THE GROWTH OF FOR-PROFIT HOSPITALS IN THE UNITED STATES, 1970-1980

by

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Urban Affairs

APPROVED:

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Patricia Edwards

John Levy

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Committee Chairman: James Bohland
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(ABSTRACT)

The growth of for-profit hospitals in the southern United States was researched. Two regression models were developed to analyze the spatial distribution and growth of for-profit hospitals as a function of the locational characteristics of a hospital's service area from 1970 to 1980. For the first model, the dependent variable was the market share of for-profit hospital beds in 1980. In the second model, the dependent variable was the percent rate of change in for-profit market share from 1970 to 1980. Based on this research, the for-profit hospital of the 1970's appears to express a locational preference for areas which had limited hospital competition and were becoming increasingly suburban. A detailed review of the literature on for-profit hospitals and the method of analysis is presented.
ACKNOWLEDGEMENTS

I would like to thank all the people who encouraged me to complete this paper. Foremost, I extend many thanks to Jim Bohland whose patience I’ve tested over the past several years. Jim, I look forward to a continued relationship with you and the Department. To Pat Edwards and John Levy, a special thanks for "pinch hitting" as committee members. Your willingness to review my paper was much appreciated. To an earlier committee member and friend Sara Rosenberry: your periodic phone calls suggesting that I should complete my thesis caused much anxiety but fortunately kept the project alive. I wish you were here to see this come to an end.

Because this project extended well beyond the time I spent in Blacksburg at Virginia Tech, many friends and work associates urged if not prodded me to complete this. Most I am sure were tired of hearing about it and convinced I would never do it. To Jim Gugel: your gentle encouragement and, in the past year, politeness for not bringing it up, will always be remembered. To Robin Wilson who most intimately understood how it can be harder to complete things which are most important. Robin, complete your thesis! To my boss Howard Gershon who trusted me to completed my thesis. It’s truly a pleasure to work with you.

To those I love the most: my parents, Pat and Bernie; my three sisters and their families (the Biroscaks, Hanchetts and Slaughters); and John Koplaski (who just passed his professional engineering exam!), thanks for believing in me.
# TABLE OF CONTENTS

1.0 **INTRODUCTION**  
1.1 Focus of the Investigation  
1.2 Research Objectives  

2.0 **GROWTH TRENDS OF FOR-PROFIT HOSPITALS AND MULTIHOSPITAL SYSTEMS**  
2.1 Ownership Trends and the For-Profit Hospital  
2.2 Multihospital Systems  
2.2.1 Benefits of Membership in Multihospital Systems  
2.3 Qualitative and Quantitative Differences Between For-Profit, System-Owned and Independent Hospitals  
2.3.1 Cost and Pricing  
2.3.2 Quality of Care  
2.3.3 Access to Care  
2.4 Summary  

3.0 **ACCESS TO CAPITAL AND THE LOCATION OF FOR-PROFIT HOSPITALS**  
3.1 Sources of Capital Financing  
3.2 Location Strategies and Capital Acquisition  
3.2.1 Demographics: Population Size and Growth  
3.2.2 Socio-demographic Determinants  
3.2.3 Competition and Health Services Availability  
3.3 Summary  

4.0 **METHODOLOGY**  
4.1 Problem Statement  
4.2 The Study Area  
4.3 Data  
4.4 Steps in the Analysis  
4.5 Models  
4.5.1 1980 For-Profit Market Share Model  
4.5.2 For-Profit Market Share Growth Models, 1970-1980  

iv
TABLE OF CONTENTS
(continued)

5.0 RESULTS AND CONCLUSIONS 68
5.1 Results: 1980 For-Profit Market Share Model 68
5.1.1 Suburbanization 70
5.1.2 Competition 71
5.1.3 Other findings 72
5.2 Results: For-Profit Market Share Growth Model, 1970-1980 72
5.2.1 Competition 73
5.2.2 Population Size and Growth 73
5.2.3 Suburbanization 75
5.2.4 Other Findings 76
5.3 Conclusions and Implications for Future Research 76

BIBLIOGRAPHY 81

VITA 86
1.0 INTRODUCTION

Historically, the American health care system has been dominated by independent hospitals and fee-for-service practitioners. Since the 1920s, the majority of all hospitals have been not-for-profit. In the past two decades, however, the development of several trends which challenge this traditional form of delivery. These developments include the introduction and implementation of managed care concepts such as health maintenance and preferred provider organizations. Also, a shift has occurred in the settings of care from inpatient, hospital-based to outpatient and freestanding services found in a myriad of new centers such as emergency, urgent, diagnostic imaging and ambulatory surgery. Changes in ownership and organization of hospitals have occurred concomitant with these developments. Most notable of these has been the renewed growth of for-profit hospitals and the growth of multihospital systems.
1.1 Focus of the Investigation

The impetus for these and other developments stems in large part from the health care industry's response to public policy and to economic pressures in the market place. As a result, hospitals have been required to seek new sources of capital for financing continued development. These new pressures required the alteration of the traditional organizational and financial structure of the health care system, particularly with regards to hospitals. One important consequence was the privatization of hospitals, shifts in ownership of hospitals from community or not-for-profit to for-profit status. The formation of multi-hospital systems through horizontal and vertical integration has accompanied the trend toward privatization. These two developments, frequently called corporatization, have dramatically changed the organization of the hospital component of the nation's health care system.
1.2 Research Objectives

The purpose of this study is to analyze the growth of for-profit hospitals in the southern United States. The specific objectives are:

- To analyze the spatial distribution of for-profit hospitals and beds as a function of the locational characteristics of the hospital’s service area in 1980, and

- To analyze what locational attributes best explain geographic variations in the growth of for-profit hospitals’ market shares between 1970 and 1980.

Market share within a county was measured as the percent of total hospital beds which were for-profit. The growth in the proportion of hospital beds from 1970 to 1980 was hypothesized to be a function of a county’s market potential as measured by selected socio-economic, demographic and health service characteristics in the county. The hypotheses were tested with a series of regression models for counties in the Southeastern and Southwestern United States. Hospital ownership types included in the study were not-for-profit; local, state and federal hospitals; and partnership and corporate-held for-
profit hospitals (of which the majority were members of multi-hospital corporations) offering general medical and surgical services. Psychiatric and long-term hospitals were excluded.
2.0 GROWTH TRENDS OF FOR-PROFIT HOSPITALS AND MULTIHOSPITAL SYSTEMS

The U.S. hospital system has always had a tri-fold pattern of ownership: not-for-profit, for-profit and public institutions. Though the system is still dominated by the not-for-profit sector, dramatic changes have occurred in the pattern of ownership and in the organizational structure of the industry. This chapter presents a historical perspective of these two changes: the development and role of for-profit hospitals and the growth of multihospital systems.

2.1 Ownership Trends and the For-Profit Hospital

Prior to the twentieth century, hospitals typically provided care to the poor who were unable to secure services in their homes from physicians, from small physician-owned facilities, or from charitable facilities. The early voluntary hospitals were funded principally by private philanthropy and often had strong religious affiliations (Rosner 1982; Rosenberg 1979; Hollingsworth and Hollingsworth 1987; Bohland and Shumsky 1989). Many of
these early hospitals focused on improving the moral
certainty of the patient while providing only a custodial-
level of care. During this time the majority of medical
care, including surgery, was provided by physicians in the
patient's home. Hospitals were institutions of last resort
for those who could not afford to pay for their care.

By the late 1800s, the role of hospitals began to
change. The transformation was a result not only of
scientific and technological advances but also of the social
and economic restructuring which accompanied the
urban/industrial transformation (Knox, Bohland and Shumsky
1983, 1984; Rosner 1982; Rosenberg 1987; Vogel 1980; Star
1982). These changes combined to create a context suited to
the growth of for-profit hospitals.

By 1910, for-profits comprised 56 percent of all
hospitals (Steinwald and Neuhauser 1970). The early for-
profit hospitals were generally small, physician-owned
clinics serving the growing needs and demands of the middle
class as well as meeting the physician's need to have a
convenient place to provide care. In comparison to their
contemporaries, for-profits were primarily supported by fee-
for-service paying patients rather than charitable,
philanthropic and government funds.

The shift to for-profit ownership was driven by several factors. The demand for services increased faster than the not-for-profit sector could provide additional services because of population growth and the changing family structure. Also, the depression of the 1890's decreased the availability of philanthropic funds which supported the development of the not-for-profit sector. Scientific and technological advances supported the development of medical and hospital care and the role of physicians as professionals. As medical education became more standardized and developments such as sterilization and anesthesia took hold, physicians began to control greater social, economic and professional power (Starr 1982). This would eventually lead to changing the locus of care from the home to the institutional setting. Finally, the cost of inputs for the delivery of care increased as did the overall cost of service delivery. Furthermore, the availability of philanthropic and charitable contributions to support the public and voluntary hospitals continued to fluctuate after the depression because of the cyclical nature of the economy.
After the first decade of the 1900s, investor-owned hospitals were no longer in the majority within the industry. Both the number of for-profit hospitals and beds declined as did their relative share of the hospital industry. However, for-profits continued as a major segment, accounting for at least 30 percent of the industry into the early 1940s. While the Great Depression further depleted the pool of philanthropic and charitable funds for public and nonprofits, it also brought hardship on the for-profits as fewer patients were able to pay for services.

The decline in for-profits share in the industry continued for three decades. A major impetus for the continued decline was the Hospital Survey and Construction Act of 1946 (the Hill-Burton Act). With the Hill-Burton Act, the federal government, for the first time, became directly involved in the hospital industry. Funds from the project were provided to build hospitals, primarily in rural areas. The construction and expansion of hospitals under Hill-Burton increased the market share for public and not-for-profit hospitals and led to a further decline in the proportion of the for-profits.

Other initiatives implemented from the mid-1940s to
1960 also impacted the supply of health care services and resources. These initiatives included: 1) the support of biomedical research through grants to the National Institutes of Health and 2) manpower training. The emphasis of these programs was to build capacity in the health care sector, and thus promoting hospital utilization. (Brown 1988:2). Such policies further supported the development of the not-for-profit hospital sector.

In the 1960s the focus of public policy changed from developing supply to promoting access to health care services through the development of financing mechanisms in new forms of health insurance (Brown 1988:2). The direction of this policy era was embodied in the enactment in 1964 of Medicare and Medicaid. Medicare targeted access to care for the elderly and disabled while Medicaid targeted access for the poor and medically indigent. By the time these programs were implemented, third party health insurance was well established and integrated into the benefit packages offered by many industries.

These policy initiatives caused an influx of health care dollars which further promoted the growth of the hospital industry. They also led to rising health care costs
and increases in the profit margins of providers. The decline of for-profit hospitals slowed in the 1960s as the ability to accrue surplus revenue over expenses was enhanced by the increased demand for services and the charge-based reimbursement systems of Medicare and Medicaid and other payors.

Medicare and Medicaid provided reimbursement for a group of patients which were less likely to be served by the for-profit sector (because their primary source of income was the paying patient). While surplus revenues were also assured for the not-for-profits, the for-profit hospital became an attractive option for investors. As a result of allowable pass through costs such as interest on debt and plant; capital depreciation; return of equity; and federal and state taxes, the for-profits were given incentives to build, acquire new hospitals and expand services in order to compete for patients. This in turn made the for-profits more attractive to investors thus the willingness of investors to provide capital to for-profits fueled their growth.

In the 1970s the focus of public policy once again changed. The growth of the economy slowed, inflation was
high and the national deficit level began to grow (Brown 1988:4). Cost containment became the watchword as health care costs increased at rates above those of the consumer price index. In this era, two types of reforms were implemented: regulatory and pro-market. These two strategies represented an attempt to make the health care industry more responsive to cost control. Both policy initiatives were to have a positive effect on the growth of for-profits.

Regulatory reforms included the adoption of the Certificate of Public Need Program as part of the National Health Planning and Development Act (P.L. 93-641), the implementation of utilization review bodies (Professional Standards Review Organizations (P.L. 93-603) and, in some states, the enforcement of hospital rate setting and the tightening of Medicare and Medicaid reimbursement and eligibility.

When regulatory policies failed to control costs, competitive/market approaches became the principal policy thrust. For example, the federal regulation for Certificate of Need was repealed in 1984 although many states opted to continue the program. Physician Standards Review
Organizations were restructured into less regulatory institutions called Professional Review Organizations. Market-oriented strategies adopted included the promotion of health maintenance organizations (P.L. 93-272), enforcement of federal antitrust laws, and the introduction of alternative reimbursement schemes. These new pressures created stress on the traditional organizational and financial structure of the health care system, particularly for hospitals.

Statistics (AHA, 1989) on the number of short-term general hospitals and beds (Table 1) clearly show the changes in ownership patterns which occurred after 1965. The data indicate that while the total number of hospitals declined by 4 percent from 1965 to 1988, the number of beds increased by over 15 percent. (From 1965 to 1975 the number of hospitals actually increased but began to decline after 1975.) The number of beds, however, increased by almost 22 percent through 1985 and then declined through 1988. Thus it appears that the number and rate of hospital closures continued while growth in the number of beds was leveling.

Since 1965, the presence of for-profits escalated after a period of relative dormancy extending from the 1940s.
Although none of the three ownership categories experienced an increase in the number of hospitals, the number of for-profit beds more than doubled, growing by 121 percent, from 1965 to 1988. (See Table 1.) This compared to a 30 percent rate of growth in the not-for-profit sector and a 20 percent rate of decline in the public sector. Growth in the number of not-for-profit and for-profit beds appeared to stabilize after 1985 as indicated by a decrease in beds in the not-for-profit sector and, the lack of growth in beds in the for-profit sector.

The not-for-profit and for-profit sectors increased their relative share of the hospital industry at the expense of the public sector from 1965 to 1988. (See Table 1.) In 1965, the not-for-profit sector with 515,000 beds accounted for 56 percent of all hospital beds; the public sector with 353,000 beds accounted for 38.6 percent and the for-profits held the remaining 5 percent of total beds. By 1988, the for-profits and not-for-profits share of total beds (1,055,000) increased to 10 percent and 63 percent respectively, while the public sector's share decreased to 27 percent.

Figures for the entire U.S. masks the concentration of


<table>
<thead>
<tr>
<th>YEAR</th>
<th>TOTAL</th>
<th>NOT-FOR PROFIT</th>
<th>FOR-PROFIT</th>
<th>PUBLIC (2)</th>
</tr>
</thead>
<tbody>
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<td>NUMBER</td>
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</tr>
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</tr>
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<td>6,263</td>
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<td>730</td>
</tr>
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<td>1985</td>
<td>6,127</td>
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<td>805</td>
</tr>
<tr>
<td>1988</td>
<td>5,921</td>
<td>3,256</td>
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**CHANGE 1965-1985:**
- Number: -258 170 67 -21
- Percent: -4.18% -4.96% -7.82% -1.11%

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<th>PUBLIC (2)</th>
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<td>PERCENT</td>
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</tr>
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<td>56.3%</td>
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</tr>
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<td>61.1%</td>
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</tr>
<tr>
<td>1980</td>
<td>1,109,000</td>
<td>693,000</td>
<td>62.5%</td>
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</tr>
<tr>
<td>1985</td>
<td>1,115,000</td>
<td>708,000</td>
<td>63.3%</td>
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</tr>
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<td>1988</td>
<td>1,655,000</td>
<td>668,000</td>
<td>63.3%</td>
<td>104,000</td>
</tr>
</tbody>
</table>

**CHANGE 1965-1985:**
- Number: 140,000 153,000 57,000 (70,000)
- Percent: 15.30% 29.71% 121.28% -19.83%

1. Includes not-for-profit, local, state, federal and for-profit short-term general and other special hospitals.
2. Includes state, local and federal hospitals.

for-profit hospitals in several geographical areas. In three areas of the United States, the Southeastern, South Central and the Western census regions, for-profits accounted for 21 percent to 26 percent of all hospitals in 1988 (American Hospital Association 1989).

In sum, the number of hospital beds began to stabilize between 1965 and 1988 while the number of hospitals declined. The sector experiencing the largest rate of growth in beds was the for-profits. In 1988, they still held a relatively small share of the hospital industry. Their growth was important, however, because it represented the re-emergence of an ownership category which in the early years of this century dominated the hospital industry in terms of market share.

2.2 Multihospital Systems

The re-emergence of the for-profit hospital was accompanied by a shift in organizational structure from free-standing hospitals to vertically and horizontally integrated multi-hospital systems, controlled to a varying degree by centralized, corporate management. A multi-
hospital system is defined as a nonfederal and non-state organization owning, managing or leasing two or more hospitals (American Hospital Association 1980). Generally research focusing on multi-hospital systems distinguishes between owned or leased facilities and managed facilities because some not-for-profit hospitals are managed by for-profit systems.

Hospital systems have emerged in the for-profit and not-for-profit sectors. Of particular interest was the growth of for-profit hospital systems into mega-corporations such as Hospital Corporation of American, American Medical International and Humana Inc. The concentration of large corporate-owned for-profit hospital systems was described in 1980 by Arnold Relman, editor of the New England Journal of Medicine, as the "new medical-industrial complex":

a large and growing network of private corporations engaged in the business of supplying health care services to a patient for a profit -- services heretofore provided by nonprofit institutions or individual practitioners" (Relman 1980: 963).

As with independent facilities, multi-hospital systems
are classified as for-profit, not-for-profit and public. In 1980, 38 percent of all system owned/leased hospitals were investor owned (Table 2). Catholic and other religious organizations owned or leased 35 percent and 23 percent were part of secular not-for-profit systems. With beds, 42 percent were owned or leased by religious organizations and 27 percent and 23 percent were owned by for-profit and secular not-for-profit corporations respectively. By 1985, not only did the for-profit sector account for the largest portion (42 percent) of all system hospitals, they had grown at a rate faster than other sectors except for public systems. Furthermore, the number of for-profit beds increased to 31 percent of all system beds (growing by 72 percent). Only religious-systems (other than Catholic-owned) grew faster. As indicated in Table 3, the majority of for-profit hospitals have been a part of larger multi-hospital corporations since 1980, and the proportion has been increasing significantly between 1980 and 1985 from 53 percent to 77 percent. The number of system-owned for-profit beds increased from 64 percent to 83 percent of all for-profit hospital beds in the same period.
<table>
<thead>
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<tbody>
<tr>
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<td>NUMBER</td>
<td>PERCENT</td>
<td>NUMBER</td>
<td>PERCENT</td>
<td>NUMBER</td>
<td>PERCENT</td>
</tr>
<tr>
<td>For-Profit</td>
<td>403</td>
<td>37.9%</td>
<td>682</td>
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<td>279</td>
<td>69.2%</td>
</tr>
<tr>
<td>Secular Not-For-Profit</td>
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<td>24.2%</td>
<td>392</td>
<td>24.3%</td>
<td>134</td>
<td>51.9%</td>
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<tr>
<td>Catholic</td>
<td>266</td>
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<td>312</td>
<td>19.3%</td>
<td>46</td>
<td>17.3%</td>
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<tr>
<td>Other Religious</td>
<td>101</td>
<td>9.5%</td>
<td>159</td>
<td>9.9%</td>
<td>58</td>
<td>57.4%</td>
</tr>
<tr>
<td>Public</td>
<td>36</td>
<td>3.4%</td>
<td>69</td>
<td>4.3%</td>
<td>33</td>
<td>91.7%</td>
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<td>Total</td>
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<td>1,614</td>
<td>100.0%</td>
<td>550</td>
<td>51.7%</td>
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<td></td>
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<td>NUMBER</td>
<td>PERCENT</td>
<td>NUMBER</td>
<td>PERCENT</td>
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<tr>
<td>For-Profit</td>
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<td>26.7%</td>
<td>101,859</td>
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<td>42,692</td>
<td>72.3%</td>
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<td>79,631</td>
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<td>59.9%</td>
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<td>Catholic</td>
<td>74,702</td>
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<td>84,306</td>
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<tr>
<td>Other Religious</td>
<td>19,048</td>
<td>8.6%</td>
<td>36,726</td>
<td>11.2%</td>
<td>17,678</td>
<td>92.8%</td>
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<tr>
<td>Public</td>
<td>18,397</td>
<td>9.3%</td>
<td>25,262</td>
<td>7.7%</td>
<td>6,865</td>
<td>37.3%</td>
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<tr>
<td>Total</td>
<td>221,064</td>
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<td>327,784</td>
<td>100.0%</td>
<td>106,720</td>
<td>48.3%</td>
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TABLE 3
NUMBER OF FOR-PROFIT HOSPITALS AND BEDS (1)
1980-1985
(United States and Puerto Rico)

### HOSPITALS

<table>
<thead>
<tr>
<th>YEAR</th>
<th>SYSTEM-OWNED</th>
<th></th>
<th></th>
<th>INDEPENDENT</th>
<th></th>
<th></th>
<th></th>
<th>TOTAL</th>
</tr>
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<tr>
<td></td>
<td>NUMBER</td>
<td>PERCENT</td>
<td>NUMBER</td>
<td>PERCENT</td>
<td></td>
<td></td>
<td></td>
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</tr>
<tr>
<td>1980</td>
<td>534</td>
<td>52.6%</td>
<td>482</td>
<td>47.4%</td>
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<td></td>
<td>1,016</td>
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<tr>
<td>1981</td>
<td>586</td>
<td>57.5%</td>
<td>433</td>
<td>42.5%</td>
<td></td>
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<td>1982</td>
<td>668</td>
<td>63.9%</td>
<td>377</td>
<td>36.1%</td>
<td></td>
<td></td>
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<tr>
<td>1983</td>
<td>755</td>
<td>67.5%</td>
<td>363</td>
<td>32.5%</td>
<td></td>
<td></td>
<td>1,118</td>
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</tr>
<tr>
<td>1984</td>
<td>890</td>
<td>74.6%</td>
<td>303</td>
<td>25.4%</td>
<td></td>
<td></td>
<td>1,193</td>
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<tr>
<td>1985</td>
<td>1,010</td>
<td>77.8%</td>
<td>289</td>
<td>22.2%</td>
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<td></td>
<td>1,299</td>
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<tr>
<td>CHANGE</td>
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<td>(193)</td>
<td>-40.0%</td>
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### BEDS

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<tr>
<td>1982</td>
<td>89,171</td>
<td>73.8%</td>
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<td></td>
<td></td>
<td>120,848</td>
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<td>1983</td>
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<td>76.4%</td>
<td>30,996</td>
<td>23.6%</td>
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<tr>
<td>1984</td>
<td>114,477</td>
<td>80.9%</td>
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<td>19.1%</td>
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<td>127,559</td>
<td>82.9%</td>
<td>26,237</td>
<td>17.1%</td>
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<td>(14,910)</td>
<td>-36.2%</td>
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1. Includes specialty and general hospitals.

Source: Federation of American Hospitals,
2.2.1 Benefits of Membership in Multihospital Systems

The growth of multihospital systems has been attributed to their comparative advantages. These include economic; manpower and planning; and program and organizational benefits (Zuckerman 1979; Ermann and Gabel 1984, 1986; Lewin 1981).

The economic benefits of system-owned hospitals over the independent hospital are their comparative advantage in: 1) obtaining access to capital; 2) increasing efficiency and economies of scale; and 3) diversification. First, debt financing rather than philanthropy and government subsidies is now the principal source of funding for capital projects in the hospital industry. (Cohode and Kinkead 1984; Charhut 1984). System-owned hospitals have higher bond ratings than independent hospitals (Kidder, Peabody and Co. 1982). Thus a system-owned hospital has the advantage in use of debt financing for capital investment. Furthermore for-profit systems are viewed even more favorably by financial lenders. This in combination with their ability to issue stock gives them greater access to capital financing.

Second, system-owned hospital can achieve greater
economies of scale than independent hospitals through group
discounts achieved by centralized purchasing; shared
services and equipment; and centralized management expertise
in functions such as finance, marketing and planning
(Zuckerman 1979; Ermann and Gabel 1984,1986). Ermann and
Gabel noted an additional fiscal advantage specific to the
for-profit system. Construction cost are lower because
advantageous relationships can be established with building
firms which result in lower costs over time (1986).

A third advantage of systems is the greater opportunity
to diversify into new lines of business, both hospital and
nonhospital-oriented. Vertical integration can provide the
system with an additional source of capital; increase
financial stability as costs and risk can be distributed
more broadly; and sustain growth by capturing patients as
they move between services (Ermann and Gabel, 1984,1986).

Manpower and personnel management are other areas of
benefits associated with multihospital systems. Research
shows that systems are better able to recruit and retain
highly qualified personnel, particularly in rural areas
(Zuckerman 1979:294). Overall, if the system hospital can
recruit more effectively, it will likely have strong
clinical and management capabilities which result in a greater availability and depth of services to the hospital’s service area population (Zuckerman 1979:294).

Finally multihospitals are thought to have organizational benefits. Affiliations can provide linkages to member hospitals which may enhance referral networks both into and out of member hospitals. It also has been argued that multihospital systems can support hospitals in areas, such as rural locations, which could not otherwise survive. Furthermore, multihospitals can support a broader array of services than an independent hospital could provide. Systems also can pilot new programs implementing them system-wide (Ermann and Gabel, 1986).

These benefits have become more pronounced in the changing market conditions of the 1970s and 1980s. Utilization controls and the over-supply and malapportionment of beds and services forced hospitals to look for ways to decrease the number of beds and reapportion services (Brown 1979). Multi-hospital systems had the capacity to redistribute beds and services while maintaining a broad array of services through cross-subsidization of services. Cross subsidization, practiced to some extent in
all hospitals, is a management strategy where the cost of less profitable services are absorbed by profitable services. Because systems could cross subsidize between as well as within hospitals, they could "maintain their attractiveness to consumers and simultaneously reduce duplication and, therefore, costs" (Barret 1984: 8).

Finally, large debts incurred by many hospitals as a result of over expansion caused by the Hill-Burton Act and the cost containment measures of the 1970s and 1980s increased the gap between the cost of services and reimbursable expenses, and made the independent hospitals a risky investment.

Therefore, many independent hospitals found themselves faced with several options to remain financially solvent.

"1) seek acquisition by a for-profit or not-for-profit chain; 2) diversify and expand vertically; 3) merge [to form a new chain]; 4) hire contract management; 5) take forceful measure to maintain current market share; 6) convert into another type of institution; and 7) close" (Kennedy 1983: 11).

In the case of both voluntary and for-profit independently-owned hospitals, acquisition by a multi-hospital corporation was frequently adopted as the option.
2.3 Qualitative and Quantitative Differences Between For-Profit, System-Owned and Independent Hospitals

The debate over the emerging organizational and ownership changes occurring within the American health care system focused on whether these new organizations behave differently from the previous generation of hospitals. Studies have analyzed differences by examining cost, pricing, patient and service mix, and quality.

The following review recaps only the salient points of these studies in order to provide a framework for discussing locational strategies of the for-profits. It is important to note that all studies reviewed were conducted prior to 1983 when reimbursement was on a cost- or charge-based system and they do not analyze how the current Medicare prospective payment system affected differences across organizational and ownership categories.

2.3.1 Cost and Pricing

The for-profit hospital should be able to operate in a more cost efficient manner and therefore should provide services at a lower cost (Gray et. al. 1986). On the other
hand, physicians (who have historically favored the not-for-profits) can use their collective power to increase the cost structure of the for-profits (Arrow 1972). In the long-run this would reduce the operating efficiency of for-profits.

The majority of empirical studies, to date, have not supported expectations of operating efficiencies within the for-profit sector (Lewin et. al. 1981; Pattison and Katz 1983, 1986; Becker and Sloan 1985; Watt et. al. 1986; Coelen 1986). Studies analyzing operating expenses consistently found that expenses per patient day were higher in for-profits but expenses per admission were lower. This was true in system-owned for-profits as compared to not-for-profits (both independents and systems). Cost in these studies have been measured in terms of accounting costs such as expenses, charges and revenues per admission and per patient day and have controlled for hospital size. Several explanations are given for these findings (Gray et.al. 1986). First, length of stay and occupancy rates are generally lower in for-profits, decreasing their ability to spread costs. Second, administrative costs are higher in the for-profits. Third, advantages gained from economies of
scale in purchasing are offset by greater use of ancillary services per patient days. Fourth, while for-profits staffing levels per bed are lower than other hospitals, their salary structure is higher. And finally, system-owned for-profits capital cost (as a percentage of their total operating costs) appear higher than other hospitals because their facilities are newer.

Not all studies found higher expenses per patient day, but concluded that system-owned for-profits were less costly when compared to independent for-profit and not-for-profit hospitals (Bays 1983; Lewin 1986; Sloan and Vracue 1983).

Another element of cost comparison is the price of care to the consumer (i.e., the individual or a third party vendor). Examination of pricing strategies, as indicated by the mark-up of charges over cost, has show that ancillary services in system-owned for-profits are more expensive (Watt et al. 1986; Pattison and Katz 1983). This is particularly true for services which are generally profitable, such as laboratory, inhalation therapy, pharmacy and central supply (Pattison and Katz 1983). Price mark-ups in the for-profit sector were even higher than mark-ups in other types of hospitals. Furthermore, the for-profits
used these services more frequently.

As a result of pricing strategies, rather than operating strategies, system-owned for-profits were more profitable. Therefore during a period when hospital constraints were minimal, for-profit hospitals were better able to compete successfully. The operational efficiencies attributed to the for-profits and thought to be the reason for their growth were not true for hospitals operating during the 1970s and early 1980s.

2.3.2 Quality of Care

Some have feared that an emphasis on cost efficiency in the for-profits is counter productive to assuring quality patient care and outcomes. Evidence to date does not support this claim. First, as discussed above cost efficiency does not appear that great in for-profits. Moreover, the argument that quality is inconsistent with profit incentives is not supported by conditions in other sectors of the health care industry.

As a developing concept, no unequivocal agreement exists on how to define and measure quality of health care.
It can be assessed through the examination of measures of service inputs or "means" (e.g. facilities, equipment, organizational characteristics, professional qualification of personnel and patient care activities) or by outcome or "ends" measures (e.g. mortality, infection rate, health status re-admissions, etc.).

In comparing quality of input measures across hospital ownership categories the results are mixed. Accreditation by the Joint Commission on Accreditation of Health Care Organizations (JCAHCO) show that in 1983 system-owned for-profits were more likely to be accredited (91 percent) than other hospitals. In comparison, 87 percent and 83 percent of not-for-profits (system-owned and independent) respectively were accredited followed by 52 percent of independent for-profits (Kravlovoc 1985; Gaumer 1986). Thus, the for-profit systems either more frequently sought JCAHO accreditation or were better able to secure accreditation. The accreditation process is intensive and requires significant administrative time. System-owned hospitals appear better able to develop methods to streamline and to coordinate the process that are not currently achievable by independents.
Other measures of quality are based on the professional qualifications of a hospitals medical and clinical personnel. A study of the medical staffs showed that for-profits (system-owned and independents) showed that they had lower rates of board certification as compared to not-for-profits (Morrisey et al. 1986). Additional studies of the comparative quality of professional staffs (the number of registered and licensed nurses per bed and governance and physician preference) showed no significant differences between for-profits and not-for-profit systems and independents (American Hospital Association 1984; Musacchio et al. 1986).

Comparative analysis of outcomes by hospital ownership categories have been limited. One study, however, showed no apparent differences in surgical outcomes across hospital ownership categories (Gaumer 1986).

It does not appear that quality is affected by the provision of care in for-profit settings. In fact, there is evidence that the consolidation of the for-profits into systems has improved the overall quality as indicated high rates of accreditation particularly compared to independent hospitals (Gray et al. 1986).
2.3.3 Access to Care

For-profit hospitals, according to some, have adopted patient and service strategies which prohibit access to certain sectors of the population, particularly those patients unable to pay for services. The willingness of hospitals of different ownership status to provide services to the medically indigent can be measured by their level of uncompensated care and the rate in admissions of uninsured patients (Grey et al. 1986).

One survey, conducted in 1981, indicated that for-profit hospitals (6 percent) had a smaller percentage of uninsured admissions when compared to not-for-profit (7.8 percent) and public (17 percent) hospitals (Rowland 1984). Data from the American Hospital Association's 1983 Annual Survey of Hospitals showed no statistical difference between for-profit and private not-for-profit hospitals in their provision of care to the uninsured as measured by the percentage of bad debt and charity care.

State data showed another picture. Gray et al. (1986) compared the percentage of uncompensated care for different ownership categories in four states (Florida 1982; Tennessee
1983; Texas 1983; California 1981-82; Virginia 1982). For-profits had a smaller proportion of uncompensated care in comparison to other hospitals. In Tennessee and California system-owned for-profits had the lowest levels of uncompensated care. Thus, it would appear that state by state differences exist in the amount of uncompensated care a hospital will provide.

Two studies compared the total patient revenue for charity care and bad debt before and after acquisition by a for-profit chain within Florida and California. They indicated that uncompensated care declined after acquisition (Brown and Klosterman 1986; Pattison 1986). The declines, however, could be an artifact of improved collection procedures rather than their unwillingness to provide uncompensated care.

Conclusive support that for-profit hospitals inhibit access cannot be found in the literature. However, the research raises several issues. First, by focusing on paying patients, do for-profits reduce the ability of other hospitals to cross-subsidize uncompensated care. Second, do for-profits reduce uncompensated care by offering fewer services, particularly those more likely to be used by
nonpaying patients. Data from the American Hospital Association suggested that for-profits offer slightly fewer services, but do not support that services not offered were necessarily money-losers or services needed by the medically indigent (Grey et al. 1986).

2.4 Summary

The growth of the contemporary for-profit hospital has been attributed to the historic concurrence of a number of factors (Gray et al. 1987, Bohland and Knox 1989). Increased demand for services, scientific and technological advancements, and the standardization of services and medical care providers initially led to the commodification of health care which increased the acceptance of for-profit delivery of hospital services. An influx of health care dollars in the form of government-sponsored and commercial insurance then created new consumer markets which led to higher levels of payment for services. The higher profit margins available to for-profits gave them better access to capital in financial markets anxious to invest in the expanding health care industry. Finally, a pro-market
approach to cost containment increased the acceptance of the for-profit hospital.
3.0 ACCESS TO CAPITAL AND THE LOCATION OF FOR-PROFIT HOSPITALS

3.1 Sources of Capital Financing

For any institution, profit or nonprofit, access to affordable capital financing is critical for long-range growth (Bohland and Knox 1989). Capital is required to maintain, update or build facilities; purchase equipment; develop new services; or pay off debt. Thus, where capital can be secured will influence the behavior of an institution. Different ownership status in hospitals responded to societal factors which changed the sources of capital needed for investment (Hollingsworth and Hollingsworth 1987, Bohland and Knox 1989). "Public hospitals [have] emerged in areas where the demands for collective goods are homogeneous and there has been a considerable consensus about the role of hospitals" (Hollingsworth and Hollingsworth 1987). In these areas, funding could be appropriated from local governments. Voluntary or private not-for-profit hospitals, on the other hand, developed in areas with strong ethnic and religious diversity where cohesive and well-organized ethnic groups
were able to garner philanthropic support. For-profit hospitals in contrast tended to locate in areas which, for numerous reasons, were unable to provide funding for not-for-profit and public hospitals. Because the early for-profits were considerably smaller and offered fewer services, their capital requirements were small and could generally be supported through their owner-physician and patient fees. As the physician-owners died or retired, or as patient fees were unavailable to support services, for-profits closed or converted to nonprofit status.

In the early years, the sources of capital for hospitals were distinct: not-for-profits primarily relied on private philanthropy; the publics principally on government subsidies; and the for-profits solely on the paying patient. Over time the sources of capital for hospitals became more diversified. Sources included philanthropy; government subsidies; profit margins; debt financing; and equity financing.

Ownership, however, still influences where capital can be obtained. For-profit hospitals typically do not have access to philanthropy or direct federal subsidies. Also, while for-profits do have access to tax-exempt bonds (one
form of debt financing), there are limits on the amounts which can be borrowed. Not-for-profits, on the other hand, cannot use equity financing, the sale of stock certificates, as a source of capital as can the for-profits. Moreover, financial institutions loan monies based on credit risk and system-owned hospitals generally have had higher bond ratings than independents. Furthermore, data on for-profits and not-for-profits systems indicate that for-profit systems have the most favorable position with lenders. Because of its greater profit margin, asset and equity base, and greater debt capacity, the system hospital is considered a better risk than the independents (Ermann and Gabel 1984).

For the for-profits and not-for-profits, however, sources also have begun to converge (Hollingsworth and Hollingsworth 1987; Gray 1986; Bohland and Knox 1989). Not-for-profit hospitals now compete for some of the sources of capital, with the exception of equity, used by for-profits: excess revenues from paying patients and debt financing. Data from 1975 to 1983, showed philanthropic and government funds declined from 44 percent to 16 percent as debt increased from 18 percent to 69 percent of financing for all hospital related construction (Cohodes and Kinkead 1984,
Charhut 1984). In 1981, the not-for-profits funded construction through about 78 percent debt; 7 percent internal reserves; 11 percent government grants and 2 percent philanthropy. In 1969, their construction was funded 12 percent philanthropy; 10 percent government grants; 9 percent internal reserves and the remaining 69 percent was debt.

3.2 Location Strategies and Capital Acquisition

The elements of a business's marketing strategy traditionally has included a mix of: 1) the type of products or services offered; 2) the location where services are offered; 3) pricing; and 4) promotion. These elements will influence who uses the products and services of a business. For hospitals three strategies impact their mix of patients: 1) recruitment of physicians with financial sound practices and patient; 2) location and 3) denial of all but emergency care for those who can not pay (Brown and Klosterman, 1986). It is more likely that the first two strategies will be employed because of medical liability and ethical issues which would be raised by society. For
hospitals, location determines the character of the hospital's service area which in turn influences the payer mix and services to be offered as well as the price to be charged.

As with sources of capital, the locational strategies of not-for-profits and for-profits have converged. Location has become a critical factor in determining market conditions that influence lenders and investors. The independent not-for-profit hospitals, with large sunken costs and high community orientation have no locational flexibility. They can only enhance, add or delete services to improve their financial and lending position or develop freestanding services in order to build new consumer markets. For the independents, their locational options are limited to their immediate service areas. Because the systems self-select into markets and do not just randomly acquire hospitals, they can use location as a tool to control factors which will sustain their long-term ability to secure affordable capital. Systems, particularly for-profit, can choose to build or acquire hospitals based on selective criteria which support the overall viability of the system and aid collectively to their ability to acquire
new capital.

Ermann and Gabel stated that "non-profit and for-profit systems showed marked differences in their locational decisions" (1985: 413). Regionally, for-profit systems tend to own hospitals across the U.S. but with a concentration of units within the Sunbelt. Approximately 60 percent of all for-profit system units are in the states of California, Texas, Florida, Louisiana, Alabama, Georgia and Tennessee (1985 Directory of Investor Owned Hospitals and Hospital Management Companies). The not-for-profit system hospitals, in contrast, generally located within the region of the system headquarters.

The importance of location in the growth of system hospitals is reflected in their acquisition strategies (Alexander, Lewis, and Morrisey 1987). Hospitals in favorable markets with strong management are the strongest candidates for acquisition. Next are hospitals in strong markets but with weak management. Hospitals in less favorable markets but with strong management may be considered for acquisition if the hospital would meet the criteria for some goal other than growth in market share (i.e. specialty service providers, potential closure to
reduce competition or convert to other use). Hospitals in weak markets with weak management are avoided. The logic is apparent. Systems can offer improvement to the hospital with weak management -- a controllable factor -- but cannot impact the inherent characteristics of the population served (Alexander, Lewis and Morrisey 1987). Since most for-profit hospital systems are national rather than regional in scope, they have greater flexibility in locating facilities in order to sustain growth and ensure profitability.

Several studies have examined the characteristics of the locations chosen by for-profit hospitals (Steinwalde and Neuhauser 1970; Mullner, Byne and Kubal 1981; Bays 1983; Ermann and Gabel 1984; Watt et. al. 1986; Alexander, Lewis and Morrisey 1987; Bohland and Knox 1989). These characteristics can be broadly classified as demographic, socio-demographic, competition and health service availability. Each of these will be discussed below as to expected usage patterns of hospital services and previous findings regarding their relationship to locational attributes of for-profit hospitals.
3.2.1 Demographics: Population Size and Growth

For-profit hospitals seek markets in areas experiencing population growth. Growth areas generate demand for services at rates which cannot be readily met by existing providers. Once population stabilizes or declines, the for-profit may close or convert to non-profit status (Steinwald and Neuhauser 1970; Bays 1983).

Studies of the geographical pattern of for-profits, independents and systems, showed they tended to locate in small and medium sized cities particularly in the suburban areas of the boom cities of the Sunbelt (Ermann and Gabel 1984); areas which have been growing at higher rates than other locales. Not-for-profit systems in comparison tended to be located in the Northern half of the United States; areas marked by relatively slower population growth rates.

Bays' study of for-profit hospitals operating from 1971 through 1977, however, suggested that population growth was not the principal factor explaining a state’s increase in for-profit market share (Bays 1983). Previous increases in utilization rates were more predictive of growth. In Bay's study, states experiencing high population growth did not
experience increases in market share of for-profit hospital beds. States with slower rates of population growth, on the hand, experienced growth due to their ability to compensate for slower market growth than their not-for-profit counterparts.

Bays (1983) attributed his findings to the stability in the absolute number of not-for-profit and for-profit hospitals during this period, which contrasts to other studies where the absolute number of not-for-profit hospitals was increasing and for-profits declining (Bays, 1983: 854). Also, significantly the 70s was the period then the shift of the for-profits from independents to system-owned occurred.

In the 1980s a growing area should be a critical factor in the location of for-profits. During the 1980s utilization of inpatient hospital services declined from 168 discharges per 1,000 population in 1980 to 138 per 1,000 in 1986, an 18 percent decline (National Center for Health Statistics, 1989). A strategy to sustain long-term growth would be to serve a population which is growing at a rate high enough to offset declines in utilization rates (including discharges, lengths-of-stay and occupancy).
While inpatient utilization rates have been and are expected to continue to decline, the proportion of outpatient services increased. To offset lower profit margins for inpatient services, hospitals have diversified their service offerings. The size and growth of a service area’s population, thus is an important factor to considered when examining the desirability of a market.

3.2.2 Socio-demographic Determinants

Several important attributes of the patient population of an area include income, race, age structure and occupational status. These characteristics are important determinants of the type of patients a hospital will serve.

Studies have shown that income is associated with health services utilization. The relationship is curvilinear with higher use rates for those with high or low incomes and lower for those with middle incomes. Data from the National Health Interview Survey (1987) indicated that the number of physician contacts was higher for families with incomes of less than $10,000. Fewer of these contacts were at a doctor’s office, but instead were in
hospital-based outpatient departments. Furthermore, inpatient discharges declined substantially as income increased. Income levels, as measured by the proportion of population below the poverty level, are also indicative of the expected amount of charity care, bad debt and Medicaid patients and general level of insurance coverage. While Medicaid insures coverage, it does not provide a return on equity which is equal to market costs of capital (Bays 1983), and therefore Medicaid patients are no longer a source of profit as they were in the 1970s.

To maximize profit, one would expect for-profit hospitals concentrated in areas with growing or high income levels and with a low percentage of population below the poverty level. Studies to date, however, are not conclusive on the relationship of income with the location of for-profit hospitals. Bays (1983) hypothesized that increases in personnel income would lead to a decline in for-profit market share; however, this was not supported by empirical evidence. Watt et al., for example, found that for-profit hospitals in 1980 "did not avoid counties with relatively higher rates of poverty..." controlling for regional differences in the location of different hospital types.
The racial mix of a population is another important predictor of health services use. Because race is associated with lower income levels, higher unemployment, and lower occupational status, it is not clear whether racial or other characteristics are the important attributes. With these associated attributes, it would be expected that for-profits would avoid areas with a large minority population. Yet, for-profits apparently do not avoid locations with large proportion of minorities (Watt et al., 1986).

Another predictor of service utilization is age. In 1987, the elderly were discharged from acute care hospitals at a rate of 350.9 per 1,000 population as compared to 138.2 per 1,000 population for all age groups (National Center for Health Statistics, 1989). A high proportion of elderly is also directly correlated with the use of Medicare. Prior to the implementation of prospective pricing, a high proportion of elderly population almost guaranteed profitability. However, in the 1980s, unless hospitals can effectively administer services, the elderly population can spell fiscal disaster.
The age structure is also an common indicator of family structure. For example, a higher proportion of population under the age of 15 usually indicates a young family structure; a population which generally uses hospital services less frequently. On the other hand, the utilization of hospital services increases with age. Bays found that "growth in the size of the Medicare population [was] associated with increases in the market share of profits..." from 1971 to 1977 (1983:856). Watt et al., also found that for-profits generally located in areas with a high concentration of elderly. Therefore for-profits, prior to the implementation of Medicare's prospective pricing, targeted areas with a concentration of elderly.

Occupational status is also an important indicator of a populations ability to pay. A large proportion of professionals suggests a well-insured population. And, therefore in combination with other socio-demographic attributes, this should be attractive to for-profit hospitals.
3.2.3 Competition and Health Services Availability

In addition to potential client attributes, the attractiveness of a location is also influenced by the health services capacity and the business climate of an area, an indicator of service availability and competition. One would expect for-profits to avoid areas of intense competition, as measured by a high hospital bed to population ratio. Watt et al., for example, showed that for-profit system hospitals did locate in areas with lower bed-to-population ratios but not in rural areas, suggesting that some level of competition was desirable (1986).

A low bed-to-population ratio coupled with a relatively high physician-to-population ratio would also be attractive to the for-profits. Because competition for providers is limited, the for-profits would be able to attract a desirable physician mix (Brown and Klosterman 1986).

Other characteristics associated with the location of for-profit hospitals include a weak regulatory environment (e.g. limited Certificate of Need regulations) and minimal union activity.
3.3 Summary

Initially, for-profit hospitals tended to located in growth areas in the South and Southwest. Income levels were high enough to support small physician-owned hospitals and no strong tradition of voluntary or public commitment to health services existed. While the contemporary for-profit hospital has a similar geographic pattern, the spatial pattern of their growth supports location strategies, steered from a corporate perspective, to secure capital in order to seek profit maximization (Bohland and Knox 1989).

Therefore, based on the literature, we would expect a clear pattern of location attributes to be associated with for-profit hospitals. This study will contribute to the literature on the location patterns of for-profit hospitals in two ways. First, the study will examine the attributes associated with the market share of for-profit beds at a single point in time. Then, changes overtime in market share and the attributes associated with these changes will be examined. Other studies have examined locational patterns from one but not both perspectives.
4.0 METHODOLOGY

4.1 Problem Statement

Based on a theory of for-profits which emphasizes the role of capital acquisition, the distribution of for-profit hospitals should conform to a strategy to increase profitability by increasing the availability of paying patients. This strategy, in turn, should increase the attractiveness of for-profits to lenders.

Based on the literature, we would expect the following factors to be important to the location decisions of for-profits: 1) population size and growth; 2) high socio-economic levels; and 3) limited competition. This study was constructed to better understand the distribution of and growth patterns of for-profit hospitals as a function of a service area's market conditions both from a static and growth perspective.

4.2 The Study Area

The unit of analysis for the study was all U.S.
counties in eighteen Southern and Southwestern states which had at least one for-profit hospital in 1970 or 1980.¹

Confining the analysis to these states was done to focus on states where for-profits were concentrated. In both 1970 and 1980, three-fourths of all for-profit hospitals and beds were located in this region. Also, limiting the study to this region provided some control for regional factors such as regulatory environments and labor costs.

From 1970 to 1980, 358 counties in the study area had at least one for-profit hospital. (See Table 4.) In 1970, about 70 percent of the counties were non-metropolitan. By 1980, this percentage had declined to 58 percent.

In 1970, short-term public and private community and specialty hospitals (excluding psychiatric and long-term hospitals) totaled 1,710 and 270,757 beds, of which 579 hospitals with 39,466 beds were for-profits. In 1980, there were 1,836 hospitals and 373,924 beds, of which 536 of the hospitals and 65,756 beds were for-profits. Thus, while the total number of hospitals in the study area increased by

¹. The states included Virginia; West Virginia; North Carolina; South Carolina; Georgia; Florida; Kentucky; Tennessee; Alabama; Mississippi; Missouri; Arkansas; Louisiana; Oklahoma; Texas; New Mexico; Arizona; and California.
### TABLE 4

**DESCRIPTIVE STATISTICS FOR STUDY AREA**

**1970 and 1980**

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<th>Hospitals:</th>
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<td>Total No. of U.S. For-Profit Hospitals</td>
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<th>1970</th>
<th>1980</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total No. of U.S. Hospital Beds</td>
<td>1,030,000</td>
<td>N/A</td>
</tr>
<tr>
<td>Total No. of U.S. For-Profit Beds</td>
<td>53,000</td>
<td>5.15</td>
</tr>
<tr>
<td>No. of Beds in Study Area</td>
<td>270,757</td>
<td>26.29</td>
</tr>
<tr>
<td>No. of For-Profit Beds in Study Area</td>
<td>39,466</td>
<td>34.07</td>
</tr>
<tr>
<td>As a % of all U.S. Beds</td>
<td>N/A</td>
<td>3.83</td>
</tr>
<tr>
<td>As a % of all U.S. For-Profit Beds</td>
<td>N/A</td>
<td>74.46</td>
</tr>
</tbody>
</table>

| No. of States in Study Area | 18 | N/A |
| No. of Counties in Study Area | 358 | N/A |
| No. of Metropolitan Counties | 108 | 30.20 |
| No. of Non-Metropolitan Counties | 250 | 69.80 |

| Average No. of Beds Per Hospital, U.S. | 161.7 | N/A |
| Average No. of Beds Per For-Profit Hospital, U.S. | 68.9 | N/A |
| Ave. No. of Beds Per Hospital, Study Area | 158.3 | N/A |
| Ave. No. of For-Profit Beds Per Hospital, Study Area | 88.2 | N/A |

N/A means not applicable.

   Includes federal and non-federal short-term general and other specialty hospitals, except psychiatric institutions.

2. Includes for-profit short-term general and other specialty hospitals.
about 7 percent, the number of for-profit hospitals decreased by 7.5 percent. The number of for-profit beds, however, increased by 67 percent compared to 38 percent for all beds.

4.3 Data

Data for the study were collected from multiple sources, including: the American Hospital Association's (AHA) Hospital Guide (1971 and 1981 editions); the 1971 National Master Facility Inventory for Hospitals (NMFI); the 1970 and 1980 U.S. Census of Population (Volume C); the 1983 County and City Data Book and the Center for Health Services Research and Development's Distribution of Physicians in the U.S., 1970.

Data on for-profit hospitals and beds in 1980 were extracted from the Hospital Guide. The NMFI provided data on the total number of hospitals and beds by ownership in 1970. The County and City Data Book provided data on the number of physicians, total number of hospitals and beds and the number of Medicare enrollees and reimbursement for 1980. The number of physician in 1970 was taken from the
Distribution of Physicians in the U.S. report. U.S. Census figures were used for demographic and socio-economic data.

4.4 Steps in the Analysis

As a first step in this analysis an extensive database was constructed for each of the qualifying counties. For each county a range of demographic, socio-economic and health service competition indicators were collected for the years 1970 and 1980. The indicators were selected based on the review of the literature presented in the previous chapters. The variables included: total population; age structure; percent homeownership; percent of population living in an urban area; metropolitan-nonmetropolitan county status, in- and out-migration, labor force, employment, income and poverty indicators; number of nonwhites; the number of and the amount of reimbursement for Medicare enrollees; the number of physicians; the number of total hospitals and beds and the number of for-profit hospitals and beds.

To determine the initial set of variables to be used in this analysis, correlation statistics were run on all of the
variables. Variables with a high degree of correlation were deleted. Eight variables were retained and included: median family income; percent nonwhite population; percent of population 65 years of age and older; percent of population 15 years of age and younger; percent of persons employed in professional/managerial occupations; percent of population below the poverty level; percent of population living in urban areas (2,500 or more people) and the number of physicians per 1,000 population.

These eight variables represented an initial set of independent variables to be tested. To define the independent dimensions of the data, a principal component analysis was conducted. This method was selected to remove any correlation effects among the independent variables. An orthogonal rotation was used to ensure that the dimensions which resulted were independent of one another and thus reduce collinearity among the variables. A variable was included within a given dimension if it had a factor loading of .4 or greater.

The variable loadings defined three factors which accounted for 83 percent of the total explained variance among the variables. (See Table 5.) The first factor,
<table>
<thead>
<tr>
<th>VARIABLES</th>
<th>SUBURBANIZATION</th>
<th>SOCI-ECONOMIC</th>
<th>AGE STRUCTURE</th>
<th>COMMUNALITY</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>I</td>
<td>II</td>
<td>III</td>
<td></td>
</tr>
<tr>
<td>PHYSICIANS/1,000</td>
<td>0.83</td>
<td></td>
<td></td>
<td>0.74</td>
</tr>
<tr>
<td>% PROFESSIONALS</td>
<td>0.88</td>
<td></td>
<td>0.8</td>
<td></td>
</tr>
<tr>
<td>% MINORITIES</td>
<td></td>
<td>0.82</td>
<td></td>
<td>0.84</td>
</tr>
<tr>
<td>% POVERTY</td>
<td>-0.48</td>
<td>0.81</td>
<td></td>
<td>0.89</td>
</tr>
<tr>
<td>MEDIAN FAMILY INCOME</td>
<td>0.68</td>
<td>-0.53</td>
<td></td>
<td>0.87</td>
</tr>
<tr>
<td>% URBAN</td>
<td>0.86</td>
<td></td>
<td></td>
<td>0.76</td>
</tr>
<tr>
<td>% 15 YEARS OLD AND YOUNGER</td>
<td></td>
<td></td>
<td>0.86</td>
<td>0.89</td>
</tr>
<tr>
<td>% 65 YEARS AND OLDER</td>
<td></td>
<td></td>
<td>-0.87</td>
<td>0.84</td>
</tr>
<tr>
<td>EIGEN VALUE</td>
<td>3.48</td>
<td>1.79</td>
<td>1.35</td>
<td></td>
</tr>
<tr>
<td>% EXPLAINED VARIANCE</td>
<td>43.5</td>
<td>22.4</td>
<td>16.8</td>
<td>82.7</td>
</tr>
</tbody>
</table>

1. Only factor loadings of .4 or greater are shown.
labeled suburbanization, explained about 44 percent of the variance. Variables which loaded high on this factor included: the percent of persons employed in professional/managerial occupations; percent of population living in urban area (2,500 or more persons); the number of physicians per 1,000 population; and median family income. An additional variable was also loaded on this dimension, percent of population below the poverty level, but had a high negative loading. The second factor, which explained 22 percent of the variance, was defined by positive loadings on percent minorities and percent of population below the poverty level. Median family income had a high negative loading. It was labeled socio-economic status. The age structure of the population was defined by the third factor. Variables loading on this factor were the percent of population 15 years of age and younger with a positive loading and the percentage of population 65 years of age and older with a negative loading. This factor explained about 17 percent of the total variance. To operationalize the research questions for this study, these factors were used as the basis for the development of two models.
4.5 Models

4.5.1 1980 For-Profit Market Share Model (1)

The first research question posed by this study is what locational characteristics best explain the spatial distribution of for-profit hospitals in 1980? To answer this question a model was developed based on the principal component analysis described above. The dependent variable was the market share of for-profit beds in 1980 which was measured as the percent of all hospital beds which were for-profit. An attempt was made to use the factor scores for each dimension as independent variables but the results were difficult to interpret. Therefore, the variable with the highest positive factor loading for each of the three dimensions was select as an independent variable. Thus the independent variables were the percent of nonwhite population in 1980; the percent of persons employed in professional managerial occupations; and the percent of population 15 years of age and younger. An additional variable, the number of total hospital beds per 1,000 population in 1980, was added as a measure of competition in
the home county of the for-profit hospital. Note that zero order correlations did not indicate a high degree of correlation among the variables. (See Table 6.)

To test the relationships posed in the research question a series of hypotheses were developed. For model the 1980 For-Profit Market Share Model (1), the hypotheses were:

H(1): The market share of for-profit hospital beds is positively associated with the proportion of the population employed in professional and managerial occupations in 1980.

H(2): The market share of for-profit hospital beds is positively associated with the proportion of a county's population 15 years of age and younger.

H(3): The market share of for-profit hospital beds is inversely associated with a high proportion of nonwhite population in 1980.

H(4): The market share of for-profit hospital beds is inversely associated with a high number of hospital beds per 1,000 population in a county in 1980.

The regression model used to test the effects of county location characteristics and the county's service capacity
<table>
<thead>
<tr>
<th>VARIABLE</th>
<th>DESCRIPTION</th>
<th>MSBEDS</th>
<th>TOTOCC</th>
<th>POP15</th>
<th>PMIN</th>
<th>TBED</th>
</tr>
</thead>
<tbody>
<tr>
<td>MSBEDS</td>
<td>% FOR-PROFIT HOSPITAL BEDS OF TOTAL HOSPITAL BEDS, 1980</td>
<td>1.000</td>
<td>-0.209</td>
<td>0.071</td>
<td>-0.128</td>
<td>-0.201</td>
</tr>
<tr>
<td>TOTOCC</td>
<td>% OF POPULATION EMPLOYED IN MANAGERIAL AND PROFESSIONAL OCCUPATIONS, 1980</td>
<td>-0.209</td>
<td>1.000</td>
<td>-0.254</td>
<td>0.143</td>
<td>0.049</td>
</tr>
<tr>
<td>POP15</td>
<td>% OF POPULATION 15 YEARS OF AGE AND OLDER</td>
<td>0.071</td>
<td>-0.254</td>
<td>1.000</td>
<td>0.282</td>
<td>-0.117</td>
</tr>
<tr>
<td>PMIN</td>
<td>% NONWHITE POPULATION, 1980</td>
<td>-0.128</td>
<td>0.143</td>
<td>0.282</td>
<td>1.000</td>
<td>0.159</td>
</tr>
<tr>
<td>TBED</td>
<td>NUMBER OF BEDS PER 1,000 POPULATION, 1980</td>
<td>-0.201</td>
<td>0.049</td>
<td>-0.117</td>
<td>0.159</td>
<td>1.000</td>
</tr>
</tbody>
</table>
on the market share of for-profit beds in 1980 was:

\[ Y_i = a + B_1 X_{1,i} + B_2 X_{2,i} + B_3 X_{3,i} + B_4 X_{4,i} \] (1)

where: in county i;

\( Y_i \) = the market share of for-profit beds in county i in 1980 (for-profit beds/total beds).

\( X_{1,i} \) = percent professionals/managers within the population in county i in 1980.

\( X_{2,i} \) = percent of population 15 years old and younger in county i in 1980.

\( X_{3,i} \) = percent of nonwhite population in county i in 1980.

\( X_{4,i} \) = the total number of beds per 1,000 population in county i in 1980.

The descriptive statistics showed that the data to be highly skewed as indicated by large standard deviations among the variables. (See Table 7.) For example, the possible range for the dependent variable was 0 percent to 100 percent with a standard deviation of 36.18. The percent of nonwhite population ranged from 6 percent to 66 percent with a standard deviation of 13. The total number of hospital beds per 1,000 population had a standard deviation of 6.5 and ranged from 0 to 77 beds per capita.
**TABLE 7**

1980 FOR-PROFIT MARKET SHARE MODEL
DESCRIPTIVE STATISTICS

<table>
<thead>
<tr>
<th>VARIABLE</th>
<th>DEFINITION</th>
<th>MEAN</th>
<th>STANDARD DEVIATION</th>
<th>MAXIMUM</th>
<th>MINIMUM</th>
<th>N</th>
</tr>
</thead>
<tbody>
<tr>
<td>MBED</td>
<td>% FOR-PROFIT BEDS IN 1980</td>
<td>34.03%</td>
<td>36.18</td>
<td>100.00%</td>
<td>0.00%</td>
<td>358</td>
</tr>
<tr>
<td>PMIN</td>
<td>% NONWHITE POPULATION, 1980</td>
<td>16.52%</td>
<td>13.07</td>
<td>66.28%</td>
<td>6.00%</td>
<td>358</td>
</tr>
<tr>
<td>TOCC</td>
<td>% OF POPULATION EMPLOYED IN MANAGERIAL AND PROFESSIONAL OCCUPATIONS, 1980</td>
<td>18.71%</td>
<td>5.12</td>
<td>44.15%</td>
<td>6.59%</td>
<td>358</td>
</tr>
<tr>
<td>POP15</td>
<td>% OF POPULATION 15 YEARS OF AGE AND YOUNGER, 1980</td>
<td>25.50%</td>
<td>3.79</td>
<td>49.61%</td>
<td>13.46%</td>
<td>358</td>
</tr>
<tr>
<td>TBED</td>
<td>NUMBER OF BEDS PER 1,000 POPULATION, 1980</td>
<td>6.07</td>
<td>6.50</td>
<td>77.36</td>
<td>0</td>
<td>358</td>
</tr>
</tbody>
</table>
4.5.2 For-Profit Market Share Growth Model, 1970-1980 (2)

A second model was used to analyze the relationship between changes in an area's location characteristics and changes in the market share of for-profits between 1970 and 1980. In this model, the dependent variable was the percent rate of change in for-profit beds between 1970 and 1980 \[ \left( \frac{\text{Beds}_{80}}{\text{Total Beds}_{80}} - \left( \frac{\text{Beds}_{70}}{\text{Total Beds}_{70}} \right) \times 100 \right) \]. In total seven independent variables were defined. Three of the independent variables measured location characteristics in 1970; three measured the percent rate of change for these variables between 1970 and 1980 and a seventh variable measured the level of competition for beds. The specific variables were: the percent of population living in an urban area in 1970; the percent rate of change in the number of persons in an urban area in 1980 from 1970; the percent of nonwhite population in 1970; the percent rate of change in the number of non-whites in 1980 from 1970; the total population in 1970; and the percent rate of change in population in 1980 from 1970. A dummy variable where "0" indicated a county with 0 or 1 hospital in 1970, and "1" represented a county with 2 or more hospitals in 1970 was
used to measure competition.

Again, these variables were selected based on the principal component analysis but indicators for 1970 were used instead of for 1980 and each were matched with an indicator which measured the percent rate of change form 1970 to 1980. Zero order correlation statistics did not indicate high levels of correlation among the variables.
(See Table 8.)

For this model the following hypotheses were tested:

H(1): Growth in market share was inversely related to competition.

H(2): Growth in market share was positively related to the growth in suburbanization, (i.e. an increased proportion of population in cities with 2,500 or more people.)

H(3): Growth in market share was inversely related growth in the proportion of nonwhites within a county.

H(4): Growth in market share was positively associated with growth in a county's population

The following model was used to examine growth or change in the market share of for-profit beds over time.
<table>
<thead>
<tr>
<th></th>
<th>FPBED</th>
<th>PMIN70</th>
<th>MINORITY</th>
<th>PURBAN</th>
<th>URBAN</th>
<th>TPOP70</th>
<th>POP</th>
<th>PA70</th>
</tr>
</thead>
<tbody>
<tr>
<td>FPBED</td>
<td>1.000</td>
<td>0.077</td>
<td>-0.058</td>
<td>0.196</td>
<td>0.048</td>
<td>0.017</td>
<td>0.165</td>
<td>-0.033</td>
</tr>
<tr>
<td>PMIN70</td>
<td>0.077</td>
<td>1.000</td>
<td>-0.254</td>
<td>0.033</td>
<td>-0.010</td>
<td>0.017</td>
<td>-0.174</td>
<td>0.091</td>
</tr>
<tr>
<td>MINORITY</td>
<td>-0.058</td>
<td>-0.254</td>
<td>1.000</td>
<td>0.370</td>
<td>-0.028</td>
<td>0.249</td>
<td>-0.178</td>
<td>0.197</td>
</tr>
<tr>
<td>PURBAN</td>
<td>0.196</td>
<td>0.033</td>
<td>0.370</td>
<td>1.000</td>
<td>-0.166</td>
<td>0.392</td>
<td>-0.044</td>
<td>0.422</td>
</tr>
<tr>
<td>URBAN</td>
<td>0.048</td>
<td>-0.010</td>
<td>-0.028</td>
<td>-0.166</td>
<td>1.000</td>
<td>-0.029</td>
<td>0.308</td>
<td>-0.090</td>
</tr>
<tr>
<td>TPOP70</td>
<td>0.017</td>
<td>0.017</td>
<td>0.249</td>
<td>0.392</td>
<td>-0.029</td>
<td>1.000</td>
<td>-0.047</td>
<td>0.153</td>
</tr>
<tr>
<td>POP</td>
<td>0.165</td>
<td>-0.174</td>
<td>-0.197</td>
<td>-0.044</td>
<td>0.308</td>
<td>-0.470</td>
<td>1.000</td>
<td>-0.114</td>
</tr>
<tr>
<td>PA70</td>
<td>-0.033</td>
<td>0.091</td>
<td>0.197</td>
<td>0.422</td>
<td>-0.090</td>
<td>0.153</td>
<td>-0.114</td>
<td>1.000</td>
</tr>
</tbody>
</table>
\[ Y_i = a + B_1 X_{1,i} + B_2 X_{2,i} + B_3 X_{3,i} + B_4 X_{4,i} + B_5 X_{5,i} + B_6 X_{6,i} + B_7 X_{7,i} \] (2)

where county \( i = \)

\( Y_i = \) change in market share of for-profit beds from 1980-1970 in county \( i \).

\( X_{1,i} = \) dummy variable where "0" represents a county with either 0 or 1 hospital and "1" represents a county with 2 or more hospitals in 1970.

\( X_{2,i} = \) percent of the population in county \( i \) that lives in an urban area (2,500 or greater population) in 1970.

\( X_{3,i} = \) percent rate of change in the number of persons living in urban areas from 1970-1980.

\( X_{4,i} = \) percent of population which are nonwhite in 1970.

\( X_{5,i} = \) percent rate of change in the number of nonwhites from 1970-1980.

\( X_{6,i} = \) total population in county \( i \) in 1970.

\( X_{7,i} = \) percent rate of change in population in county \( i \) from 1970-1980.

Again the descriptive statistics for this model indicated several variables to have large standard deviations. (See Table 9.) These variables included the dependent variable, the percent change in the market share
<table>
<thead>
<tr>
<th>VARIABLE</th>
<th>DEFINITION</th>
<th>MEAN</th>
<th>STANDARD DEVIATION</th>
<th>MAXIMUM</th>
<th>MINIMUM</th>
<th>N</th>
</tr>
</thead>
<tbody>
<tr>
<td>FPBED</td>
<td>PERCENT CHANGE IN MARKET SHARE OF FOR-PROFIT BEDS, 1970-1980</td>
<td>-0.04%</td>
<td>43.14</td>
<td>99.48%</td>
<td>-100.00%</td>
<td>358</td>
</tr>
<tr>
<td>PA70</td>
<td>DUMMY VARIABLE WHERE, 0 = 0 OR 1 HOSPITAL AND 1 = 2 OR MORE HOSPITALS</td>
<td>0.765</td>
<td>0.424</td>
<td>100.00%</td>
<td>0</td>
<td>358</td>
</tr>
<tr>
<td>PUSAN</td>
<td>% OF POPULATION LIVING IN URBAN AREAS, 1970</td>
<td>49.23%</td>
<td>29.17</td>
<td>100.00%</td>
<td>0</td>
<td>358</td>
</tr>
<tr>
<td>URBAN</td>
<td>PERCENT RATE OF CHANGE IN NUMBER OF PERSONS IN URBAN AREA, 1970-1980</td>
<td>28.70%</td>
<td>9.48</td>
<td>43.57%</td>
<td>-71.00%</td>
<td>358</td>
</tr>
<tr>
<td>PMIN70</td>
<td>PERCENT NONWHITE POPULATION, 1970</td>
<td>14.32%</td>
<td>13.11</td>
<td>66.28%</td>
<td>0.03%</td>
<td>358</td>
</tr>
<tr>
<td>MINORITY</td>
<td>PERCENT RATE OF CHANGE IN NUMBER OF NONWHITES 1970-1980</td>
<td>2.21%</td>
<td>6.5</td>
<td>55.43%</td>
<td>-18.95%</td>
<td>358</td>
</tr>
<tr>
<td>TPOP70</td>
<td>TOTAL POPULATION, 1970</td>
<td>143,498.80</td>
<td>433,868</td>
<td>7,036,463</td>
<td>2,793</td>
<td>358</td>
</tr>
<tr>
<td>POPP</td>
<td>PERCENT RATE OF CHANGE IN POPULATION FROM 1970-1980</td>
<td>25.58%</td>
<td>25.46</td>
<td>159.68%</td>
<td>-12.31%</td>
<td>358</td>
</tr>
</tbody>
</table>
of for-profit beds from 1970 to 1980 and three of the independent variables: the percent change in the number of nonwhites from 1970-1980; the percent of nonwhites in 1970; and the percent change in population from 1970 to 1980.
5.0 RESULTS AND CONCLUSIONS

5.1 Results: 1980 For-Profit Market Share Model (1)

The first model analyzed the market shares of for-profit hospitals in 1980 as a function of a hospital's service area (defined as the county in which a hospital is located) characteristics. The characteristics included the level of suburbanization; socio-economic status; age structure; and competition as measured by the existence of additional hospitals in the area. The model explained only 8.5 percent of the variance in the market share of for-profit hospital beds in 1980 although the results were significant (at the .0000 level) due primarily to the large sample size. As the descriptive statistics indicated (see previous chapter) the independent variables exhibited large standard deviations which suggests a differentiation of locations among for-profits. The low explanatory power of the model would support that interpretation although additional reasons may be needed to explain some interaction affects with the existing variables. The findings are summarized below. (See Table 10.)
TABLE 10
1980 FOR-PROFIT MARKET SHARE MODEL
REGRESSION STATISTICS

<table>
<thead>
<tr>
<th>VARIABLE</th>
<th>B</th>
<th>SE/B</th>
<th>BETA</th>
<th>T</th>
<th>R</th>
<th>F</th>
<th>Significant at .0000</th>
</tr>
</thead>
<tbody>
<tr>
<td>NUMBER OF BEDS PER 1,000 POPULATION, 1980</td>
<td>-0.9978</td>
<td>0.29</td>
<td>-0.176</td>
<td>-3.36</td>
<td>0.0009*</td>
<td></td>
<td></td>
</tr>
<tr>
<td>% OF POPULATION EMPLOYED IN MANAGERIAL AND PROFESSIONAL OCCUPATIONS, 1980</td>
<td>-1.28</td>
<td>0.38</td>
<td>-0.182</td>
<td>-3.36</td>
<td>0.0009*</td>
<td></td>
<td></td>
</tr>
<tr>
<td>% NONWHITE POPULATION, 1980</td>
<td>-0.23</td>
<td>0.15</td>
<td>-0.082</td>
<td>-1.46</td>
<td>0.1442</td>
<td></td>
<td></td>
</tr>
<tr>
<td>% OF POPULATION 15 YEARS AND YOUNGER, 1980</td>
<td>0.26</td>
<td>0.54</td>
<td>0.027</td>
<td>0.48</td>
<td>0.6328</td>
<td></td>
<td></td>
</tr>
<tr>
<td>CONSTANT</td>
<td>61.06</td>
<td>17.06</td>
<td>3.58</td>
<td>0.0004</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

* significant at the .05 level
5.1.1 Suburbanization

The indicator used to measure the dimension of suburbanization was the proportion of professional and managerial persons (to be referred to as white collar workers) in the labor force. In counties with high for-profit market shares, a lower concentration of white collar workers was present. This coefficient for the suburbanization variable was significant at .05 level and had the highest explanatory power of the four independent variables.

The inverse relationship was not anticipated. Based on the literature, it was expected that for-profits would be positively correlated with concentrations of white collar workers, typical of suburban and urban areas. This finding therefore contrasts with the literature which suggested that for-profits tend to be located in suburban areas.

One interpretation for this relationship is that for-profit hospitals tended to locate in the outer suburban counties or rural areas as opposed to the older, more established suburban areas. These areas would be in the process of becoming suburban but would not have the high
proportion of white collar workers as yet. Such growth areas would be suitable, but speculative locations for the for-profits.

5.1.2 Competition

The total number of hospital beds per 1,000 population was the measure for competition. This variable has the second highest level of explanatory power and was significant at the .05 level. The model supports the argument that for-profits located in areas where competition is minimal or absent. Furthermore, it also suggests that for-profits prefer newer suburban areas as opposed to areas which are more likely to have well established hospitals. Locations without competing hospitals provide monopolistic advantages for the for-profit hospital in both price and staffing. Monopolistic locations, however, pose a potential problem if sizable concentrations of lower income or uninsured residents are present in the service area. This would require a hospital to increase its level of uncompensated care. Thus, the ideal location would appear to be one in which the for-profit is the only facility in
areas which have a low proportion of population with low incomes.

5.1.3 Other Findings

The indicator which represented the socio-economic characteristics of a county was the percentage of nonwhites in the population. While the results were not significant, the relationship was as hypothesized. That is, the market share of for-profit hospital beds in 1980 was greatest in counties with a lower proportion of nonwhites.

The variable measuring age structure was not significant. The proportion of the population 15 years of age and younger did have the expected positive relationship.

5.2 Results: For-Profit Market Share Growth Model, 1970-1980 (2)

The second model analyzed the percent rate of change of for-profit's market share from 1970 to 1980 as a function of county characteristics in 1970 and the percent rate of change in these same indicators from 1970 to 1980. In addition to analyzing the dimensions of suburbanization; socio-
economic status; and competition, the model also included variables measuring population size and growth. This model accounted for a low percentage of the explained variance, 10.3 percent, but was significant (at the .0000 level), again due to the large sample size. The findings are presented below. (See Table 11.)

5.2.1 Competition

The market share of for-profits increased from 1970 to 1980 in counties with either no hospital or with only one in 1970. The results were significant at the .05 level and the variable explained the largest proportion of the variance in market share growth.

5.2.2 Population Size and Growth

It was anticipated that counties with growing populations would experience increases in market share. The findings supported this conclusion and were significant. That is, for-profit’s market share grew more rapidly in areas which experienced the greatest population growth from
### Table 11

**FOR-PROFIT MARKET SHARE GROWTH MODEL, 1970-1980**

**REGRESSION STATISTICS**

<table>
<thead>
<tr>
<th>VARIABLE</th>
<th>B</th>
<th>SE/B</th>
<th>BETA</th>
<th>T</th>
</tr>
</thead>
<tbody>
<tr>
<td>DUMMY VARIABLE WHERE, 0 = 0 OR 1 HOSPITAL AND 1 = 2 OR MORE HOSPITALS</td>
<td>-12.887</td>
<td>5.730</td>
<td>-1.270</td>
<td>-2.250</td>
</tr>
<tr>
<td>% OF POPULATION LIVING IN URBAN AREAS, 1970</td>
<td>0.184</td>
<td>0.248</td>
<td>0.040</td>
<td>0.743</td>
</tr>
<tr>
<td>PERCENT RATE OF CHANGE IN NUMBER OF PERSONS IN URBAN AREA, 1970-1980</td>
<td>0.465</td>
<td>0.094</td>
<td>0.315</td>
<td>4.942</td>
</tr>
<tr>
<td>PERCENT NONWHITE POPULATION, 1970</td>
<td>0.275</td>
<td>0.181</td>
<td>0.083</td>
<td>1.521</td>
</tr>
<tr>
<td>PERCENT RATE OF CHANGE IN NUMBER OF NONWHITES 1970-1980</td>
<td>-0.571</td>
<td>0.395</td>
<td>-0.086</td>
<td>-1.448</td>
</tr>
<tr>
<td>TOTAL POPULATION, 1970</td>
<td>-5.836</td>
<td>5.530</td>
<td>-0.059</td>
<td>-1.057</td>
</tr>
<tr>
<td>PERCENT RATE OF CHANGE IN POPULATION FROM 1970-1980</td>
<td>0.252</td>
<td>0.095</td>
<td>-0.149</td>
<td>2.640</td>
</tr>
<tr>
<td>CONSTANT</td>
<td>-21.890</td>
<td>6.290</td>
<td>-3.478</td>
<td>0.001</td>
</tr>
</tbody>
</table>

\[ R^2 = .10277 \]
\[ F = 5.73 \]

Significant at the .0000

* * SIGNIFICANT AT .05 LEVEL
1970 to 1980. This variable accounted for the second largest amount of variance in market share growth.

While the coefficient was not significant, the results also indicated that counties which experienced the greatest gains in for-profit market share from 1970 to 1980 were counties with smaller 1970 populations. In combination, these variables clearly support that for-profits tended to flourish in areas with growing populations typical of newer suburban locations.

5.2.3 Suburbanization

In the change model, the percent of population living in urban areas (2,500 people or more) in 1970 and the percent rate of change in this indicator from 1970 to 1980 were measures of the degree of suburbanization in a county. For-profit market share had the greatest increases from 1970 to 1980 in areas that had a higher urban population and in counties where this proportion increased more rapidly from 1970 to 1980. However, only the rate of growth variable was significant (Table 11). This result supports the contention that for-profits located in areas experiencing urban growth.
5.2.4 Other Findings

While the results were not significant, in the model for-profit market share increased from 1970 to 1980 in areas which experienced sizeable declines in the percent of nonwhites over the same time period but had larger proportions of nonwhites in 1970.

5.3 Conclusions and Implications for Future Research

Because of the low explanatory power of the models, definitive conclusions are difficult to make. However, several broad observations can be made from the study. Based on this research, the for-profit hospital of the 1970s appears to express a locational preference for areas which had limited competition and were becoming increasingly suburban. From 1970 to 1980, these areas were still experiencing a transition to suburban development as indicated by large population growth and increased proportions of population living within urban areas. In 1980, not only were the for-profits market shares greater in areas with a limited number of hospital beds per 1,000
population, but were also areas more likely to have no other or only one hospital in 1970. It would appear that despite the general growth of the areas, for-profits were able to discourage other providers from developing in these areas. A limited availability of other hospital services provided the for-profits with the ability to set prices; to better attract staff and to build a loyal medical staff.

The low explanatory power of the models was disappointing and raises several questions about the future directions for research. The rather poor performance of the models may have been due to methodological as well as theoretical problems in the approach. Several methodological problems can be cited. First, the data were highly skewed as indicated by the variables' large standard deviations. A high degree of variability in the measure leads to some instability in the estimation of coefficients using linear regression. Some transformation of the data may be necessary in future studies.

Second, the unit of analysis, the county, is perhaps too concentrated of an area to be used as a surrogate for a hospital's service area. For example, a hospital may be located near county boundaries and thus draw heavily from
areas outside of its home county. These areas may exhibit very different characteristics from the home county. A solution would be to define service areas of hospital clusters and use those for the unit of analysis. Such an approach, however, limits one's ability to explain the development of new hospitals which are cited on the basis of estimated small areas. Delineations of service areas also would be impossible for a study with the number and geographic extent used in this study.

A second reason for the weak results may be the theoretical assumptions about the locational selection process. The implicit assumption of this study was that for-profits have a single locational strategy and that the strategy is implemented as a result of direct quantitative market analysis. It is likely, however, that for-profits have several locational strategies depending on a variety of market conditions. The models as used in this study did not account for this. Comparative analysis of for-profit market share in different markets such as metropolitan versus nonmetropolitan counties could be performed. Also, there are components of the for-profits locational strategies that are not directly measurable. For example, a system may
choose to locate in an area which from a demographic standpoint, appears undesirable but may serve to decrease political concerns over "patient skimming". In such cases, the use of quantitative analyses would be inappropriate. Qualitative rather than quantitative analysis would be required. One study, in fact, approached the issue of location strategies of hospitals by interviewing hospital administrators (Alexander and Morrisey, 1985). This study divided locational decisions into management and market characteristics.

The following recommendations are offered to build upon the research presented here. To further develop empirical models of for-profit location several steps could be taken to improve their explanatory power. Models could be developed to show comparative growth patterns among different markets such as metropolitan versus nonmetropolitan markets. Second, a variety of different units of analysis should be used and comparisons made. Another research option that may increase the explanatory power of the models would be to add measures of financial performance. A fourth suggestion would be to repeat the study and compare system-owned not-for-profit and for-profit
hospital market share growth patterns. And finally, further research should be conducted to better develop the theoretical constructs for market characteristics which cannot be directly measured.

What does the future hold for the growth of for-profit hospitals in the 1980s and 1990's? It seems likely that for-profit hospitals of the 1980s and 1990s will continue to increase market share in high growth peripheral suburban and rural areas. Furthermore, given declining inpatient acute hospital discharge rates; declining reimbursement levels; and shifts in the locus of care to outpatient settings, the for-profits will continue to pressure the not-for-profit sector as it competes for paying patients in prime development areas. That competition will force many nonprofits to continue to structure themselves and behave in ways similar to for-profits. For-profit's market shares may continue to grow although the number of hospitals and beds will continue to be stable. Older suburban and metropolitan hospitals will continue to close as they will be unable to attract patients from the outlying suburban and rural areas.
BIBLIOGRAPHY


LYNN M. HABERLEIN
D.O.B.: September 6, 1962

PROFESSIONAL
Associate, Lammers and Gershon Associates,
Inc. Reston, VA (health care consulting firm)
June 1990-
Present

Serves as client liaison and manages day-
today project activities including project
budget and scheduling. Responsible for
developing strategic and programmatic plans;
conducting market assessments and primary
market research; and preparation of report
presentations. Directly involved with all
phases of project work. Recent projects
include market assessments for new product
development, medical staff development plan,
psychiatric and physical rehabilitation
services program plans, feasibility study for
an inpatient psychiatric unit, bed-need
analysis for a state psychiatric facility, a
strategic audit and product line study for an
acute care facility. Promoted from
consultant to associate (June of 1990).

October 1987-
May 1989
Corporate Planner, Loudoun Healthcare Inc.
Leesburg, VA (119 bed acute care hospital,
100 bed Long Term Care facility and for-
profit subsidiaries).

Principal responsibilities included
management of strategic plan development;
business plan development (Women's Health,
Business Health, Surgical Service and
Emergency Services) and a variety of research
projects. Research topics included large
telephone survey, medical staff analysis,
obstetric services, substance abuse, cancer
centers, CORF's, market share analysis, etc.
Corporate Planner, Loudoun Healthcare Inc.  
(Continued)

Position with the Strategic Planning Committee of the Board, Executive Management, the hospital's Management Council and Consultants.

October 1986-October 1987  
Planning/Marketing Associate, Harris Methodist Health System, Fort Worth, TX (11 hospitals, 2 nursing homes, 1,678 beds)

Duties included the development of hospital and service specific utilization projections; data bases and market/demographic analyses; interpretation of system and competitor data; assisted with the development of Corporate, hospital and strategic business unit plans. Examples of project topics included ER, trauma, open heart surgery, ob/gyn surgery, in-vitro fertilization, retirement housing and physician data and need analyses.

June 1986-Sept. 1986  
Health Planner/Analyst, Southern Maryland Health Systems Agency, Clinton, MD (full-time contract)

Member of two person grant team conducting a mental health needs assessment. Tasks included design, development and interpretation of survey and secondary data. Worked closely with Mental Health providers and advocates. Other duties included assisting with C.O.N. review, editing and research for Agency staff documents.
January 1986–March 1986  
Special Project Assistant, Southwest Virginia Health Systems Agency, Roanoke, VA (part-time contract)

Updated and expanded agency's data resources. Drafted proposal for the implementation of a "data center" program as part of agency's efforts to diversify.

Graduate Research Assistant, Virginia Polytechnic Inst. & S.U., Dept. of Urban Affairs, Blacksburg, VA

Planning Intern, Radford Community Hospital, Office of the Director of Clinical Services and Planning, Radford, VA (part-time temporary)

June 1984–Sept. 1984  
Planning Intern, Loudoun County Department of Planning, Zoning and Community Development, Leesburg, VA (full-time)

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M.A., Urban Affairs  
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