

# The Rural Physician Recruitment Problem: A View Through the Lens of Transaction Cost Theory

James N. Barnes  
J. Matthew Fannin

Department of Agricultural Economics & Agribusiness  
Louisiana State University

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# WHAT WE KNOW...

*about some aspects of rural health  
care systems*

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# Rural Health Care Systems

- **Consumers:** declining population base, generally poorer than urban residents, lower income/education, higher incidence of diseases and perhaps more limited access to health care services
- **Providers:** hospitals, HMOs, community health centers face difficulty of recruiting physicians and other professionals
- **Managed Care:** seen as increasing the incentive for providers to organize new networks to leverage complementary assets and increase delivery efficiency
- **Policy:** largely focused on improving access through financial incentives to hospitals (*CAH program*) and institutional support for recruiting (*NHSC*)

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# WHAT WE KNOW...

*about the rural physician  
recruitment (**RPR**) problem*

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# The Nature of the RPR Problem

- Forty percent of rural hospitals cited the RPR problem as the number one managerial difficulty of operating a rural hospital (RUPRI, 2003)
- Institutional assistance from the federal government has been significant (NHSC)
- State level assistance has been significant as well
- Problem is share across the spectrum of rural providers (hospitals and community health centers)
- RPR is a global, not U.S. only, problem (Australia)

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## Search Results

Data last updated July 20 2006

A posting on the NHSC Opportunities list does not guarantee an NHSC LRP contract award. [More information on the NHSC LRP.](#)

Type of Opportunity = NHSC Opportunities (all)

Now displaying records 1 to 250 of 1866.

1 2 3 4 5 6 7 8 Next >>

NAME OF SITE	STATE	CITY	DISC-SPEC	HPSA SCORE *	CHC?	SITE PROFILE?	DATE NEEDED	DATE VERIFIED
<a href="#">JEFFERSON COMPREHENSIVE CARE SYS</a>	AR	PINE BLUFF	MD/DO-OBG	22	YES	NO	IMMEDIATE	05/24/06
<a href="#">SAN LUIS HEALTH CENTER</a>	CO	SAN LUIS	MD/DO-FP	22	YES	NO	IMMEDIATE	06/14/06
<a href="#">ASPC - EYMAN</a>	AZ	FLORENCE	MD/DO-PSY	21	NO	NO	IMMEDIATE	07/07/06
<a href="#">ASPC TUCSON</a>	AZ	TUCSON	MD/DO-PSY	21	NO	NO	IMMEDIATE	07/06/06
<a href="#">ASPC TUCSON</a>	AZ	TUCSON	MD/DO-PSY	21	NO	NO	IMMEDIATE	07/06/06
<a href="#">AVENAL STATE PRISON</a>	CA	AVENAL	MD/DO-PSY	21	NO	NO	IMMEDIATE	03/13/06
<a href="#">AVENAL STATE PRISON</a>	CA	AVENAL	MD/DO-PSY	21	NO	NO	IMMEDIATE	04/06/06
<a href="#">CALIFORNIA</a>	CA	SUGARVILLE	MD/DO-	24	NO	NO	IMMEDIATE	04/06/06

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# WHAT WE DON'T KNOW...

*is more about the **economics** of  
supply chain organization between  
rural providers and physicians*

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# Three Messages to Remember

- Study of health care organizations is in its infancy (cost, quality, access), especially rural aspects
- Conceptual frameworks are underdeveloped in health services research, urban and rural alike (Robinson, 2001)
- NIE frameworks useful; transaction cost theory as an example

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# New Institutional Economics

- NIE can be broadly divided into the study of the institutional environment and contractual arrangements given positive transaction costs exist
- Transaction costs include: costs of writing and enforcing contracts (search, bargain, monitor)
- Core focus is to understand how transaction costs influence economic organization of firms and the performance of economies

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# Transaction Costs Theory

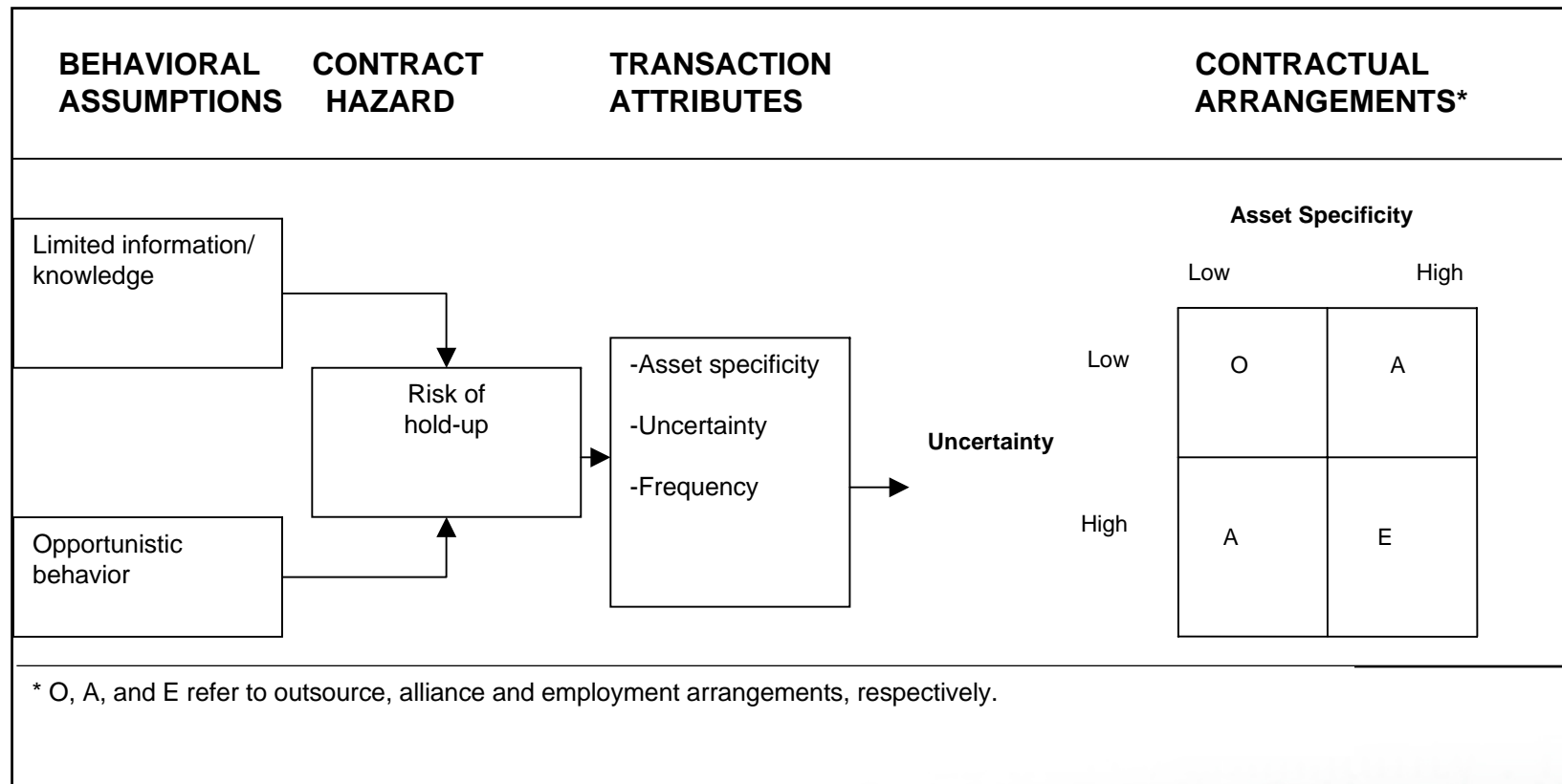
- **Origins: (Coase 1937; Williamson, 1975; 1985)**
- **TCT (Williamson) behavioral assumptions:**  
limited knowledge/opportunism
- **Examines the ‘attributes’ of a contract or transaction**
- **Asset specificity primary attribute of interest**  
(hold-up story)
- **Key hypothesis:** vertical integration and asset specificity (+)

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# Transaction Cost Theory – A Reduced Form Model

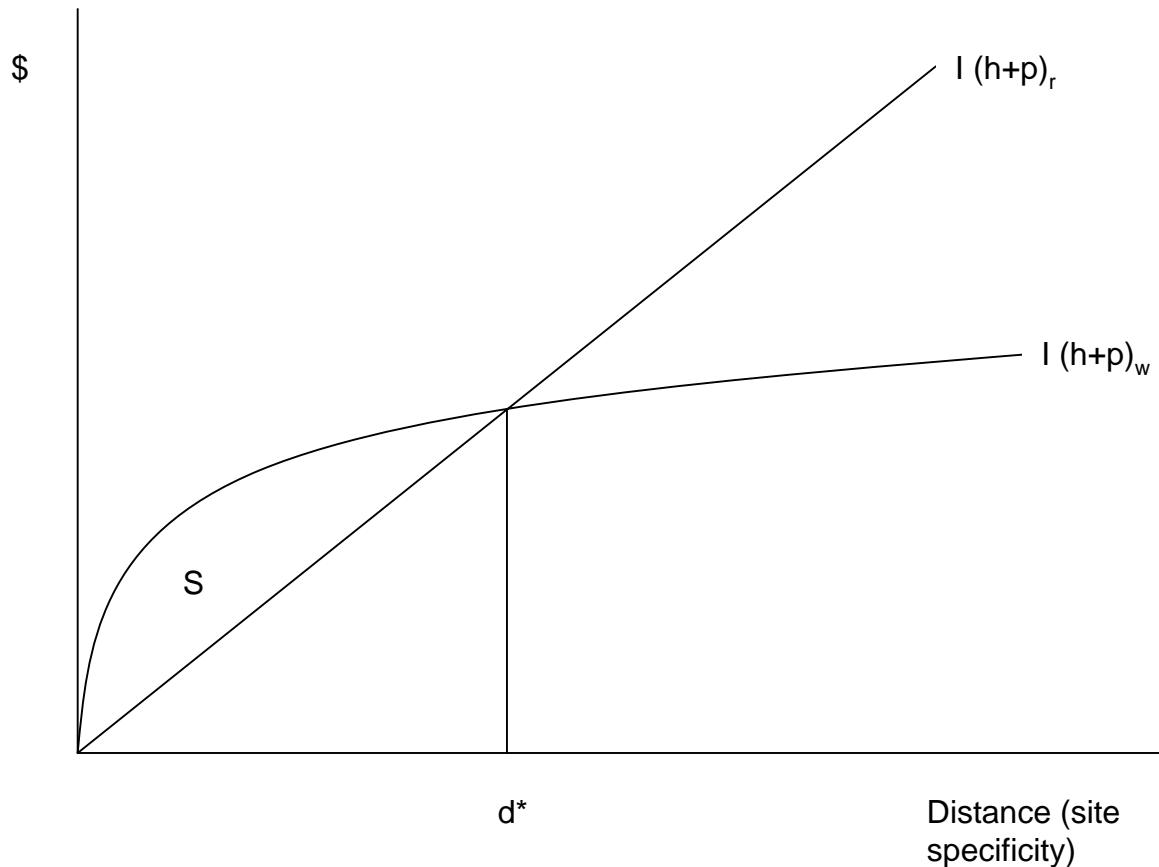


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# TCT Predictions



$I$  = joint investment level  
 $h$  = hospital  
 $p$  = physician  
 $r$  = required investment level  
 $w$  = investment level willing to invest given transaction costs

Figure 2. A View of the RPR Problem Using TCT

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# TCT Hypotheses

- **Hospitals that make highly specific investments to recruit physicians will choose contractual arrangements to protect those investments (more control preferred to less)**
- **Vertical integration strategies are positively related to measures of asset specificity (distance, physical assets, human assets)**

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# QUESTIONS?

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# Vertical Integration Business Strategies in Health Care Markets: Theory and Evidence

James N. Barnes  
J. Matthew Fannin

Department of Agricultural Economics & Agribusiness  
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# Rural Health Care Research

- **Research to date focused more on demand side;** access barriers and quality of care are dominate themes
- **Role of economic organization has received limited attention;** organization of supply chain affects access, quality of care and firm performance (Esposito, Coles and Hesterly, Barnes and Fannin)
- **Interconnection between organization, access and quality of care** not well understood

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# Shortages of Medical Personnel at Community Health Centers

## Implications for Planned Expansion

Roger A. Rosenblatt, MD, MPH

C. Holly A. Andrilla, MS

Thomas Curtin, MD

L. Gary Hart, PhD

RESIDENTS OF THE UNITED States lack universal access to health care, and millions of people have difficulty obtaining medical care.<sup>1,2</sup> The year 2005 marked the 40th anniversary of one of the nation's most enduring attempts to remedy this problem: the creation of community health centers (CHCs) as part of the "war on poverty."<sup>3-8</sup> The national importance of these centers has grown during the ensuing 4 decades, and the federal government provides funding through a variety of categorical mechanisms under the collective term *federally qualified health centers*. CHCs provide medical, dental, and mental health care for migrant workers, the uninsured, the homeless, and others in need, and the number of people they have served has expanded rapidly in the 21st century.<sup>9</sup>

The role and responsibility of CHCs have increased as more people in the United States have difficulty gaining access to medical care.<sup>10</sup> CHCs now provide care to more than 14 million US residents in more than 3500 communities.<sup>9</sup> Governed by nonprofit boards

**Context** The US government is expanding the capacity of community health centers (CHCs) to provide care to underserved populations.

**Objective** To examine the status of workforce shortages that may limit CHC expansion.

**Design and Setting** Survey questionnaire of all 846 federally funded US CHCs that directly provide clinical services and are within the 50 states and the District of Columbia, conducted between May and September 2004. Questionnaires were completed by the chief executive officer of each grantee. Information was supplemented by data from the 2003 Bureau of Primary Health Care Uniform Data System and weighted to be nationally representative.

**Main Outcome Measures** Staffing patterns and vacancies for major clinical disciplines by rural and urban location, use of federal and state recruitment programs, and perceived barriers to recruitment.

**Results** Overall response rate was 79.3%. Primary care physicians made up 89.4% of physicians working in the CHCs, the majority of whom are family physicians. In rural CHCs, 46% of the direct clinical providers of care were nonphysician clinicians compared with 38.9% in urban CHCs. There were 428 vacant funded full-time equivalents (FTEs) for family physicians and 376 vacant FTEs for registered nurses. There were vacancies for 13.3% of family physician positions, 20.8% of obstetrician/gynecologist positions, and 22.6% of psychiatrist positions. Rural CHCs had a higher proportion of vacancies and longer-term vacancies and reported greater difficulty filling positions compared with urban CHCs. Physician recruitment in CHCs was heavily dependent on National Health Service Corps scholarships, loan repayment programs, and international medical graduates with J-1 visa waivers. Major perceived barriers to recruitment included low salaries and, in rural CHCs, cultural isolation, poor-quality schools and housing, and lack of spousal job opportunities.

**Conclusions** CHCs face substantial challenges in recruitment of clinical staff, particularly in rural areas. The largest numbers of unfilled positions were for family physicians at a time of declining interest in family medicine among graduating US medical students. The success of the current US national policy to expand CHCs may be challenged by these workforce issues.

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www.jama.com

different from the private practices and for-profit entities that deliver most am-

Author Affiliations: WWAMI (Washington, Wyoming, Alaska, Montana, Idaho) Rural Health Research Center. Department of Family Medicine. Uni-

# An Application of TCT:

## Hospital-Physician Contractual Arrangements in the U.S.

- **Contractual problem:** recruitment of rural physicians is a persistent managerial problem (RUPRI, 2003)
- **Quasi-rents at stake for hospital:** time needed to replace primary care physician + any loss of patients due to physician loyalty
- **Government institutional supports:** Medicare Hospital Flexibility Program-CAH, NHSC
- **Key question:** does TCT explain variation in hospital-physician arrangements in U.S.?

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# Hospital Contractual Arrangements with Physicians

- Independent Practice Association (IPA)
- Group Practice without Walls (GPWW)
- Open Physician-Hospital Organization (OPHO)
- Closed Physician-Hospital Organization (CPHO)
- Management Service Organizations (MSO)
- Equity Model (EM)
- Foundation (F)
- Integrated Salary Model (ISM)

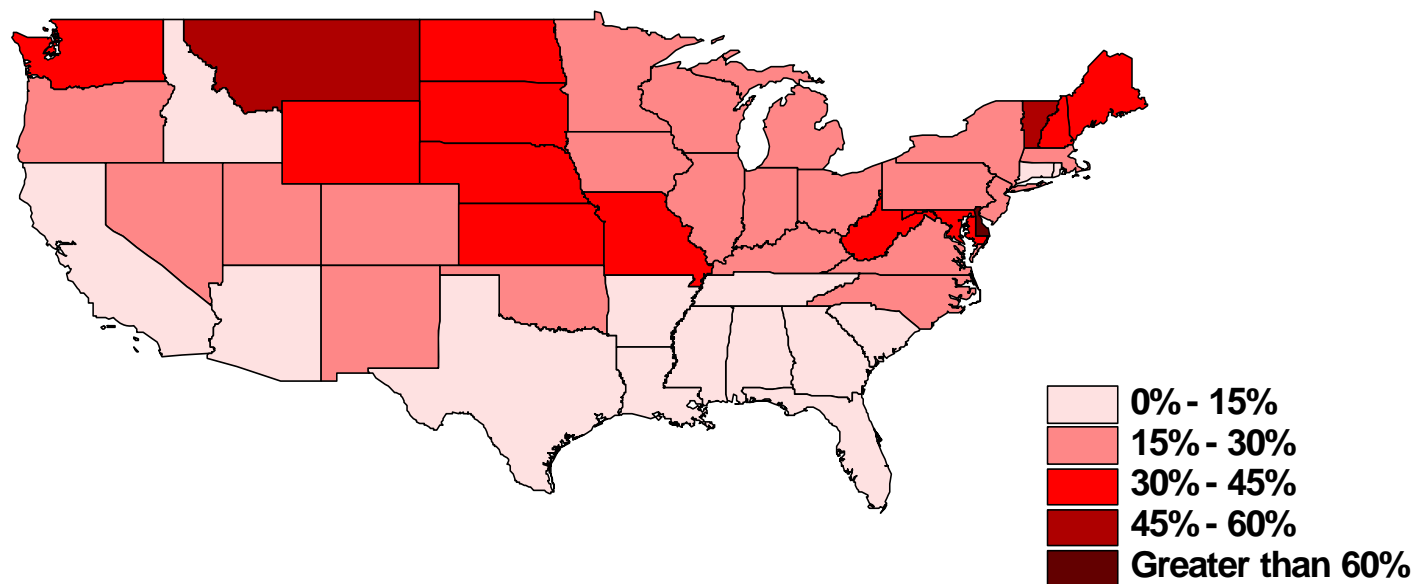
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# U.S. Hospital-Physician Arrangements: A Snapshot

Figure 1. Percentage of Hospitals with Salaried Organizational Arrangement in 2004.



# Previous Studies: why the variation exists in hospital-physician arrangements?

- Burns et al (2000) found the number of HMO providers increased the probability of tighter hospital-physician alliances
- Coles and Hesterly (1998a, 1998b) and Esposto (2004) showed where physical and human asset specificity increased probability of employment arrangements between hospital and physician

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# TCT Analysis and Approach

- **Estimate an ordered probit model**
- **Data from 2004 AHA hospital-physician arrangements**
- **Examine rural TCT related hypotheses:**
  - physical asset specificity (+);
  - HMO arrangements with hospital (+); and
  - CAH status
- **Contributions:** ordered approach, first TCT study to examine attributes, HMO and policy effects in rural areas

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# Empirical Model

- **Dependent categories (Burns et al):**
  - **No arrangement:** hospital did not have any physician arrangements in categories
  - **Weak:** OPHO or IPA
  - **Weak-Tight:** OPHO and/or IPA
  - **Tight:** combination of at least one OPHO or IPA with at least one CPHO, MSO, GPWW, EM or F
  - **Hybrid-Employment:** at least one ISM with at least one OPHO, IPA, CPHO, MSO, GPPW, EM or F
  - **Employment Only:** ISM only

# Empirical Model cont...

- **Explanatory Variables:**
  - **hmo**, md, **hospb**, **cah**, profit, hospdist, pop65, psqm, pci, rural interactions, regional dummies

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# Descriptive Statistics

Variable	Observation	Mean	Std. Dev.	Minimum	Maximum
org_rank	4184	1.849	2.040	0	5
hmo	4184	0.651	0.477	0	1
md	4184	17.457	72.802	0	1,497
hospb	4184	164.641	182.04	0	2,095
cah	4184	0.189	0.392	0	1
profit	4184	0.195	0.396	0	1
hospdist	4184	22.176	23.963	0.01	103.74
pop65	4184	75,112.860	162,389.000	244	926,673
psqm	4184	1,194.818	4,225.710	0.4	55,041
pci	4184	27,856.700	8,632.332	9,769	92,984

# Ordered Probit Model Results

Variable	No Arrange (0)	Weak (1)	Weak-Tight (2)	Tight (3)	Hybrid-Emp. (4)	Emp. Only (5)
Predicted Probability	0.4142	0.1959	0.0334	0.0803	0.0766	0.1996
hmo	0.0108 (0.60)	-0.0001 (0.56)	-0.0003 (0.60)	-0.0011 (0.60)	-0.0015 (0.60)	-0.0078 (0.60)
md	-0.0003 (0.02)b	5.12e-06 (0.16)	9.19e-06 (0.03)b	0.0000 (0.02)b	0.0000 (0.02)b	0.0002 (0.02)b
hospb	-0.0003 (0.00)a	4.80e-06 (0.10)c	8.63e-06 (0.00)a	0.0000 (0.00)a	0.0000 (0.00)a	0.0002 (0.00)a
cah	-0.0419 (0.07)c	-0.0000 (0.93)	0.0011 (0.05)b	0.0039 (0.06)c	0.0058 (0.07)c	0.0312 (0.08)c
profit	0.1622 (0.00)a	-0.0120 (0.00)a	-0.0058 (0.00)a	-0.0183 (0.00)a	-0.0236 (0.00)a	-0.1026 (0.00)a
hospdist	0.0000 (0.98)	-1.61e-07 (0.98)	-2.89e-07 (0.98)	-1.03e-06 (0.98)	-1.46e-06 (0.98)	-7.47e-06 (0.98)
pop65	-5.19e-08 (0.26)	8.02e-10 (0.36)	1.44e-09 (0.26)	5.13e-09 (0.26)	7.30e-09 (0.26)	3.73e-08 (0.26)
psqm	1.27e-06 (0.48)	-1.97e-08 (0.51)	-3.54e-08 (0.48)	-1.26e-07 (0.48)	-1.79e-07 (0.48)	-9.14e-07 (0.48)
pci	2.31e-06 (0.03)b	-3.56e-08 (0.18)	-6.41e-08 (0.03)b	-2.28e-07 (0.03)b	-3.24e-07 (0.03)b	-1.66e-06 (0.03)b

# Ordered Probit Model Results

Variable	No Arrange (0)	Weak (1)	Weak-Tight (2)	Tight (3)	Hybrid-Emp. (4)	Emp. Only (5)
Predicted Probability	0.4142	0.1959	0.0334	0.0803	0.0766	0.1996
rural*hmo	-0.0635 (0.04)b	-0.0007 (0.61)	0.0015 (0.01)a	0.0058 (0.02)b	0.0087 (0.03)b	0.0481 (0.05)b
rural*md	-0.0064 (0.04)b	0.0001 (0.16)	0.0002 (0.04)b	0.0006 (0.04)b	0.0009 (0.04)b	0.0046 (0.04)b
rural*hospb	0.0003 (0.09)c	-5.35e-06 (0.22)	-9.61e-06 (0.10)c	-0.0000 (0.10)c	-0.0000 (0.10)c	-0.0002 (0.09)c
rural*profit	-0.1038 (0.02)b	-0.0051 (0.33)	0.0019 (0.00)a	0.0082 (0.00)a	0.0134 (0.09)c	0.0854 (0.04)b
rural*hospdist	-0.0004 (0.51)	6.66e-06 (0.54)	0.0000 (0.51)	0.0000 (0.51)	0.0001 (0.51)	0.0003 (0.51)
rural*pop65	-1.47e-06 (0.73)	2.27e-08 (0.74)	4.08e-08 (0.73)	1.45e-07 (0.73)	2.06e-07 (0.73)	1.05e-06 (0.73)
rural*psqm	0.0009 (0.02)b	-0.0000 (0.17)	-0.0000 (0.02)b	-0.0001 (0.02)b	-0.0001 (0.02)b	-0.0006 (0.02)b
rural*pci	-5.65e-08 (0.97)	8.73e-10 (0.97)	1.57e-09 (0.97)	5.58e-09 (0.97)	7.94e-09 (0.97)	4.05e-08 (0.97)



# Conclusion

- **# of hospital beds, cah status increased probability of tighter hospital-physician alliances**
- **HMO status had no impact on tighter alliances but positive impact on rural hospital alliances**

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# Further Research

- Address other federal health policy program impacts such as FQHCs and RHCs
- Apply panel data and structural models to understand timing of impacts and direction of causality
- Further analyze differences in contractual arrangements NOT used as well as those listed by AHA
- Explore how contractual arrangements affect hospital performance, variations in patient access and quality of care

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# QUESTIONS?

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