cork<br>S. MacFeely |
| *Bilateral trade asymmetries, micro-data linking and the importance of national and global business registers (abstract)* | **R. Jansen,** UNSD |
| *Analysing non-tariff measures: a survey-based approach (abstract)* | **A. Benzakri,** ITC<br>et al. |

### 08:30-10:10 Topic contributed session: *New approaches to research and development supporting establishment survey redesign*

**Chair:** Kathleen Ott, National Agricultural Statistics Service
**Organizer(s):** Jennifer Beck, Alfred D Tuttle, US Census Bureau

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| *Using a collaborative approach and multi-method research to re-engineer a census of businesses (abstract)* | **J. Beck,** US Census Bureau<br>et al. |
| *Using the respondents' perspective in redesigning the survey on international trade in goods (final paper)* | **M. Geurden-Slis,** Statistics Netherlands<br>D. Giesen, L. Houben |
| *Questionnaire Communication with Businesses; A Case Study (abstract)* | **G. Haraldsen,** Statistics Norway |
| *Generating business survey questionnaires using active metadata (abstract)* | **T. Dubois,** INSEE |

**Contributed session:** *Estimation using administrative data*

**Chair:** Jean-Marc Nicoletti, Swiss Federal Statistical Office

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| *Adjusting for Calendar Effects in Payroll Hours and Earnings Series (final paper)* | **N. Hudson,** US Bureau of Labor Statistics<br>J. Mercurio |
| *Occupational Injuries and Employer Dynamics (abstract)* | **N. Nestoriak,** US Bureau of Labor Statistics |
| *Flash estimates for short term statistics (abstract)* | **A. Meraner,** Statistics Austria<br>M. Fröhlich, A. Kowarik |
| *Automatic balancing of the national accounts (abstract)* | **A. Lennmalm,** Statistics Sweden<br>et al. |

**Contributed session:** *Mixed mode data collection*

**Chair:** Martin Karlberg, Eurostat

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| *Web Collection in the Quarterly Census of Employment and Wages Program (final paper)* | **S. Stang,** US Bureau of Labor Statistics<br>E. Thomas |
| *Is moving establishment surveys from mail to web a good or bad decision in terms of perfomance and data quality (abstract)* | **G. Haas,** Institute for Employment Research<br>et al. |
| *The efficiencies of fax in surveys of clinical establishments: observations from a multi-mode survey of Ambulatory Surgery Centers (final paper)* | **N. Teixeira,** Westat<br>et al. |
| *Use of mixed modes in establishment surveys: associated establishment characteristics and differences in survey responses in the 2014 National Study of Long-Term Care Providers (abstract)* | **M. Sengupta,** National Center for Health Statistics<br>L. Harris-Kojetin |
| *From Experimental Testing to Reality: Outcomes from Mixed-mode Implementation of the 2014 National Survey of Business Competitiveness (final paper)* | **D. Moore,** Washington State University<br>T. Wojan |

*Parallel Sessions*

**Introductory overview lecture:** *Economic classification - industry/activity vs. product*

**Chair:** Wesley Yung, Statistics Canada

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| *Part 1 - Overview of Industry/Activity and Product Classification Systems in North America and Europe (abstract)* | **K. Blomqvist,** Statistics Sweden<br>A. Baer |
| *Part 2 - Practical Applications of Economic Classification Systems for Establishment Surveys (abstract)* | **A. Baer,** US Census Bureau<br>K. Blomqvist |

**Invited session:** *Statistical inference in the presence of missing survey data: a CANSSI session*

**Chair:** David Haziza, Université de Montréal
**Organizer(s):** David Haziza,Université de Montréal

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| *Statistical matching using fractional imputation (abstract)* | **J. Kim,** Iowa State University |
| *Analysis of Ordinal Survey Responses with Missing Values (abstract)* | **C. Wu,** University of Waterloo<br>X. She |
| *Robust inference in two-phase sampling designs with application to unit nonresponse (abstract)* | **J. Beaumont,** Statistics Canada<br>D. Haziza, C. Favre Martinoz |

| 10:40-12:20 | **Invited session:** *The Future of Statistical Units* |
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**Chair:** Norbert Rainer, Statistics Austria
**Discussant:** Steven Vale, United Nations Economic Commission For Europe
**Organizer(s):** Peter Struijs, Statistics Netherlands

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| *The desired future system of statistical units from the perspective of Business Statistics (final paper)* | **P. Struijs,** Statistics Netherlands |
| *The desired future system of statistical units from the perspective of National Accounts (abstract)* | **S. Mahajan,** UK Office for National Statistics |
| *The desired future system of statistical units from the perspective of globalisation (abstract)* | **P. Nielsen,** Statistics Denmark |

| 10:40-12:20 | **Topic contributed session:** *Quality, analytic potential and accessibility of linked administrative, survey and commercial data* |
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**Chair:** David Talan, US Bureau of Labor Statistics
**Organizer(s):** Manfred Antoni, Institute for Employment Research, Nuremberg

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| *Longitudinal administrative labour market data – Origin, preparation and access (abstract)* | **A. Schmucker,** Institute for Employment Research<br>M. Antoni |
| *Using administrative data for innovative survey designs: The case of linked employer-employee data on further training in Germany (abstract)* | **M. Huber,** Institute for Employment Research<br>A. Schmucker |
| *Management Practices and Firm Performance – An Establishment Survey amongst German Managers (abstract)* | **M. Laible,** Institute for Employment Research<br>S. Broszeit |
| *Combining commercial firm data with administrative employer-employee data – methodological challenges of linkage, preparation and anonymization (abstract)* | **M. Antoni,** Institute for Employment Research<br>M. Laible |

| 10:40-12:20 | **Contributed session:** *Administrative data quality issues* |
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**Chair:** Manisha Sengupta, CDC/National Center for Health Statistics

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| *Using administrative data in establishment surveys in Statistics Finland calculating monthly index of industrial production (IPI) (final paper)* | **K. Rautio,** Statistics Finland |
| *Swiss Structural Business Statistics: Data Harmonization for the Construction of Full-time Equivalents (final paper)* | **D. Nedyalkova,** Swiss Federal Statistical Office<br>D. Assoulin |
| *Can administrative tax return data be used to substitute survey data? An assessment of editing and imputing tax data to ensure data quality (abstract)* | **C. Gaughan,** UK Office for National Statistics |
| *How hard is it to count? Reconciling monthly survey and administrative data: experiences from the Current Employment Statistics program (final paper)* | **S. Mance,** US Bureau of Labor Statistics<br>C. Manning |
| *Surveys on spatial populations of firms in presence of locational errors (abstract)* | **M. Dickson,** University of Trento<br>et al. |

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| 13:40-15:20 | **Invited session:** *Establishing and maintaining a relationship with businesses: respondent advocate/ombudsman experiences and response burden management* |

**Chair:** Ger Snijkers, Statistics Netherlands
**Discussant:** Norbert Rainer, Statistics Austria
**Organizer(s):** Ger Snijkers, Deidre Giesen, Statistics Netherlands

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| *Respondent advocacy at Statistics New Zealand (final paper)* | **P. Brown,** Statistics New Zealand |
| *Respondent Outreach Practices at the US Census Bureau (abstract)* | **C. Brady,** US Census Bureau |
| *Response burden coordination at Statistics Netherlands (final paper)* | **A. Vaasen Otten,** Statistics Netherlands <br> D. Giesen |
| *Business Respondent Advocacy at Statistics Canada: Where we've been and where we're going? (final paper)* | **M. Vella,** Statistics Canada |

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| 13:40-15:20 | **Invited session:** *New Approaches for Agricultural Surveys* |

**Chair:** Michael Steiner, National Agricultural Statistics Service
**Discussant:** Calogero Carletto, World Bank, Rome
**Organizer(s):** Michael Steiner, National Agricultural Statistics Service

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| *Agricultural Surveys in the Republic of Georgia (abstract)* | **M. Guntsadze,** National Statistics Office of Georgia <br> M. Steiner |
| *Use of administrative data with the survey of wineries (abstract)* | **E. Laczka,** Hungarian Central Statistical Office |
| *Challenges in Developing and Implementing a New Survey Program: The Current Agricultural Industrial Reports (abstract)* | **B. Rater,** National Agricultural Statistics Service |

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| 13:40-15:20 | **Topic contributed session:** *New developments in sampling methods for business surveys* |

**Chair:** Gary Brown, UK Office for National Statistics
**Discussant:** Yves Tillé, University of Neuchatel
**Organizer(s):** Paul Smith, University of Southampton

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| *Cross-classified sampling for a survey of pharmacies (abstract)* | **C. Skinner,** London School of Economics and Political Science |
| *Optimizing sampling designs in establishment surveys (abstract)* | **R. Münnich,** Trier University <br> U. Friedrich, M. Rupp |
| *An assessment of balanced sampling for use in business surveys (abstract)* | **P. Smith,** University of Southampton <br> L. Zhang |
| *Small area estimation with a lognormal mixed model under informative sampling (abstract)* | **T. Zimmermann,** Federal Statistical Office of Germany <br> R. Münnich |

| 13:40-15:20 | **Contributed session:** *Estimation for nondesign outputs* |
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**Chair:** *Joakim Malmdin, Statistics Sweden*

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| Small area estimation for business statistics: a study on Italian small and medium enterprises *(final paper)* | **F. Rocci,** Istat<br>F. Solari, O. Luzi |
| Sensitivity analysis of the Swedish GDP *(abstract)* | **D. Lennartsson,** Statistics Sweden<br>A. Lennmalm |
| On inference from convenience samples of establishments *(abstract)* | **B. Hulliger,** University of Northwestern Switzerland |

| 13:40-15:20 | **Contributed session:** *New approaches to survey design and response* |
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**Chair:** Morgan Earp, US Bureau of Labor Statistics

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| Unit Nonresponse and Data Quality in an Establishment Mail Survey *(abstract)* | **D. Williams,** Westat<br>et al. |
| Does the Placement of the Linkage Consent Question Matter in Establishment Surveys? *(abstract)* | **J. Sakshaug,** University of Manchester<br>B. Vicari |
| The factorial survey approach in establishment surveys – results from the German BIBB-qualification panel study *(abstract)* | **C. Gerhards,** BIBB - German Federal Institute for Vocational Education and Training |
| Design of the Medical Expenditure Panel Survey Medical Organization Survey Component *(final paper)* | **S. Cohen,** RTI International |
| Annual reports and models in the production of business statistics *(abstract)* | **E. Tamm,** Statistics Estonia<br>M. Põldsaar, R. Nestor |

| | *Parallel Sessions* |
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| 15:50-17:30 | **Invited session:** *Integrating administrative data into official statistics* |
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**Chair:** Nancy Kirkendall, National Academy of Sciences, Committee on National Statistics
**Discussant:** Anders Holmberg, Statistics Norway
**Organizer(s):** Andrew Black and Chen Chen, Statistics New Zealand

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| Creating New and Improved Business Statistics by Maximising the Use of Administrative Data *(final paper)* | **C. Chen, M. Page, J. Steward,** Statistics New Zealand |
| Using Administrative Data in Monthly Economic Surveys; the Statistics Canada Experience *(final paper)* | **M. Renaud, R. Laroche,** Statistics Canada |
| Investigating methods for using admin data in ONS business statistics *(abstract)* | **D. Lewis,** UK Office for National Statistics |
| Usability of administrative data –initiatives and common approach *(final paper)* | **F. Verschaeren,** Statistics Belgium |

| 15:50-17:30 | **Topic contributed session:** *Business process improvement using lean (Six Sigma) method and tools* | |
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| | **Chair:** Siobhan Carey, Department for Business, Innovation and Skills, UK<br>**Organizer(s):** Remco Paulussen, Statistics Netherlands | |
| | *Using Lean Six Sigma in Business Surveys: a practical example (final paper)* | **S. Portillo,** Central Statistics Office Ireland |
| | *Strategic planning for continuous improvement - use the Hoshin Kanri X-matrix (joint final paper)* | **R. Paulussen,** Statistics Netherlands<br>M. Kevers, J. Lammers |
| | *The application of "Value Engineering" tools to risk assess the outputs of an NSI. (final paper)* | **G. Sharp,** UK Office for National Statistics |
| | *Achieve a culture of continuous improvement in a statistical environment (joint final paper)* | **M. Kevers,** Statistics Netherlands<br>J. Lammers, R. Paulussen |

| 15:50-17:30 | **Topic contributed session:** *Understanding innovation and entrepreneurship in the U.S. through data integration* | |
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| | **Chair:** Laura Bechtel, US Census Bureau<br>**Discussant:** Lars Vilhuber, Cornell University<br>**Organizer(s):** Javier Miranda, US Census Bureau | |
| | *The Business Dynamics Statistics of Innovative Firms: Linking U.S. Patents with Administrative Data on Workers and Firms (abstract)* | **J. Miranda,** US Census Bureau<br>et al. |
| | *The LBD Initiative: Understanding Innovation and Entrepreneurship in the U.S. (abstract)* | **J. Miranda,** US Census Bureau<br>K. McCue |
| | *The Business Dynamics of Exporting Firms: Integrating Trade Transactions Data with Business Administrative Data (abstract)* | **F. Kamal,** US Census Bureau<br>J. Miranda, G. Barresse |
| | *Business Dynamics and Workforce Characteristics: Integrating Demographic Data with Business Administrative Data (abstract)* | **M. Stinson,** US Census Bureau<br>K. McCue, C. Trillo |

| 15:50-17:30 | **Contributed session:** *Questionnaire design* | |
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| | **Chair:** Eva Belak, Statistical Office of the Republic of Slovenia | |
| | *Improving questionnaires in Business Surveys: Cognitive Pretesting in the IAB-Establishment Panel (abstract)* | **S. Kohaut,** Institue for Employment Research<br>I. Möller, E. Peter |
| | *Second European Survey of Enterprises on New and Emerging Risks (ESENER-2) – Questionnaire development process (abstract)* | **X. Irastorza,** European Agency for Safety and Health at Work |
| | *Harmonisation and the Electronic Data Collection Program (abstract)* | **I. Sidney,** UK Office for National Statistics<br>C. Wroth-Smith |
| | *Using Graphics in Data Collection to Aid Respondent Comprehension (final paper)* | **R. Morrison,** National Science Foundation<br>H. St.Onge |
| | *Insights and Issues from the 4th International Workshop on Business Data Collection Methodology (abstract)* | **G. Snijkers,** Statistics Netherlands<br>D. Willimack, G. Haraldsen |

| 15:50-17:30 | **Contributed session:** *Estimation using linked and combined data* | |
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| | **Chair:** Li-Chun Zhang, University of Southampton, Statistics Norway | |
| | *Complementary facility and population surveys for identifying barriers to health care in developing countries (abstract)* | **A. Levine,** University of Washington<br>et al. |
| | *Developments in Model-based Estimation of County Level Agricultural Estimates (final paper)* | **N. Cruze,** National Agricultural Statistics Service<br>et al. |
| | *Enterprises in International Trade. Gaining Information by combining different data sources. (abstract)* | **I. Duarte Fernandes,** Destatis |
| | *Derivation of complex economic indicators through statistical matching (abstract)* | **G. Seri, D. Ichim,** Istat<br>et al. |

**Chair:** Andrew Baer, US Census Bureau

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| *Reviewing the orchard survey in Germany 2017 (final paper)* | **W. Hauschild,** Federal Statistical Office of Germany |
| *Steps towards process standardisation in mixed mode data collection from enterprises in the Statistical Office of the Republic of Slovenia (abstract)* | **M. Noc Razinger,** Statistical Office of the Republic of Slovenia |
| *Use of the Information and communications technology (ICT) in National Economic Surveys of Mexico: advantages and challenges (abstract)* | **J. Rios,** Instituto Nacional de Estadística y Geografía |
| *Building a common production environment - The Swedish experience (final paper)* | **J. Erikson, M. Odencrants,** Statistics Sweden |
| *Developing a Taxonomy and Lexicon of Terms and Concepts for the US Bureau of Labor Statistics (abstract)* | **D. Gillman,** US Bureau of Labor Statistics et al. |

## Thursday, June 23

*Parallel Sessions*

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**08:30-10:10**   **Introductory overview lecture:** *Disclosure avoidance methods*

**Chair:** *Gary Brown, UK Office for National Statistics*

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| *Statistical Disclosure Methods for Microdata  ([abstract](#))* | **A. Oganian,** Georgia Southern University and National Center For Health Statistics |
| *Statistical Disclosure Methods for Tabular Data  ([abstract](#))* | **J. Salazar Gonzalez,** Universidad De La Laguna |

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**08:30-10:10**   **Invited session:** *Developing and mainstreaming business statistics – Best practices and challenges in low and middle income countries*

**Chair:** Gabriel Gamez, United Nations Statistics Division
**Discussant:** Ronald Jansen, United Nations Statistics Division
**Organizer(s):** Gabriel Gamez, United Nations Statistics Division

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| *Alignment Of The Quarterly Financial Statistics To Annual Financial Statistics Data ([final paper](#))* | **S. Pillay,** Statistics South Africa<br>J. de Beer |
| *Economic Information Updating Cycle in Mexico ([abstract](#))* | **A. Blancas,** National Institute of Statistics and Geography |
| *Producing establishment statistics in developing countries: Tanzanian Experience by 2015 ([final paper](#))* | **Z. Msokwa,** Africa Statistical Solutions |
| *Harmonised and integrated business surveys – Initiatives and good practices from Malaysia ([abstract](#))* | **S. Mohd Din,** Department of Statistics Malaysia<br>N. Mansor |

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**08:30-10:10**   **Topic contributed session:** *The future of business data collection - Experiences with integrated and automated data collection, Standard Business Reporting (SBR) and XBRL*

**Chair:** Ger Snijkers, Statistics Netherlands
**Organizer(s):** Ger Snijkers, Gert Buiten, Statistics Netherlands

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| *Integrated Survey Management System: Statistics Portugal experience ([abstract](#))* | **P. Saraiva dos Santos,** Statistics Portugal |
| *Harmonizing Financial Information from Businesses at Statistics Canada ([final paper](#))* | **A. Born,** Statistics Canada |
| *Automated data collection and reuse of concepts in order to minimize the burden ([final paper](#))* | **A. Erikson, J. Erikson, C. Hertzman,** Statistics Sweden |
| *Issues in automated data collection for financial information in the Netherlands ([final paper](#))* | **G. Buiten,** Statistics Netherlands<br>G. Snijkers, R. van de Boom |

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**08:30-10:10**   **Contributed session:** *Estimation including nonsampling error*

**Chair:** John Dixon, US Bureau of Labor Statistics

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| *Extrapolating a model beyond the sample. An application to cut-off sampling ([abstract](#))* | **D. Hedlin,** Stockholm University |
| *Calibration for nonresponse treatment using auxiliary information at different levels ([final paper](#))* | **P. Andersson,** Stockholm University<br>C. Särndal |
| *Sensitivity of Econometric Estimates to Nonresponse Adjustment ([final paper](#))* | **J. Sanchez,** University of California Los Angeles |
| *Total Survey Error in the Swedish PPI/SPPI ([abstract](#))* | **K. Strandberg,** Statistics Sweden,<br>A. Norberg, M. Fridén |

| 08:30-10:10 | **Contributed session:** *Survey production and management* |
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**Chair:** *Anders Holmberg, Statistics Norway*

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| *Challenges and Benefits of Producing Business Statistics within a Highly Centralized Model (final paper)* | **D. Ravindra,** Statistics Canada |
| *Management of business surveys and production of economic statistics; perspectives from the U.S. Bureau of Labor Statistics' Current Employment Statistics survey (final paper)* | **K. Robertson,** US Bureau of Labor Statistics |
| *Integrating Project Management into the Survey Life Cycle at the US Census Bureau (abstract)* | **J. Eanes,** US Census Bureau |
| *Challenges in Moving Research into the Operational Production Environment (final paper)* | **W. Barboza,** National Agricultural Statistics Service |

| 08:30-10:10 | **Contributed session:** *Measuring and improving data quality* |
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**Chair:** Mojca Bavdaz, University of Ljubljana

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| *Verification of incoming data and ongoing quality assurance during CAPI data collection (abstract)* | **K. Shackelford,** University of Washington et al. |
| *An analysis of the quality of a NACE code based on answers to a survey (abstract)* | **T. Deroyon,** INSEE |
| *Can data quality be enhanced through early notifications to responding agencies? (abstract)* | **C. Ellis,** RTI International et al. |
| *A system for continuous control of the NACE code in the Swiss business register (final paper)* | **M. Ferster,** Swiss Federal Statistical Office |
| *Exploring Response Data to Inform Questionnaire Design (abstract)* | **D. Willimack,** US Census Bureau et al. |

*Parallel Sessions*

| 10:40-12:20 | **Invited session:** *The unit problem in business statistics* |
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**Chair:** Paul Smith, University of Southampton
**Organizer(s):** Li-Chun Zhang, University of Southampton

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| *A first assessment of the impact of profiling on sampling (final paper)* | **R. Le Gleut,** INSEE A. Levieil, É. Martal |
| *Resolving Differences in Statistical Units: Statistics Canada's Experiences with Using Administrative Data in Economic Programs (final paper)* | **L. Jang,** Statistics Canada |
| *Exploring the effect of time-related classification errors on accuracy of growth rates in business statistics (final paper)* | **A. van Delden,** Statistics Netherlands S. Scholtus, J. Burger |
| *Estimating population size from multisource data with coverage and unit errors (final paper)* | **M. Di Zio,** Istat |

| 10:40-12:20 | **Topic contributed session:** *Data Warehouses - efficient and effective use of data science to reduce costs, improve timeliness and re-use data in the production of business statistics* | |
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| | **Chair:** Pete Brodie, UK Office for National Statistics<br>**Organizer(s):** Gary Brown, UK Office for National Statistics | |
| | *A user manual for building and operating a statistical data warehouse (abstract)* | **G. Brown,** UK Office for National Statistics<br>**H. Goossens,** Statistics Netherlands |
| | *YTY - integrated production system for business statistics in Statistics Finland (final paper)* | **A. Santaharju,** Statistics Finland |
| | *Developing an Integrated Business Survey System for Northern Ireland (abstract)* | **J. Gillan,** Northern Ireland Statistics and Research Agency<br>et al. |
| | *Portuguese Statistical Data Warehouse solution for Structural Business Statistics but not for the Business Register (abstract)* | **S. Quaresma,** Statistics Portugal |

| 10:40-12:20 | **Topic contributed session:** *Multi-method questionnaire testing in establishment surveys* | |
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| | **Chair:** Jennifer Beck, US Census Bureau<br>**Organizer(s):** Jaki McCarthy, National Agricultural Statistics Service | |
| | *Combining Multiple Questionnaire Testing Methods: the Bento Box Approach in the 2017 Census of Agriculture Testing (final paper)* | **J. McCarthy,** National Agricultural Statistics Service |
| | *Developing and Testing New Survey Questions: The Example of New Questions on the Role of Women and New/Beginning Farm Operators (final paper)* | **D. Miller,** National Agricultural Statistics Service<br>et al. |
| | *Using Analysis of Field Test Results to Evaluate Questionnaire Performance (final paper)* | **K. Ott,** National Agricultural Statistics Service<br>et al. |
| | *Developing and Evaluating a Short Form: Results and Recommendations from tests of a form designed to reduce questionnaire length (final paper)* | **D. Moore,** Washington State University<br>K. Ott, A. Gertseva |

| 10:40-12:20 | **Contributed session:** *Managing respondent load* | |
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| | **Chair:** Wim Kloek, Eurostat | |
| | *Using Quantile Regression to Model Revisions Due to Late Reporting in the Current Employment Statistics Survey (final paper)* | **J. Dixon,** US Bureau of Labor Statistics |
| | *Comparing expected average response burden with actual burden distribution (final paper)* | **J. Delaney,** Central Statistics Office, Ireland |
| | *Considerations for designing and selecting a panel of law enforcement agencies in the United States (final paper)* | **M. Berzofsky,** RTI International<br>S. Zimmer, B. Shook-Sa |
| | *Nonresponse Adjustment in the IAB Job Vacancy Survey (abstract)* | **C. Röttger,** Institute for Employment Research |

| 10:40-12:20 | **Contributed session:** *New approaches to Survey design* | |
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| | **Chair:** Rebecca L. Morrison, National Science Foundation | |
| | *Quantifying U.S. Urban Agriculture: A Pilot Study (abstract)* | **L. Young,** National Agricultural Statistics Service |
| | *Surveying Military Personnel: A Methodological Review (abstract)* | **Z. Wang,** Defence Research and Development Canada |
| | *Measuring the requirements of work: Developing a survey to provide information on the physical, cognitive, and environmental demands of today's jobs and the preparation needed to perform them. (abstract)* | **P. Doyle,** US Bureau of Labor Statistics |
| | *International School Surveys: Challenges and Solutions (abstract)* | **S. Amer,** RTI International<br>et al. |

| 10:40-12:20 | **Student Contest:** *Imputing multivariate data from two business populations - results of the ICES-V student contest* |
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**Chair:** Katherine J. Thompson, US Census Bureau

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| *Developing a Student Contest for the ICES-V Conference. (final paper)* | **K. Thompson,** US Census Bureau |
| *Multivariate Regression Imputation Approach to the Analysis of Item Nonresponse in a Retail Trade Survey Data (final paper)* | **D. Lee,** Iowa State University |
| *Nonparametric Bootstrap to Generate Synthetic Population to Handle Complex Missing Data Problems (abstract)* | **H. Sang,** Iowa State University<br>Z. Wang |
| *Imputation Procedure and Inference in the Presence of Imputed Data: Application to Industries (abstract)* | **J. Miron,** Universite de Neuchatel<br>A. Vallee |

*Parallel Sessions*

| 13:40-15:20 | **Introductory overview lecture:** *Big data* |
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**Chair:** Silvia Biffignandi, University of Bergamo

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| *Practical Applications of Big Data for Official Statistics (abstract)* | **P. Struijs, B. Braaksma,** Statistics Netherlands |
| *Overview of Big Data Research in European Statistical Agencies (final paper)* | **M. Karlberg,** Eurostat<br>et al. |

| 13:40-15:20 | **Invited session:** *The Influence of Business Register Quality* |
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**Chair:** Richard Penny, Statistics New Zealand
**Discussant:** Andrew Allen, UK Office for National Statistics
**Organizer(s):** Christopher Bryant, Statistics New Zealand

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| *Methods and Challenges of Quality Measurement at Finnish Business Register (final paper)* | **H. Heljala,** Statistics Finland |
| *Business Register as the backbone of statistics; challenges and opportunities regarding Business Register and outcome quality (final paper)* | **I. Salemink,** Statistics Netherlands<br>et al. |
| *How to communicate the contents of the quality indicators of a Statistical Business Register (abstract)* | **P. Salamin,** University of Applied Sciences and Arts Western Switzerland<br>F. Tomasini |
| *Dated - undated - outdated: The issue of time stamps and reference dates in Business Register data (final paper)* | **R. Sturm,** Federal Statistical Office Germany |

| 13:40-15:20 | **Topic contributed session:** *Measuring the cost of payments for merchants and financial institutions* |
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**Chair:** Kevin Moore, Board of Governors of the Federal Reserve System
**Discussant:** Bjorn Segendorf, Sveriges Riksbank
**Organizer(s):** Kim Huynh, Bank of Canada

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| *A Survey of Payments to Businesses in the U.S.: Can a Survey Cost-Effectively Measure Share of the Till? (abstract)* | **G. Gerdes,** United States Federal Reserve Board of Governors |
| *Sampling frame construction in the 2015 Bank of Canada Retailer Cost of Payments Survey (final paper)* | **A. Welte,** Bank of Canada<br>C. Jones |
| *Maximizing Item-Level Responses through Adaptive Design in a Financial Institution Survey: Findings from the Federal Reserve Payments Study (abstract)* | **X. Liu,** United States Federal Reserve Board of Governors<br>G. Gerdes |
| *Chargebacks: Another Payment Card Acceptance Cost for Merchants (abstract)* | **F. Hayashi,** Federal Reserve Bank of Kansas City<br>R. Sullivan, Z. Markiewicz |

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| *Quarterly Inventories Survey Imputation (abstract)* | **D. Roash,** Israel Central Bureau of Statistics |
| *Imputation methods for nonresponse on different domains in a business survey (final paper)* | **F. Weideskog,** Statistics Sweden |
| *Reviewing selective editing thresholds at ONS (abstract)* | **C. Gaughan,** UK Office for National Statistics<br>I. Tomlinson |
| *Power calculation of incomplete data using multiple imputation (abstract)* | **O. Harel,** University of Connecticut<br>R. Zha |
| *Cleaning, supplementing, and imputing health facility data in Sub-Saharan Africa (abstract)* | **A. Wollum,** University of Washington<br>et al. |

| 13:40-15:20 | **Contributed session:** *Survey and sample designs* |
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**Chair:** Yves Tillé, University of Neuchatel

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| *Developing the Optimal Sample Design at the Agency and Officer Levels for the Survey of Law Enforcement Personnel in Schools (abstract)* | **B. Shook-Sa,** RTI International<br>et al. |
| *The procedure of sampling coordination for business surveys implemented at INSEE: methodology and practice (final paper)* | **E. Gros,** INSEE |
| *Measuring the informal economy using establishment surveys (final paper)* | **A. Mata Greenwood,** International Labour Office<br>K. Walsh |
| *A new approach for multipurpose stratification in agriculture surveys (final paper)* | **E. Catanese,** Istat<br>M. D'Orazio |

| 13:40-15:20 | **Contributed session:** *Contact strategies and response* |
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**Chair:** Diane Willimack, US Census Bureau

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| *Substituting e-mail for hardcopy when inviting participation in a multi-form, multi-mode collection (abstract)* | **C. Ellis,** RTI International<br>et al. |
| *Email vs. Fed Ex: An experiment to examine effectiveness and efficiency of survey invitations on a study of U.S. colleges and universities (abstract)* | **E. Jodts,** Westat<br>et al. |
| *Improving Data Collection: Results from Two Contact Strategy Experiments in Economic Surveys (abstract)* | **J. Langeland,** US Census Bureau and Joint Program in Survey Methodology<br>A. Tuttle |
| *Methods of Improving Establishment Recruitment by Converting Soft Refusals; Lessons from the LA County Survey of Food Service Workers (final paper)* | **P. Weinfurter,** Westat<br>V. Narayanan, R. Reporter |
| *Maximizing Web Survey Response: Research from the Current Employment Statistics (CES) Survey (final paper)* | **N. Johnson,** US Bureau of Labor Statistics |