

Mitigating the Impact of Endogeneity in Healthcare Data via Multilevel Models

Paul Johnson

University of Wisconsin-Madison

Abstract: It has been widely recognized that racial disparities exist in healthcare. In particular, analysts have found extensive evidence of racial disparities in mental healthcare, both in health status outcomes associated with mental health treatment and in utilization of mental health services. These racial disparities have been attributed to factors such as differences in socio-economic status health insurance coverage, patient preferences for treatment, physician bias, and discrimination. This paper examines whether racial disparities occur in inpatient mental health treatment, by considering the outcome variable hospital total charges (TOTCHG). We consider whether TOTCHG incurred by discharges admitted for a mental health disorder vary significantly for US adults (ages 18 to 64) by race, using 2003 data from the Healthcare Cost and Utilization Project's Nationwide Inpatient Sample and the Area Resource File, which contain discharge, hospital, and county information. We expand upon the ordinary least squares models used previously in the literature by modeling TOTCHG with multilevel models, and show that more precise estimates of model parameters and different inferences about racial disparities are obtained. Further, these data are endogenous; factors such as patient preferences and physician bias are omitted variables that can bias the regression coefficients of many model covariates. We employ multilevel model-based fixed effects and instrumental variables estimation strategies that mitigate the impact of these endogeneities. These methods are recommended as an alternative approach to modeling potentially endogenous healthcare data.