

# Time series modelling in repeatedly conducted sample surveys

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# PROPOSITIONS (STELLINGEN)

BELONGING TO THE PH.D. THESIS

## TIME SERIES MODELLING IN REPEATEDLY CONDUCTED SAMPLE SURVEYS

BY OKSANA BALABAY

1. The time series model-based inference should become a standard tool in repeatedly conducted surveys for variance reduction and for dealing with level breaks caused by survey redesigns. (Chapters 2, 3, 4, and 5)
2. "You can't fix by analysis what you bungled by design," - R.J. Light, J.D. Singer, J.B. Willett. But you can fix things screwed up by a survey redesign. (Chapters 2 and 5)
3. "The current paradigm [of official statistics] generally employs direct design-based estimates in large samples, and model-based estimates in small samples," - R.J. Little. This inferential schizophrenia related to deciding on how large "large" and "small" are supposed to be, should not bother those working with repeatedly conducted surveys, since even series based on large samples can benefit from borrowing strength over time and optionally over space too. (Chapters 2 and 5)
4. Most reduction in design-based variances with the help of time series models comes from borrowing strength over time, with an additional variance reduction due to borrowing strength over space. (Chapter 2)
5. National statistical institutes should not discard data accumulated over time. This treasure can be easily converted into money saved for the tax-payers' benefit.
6. "By a small sample, we may judge of the whole piece,"- from "Don Quixote" by Miguel de Cervantes, Ch.4.
7. "According to the latest official figures, 43% of all statistics are totally worthless,"- A. Brilliant. Hopefully, the confidence interval bands around this "estimate" are wide.
8. "The death of one man is just death, the death of two millions is a statistic," - E.M. Remarque.
9. In the ocean of data, it has become increasingly easy for politicians, marketing managers and even health scientists to use "statistics as a drunken man uses lampposts - for support rather than for illumination" (attributed to Andrew Lang (1844-1912)). The task of academicians is to create awareness about biases and errors resulting from such misguiding practices and to propose reliable alternatives to them.
10. "Democracy is an abuse of statistics" (J.L. Borges), in the sense that it hinges on the notion of the majority opinion whose estimate is distorted by a self-selection bias due to voluntary attendance, not to mention such "systematic measurement errors" as falsifications.
11. "Education is the most powerful weapon which you can use to change the world" (N. Mandela), but it is, at the same time, a more dangerous weapon than propaganda in evil hands.