

# Demand for Medical Care by the Elderly: A Nonparametric Variational Bayesian Mixture Approach

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## Abstract

Outpatient care is a large share of total health care spending, making analysis of data on outpatient utilization an important part of understanding patterns and drivers of health care spending growth. Common features of outpatient utilization measures include zero-inflation, over-dispersion, and skewness, all of which complicate statistical modeling. Mixture modeling is a popular approach because it can accommodate these features of health care utilization data. In this work, we add a nonparametric clustering component to such models. Our fully Bayesian model framework allows for an unknown number of mixing components, so that the data, rather than the researcher, determine the number of mixture components. We apply the modeling framework to data on visits to physicians by elderly individuals and show that each subgroup has different characteristics that allow easy interpretation and new insights.

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