# The Impact of Health Information Technology on Demand for Inpatient Services

**Principal Investigator:** Barrette, Eric, M.A.
**Organization:** University of Minnesota, Twin Cities
**Mechanism:** PAR: HS06-118: AHRQ Grants for Health Services Research Dissertation (R36)
**Grant Number:** R36 HS 018272
**Project Period:** September 2009 – April 2011, Including No-Cost Extension
**AHRQ Funding Amount:** $24,642
**Summary Status as of:** December 2010

**Target Population:** Elderly*, Medicare

**Summary:** The influence of the adoption of health information technology (IT) on where consumers decide to receive hospital inpatient services is largely unknown. These decisions affect the costs and quality of those services and the market power of the hospitals. This project is examining the role of health IT in meeting inpatient health care service demands. This demand analysis complements existing supply-side analyses to provide more complete and dynamic estimates of the impact that health IT has on health care markets. It allows policymakers and the health care industry to make better decisions on optimal health IT adoption and implementation strategies.

The analysis requires information about hospitals' characteristics and information technology as well as patients' characteristics and hospital choices. Data needed to perform this analysis comes from several sources. Hospital characteristics data are obtained from the American Hospital Association (AHA) annual survey. This database contains information on hospitals' physical and organizational characteristics such as location, number of full-time physicians, services provided, and number of beds. The AHA database is linked with the Health Information and Management Systems Society Analytics Database. This dataset contains detailed historical information on the health IT software, hardware, and infrastructure installed in the surveyed hospitals. Inpatient Medicare claims data are the source of patient-level choices and characteristics. Regional demographic data from the 2000 U.S. Census are also included.

The econometric methods for this project estimate the demand for hospital services using patient characteristics, hospital characteristics, and observed patient choices. A hospital's decision to implement health IT is considered a treatment or policy intervention, and the change in the total number of patients using the hospital is the outcome of interest. A discrete choice model is using patient-level data to estimate the probabilities of patients choosing each hospital in their choice set. The parameter estimates from these models show how health IT affects a patient's likely hospital choice. Advanced, discrete-choice modeling is applied to deal with biased and inconsistent parameter estimates if they arose.

**Specific Aims:**

- Measure the effect of hospital adoption of health IT on the demand for inpatient care. **(Ongoing)**
- Estimate the impact of health IT by type of inpatient service. **(Ongoing)**
- Evaluate the effect of changes in patient hospital choices using consumer surplus as a welfare measure. **(Ongoing)**

**2010 Activities:** All data has been cleaned and merged for the database. Preliminary data analysis using the original model showed that the data sets were too big and were not converging. As a result, additional models and model specifications were tested. The resulting comparable approach used aggregate data to address the issue with data set size. Eight years of data for a subset of three states were ultimately analyzed.

---

**Grantee's Most Recent Self-Reported Quarterly Status (as of December 2010):** The project is meeting most of its aims on time. Budget spending is roughly on target. The acquisition of data and model specification took longer than anticipated, resulting in a request for a no-cost extension.

**Preliminary Impact and Findings:** Preliminary results suggest that health IT does not have a significant effect on patient demand.

---

**Strategic Goal:** Develop and disseminate health IT evidence and evidence-based tools to improve health care decisionmaking through the use of integrated data and knowledge management.

**Business Goal:** Knowledge Creation

---

* *AHRQ Priority Population*