

Discussion of “Small area estimation: its evolution in five decades”, by Malay Ghosh

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This review article will help to promote further the “exponentially” expanding literature on small area estimation (SAE), which became one of the most researched and practiced topics in statistics in the last three decades. The areas are small, but the research and applications are huge. Malay Ghosh is undoubtedly one of the world leading experts in the theory and application of SAE, and his pioneering articles with his students and colleagues paved the way for new research and applications all over the world. No wonder that he is frequently invited to make keynote presentations in conferences and workshops, and from time to time to write review articles as this one.

I have sent Malay already a few remarks, leaving him the choice to include them in the text or just ignore them, which I shall not repeat here. (I was asked to send a short review anyway.) In the last section of the paper, Malay acknowledges that “the present article leaves out a large number of useful current day topics in small area estimation”, referring the readers to look for them in the very comprehensive book of Rao and Molina (2015) and the extensive list of references therein. I shall therefore list a few topics which have been researched more recently (but need to be researched further), and topics that to the best of my knowledge have not been researched so far, but in my view should be investigated. (Unfortunately, due to my extensive administrative roles in the last 7 years, I no longer follow the SAE literature as I used in the past.)

1. SAE with unit observations in the presence of NMAR nonresponse. As well known, the response rate in surveys is steadily declining all over the world, and the nonresponse is often informative, implying inevitably the same problem in at least some of the areas. NMAR nonresponse need to be handled properly, irrespectively of the method of inference, whether design- or model-based; following the frequentist or the Bayesian approach.

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