

MODELING DIFFUSION AND EFFECTS OF NEW DRUGS: METHODS AND APPLICATIONS

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A fundamental statistical problem involves making inferences of the impact of a treatment in the absence of randomization. It is well-appreciated that the potential presence of unmeasured confounding variables threatened the validity of the findings. Understanding the diffusion of new drugs and their effects on health outcomes is an important and policy question that relies on observational data. Over the past 50 years technological changes in drug development have had enormous consequences for the cost of care and for the outcomes of treatment. In the US, spending on mental health prescription drug expenditures grew annually by 18% between 1993 and 2003. Growth in antipsychotic sales has been quite impressive. New atypical antipsychotics, while more expensive than conventional antipsychotics, are purported to offset their costs because patients are more likely to adhere to treatment regimens. However, patients are not randomly allocated to type of antipsychotic making this assertion difficult to verify. In this talk I describe the use of sensitivity analyses in combination with propensity score methods and with instrumental variable methods to address the uncertainty about the validity of models and illustrate methods to determine whether new atypical antipsychotic drugs "pay for themselves" for treatment of schizophrenia.

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