

# **The Impact of Freestanding Ambulatory Surgery Centers on Rural Community Hospital Performance, 1997–2006**

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## EXECUTIVE SUMMARY

### Introduction

Freestanding ambulatory surgery centers (ASCs) compete directly with hospital outpatient departments (HOPDs) for many medical procedures that can now be performed in an outpatient setting. This competition has intensified since 1982 when Medicare-certified ASCs were allowed to provide services to Medicare beneficiaries.

As market competition has heated up, so has the ongoing policy debate over the implications of this competition. Central to the ongoing debate is the impact of ASC operations on hospital financial performance. Research has helped inform policy in urban areas. However, studies have largely ignored the rural context. The absence of information about ASC versus hospital competition in rural areas can be especially problematic because of the fragile nature of rural hospital finances. This study begins to bridge that information gap by providing the first-ever picture of the impact of ASCs on rural hospital markets.

### Methods

We conducted a retrospective analysis of archival data on hospital, ASC, and market characteristics for the years 1997 through 2006. Hospitals and ASCs were categorized by metropolitan, micropolitan and non-core location using the twelve Urban Influence Code (UIC) categories developed by the U.S. Department of Agriculture. The analyses compared hospitals located in micropolitan counties with hospitals located in non-core counties. Geographic differences also included comparisons using a finer measure of rurality based on the relative proximity of a non-metropolitan county to an area of greater population.

The study employed three measures of hospital financial performance. In addition, two measures of ASC competition were constructed: Close proximity indicated a freestanding ASC located within a mile of a rural hospital and captured the potential positive effect of ASCs through collaboration with the rural hospital or the negative effect of service competition. Distant proximity captured the potential negative effect of ASCs through competition and was measured as the sum of  $1 / \text{distance}$  in miles from hospital for all ASCs within 1 to 50 miles from the hospital.

### Results

Our analysis revealed that the distribution of rural ASCs mirrors that of urban ASCs. That is, rural ASCs are more likely to be located in higher population areas (micropolitan rural counties), in states without Certificate of Need (CON) regulations, and in states located in the South.

All three measures of patient care margin indicate that, on average, rural community hospitals are financially fragile and receive a degree of relief from the addition of ancillary revenues and government appropriations. Rural hospitals with a freestanding ASC in close proximity had relatively higher operating margins and profits, compared to hospitals with ASCs located between one mile and 50 miles away. One possible explanation for this relationship is

that ASCs located within one mile of a hospital increased the profitability of those hospitals. The relationship between ASC proximity and hospital margins was not affected by either providing hospital outpatient department surgical services or providing services in conjunction with a health care system, network, or joint venture. However, hospitals within one mile of an ASC were significantly more likely to report engaging in a joint venture with an ASC.

Our findings suggest that the financial benefit for hospitals in close proximity to an ASC could come from the provision of services related to but not including surgical procedures (e.g., ancillary services, outpatient follow-up care, economies of scale, or ASC services billed through the hospital for third-party reimbursement). The additional data collected in more recent AHA surveys will make it feasible to explore the ASC/hospital joint venture phenomenon in rural communities and to more accurately assess the financial and operational implications for rural hospitals.

The growth rates and distribution of urban and rural ASCs suggest that urban markets may be becoming saturated while rural markets are growing. It is possible that this trend reflects not only an urban saturation phenomenon but also an increase in the attractiveness of setting up an ASC practice or expanding marketing efforts in rural communities. An increase in ASC market presence could also make physician joint ventures a more viable option for hospitals. The use of joint ventures to secure mutually beneficial arrangements with physician competitors and to retain the collaboration of physicians who have yet to establish a competitive practice has become increasingly popular in recent years.

### **Conclusions**

The cross-subsidization of lower margin services by high margin services is clearly not a sustainable option for rural hospitals. Efforts to restrict the ability of ASCs to enter and compete in rural markets may preserve the financial viability of community hospitals but will not encourage the innovation or cost efficiencies needed to continue meeting local health care needs. Further understanding of the implications of ASC and hospital competition in the rural context is necessary to determine if market or regulatory strategies, or some combination of the two, best assures health care access, quality, and efficiency for rural communities within the market area of ASCs.

## INTRODUCTION

### **The Emergence of ASCs as Hospital Competitors**

Changes in health care reimbursement policy, advances in medical technology, and advances in pain management have made it possible to shift many medical procedures from the inpatient departments of general hospitals to ambulatory settings and specialty focused providers (Choudhry, Choudhry, & Brennan, 2005; Winter, 2003; Russo et al., 2007). The 1982 decision to let certified ambulatory surgery centers (ASCs) provide services to Medicare beneficiaries created a dramatic shift in the market competition for surgical services by directly pitting ASCs against hospitals.

From the establishment of the first ASC in 1970 up until 1982, when Medicare began reimbursing ASC services, the ASC industry experienced modest growth, averaging fewer than 30 new facilities per year. After Medicare began certifying ASCs, several hundred new ASCs opened every year. This growth continues: Between 1999 and 2007, the number of ASCs increased by more than 60 percent. ASCs accounted for \$2.9 billion in Medicare program and beneficiary spending in 2006, with a projected revenue growth to \$3.9 billion in 2009 (MedPAC, 2008a, 2008b, 2009).

### **The Policy Debate**

As market competition has heated up, so has the ongoing policy debate over the implications of this competition (Choudhry, Choudhry, & Brennan, 2005; Russo et al., 2007). ASC advocates argue for a market-based approach, claiming that the high volume of focused procedures, provided in a patient-centered, physician-supportive environment, promote (a) provider efficiencies, (b) patient choice and satisfaction, and (c) improved quality of care compared to hospital-only markets. Opponents favor a regulatory approach that limits ASCs. They argue that ASCs harm hospitals by diverting lucrative surgical cases (primarily from physician self-referral), thus decreasing hospital revenue that helps subsidize the hospitals' unprofitable but important community services (e.g., indigent care, emergency room care, community outreach and screening).

The claims of both parties are being actively debated in policy and practice at federal and state levels. At the federal level, the work of the Federal Trade Commission (FTC), Department of Justice (DOJ), Government Accountability Office (GAO), and the Medicare Payment Advisory Commission (MedPAC) has resulted in recommendations that support both market and regulatory approaches. Nationally, the American Hospital Association (AHA), the Federation of American Hospitals (FAH), and others produce information that supports a regulatory solution. In contrast, the Ambulatory Surgery Center Association (ASCA) and the Federated Ambulatory Surgery Association (FASA) advocate for allowing market forces to determine the outcomes of competition.

State-level policy action has also been mixed. Some states take a regulatory approach to restrict ASC establishment under the state's Certificate of Need (CON) program (e.g., Maine and Massachusetts) (C. Cobb, personal communication with Maine CON program director on

CON changes between 1996 and 2006, August 2008; J. Gorga, personal communication, Special Commission Report on Ambulatory Surgical Centers and Medical Diagnostic Services, Office of State Senator Richard T. Moore, Boston, MA, July 2008). States such as New York and Ohio have relaxed their barriers to establishing ASCs (Sandman & Berger, 2006; C. Kenney, personal communication with Ohio CON program director on CON changes between 1996 and 2006, August 2008.). For some states (e.g., Georgia), the promulgation of new regulations has not ended the debate but elevated it to the courts, as opponents have sued to invalidate the new rules (*Atlanta Business Chronicle*, 2007). Still other states remain undecided, looking to public hearings and policy studies for the best course of action.

### **ASCs and Rural Hospitals: A Critical Information Gap**

Central to the ongoing debates is the impact of ASC operations on hospital financial performance. Health services researchers have used case studies and multivariate analyses to assess whether a financial impact exists and, if so, the nature of the factors that influence the relationship between ASCs and hospitals. Given that approximately 80 percent of ASCs operate in urban areas, this body of work has been valuable for the development of health policy.

However, the relevance of this research to rural health policy is unclear at best. With the exception of a few case studies (Lynk & Longley, 2002), researchers have largely ignored the rural context by using pooled data that masks urban/rural differences (Chukmaitov et al., 2007) or by intentionally excluding rural data from their analyses (Bian & Morrissey, 2007; Gabel et al., 2008). The absence of relevant information about rural ASC versus hospital competition is of special concern because of the fragile nature of rural hospital finances and the rural hospitals' often-critical role in providing unprofitable but important safety net services.

Our study begins to bridge this important information gap with a retrospective analysis of archival data on rural hospital, ASC, and market characteristics for the years 1997 through 2006. It provides the first-ever picture of the impact of freestanding ASCs on rural hospital markets. Rural hospitals have long depended on outpatient revenue for survival. The shift in focus from inpatient to outpatient care settings has magnified this dependence and increased rural hospitals' vulnerability to changes in outpatient/ambulatory surgical markets (National Advisory Committee on Rural Health and Human Services, 2008). In economic downturns, this vulnerability can further increase as the demand for safety net services is driven higher by increases in the unemployed and uninsured. Consequently, it becomes even more important to understand the impact of ASC competition on rural hospitals' financial viability.

## **BACKGROUND**

### **ASC Definitions**

Ambulatory surgery centers are defined by Medicare as distinct entities operating exclusively to furnish outpatient surgical services to patients who do not require hospitalization and do not require more than a 24-hour length of stay (CMS, 2008a). Medicare recognizes two classes of ASCs: independent or freestanding ASCs, and hospital-based ASCs, which are owned

or controlled by a hospital (CMS, 2008b). Hospital-based ASCs may be located on a hospital campus or at some distance in a separate building.

This study focuses on the potential impact of freestanding ASCs. While freestanding ASCs are not controlled by hospitals, they can and do establish collaborative relationships with hospitals.

### **Growth and Evolution of ASCs**

Organizational, operational, and financial factors have all contributed to the growth of ASCs. Salient factors include technological advances, changing practice patterns, pharmaceutical innovations, a relatively low managerial and infrastructure complexity, and relatively low capital requirements (Wall Street Comes to Washington Conference, 2007; Rex-Waller, 2004). ASCs offer a work environment that gives physicians greater control over their scope of work, achievement of lifestyle goals, and financial opportunities. Such incentives have attracted the practitioners needed to create ASCs and to compete for a share of the surgical market (HCPPro, 2003; Shactman, 2005). Equally important, Medicare reimbursement policies, as well as prospective payment and managed care policies, have provided the stability of revenue needed to encourage long-term growth and development of ASCs (Winter, 2002; Levit & Freeland, 1988).

One of the principal factors fueling the phenomenal growth of ASCs has been reimbursement under Medicare, which began in 1982. Reimbursable procedures for ASCs are grouped into ambulatory payment classification (APC) groups. Medicare uses the same APCs for ambulatory surgery centers and for hospital outpatient departments. The APC rates are based on a relative weight, which is a measure that CMS uses to rank the costs of performing a procedure (MedPAC, 2008b; CMS, 2008c).

Medicare's payment policy continues to evolve. Between 1997 and 2006, Medicare did not provide reimbursement for procedures that (a) were commonly provided in a physician's office, (b) exceeded 90 minutes of operating time, (c) exceeded four hours of recovery time, or (d) posed a safety risk to patients. The new ASC payment system, implemented in January 2008, reimburses any procedure that does not pose a safety risk or require an overnight stay. That policy change increased the number of covered procedures from 2,571 to 3,400 (MedPAC, 2008b). However, while the payment rates for the majority of ASC procedures increased, the payment rates for selected procedures that accounted for the majority of Medicare volume *decreased*. CMS established a four-year transition to the new rates to give ASCs more time to adjust to the new payment system.<sup>1</sup>

The growth of ASC-related Medicare expenditures will likely continue as ASCs respond to changes in market pressures by further diversifying their services and by emphasizing those procedures with increased payment rates (MedPAC, 2009). Common services offered by ASCs

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<sup>1</sup> Medicare ASC payments for 2008 were a blend of 75% of the 2007 rate and 25% of the amount Medicare would have paid in 2008 had the transition not been adopted. In 2009, the blend was 50/50 with full transition in 2011.

include procedures in the areas of ophthalmology, orthopedics, gastroenterology, oral and maxillofacial surgery, reconstructive surgery, pain management, podiatry, and otolaryngology.

Originally, ASCs were competitors of inpatient surgery units.<sup>2</sup> Now, ASCs are the primary competitor of hospital outpatient departments, HOPDs, (Casalino, Devers, & Brewster, 2003). Between the early 1980s and 2005, HOPD surgeries dropped by almost half, from over 90 percent of all ambulatory surgeries to 45 percent. During the same time period, the share of ASC surgeries increased from less than five percent to 38 percent. The remaining ambulatory surgeries are provided in physician offices (AHA, 2006). The annual growth rate for ASC services between 1998 and 2002 was 15 percent (compared to 1.7 percent for HOPDs), largely because of an increase in the number of Medicare beneficiaries served by ASCs (MedPAC, 2004). Between 2002 and 2007, services provided to Medicare beneficiaries grew by 59 percent (9.8 percent per year). The major contributor to this dramatic growth was the migration of Medicare patients from HOPDs to ASCs (MedPAC, 2009).

As the number of ASCs has grown, the proportion of physician-owners has also increased. Survey data collected by the Ambulatory Surgery Center Association (ASCA) for 2004 found that 88 percent of ASCs shared ownership with physicians. Indeed, physicians were the sole owners of more than 60 percent of ASCs (ASCA, 2006). In 2007, the percentage of ASCs with shared physician ownership had increased to 91 percent (MedPAC, 2009). Traditionally, physician-owners of ASCs have not been subject to anti-referral laws (Stark I and II).<sup>3</sup>

### **Debates about the Impact of ASCs**

Advocates of ASCs argue that the competition between ASCs and other providers of surgical services increases market efficiencies because hospitals will be forced to either improve their operational efficiencies to compete or withdraw from the contested surgical market. Supporters also claim that, compared to HOPDs, ASC services foster a greater degree of patient choice and satisfaction. While price competition can result in operational efficiencies and quality improvement (MedPAC, 2004; FTC/DOJ, 2004), aside from facility-specific surveys, there is little empirical evidence that demonstrates higher levels of patient satisfaction for ASCs compared to HOPDs (OIG, 1989; Gardner et al., 2005).

Hospital advocates argue that the financial self-interest of physician-owners will result in a greater proportion of patients with lower acuity and greater ability to pay referred to ASCs, while sicker patients or those less able to pay or both will be referred to hospitals (Berenson,

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<sup>2</sup> A major intent behind Medicare reimbursement for ASC services was, in part, to control escalating hospital inpatient costs of care by providing incentives for shifting service delivery from hospitals to lower cost ambulatory settings.

<sup>3</sup> Physician referral to a facility in which the physician has a financial interest is prohibited by the Stark (I and II) anti-referral laws. However, physician owners of ASCs are provided a “safe harbor” under the same provisions that allow physicians to self-refer to their “own office.” Opportunity for abuse is limited because the “safe harbor” applies only to those services a physician can provide over the course of one workday. Indeed, physician-owners must refer a portion of their patients to the ASC in which they have a financial interest to qualify for the safe harbor exclusion.



Bodenheimer, & Pham, 2006; AHA, 2008; Gabel et al., 2008). In addition, ASCs do not share the demand for emergency services and can potentially increase the burden for hospitals if ASC patients develop an emergent condition requiring transfer to a hospital emergency room.

Physician self-referral clearly does exist (Paquette, Smink, & Finlayson, 2008; Greenwald et al., 2006). Studies using Medicare claims data, market data, and case study approaches conclude that physician self-referral presents a financial challenge for community hospitals (Winter, 2003; Bian & Morrissey, 2007; Lynk & Longley, 2002; Casalino, Devers, & Brewster, 2003).

### **Hospitals' Strategic Responses**

The responses of hospitals to the challenge of ASCs have been strategic as well as political. Strategically, hospitals choose to compete or cooperate with ASCs to minimize financial losses. Competitive strategies can involve improving or expanding services or both, investing in new technologies, and recruiting new physicians. However, smaller hospitals, and especially those serving remote communities, are less able to improve their competitiveness because of limitations in purchasing power, access to capital, and workforce resources (Greenwald et al., 2006; Ford & Keck, 2006).

Cooperative strategies can involve the establishment of joint ventures; group purchasing of supplies, equipment, or real estate; or the purchase of services from each other (e.g., the hospital purchases physician services from the ASC and the ASC purchases ancillary services from the hospital). For example, an ASC may provide services to a hospital, and the hospital then bills a third party as an outpatient department service. Joint ventures, as a strategy for co-opting physician competitors and developing mutually beneficial relationships with physicians that have yet to become competitors, have become increasingly popular (Berenson, Ginsburg, & May, 2006).

ASCs can create financial challenges for rural hospitals in two ways: an ASC can not only enter the market by locating in the hospital's community but urban-based ASCs can also extend their market-reach into rural areas. ASCs may have differential effects on rural hospital financial performance depending on their proximity to the hospital. A competition argument suggests that ASCs located both close to and distant from a rural hospital have a negative effect on rural hospital financial performance. In contrast, a cooperation argument suggests that ASCs located close to a rural hospital could have a positive impact on financial performance. The models we estimate allow for these different effects.

## **METHODS**

### **Data Sources**

Data sources include the American Hospital Association (AHA) annual survey, the Healthcare Cost Report Information System (HCRIS), the Area Resource File (ARF), and the Medicare Online Survey Certification and Reporting System (OSCAR). The measurement of hospital organizational variables used information from AHA survey data for 1997 through 2006 (AHA, 1997–2008) and for ASCs using the 2006 Provider of Services (POS) file extracted from

OSCAR (CMS, 2007). Measurement of hospital financial variables used HCRIS data reported for 1997 through 2006 (CMS, 2001–2006), while measures of environmental variables used data from the ARF (National Center for Health Workforce Analysis, Bureau of Health Professions, and Health Resources and Services Administration, 2005).

### **Hospitals and ASCs Included in the Study**

Rural hospitals are the unit of analysis for this study. The population is all non-federal general medical hospitals<sup>4</sup> from 1997 to 2006. Hospitals were selected from the AHA annual survey participants for the years 1997 through 2006 (67,898 records). Facilities not located in the 50 U.S. states or the District of Columbia were excluded from the sample (641 records). Those facilities that could not match by AHA county Federal Information Processing Standard (FIPS) code with the urban influence codes (UICs) were also excluded (92 records).

The POS data on ASCs identified all ASCs that had operated in the period studied. Organizational variables for ASCs extracted from the POS file include the date a facility opened its doors; the date it was certified by Medicare/Medicaid (if applicable); the date a facility was dropped from the Medicare program (either de-certified or closed); state and county location; status as a freestanding- or hospital-based entity; ownership; provision of pharmaceutical, radiologic, and laboratory services (e.g., on-site, off-site, or a combination); the number of operating rooms; and the provision of one or more of twelve specific surgical services.<sup>5</sup>

### **Categorizing Rurality**

Hospitals and ASCs were categorized by metropolitan, micropolitan and non-core location using the twelve UIC categories developed by the U.S. Department of Agriculture. The U.S. Office of Management and Budget defines a metropolitan area as a central county with one or more urbanized areas of 50,000 or more persons, or an outlying county that is economically tied to one or more core counties as measured by work commuting. Non-metropolitan areas are defined as counties outside the boundaries of metropolitan areas and are subdivided into micropolitan and non-core counties. Micropolitan counties include a core city of between 10,000 and 50,000 persons; such counties account for approximately 60 percent of the nation's non-metropolitan population. The remaining areas are designated as non-core counties (Economic Research Service, 2003).

Hospitals and ASCs located in a county with a UIC of 1 or 2 were considered to be metropolitan facilities. The analyses compared hospitals located in micropolitan counties with hospitals located in non-core counties. Geographic differences also included comparisons using a finer measure of rurality based on the relative proximity of a non-metropolitan county to an area of greater population. We identified and analyzed five categories of rurality:

- Micropolitan areas that are adjacent to a metropolitan area (UIC of 3 or 5),

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<sup>4</sup> Control codes 12, 13, 14, 15, 16, 21, 23, 31, 32, and 33, service codes 10 and 50, and length of stay code 1 in the AHA data.

<sup>5</sup> Surgical categories include ophthalmology, plastic, orthopedic, foot, general, otolaryngology, obstetrics/gynecology, urology, oral, neurological, cardiovascular, and thoracic.

- Micropolitan areas *not* adjacent to a metropolitan area (UIC 8),
- Non-core areas that are adjacent to a metropolitan area (UIC 4, 6, or 7),
- Non-core areas that are adjacent to a micropolitan area (UIC 9 or 10), and
- Non-core areas that are not adjacent to either metropolitan or micropolitan areas (UIC 11 or 12).

### Measures

Hospital organizational, operational, and financial variables were merged for analysis. Because the AHA and HCRIS data are both filed as annual reports, a match year based on the reported year for the financial reports was used to guide the merge. Geographic/market data were merged by county and by health service area. Urban Influence Codes used to identify variations in the rural context were merged by county code. Demographic data (e.g., physicians per capita, poverty levels, household income) were aggregated to the health service area (HSA),<sup>6</sup> a clustering of counties designed to create market areas with relatively self-contained hospital care, (Makuc et al., 1991) and then merged into the hospital data by HSA code and year. The hospital market competition measure (i.e., Herfindahl Index) was calculated at the HSA level and merged using the HSA code and year.

The three measures of hospital financial performance are patient care operating margin,<sup>7</sup> patient care and other operations operating margin,<sup>8</sup> and patient care, other operations, and government appropriations operating margin.<sup>9</sup> Total hospital margin (net income divided by total revenues) is measured to gauge overall hospital financial performance.

ASC competition is measured in terms of the proximity of freestanding ASCs to a rural hospital. Distances were determined by matching facility latitude and longitude with zip codes (the match rate exceeded 99 percent in each of the study years). Two measures of ASC competition were constructed and labeled close proximity and distant proximity, respectively. Close proximity identifies an ASC located within one mile of a rural community hospital and captures the potential positive effect of ASCs through collaboration with the rural hospital or the negative effect of service competition. Distant proximity captures the potential negative effect of ASCs through competition and is measured as the sum of  $1 / \text{distance}$  in miles from hospital for all ASCs within 1 to 50 miles from the hospital.

Control variables included hospital organizational variables such as inpatient and outpatient surgical volume, ownership, system and network affiliation, number of staffed beds, and managed care arrangements.

### Estimation

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<sup>6</sup> The aggregation was a weighted average with the weight defined as county population divided by HSA population.

<sup>7</sup>  $(\text{Net Patient Revenues} - \text{Total Operating Expenses}) / \text{Net Patient Revenues}$

<sup>8</sup>  $[(\text{Net Patient Revenues} + \text{Other Revenues}) - \text{Total Operating Expenses}] / (\text{Net Patient Revenues} + \text{Other Revenues})$

<sup>9</sup>  $[(\text{Net Patient Revenues} + \text{Other Revenues} + \text{Government Appropriations}) - \text{Total Operating Expenses}] / (\text{Net Patient Revenues} + \text{Other Revenues} + \text{Government Appropriations})$

An instrumental variable approach was used to estimate models because ASC presence may be endogenous. That is, the existence of profitable hospitals or many specialists or both may attract ASCs. The models were estimated using the XTIVREG in Stata. The endogenous effects were ASC competition (close and distant competition) and the number of specialists per capita in the hospital market area. Number of specialists was included in the model because it is assumed that an increase in provider supply would drive service demand, which could influence hospital margins and encourage the establishment of ASCs in a market. State-fixed effects were used as instruments under the assumption that the regulatory context at the state level influences the probability of ASC establishment.

## RESULTS

### Rural ASC Growth, Distribution, and Characteristics

The POS data set for the years 1997–2006 identified 5,576 ASCs. Of these facilities, 4,654 facilities met the sampling criteria of active, freestanding, Medicare-certified facilities operating within the fifty U.S. States and the District of Columbia.<sup>10</sup> Figure 1 depicts the distribution of ASCs as of 2006 in states with and without CON oversight for ASC formation and operation. Twelve state CON programs in place in 2006 did not exercise regulatory authority over ASCs; therefore those states are not identified in Figure 1 as CON states. As is the case with other types of health care facilities, state CON regulations can have a marked influence on the establishment of new facilities. Sixty-two percent of freestanding ASCs have been established in states without CON programs (Table 1).

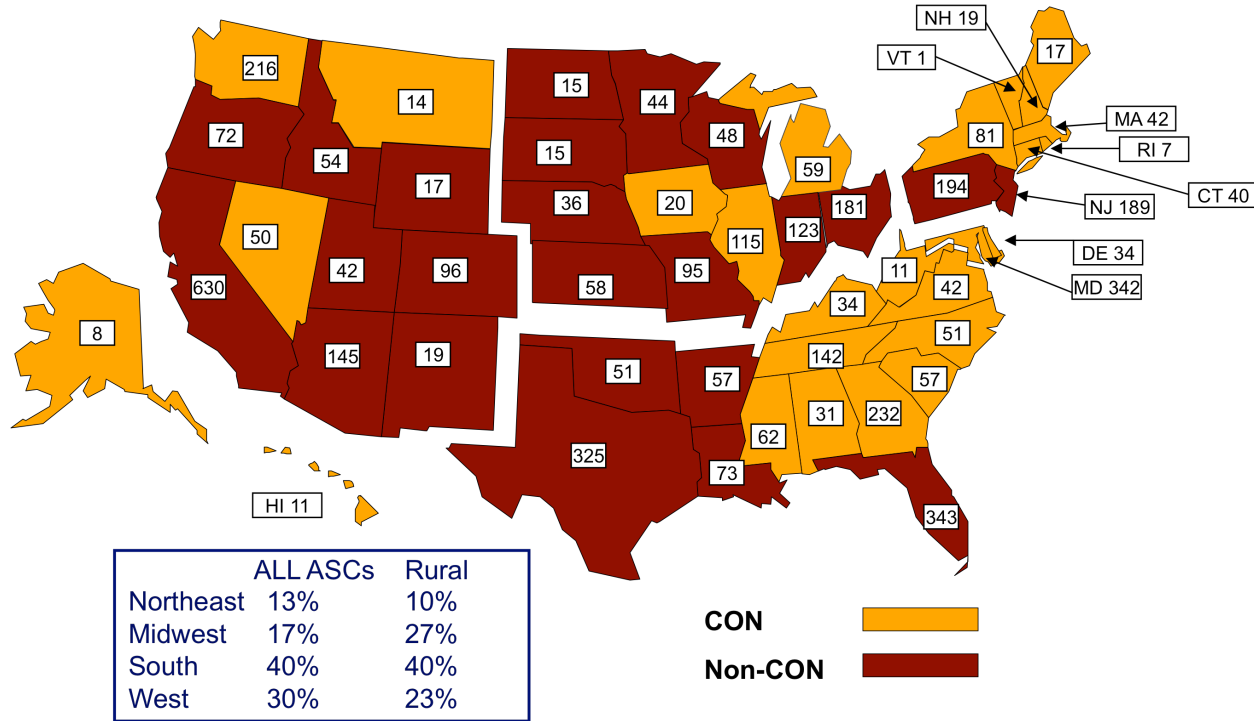
Rural ASCs accounted for approximately 10 percent ( $n = 453$ ) of the 4,654 ASCs included in the study. Almost 90 percent of these rural facilities are located in a micropolitan county; only two percent are located in a non-core, non-adjacent county (Table 2). Regionally, the distribution of rural ASCs is similar to urban facilities in that the South contains 40 percent of rural ASCs (the highest percentage), and the lowest percentage (10 percent) is in the Northeast (Figure 1).

Table 3 summarizes rural versus urban differences on various ASC operational characteristics. Ninety-six percent of ASCs are for-profit enterprises, a figure identical across rural and urban facilities. Although the differences in the number of ASC operating rooms (ORs) by location were minor, the average number of ORs was inversely related to the degree of rurality. ASCs were identified as providing ancillary services (e.g., pharmacy, laboratory, and radiology) either on-site, through a joint arrangement, or by a contractual arrangement with another provider. The majority of ASCs, regardless of location, contracted with an outside entity for ancillary services. Radiology was the most common service provided on-site, and the provision of on-site radiology increased with rurality.

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<sup>10</sup> Thirty-two ASCs located in one of the U.S. territories were eliminated from the study sample as well as 895 inactive ASCs (e.g., closed or dropped from the Medicare program) and 27 hospital-based facilities.

**Figure 1**  
**Distribution of Freestanding ASCs by State and Relative to CON Regulatory Oversight, 2006**



Source: National Conference of State Legislatures, Washington, DC. Accessed 2007 <http://www.ncsl.org>.

**Table 1**  
**Distribution of Freestanding ASCs by State CON Regulations, 2006**

	Number of ASCs	CON Regulation	No CON Regulation
Urban Surgery Centers	4,201	37%	63%
Rural Surgery Centers	453	43%*	57%
All Surgery Centers	4,654	38%	62%

\*  $p < .01$

**Table 2**  
**Distribution of Freestanding ASCs by Degree of Rurality, 2006**

Location	Frequency	Percent
Micropolitan Adjacent to Metropolitan	238	52.5%
Micropolitan Not Adjacent	169	37.3%
Non-Core Adjacent to Metropolitan	28	6.2%
Non-Core Adjacent to Micropolitan	8	1.8%
Non-Core Not Adjacent	10	2.2%
All Non-Metropolitan Locations	453	100.0%

**Table 3**  
**Operational Characteristics of Rural Versus Urban Freestanding ASCs**

	Urban ( <i>n</i> = 4,201)	Rural ( <i>n</i> = 453)	Micropolitan ( <i>n</i> = 407)	Non-Core ( <i>n</i> = 46)
For Profit Ownership	96%	96%	96%	94%
Average Number of ORs	2.6	2.2	2.2	1.8
Facility-based Pharmacy	16%	18%	18%	24%
Facility-based Laboratory	12%	16%	14%	26%
Facility-based Radiology	21%	22%	21%	35%

Twelve surgical categories are identified in the POS file, along with an “other” category for all surgical procedures that cannot be grouped into the twelve groups (Table 4). The percentage of rural ASCs providing only one surgical service is comparable to urban facilities (40 percent versus 43 percent respectively). Ophthalmologic surgery is the most common service provided by all ASCs, and rural ASCs are statistically more likely to provide that service than urban facilities ( $p = < .001$ ). Of the remaining eleven surgical categories, rural ASCs are statistically more likely than urban ASCs to provide procedures in general surgery, obstetrics/gynecology, and urology, while urban facilities are more likely to provide plastic surgery ( $p = \leq .05$ ).<sup>11</sup>

<sup>11</sup> Only the ASCs reporting one of the twelve surgical services are included in Table 4. The proportion of rural ASCs (*n* = 69) versus the number of urban ASCs (*n* = 967) that were excluded from Table 4 was not statistically significant.

**Table 4**  
**Distribution of Urban and Rural Freestanding ASC Surgical Services, 2006**

Surgical Services Provided	Urban (n = 3,234)*		Rural (n = 384)*	
	Rank	Percent Provide	Rank	Percentage Provide
Ophthalmology**	1	54%	1	65%
Plastic**	2	40%	7	35%
Orthopedic	3	50%	2	50%
Foot	4	48%	4	46%
General**	5	43%	3	49%
Otolaryngology	6	40%	5	44%
Obstetrics/Gynecology**	7	38%	6	42%
Urology**	8	35%	6	42%
Oral	9	25%	8	24%
Neurological	10	14%	9	10%
Cardiovascular	11	5%	10	4%
Thoracic	12	4%	11	3%

\*Includes only those ASCs with identified surgical services

\*\* $p \leq .05$

### The Influence of ASC Competition on Rural Hospital Performance

Table 5 shows the descriptive statistics for the sample of rural community hospitals. The hospital data set includes 16,078 data records over the nine-year period of 1997 – 2006. (These records represent only those hospitals for which AHA survey data could be matched with HCRIS financial data.) All three measures of patient care margin indicate that, on average, rural community hospitals are financially fragile and receive a degree of relief from the addition of ancillary revenues and government appropriations.

Approximately 35 percent of the sample hospitals had at least one ASC within a fifty-mile radius of their location. While 65 percent of the hospitals contract with at least one PPO and 45 percent with at least one HMO, the standard error for these variables suggests that there are geographical areas with greater and less managed care activity. More than one-half of the hospitals have Joint Commission on Accreditation of Healthcare Organizations (JCAHO) accreditation and almost one-third are designated as Sole Community Providers. Twenty-five percent of the hospitals have designations as Critical Access Hospitals (CAHs).<sup>12</sup>

<sup>12</sup> The proportion of CAHs in the sample is lower than expected when comparing existing data from the Flex Monitoring Team because the sample only includes those facilities with a full year of financial data (> 345 days) over the 1997–2006 period. Conversion years typically include less than a full year of HCRIS financial data.

**Table 5**  
**Descriptive Statistics of Rural Hospitals and Their Communities, 1997–2006**

	<b>Mean</b>	<b>Std Dev</b>
<b>MARGINS</b>		
Patient Care	-0.05	0.13
Patient Care + Other	0.03	0.08
Patient Care + Other + Government	0.04	0.09
Total Profit Margin	0.02	0.08
<b>ASC COMPETITION</b>		
ASCs within One Mile	0.12	0.32
ASCs Between One and Fifty Miles	0.23	0.45
<b>HOSPITAL CHARACTERISTICS</b>		
Have Outpatient Surgery Unit	0.81	0.39
Log of Staffed Beds	3.86	0.78
Log Adjusted Average Daily Census	4.08	0.99
PPO Contract	0.65	0.48
HMO Contract	0.45	0.50
System Affiliation (Centralized)	0.05	0.23
Non-Profit Status	0.54	0.50
Governmental Ownership	0.37	0.48
Religious Affiliation	0.08	0.28
Critical Access Hospital Status	0.25	0.39
Sole Community Hospital Status	0.28	0.47
JCAHO Accreditation	0.53	0.50
Residency Program	0.03	0.16
Medical School Affiliation	0.05	0.22
<b>COMMUNITY CHARACTERISTICS</b>		
Non-Core County	0.57	0.50
Health Professional Shortage Area (HPSA)	0.67	0.47
Hospital Beds (Herfindahl)	0.39	0.21
Specialists (per 1,000)	0.27	0.38
Infant Mortality Rate (per capita)	7.71	3.19
Percent Poor (below federal poverty level)	13.65	4.50
Household Income (\$10,000 increments)	3.46	0.61
Population Density (1,000/square mile)	0.07	0.10
Proportion Elderly (65 years or greater)	0.15	0.03
CMS per Capita FFS Cost	0.46	0.11



Table 6 compares micropolitan hospitals and non-core hospitals. Across the board, micropolitan hospitals are in better financial shape than hospitals serving non-core communities. The largest difference appears in their respective patient care margins (-0.01 compared to -0.08). Approximately four out of five hospitals in the sample provide outpatient surgical services: 86 percent of all micropolitan hospitals and 77 percent of non-core hospitals. Not surprisingly, more micropolitan community hospitals, compared to non-core hospitals, operate in markets that also contain an ASC. On average, micropolitan hospitals are larger than non-core facilities.

**Table 6**  
**Descriptive Statistics of Rural Hospitals and ASC Competition, Comparing Micropolitan and Non-Core Locations, 1997–2006**

	Micropolitan		Non-Core	
	Mean	Std Dev	Mean	Std Dev
<b>MARGINS</b>				
Patient Care	-0.01	0.11	-0.08	0.14
Patient Care + Other	0.05	0.08	0.02	0.08
Patient Care + Other + Government	0.06	0.08	0.04	0.09
Total Profit Margin	0.04	0.08	0.01	0.08
<b>ASC COMPETITION</b>				
ASCs within One Mile	0.25	0.43	0.02	0.14
ASCs Between One and Fifty Miles	0.36	0.60	0.12	0.26
<b>HOSPITAL CHARACTERISTICS</b>				
Have Outpatient Surgery Unit	0.86	0.34	0.77	0.42
Log of Staffed Beds	4.33	0.73	3.50	0.62
Log Adjusted Average Daily Census	4.54	0.83	3.73	0.96

Table 7 displays the regression estimates that assess the impact of ASC competition, hospital characteristics and community characteristics on the three measures of hospital financial health.<sup>13</sup> Results suggest that rural hospitals with a proximate ( $\leq$  one mile), freestanding ASC have, on average, higher patient and total margins ( $p \leq .05$ ). With the exception of patient care and patient care other, hospitals with an ASC between one and fifty miles had significantly lower and negative margins ( $p = .05$ ).

Hospitals located in non-core communities have significantly lower margins than micropolitan hospitals. Given that non-core facilities are, on average, smaller than micropolitan hospitals, it is not surprising that hospital size (logged staffed beds) and patient volume (logged adjusted average daily census) are associated with significant and positive patient care margins ( $p < .01$ ). Accreditation by the JCAHO is significant and positively related to all margin measures ( $p \leq .05$ ). Serving a Health Professional Shortage Area (HPSA) is negatively associated with all

<sup>13</sup> Due to incomplete financial data for 2006, these analyses are based on data spanning 1997–2005.

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margins except the patient care margin ( $p < .01$ ). Hospital operational and profit margins are not significantly associated with either PPO or HMO contracting.

**Table 7**  
**Effect of ASC Competition on Rural Hospital Margins, 1997–2005**

Variable	Hospital Margins			
	pc	pco	pcgov	profit
<b>ASC COMPETITION</b>				
ASCs within One Mile	0.088**	0.085***	0.116***	0.080***
ASCs Between 1 and 50 Miles	-0.010	-0.014*	-0.019**	-0.016**
<b>HOSPITAL CHARACTERISTICS</b>				
Have Outpatient Surgery	0.018***	0.007***	0.001	0.006***
Log of Staffed Beds	0.008***	0.000	-0.006***	0.001
Log Adjusted Average Daily Census	0.013***	0.002	-0.001	0.002*
Adjusted Average Census Zero Indicator	-0.033	-0.059*	-0.050	-0.056*
PPO Contract	-0.001	0.001	0.002	-0.001
HMO Contract	-0.003	0.000	0.000	0.000
System Affiliation (Centralized)	0.017***	0.010***	0.010***	0.005
Non-Profit Status	-0.049***	-0.018***	-0.015***	-0.019***
Governmental Ownership	-0.077***	-0.014***	0.006	-0.012***
Religious Affiliation	0.009*	0.006	0.005	0.004
Critical Access Hospital	0.004	0.004*	0.004	0.004*
Sole Community Hospital	-0.010***	-0.001	-0.001	-0.000
JCAHO Accreditation	0.020***	0.010***	0.006**	0.009***
Residency Program	0.008	0.012*	0.015**	0.011*
Medical School Affiliation	-0.011**	-0.010**	-0.011***	-0.008*
<b>COMMUNITY CHARACTERISTICS</b>				
Non-Core County	-0.018**	-0.012***	-0.007	-0.008*
HPSA	-0.003	-0.005***	-0.005***	-0.005***
Hospital Beds (Herfindahl)	0.026***	0.010*	0.009	0.007
Specialists (per 1,000)	-0.011	-0.009	-0.007	-0.003
Infant Mortality Rate (per capita)	-0.000	-0.000	-0.000	-0.000
Infant Mortality Zero Indicator	-0.018***	-0.014***	-0.006	-0.015***
Percentage Poor (< federal poverty level)	-0.001*	-0.001	0.000	-0.001**
Household Income	-0.003	0.007	0.017***	0.004
Population Density	0.049	-0.005	-0.034	0.003
Proportion Elderly (65+)	0.026	-0.030	0.019	-0.030
CMS per Capita FFS Cost	-0.030	0.008	0.050***	0.004

\*\*\* $p < 0.01$ , \*\* $p < 0.05$ , \* $p < 0.10$

pc = patient care margin

pco = patient care margin and other operations operating margin

pcgov = patient care margin, other operations, and government appropriations operating margin

Table 7 (continued)

Variable	Hospital Margins			
	pc	pco	pcgov	profit
1997	-0.026***	-0.022***	-0.023***	-0.022***
1998	-0.030***	-0.024***	-0.027***	-0.025***
1999	-0.034***	-0.029***	-0.032***	-0.028***
2000	-0.020***	-0.020***	-0.026***	-0.021***
2001	-0.019***	-0.026***	-0.035***	-0.029***
2002	-0.021***	-0.028***	-0.039***	-0.028***
2003	-0.010*	-0.022***	-0.035***	-0.022***
2004	-0.005	-0.015***	-0.030***	-0.015***
2005	-0.010	-0.022***	-0.039***	-0.022***
Constant	-0.049	0.035	0.014	0.037
Number of Observations	16,078	16,078	16,078	16,078
Number of Hospitals	2,055	2,055	2,055	2,055
R-squared	0.17	0.05	0.03	0.05

\*\*\* $p < 0.01$ , \*\* $p < 0.05$ , \* $p < 0.10$

pc = patient care margin

pco = patient care margin and other operations operating margin

pcgov = patient care margin, other operations, and government appropriations operating margin

The provision of hospital-based outpatient surgical services significantly improved hospital margins for three of the four dependent variables. However, the provision of hospital-based outpatient surgical services did not alter the effect of ASC competition.

AHA data for 2006 permitted a more focused analysis of hospital/ASC joint ventures.<sup>14</sup> An analysis of the existence of ASC joint ventures using these data revealed that hospitals located within one mile of an ASC were significantly more likely ( $p < .01$ ) to report having a joint venture arrangement with an ASC.

Table 8 summarizes the effect of ASC competition on the margins of the average rural hospital, employing the most current annual data (2005) used in the analysis. Means for each margin measure are given for those hospitals located within one mile of an ASC and those

<sup>14</sup> Information on the presence or absence of a joint venture agreement with an ASC was not included in the AHA annual survey until 2006.

hospitals without an ASC located within one mile. Using the 2005 data provides a sense of the magnitude of the effect of ASC competition as of 2005, a more updated portrait than data averaged over the nine-year study period. The financial margins of community hospitals located within one mile of an ASC are greater than the margins of hospitals that do not have a nearby ASC.

**Table 8  
Effect of ASC Competition for Rural Hospital Operating and Profit Margins, 2005**

ASC Location	Hospital Margin				
		pc	pco	pcgov	profit
Not Within One Mile	Mean	-.038	.035	.045	.025
	Std Dev	.122	.080	.084	.076
Within One Mile	Mean	.025	.075	.077	.060
	Std Dev	.095	.079	.079	.069

pc = patient care margin

pco = patient care margin and other operations operating margin

pcgov = patient care margin, other operations, and government appropriations operating margin

**Limitations**

Three study limitations make it difficult to identify why ASCs in close proximity to rural hospitals have better margins and those distant have reduced hospital margins. Due to the relatively low levels of change in the number of ASCs near rural hospitals and in hospital financial performance, we were unable to estimate first difference models (i.e., the relationship between changes in independent and dependent variables).

Second, it was not possible to identify the factors driving the relationship between proximity and hospital margins cited in the literature on urban ASCs and hospitals (e.g., the pursuit of operational efficiencies, profit maximization and the existence of hospital/ASC joint ventures). Finally, the lack of consistent reporting of uncompensated care in the Medicare cost reports over the study period made it difficult to assess whether financial pressures can undermine the provision of safety net services.

**DISCUSSION**

This study is the first to examine the implications of ASC proximity on rural community hospital performance. Our analysis documented that the distribution of rural ASCs mirrors that of urban ASCs in that rural ASCs are more likely to be located in higher population areas (micropolitan rural counties), states without CON regulations, and states located in the South.

Rural hospitals with proximate ASCs (one or more ASCs located within one mile) had higher operating margins and profits than did rural hospitals with distant ASCs (ASCs located

between one mile and fifty miles away). One possible explanation for this relationship is that ASCs located within one mile of a hospital made those hospitals more profitable. Neither providing HOPD surgical services nor providing services in conjunction with a health care system, network, or joint venture affected the relationship between ASC proximity and hospital margins. However, hospitals within one mile of an ASC were significantly more likely to report engaging in a joint venture with an ASC. These findings suggest that the financial benefit for hospitals in close proximity to an ASC could come from the provision of services related to but not including surgical procedures (e.g., ancillary services, outpatient follow-up care, economies of scale, or ASC services billed through the hospital for third-party reimbursement).

The growth rates and distribution of urban and rural ASCs suggest that urban markets may be becoming saturated while the ASC presence in rural markets is still growing. It is possible that this trend reflects not only an urban saturation phenomenon but also an increase in the attractiveness of establishing an ASC practice or expanding ASC marketing efforts in rural communities. An increase in ASC market presence could also make physician joint ventures a more viable option for hospitals. The use of joint ventures to secure mutually beneficial arrangements with physician competitors and to retain the collaboration of physicians who have yet to establish a competitive practice has become increasingly popular over the last few years. As available data on ASC–hospital joint ventures grows with subsequent AHA surveys, it will become more feasible to explore this phenomenon in rural communities and to more accurately assess the financial and operational implications for rural hospitals.

The ongoing debate over the use of market or regulatory strategies in relation to the growth of ASCs may be hotly contested, yet both parties favor similar outcomes (e.g., fostering innovation and efficiency without compromising health care access and quality, especially for indigent populations). Perhaps a difference in the underlying assumptions draws the lines of the debate. At the federal level, agencies such as the FTC and DOJ have long advocated for the use of market-driven strategies to control health care costs, access, and quality. These agencies have highlighted the failure of state CON laws to control costs. However, they and other federal agencies acknowledge that some regulatory oversight is needed to assure health care access and quality for the medically indigent. The current Medicare payment methodology for ASCs (introduced by CMS in January 2008) represents a middle-ground approach that guides rather than constrains provider behavior by correcting the pricing distortions thought to encourage adverse patient selection.

## **CONCLUSIONS**

The cross-subsidization of lower margin services by high margin services is clearly not a sustainable option for rural hospitals. In the case of sufficient high margin demand where rural hospitals can generate the revenues needed for cross-subsidization, competitors may be attracted to that market and eventually provide profitable services previously provided by rural facilities (e.g., orthopedic surgery, gastroenterology, and otolaryngology).

Efforts to restrict the ability of ambulatory surgery centers to enter and compete in rural markets may preserve the financial viability of community hospitals and those hospitals' ability to cross-subsidize low margin, community beneficial services. However, such efforts will not encourage the innovation or cost efficiencies needed to continue meeting local health care needs. If ASCs provide efficient, high quality services, then limiting their establishment through regulation is not a prudent option. If, on the other hand, ASCs do not provide services more efficiently and of higher quality than community hospitals (and/or if the capacity for meeting important community health needs does not exist without the local hospital), then efforts to level the playing field may make sense.

The impact of ASC competition on the capacity of community hospitals to provide high or low margin services could be better assessed if future studies incorporate data on patient flow and cost center expenditures, plus information on uncompensated care. The increasing availability of data from the IRS 990 form may help clarify the impact of competition on the provision of low margin health services needed by rural communities. Further understanding of the implications of ASC–hospital competition in the rural context is necessary to determine if market or regulatory strategies, or some combination of the two, best assures health care access, quality, and efficiency for rural communities within the market area of ASCs.

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