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Research Note:
Relative Profitability of Acute Care Hospital Services

Online Exhibit

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Jill Horwitz, Ph.D., J.D., M.P.P.
Assistant Professor of Law
University of Michigan Law School
jrhorwit@umich.edu
This research note categorizes acute care hospital services as relatively profitable, relatively unprofitable, or variably profitable. The underlying research includes reviews of academic literature, policy reports, and trade press articles, and interviews with relevant experts. The different methods of characterizing services yield remarkably similar results.

Sources

The evaluations are based primarily on a study of the peer-reviewed medical, business, finance, statistics, sociology, and public policy literatures. Medicare reimbursement policies, as reported by the Medicare Payment Advisory Commission (MedPac) and Prospective Payment Assessment Commission (ProPAC), are also examined below. In some cases an analysis of the socioeconomic or insurance status of patients likely to demand various services supports the case that a service was relatively profitable or relatively unprofitable. (Epstein et al., 1988) For example, hospital charges have been found to range from one to 18 percent higher for patients of lower than higher socioeconomic status. (Epstein et al., 1990) In addition to reviews of the published scientific literature and policy reports, the designations are supported by a review of trade publications, business magazines, and newspaper reports. Finally, the results of interviews with policy experts, hospital administrators and doctors are also reported. ¹

¹ Because of the importance of Medicare in reimbursing hospitals for service provision the profitability assignments were reviewed by Dr. Joseph P. Newhouse, former Chair of the Prospective Payment Assessment Commission (PPAC) and former member of the Medicare Payment Advisory Commission (MedPac) and the Physician Payment Review Commission (PPRC). The following interviewees also commented on the categorization of all services examined in the project: Dr. Troyen Brennan, President of the Brigham and Women’s Hospital Physician Organization and Professor, Harvard Medical School and School of Public Health; Dr. Jerome H. Grossman, Chairman Emeritus, New England Medical Center and Chairman/CEO from 1979–1995; Barbara McNeil, Chair, Department of Health Care Policy and
Despite the rigorous nature of this service review, a note of caution is necessary. Categorizing services by profitability is difficult. Profitability is not an inherent attribute of medical services, but depends on institutional-specific factors such as management skills or accounting conventions like cost allocation. Even if one could reliably measure medical service prices, cost measurement would remain notoriously difficult. Within a single hospital, costs and charges differ, and discounts vary by individual payer. Further, there are joint service costs that blur the profitability picture. Despite these complications, it is possible to make valid generalizations about the average relative profitability of medical services provided at hospitals.

1 Relatively Low Profit and Undersupplied Services

A) Acquired Immune-Deficiency Syndrome (AIDS) and Human Immunodeficiency Virus (HIV) Treatment

During the 1980s and 1990s, HIV-positive and AIDS patients were unprofitable patients to treat. They were often sicker than other hospital patients. According to a report on the results from the 7th National Conference on AIDS, “Emergency department patients who are infected with the AIDS virus require ‘considerably more’ time, effort and resources than those who aren’t HIV-positive.” (1993b)

Because private insurers often refused to cover them, many HIV-positive patients were not only sick but also uninsured. Almost all community health insurers rated those with Aids Related Complex (ARC), AIDS, or HIV Seropositive as uninsurable, although some states forbade HIV antibody testing for underwriting purposes. (Pascal et

Professor of Radiology, Harvard Medical School. When a hospital administrator or doctor commented on a single service, the interview is cited in the section of this note pertaining to that service.
Without private insurance, many patients were unable to pay their treatment bills. Some patients were eligible for insurance coverage under public payer programs such as Medicaid, which provided the largest source of financing for AIDS/HIV treatment in the 1990s. Typically, however, reimbursement payments did not fully cover the cost of treatment. Public hospitals, for example, were uncompensated for approximately fifteen percent of AIDS treatment costs in the 1980s.

Despite the poor financial prospects of treating HIV-positive and AIDS patients in the 1980s and 1990s, the services were in great demand. Sloan has noted that AIDS treatment may be a public good because it minimizes disease spread and thus reduces a negative externality.

B) Burn Care

Burn treatment is a resource intensive service, but does not generally bring in high revenues. Burn victims tend to be young and, therefore, are disproportionately insured by Medicaid or uninsured. Even more generous payers, such as Medicare, do not reimburse providers at levels sufficient to cover the costs of burn treatment. Further, one case study found that the complicated coding of burn treatment, involving both severity and extent of the injury, led to inaccurately coded treatments and inappropriately low-reimbursing related DRGs.

Hospital treatment of burn services suggests that hospital administrators have perceived them as unprofitable. In 1989, changes to the regulations prohibiting patient dumping -- the transfer of patients before stabilizing them -- specifically forbid hospitals...
with burn units, among other special care units, from refusing transfers to those units. (1991a) The law’s identification of burn care in particular suggests that hospitals were reluctant to admit burn patients, probably because of the high likelihood that the care would be uncompensated. Transferred surgical patients have been found to be more costly patients than those admitted directly to the hospital that treats them (Munoz et al., 1988), further suggesting that hospitals sought to transfer burn patients, at least in part, because of costs.

Finally, burn units are commonly used as a canonical example of an unprofitable but undersupplied service. For example, burn units have been identified as the type of unit that benefits from cross-subsidies from profitable services such as cardiac care. (Larson, 2004) And, as a typical unprofitable service, it is often characterized as being in need of special protection from being discontinued when hospitals convert to for-profit status. (Legnini et al., 1999; Young and Desai, 1999)

C) Emergency Rooms

In general, emergency rooms are, and are known to be, high-cost sites of care. Emergency care has been considered one of the least profitable hospital services because of poor reimbursement and disproportionate use by poor, uninsured, and relatively sick patients. (Gentry and Penrod, 2000) Patients from lower socioeconomic groups have longer hospital stays and likely use more resources than do patients from higher socioeconomic groups. (Epstein et al., 1988)

Some providers believe that emergency care is unprofitable because public payers do not make additional payments for emergency care that precedes inpatient care and, therefore, do not explicitly cover costs such as licensing and standby costs. (Eisenberg,
1990) Many hospitals have implemented programs that remove non-emergency patients to less expensive sites of care. (1992) In fact, whether reimbursements are sufficient to cover the costs of emergency care prior to admission depends on the total level of reimbursement for the admission.

A study of hospital costs shows “that in aggregate, elective admissions are less expensive on average than emergency and urgent admissions, after controlling for DRG and hospital teaching status.” (Melnick et al., 1989) The unplanned nature of emergency visits limits treatment options. It excludes outpatient diagnosis and preliminary treatment, and may reflect a higher level of illness severity. (Melnick et al., 1989)

One interviewee, a former hospital CEO, said that the high costs associated with emergency room care reflect a history of particularly poor management. (Grossman, 2002) This view is supported by the trade press which, in the early 1990s, included many advertisements for emergency room consulting firms to remedy this failing. The advertisements promised to increase revenues by better tracking emergency room resource use and refining systems used for billing the government. They emphasized that although a high proportion of revenues come through the emergency department, up to forty percent, (Fischer Mangold, 1991), much potential revenue was lost because of inadequate systems for tracking usage in a busy environment. (Spectrum Emergency Care, 1993)

Regardless of the potential to increase emergency room efficiency and profitability, hospital executives, the popular press, and academics have believed emergency care to be a financial drain. In 1990 Deloitte & Touche survey of 1,765 hospital executives, 53 percent of them ranked emergency rooms as their most
unprofitable services. (Deloitte & Touche, 1990) The popular press includes many references to emergency care as unprofitable. (See, e.g., Dang, 2002; Romano, 2004) For example, according to a local Florida newspaper, for-profit hospitals earned profits by “shedding unprofitable services, such as intensive emergency care...” (East, 1997) Academics have used emergency rooms as the canonical unprofitable hospital service. (Needleman, 1999)

D) Mental Health/ Substance Abuse Treatment

With the exception of some inpatient mental health care services, mental health and substance abuse were, and still are, among the least profitable services provided by acute-care hospitals. In large part, these services have been unprofitable because behavioral health has been substantially less comprehensive than physical health insurance coverage. (Woodward et al., 1997) In fact, historically, many insurers did not offer mental health and substance abuse coverage at all. As a result, some hospitals have found psychiatric beds and facilities too unprofitable to operate, even for insured patients, and closed them. (Downing, 2002) In the Deloitte and Touche survey cited above, 14 percent of the surveyed hospital executives said they would limit substance abuse and detoxification programs, and 12 percent said they would limit psychiatric services to address hospital financial strain. (Deloitte & Touche, 1990)

Scholars have offered several reasons for why behavioral health insurance is often limited or unavailable, including employer and insurer fears about attracting bad insurance risks. (Frank and McGuire, 1990; U.S. General Accounting Office, 2000) In the 1970s, states began mandating that mental health and substance abuse care be included in insurance plans; by 1998 over thirty states had passed such laws. (Ma and
Although the effects of this legislation led to considerably expanded coverage for many patients, the laws generally required only low levels of coverage and did not apply to large employers exempt from state laws under Employee Retirement and Income Security Act (ERISA). (Frank et al., 1997)

Federal efforts to expand coverage, such as the Mental Health Parity Act of 1996, have also had limited success in expanding coverage. Under the Parity Act, for example, parity refers to maintaining the same annual and lifetime benefits as physical health services (Mechanic and McAlpine, 1999) but does not include parity regarding cost-sharing provisions (U.S. General Accounting Office, 2000) that could discourage patients from seeking care. The law was limited in other ways. It applied only to large employers, plans that experienced less than one percent cost increase due to compliance, and coverage sold in the group insurance market. (U.S. General Accounting Office, 2000) Even given these limits, only 86 percent of private employers complied; and, many of those who did comply restricted their medical and surgical benefits, rather than expand mental health benefits, to achieve parity. (U.S. General Accounting Office, 2000) As a result, patients were left without coverage, with limited coverage, or covered by public payers. (U.S. General Accounting Office, 2000)

In addition, the 1990s saw the growth of stringent cost-control mechanisms. Increasingly, mental health and substance abuse services were separated from other care and offered under managed care arrangements known as carve-outs. (Frank et al., 1996) In large part, carve-outs lowered costs by cutting provider fees. (Ma and McGuire, 1998) These mechanisms further increased the financial strain on acute-care hospitals that provided mental health and substance abuse treatment. (Gottlieb, 2002; Huskamp, 2002)
The demographic characteristics of behavioral health patients, in addition to the types of insurance associated with the services, made these services unprofitable. The National Household Survey on Drug Abuse identified “the characteristics of drug abusers who need specialized drug treatment. This population includes a disproportionate number of men, poor people, and people who report that they have committed crime, are not employed, have no health insurance, and receive welfare assistance.” (Woodward et al., 1997)

Despite low levels of profitability, there has been considerable community need for these services. (Downing, 2002) An analysis estimating care needs stated, “There is a large gap between the number who need and the number who receive treatment; approximately 50% of those in need receive treatment, but this percent has declined during recent years.” (Woodward et al., 1997) The authors hypothesized that, among other reasons, sufficient treatment did not exist because of lack of funding and limited capacity at public facilities. (Woodward et al., 1997)

1) **Outpatient Mental Health, Alcohol, and Substance Abuse Treatment**

Alcohol and substance abuse outpatient care has been one of the biggest money losers for acute care hospitals. Before the widespread use of private insurance behavioral carve-out plans, private insurance payments were used to cross-subsidize publicly insured patients and the uninsured. (Gottlieb, 2002) For many years, including during the study period, mental health payment rates were insufficient to cover even staffing costs. Overhead, therefore, had to come from payments for other services. According to one interviewee, a major Boston hospital loses almost $20 per alcohol or substance abuse outpatient visit. (Gottlieb, 2002)

2) **Inpatient Mental Health, Alcohol, and Substance Abuse**
Although many factors make categorizing these services difficult, it is reasonable to categorize them as unprofitable. (Grossman, 2002) Despite the availability of an exemption for alcohol, drug, and mental disorder specialty units from the most stringent cost-containment provisions of the Medicare Prospective Payment System, inpatient behavioral health care has generally been considered unprofitable for most hospitals. Although the American Hospital Association data used in the study do not differentiate units exempt from non-exempt units, it is likely that many units were exempt units because only a small percentage of psychiatric beds are general acute care beds, known as “scatter beds”; and, only a small percentage of inpatients were elderly, and covered by the relatively favorable Medicare reimbursement terms. (Gottlieb, 2002) In addition, acute care hospitals likely referred some patients elsewhere because acute care hospitals were not the best settings for patients with difficult-to-treat diseases. (Gottlieb, 2002) Still, many hospitals have struggled to keep open inpatient units to meet patient demand. (Tye, 2001)

Making a simple determination regarding the potential profitability of inpatient care in this area is further complicated because of cream-skimming and patient dumping. If hospitals are able to attract patients whose treatments are low cost relative to payments and to avoid other patients, the services can be very profitable. There is evidence that skimming and dumping is considerable in the free-standing psychiatric hospital business. (Schlesinger et al., 1997) One study of psychiatric hospitals found that the existence of a proprietary psychiatric hospital in the catchment area was correlated with higher levels of patient dumping. (Schlesinger et al., 1997) Further, “[a]s states reduce their capacity for inpatient psychiatric treatment, private hospitals in the
area become increasingly inclined to dump their unprofitable patients onto the community mental health care system.” (Schlesinger et al., 1997)

3) Child/Adolescent Psychiatric Care

Child and adolescent psychiatric services are even less profitable than are adult services, giving hospitals little financial incentive to offer them. The study period saw increasing need for these services and decreasing public dollars with which to supply them. (Friedman and Kutash, 1992)

In part, child and adolescent psychiatric services are unprofitable because they are complex, difficult, and expensive to treat. (Gottlieb, 2002) In part, children are unprofitable because of their insurance characteristics. During the study period, increasing insurance costs led many employers to limit dependent coverage. (Scanlon, 1997) Consequently, children were increasingly losing private insurance. They either substituted to the low-paying Medicaid insurance program or remained uninsured. Only 66 percent of children had private insurance in 1995, a number which represented an 8 percentage point decline from 1989 and 1995. (Scanlon, 1997) Although some families that lost private insurance enrolled in Medicaid, almost 3 million Medicaid-eligible children were not enrolled in Medicaid as of 1997, suggesting that there was not complete substitution. (Scanlon, 1997) In addition, some state Medicaid programs did not offer mental health coverage or only offered limited benefits. (Scanlon, 1997) Finally, almost 10 million children were uninsured in 1995. (Scanlon, 1997)

4) Psychiatric Emergency Care

Psychiatric emergency services have been unprofitable services for several reasons: (1) they occur in the emergency room, an unprofitable setting (See above for detail regarding the profitability of emergency rooms); (2) they involve psychiatric
care, a service for which reimbursement is uncertain and, often, low relative to cost; and, (3) they attract a poorly insured, very sick population.

As discussed above, psychiatric care provided in acute care hospitals is also unprofitable because it suffers from insurance limits, attracts a low paying population, faces competition from private free-standing psychiatric hospitals which contract with the most generous payers leaving little reimbursement for acute-care hospitals, and brings considerable regulatory burden. During the 1990s, both private and public payers sought methods to control mental health costs. The rapid expansion of mental health carve-out programs and other cost-control methods led to low provider payments.

Psychiatric emergency patients are dominated by two groups of patients characterized as “bad payers” – the Medicaid population and the uninsured. (Gottlieb, 2002) Medicaid programs encountering financial shortfalls often cut mental health services to balance budgets. When Louisiana’s Medicaid program faced a financial crisis, for example, the governor proposed large cuts for all non-primary or preventive care including mental health services, programs for patients infected with HIV, and drug benefits. (BNA Health Care Daily, 1995) The proposal included cuts of “31.3 percent ($32.41 million) from non-discretionary inpatient mental hospital and outpatient mental health clinical services for those aged 22 and under.” (BNA Health Care Daily, 1995) With cuts in the budget for free-standing psychiatric hospitals (Downing, 2002), sicker and poorer patients were expected to seek care in the emergency rooms of acute care hospitals. Having a psychiatric emergency service would attract them. Although in 1983, the Missouri Supreme Court struck the proposal as a violation of rulemaking procedures, Missouri disallowed Medicaid reimbursement for
all psychiatric services other than electric shock treatment between 1987 and 1993. (BNA Health Care Daily, 1993)

The patients that use psychiatric emergency care are particularly underprivileged. (Dhossche and Ghani, 1998) Young adults, who are disproportionately uninsured are overrepresented; the elderly, who are covered by Medicare, are underrepresented. (Ellison et al., 1986) Psychiatric emergency patients are often extremely sick, uninsured, and difficult to manage. (Tye, 2001) In one article regarding psychiatric residencies, the authors explain that a rotation in the emergency room is important because emergency treatment involves specialized techniques. These include learning “management principles for the violent patient, the drifter, and the drug addict.” (Shwed, 1980) Further, approximately 7 to 18 percent of psychiatric emergency patients and one-third of the visits are difficult-to-treat, repeat visitors with chronic conditions. (Ellison et al., 1986)

Finally, not having psychiatric emergency capacity may protect hospitals from liability under the Emergency Medical Treatment and Labor Act (EMTALA), which requires hospitals that have emergency rooms and also serve Medicare beneficiaries to stabilize emergency patients, including emergency psychiatric conditions,2 before transferring them to another hospital.3 However, emergency rooms are only required to screen and stabilize patients with conditions that fall within the emergency room’s capabilities. If a hospital does not offer psychiatric treatment or have mental health professionals on staff, EMTALA does not require the hospital to stabilize emergency

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3 Emergency Medical Treatment and Active Labor Act (EMTALA) 42 U.S.C.A. § 1395(d)(d).
psychiatric patients before transferring them. Not having emergency psychiatric services, therefore, makes it easier to transfer a poorly insured, high-risk patient.

On the other hand, the exemption of some psychiatric units from the prospective payment system in the early 1980s, discussed above, brought with it the possibility of profits from psychiatric care, and the emergency room may have provided a gateway to this business. However, using psychiatric emergency care as a “loss leader,” was risky because only a small percentage of psychiatric inpatients, one interviewee estimated approximately 20 percent, come through the emergency room; the better-insured remainder come through referrals. (Gottlieb, 2002)

E) Obstetrics (see other women’s service below)

Obstetric care is likely an unprofitable (Gentry and Penrod, 2000) or break-even (Taheri, 2004) service. Although almost all births are insured, some hospitals have had difficulty in negotiating sufficient rates to cover privately-insured births. (Brennan, 2002) And, payments are based on healthy babies, not those who are sick enough to stay longer in the hospital, but not so sick that they are transferred to the better-reimbursed neonatal intensive care unit. (Ringer, 2002) In the 1990 Deloitte & Touche survey of 1,765 hospital executives cited above, 46 percent ranked obstetrics as their most unprofitable service, and 22 percent (the greatest percentage) said that they would cut back obstetrical services if their hospital faced financial failure. (Deloitte & Touche,

1990) One interviewee reported obstetric care as a profitable service, though not nearly as profitable as neonatal intensive care and other associated services. (Grossman, 2002)

Despite the uncertain profitability of obstetric care, a high percentage of acute care hospitals offer the service. There are several reasons that might explain investment in an unprofitable service. Providing obstetric care is considered a fundamental part of a full service hospital, without which a hospital is unable to bill itself as offering “cradle to grave” care. (Ringer, 2002) Obstetric care also attracts female patients who, in turn, bring their families to hospitals. In this sense it has been used as a loss-leader, as is likely the reason why many hospitals market their obstetric services so extensively. One study found that “[i]f there are just a few competitors who also control a substantial market share of births, they are each noticeably hurt if they lose obstetric patients to identifiable competitors.” (Friedman et al., 2002)

Obstetrics is also the gateway to other profitable services, such as neonatal intensive care. Finally, the probability of a birth being covered by insurance increased during the late 1980s and early 1990s because Medicaid expanded eligibility to more pregnant women. (Ellwood and Kenney, 1995) Previews of Medicaid expansions appeared in the hospital trade press in 1991. (Wagner, 1991a)

F) Trauma Centers

Trauma centers are a community resource used to treat the most acutely ill, emergency patients. Though they have been called “one of the last bastions of fee-for-service medicine,”(R., 1999) and their profitability varies by location and type of injury they treat (Taheri, 2004), they are typically unprofitable or, at a minimum, at risk of financial failure (Selzer et al., 2001).
Trauma centers generate high operating costs because they require expensive standby capacity such as, depending on the level of trauma center, the capacity to initiate neurosurgery within seven minutes, twenty-four hours per day. (Grossman, 2002) Despite high costs, trauma centers can be profitable if they are reimbursed at adequately high levels. Automobile accidents, falls, and other blunt trauma, which accounted for approximately 80 percent of trauma injuries in the early 1990s (1991c), are injuries that are usually fully reimbursed by private insurers; and, the reimbursement return can be high. (Taheri et al., 1999)

Trauma centers, however, are often located in urban settings and, in addition to blunt injury patients, serve uninsured patients suffering from crime and drug-related violence. (1991c; Wagner, 1992a) Uninsured and publicly insured patients, patients who contribute to a poor payer mix, do not cover the costs of their care. (1991c) The insurance status of the patient base, over which hospitals have no control because they must accept all patients to their trauma centers, “is a key determinant of a center’s financial viability.” (1991c)

Trauma centers are widely reported to be poorly reimbursed and an economic drain on a hospital. (Zuckerman et al., 2001) In fact, a 1991 GAO study reported that of 35 trauma centers reviewed 15 closed, 12 primarily because of financial losses; these losses resulted from unreimbursed costs of care for uninsured and publicly insured patients. (1991c) Because so many are unprofitable, trauma centers are often identified as needing special protection from closure when hospitals convert to for-profit status. (Legnini et al., 1999; Young and Desai, 1999)

Attempts to relieve the financial pressure on trauma centers in the early 1990s failed. Although in 1992, for example, President “Bush signed a bill authorizing
Congress to spend $225 million over three years on trauma centers with high uncompensated care costs linked to drug violence,” Congress did not appropriate funding. (1992)

2 Relatively Profitable Services

A) Cardiac Care

Cardiac care includes: 1) bypass surgery or coronary artery bypass graft (CABG), a revascularization procedure used to improve blood supply to the heart after a patient suffers a heart attack by splicing a piece of vein or artery from another part of the body around the blocked artery; 2) cardiac catheterization, a diagnostic imaging procedure used to locate a blockage of coronary arteries supplying blood to the heart; and, 3) angioplasty, which uses a mesh tube, known as a stent, to open a blocked area of the artery.

Like almost all surgical and related services, cardiac services -- including cardiac catheterization labs (1987; Winslow, 1998), angioplasty, and open-heart surgery – are, and are widely known to be, hospital profit centers. (Devers et al., 2003; Ginsburg, 2000; Stout, 2001) According to one trade journal, “[a]lthough hospitals have provided cardiac services for years, growth [in cardiac services] is being spurred by advances in diagnoses and treatment technology, as well as cardiology’s performance as a hospital revenue-generator.” (Wagner, 1991b) Hospitals seeking to open cardiac services argue that doing so “will help ensure their financial survival.” (Galewitz, 2003) According to a health care business consultant, “Hearts are what keep hospitals in business.” (Winslow, 1999)
There is considerable evidence that the reputation of cardiac care as profitable was justified. Like other surgical services, heart attack treatments have been well-reimbursed by insurers. (Brennan, 2002; Cutler et al., 2000) In fact, in the early 1990s, cardiovascular surgery was the inpatient service that produced the highest revenue per hospital admission, approximately $11,600 per admission. (Wagner, 1990a)

Since most open-heart surgeries are covered by Medicare, patients receiving them are unusually well insured. The average age of a first heart attack is 65.8 years for men and 70.4 years for women (American Heart Association, 2002), within the age range of Medicare patients. Further the average age of patients treated for heart attacks was increasing during the study period. (Cutler et al., 1999)

In addition, overall spending on cardiac care was high and increasing during the study period. Between 1984 and 1994, the price (measured by expenditures) for providing bypass surgery among Medicare patients increased by 2.3 percent annually from $29,176 to $36,564 (in 1991 dollars using the GDP deflator) while the share of patients receiving the treatment increased by one percentage point annually from 5 to 15 percent. (Cutler et al., 2001) While reimbursement increased, the costs of supplying bypass surgery in real terms were either flat or fell during the same period, perhaps because of learning and volume increases. (Cutler and Huckman, 2002)

Between 1984 and 1994, the price for providing catheterization, and no other treatment, among Medicare patients decreased by 0.1 percent per year ($15,887 to $15,673) while the share of patients receiving catheterization increased by one percentage point per year (6 to 16 percent). (Cutler et al., 2001) However, the “[p]ayments for cardiac catheterization only fell as more catheterizations were done in the initial hospital visit or on the same admission as more expensive revascularization
procedures.” (Cutler et al., 2001) In other words, increasingly the procedure was
bundled with profitable services. Further, as a gateway to surgery, it is a necessary
service for the provision of more highly-reimbursed services such as open-heart surgery.

Similarly, the price for angioplasty fell during this period. Between 1984 and
1994, the price for providing angioplasty among Medicare patients decreased by 3.2
percent per year ($26,661 to $19,309) while the share of patients receiving angioplasty
increased by 1.6 percentage points per year (1 to 17 percent). (Cutler et al., 2001) Like
the case of cardiac catheterization, however, the price decline does not mean that the
procedure became unprofitable. When angioplasty was first developed, Medicare paid
for the service under a surgery diagnostic related group that was highly reimbursed
relative to costs. In 1985, the coding was changed to lower level of reimbursement
category. (Wagner, 1990b) Since then, some studies show that angioplasty is only
profitable for hospitals that perform a large volume of them. (Wagner, 1990b)

During the 1980s and 1990s, cardiac care accounted for an increasing percentage
of total Medicare spending, which was also increasing. In 1983, intensive or coronary
care accounted for $3.7 billion (6.8 percent) of total Medicare short-stay hospital
charges; by 1994, that figure rose to $12.8 billion (8.6 percent) and cardiology – a
category not measured in 1983 -- accounted for $6.5 billion (4.4 percent). (1996a) In
1991, it was estimated that more than 135,000 Medicare patients would have bypass
surgery, costing more than $3 billion. (Tokarski, 1991) Because spending on bypass
surgery was so high, in 1991 HCFA started a pilot program – the Medicare Participating
Heart Bypass Center Demonstration -- in which hospitals and physicians negotiated
bypass surgery prices. (Cromwell et al., 1997)
For these reasons, hospitals seeking to start cardiac services have faced opposition from competitors (Swartz, 2004), some of whom worry about losing market share of a revenue center. (2002; Shepherd, 2000) By 2000, heart treatments, along with orthopedics, led the niche hospital market in which small proprietary hospitals offer a single, profitable service. (1999; Devers et al., 2003; Japenga, 2000; Larson, 2004) The establishment of these independent heart hospitals often caused local general hospitals to complain that the new sites would deprive general hospitals of their most profitable business. (Dang, 2002; Gallagher, 1998; Meyer, 1998; Romano, 2004; Winslow, 1999)

Despite the potential for such high profits, not all hospitals offer cardiac care. In addition to certificate of need requirements, the considerable level of capital necessary to start a cardiac service can limit entry. According to one estimate published in 1990, “[t]o enter the open-heart surgery business, a hospital may spend up to $5 million in equipment, staffing, and training.” (Wagner, 1990b)

B) Diagnostic Imaging

This section discusses the profitability of diagnostic imaging equipment as a group. The specific services evaluated in the study are:

1) Computed Tomography Scanning (CT), which uses radioactive tracers and is primarily used to image the brain, spine, thoracic, and abdominal organs. (Wagner, 1992c)

2) Diagnostic Radio Isotope Facilities use radioactive isotopes as tracers or indicators to detect an abnormal condition or disease. (1993a)
3) Magnetic Resonance Imaging (MRI) allows technicians to determine tissue type in the human body by looking at a map of how hydrogen nuclei in different parts of the body respond to the magnetic field generated by the machine.

4) Positron Emission Tomography (PET) is a nuclear medicine imaging technology which uses radioactive (positron emitting) isotopes. It is primarily used to take images of the brain and heart (Wagner, 1992c) that depict metabolic activity or blood flow. The imaging agents needed to operate PET must be manufactured on site in a cyclotron or linear accelerator. (1993c)

5) Single Emission Computed Tomography (SPECT) is generally used to image the heart and brain. It uses radiopharmaceutical agents to perform imaging and requires the installation of a gamma camera and a display terminal. (Wagner, 1992c)

6) Ultrasound uses sound waves to take images. It is primarily used to image the heart and blood flow, for gynecological and obstetric purposes, and to image some abdominal organs. (Wagner, 1992c)

Like surgical services, diagnostic imaging services come with high costs and high profits. Almost all diagnostic imaging equipment requires a high initial capital investment. In 1990, hospitals and other medical facilities spent approximately $4 billion on imaging equipment. (Bell, 1992) Radiology also accounted for a high percentage of hospital operating expenses – between 3 percent and 8 percent in the mid-1990s. (Scott, 1994)

A 1992 trade journal article estimated that x-ray was the cheapest imaging technology to purchase (between $1,000-100,000 per machine) and MRIs were among
the most expensive (between $2 and 2.5 million per machine). (Wagner, 1992c) A typical MRI, excluding installation and licensing fees, costs approximately $1.5 million. (Anonymous Interviewee, 2002) MRIs also require the use of a shielded room. (Wagner, 1992c) Despite the high cost, the diffusion of this technology continues to increase – “U.S. sales reached $1.1 billion in 1999 and are expected to grow at an annual compound rate of 5.6% through 2006, according to market consultants...” (Becker, 2001b)

PET technology, however, is commonly believed to be the most expensive imaging technology. In the early 1990s, one machine cost between $5 and 7 million to purchase and install, and $1 million annually to operate. (Wagner, 1992b) The imaging agents needed to operate PET must be manufactured on site, in a cyclotron or linear accelerator,(1993c) are expensive to manufacture, and have short lives.

Despite high costs, in the 1990s diagnostic imaging was considered to be a profitable hospital service. (Campbell, 1998; Grossman, 2002; Hensley, 1998b; McNeil, 2001) Indeed, some hospitals even allocated the entire costs of hospital-wide information systems to radiology because of its profitability. (Hensley, 1998a) Experts have explained the profitability of these services as a result of productivity increases from improved technology and expanded uses that made up for decreasing reimbursement for services like MRI scans. (Knight, 2002) According to a U.S. General Accounting Office report, scanning usage increase and per-unit cost decline were achieved because of increases in machine speed and diagnostic uses. (U.S. General Accounting Office, 1992)

Medicare payment policies have had a strong effect on the adoption and profitability of high technology services such as diagnostic imaging services. As services
outside the scope of the restrictive prospective payment system, diagnostic imaging reimbursement was characterized as “easy imaging money.” (Hensley, 1998a) In fact, MEDPAC’s 1999 recommendations to Congress have included that Medicare pay “for scientific and technological advances that accounts for emerging technologies that are quality enhancing, but cost increasing.” (Medicare Payment Advisory Commission, 1999) The report cited radiology, imaging, and nuclear medicine as an area of enormous growth and medical potential and, therefore, in need of allowances in the payment models. While the costs of imaging may be high, it seems that Medicare policy intended payments to keep pace.

Likely both increased efficiency and Medicare reimbursement policies explain profitability. Medicare technical component payments for MRI services did not reflect efficiency increases; therefore, even facilities with low volume MRI usage could realize profits on Medicare payments. (U.S. General Accounting Office, 1992) According to the GAO these results could be generalized to technical component payments of other high-technology radiology services. (U.S. General Accounting Office, 1992) In addition, well patients have been increasingly willing to pay for full-body scans that insurers are unwilling to cover. (Becker, 2001a)

The relative profitability of PET scanning likely followed a different pattern from the other technologies studied here because, among other reasons, the service required the creation of new billable service designations with new medical billing codes such as Diagnostic Related Groups. (Medicare Payment Advisory Commission, 2003) It was not until 1999, for example, that Medicare expanded its inpatient coverage to diagnoses of several types of cancers. (Becker, 2000)
Reimbursement, however, was likely profitable. The outpatient use of PET was covered by a billing category – new technology ambulatory payment classification (APC) -- that was not subject to cap or budget neutrality provisions restricting other services, making reimbursement for PET use relatively easy to authorize; in addition, payments for services classified under the new technology category of APC, as opposed to other technologies for which Medicare has not made special payment allowances and are only included in the DRG or must be budget neutral, are cost-based payments that are made each time the service is used. (Medicare Payment Advisory Commission, 2003/ at 183) In terms of private insurance, the use of the machine became increasingly profitable as insurers who had traditionally refused to reimburse for PET services, because they were investigational technologies, began reimbursing on a case-by-case basis. (Wagner, 1992b)

C. Women’s Health, Neonatal and Pediatric Intensive Care, and Related Services

In general, women’s health care is considered to be profitable for hospitals. (Stout, 2001) (But see obstetric care, discussed above). As a matter of direct expenditures, women account for a disproportionate share of overall health spending. (Deveny, 1986) In addition, it is widely believed that women make the health care decisions for their families. (Deveny, 1986) Therefore, once a woman chooses a hospital for herself, her family’s business will follow. (Dearing, 1987; McNeil, 2001) For these reasons, many hospitals have built women’s health centers.

Although somewhat difficult to classify since profitability depends heavily on the size of the program and market (Friedman et al., 2002), neonatal and pediatric intensive care have been largely profitable services. (but see Grossman, 2002) In part
this is because, like women’s centers, the services attract female patients, younger and healthier patients, and their family’s business. (Friedman et al., 2002) More specifically, “general-service hospitals are targeting pediatric services...[because] women typically choose the family’s health care provider...Hospitals that develop specialized programs for women and children ensure that they will be asked to provide the families’ future health care needs.” (Smith, 1994)

Neonatal intensive care is a high cost service, with direct costs of low birth weight infants adding up to $4 billion annually and 35 percent of total health care costs for infants. (Richardson et al., 2001) Despite high costs, it has been relatively profitable for several reasons. Reimbursement rates for neonatal and pediatric intensive care are relatively high because treatments have improved such that costs of care are concentrated on the first part of the stay making a greater portion of the stay essentially a low-cost convalescent stay. (Ringer, 2002) And, neonatal care has been largely insulated from managed care and other financial pressures on its provision. (Schulman, 2003) Years after other services experienced constraints through aggressive case management, neonatal care remained relatively unexamined as a site for cost-containment, possibly because of the political difficulties associated with limiting services to babies. (Schulman, 2003) Articles reviewing costs and methods for cost-containment for these services have appeared recently, late in the application of managed care methods to other hospital services. (See, e.g., Richardson et al., 2001; Schulman, 2003)

During the study period, even among poor families with uninsured parents, the infants and very young children who are the patients in neonatal and pediatric intensive care units were eligible for Medicaid coverage, which includes payment for inpatient
hospital care. Starting in the mid-1980s, a series of federal laws first allowed, and then required, states to provide Medicaid coverage for children under age six whose family income was at or below 133 percent of the Federal poverty level; then, states were required to expand coverage of children in poor families up to age nineteen. (For a history of this legislation see Dubay et al., 2004) However, it is not clear that Medicaid rates were sufficient to cover the costs of pediatric care (Broyles et al., 1997), and some share of patients newly insured by Medicaid were not previously uninsured, but were insured under private plans.

Although Medicaid payments may not be sufficient to cover costs and some patients in these units have no coverage of any type, it seems that hospitals are able to effectively differentiate among insurance groups in providing neonatal intensive care. Hospitals with higher proportions of privately insured patients have more neonatal intensive care beds than do those with lower proportions of those patients. (Glied and Gnanasekaran, 1996) Even within hospitals that offers neonatal intensive care, Medicaid and uninsured patients receive less intensive care. (Braveman et al., 1991)

D. Orthopedic Surgery

Orthopedic surgery is a hospital profit-center. Although some orthopedic surgery specialties (e.g. pediatric surgery) treat poorly insured patients and provide high-cost services for low reimbursement, the “bread and butter” orthopedic patient is a well-insured, joint-replacement patient. (Yassir, 2002) These patients are typically over 45 years old, many considerably older and covered by Medicare. (Yassir, 2002) In addition, for the past several decades, orthopedic surgery has been increasingly performed on an outpatient basis, a particularly profitable method of performing
Many hospitals have converted space into day patient suites, in which physicians can move patients through quickly and the hospital can keep overhead low. (Yassir, 2002) In fact, affiliating with orthopedic surgeons has been used as a method to increase income of a money-losing hospital. (Hensley, 1999)

Along with cardiac care, orthopedic services were increasingly delivered at single-service, specialty hospitals, which have been accused of drawing the most profitable businesses away from acute care hospitals. (Dang, 2002; Devers et al., 2003)

E) Sports Medicine

Sports medicine programs have been considered a profitable service because of the nature of the service and the characteristics of the patients who need it. Sports medicine programs attract patients who are likely to need complimentary services that are profitable for hospitals, including surgical or imaging services. (Richman, 1987) Moreover, the surgery they need is often a type known as “day surgery”. A surgery is characterized as day surgery (outpatient surgery) if a patient is in the hospital for 23 hours or less. (Yassir, 2002) As outpatients, day surgery patients do not require the same cumbersome pre-admission approvals from insurers as do ordinary surgery patients. (Yassir, 2002) In addition, even though the costs of day surgery are lower than those of ordinary surgery, most insurers reimburse the hospital at the same rates for both.

Sports medicine patients are generally well-insured. They are often relatively wealthy “weekend warriors” or the children of higher income parents. (Richman, 1987; Yassir, 2002) In fact, hospitals have started sports medicine programs to attract the “healthy, well-motivated patients” who seek sports treatments. (Richman, 1987)
Hospitals can use sports centers to establish contracts with school systems or professional sports to provide regular care, a method that provides effective publicity in the market. (Richman, 1987) In addition to attracting patients, sports medicine centers are often used to attract orthopedists, who provide profitable hospital services. (Richman, 1987)

Although several hospitals reported bringing in two to three percent of its revenues through sports medicine, some observers believed that the business was flattening by 1987. (Richman, 1987)

F) Fitness Center

During the early 1990s, hospitals began building fitness centers as a method of “pumping up profits”. (Lutz, 1991) Approximately 150 hospitals had built centers, not only as a resource in which to treat patients who need rehabilitation and orthopedic care but also to attract young, insured patients (Lutz, 1991; See also Spencer, 1998), provide perquisites for staff (Worrell, 2002), and support patient rehabilitation activities through commercial sales to local residents. (Pallarito, 1994) A survey by the Association of Hospital Health and Fitness Centers in 1991 demonstrated that 70 percent of the fitness centers studied had a positive cash flow. (Lutz, 1991) One operator of hospital-based fitness centers builds and operates centers to target high income, middle-aged, women (Worrell, 2002), a source of profitable patients. In building a 45,500 square foot wellness center, hospital executives in New Orleans expected to “bring in revenue of more than $3 million during its first year.” (Butler, 2003)

There were, however, reasons for nonprofit hospitals to be cautious in opening fitness centers. In the early 1990s, the Internal Revenue Service’s tax-exempt
organizations divisions examined whether the profits from the operation of fitness centers should be taxed as unrelated business income. In 1991, these concerns were somewhat assuaged by a private letter ruling authorizing a fitness center that had membership fees low enough to allow “a significant segment of the population” to afford membership. (Lutz, 1991) Later private letter rulings addressed the issue suggesting that “if people who aren’t hospital patients are allowed to be members, a hospital-owned health club must show that its membership is representative of the community it serves and document that its membership is representative of all economic classes in the community.” (Pallarito, 1995) In 1999, an IRS training manual gave more detail regarding permissible and impermissible fitness centers; the scenarios focused on the importance of waived or reduced fees. (Taylor, 1999)

G) Extracorporeal Shock Wave Lithotripsy (ESWL)

In 1985, the Food and Drug Administration approved the use of the extracorporeal shock wave lithotripter (ESWL or Lithotripter), a machine that uses shock waves to shatter kidney stones. (Kuntz, 1985) Lithotripsy is non-invasive, involves shorter hospital stays than conventional surgery, and was increasingly being performed on an outpatient basis during the 1990s. (Bryce and Cline, 1998) One study identified ESWL as increasingly high cost for insurers because of rapid diffusion and rising charges. (Bryce and Cline, 1998) Because the machine cost approximately $1 million, only approximately 240 hospitals in the country had them in the early 1990s; but, in 1991, there were reports that a new, much less expensive machine was being developed, but was not yet to market. (1991b)
3 Variable Profits -- Skilled Nursing and Home Health Care

Changes in the profitability of post-acute services, such as home health and skilled nursing,\(^5\) make them particularly useful services to demonstrate the relative responsiveness of hospitals to financial incentives. With the implementation of the prospective payment system (passed in 1983, implemented in 1984), post-acute services became very profitable services for several reasons. First, unlike acute services payments under the DRG system in which hospitals receive a single per-episode payment for each patient, Medicare paid hospitals a cost-related reimbursement for post-acute services. For example, for skilled nursing units, hospitals could receive daily operating services payments up to 112 percent of the national average and reasonable cost payments for ancillary services such as therapy and capital costs. (Newhouse, 2002b) Home health services were also reimbursed by cost, up to 112 percent of the national mean per visit. (Newhouse, 2002b)

Second, the payment system was particularly generous to new entrants, exempting Skilled Nursing Facilities (SNFs) and home health services from cost limits for the first three to four years of operation. (Newhouse, 2002a) Third, these generous reimbursements coupled with the fixed payment built into the DRG system made post-acute services particularly valuable for acute care hospitals. Rather than receiving a single payment for an inpatient, hospitals could increase reimbursements by unbundling the services, transferring a patient to a post-acute bed at the end of the patient visit. (Cutler and Horwitz, 2000) There is considerable evidence of these

\(^5\) I have eliminated rehabilitation services from the analysis because the unit type in which the care is provided strongly affects the profitability of the service and the AHA survey does not specify unit type.
transfers: for example, between 1988 and 1996 acute care lengths of stay fell 27 percent for Medicare patients and only 15 percent for all patients; during the same period post-acute service usage and payment rose rapidly. (Newhouse, 2002b)

Finally, the hospital could allocate joint costs to these units, increasing the total reimbursement to the hospital. The rapid increase in Medicare spending on and utilization of post-acute services reflects these provider incentives. A 1999 Urban Institute paper reports that “[p]ayments to SNFs and home health providers have grown at double digit rates since the late 1980s, averaging 35 percent a year for SNFs and 25 percent for home health. SNF payments rose from $2.5 billion to $11.7 billion between 1990 and 1996. Home health payments grew from $3.9 billion to over $18.3 billion during the same period.” (Liu et al., 1999) From 1993 to 1994, the number of hospital-based SNF units increased 16 percent (from 1,487 to 1,728 units) and hospitals admissions to SNFs increased 31 percent (from 275,604 to 360,339 admissions). (1996b)

Although the incentives for providing post-acute services were in place in the early-1980s, eligibility and coverage guidelines made reimbursement uncertain. Two court cases increased eligibility and decreased the probability of claim denials for home health and skilled nursing.6

The profitability of these services was widely understood by regulators and hospital administrators alike. Academic and trade journals were filled with articles regarding the

profitability of these services. (Helbing and Cornelius, 1992; Helbing et al., 1992; Scharmach, 1990; Wagner, 1989) Hospital management consultants urged hospitals to use these services as revenue centers. One advertisement in a trade journal recommended that hospitals, “[a]chieve optimum financial benefits by complementing hospital operations with a short-term, sub-acute skilled nursing program.” (Geriatric Health Ventures Incorporated, 1992) Even as regulators recognized post-acute services as a financial problem for Medicare and began searching for solutions in the early 1990s, observers predicted that post-acute services would remain profitable even if limited by capitated payment arrangements. (1993b; Fowler, 1992; Lutz, 1992; O’Donnell, 1993)

The Balanced Budget Act of 1997 (BBA) dramatically restricted the profit-making opportunities of post-acute care. It set the 1998 update factor (the percentage by which hospital payments increase) to zero, reduced the growth rate of reimbursement by setting more stringent cost limits, eliminated the benefits for new entrants, and lowered DRG payments for some post-acute patients who are transferred after short acute-care stays. (Newhouse, 2002b) Perhaps most importantly, the BBA ordered the Health Care Financing Agency to develop a prospective payment system for post-acute services. The program implementation was legislated to start in July 1998 for SNFs and October 1999 (later postponed until 2000) for home health. (Liu et al., 1999) Methods to control double billing included requiring patients to stay overnight in the hospital before allowing for a billing under prospective payment, including related services delivered through an outpatient treatment in the prospective payment if they are delivered within three days before an admission, and reducing payments if patients are transferred to other hospitals after a stay that is more than one day shorter than the national average
stay for that diagnosis. (Medicare Payment Advisory Commission, 2004) The BBA’s success in controlling costs worked, especially in the post-acute services. “Between 1997 and 1999 home health spending fell 45 percent, from $17.5 billion to $9.7 billion, and SNF payments fell 17 percent, from $11 billion to $9.4 billion (nominal dollars).” (Newhouse, 2001)
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