Accepted Manuscript

Semiparametric double robust and efficient estimation for mean functionals with response missing at random

Xu Guo, Yun Fang, Xuehu Zhu, Wangli Xu, Lixing Zhu

PII: S0167-9473(18)30183-X
DOI: https://doi.org/10.1016/j.csda.2018.07.017
Reference: COMSTA 6661

To appear in: *Computational Statistics and Data Analysis*

Received date : 13 September 2017
Revised date : 6 July 2018
Accepted date : 31 July 2018

Please cite this article as: Guo X., Fang Y., Zhu X., Xu W., Zhu L., Semiparametric double robust and efficient estimation for mean functionals with response missing at random. *Computational Statistics and Data Analysis* (2018), https://doi.org/10.1016/j.csda.2018.07.017

This is a PDF file of an unedited manuscript that has been accepted for publication. As a service to our customers we are providing this early version of the manuscript. The manuscript will undergo copyediting, typesetting, and review of the resulting proof before it is published in its final form. Please note that during the production process errors may be discovered which could affect the content, and all legal disclaimers that apply to the journal pertain.

ACCEPTED MANUSCRIPT

*Manuscript
Click here to view linked References

Semiparametric Double Robust and Efficient Estimation for Mean Functionals with Response Missing at Random

Xu Guo[1,†], Yun Fang[2,†], Xuehu Zhu[3], Wangli Xu[4], and Lixing Zhu[1,5*]

[1] *School of Statistics, Beijing Normal University, Beijing*

[2] *Department of Mathematics, Shanghai Normal University, Shanghai*

[3] *School of Mathematics and Statistics, Xi'an Jiaotong University, Xi'an*

[4] *School of Statistics, Renmin University of China, Beijing*

[5] *Department of Mathematics, Hong Kong Baptist University, Hong Kong*

Abstract: Under dimension reduction structure, several semiparametric estimators for the mean of missing response are proposed, which can efficiently deal with the dimensionality problem. Specifically, a generalized version of Augmented Inverse Probability Weighting estimator (AIPW) is proposed and its double robustness, estimation consistency and asymptotic efficiency are investigated. A generalized version of Inverse Probability Weighting (IPW) estimator is also introduced. An asymptotic efficiency reduction phenomenon occurs in the sense that the IPW estimator with the true selection probability is asymptotically less efficient than the one with an estimated selection probability. Besides, two partial imputation and two complete imputation estimators are discussed. We further systematically investigate the comparisons among these estimators in theory. Several simulation studies and a real data analysis are conducted for performance examination and illustration.

Keywords: Dimension Reduction; Double Robustness; Inverse Probability Weighting; Missing at random.

*Corresponding author: Lixing Zhu, email: lzhu@hkbu.edu.hk.

† Xu Guo and Yun Fang are co-first authors. The authors are grateful to the editor, the associate editor and the three anonymous referees for the constructive comments and suggestions that led to significant improvement of an early manuscript.

Download English Version:

https://daneshyari.com/en/article/11002382

Download Persian Version:

https://daneshyari.com/article/11002382

Daneshyari.com