Advances in Adaptive Survey Designs:
Developing a Bayesian Perspective
May 15th, 2016
8:30 AM - 10:00 AM

BADEN Group

How we got started? At the 2013 workshop on Advances in Adaptive and Responsive Survey Design, the need for a formal network of national statistical institutes and academia was recognized

The **Bayesian Adaptive Survey Design Network** (BADEN) is funded by the United Kingdom Leverhulme Trust International Network Grant (reference number: IN-2014-046), January 2015 – January 2018

www.Badennetwork.com
@BADEN_Network

BADEN Group

Partners:

Natalie Shlomo (PI) - University of Manchester

Stephanie Coffey - US Census Bureau

Gabriele Durrant - University of Southampton

Peter Lundquist - Statistics Sweden

Dan Pratt - RTI International, North Carolina

Barry Schouten - Statistics Netherlands

James Wagner/Andy Peytchev - University of Michigan

and the many researchers working in these institutions…

Rebecca Moore– Network Facilitator

University of Manchester

www.Badennetwork.com
@BADEN_Network

BADEN Group

- **Aim:** to develop theory and practical implementation of adaptive survey designs; in particular, the development of a Bayesian framework to learn and update key input parameters to these designs

- The learning and updating of critical design parameters in a Bayesian framework needs to be done mostly in production environments under theoretical formulations

- Theory to be tested using simulation studies and applications that are subject to real-world constraints in multiple institutions and contexts

www.Badennetwork.com
@BADEN_Network

BADEN Group

Network goals:

Development of theory for a Bayesian approach towards adaptive survey design

Testing and implementation of theory through practical case studies

Communication of the results to the large public through conferences and workshops

Proclamation of adaptive survey designs

BADEN Group

The BADEN international network grant includes:

- 3 full Network meetings

- 3 Bi-lateral meetings between institutions

- Dissemination at 2 conferences:

  - AAPOR 2016

  - JSM 2017

- 4th International Workshop Advances in Adaptive and Responsive Survey Design, 9-10 November 2015, University of Manchester

- 5th International Workshop Advances in Adaptive and Responsive Survey Design to be held in November 2017, University of Michigan

www.Badennetwork.com
@BADEN_Network

Five Presentations:

Presentation 1: Statistics Sweden and University of Southampton: Modelling length and final response outcome of call sequences in the Swedish Labour Force Survey (Anton Johansson, Peter Lundquist, Sara Westling and Gabriele Durrant)

Presentation 2: RTI and University of Michigan: Interventions during data collection to increase response and sample representativeness: a field test experiment and responsive design simulation (Daniel Pratt, Jeffrey Rosen, David Wilson, Melissa Cominole, Elizabeth Copello, and Andrey Peytchev)

Presentation 3: Statistics Netherlands: A Bayesian analysis of mixed-mode data collection. Results from four case studies (Lisette Bruin, Nino Mushkudiani and Barry Schouten)

Presentation 4: University of Michigan: Using Bayesian Methods to Estimate Response Propensity Models During Data Collection (James Wagner)

Presentation 5: United States Census Bureau: Improving Response Propensity Estimation for Adaptive Design Interventions at the U.S. Census Bureau (Stephanie Coffey, Benjamin Reist)

Presentations

Synopsis

Each of the case studies differ in their objectives:

- Statistics Sweden focus on prioritising cases and a stopping rule for the 8th wave of LFS (telephone survey) based on information from the previous waves

- RTI focus on experiments for targeting interventions (incentives) during data collection for a mixed mode survey. Simulations to leverage responsive design methods to target interventions

- CBS provides a theoretical framework for estimating design parameters using Bayesian methods for a sequential mixed mode survey design

- University of Michigan focuses specifically on response propensity modelling during data collection using a Bayesian framework

- US Census Bureau provides motivation for a Bayesian approach for case prioritisation prior to field work

Discussion Points

- Decisions for Adaptive Survey Designs are based on frame variables, paradata, auxiliary variables, and don't include the y-variables. Is this an issue?

- Many of the indicators used to inform decisions are under the assumption of MAR. How do we deal with NMAR? In particular, what does representativity mean in more realistic settings of selection bias. Can the Bayesian methods help?

- In many surveys, samples may change over time, eg. cohabitants in a longitudinal survey or delayed entry into the field work. How to define representativeness?

Comments and Discussion

www.Badennetwork.com
@BADEN_Network