CSE 590 B Project Proposal: Improving healthcare outcomes and cost through analysis and design of provider incentives

Keyan Pishdadian Student ID: keyanp

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Working Abstract

Healthcare is a socially and economically important aspect of the modern United States. Roughly 1/6th of US consumer spending goes towards some form of healthcare [1] and the success, efficiency, and outcomes of this market reflect directly on the viability and happiness of American citizens and the US economy. The decision making of physicians plays a critical role in this system, with roughly 80% of all expenditure being a result of physicians' decisions [2]. Despite this critical role, the incentive structures that underlie provider decision making are poorly designed both financially and from a provider risk perspective. The classic incentive structures used result in a principle-agent problem between providers (agents) and payers (government/insurance companies), as well as multiple "prisoners' dilemmas" between providers and patients as well as providers and other providers [5]. In this paper we analyze the inefficiencies and sub-optimal equilibria that result from the use of classic incentive systems, then extend recent ideas to propose a hybrid incentive structure that increases provider profits and improves patient outcomes.

Project Overview

This project will focus on a literature review around the subject of provider incentive structures, followed by a presentation and analysis of a hybrid incentive structure designed through combining ideas from research and recent real world approaches. I will provide an overview of the agents and their incentives, focusing on the decision making of providers and how the classic incentive systems fail to create socially optimal equilibria. Discussion of current systems will focus on failure of the two poles of incentive models "fee-for-service" and "capitation", which result in equilibria of low quality service with either over-servicing or under-servicing, respectively. Finally I will use/extend several ideas encountered during literature review to create a hybrid incentive system and provide theoretical support for it allowing for breaking out of sub-optimal equilibria.

Outline

- Abstract
  - See working abstract above
- Introduction
  - General background and overview of actors (patients, insurers, providers)
  - Discussion of incentives for actors and present how actors affect each other through a 'influence diagram'
  - Formal framework for structuring incentive systems, adapted lightly from [5]
- Background, discussion of current classic incentive systems

  - "Fee-for-service" model, benefits, problems, equilibria
  - "Capitation" model, benefits, problems, equilibria
  - Review of alternative strategies used in the wild, principally Accountable Care Organizations (ACOs), their analysis and problems. Leaning heavily on analysis provided by [6].

- Hybrid Approach Proposal
  - Not fully fleshed out, but uses a combination of ideas from ACOs [**?**], incorporation of trust [2] and externalities [5] to create new payoff matrices for the major agent interactions
  - Analysis using formal framework discussed in introduction

References

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