

ASSESSING THE QUALITY OF CARE IN NURSING HOMES THROUGH BAYESIAN BELIEF NETWORKS

Justin Goodson

Dr. Wooseung Jang, Thesis Advisor

ABSTRACT

The need to properly assess – and thus improve – the quality of care in nursing homes is a growing concern. This research proposes Bayesian belief networks (BBNs) as a modeling tool to perform such assessments. Variables were selected for inclusion in each of 11 BBNs based on prior research pertaining to the quality of care in nursing homes, stepwise variable selection in a least squares regression model, and a Chi-square test of association with the quality of care. After learning the structure and parameters of the BBNs, each model was evaluated based on its ability to accurately assess the quality of care in nursing homes. The structure and parameters of the proposed model support previous research relating structure, process, and outcome measures to the quality of care. The proposed model successfully predicted the quality of care in 58% of the validation data. A larger dataset and consideration of additional measures of the overall quality of care are recommended to improve the accuracy of the proposed model. The major accomplishments of this work include the incorporation of a wide variety of variables into a quality of care assessment model, the attainment of previously unachieved quantitative and qualitative insight into the quality of care in nursing homes, the ability to perform quality of care assessments with incomplete information using the proposed model, the capacity to distinguish among the quality of care delivery in nursing homes with like classifications, and the utilization of the BBN environment as a means of integrating various research efforts.