

**The Financial Viability of Rural Hospitals  
in a Post-BBA Environment**

*Working Paper Series*

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## EXECUTIVE SUMMARY

Rural providers and policy makers are concerned that many rural hospitals have suffered significant losses under the Balanced Budget Act of 1997 (BBA) and that access to inpatient care may be at risk. In response to these and other concerns, Congress passed the Balanced Budget Refinement Act of 1999 (BBRA). However, only small portions of the BBA's cuts were returned to rural hospitals. There is still a risk that some rural hospitals may not be financially viable given current Medicare payment policies.

This paper evaluates the financial viability of rural hospitals under BBA and BBRA Medicare payment policies. To evaluate financial viability, we first project rural hospitals' profit margins for the years 1998 through 2004. The BBA will be fully implemented by 2004. Margins are projected using a simulation model that adjusts each hospital's historical profit margin for projected changes in hospital productivity and Medicare payments. The simulation model does not formally model potential changes in the profitability of non-Medicare patients.

In contrast with most simulations of the BBA, this paper also projects behavioral changes. We estimate the number of hospitals that will become Critical Access Hospitals (CAHs) and estimate the number of beds at each hospital. These projections are important because under the BBA and BBRA, Medicare payments will depend on the choices hospital boards make with respect to staffed beds and Critical Access Hospital status.

The model predicts that the median profit margin for rural hospitals will fall from 4.5 percent during 1995-1997 to between 2.1 percent and 3.2 percent after the BBA is fully implemented in 2004. The model also looks at the number of hospitals that will suffer significant losses. In this paper, a hospital is defined as suffering a significant loss when the losses are greater than one percent of its revenues in two of three years and average more than five percent of the hospital's fund balances (i.e. equity) over the three-year period. This definition of "significant" was used because we found it to be a good predictor of past hospital closures. The number of hospitals with significant losses is projected to increase from 12 percent in 1997 to between 16 and 19 percent in 2004 unless hospitals restructure their operations. The last time 19 percent of rural hospitals suffered losses that meet our definition of "significant" was during the late 1980s and early 1990s. During the period 1987 to 1993, an average of 35 rural hospitals closed per year (Moscovice, Wellever, and Stensland, 1999).

If isolated rural hospitals close, members of those communities may face reduced access to basic inpatient and emergency care. To help prevent the closure of hospitals that provide essential access to emergency care, the BBA included a provision to expand the EACH/ RPCH program into the Critical Access Hospital (CAH) program. Under the CAH program, a small rural hospital can be designated a Critical Access Hospital (CAH) if it meets certain federal criteria or if the state declares the hospital a "necessary" provider. These "necessary" providers will receive cost-based Medicare payments. Given current incentives, we expect states to declare a majority of their rural hospitals "necessary providers" to make them eligible for the CAH program.

If profit margins decline as is projected in the simulation model, the CAH program will be an essential tool for maintaining access to care in rural areas. Without the CAH program, lower profit margins would result in an increased rate of rural hospital closures. With the CAH program, state officials can use their “necessary provider” authority and their control of Medicaid rates to preserve rural hospitals that are deemed essential for access to care. If state officials choose to not grant “necessary provider” status to certain small rural hospitals, those small hospitals will face increased financial difficulty in a post-BBA environment.

## INTRODUCTION

Providers and policy makers are struggling to understand how the Balanced Budget Act (BBA) and the Balanced Budget Refinement Act of 1999 (BBRA) will affect the financial viability of rural hospitals. This paper addresses this concern by predicting how the BBA and BBRA will alter the strategies and profitability of rural hospitals. This evaluation of the BBA includes a projection of future profit margins for rural hospitals and a discussion of what types of hospitals will face substantial losses when all of the provisions of the BBA and BBRA are fully implemented.

Working papers by Project Hope (1999) and North Carolina's Cecil G. Sheps Center (2000) suggest that rural hospitals have an unusually high exposure to the BBA due to low patient volumes and a high level of dependence on home health payments, skilled nursing care payments, and outpatient payments. An earlier study of the BBA by HCIA (1999) predicts that small rural hospital margins will fall from 4.2 percent in 1998 to -5.6 percent in 2002. The HCIA did not factor in the impact of the Critical Access Hospital (CAH) program and the study was conducted before the BBRA was passed. After the BBRA was passed, the Lewin Group evaluated post-BBRA Medicare payment policies in a report prepared for the American Hospital Association. The Lewin Group predicts that the BBRA will provide some relief for rural hospitals, but that rural hospitals will still suffer losses on their Medicare patients (Lewin, 2000).

One of the limitations of the Lewin report and earlier studies (Lewin, 2000; Lewin, 1999; HCIA, 1999) is that they did little to evaluate how hospital behavior will change given the new Medicare policies.

This study evaluates the effects of the BBA after projecting the conversion of certain hospitals to Critical Access Hospital (CAH) status. The BBA stipulates that certain isolated

rural hospitals will be able to convert to CAH status and receive cost-based reimbursement for inpatient and outpatient care. The option of converting to CAHs will allow some of the most financially troubled rural hospitals to retain cost-based reimbursement for outpatient care and benefit from cost-based reimbursement for inpatient care. Due to the CAH provision of the BBA, the BBA will benefit some rural hospitals.

This paper first projects the number of rural hospitals that will have the option of converting to CAH status. Second, we estimate the future profitability of rural hospitals given the expected changes in Medicare payments, expected changes in the number of beds and conversions to CAH status. Third, we simulate how many hospitals will suffer significant losses during the period 1998-2004. Given the potential for significant losses at small rural hospitals, we discuss whether the CAH program will be able to safeguard access to care in rural areas.

#### **METHODOLOGY FOR PREDICTING CONVERSIONS TO CRITICAL ACCESS HOSPITAL STATUS**

The BBA requires that Medicare start to pay SNF, home health, and outpatient services based on a prospective payment schedule rather than based on costs. However, the BBA and BBRA give each rural hospital some options for retaining cost-based outpatient payments depending on the hospital's number of staffed beds and CAH status. Through 2003, a rural hospital that chooses to staff less than 100 beds will have the option of having outpatient Medicare payments based on the ratio of Medicare reimbursement to costs that were received in 1996. In this paper, we assume that hospitals with an average daily census of less than 80 will staff less than 100 beds in order to retain cost-based outpatient reimbursement through 2003. Our model assumes that the reduction in beds will not affect profits in any way other than to allow for cost-based outpatient payments.

Certain small rural hospitals also have the option of becoming Critical Access Hospitals (CAHs). Critical Access Hospitals will receive cost-based Medicare reimbursement for inpatient and outpatient care. To qualify for CAH status, a hospital must be willing to maintain no more than 15 acute care beds (25 total beds including swing beds). CAH hospitals must also be either located more than 35 miles (15 miles by secondary road) from all other hospitals or be designated a “necessary” hospital by the state in which the hospital is located (HCFA, 1997). Small isolated rural hospitals are given special payment provisions due to a belief that lower volume hospitals may not have the economies of scale necessary to keep costs below Medicare’s prospective payment rates.

### **Assumptions Used to Predict the Number of Critical Access Hospitals**

To predict whether a hospital will have the option of converting to CAH status, we follow a methodology similar to Dalton, Howard, and Slifkin (2000). Our model assumes that all hospitals located more than 15 miles “as the crow flies” from another hospital and which have an average daily census less than 20 will become CAHs if conversion to a CAH will increase the hospital's Medicare payment rates.

By predicting that hospitals with a census of over 20 will not convert to CAH status, this model assumes that hospitals will not substantially reduce inpatient admissions in order to meet the limit of having 15 acute care beds in use at one time. The practical effect of this assumption is that the projected number of CAHs may be a conservative estimate.

The distance criteria is less stringent since states have the ability to declare a hospital a “necessary” provider and nullify the federal requirements that a hospital be more than 35 miles by highway and 15 miles by secondary roads from all other hospitals (HCFA, 1997). Since the awarding of “necessary provider” status does not place a financial burden on states (unless the

state pays cost-based Medicaid reimbursement to CAHs), states have tended to set liberal criteria for determining which hospitals are “necessary providers.” In many states, the vast majority of rural hospitals could qualify as necessary providers.<sup>1</sup> Given that HCFA has allowed states to set liberal guidelines for “necessary provider” status in their state health plans, HCFA is not expected to challenge a state's decision to declare a rural hospital a necessary provider.

In this paper, we have used the 15-mile criteria to estimate which hospitals could qualify for CAH status. State governments and HCFA may approve some hospitals' applications that are less than 15 miles from another provider and deny applications from hospitals that are more than 15 miles from a provider, but on average the 15-mile criteria should provide a reasonable (though possibly conservative) estimate of the number and type of hospitals that will qualify for CAH status.

The BBRA also requires that CAHs have an average stay of less than 96 hours. However, Medicare cost reports for 1997 indicate that the average stay for small rural hospitals was already close to 96 hours, so the length of stay requirement was not deemed an impediment to converting to CAH status. When asked about the changes that were needed to comply with the length of stay requirement, one CAH administrator stated that the hospital needed to have discharge planners and medical records staff available on weekends. The administrator said, “We didn't change a lot... No one walking down the halls could tell the difference since we changed to critical access” (Taylor, 2000).

Given the above criteria, it is projected that among the 1,712 rural general and surgical hospitals with available data, 809 (47%) could qualify for CAH status; 121 (7%) will continue to have over 100 beds; and 782 (46%) will have less than 100 beds but are not expected to qualify for CAH status. Of the hospitals that qualify for CAH status, 117 were already designated CAHs

by February 1, 2000 (North Carolina Rural Health Research Center, 2000). For hospitals that are expected to become CAHs, but that were not yet CAHs by February 2000, we assume conversion occurs on the first day of the hospital's 2001 fiscal year. Modeling a gradual conversion process would not substantially alter the analysis.

To evaluate the sensitivity of our simulation model to the criteria used to predict CAH status, we tested distance criteria ranging from 0 to 35 miles and evaluated occupancy criteria ranging from an average daily census of 15 to an average daily census of 40. The number of hospitals qualifying for CAHs under this range of assumptions varied from five percent of rural hospitals up to 80 percent of rural hospitals. The different criteria for CAH status caused the simulation model's median profit margins for rural hospitals to vary by less than .7 percent from the projections shown in this paper. The benefits of looser CAH criteria on actual profit margins are limited because post-BBA prospective payments (the sum of inpatient and outpatient payments) are expected to be similar to or greater than cost-based reimbursement for most large rural hospitals.

#### **METHODOLOGY FOR SIMULATING THE BBA'S IMPACT ON PROFIT MARGINS**

The profit margins of rural hospitals during 1998-2004 are estimated by adjusting historical cost report data for changes in Medicare payment policies. Cost report data from 1995, 1996, and 1997 are adjusted for thirteen changes in Medicare payments that are stipulated in the BBA and BBRA. Each of the three years serves as a different base year resulting in three different sets of projected margins for each rural hospital. The median of the three projected profit margins is used to limit the influence of outliers, unusual events and errors in the cost reports.

The magnitudes of the thirteen changes in Medicare payment policies are outlined in Table 1. Most of the changes are expected to reduce Medicare payments to hospitals. Only the CAH program is expected to benefit rural hospitals. While no single change in Medicare payment policies is expected to have a dramatic effect on rural hospitals, the aggregate effect of the thirteen changes may be large enough to reverse a significant portion of the financial gains rural hospitals made during the 1990s. Before the aggregate effect of the changes is presented, the methodology used to estimate the impact of each one of the thirteen changes is discussed individually.

*Change 1: The CAH Program.* For hospitals eligible for conversion to a CAH, both CAH and non-CAH profits are projected. The model assumes that CAH-eligible hospitals will choose CAH status if they would receive more from cost-based reimbursement than they would from Medicare's post-BBA payment schedule. The CAH program is expected to significantly improve the sustainability of the smallest rural hospitals.

*Change 2: Inpatient Operating Payments.* The BBA froze 1998 payment rates for inpatient operating costs at the rate provided in 1997. Hence operating profits would have fallen in 1998 by an amount equal to a hospital's increase in input prices less any productivity gains at the hospital. To estimate changes in productivity, we follow the methodology of MedPAC (1998) and assume the productivity improvements reduce the cost of care by one percent in each year due to reductions in length of stay and other efficiency gains. Given that input prices rose by 2.8 percent in 1998, it is estimated the inpatient operating profits on Medicare patients fell by 1.8 percent. During 1999-2002, the BBA stipulates that Medicare inpatient prices will increase by 1.9 percent, 1.8 percent, 1.1 percent, and 1.1 percent below the anticipated inflationary increase in the cost of hospital inputs. One exception is that sole

**Table 1**
**The BBA and BBRA Policies that are used to Project Hospital Profit Margins**

<b>Policy Change</b>	<b>Magnitude of the Change</b>	<b>Projected Mean<sup>1</sup> Effect on Rural Hospitals' 2004 Overall Net Profit Margins</b>
<b>Critical Access Hospital Program</b>	Dependent on each hospital's cost of care and state policies regarding "necessary" providers.	0.72% increase
<b>Changes in Inpatient Payment Rates</b>		
Reduced inpatient rate increases	No inflationary increase in 1998 and increases that are 1.9%, 1.8%, 1.1%, and 1.1% below the market basket in 1999 to 2002. Market basket increases in 2003-2004.	0.29% reduction
Reduced inpatient capital payments	A 15.68% reduction in 1998 to 2004 with an additional 2.1% reduction in 1998 to 2002.	0.32% reduction
<b>Changes in Outpatient Payment Rates</b>		
Outpatient prospective payment	Dependent on hospital costs.	0.51% reduction
Eliminate "formula driven overpayment"	Dependent on the difference between Medicare rates and hospital charges	0.39% reduction
<b>Post-Acute Care Provisions</b>		
Prospective home health payments	Dependent on costs and behavioral changes	0.0% to 0.18% reduction
Prospective payment for skilled nursing care	Dependent on costs, case mix, and behavioral changes	0.0% to 0.35% reduction
Swing bed payments based on prospective SNF rates	Dependent on costs of care and regulations still to be issued	0.0% to 0.28% reduction
Transfer provision	Dependent on the number of admissions and type of discharge for 10 specific DRGs	0.0% to 0.31% reduction
<b>Other Changes</b>		
Reduced payments for bad debts	Reduced by 25% in 1998, 40% in 1999, and 45% in 2000 to 2004.	0.12% reduction
Reduced disproportionate share (DSH) payments	A 4% reduction in DSH payments is phased in through 2002 and is assumed to remain through 2004.	0.01% reduction
Reduced indirect medical education (IME) payments	Phases in a 28.6% reduction in IME payments through 2002.	0.01% reduction
Reduced variation in direct	Dependent on current payments per resident	No change
<b>Aggregate Impact</b>		
Total impact of the BBA and BBRA on mean net profit margins 1997 to 2004	Aggregate impact	0.9% to 2.1% reduction
Total impact of the BBA and BBRA on the median profit margin	Aggregate impact	1.3% to 2.4% reduction

<sup>1</sup> Changes in profit margins are calculated by comparing hospital profits in 1997 under post-BBA/Post-BBPA regulations in 2004.

community hospitals are given a full inflationary update in 2001. Since operating payments are not expected to keep up with inflation, inpatient margins are expected to fall through 2002.

Inpatient margins are expected to recover slightly in 2003 and 2004 due to continued productivity improvements and full market basket increases in Medicare rates.

*Change 3: Inpatient Capital.* Inpatient capital payments were reduced by 15.68 percent in 1998 and by another 2.1 percent for the years 1998-2002. In the simulation model, the 2.1 percent reduction in capital is assumed to be restored in 2003.

*Change 4: Prospective Outpatient Payments.* Starting in the year 2000, hospitals with under 100 beds will be paid based on a prospective fee schedule. Rural hospitals with under 100 beds have the option of receiving cost-based reimbursement through 2003. The effect of transitioning to prospective payment was simulated by the Health Care Financing Administration (HCFA). HCFA used 1996 cost report data to evaluate how much each hospital will gain or lose by transitioning to the new prospective payment system. HCFA had sufficient data to make projections for 1,824 of the approximately 2,200 rural hospitals in the United States and posted its findings on the HCFA web site.

While HCFA has provided the best available estimates, the estimates come with certain caveats. Since hospitals may be more careful about outpatient coding when their revenue depends on coding, HCFA may have overestimated rural hospital losses from outpatient services. It is also possible that HCFA underestimated losses due to not estimating losses for visits with missing data. Despite the limitations of the HCFA analysis, it is considered the best available data and was used to project how prospective payment will affect hospitals.

*Change 5: Formula Driven Overpayment.* In addition to the effect of prospective payment, the BBA reduces outpatient payments by eliminating the “formula driven

overpayment” for ambulatory surgery, radiology, and other diagnostic services. Prior to the BBA, Medicare payments were reduced to account for patient’s coinsurance by subtracting an amount equal to 20 percent of the Medicare fee schedule payment. However, the patient’s copayments were often based on charges rather than Medicare payments, hence there was usually a “formula driven overpayment” to hospitals. The simulation model accounts for BBA provisions that remove this formula driven overpayment by basing reductions for coinsurance on a hospital's charges.

*Change 6: Home Health Care.* Home health care payments were originally paid based on the cost of care, and providers had little incentive to control costs. From 1990 to 1997, payments to home health agencies grew from \$3.7 billion to \$17.8 billion and the average number of visits per beneficiary receiving home health doubled from 36 to 73 (HCFA, 1999). Following the BBA, an interim payment system was developed that set per visit and per beneficiary limits on reimbursement. Starting in October 1, 2000, HCFA will be paying hospitals based on a prospective payment system where the hospital receives a fixed payment for each 60-day episode of care. Prospective payment will give hospitals an incentive to reduce the number of visits and the cost of care.

Since it is very difficult to estimate how hospitals will change the number and cost of visits, it is not clear whether the prospective payment system for home health will significantly reduce the profits of rural hospitals. Instead of estimating potential losses or gains under the system, we project optimistic and pessimistic bounds on the profitability of rural home health agencies. The optimistic scenario assumes that hospitals break even on home care services. If hospitals chose to use less expensive home care employees or to reduce the number of patient visits, hospitals may be able to compensate for any reductions in Medicare payments.

The pessimistic scenario assumes that hospital home care services become so unprofitable that the hospitals close the facilities. If a home care facility is closed, fixed costs that were previously allocated to home care may have to be absorbed by the hospital. Hence, the fixed costs of home health care are viewed as an upper bound on the losses that the hospital may incur before closing the agency.<sup>2</sup>

*Change 7: Skilled Nursing Care.* Skilled nursing facilities have substantial fixed costs and are more dependent on Medicaid than Medicare. Therefore we expect hospitals to absorb the losses associated with reduced Medicare payments rather than close the facilities. Hospitals began a transition to prospective payment for skilled nursing services starting on July 1, 1998. HCFA projected that hospital-based rural skilled nursing facilities would, on average, face an 18 percent reduction in their Medicare payments in the first year of the transition to the prospective payment system and a 30 percent reduction by the time the system was fully implemented (Federal Register, July 30, 1999). However, due to a concern that the prospective rates did not adequately compensate providers for high-cost cases, the BBRA increased rates by 20 percent for 15 categories of high-cost patients. These payments will remain in effect from April 2000 until a refined case mix system is designed and implemented. Skilled nursing facilities will also receive a temporary increase in payments of four percent in 2001 and 2002. Given the temporary nature of these adjustments, it is clear that the legislation governing skilled nursing care will continue to evolve and will probably change before 2004, making it difficult to project future profits and losses.

As an alternative to projecting profits, optimistic and pessimistic scenarios for skilled nursing services are proposed. The optimistic scenario assumes no change in skilled nursing facility profitability and the pessimistic scenario assumes that hospitals face a reduction in their

Medicare per diem rates equal to 30 percent of their facility's average cost of care per patient day.<sup>3</sup> These lower and upper bounds on expected profitability will be combined with lower and upper bounds for home health care, swing beds, and the effect of the transfer provision to arrive at a lower and upper bound for each hospital's expected profitability.

*Change 8: Swing Bed Payments.* While only 36 percent of rural hospitals in our sample have skilled nursing facilities, 61 percent of rural hospitals in our sample have swing beds. The BBA requires that a system for prospective payment for swing beds be developed by 2001. Until that time, swing bed rates will equal the sum of costs for ancillary services plus “the average Medicare rate per patient day for routine services provided in freestanding SNFs in the region where the swing-bed hospital is located” (Code of Federal Regulations, 1999). The average per diem revenue for rural hospital based SNFs is approximately \$200 per day prior to the implementation of prospective SNF payments. We estimate an upper bound on swing bed losses that reflect reduced payments of approximately 30 percent of the average daily rate or \$60 per inpatient day.

*Change 9: The Transfer Provision.* The BBA reduces payments to hospitals if the hospital transfers a patient in one of ten specific DRGs to a SNF within a set period of time. MedPAC evaluated the transfer provision using 1999 claims data from HCFA (MedPAC, 2000). On average MedPAC found that DRG payments were reduced by 4.9 percent for the ten DRGs, which is equivalent to .7 percent of all DRG payments. The impact of the program on individual hospitals will vary greatly depending on their case mix of patients, access to SNF beds and access to swing beds. Most rural hospitals have swing beds so physicians at the hospital could transfer patients to swing beds and avoid the impact of the transfer provision.

Because we do not have the data necessary to predict how the program will affect individual rural hospitals, we created optimistic and pessimistic bounds on the impact of the transfer provision. The optimistic scenario is that the rural hospital is not affected by the transfer provision and the pessimistic scenario is that inpatient DRG payments fall by 1.5 percent. Using 1999 data, MedPAC found that half of all hospitals saw DRG payments fall by less than .3 percent, and only one-tenth of hospitals faced a decline of 1.5 percent or more (MedPAC, 2000).

*Changes 10-13.* The simulation model accounted for the reduction in payments for bad debts, the reduction in the payments for serving a disproportionate share (DSH) of low income patients, the reduction in indirect medical education payments, and the change in payments for direct graduate medical education payments (DGME). The changes in DGME regulations are designed to reduce the variance in payments per resident. Hospitals with current payments lower than 70 percent of the adjusted national average will see increases while hospitals with payments above 140 percent of the adjusted national average will see decreases in payments. The Association of American Medical Colleges (AAMC) estimated how the new DGME rules will affect payments to specific hospitals. The AAMC estimates are incorporated into this analysis. While payments for graduate medical education are significant for a few rural facilities, most rural hospitals will not be affected by these changes.

### **Omitted Changes In Medicare Policies**

Not all aspects of the BBA are included in the simulation model. One change that has been estimated in other analyses (Lewin, 2000) is the change in the outlier payments. When setting the criteria for outlier payments, HCFA will no longer take graduate medical education or disproportionate share payments into account in determining whether a patient's costs are high enough to be deemed an outlier. To evaluate whether the outlier provision will significantly

affect rural hospitals, we examined hospitals that were under the new rules for at least half of the 1997 fiscal year. On average, the fiscal year 1997 outlier payments were not lower than the 1996 payments. The 1997 outlier payments were slightly higher in absolute dollar terms and about equal to 1996 as a percentage of inpatient Medicare revenue. Given this finding, we assumed that the outlier provisions in the BBA would not have a significant effect on rural hospitals.

We also did not evaluate whether rural hospitals could game the system by taking advantage of differences in the way Medicare pays for swing bed care and SNF care. Among rural hospitals in our sample, 15 percent have swing beds and a SNF. Physicians at these hospitals could send patients with high ancillary costs relative to Medicare SNF payment rates to swing beds. The hospital could then receive cost-based reimbursement for ancillary services provided to patients with high ancillary costs and prospective payment for patients with low ancillary costs. While the possibility of gaming the system is acknowledged, the net financial impact is expected to be small and is not included in the simulation of future hospital profitability.

## **SIMULATION RESULTS**

Given the simulated changes in hospital strategy and Medicare reimbursement, each hospital's future profit margin was estimated based on the hospital's historical financial data. Point estimates of profit margins for the years 1998 through 2004 were developed for each hospital by making the thirteen adjustments listed above to the hospital's median level of profits during the years 1995-1997. The median of the three profit margins was used to limit the influence of one-time events and errors in the Medicare cost reports.

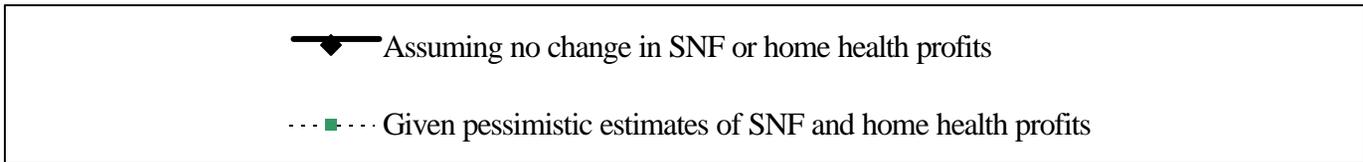
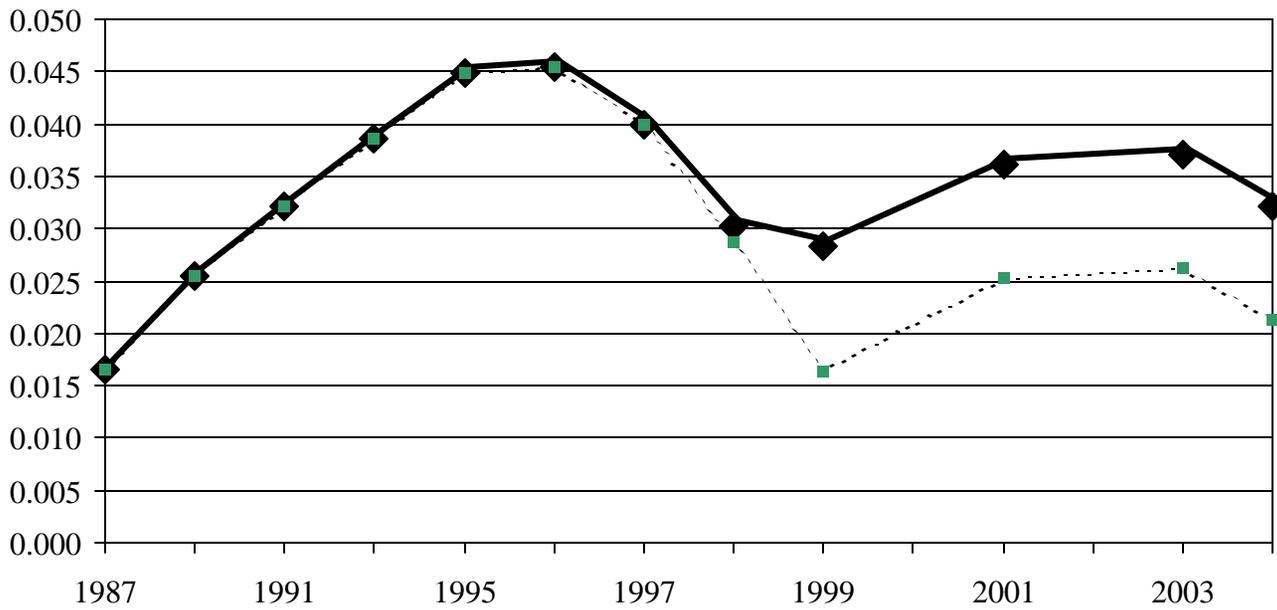
The simulation model predicts that the Medicare revenues will be three to six percent lower under BBA/BBRA payment policies than they would have been under pre-BBA payment policies. The reduction in Medicare profits is expected to cause the median overall profit margin of rural hospitals to be 1.3 to 2.4 percent lower than rural hospitals' median profit margin of 4.5 percent during 1995-1997. As shown in Figure 1, profit margins fall significantly from 1997 to 1999. They are projected to recover during 2000 to 2003 as the benefits of the BBRA are felt and as more hospitals become Critical Access Hospitals. In 2004, profit margins are expected to fall again due to the implementation of outpatient prospective payment for all non-CAH hospitals. By the time the BBA is fully implemented in 2004, net profit margins are projected to be in the range of 2.1 to 3.2 percent. The optimistic estimate of 3.2 percent ignores the transfer provision and assumes no change in skilled nursing facility, swing bed, or home health profitability. The pessimistic estimate of 2.1 percent includes pessimistic projections of how the home health, SNF, swing bed and transfer provisions of the BBA and BBRA will affect profitability. Median profit margins of 2.1 to 3.2 percent are similar to the profit margins at rural hospitals in the late 1980s and early 1990s.

In this paper we have focused on overall profit margins so we could examine the sustainability of rural hospitals. Our methodology is slightly different than the methods used by The Lewin Group (2000) in their simulation of the BBA and BBRA's impact on urban and rural hospitals. The Lewin report focused purely on Medicare margins and reported mean margins rather than median margins. To determine whether our results are comparable to the Lewin report, we examined the projected Medicare margins in our model.

Our simulation model predicts that the mean Medicare margin for rural hospitals will be between +.9 percent and B2.5 percent in 2004. The Lewin Group (2000) estimated that, if

Figure 1

Median Profit Margins  
for Rural Hospitals, 1987-2004



productivity decreases the cost of care by one percent per year, rural hospitals' profit margins on Medicare patients would fall to a mean of -3.3 percent in 2004. While there are several small methodological differences between this paper and the Lewin simulation, one major difference is that this paper is dynamic in the sense that it allows for future conversions to Critical Access Hospital status. The Lewin model accounts for hospitals that are already CAHs, but does not allow for future conversions to CAH status. If our model ignored the potential for additional CAH conversions, the projected mean Medicare margin would range from -1.7 percent to -5.4percent.<sup>4</sup> Given The Lewin Group's projection of a -3.3 percent Medicare margin, it appears that a static version of our model would yield similar results to the Lewin simulation model.

### **FINANCIALLY TROUBLED HOSPITALS**

While the median rural hospital may still be profitable in 2004, many rural hospitals will suffer significant losses unless they increase private-payer prices, receive increased Medicaid payments, or restructure their hospital. The simulated profit margins are used to predict how many hospitals will suffer losses of greater than one percent of their revenues when the hospitals are paid based on post-BBRA regulations, assuming no change in private-payer or Medicaid profits. If the hospital is projected to suffer losses greater than one percent of its revenues when using two of the three base years (1995 to 1997), the losses were deemed persistent (meaning the losses would not be the result of unusual circumstances the hospital faced in one particularly unprofitable year). Next we examined the extent of the loss relative to the hospital's financial reserves as measured by their total fund balances (i.e. equity). If the hospital is expected to lose more than five percent of its equity per year, the losses were deemed substantial in relation to the hospital's ability to absorb losses. Losses that are projected to be persistent and substantial are deemed "significant" in relation to the hospital's revenue and equity.

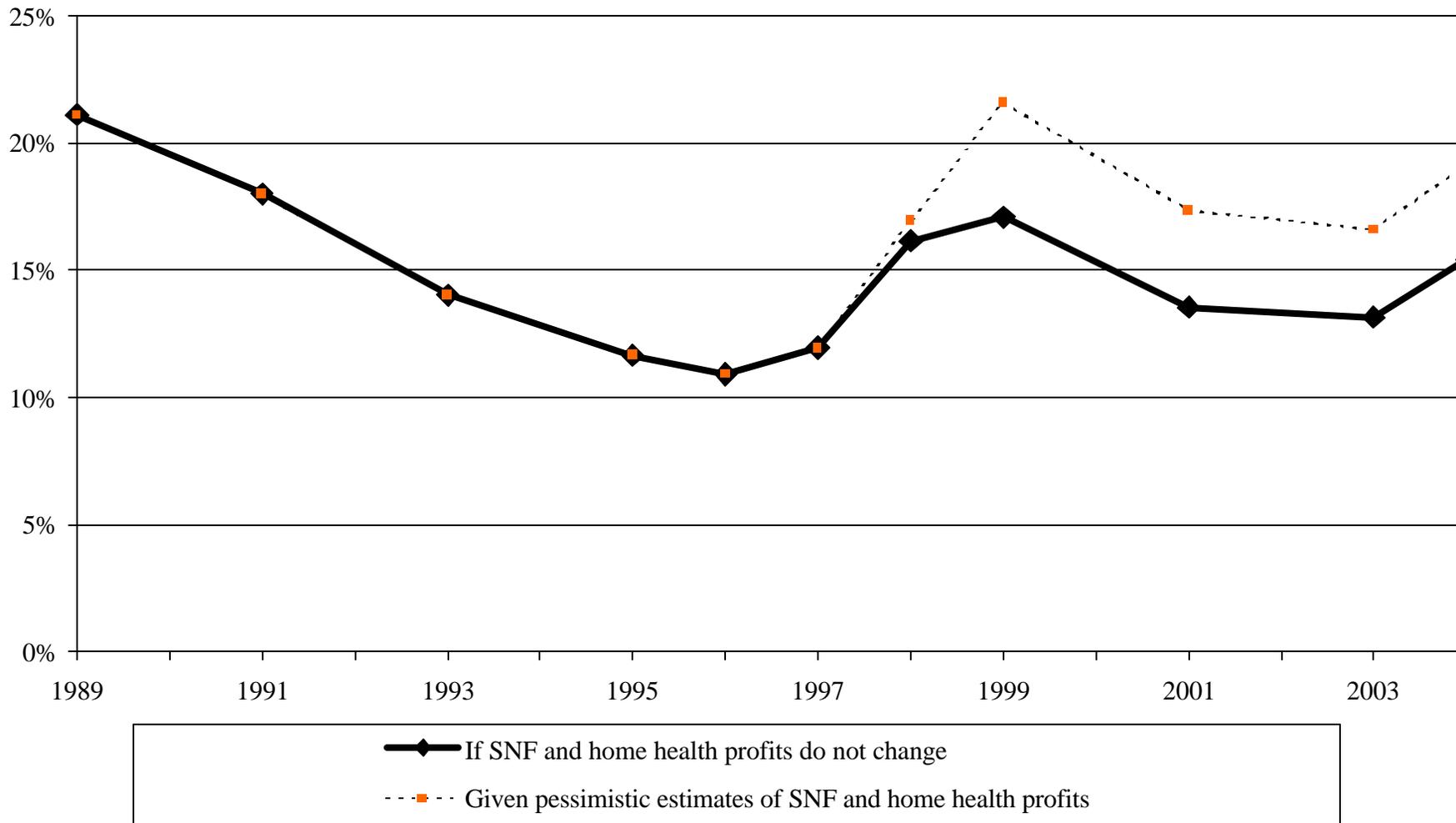
To provide a point of historical comparison, we also calculated the percentage of hospitals that have historically suffered significant losses over the period 1987 through 1997. During that period, losses were deemed significant if they were greater than one percent of the hospital's revenue in two of three years and averaged more than five percent of equity over the three-year period. This definition is used to reduce the impact of one-time events and to make historical results comparable to projected losses.

To evaluate whether our definition of significant losses is appropriate, we tested the measure's ability to predict hospital closure. The test was conducted by comparing Medicare cost report data from 128 hospitals that closed during the period 1989 through 1996 to data from 2,175 hospitals that remained open during that same period. First we tested whether "significant" losses were a sensitive predictor of whether a hospital would close. We found that 58 percent of the hospitals that closed during the period 1989 through 1996 had suffered what we term "significant" losses during the period 1987 to 1989. Next we tested whether significant losses were a phenomenon found specifically in hospitals that closed. Of the hospitals that remained open, only three percent suffered significant losses during 1987 to 1989. Other definitions of significant losses were tested, but this definition appeared to have a desirable combination of specificity, sensitivity, and intuitive appeal.

Figure 2 illustrates that the number of hospitals suffering significant and persistent losses is expected to increase from 12 percent in 1995-1997 to between 15 percent and 19 percent in 2004 if the profitability of non-Medicare patients does not change. A key policy question is whether BBA-induced financial strain will jeopardize rural patients access to inpatient and emergency care.

Figure 2

Percentage of Rural Hospitals  
Suffering Significant\* Losses



\*Losses greater than 1% of revenues in two of three years and greater than 5% of equity per year are considered significant losses

**WHICH HOSPITALS ARE AT RISK?**

Table 2 compares the pre-BBA and post-BBRA profits of various categories of hospitals. The table indicates that the BBA will not drive many large rural hospitals into a state of financial difficulty, and the BBA may help small hospitals that qualify for CAH status. The negative impact of the BBA will fall hardest on small hospitals that do not become Critical Access Hospitals.

The outlook is grim for small hospitals that do not meet federal or state “necessary provider” criteria. In our simulation, approximately 150 small rural hospitals are projected to not qualify for CAH status due to being closer than 15 miles to other rural hospitals. If our projection is correct and states deny these hospitals “necessary provider” status, about one third are expected to suffer significant losses. Small hospitals suffering significant losses may feel pressured to consolidate with neighboring facilities or close their doors.

The project that 414 small rural hospitals in our sample of 1,712 hospitals will decline the opportunity to become a CAH even though they could qualify for CAH status. These hospitals will want to retain prospective payment for Medicare patients because their prospective payments are projected to be higher than cost-based reimbursement. Of the 414 hospitals that are expected to initially decline CAH status, at least 81 are expected to suffer significant losses unless they restructure their operations. While these 81 hospitals are projected to make profits on their Medicare patients, the Medicare profits will not be enough to compensate them for losses on other patients. Once the full impact of the BBA is felt in 2004, these hospitals may have to significantly restructure their operations. One restructuring option for these hospitals would be to significantly raise private rates, shrink in size, and then reconsider becoming a CAH.

**Table 2**

**Rural Hospitals Suffering Significant and Persistent Losses During 1995 to 1997 and Forecast to Suffer Significant Losses in 2004**

Type of Rural Hospital	Percent Suffering Significant Losses before the BBA (1995-1997 Data)	Percent Projected to Suffer Significant Losses in 2004	
		Optimistic Estimate <sup>a</sup>	Pessimistic Estimate <sup>b</sup>
Larger rural hospitals that are projected to have over 100 beds and an average daily census over 80. This category of hospitals is expected to have the greatest economies of scale (n=121).	0% (n=0)	3% (n=4)	7% (n=8)
Rural hospitals that are expected to have fewer than 100 beds but have an average daily census of over 20 and are not expected to become Critical Access Hospitals (n=628).	5% (n=29)	9% (n=54)	11% (n=70)
Rural hospitals with an average daily census of under 20 <sup>c</sup> , but have positive post-BBA Medicare margins and are not expected to be CAHs (n=414).	11% (n=47)	20% (n=81)	24% (n=98)
Rural hospitals with an average daily census under 20 that would like to become CAHs due to negative Medicare margins, but are closer than 15 <sup>c</sup> miles to another hospital (n=154).	18% (n=28)	30% (n=46)	40% (n=61)
Rural hospitals that are expected to be CAHs <sup>d</sup> (n=395).	25% (n=97)	21% (n=81)	24% (n=94)
Full sample of rural hospitals (n=1712).	12% (n=201)	16% (n=266)	19% (n=331)

1. The optimistic estimate assumes that hospital profits are not reduced by prospective payment for skilled nursing care, prospective payment for home care, and the post-acute care transfer provision of the BBA.
2. The pessimistic estimate is based on a pessimistic assumption regarding how new SNF payments, home health payments, and the transfer provision will affect rural hospital profits.
3. Hospitals without another hospital within 15 miles are projected to qualify for CAH status. The exact criteria will vary from state to state.
4. CAH profits in 2004 may be underestimated because changes in Medicaid payments are not factored into the analysis. The estimated number of CAHs is also a conservative estimate.

CAH status may become attractive for these hospitals if the hospital's patient volume shrinks to the point where the costs of care for Medicare patients rise above prospective payment rates.

CAH status alone is not a cure all for a hospital's financial troubles. Hospitals still have to at least break even on non-Medicare patients. Table 2 indicates that between 81 and 94 of the 395 CAHs in our simulation face significant losses (losses greater than one percent of their revenue and five percent of their equity) unless they see increases in private-payer rates, increases in Medicaid rates, or decreases in expenses. The good news for CAHs is that states have the option of paying their CAHs cost-based reimbursement for Medicaid patients and most unprofitable CAHs are expected to increase private-payer prices.

The incentive to raise private-payer rates is an indirect effect of receiving cost-based Medicare payments. Prior to becoming a CAH, any loss of private patients would cause the hospital's fixed overhead to shift onto a smaller pool of patients. Once the hospital is a CAH, the loss of private-payer patients causes an increase in the amount of overhead allocated to Medicare patients. Therefore, every time a CAH hospital loses a private patient, Medicare increases the hospital's reimbursement to partially cover the loss. Higher charges to private patients will also increase Medicare patient's copayments. CAHs may be able to improve profitability and sustainability by raising their prices even if higher prices cause a decline in their patient base. Critical Access Hospitals will remain financially viable unless they incur losses on Medicaid and indigent patients that are large compared to private patient profits, government contributions, and private contributions. If states provide a CAH with sufficient reimbursement to cover the hospital's cost of caring for Medicaid patients, the CAH will survive if local government contributions, charitable contributions, and profits from private-payer patients are sufficient to pay for indigent care.

The CAH legislation was originally designed to preserve rural hospitals that were isolated from other hospitals. Among the 1,712 rural hospitals evaluated in this study, 99 (6%) were located more than 35 miles from another hospital. Of the 99 isolated hospitals, 16 were suffering significant losses in 1997, and up to 19 are projected to suffer significant losses in 2004 unless they are able to improve the profitability of their non-Medicare patients.

While the potential closure of these 19 isolated hospitals should be of concern to policymakers, the relevant question to be asked in the context of this paper is whether the BBA made the closure of these hospitals more or less likely. On average, the CAH provisions of the BBA should make closure of these facilities less likely due to enhanced opportunities for cost-based Medicaid and a reduction in the risks associated with raising prices charged to private-payer patients.

## **LIMITATIONS**

The biggest limitation of our simulation model is the omission of potential changes in Medicaid policy. Under the BBA, states have the option of paying CAHs prospectively or based on the costs of providing care to Medicaid patients. Since the simulation model does not factor in the potential benefits of cost-based Medicaid payments, it may slightly underestimate the number of hospitals that will convert to CAH status and underestimate the profits of Critical Access Hospitals.

The simulation model also ignored CAHs increased incentive to raise private-payer rates. We cannot predict the degree to which local hospital boards will choose to increase private-payer rates. All we can say is that cost-based reimbursement for Medicare care patients acts as an additional incentive for hospitals to risk the loss of private patients by increasing prices.

There are several smaller omissions. We ignored the potential for hospitals to game the system by sending patients with high ancillary costs to swing beds. We also ignored numerous aspects of the BBA and BBRA (such as rebasing costs for sole community hospitals and unified billing for SNFs) that were deemed too insignificant to warrant inclusion in the simulation model.

One final limitation of the study is that we only examined hospitals in rural counties. The effect of the BBA on urban hospitals may be significantly different because they have different payment options and different revenue streams. We also did not evaluate whether urban hospitals will become reclassified as rural hospitals. The BBRA allows some hospitals that are in MSA counties to be classified as rural if the hospital's community is deemed rural by the Goldsmith Modification or by the state. For this reason, the number of CAH hospitals projected in this report only refers to CAHs in rural counties; there may be additional CAHs in urban counties.

## **DISCUSSION**

The BBA will cause significant changes at rural hospitals. Prospective payment for skilled nursing care and home health care may cause some rural hospital boards to reduce the scope of their hospital's services. As hospitals react to the BBA, Congress will have to carefully monitor changes in the quality and access to post-acute care. An even greater policy concern is whether rural hospitals will be able to continue providing access to basic inpatient and emergency care in a post-BBRA environment.

The simulation presented in this paper predicts that the BBA and BBRA will cause rural hospital Medicare profits to fall toward zero and total profit margins to fall to between 2.1 and 3.2%. A median Medicare profit margin of zero implies that approximately half of all rural

hospitals will be forced to subsidize the care they provide to Medicare patients, and approximately half can use Medicare profits to subsidize the care for indigent and other non-Medicare patients. Some policy makers may view this level of reimbursement as appropriate. MedPAC (2000) suggested that Medicare should “ensure access” for beneficiaries but not be expected to compensate providers for lost income from other payers. From MedPAC’s perspective, hospitals “poor provider financial performance” does not necessarily indicate that “the BBA missed the mark.” The BBA will only have missed the mark if the decline in Medicare revenues causes an unacceptable decrease in the quality or access to care.

The simulation model predicts that we will see a reduction in average profit margins, but the CAH program can be used to prevent the projected decline in Medicare profit margins from being translated into a decline in rural patient’s access to basic inpatient and emergency care. State officials can preserve access by declaring hospitals “necessary providers” and providing the hospitals with adequate Medicaid funding.

However, states may not want to use the CAH program to preserve all struggling rural hospitals. If states allow the cost of the CAH program to grow rapidly, states may face political and budgetary risks. From a political standpoint, states will want Congress to see them as appropriately using their CAH powers so that the federal government does not place new restrictions on states’ abilities to declare hospitals “necessary providers.” From a budgetary standpoint, states will want to limit Medicaid expenditures. To limit Medicaid spending, state policy makers may allow the closure of certain high-cost rural hospitals that are not essential for access to care.

The closure of a high-cost rural hospital may be viewed as the natural evolution of the health care system by some and as a failure of the health care system by others. To individuals in

a community losing its hospital, the closure may be an economic and cultural tragedy. From the perspective of a policy maker balancing the cost of care with access to care, it may be natural evolution. In this paper, we have shown that the financial pressures of the BBA will force state policy makers to decide the degree to which they will use state resources and federal Medicare dollars to preserve rural hospitals.

In the simulation model, we made the assumption that state policy makers would not declare a hospital a “necessary provider” when it is located less than 15 miles from another hospital. If states follow this policy, approximately 150 of the 1,712 rural hospitals in our sample would be denied “necessary provider” status and lose money on their Medicare patients. Of these 150 hospitals, approximately one third would face significant financial difficulties. If states were to place this type of restriction on the CAH program, policymakers need to understand that some rural hospitals would not survive under post-BBRA reimbursement rules.

States will make different choices when it comes to balancing access to care and cost of care issues. Policy makers in some states may preserve all of their rural hospitals through liberal “necessary provider” policies and Medicaid payments that fully cover the cost of care. Officials in other states may follow less liberal “necessary provider” guidelines and may choose to have lower Medicaid rates. While we cannot predict how officials in each state will balance access concerns and cost considerations, we can predict that the financial pressures associated with declining Medicare margins will continue to put political pressure on state governments to use the CAH program and their control of Medicaid rates to aid rural hospitals. Federal policymakers need to consider whether it is appropriate to have Medicare policies that force many small rural hospitals to depend on the CAH program and state-level policy decisions for their survival.

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**ENDNOTES**

1. To qualify for CAH status, a hospital must be more than a 35-mile drive from another facility (15 miles in the case of mountainous terrain or poor terrain), or be deemed a “necessary provider” by the state where the hospital is located. States use different criteria for deeming a hospital a “necessary provider.” For example, in Maine and Arkansas the state will consider demographic criteria such as income, unemployment, and percentage of people over 65 (Maine Office of Rural Health, 1998; Arkansas Department of Health, 1998). In Minnesota, a hospital must be 20 miles from another hospital or be the only hospital in the county (Minnesota Department of Health, 1999). In Georgia, the hospital’s perceived risk of closure is considered when evaluating whether the hospital is a “necessary provider” (Health Strategies Council, 1998). In general, it is to the state’s advantage to have liberal criteria, and the states have created very flexible criteria for CAH qualification. In certain states such as Maine and Minnesota, a majority of rural hospitals would qualify as “necessary” providers.
2. If the home health agency closes, it is also possible that hospitals may face discharge planning problems and longer lengths of stay for their Medicare patients. An analysis of a panel data set of 2,292 rural hospitals from 1989 to 1995 was used to determine whether hospitals were able to reduce patient’s length of stay when they formed a home health agency. The regression results provide modest evidence that a home health agency may reduce the average Medicare patient's length of stay. The t-statistic on the home health variable was 1.78. A range of plus or minus two standard deviations was used to estimate a range of possible reductions in the patient’s length of stay. Using the two standard deviation methodology, it is estimated that a home health agency reduces the length of stay for Medicare patients by 0.0 to 0.1 days.

The cost of inpatient care for a patient that could be released to home care should be close to the cost of caring for a patient in a swing bed or a SNF. In our data set, the average cost of caring for patients in hospital owned SNFs was roughly \$200 per day in 1997. This implies that the average cost of treating Medicare patients would increase by approximately \$20 per admission if the average length of stay increased by .1 days. Therefore, even if a hospital does close its home health agency, historical data suggests that Medicare costs would only increase by an average of \$0 to \$20 per Medicare discharge. Work by the GAO (1999) suggests that the BBA had not caused significant discharge planning problems. Given the modest impact of hospital-based home health agencies on length of stay and the work of the GAO suggesting few discharge planning problems are occurring, we chose to use a simulation model that does not to include an estimation of how the closure of a home health agency would affect inpatient costs.

3. The loss of 30 percent of the facility average per diem revenue may seem overly pessimistic since HCFA estimated a 30 percent reduction in Medicare payments without factoring in the benefits of the BBRA. However, the 30 percent figure mentioned by HCFA represents 30 percent of Medicare revenues as opposed to 30 percent of the facility average per diem revenues. We used a reduction equal to 30 percent of the average per diem rate where Medicare, Medicaid, and private-payer rates are included in the average. The 30 percent

figure represents a judgment call regarding a reasonable upper bound on SNF losses. It is not based on specific assumptions about how Congress will change SNF legislation once the temporary SNF reimbursement rules are replaced.

4. The Medicare margin is calculated as the sum of inpatient profits, outpatient profits, SNF profits, home health profits, and disproportionate share payments all divided by the sum of inpatient, outpatient, disproportionate share, SNF, and home health revenue. If we had left disproportionate share payments out of the margin calculation, Medicare profit margins would be approximately .5 percent lower than the margins in the text. The simulation model projects mean Medicare margins between 0.9 percent and -2.5 percent when allowing for future CAH conversions. If we ignored the potential for CAH conversions, then the mean projected Medicare margin is projected to range from -1.7 percent to -5.4 percent.

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