

CSAC, April 10-11, 2014

Discussion: 2014 Census Test

Noel Cressie

National Institute for Applied Statistics Research Australia
(NIASRA)

University of Wollongong
Australia

(ncressie@uow.edu.au)

NIASRA

NATIONAL INSTITUTE FOR APPLIED
STATISTICS RESEARCH AUSTRALIA



Presentations

- “2013 Census Test Report” by Peter Miller
- “2014 Census Test” by Burton Reist and Peter Miller

The “2013” paper by Miller provides a foundation for subsequent Census Tests (including the 2014 Census Test).

The “2014” paper by Reist and Miller tests self-response and non-response field components. It informs design decisions for a larger Census Test scheduled for FY2015, which ultimately informs decisions for the 2020 Census.



DESIGN AND INFERENCE

- A principal goal of each paper is testing.
- The “2013” paper tests an adaptive-design approach versus a fixed-design approach.
- The “2014” paper tests different contact strategies for non-responders, including adaptive designs.
- Have lessons learned from the 2013 Test helped the 2014 Test? Slide 8 of the “2013” paper seems quite speculative: “Response propensity models need further scrutiny”; “More research on...”; More research on...” Does the 2014 Test address these issues?

DESIGN AND INFERENCE, CTD

- What is the *design* of the series of Census Tests? Is there enough time between results of the x Census Test to inform on design (and implementation) of the $x+1$ Census Test?
- These “2013” and “2014” papers concentrate on *design* but say almost nothing about *inference*. In other words, if a difference between two *treatments* (e.g., two different contact strategies for non-responders) is seen, is it real?



DESIGN AND INFERENCE, CTD

- To determine whether the inference is real, a *hypothesis test* (i.e., *statistical inference*) is needed.
- The tests referred to in the two papers should be performed using (moments of) *sampling distributions*.
- The random sampling of populations followed by statistical inference requires knowledge of the *sample inclusion probabilities*.

NIASRA

NATIONAL INSTITUTE FOR APPLIED
STATISTICS RESEARCH AUSTRALIA



5

UNIVERSITY OF
WOLLONGONG



ADAPTIVE SAMPLING DESIGN (ASD)

Idea:

- Collect more detailed paradata during the survey-sample acquisition phase.
- “Tune” the final sample to require the smallest number of call-backs in order to achieve a pre-specified level of survey-output quality.

The literature on making *valid statistical inferences* for ASDs is sparse!



VALID INFERENCES FOR ASDs

Issues are:

- Non-ignorable non-response bias: Is it in fact ignored by Census?
- The factors that drive non-response: Are they all known *a priori*?
- Response propensity model: Where does it come from, and is it fixed or is it estimated?
- Sample inclusion probabilities for ASDs: Given the sample inclusion probabilities *prior* to adaptive sampling, can they be calculated for the ASD?
- **Valid inferences require the ASD's sample inclusion probabilities to be known!**

