Title: Topic Modelling for Medical Prescription Fraud and Abuse Detection

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Abstract:

Medical prescription fraud and abuse has been a pressing issue in the U.S. resulting in large financial losses and adverse effects on human health. The size and complexity of the healthcare systems as well as the cost of medical audits make use of statistical methods necessary to generate investigative leads in prescription audits. Current practice and literature are generally based on outlier detection based rules that are generated using descriptive summary statistics. We propose the use of topic models by treating prescription data as text corpora. The proposed model is used to group drugs with respect to the billing patterns, to display associations and exhibit the potential aberrant behavior of prescriber-drug pairs. The prescription patterns of the providers are retrieved with an emphasis on opioids, and aggregated into distance based measures derived from Lorenz curve. The proposed framework, illustrated by using real world Medicare Part D prescription data, can enable medical auditors to identify leads for audits of providers prescribing medically unnecessary drugs.