N H C P P S

New Hampshire Center for Public Policy Studies

Community Benefit and Market Changes in New Hampshire

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About this paper

One of the Center's projects in recent years has been to address issues regarding changes in the health care sector in New Hampshire. This paper is the latest in our series of reports on that topic. This report was funded in part by the State of New Hampshire Attorney General's office, but the findings and recommendations are those of the Center and not necessarily those of the State of New Hampshire or the Attorney General's Office.

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Executive Summary

New Hampshire hospitals have financial responsibility for almost $5.7 billion in total assets as of 2014, the most recent year for which complete audited financial data is available. Of that $5.7 billion, almost 10% of those assets have been a part of hospital merger activities (Memorial, Upper Connecticut Valley, Weeks, Littleton, Androscoggin, Alice Peck Day, Lakes Region and Franklin hospitals). Catholic Medical Center, Huggins Hospital, and Monadnock Hospital (accounting for another $500 million in community assets) and Wentworth Douglass Hospital ($500 million) recently had merger requests before the Attorney General's office. [Other conversations – principally Mary Hitchcock and Elliot Hospital – represent more than $2 billion in additional assets potentially affected by merger activities. Together, these affiliation activities account for 2/3rds of the assets of New Hampshire's 24 non-profit hospitals.

The Charitable Trusts Unit in the New Hampshire Attorney General's office has responsibility for monitoring these affiliation activities, and is required to ensure that:

> "The assets of the health care charitable trust and any proceeds to be received on account of the transaction shall continue to be devoted to charitable purposes consistent with the charitable objects of the health care charitable trust and the needs of the community which it serves" - Section 7:19-b

To that end, the Attorney General's office requested a review of existing data and information on the types and level of community benefit currently being provided in the state, and by the 4 hospitals currently engaged in merger discussions – Wentworth Douglass, Catholic Medical Center, Monadnock and Huggins. In addition, this analysis provides information on what the academic literature suggests the impact of hospital consolidation could be on community benefit.

Major Findings

The NH Department of Justice and the Internal Revenue Service offer a rich – if relatively imprecise – body of data on community benefit that could be used to both increase the transparency of conversations regarding community benefit and provide a means for holding hospitals accountable for both the level and type of community benefit provided. However, hospitals are given wide latitude in reporting community benefit, which makes comparison across hospitals and over time difficult. Providing clearer instructions to hospitals on reporting requirements could result in data which the attorney general could use to track community benefit across merging hospitals.

The literature regarding hospital consolidation suggests policy makers should be cautious about claims that mergers would automatically increase value in the health care system (either through improvements in price, quality or both). There is a robust – albeit dated - literature suggesting that reductions in competition and hospital consolidation result in increases in price.

More recent research, however, suggests that not all mergers are the same and that more recent mergers may differ in key respects to those that have historically been evaluated. Specifically, the nature of the markets, clinical service changes, and geography matter on the impact on price. This emerging literature suggests that mergers involving hospitals in different markets and geographically far from one another have no impact on prices. The literature on the impact of consolidation on quality and other community benefit provision is less robust, generally suggesting no relationship between consolidation and quality or the level of overall community benefit provision.

Finally, specific to the mergers currently before the Attorney General's office, the Charitable Trusts Unit will have a difficult time assessing the impact of mergers without additional information not currently provided. As mentioned, the literature regarding hospital consolidation – and associated changes in market competition – suggests that the claims regarding such activities – reductions in prices and increases in quality, for example – are sensitive to definitions of markets and services that would be affected. These are not currently defined in the documents provided to the Attorney General's office.

Policy makers and boards of directors will have a hard time understanding the potential impact of a merger without additional information on the actual plans for integration, including the degree of clinical integration that might occur. The Attorney General's office, likewise, would find it impossible to judge – as it is required to do – the impact of mergers without clearer information on how the merger will actually impact clinical services.

Recommendations

In what follows, we provide a series of recommendations for the Attorney General and other policy makers interested in understanding more clearly the impact of merger activity on community benefit provision in New Hampshire.

Community Benefit Provision

Both the New Hampshire Attorney General's office and the IRS collect data on the provision of community benefit by New Hampshire's hospitals. Little analysis has been conducted on this data, but it is a useful source of data with which the Attorney General's office and hospital boards could monitor changes in community benefit provision over time.

In our analysis of data collected by the Attorney General's office, we found significant variation in the level of community benefit by hospital, and significant change over time in the level of community benefit provided by a given hospital. Some of this variation is due to inconsistencies in the way in which the data is reported. These inconsistencies stem from the fact that both the NH Attorney General's office and the IRS give hospitals broad latitude in reporting. The literature on hospital consolidation and the provision of community benefit suggests that hospital consolidation could, in some instances, result in increases in community benefits, and potentially shift how those benefits are provided.

As a result of these findings, we recommend:

- The Attorney General's office convene a workgroup to discuss clarifying the definition of what should and should not be included as a community benefit, based on guidance from the Catholic Hospital Association, which has been a leader in the development of community benefit reporting practices. This workgroup should also discuss whether the state should continue requiring hospitals to report community benefits both to the Attorney General's office and to the IRS.
- The state and hospitals should Increase the transparency of data on the provision of community benefit and changes over time. Such an effort could take many different forms. Hospitals could, as part of their community benefit plan efforts, provide an analysis of changes in the level and type of community benefit over time. Similarly, the legislature could require the Attorney General's office to prepare an annual report on community benefit provision.

Changes in Prices and Quality Associated with Consolidation

The body of literature that has emerged over the last 20 years largely suggests that hospital consolidation neither lowers costs nor consistently improves the quality of the care provided. However, there are important qualifications to these findings.

With respect to prices, it is only recently that the literature has begun to explore the possibility that the type of consolidation – whether the two organizations are competitors for certain services compared to non-competitors – and the level of administrative and therefore clinical integration – materially impacts the degree to which consolidation could impact prices. The most recent analysis (Dafny, 2015) confirmed that as hospital competition declines, prices rise. However, it also suggested that the mergers of hospitals that are more distant – and potentially not competing for the same patients or services – had little impact on prices.

With respect to quality of care, the literature is weaker still. National studies – with the best controls and most generalizable results – have looked at a very narrow set of services (principally for acute myocardial infarction), and none have looked at geography and different types of service competition (for example, for primary, tertiary or quaternary services).

Beyond these generalizations, however, the ability to understand how the proposed affiliations would impact price and quality is extremely limited as a result of the fact that the affiliation documents provided to the Attorney General's office describe governance changes associated with the mergers, but do not provide any detail on the integration plan for services.

As a result of these findings, we recommend:

- Hospital boards engaged in merger activities could develop quality and cost monitoring plans that link quality and cost with specific clinical services, identified as important in the development of their integration plans. These could also become part of the community benefit plan communication efforts with the local community.

The NH Attorney General's office could similarly monitor changes in prices and quality, using standard national quality measures, such as readmission rates in the case of quality, and with price data from the New Hampshire Comprehensive Health Information Database, which has been used by the New Hampshire Department of Insurance.

Part 1 - Measuring Community Benefit

The New Hampshire Attorney General's office has led the nation in developing a community benefits reporting process that requires health care charitable trusts to assess their community's needs, and quantitatively document how the charitable trust is focusing resources on those problems. Each year, New Hampshire's healthcare charitable trusts must provide the Attorney General with a report on their community benefit activities.

With the passage of the Affordable Care Act, the federal government followed suit. The ACA added Section 501(r), which required non-profit hospitals to meet a new set of obligations regarding community benefits to qualify for tax-exempt status under section 501(c)(3). These requirements were similar to those developed by New Hampshire. Non-profit hospitals were required to:

- Conduct a community health needs assessment and provide an implementation plan
- Document written financial assistance policy for free care to the medically indigent
- Report on the resources devoted to various community benefit activities on the IRS 990, under schedule H

Relative to New Hampshire's reporting efforts, the ACA was narrower in the sense that the act related solely to non-profit hospitals, whereas New Hampshire's law relates to all healthcare charitable trusts. In addition, the data collected under the IRS Form 990 Schedule H form is less detailed than New Hampshire's collection effort. For the purpose of this analysis, we have focused our analysis on the data collected by the New Hampshire Attorney General's office. [1]

NH's Community Benefit Reporting and Data

As a result of increasing scrutiny regarding the costs of tax exemptions for healthcare charitable trusts and the potential benefits they provide, states across the country began developing legislation to track and assess community benefits in the late 1990s and early 2000s. New Hampshire led the country in developing laws which required healthcare charitable trusts[2] in New Hampshire to report on the benefits provided to the community they serve.

The New Hampshire Legislature passed SB 69 - known as NH's community benefits statute - in 1999. Effective January 1, 2000, the bill required that non-profit hospitals in New Hampshire develop a community benefits plan, a report on the community benefit activities undertaken by the hospital, and information describing the results of these community investments. The Charitable Trusts Unit issued its first community benefits reporting form in September of 2001.

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[1] We reviewed a sample of hospitals' community benefit reporting in both the Schedule H from the IRS form 990 and the NH Attorney General's community benefit forms. They were similar in most instances, with differences attributable to slight differences in the reporting requirements. We chose to use the NH DOJ data as it was more readily available for recent years. As we note, a more detailed analysis should be conducted to decide whether reporting of the state specific data is necessary, given the IRS 990 requirements.

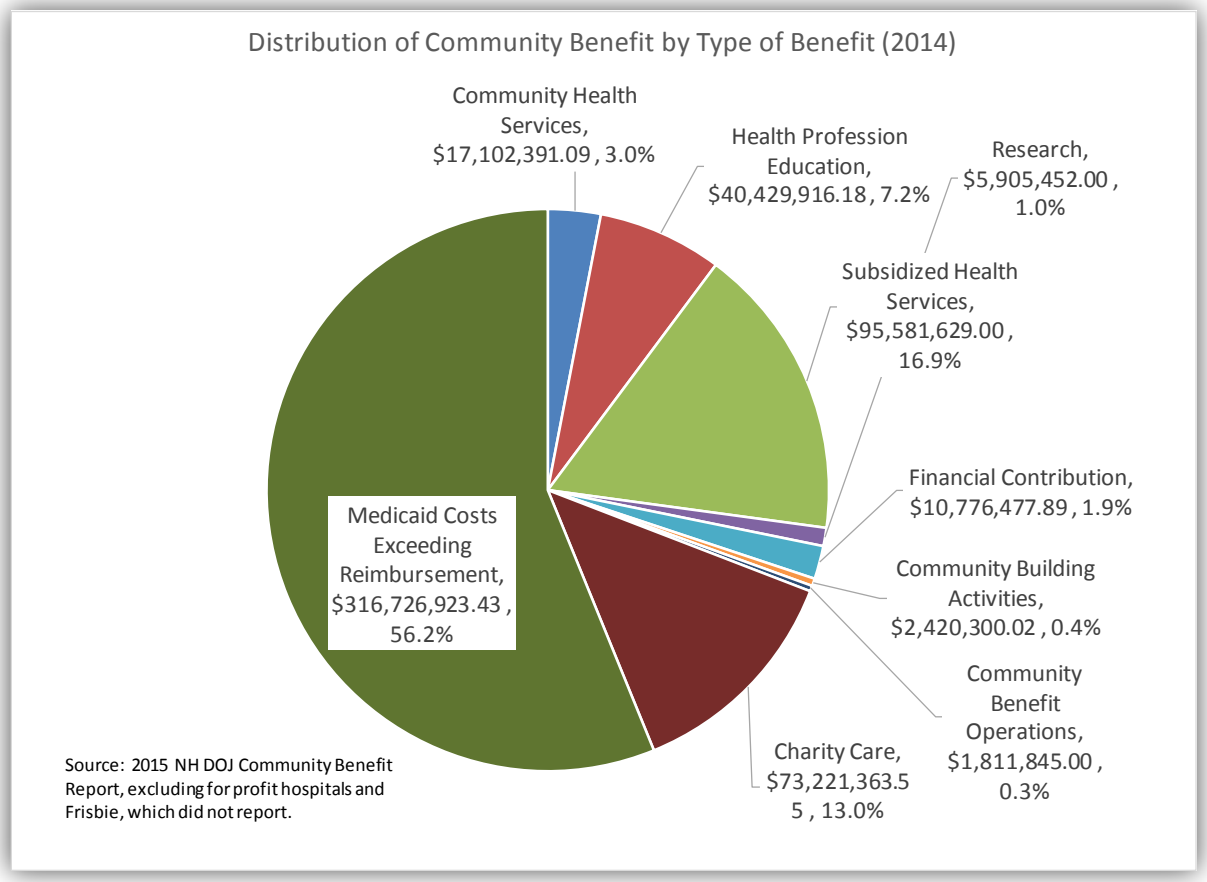
2 "Health care charitable trust" means a charitable trust organized to directly provide health care services, including, but not limited to, hospitals, nursing homes, community health services, and medical-surgical or other diagnostic or therapeutic facilities or services.

In 2009, a new form was required, which provided a clearer delineation between the different types of community benefits provided, based on work conducted by the Catholic Health Association, a recognized leader in the development of information and data on community benefits. As of 2009, the Attorney General's office collected data on the basic needs identified in the community needs assessment process, and the benefits provided to the community. The benefits identified by the AG's office were:

- Charity care
- Unreimbursed costs of government healthcare (Medicaid)
- Subsidized health services
- Community health services
- Health profession education
- Research
- Financial contributions
- Community building activities
- Community benefit operations

In 2015, the most recent

Figure 1 Distribution of Community Benefits



year for which complete data is available, New Hampshire charitable trusts provided almost $564 million in community benefit, according to reports filed with the Attorney General's Charitable Trusts Unit. Of that total amount, 56% resulted from the fact that Medicaid pays less than the expenses associated with providing services to Medicaid clients. The second largest share resulted from the provision of subsidized healthcare services (17%). Charitable Care (at 13% of the total) came in a distant third.

According to these same reports, the average healthcare charitable trust provided almost $22 million in community benefit. Mary Hitchcock provided over $180 million in community benefit, with Elliot and Concord hospital providing more than $60 million. Not surprisingly, the larger hospitals accounted for the lion's share of the community benefit provided.

The figures below include data for each of the four NH based non-profit hospitals that have sought attorney general approval for merger activities. What is notable about this data is the significant variation in the distribution of community benefit by type by hospital. Relative to the other hospitals, for example, Huggins Hospital provided a disproportionate share of its community benefit as subsidized health services. A review of the underlying data suggests that Huggins[3] included subsidies for their primary care services in their community benefit accounting, something which only a few other hospitals did, and which could arguably be assumed to be a normal cost of doing business.

[3] http://doj.nh.gov/charitable-trusts/community-benefits/documents/2015-huggins-hospital.pdf . This and all other data collected is available on the attorney general's office website back to 2012.

Figure 2: Wentworth Douglass

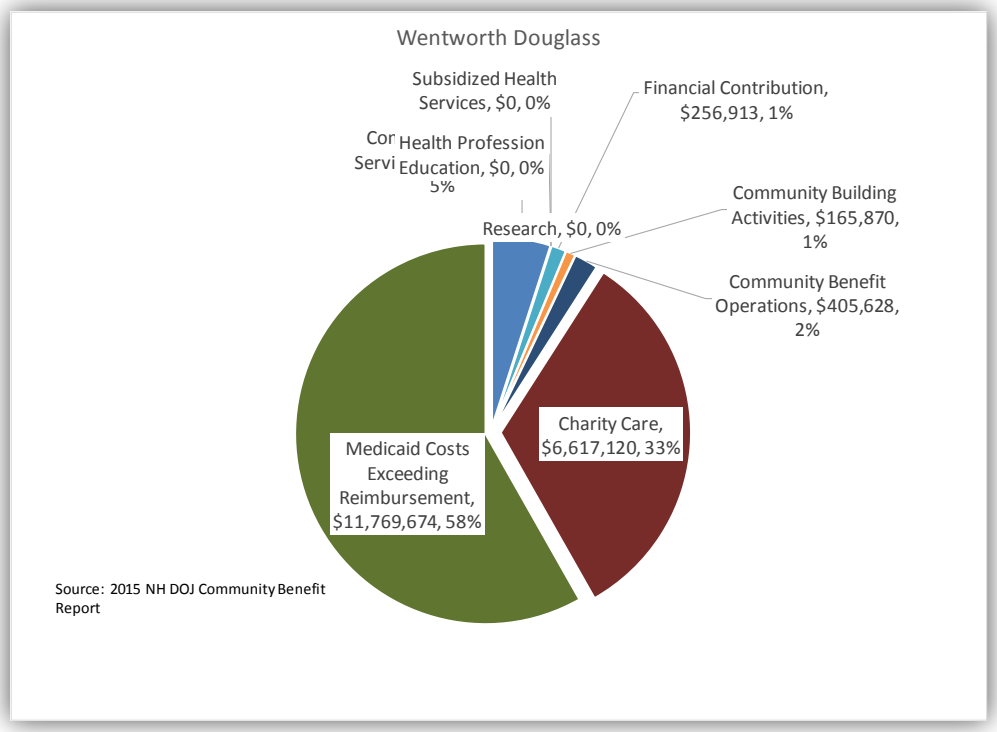


Figure 3: Catholic Medical Center

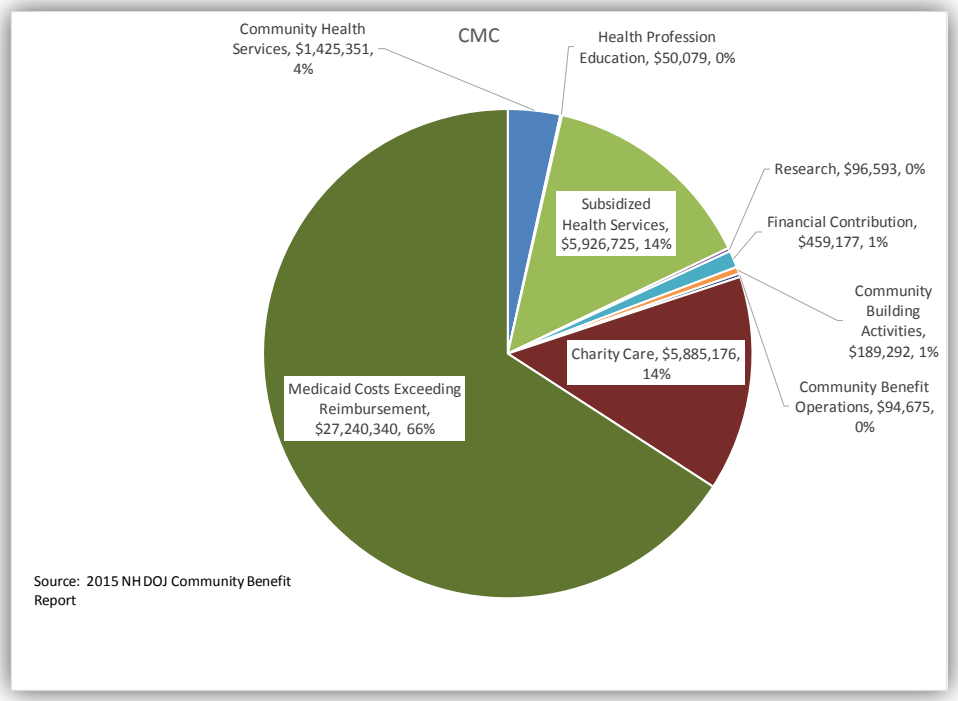


Figure 4: Huggins

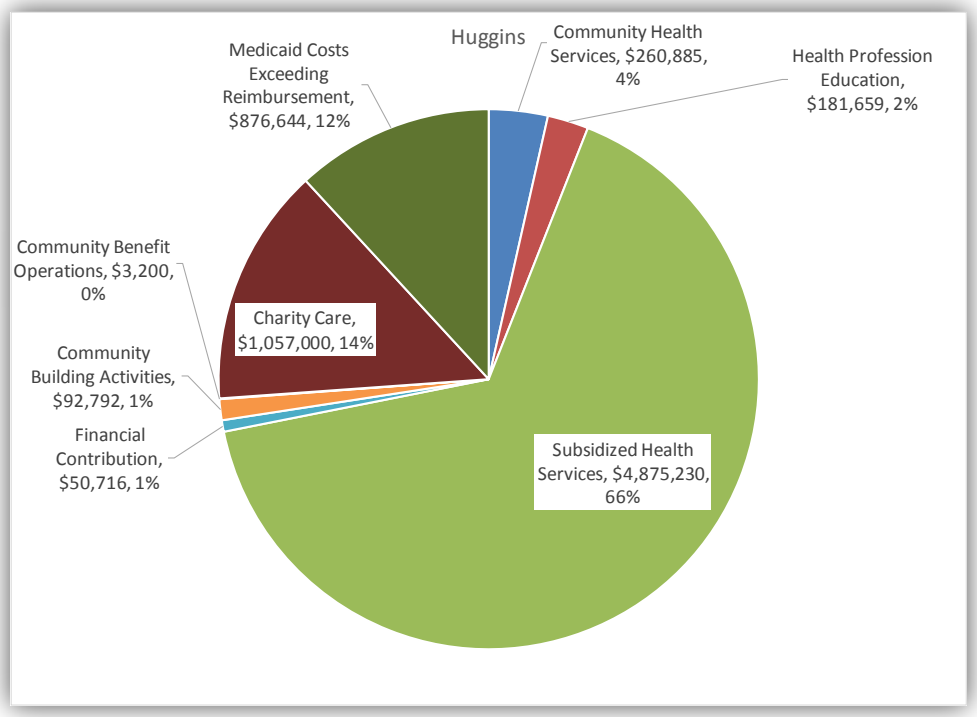
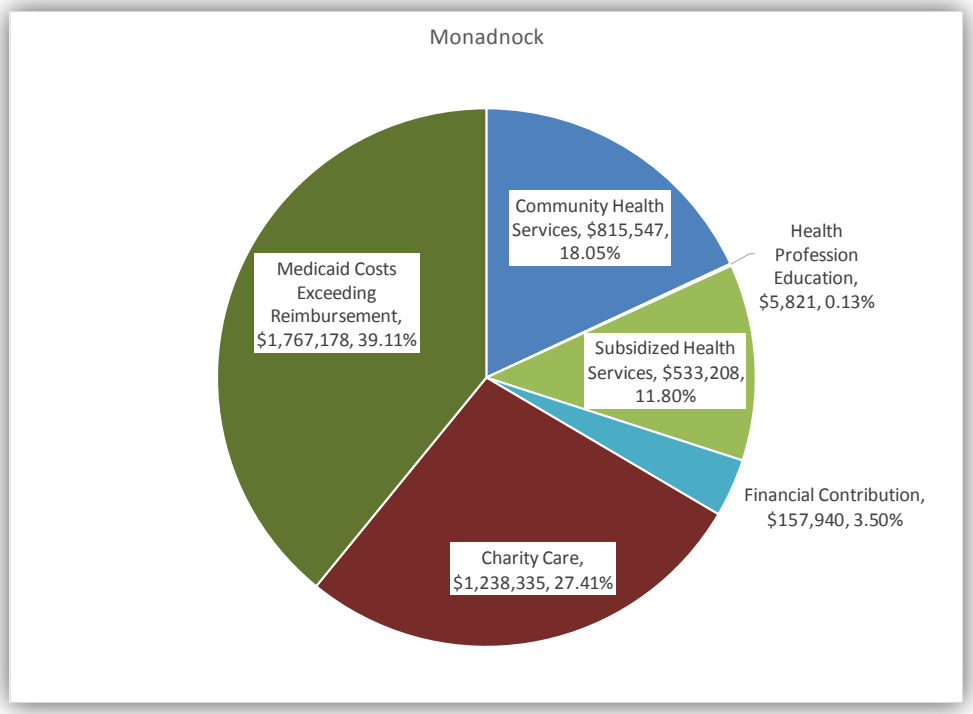
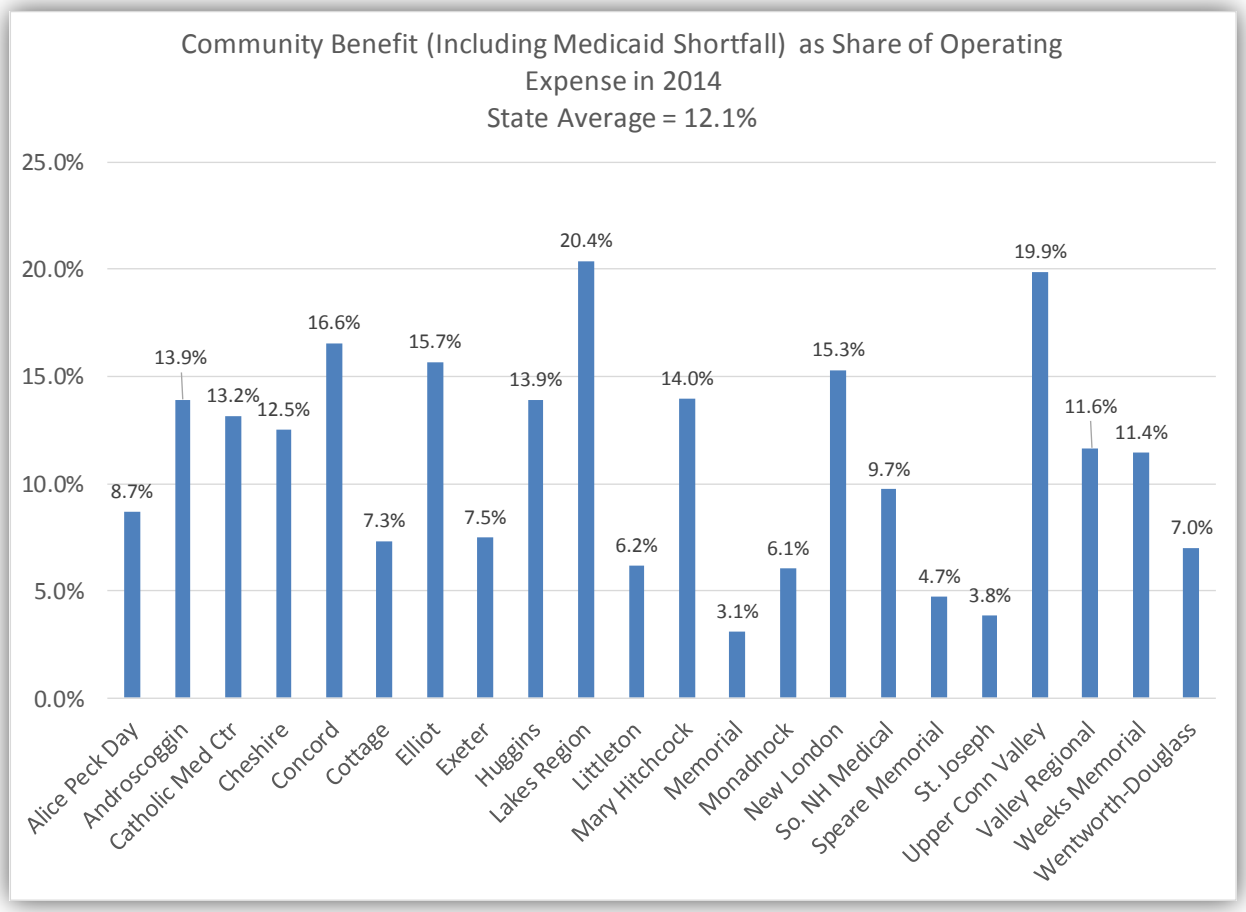


Figure 5: Monadnock



The overall level of community benefit effort varied considerably as well, as shown in Figure 6 which provides information showing community benefit relative to the size of the organization, as measured by operating expenses. Lakes Region Hospital and Upper Connecticut Valley Hospital provided community benefit that was approximately 20% of operating expenses, compared to Speare Memorial, St. Joseph Hospital and Memorial Hospital, each of which provided community benefits at much lower levels (less than 5%).

Figure 6: Level of Effort: Community Benefit as a share of Operating Expenses



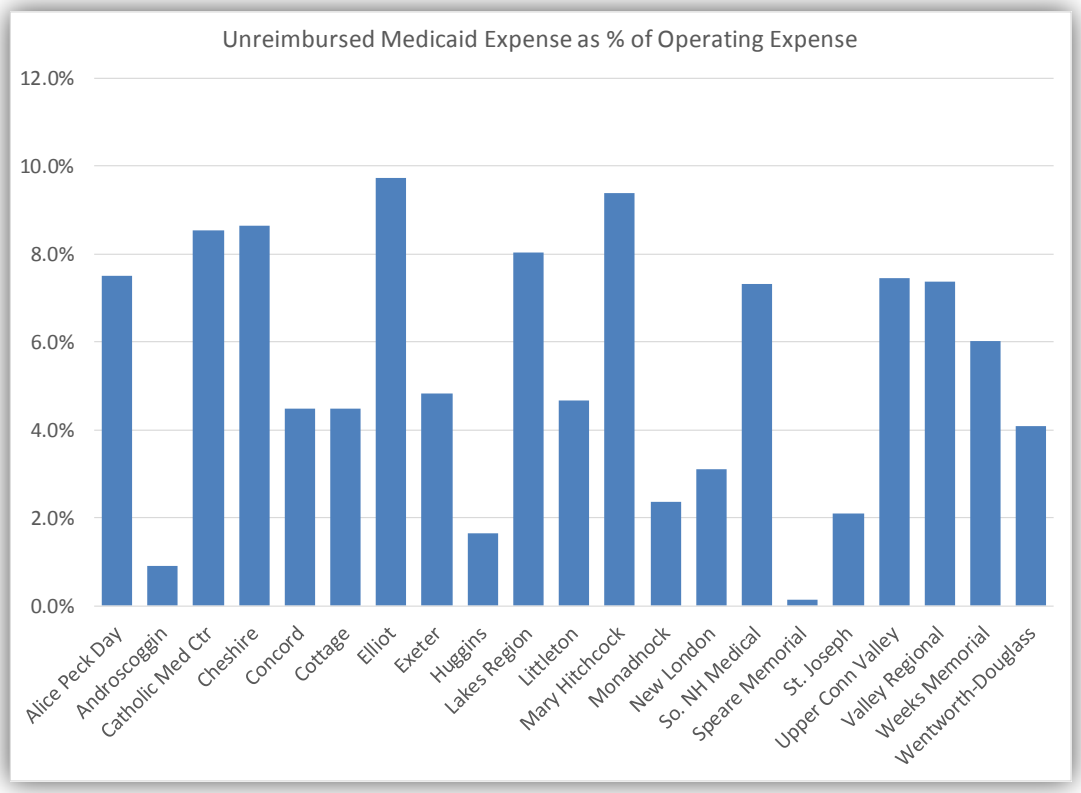
Unreimbursed Medicaid Expenses

As noted, unreimbursed Medicaid expenses account for the single largest share of community benefit activities, ranging from .1% of expenses in 2015 to almost 10%, as shown inFigure 7. New Hampshire pays for base payment rates through managed care arrangements for services provided to Medicaid beneficiaries. These payments are generally much lower than the expenses associated with providing that care. In addition, payment policies in the Medicaid program have generally recognized the difficult financial position of many rural hospitals.

Those small rural hospitals – designated critical access hospitals – in certain instances received enhanced rates.[4]

In addition, New Hampshire makes supplemental payments to hospitals to offset both charity care and unreimbursed expenses associated with Medicaid. Nationally, all supplemental Medicaid payments combined amounted to 44 percent of Medicaid fee-for-service payments to hospitals in 2014.[5] These payments significantly reduce both charity care and unreimbursed Medicaid expenses. Similar to the base payment, hospitals receiving critical access designation are treated differently, with the Uncompensated Care and Medicaid Fund offsetting up to 75% of the hospital's charity care and unreimbursed Medicaid expenses, compared to 50% for all other hospitals, a result of legislation passed in 2014.

Figure 7: Community Benefit and Medicaid



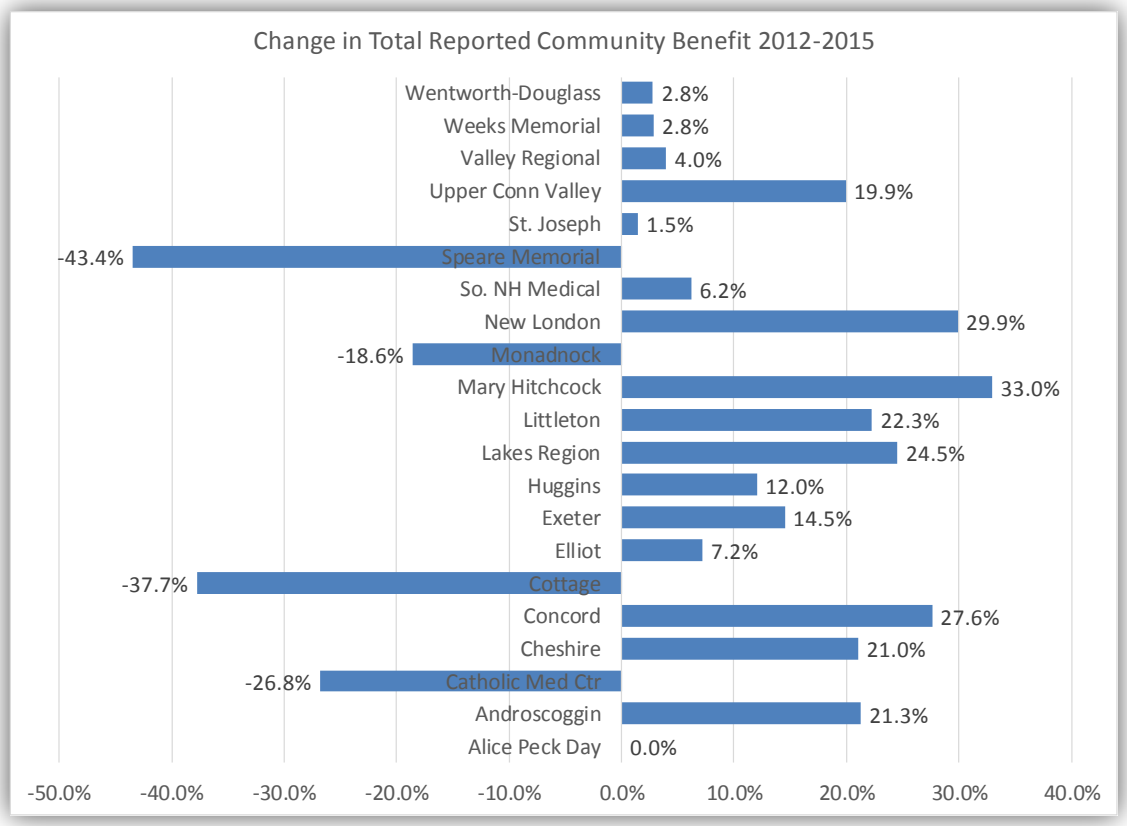
[4] This includes Alice Peck Day, Androscoggin, Cottage, Franklin Regional, Huggins, Littleton, Memorial, Monadnock, New London, Speare, Upper Connecticut Valley, Valley Regional, and Weeks.]

5 https://www.macpac.gov/wp-content/uploads/2015/11/EXHIBIT-23.-Medicaid-Supplemental-Payments-to-Hospital-Providers-by-State-FY-2014-millions.pdf

Changes in Community Benefit Provision

The NH Community Benefit Reports can also be used to track changes in community benefit over time. Figure 8 below shows the change in aggregate dollar amounts identified as community benefits provided by most of the non-profit hospitals in the state. As with other aspects of community benefit, this analysis shows significant variation in how community benefit is changing across the state. Without careful analysis, however, this data can be misleading. Catholic Medical Center, for example, reported a reduction of approximately 27% in its community benefits provision between the 2012 and 2015 reporting years. This reduction was entirely driven by the fact that CMC stopped reporting its subsidy of continuing care services between 2012 and 2015.

Figure 8: Measuring Changes in Community Benefits[6]



Implications

In this analysis, we found that non-profit hospitals across the state provide community benefit that is roughly 12% percent of total operating costs, an amount significantly higher than the national average of 7.5% based on an analysis of IRS Form 990 data[7]. We also found significant variation in the level of community benefit by hospital, and significant changes over time in the

[6] No data was available on the DOJ website for Alice Peck Day in 2012

7 http://www.nejm.org/doi/full/10.1056/NEJMsa1210239?query=featured_home&#t=article

level of community benefit provided by a given hospital. Some of this variation is likely due to inconsistencies in the way in which the data is reported. These inconsistencies stem from the fact that both the NH Attorney General's office and the IRS give hospitals broad latitude in reporting.

For policy makers interested in understanding the community benefit environment, this data would provide a good benchmark against which changes going forward could be assessed. The state and hospital boards could use this data to increase the transparency of conversations about community benefit provision, as they have done with conversations about health care costs. This could take different forms. Hospitals could, as part of their local community benefit plan efforts, provide an analysis of changes in the level of, and type of community benefit over time. Alternatively, the legislature could require the Attorney General's office to prepare an annual report on community benefit provision.

To use this tool effectively, however, would require additional steps to ensure the accuracy of the data. First, a more in depth analysis of the New Hampshire Community Benefit data should be conducted, which includes a more in depth analysis of the data and discussions with hospitals regarding the definition and calculation of the quantitative measures of community benefit.

The variation in what is included (or not) as community benefit by hospitals suggests that more clarity is likely needed in defining what is and what is not community benefit. The Center requested data from each of the hospitals recently involved in merger discussions with the Attorney General's office on two areas that significantly impact the overall estimates of the provision of community benefit.

First, we asked hospitals whether the Medicaid loss was net of any expenses (associated with the Medicaid Enhancement Tax) and revenues (in the form of payments by the state for a high share of costs associated with Medicaid and uncompensated care) associated with the state's disproportionate share program. The hospitals varied considerably in how they reported this information on the community benefit forms.

Second, we requested data on the degree to which hospitals included the subsidization of physician practices. Arguably, a hospital's decision to purchase a physician practice is a business decision and should therefore not immediately be considered a community benefit unless it is identified specifically in the hospital's community benefit plan or linked with some special need within the community. Here too, there was significant variation in what was included, and the rationale for its inclusion.

Any decision about how to proceed with this data should also include a full comparison of the results relative to data collected by the IRS. From this analysis, hospitals, the Attorney General, and legislators could clarify and tighten the definition of what is included as a community benefit or not to ensure comparability over time (and also across hospitals), and discuss

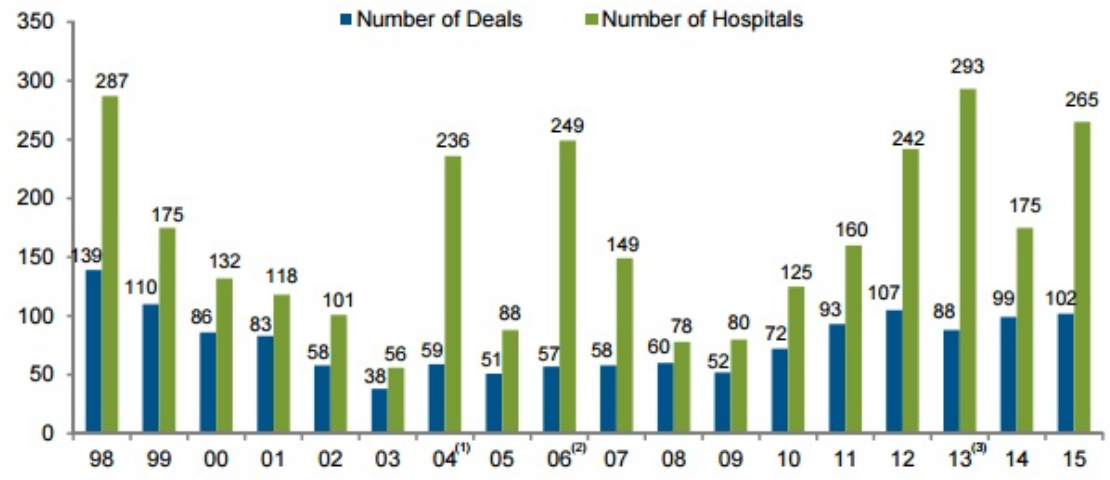
whether or not the state should continue collecting data from the charitable trusts in New Hampshire, or defer to the collection of data from the IRS.

Part 2 - Hospital Consolidation's Impact on Community Benefits

In the Center's review of affiliation documents, it's clear that in addition to 'community benefit' as defined by the NH Department of Justice as well as the IRS in their instructions, the hospitals themselves identify the triple aim of lowering costs, improving public health and improving quality. The theory behind these claims is that consolidation will help improve coordination of care (via scale or by allowing for investment in information technology systems and other process improvement efforts). Consolidation could also eliminate duplication. Finally, both hospitals themselves and the Affordable Care Act have made the argument that such consolidation will help create scale sufficient to improve public health.

In what follows, we review the literature on the implication of hospital mergers on community benefit, prices and quality. In this analysis, we review literature for the last 20 years, which looks at the large increase in mergers and acquisitions in the late 1990s and more recently in early to the mid 2010s.

Figure 9: Hospital Mergers and Acquisitions, 1998-2014[8]



Source: Irving Levin Associates, Inc. (2016). *The Health Care Services Acquisition Report*, Twenty-Second Edition.

(1) In 2004, the privatization of Select Medical Corp., an operator of long-term and acute-care hospitals, and divestiture of hospitals by Tenet Healthcare Corporation helped to increase the number of hospitals affected.

(2) In 2006, the privatization of Hospital Corporation of America, Inc. affected 176 acute-care hospitals. The acquisition was the largest health care transaction ever announced.

(3) In 2013, consolidation of several investor-owned systems resulted in a large number of hospitals involved in acquisition activity.

Chart 2.10 in 2009 and earlier years' Chartbooks.

[8] American Hospital Association, Trendwatch Chartbook 2015, Chart 2.9

Charity Care

Several articles were published regarding the relationship between the provision of charity care and the level of competition in the 1990s and early 2000s. These included Frank and Salkever (1991), Gruber (1994), Mann et al. (1995), Mann et al. (1997) and Garmin (2006). These studies in various ways assessed the hypothesis that increased competition would inhibit a provider's ability to offer charity care. Under this theory, hospital consolidation could, because of the resultant reduction in competition, result in an increase in uncompensated care provision.

The results of the literature are mixed, but generally suggest that reductions in competition could lead to increases in charity care provision, all other factors being equal. Gruber (1994) and Mann et al. (1995) found that when faced with system-wide changes in reimbursement systems, hospitals decreased their charity care faster in relatively competitive markets than in relatively uncompetitive markets. Cuellar and Gertler (2005)[9] and Garmin (2006) found similar results. However, none of these studies directly measured the relationship between hospital consolidation and charity care provision.

Community Benefit Broadly Defined

While policymakers were generally concerned with the provision of charity care, over the course of the 2000s, states - and ultimately the IRS - expanded the definition of community benefit to include a whole series of community based activities, as described elsewhere. This, along with the data available as a result of the IRS' implementation of schedule H, has resulted in a limited number of studies assessing these other community benefit offerings.

Most recently, a 2013 article in the New England Journal of Medicine used schedule H data to describe non-profits' provision of charitable care. That study found that hospitals expended 7.5% of their operating expenses for community benefit services. Approximately half of these expenditures went to subsidizing the cost of care for patients covered by means-tested programs, primarily Medicaid.[10]

In addition to describing the characteristics of the provision of charitable care, Young et. al. (2013) conducted regression analyses to assess the impact of various market characteristics on the provision of community benefit. For this analysis, they analyzed direct patient care and community service. The authors were testing the hypothesis that institutional characteristics (sole community provider status, among others) and market characteristics (including market competition) would impact the levels of community benefit provision.

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[9] 9 How The Expansion Of Hospital Systems Has Affected Consumers Alison Evans Cuellar and Paul J. Gertler C

10 Gary J. Young, J.D., Ph.D., Chia-Hung Chou, Ph.D., Jeffrey Alexander, Ph.D., Shoou-Yih Daniel Lee, Ph.D., and Eli Raver N Engl J Med 2013; 368:1519-1527April 18, 2013

For the model assessing direct patient care, hospital community benefit expenditures were positively associated with only the state-level requirements for reporting community benefits. This result suggests that state accountability systems encourage the provision of community benefits (and that perhaps attorneys general should increase their review of this important trust). For the model assessing community-service, hospital expenditures were positively associated with two institutional-level characteristics — teaching status and sole community provider designation — and also with state-level reporting requirements for community benefits. The results for teaching status are not surprising given the fact that health education services are considered a community benefit. In both models, the analysis found no statistical relationship between market competition and the level of community benefit.

Public Health Improvement

Again, taking advantage of data available because of state and federal efforts to more clearly define community benefits, a variety of studies have suggested that declines in competition could lower the provision of health improvement activities because hospitals use these services as marketing tools. C. Ginn, Shen and Moseley (2006), for example, reviewed the effect of community benefit laws, type of ownership, and competition on hospital-based health promotion services. They concluded that the higher the level of competition – as measured by the HHI – the more significant the provision of hospital-based health promotion services, suggesting that hospitals provide these services at least in part for competitive reasons. D. Ginn and Moseley (2009), and Moseley, Shen, and Ginn (2010), E. Proenca, Rosko, and Zinn (2000; 2003) all suggest that the intensity of competition is significantly and positively associated with the provision of hospital-based health promotion services.

Systems Vs. Mergers and Hospital Operating Expenses

In theory, hospital mergers can result in efficiencies through the elimination of duplicative activities, including the integration of clinical activities. Dranove and Lindrooth (2003)[11] attempted to assess the degree of integration that occurs by differentiating between system acquisitions and mergers. In their definition, hospital mergers involve the combination of separate licenses into a single facility license, with the hospitals reporting a single set of financial and utilization statistics and regulated as a single entity. Theoretically, the authors argue, a merger would allow for more clinical integration, and the authors conduct a pre-post analysis of system consolidations and mergers, to test the hypothesis that such integration lowers operating expenses.

[11] Journal of Health Economics 22 (2003) 983–997

The authors' results suggest that the greater the clinical integration, the more likely it is that there will be operating expense reductions. Their analysis of system consolidations (comparing those that consolidated to those that didn't) showed an insignificant impact on operating expenses. Their re-analysis of system mergers, on the other hand, suggested that controlling for other factors, hospital mergers resulted in a reduction in 14% of operating expenses and that impact remained significant for four years post the merger.

Price

The early literature on consolidation that occurred in the 1990s is well summarized by Vogt and Brown (2006). They conducted a meta-analysis of studies looking at various methods for understanding the impact of consolidation on prices. The results of their meta-analysis led them to the conclusion that the hospital consolidation in the 1990s raised prices by at least five percent, and likely by significantly more.

The single largest group of literature conducted what the authors call structure-conduct-performance analysis, which do not analyze actual mergers, but looks at the impact of changes in market structure – usually competition as measured by the Herfindahl index – and its impact on prices. The figure below shows the authors' selections of studies that were the methodologically most sound[12] and documents the variation in the results, all of which suggest declines in market competition result in increases in prices.

[12] Based on the definition of the market, controls for other factors which could impact prices, and the measure of price.

Figure 10: Summary of structure-conduct-performance literature

Study	Data			Price		Measurement strengths
	Year	Place	Services	Measure	Merger effect	
Noether (43)	1977–78	U.S.	Various diagnoses	Charges	-1%	Controls for marginal costs
Staten, Umbeck and Dunkelberg (45)	1983	IN	All inpatient	Discounts from charges	+2%	
Melnick et al. (41)	1987	CA	All inpatient	Transaction price	+2%	Price measure, market definition, controls for marginal cost
Dranove, Shanley and White (29)	1988	CA	Hospital cost centers	Adjusted charges	+5%	
Dranove and Ludwick (27)	1989	CA	10 common procedures	Adjusted charges	+17%	Controls for marginal cost
Lynk (38)	1989	CA	10 common procedures	Adjusted charges	-1%	Controls for marginal cost
Brooks, Dor and Wong (18)	1988–92	U.S.	Appendectomy	Transaction price	+2%	Price measure
Simpson and Shin (44)	1993	CA	All discharges	Net revenue per discharge	+10%	Controls for marginal cost
Keeler, Melnick and Zwanziger (36)	1994	CA	10 common procedures	Adjusted charges	+6%	Market definition, controls for marginal cost
Lynk and Neumann (39)	1995	MI	All inpatient	Transaction price	-3%	Price measure
Dor, Grossman and Koroukian (25)	1995–96	U.S.	Heart bypass	Transaction price	+2%	Price measure
Dor, Koroukian and Grossman (26)	1995–96	U.S.	Angioplasty	Transaction price	+3%	Price measure
Capps and Dranove (19)	1997–01	Various	All inpatient	Transaction price	+4%	Price measure, market definition

* The merger effect is the effect on price predicted by the study for a consolidation from five equally sized hospitals to four hospitals in the market, amounting to an increase in the HHI from 2,000 to 2,800.

In this analysis, as the authors note, the relationship between market competition and prices is used to calculate the listed merger effect, which is the effect on price predicted by the study for the consolidation from five equally sized hospitals to four hospitals in the market. The impact ranges from a slight reduction to a 17% increase.

Recent analyses have become more sophisticated and refined in their approach to both market definition and measures of price. These studies generally confirm the findings of previous authors. Akosa Antwi et al. (2009), Dranove et. al., Melnick and Keeler (2007), and WU (2008) all indicated that increases in market power resulted in increases in price. Cooper et. al. (2015)[13] analyzed claims data between 2007 and 2011 to look at a variety of factors, including the impact of market power on prices. The authors found that even after controlling for demand and for other cost measures, hospital prices in monopoly markets were 15% percent higher than those markets with four or more hospitals.

The review of studies of actual mergers is less robust, but still suggests that hospital consolidation could result in price increases, but market structure and competition for specific services play a key role. One study (Dafny, 2005)– which looked at merging hospitals within 3

[13] Zack Cooper, Stuart Craig, Martin Gaynor, John Van Reened. The Price Ain't Right? Hospital Prices and Health Spending on the Privately Insured. December, 2015.

miles of each other – showed a 40 percent increase in prices over the long run.[14] On the other hand, Connor (1997), and Connor and Feldman (1998) found that prices rose more slowly in merger than in non-merger markets, except in those areas where market competition was low already. The authors argue that their market definition was overly broad (among other concerns) but highlight the fact that market (and potentially product) definition is very important to understanding the price impacts of hospital consolidation.

While most studies have looked at horizontal mergers in the same geographic area, Dafny et. al. (2016)[15] took the literature a step further and looked at both those hospitals that merged within the same state, and those that merged across state lines. Similar to work previously conducted, Dafny (2005) found that hospitals gaining members within a state saw price increases of 6-10 percent, while hospitals gaining system members out-of-state exhibit no statistically significant changes in price.

Quality of Care

There is little evidence to suggest that quality improves with increasing hospital concentration. Kessler and McClellan (2000), Mukamel et al. (2002), Shen (2003), and Kessler and Geppert (2005) all used Medicare data to assess various measures of mortality, principally with a focus on acute myocardial infarction. These studies found that there was either no impact, or a slight decrease in the quality of care as measured by AMI mortality associated with increasing hospital concentration. More recent studies of the National Health Service show similar results (Cooper et al. 2011, Gaynor et al, 2010, Bloom et al. 2010).

Studies on the full population of the U.S. show similar results (Mukamel et al. 2001; Gowrisankaran and Town, 2003; Volp et al., 2005). Cuellar et al. (2003) look at more broad measures of quality of care, including rates of readmission, adverse patient safety events, and mortality, and found weak results, with only one measure – rates of overused procedures – declining associated with increasing market concentration.

[14] Dafny L. Estimation and Identification of Merger Effects: an Application to Hospital Mergers. 2005, Mimeo, Northwestern University.

[15] Leemore Dafny, Kate Ho, Robin Lee. The Price Effects of Cross-Market Hospital Mergers." March, 2016.

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