Children's Hospital of Philadelphia PolicyLab

Imputing Missing Race/Ethnicity in Pediatric Electronic Health Records: Reducing Bias with Use of U.S. Census Location and Surname Data

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OBJECTIVE: To assess the utility of imputing race/ethnicity using U.S. Census race/ethnicity, residential address, and surname information compared to standard missing data methods in a pediatric cohort.

DATA SOURCES/STUDY SETTING: Electronic health record data from 30 pediatric practices with known race/ethnicity.

STUDY DESIGN: In a simulation experiment, we constructed dichotomous and continuous outcomes with pre-specified associations with known race/ethnicity. Bias was introduced by nonrandomly setting race/ethnicity to missing. We compared typical methods for handling missing race/ethnicity (multiple imputation alone with clinical factors, complete case analysis, indicator variables) to multiple imputation incorporating surname and address information.

PRINCIPAL FINDINGS: Imputation using U.S. Census information reduced bias for both continuous and dichotomous outcomes.

CONCLUSIONS: The new method reduces bias when race/ethnicity is partially, nonrandomly missing.

Journal:

Health Services Research
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