

# Augmented inverse probability weighted estimation for missing covariates in Taiwan social change survey

鄭至展\*、雷淑儀  
國立臺北大學統計學研究所

## Abstract

In this paper, we discuss significant factors and differences arose from applying various methods of estimation to solve the problems with missing data, especially for the high dimensionality in Taiwan Social Change Survey (TSCS). Following the study of Wang *et al.* (2007), we show the augmented inverse probability weighted (AIPW) estimator to be at least equal to or better than other methods, like complete-case (CC) analysis, multiple imputation (MI), weighting nonparametrically and simple inverse probability weighted (SIPW) estimator. There is little literature on AIPW estimator lately, thus in this research we would focus on how this method can be used to solve the problem with high dimensional data. Two data sets regarding religion and culture, and future development of citizenship are illustrated as examples to show these works mentioned above. Furthermore, these estimators are compared accordingly and the relation between variables of interest will be investigated. Factors would be researched to tell the influence on modeling certain issues from two questionnaire surveys of TSCS in 2003, both involving interviewees' basic materials. In the questionnaire of religion and culture, the impact of religion toward charitable attitude, behavior and value orientation is discussed. As to the latter one, we consider the development of the trend of citizenship in Taiwan social changes through political participation and culture transition. Finally, the results suggest that religion be the most important factor affecting the inclination toward donation, and there exists more complicated relation on citizenship issue.

Keywords: augmented inverse probability weighted, multiple imputation