

Are Networks Key to Solving America's Healthcare Crisis?

Examining the Performance of Medicare Accountable Care Organizations (ACOs)

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Project Overview

Research question

- How can network analysis be used to understand the performance of Medicare ACOs?

Data

- 70+ million ties among 250,000 providers working in 44,231 organizations, which comprise 250 ACOs from 2012-2015.
- Longitudinal data based on networks constructed for each ACO-year.

Findings

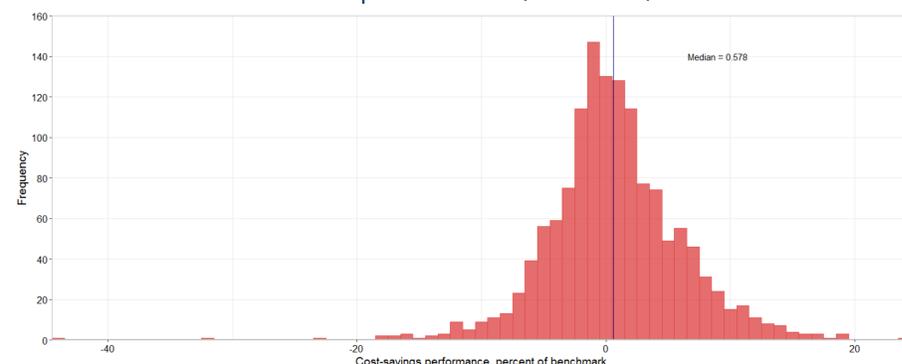
- Network disconnectedness (structural) is associated with worse ACO performance
- This association is moderated by (relational) strength of network ties and the presence of academic-oriented (cultural) organizations

Medicare Accountable Care Organizations

Medicare ACOs were formed through provisions of the Affordable Care Act (2010) and are designed to reduce healthcare spending while improving care quality. An ACO is a **voluntary group of healthcare providers** (e.g., physicians, hospitals, clinics) that agree to **coordinate care** for a group of patients that are insured by Medicare (federal health insurance for elderly and disabled patients).

Today, there are more than 500 ACOs across all 50 states, caring for more than 10 million Americans

However, Medicare ACO performance (2013-2016) has been mixed.



Conceptual Approach

To better understand why ACO performance is so heterogeneous, we **conceptualize ACOs as collaborative networks of organizations**.

Network structure affects collective performance of groups of individuals (e.g., Christie et al., 1952) and organizations (e.g., Fang et al., 2010). However, similar structures have also been found to produce different outcomes (e.g., Lazer & Friedman, 2007 vs. Mason & Watts, 2012).

Using theories of macrostructural sociology, we theorize that the same structures may lead to different outcomes because of the strength and character of network relationships.

Hypothesis 1 (H1)

Disconnected ACO networks will perform worse if their members have stronger relationships.

Hypothesis 2 (H2)

Disconnected ACO networks will perform better if they include members that are academically oriented.

Data

To map informal networks among physicians, we use.

- Medicare physician referral data from Centers for Medicare & Medicaid Services (60-day window)
- Medicare Shared Savings Program (MSSP) ACO Provider Research Identifiable File (2012-2015)

Our sample includes.

- 70+ million physician-to-physician patient sharing interactions for 250 MSSP ACOs from 2009-2015
- 237,574 physicians
- 44,231 hospitals

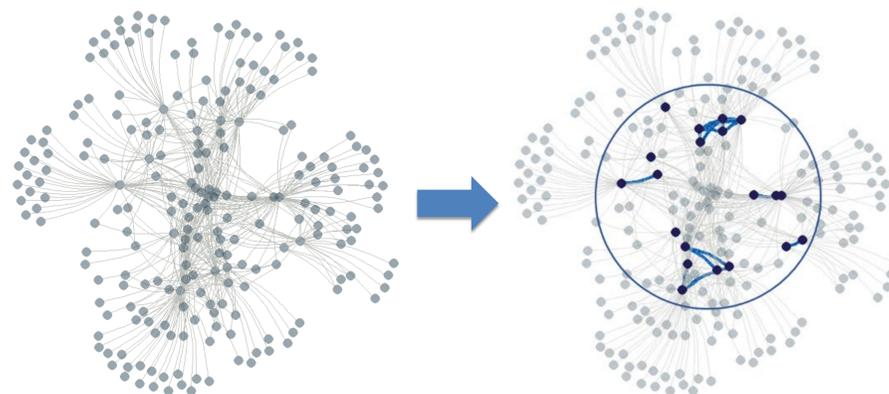
Constructing ACO Networks from Medicare Claims

Using Medicare claims, physicians are connected if they treat the same patient within a 60-day time period. We begin with the full set of physician-to-physician ties.

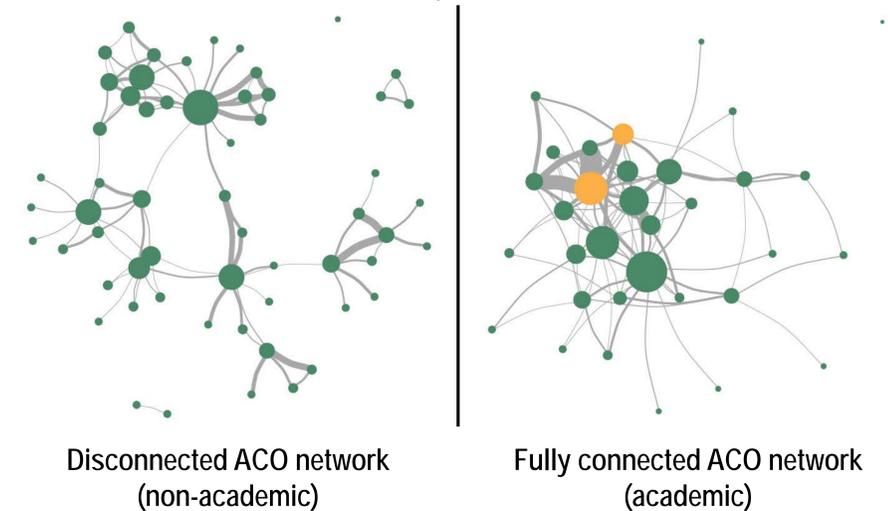
To construct each ACO network:

- Identify physicians that participate in each ACO in a given year
- Isolate ties between physicians within the same ACO
- Aggregate ties based on physicians' organizational affiliation
- Repeat for each ACO, accounting for year-to-year changes in ACO membership

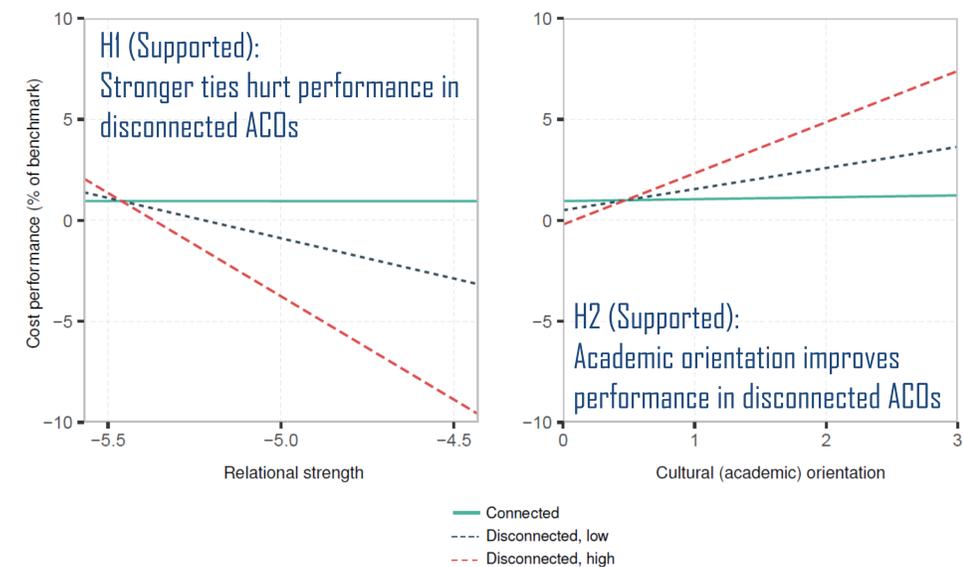
We created ACO networks from millions of physician-level interactions.



ACOs vary considerably in their connectedness, strength of ties, and composition.



Results



Conclusions

- There is **no "one-structure-fits-all" recipe for ACO performance**.
- Disconnectedness (i.e., lack of connections among some members) generally hurts performance.
- However, disconnectedness may be even more detrimental when the strength of relationships among members is greater.
- On the other hand, an academic orientation may offset the negative effects of disconnectedness and increase collective performance.

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