

# The Adequacy of Medicaid Program Payments to Hospitals in the Commonwealth of Pennsylvania



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# The Adequacy of Medicaid Program Payments to Hospitals in the Commonwealth of Pennsylvania

Submitted to:  
The Hospital and Healthsystem Association of Pennsylvania

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# *Executive Summary*

## **Purpose and Overview**

Dobson | DaVanzo was commissioned by the Hospital and Healthsystem Association of Pennsylvania (HAP) to evaluate the adequacy of payments to hospitals for Medicaid and uninsured patients in the Commonwealth with respect to:

- **Medicaid/uninsured payment-to-cost ratio (PCR):** The degree to which Medicaid program payments cover Medicaid patient care costs. Because Medicaid supplemental payments are often directed toward both the Medicaid and uninsured populations, we focus on PCRs for Medicaid and uninsured patients taken together.
- **Quality Care Assessment (QCA):** Revenue collected from the statewide provider assessment (i.e., hospital provider tax). In Pennsylvania, the QCA was implemented in state fiscal year (SFY) 2010-2011. The QCA authorizes the Pennsylvania Department of Human Services (DHS) to impose a statewide assessment on hospital net inpatient revenue, and net outpatient revenue as of July 1, 2018.
- **Patient Care Margins:** The degree to which Medicaid program payment adequacy allows for adequate all-payer hospital patient care margins. Hospital patient care margins indicate the degree to which hospital patient revenues from all payer sources cover hospital operating costs and are reflective of hospitals' overall financial health.

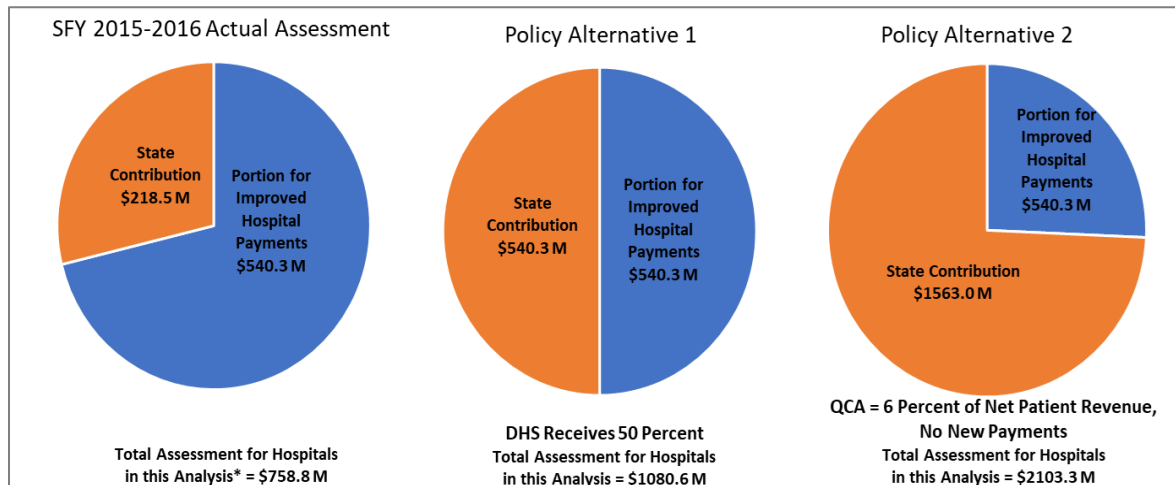
The report also considers the degree to which Pennsylvania hospitals are economically efficient to determine if efficiency improvements are likely to offset Medicaid program payment shortfalls. We also consider the broader economic implications for Pennsylvania—i.e., the degree to which Medicaid reimbursement affects the Commonwealth's economic activity, employment, and state and federal taxes. Finally, the report addresses potential consequences of Medicaid shortfalls to hospitals and the community. This includes private sector premium effects, such as cost-shifting—i.e., increases to private/commercial insurance premiums resulting from Medicaid underpayment.

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## Study Scenarios

We address these aspects of payment adequacy for three study scenarios, as depicted in Exhibit ES- 1 and described below.

### Exhibit ES- 1: State Contribution and Improved Hospital Payment Amounts under SFY 2015-2016 QCA and Alternative Policy Scenarios



\* The total assessment in SFY 2015-2016 was \$764 million and the state contribution was \$220 million. The assessment total of \$758.8 million presented in this exhibit, as well as the \$218.5 state contribution for SFY 2015-2016, reflects data from the subset of 210 hospitals used for this analysis. Please refer to Appendix B for a description of the methodology and data sources used in this report, including the selection of the analytic subset of hospitals.

1. **The baseline of state fiscal year (SFY) 2015-2016.** These are actual program results and are based on the most currently available data. In this baseline scenario, the quality care assessments total approximately \$759 million.

Since SFY 2015-2016, Pennsylvania hospitals have seen increases in net patient revenue, and modifications to the QCA in the intervening years have made use of this increased revenue base. Hospitals are paying increasing amounts under the current QCA policy landscape relative to SFY 2015-2016. Thus, specific dollar amounts have varied over time relative to those presented here. However, analyses of the recent 2015-2016 data help to assess the impact of potential future policy decisions.

2. **Quality Care Assessment Alternative 1 (Policy Alternative 1).** Currently, the “state contribution” from the QCA is approximately 30 percent of total hospital revenues generated by the assessment.<sup>1</sup> Policy Alternative 1 explores the impact

<sup>1</sup> The “state contribution” refers to that portion of the provider tax retained by the Commonwealth for purposes other than Medicaid payments to hospitals.

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of a potential policy change to increase the QCA’s “state contribution” to 50 percent. This would be operationalized through higher hospital assessment levels but without additional hospital payments. In this alternative scenario, the QCA is increased by approximately \$322 million.

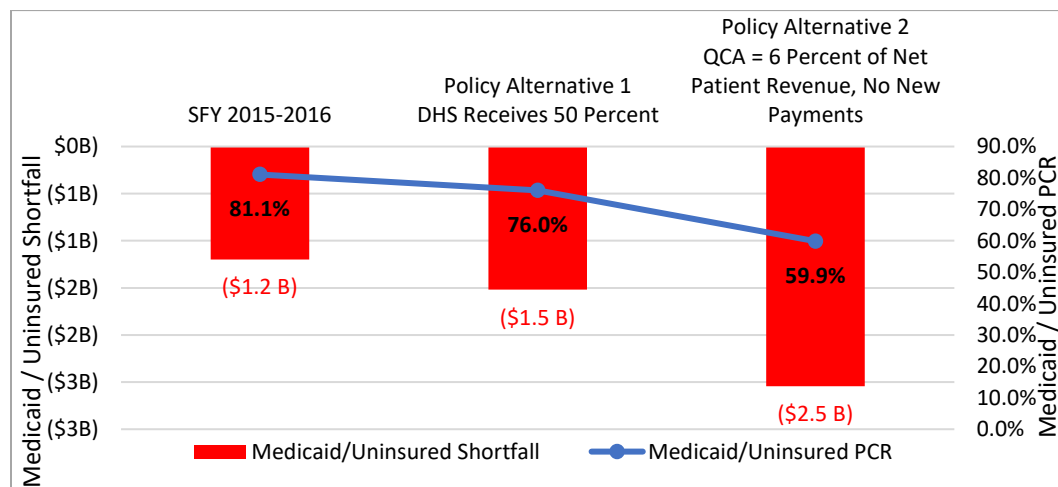
3. **Quality of Care Assessment Alternative 2 (Policy Alternative 2).** The impact that is estimated if the QCA is set to a maximum level of 6 percent of hospital net patient revenue (increased from less than 3 percent) through higher hospital assessment levels with no additional hospital payments.<sup>2</sup> In this scenario, the QCA is increased by approximately \$1.3 billion.

The findings in this report are presented for Pennsylvania hospitals overall and by rural classification. We note that this analysis is focused solely on the QCA, and we recognize that other factors could influence individual hospital payments and finances.

## Medicaid/Uninsured Payment-to-Cost Ratios

As of SFY 2015-2016, Medicaid/uninsured payments to hospitals were \$5.1 billion, while hospital costs were \$6.3 billion. The resulting PCR of 81.1 percent represents losses of \$1.2 billion to hospitals for the provision of care to Medicaid and uninsured patients. If the Commonwealth were to adopt more aggressive QCA policies, Medicaid/uninsured PCRs could fall to 59.9 percent, with commensurate losses of \$2.5 billion (see Exhibit ES-2).

**Exhibit ES-2: Medicaid/Uninsured Payment-to-Cost Ratio and Payment Shortfalls for Three Study Scenarios**



Source: Dobson | DaVanzo analysis of SFY 2015-2016 Pennsylvania MA Cost Reports and QCA Data

<sup>2</sup> Our alternative QCA estimates are presented in 2016 dollars so as to be consistent with our primary data sources.



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Notably, the PCR varies by rural classification. In SFY 2015-2016, the Medicaid/uninsured PCR for rural general acute care hospitals was 64.5 percent, versus 82.1 percent for all other hospitals. Under Policy Alternative 1, rural general acute care hospitals could experience Medicaid/uninsured PCRs of 60.6 percent. Under Policy Alternative 2, rural general acute care hospitals could experience Medicaid/uninsured PCRs of 41.8 percent. Results such as this could render many hospitals economically non-viable.

## Patient Care Margins

Patient care margins measure a hospital’s profitability related to its primary business of providing medical services to individuals. The Pennsylvania Health Care Cost Containment Council (PHC4) acknowledges that “hospitals need positive income levels” and that “hospitals need to receive sufficient income to be able to improve their facilities and equipment” (Pennsylvania Health Care Cost Containment Council, 2017).

PHC4 further notes that the level of profitability required to keep a hospital financially healthy is different for each hospital (Pennsylvania Health Care Cost Containment Council, 2017). As an example, a recent study of rural hospitals found that that the operating margins of those hospitals that remained in business between 2010 and 2014 had a median operating margin of 2.0 percent in 2009 (Kaufman, et al., 2016).<sup>3</sup>

Data in Exhibit ES-3 indicate that the overall Pennsylvania hospital patient care margin in 2016 was 1.6 percent. This margin would fall to 0.9 percent under Policy Alternative 1, and to -1.4 percent under Policy Alternative 2.

### Exhibit ES-3: Average Pennsylvania Hospital Patient Care Margins for Three Study Scenarios

	SFY 2015-2016	Policy Alternative 1	Policy Alternative 2
Average PA Hospital Patient Care Margin	1.6%	0.9%	-1.4%

Source: Dobson | DaVanzo analysis of FY 2016 Medicare Cost Reports and Pennsylvania QCA Data

The underlying premise with patient care margins is that hospital patient care revenues should, all things being equal, cover their operating expenses. In the latter instance, overall patient care revenues from all payers would fail to cover the hospitals’ operating costs.

Exhibit ES-3 illustrates the profound impacts of QCA policy on hospitals’ financial health. If hospitals do not generate financial reserves, they cannot deal as effectively with public health crises such as the opioid epidemic, nor can they modernize, refurbish, or stay current with new technologies to provide continuous innovations to patient care that Commonwealth communities require (Bazzoli, Fareed, & Waters, 2014). Because Medicaid

<sup>3</sup> Operating margin is generally defined as [(Operating Revenue – Operating Costs) / Operating Revenue].

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underpayment affects a hospital's overall fiscal health, its implications reach well beyond Medicaid enrollees to all members of the community.

## **Pennsylvania Hospital Efficiency**

To further assess whether Pennsylvania Medicaid hospital payments cover Medicaid costs for efficient hospitals, this analysis evaluates the cost efficiency of Pennsylvania hospitals as compared to hospitals in other states, adjusting for variables such as patient severity and the local costs of providing services. Our analysis determined that Pennsylvania hospitals are efficient, relative to hospitals nationally. Pennsylvania ranks in the top 15 states nationally for hospital economic efficiency based on data from FFY 2016. (Methods described in Appendix B.) Indeed, Pennsylvania's national ranking has risen consistently over the last 5 years.

This finding indicates that Pennsylvania hospitals have adjusted their costs to reflect incentives for enhanced efficiency and of changing hospital payment systems. We conclude, therefore, that potential efficiency improvements are not likely to be sufficient to offset current and anticipated future Medicaid underpayment.

## **Total Economic Impact of Medicaid Program Payments to Hospitals**

Inadequate Medicaid remuneration affects more than just hospitals. Because the hospital industry is critical to the Commonwealth's economic ecosystem, Medicaid shortfalls produce a downstream ripple effect throughout Pennsylvania financial landscape.

Analysis of data from the Pennsylvania Health Care Cost Containment Council (Pennsylvania Health Care Cost Containment Council, 2017) indicates that revenues for hospital services in Pennsylvania totaled \$43.7 billion in 2016, or 6.3 percent of the Commonwealth's Gross Domestic Product of \$724.7 billion (U.S. Bureau of Economic Analysis).

Using IMPLAN software (IMPLAN Group LLC), an analytic model that measures spending impacts on economic output, employment and state and federal taxes, our analysis produced a multiplier for hospital services in the Commonwealth of Pennsylvania of just under 2.0. That is, for every \$1 dollar in hospital expenditures in Pennsylvania, another dollar of downstream economic activity is generated.

Payments to the hospitals in this study for Medicaid and uninsured patients were \$5.1 billion in SFY 2015-2016. Thus, as summarized in Exhibit ES-4, the multiplier of about 2.0 produces a total economic impact from Medicaid/uninsured hospital expenditures of \$10.2

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billion. This Medicaid/uninsured spending of \$5.1 billion also generated 65,481 jobs and state and local tax revenue totaling \$1.2 billion.

## Exhibit ES-4: The Economic Impact of the Three Study Scenarios

	SFY 2015-2016	Policy Alternative 1	Policy Alternative 2
Total Economic Impact (Dollar Loss Relative to SFY 2015-2016)	\$10.2 billion	\$9.6 billion (\$641.8 million)	\$7.6 billion (\$2.7 billion)
Total Employment impact (Job Loss Relative to SFY 2015-2016)	65,481 jobs	61,378 jobs (4,103 jobs)	48,339 jobs (17,142 jobs)
State and Local Tax Impact (Dollar Loss Relative to SFY 2015-2016)	\$1.3 billion	\$1.2 billion (\$81.9 million)	\$1.0 billion (\$355.2 million)

Source: Dobson | DaVanzo analysis of SFY 2015-2016 Pennsylvania MA Cost Reports and QCA Data using IMPLAN software

Given the size of this multiplier, changes in Commonwealth hospital spending (such as reduction in revenue through tax assessments) can produce pronounced economic results. As seen in Exhibit ES-4:

- Implementing Policy Alternative 1 could result in a decrease of \$641.8 million dollars in total economic activity in the Commonwealth. This is coupled with 4,103 fewer jobs and \$81.9 million less in total tax revenue. In other words, while the Commonwealth would receive \$321.8 million more in QCA funds, it would simultaneously lose \$641.8 million in economic benefits related to hospital spending.
- Implementing Policy Alternative 2 could result in \$2.7 billion less in economic activity, 17,142 fewer jobs, and \$355.2 million less in tax revenue. In other words, while the Commonwealth would receive \$1.3 billion more in QCA funds, it would simultaneously lose \$2.7 billion in economic benefits related to hospital spending.

It is likely that these results will affect communities differently based upon the location of the hospitals. For example, a rural hospital that closes will result in decreased economic activity and employment reductions that are not likely replaced by other new economic activities.

## Potential Consequences of Medicaid Shortfalls

We have documented how low PCRs and patient margins threaten hospital financial health. We also determined that Pennsylvania hospitals are already economically efficient, which suggests that further efficiency improvements would be insufficient to offset Medicaid shortfalls. Furthermore, we document how Pennsylvania hospitals are key drivers to the

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Commonwealth's economy, and shortfalls will have significant deleterious effects. The consequences of continued shortfalls are broad, potentially affecting access to care.

To validate these findings and gain additional insight into how Pennsylvania's Medicaid program payment policy affects hospitals, we conducted interviews with five senior hospital administrators. These interviews revealed that hospitals must consider methods of cost reduction in response to continued Medicaid shortfalls. These methods include delaying investments in property and equipment, closing units, consolidation, changes in staffing mix or staffing reductions, and ultimately, hospital closure. As one hospital administrator stated, "hospitals will be forced to close as the financial equation gets tougher."

Other consequences of Medicaid shortfalls could involve potential cost-shifting. Payment shortfalls from public payers typically result in cost shifting to patients with private coverage—either employer-based or direct-purchase health insurance. Such costs may make it necessary for private insurers to pass on increased costs to employers and individuals in the form of higher premiums.

The overall Commonwealth Medicaid/uninsured payment shortfall per privately insured person in 2016 was \$165.22. Exhibit ES-5 provides potential increases in premiums and out-of-pocket spending increases due to Medicaid underpayment for the study's three scenarios. It indicates that the potential premium and out-of-pocket spending increases associated with Medicaid underpayment could be substantial – as much as \$1,051.92 for family premiums under Policy Alternative 2. For example, each family in Pennsylvania could potentially pay up to \$495.66 in increased premiums and out-of-pocket spending due to SFY 2015-2016 Medicaid program payment shortfalls; under Policy Alternative 1, families could potentially be responsible for an additional \$133.14 in premiums and out-of-pocket costs.

**Exhibit ES-5: Potential Private Sector Employer-Sponsored Health Insurance Premium and Out-of-Pocket Spending Increases Due to Medicaid Program Payment Shortfalls for Three Study Scenarios**

Type of Coverage	Contribution Source (Employer/Employee)	Potential Costs Shifted to Private Insurance		
		SFY 2015-2016	Policy Alternative 1	Policy Alternative 2
Single Coverage	Employer Contribution	\$108.88	\$138.13	\$231.07
	Employee Contribution	\$56.34	\$71.47	\$119.57
	<b>Total</b>	<b>\$165.22</b>	<b>\$209.60</b>	<b>\$350.64</b>
Family Coverage	Employer Contribution	\$310.28	\$393.63	\$658.50
	Employee Contribution	\$185.38	\$235.17	\$393.42
	<b>Total</b>	<b>\$495.66</b>	<b>\$628.80</b>	<b>\$1,051.92</b>

Sources: Dobson | DaVanzo analysis of data from U.S. Census Bureau; 2016 American Community Survey 1-Year Estimates; Medical Expenditure Panel Survey, 2019; and National Health Expenditure Data

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## Discussion and Conclusions

The analyses and estimates presented in this report are sobering. Increases to the QCA amounts without corresponding increases in Medicaid reimbursement could have a detrimental effect on the financial stability of all Pennsylvania hospitals. The Medicaid/uninsured PCR falls from 83.6 percent to 76.0 percent under Policy Alternative 1 and further, to 59.9 percent under Policy Alternative 2. These large changes in PCRs are due to the fact that the QCA is determined based on a percentage of the net patient revenue of the entire hospital, not just Medicaid revenue. **In Pennsylvania, a tax applied to total hospital net revenue has a nine-fold multiplier effect on the Medicaid program payment-to-cost ratios.** Hence, seemingly small changes to the QCA could have a profound effect on Medicaid program payment adequacy.

The broader implications of Medicaid underpayment are complex. While the Commonwealth might expect that Medicaid underpayments or QCA increases could be made up with increased hospital efficiencies, we found that Pennsylvania hospitals are efficient relative to hospitals nationally, ranking 15<sup>th</sup> among states in FFY 2016. Thus, potential efficiency improvements are not likely to be sufficient to offset current and anticipated future Medicaid underpayment.

The Medicaid program is unique in its economic impact upon the Commonwealth, given the federal match rate of about 50 percent. This, coupled with the economic multiplier of almost 2.0 implies an overall Medicaid multiplier of about four from the Commonwealth's perspective. Fewer Medicaid expenditures lead to economic contraction, which would likely be concentrated in Medicaid dependent communities where jobs are at a premium.

Interviews with hospital administrators revealed that the consequences of continued Medicaid shortfalls are broad, potentially affecting access to care as hospitals consider closing units or facilities, consolidation, and staffing changes. In addition, increases to the QCA, without corresponding increases in hospital payments, could ultimately be paid by Commonwealth workers through increased health insurance premiums, amounting to hundreds of dollars per insured person.

In conclusion, the implications of Medicaid program payment adequacy are multifaceted and reverberate throughout the Commonwealth's social and economic infrastructure.

***The analyses and estimates presented in this report are sobering. Increases to the QCA amounts without corresponding increases in Medicaid reimbursement could have a detrimental effect on the financial stability of all Pennsylvania hospitals.***

# *Introduction and Purpose*

Medicaid provides health coverage to eligible low-income people. The Medicaid program is funded jointly by the federal government and states, but is administered by states under broad federal standards. The federal government pays for a portion of Medicaid expenditures, based upon the Federal Medical Assistance Percentage (FMAP) which determines the federal share of the cost of Medicaid services in each state. The FMAP has a floor of 50 percent, which means that the federal government matches one-for-one, at minimum, every dollar of state Medicaid spending. In 2016, the Pennsylvania FMAP was 0.5201 and the state contribution was 0.4799. That is, each \$1.00 directly contributed by the Commonwealth in 2016 is matched by \$1.08 in direct Medicaid expenditures contributed by the federal government.

While federal funds are essential to financing the Medicaid program, state and local funds also play an important role. In fact, Medicaid spending is a significant economic concern to the Commonwealth of Pennsylvania.

## **What is the QCA?**

In general, the primary source of funding for the non-federal share of Medicaid comes from state general fund appropriations. However, to address budget constraints, states also fund a portion of the non-federal share of Medicaid with revenue collected from provider taxes and fees. In Pennsylvania, the hospital provider tax, known as the Quality Care Assessment (QCA), was implemented in state fiscal year (SFY) 2010-2011. The QCA authorizes the Pennsylvania Department of Human Services (DHS) to impose a statewide assessment on hospital net inpatient and net outpatient revenue. DHS keeps a portion of the assessment as a “state contribution,” and the remainder is used for Medicaid program payments to hospitals. All dollars used for Medicaid program payments (for any purpose) are eligible to be matched by the federal government.

# Introduction and Purpose

## The State Contribution from the QCA

Since the inception of the QCA, the “state contribution,” or that portion of the provider tax retained by the Commonwealth for purposes other than increasing Medicaid payments to hospitals, has grown to approximately 30 percent of total hospital revenues generated by the assessment. In SFY 2015-2016, the QCA totaled approximately \$759 million for hospitals in this analysis. In the coming years, it is likely that the Commonwealth will seek to raise the assessment without increasing Medicaid payments to hospitals, and thus increasing this “state contribution” percentage.

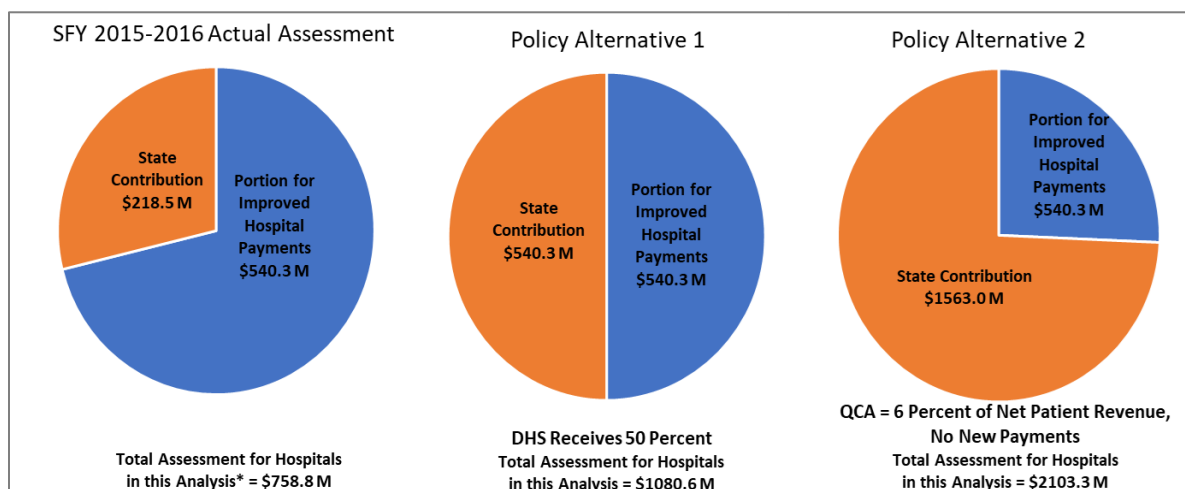
## Report Structure

Dobson | DaVanzo was commissioned by the Hospital and Healthsystem Association of Pennsylvania (HAP) to evaluate the adequacy of payments for Medicaid and uninsured patients to hospitals in the Commonwealth and to quantify the impact of higher QCA amounts and increased “state contribution” amounts. This report therefore addresses a number of topics related to payment adequacy and the implications of Medicaid program payment policy.

### Study Scenarios

We address payment adequacy for three study scenarios, as depicted in Exhibit 1 and described below.

**Exhibit 1: State Contribution and Improved Hospital Payment Amounts under SFY 2015-2016 QCA and Alternative Policy Scenarios**



\* The total assessment in SFY 2015-2016 was \$764 million and the state contribution was \$220 million. The assessment total of \$758.8 million presented in this exhibit, as well as the \$218.5 state contribution for SFY 2015-2016, reflects data from the subset of 210 hospitals used for this analysis. Please refer to Appendix B for a description of the methodology and data sources used in this report, including the selection of the analytic subset of hospitals.

# Introduction and Purpose

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1. **The baseline of state fiscal year (SFY) 2015-2016.** These are actual program results and are based on the most currently available data. In this baseline scenario, the QCA total approximately \$759 million.

Since SFY 2015-2016, Pennsylvania hospitals have seen increases in net patient revenue, and modifications to the QCA in the intervening years have made use of this increased revenue base. Hospitals are paying increasing amounts under the current QCA policy landscape relative to SFY 2015-2016. Thus, specific dollar amounts have varied over time relative to those presented here. However, analyses of the recent 2015-2016 data help to assess the impact of potential future policy decisions.

2. **Quality Care Assessment Alternative 1 (Policy Alternative 1).** Currently, the “state contribution” from the QCA is approximately 30 percent of total hospital revenues generated by the assessment.<sup>4</sup> Policy Alternative 1 explores the impact of a proposed policy change to increase the QCA’s “state contribution” to 50 percent. This would be operationalized through higher hospital assessment levels but without additional hospital payments. In this alternative scenario, the QCA is increased by approximately \$321.8 million.
3. **Quality of Care Assessment Alternative 2 (Policy Alternative 2).** The impact that is estimated if the QCA is set to a maximum level of 6 percent of hospital net patient revenue (increased from less than 3 percent) through higher hospital assessment levels with no additional hospital payments.<sup>5</sup> In this scenario, the QCA is increased by approximately \$1.3 billion.

Please refer to Appendix B for additional description of the methods used to determine the policy alternatives.

## **Adequacy of Medicaid Program Payments to Hospitals: Payment-to-Cost Ratios and Patient Care Margins**

The concept of Medicaid program payment adequacy is complex. This report first addresses payment adequacy in the context of payment-to-cost ratios (PCRs). Using data from state fiscal year (SFY) 2015-2016, we examine Medicaid payments, including disproportionate share hospital (DSH) and supplemental payments net of the QCA amounts, as a percent of Medicaid patient care costs. Because Medicaid supplemental payments are often directed toward both the Medicaid and uninsured populations, we

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<sup>4</sup> The “state contribution” refers to that portion of the provider tax retained by the Commonwealth for purposes other than Medicaid payments to hospitals.

<sup>5</sup> Our alternative QCA estimates are presented in 2016 dollars so as to be consistent with our primary data sources.



# Introduction and Purpose

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estimate hospital PCRs for Medicaid combined with the uninsured population.<sup>6</sup> We refer to this as the Medicaid/uninsured PCR. In addition to the PCRs from SFY 2015-2016, we examine the impact of higher QCA amounts (Policy Alternative 1 and Policy Alternative 2) on hospital Medicaid/uninsured PCRs.

Hospitals that face significant shortfalls due to inadequate payment policies from public payers may have difficulty maintaining positive patient care margins. Additionally, the financial position of a hospital impacts its ability to invest in innovations and quality improvement activities (Bazzoli, Fareed, & Waters, 2014). To consider these implications, we examine hospital all-payer patient care margins in light of payment adequacy, as these margins express a hospital's profitability related to its primary business of providing patient care. This section also addresses the impact of higher QCA amounts on hospital patient care margins and demonstrates the negative impact of these higher assessment amounts could have on hospital financial health.

## **Pennsylvania Hospital Efficiency**

To further assess whether hospital payments for Medicaid and uninsured patients cover the costs of these patients for efficient hospitals, this analysis evaluates the cost efficiency of Pennsylvania hospitals as compared to hospitals in other states, adjusting for variables such as patient severity and the local costs of providing services. This analysis is important because, for hospitals that are relatively efficient, potential efficiency improvements are not likely to be sufficient to offset current and anticipated future Medicaid underpayment.

## **Total Economic Impact of Medicaid Program Payments to Hospitals**

In the next section of this report, we examine the total economic impact of expenditures for Medicaid and uninsured patients to hospitals on the Commonwealth of Pennsylvania, which totals over \$10 billion. Because Medicaid expenditures affect hospitals directly, but also have immediate and subsequent downstream impacts that affect all sectors of the economy, we consider the impacts of Medicaid hospital expenditures on the Commonwealth's economic activity, employment, and state and local taxes. This section further addresses how the economic impact of Medicaid expenditures to hospitals would be changed if increases to the QCA amounts were implemented.

## **Potential Consequences of Medicaid Shortfalls**

Having examined the impact of shortfalls for Medicaid and uninsured patients on hospital financial health, and on the Commonwealth in general, the final section of this report discusses the potential consequences of these shortfalls. We look at ways in which hospitals might absorb the payment shortfalls through cost reduction, or shift the burden of

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<sup>6</sup> PCRs for Medicaid alone were also calculated and are presented in Appendix A.

## *Introduction and Purpose*

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underpayment to other payers to recoup some portion of the loss. Interviews with senior hospital and health system administrators inform this discussion.

This report also considers private sector premium effects, and the extent to which current levels of underpayment for Medicaid and uninsured patients have transferred financial burden to the privately insured in the form of higher charges. These higher charges then translate into higher insurance premiums and patient out-of-pocket and cost sharing. This concept, known as the “cost-shift,” means that when Medicaid pays less than the cost of providing care, commercial payers often pay more.

# Adequacy of Medicaid Program Payments to Hospitals

## KEY FINDINGS

- **In SFY 2015-2016:**
  - **Medicaid/uninsured shortfalls were approximately \$1.2 billion.**
  - **The overall Pennsylvania hospital Medicaid/uninsured payment-to-cost ratio was 81.1 percent.**
  - **In FFY 2016, Pennsylvania hospitals overall had a patient care margin of 1.6 percent.**
- **Under Alternative Policy 1: If the Commonwealth were to increase the “state contribution” to 50 percent of the total assessment collected:**
  - **Medicaid/uninsured shortfalls would increase to \$1.5 billion.**
  - **The Medicaid/uninsured payment-to-cost ratio would fall to 76.0 percent.**
  - **Patient care margins would be reduced by approximately 50 percent, falling to 0.9 percent.**
- **Under Alternative Policy 2: If the Commonwealth were to increase the “state contribution” to maximum levels:**
  - **Medicaid/uninsured shortfalls would increase to \$2.5 billion.**
  - **The Medicaid/uninsured payment-to-cost ratio would fall to 59.9 percent.**
  - **Patient care margins would fall to -1.4 percent.**

A fundamental question in assessing overall Medicaid program hospital payment adequacy is the extent to which total Medicaid program reimbursement to hospitals covers the actual cost of providing care to Medicaid and uninsured patients. A key measure of Medicaid program payment adequacy is the Medicaid/uninsured payment-to-cost ratio (PCR), which compares payments to costs. This section analyzes the Medicaid/uninsured PCRs of Pennsylvania hospitals to summarize the relationship between payments and costs and to

# Adequacy of Medicaid Program Payments to Hospitals

assess payment adequacy. Because payment adequacy affects hospital profitability and financial stability, this section also examines the patient care margins of hospitals in Pennsylvania to ascertain the profitability of hospitals related to the primary business of providing patient care.

## Analysis of Medicaid Program Payment Adequacy for SFY 2015-2016

In SFY 2015-2016, the provision of care to Medicaid and uninsured patients jointly caused Pennsylvania hospitals to incur losses relative to their incurred costs totaling approximately \$1.2 billion (see Exhibit 2). These financial losses show that Medicaid program payments do not cover costs of care for Medicaid and uninsured patients.

**Exhibit 2: SFY 2015-2016 Medicaid/Uninsured Payments, Costs, Shortfall, and Payment-to-Cost Ratio for Pennsylvania Hospitals**

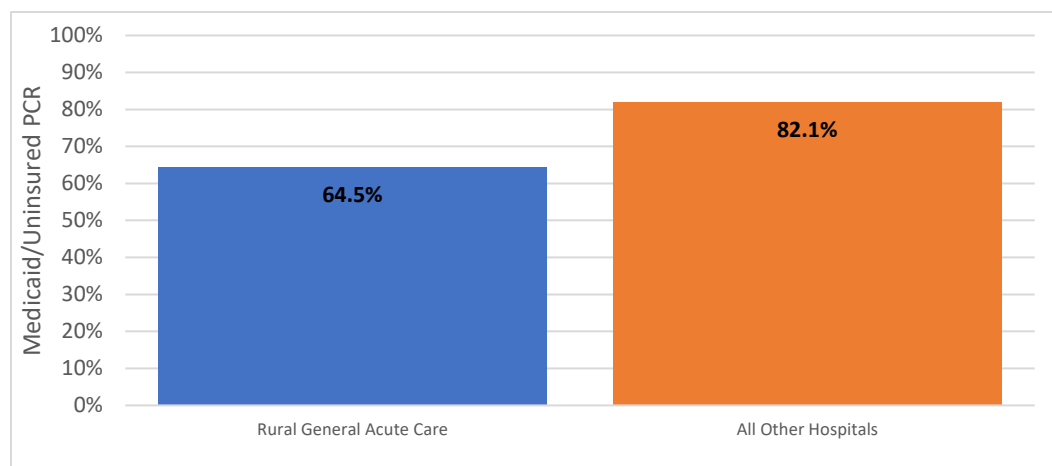
	Medicaid/Uninsured
Medicaid/Uninsured Costs	\$6,333,847,397
Medicaid/Uninsured Payments	\$5,135,815,976
Medicaid/Uninsured Payment Shortfall	(\$1,198,031,214)
Net Medicaid/Uninsured Payment-to-Cost Ratio	81.1%

Source: Dobson | DaVanzo analysis of SFY 2015-2016 Pennsylvania MA Cost Reports and QCA Data

Note: Analysis is based on 210 Pennsylvania hospitals. Calculations include all Medicaid program payments, including DSH and supplemental payments, net of the QCA amount. Calculations do not include the outpatient or emergency department payments or amounts assessed from the Philadelphia assessment.

As shown in Exhibit 2, the overall Pennsylvania hospital Medicaid/uninsured PCR was 81.1 percent in SFY 2015-2016. However, the PCR varies by rural classification, as demonstrated in Exhibit 3. The Medicaid/uninsured PCR for rural general acute care hospitals is lower than that of other hospitals (64.5 percent versus 82.1 percent).

**Exhibit 3: SFY 2015-2016 Net Medicaid/Uninsured Payment-to-Cost Ratios by Rural Classification**



Source: Dobson | DaVanzo analysis of SFY 2015-2016 Pennsylvania MA Cost Reports and QCA Data

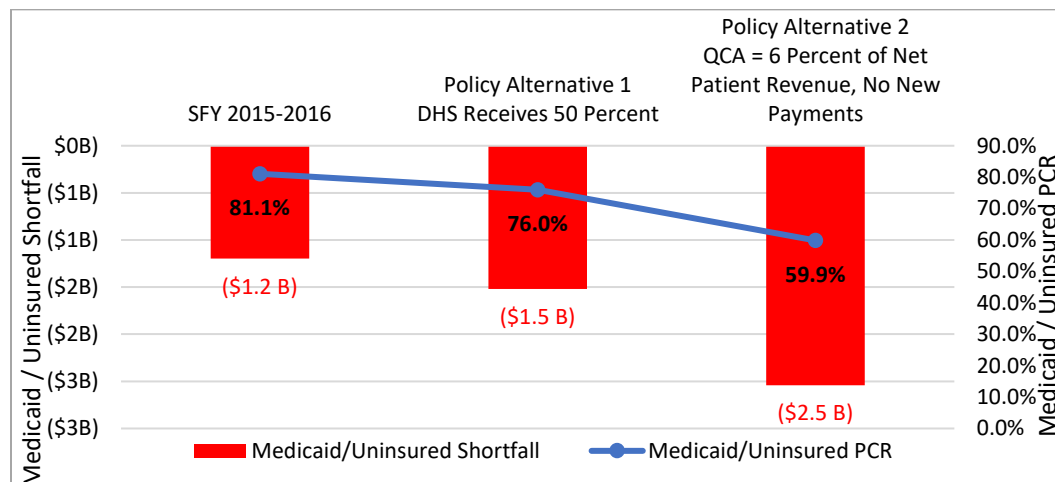
# Adequacy of Medicaid Program Payments to Hospitals

Please refer to Appendix A for the underlying data and for additional data tables, including Medicaid-only PCRs. Refer to Appendix B for details of our analytic methodology and data sources.

## Financial Impact of Increased Quality Care Assessments on Pennsylvania Hospitals

To demonstrate the potentially harmful financial impact to hospitals of increases to the QCA amounts, we next estimated PCRs based upon payments and costs from SFY 2015-2016, but with the increased QCA burden using Policy Alternative 1 and Policy Alternative 2. As demonstrated in Exhibit 4, the Medicaid/uninsured PCRs decline, falling from 81.1 percent to 76.0 percent under Policy Alternative 1, and then to 59.9 percent under Policy Alternative 2.

**Exhibit 4: Medicaid/Uninsured Payment-to-Cost Ratios Decline and Shortfall Increases Under Policy Alternatives 1 and 2**



Source: Dobson | DaVanzo analysis of SFY 2015-2016 Pennsylvania MA Cost Reports and QCA Data

Notes: Analysis is based on 210 Pennsylvania hospitals. Calculations include all Medicaid program payments, including DSH and supplemental payments, net of the QCA amount.

Under Policy Alternative 1, in which the QCA amounts for hospitals in this analysis would total approximately \$1.1 billion, the provision of care to Medicaid and uninsured patients would cause Pennsylvania hospitals to incur losses relative to their incurred costs totaling approximately \$1.5 billion.

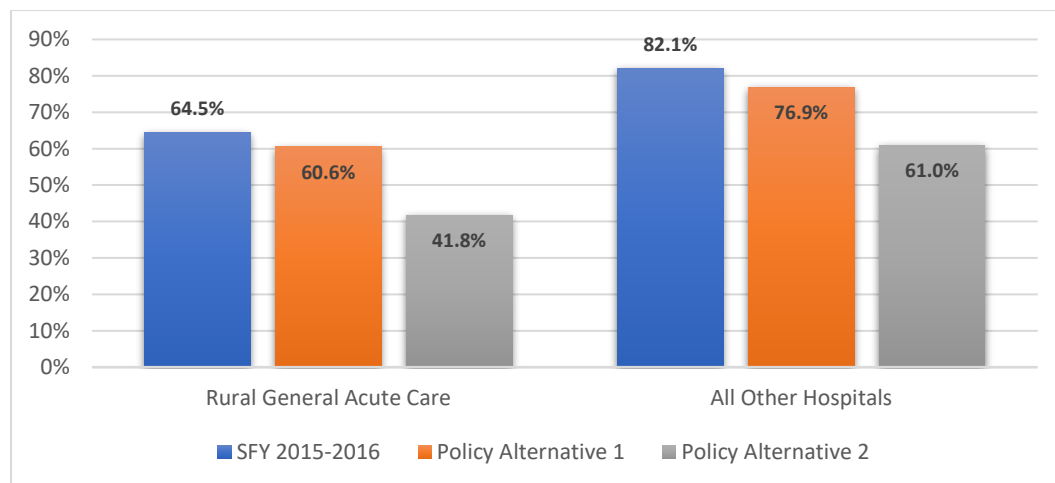
Under Policy Alternative 2, in which the QCA amounts for hospitals in this analysis would total approximately \$2.1 billion, the provision of care to Medicaid and uninsured patients

# Adequacy of Medicaid Program Payments to Hospitals

would cause Pennsylvania hospitals to incur losses relative to their incurred costs totaling approximately \$2.5 billion.

Exhibit 5 demonstrates the initial variation in PCRs by rural classification, and shows how the PCRs fall under Policy Alternative 1, and decline further under Policy Alternative 2 uniformly across regions. Rural general acute care hospitals would have experienced a PCR of 60.6 percent under Policy Alternative 1 and of 41.8 percent under Policy Alternative 2. (See Appendix A for the underlying data and for additional data tables, including Medicaid PCRs.)

**Exhibit 5: Medicaid/Uninsured Payment-to-Cost Ratios for Pennsylvania Hospitals by Rural Classification**



Source: Dobson | DaVanzo analysis of SFY 2015-2016 Pennsylvania MA Cost Reports and QCA Data

Notes: Analysis is based on 210 Pennsylvania hospitals. Calculations include all Medicaid program payments, including DSH and supplemental payments, net of the QCA amount.

As designed, supplemental payments and the QCA are supposed to enhance Medicaid program payments through the use of the federal match. In these alternative scenarios, if the Pennsylvania legislature increases QCA amounts and the Commonwealth retains a higher portion of the assessments to meet Medicaid budgetary needs, the QCA would create negative financial consequences for Pennsylvania hospitals.

## Relationship of Medicaid Program Payment Adequacy to Hospital Patient Care Margins and Hospital Financial Health

Hospitals, both non-profit and for-profit, cannot consistently incur overall financial losses and continue to provide up-to-date and critical services. Indeed, the Pennsylvania Health Care Cost Containment Council (PHC4) acknowledges that “hospitals need positive income levels” and that “hospitals need to receive sufficient income to be able to improve

# Adequacy of Medicaid Program Payments to Hospitals

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their facilities and equipment” (Pennsylvania Health Care Cost Containment Council, 2017).

Over time, a hospital that experiences financial losses is unable to invest in infrastructure updates and technological improvements. Without such investment, a hospital will likely become undercapitalized and hence increasingly inefficient, less competitive, and less likely to continue as a going concern.

**Medicaid program payment shortfalls could ultimately have a negative impact on access to care. For hospitals in Pennsylvania to sustain the levels of care expected by the community, they need financial surpluses to continually replenish and modernize their capital stock.**

Although the level of profitability required to keep a hospital financially healthy is different for each hospital (Pennsylvania Health Care Cost Containment Council, 2017), a recent study of rural hospitals found that the operating margins of those hospitals that remained in business between 2010 and 2014 had a median operating margin of 2.0 percent in 2009 (Kaufman, et al., 2016).<sup>7</sup>

This report uses margins from revenues and costs associated with patient care to determine the impact of Medicaid payments on hospital

financial health. In federal fiscal year (FFY) 2016, Pennsylvania hospitals overall had a positive patient care margin of 1.6 percent. However, the lower PCRs and increased Medicaid shortfalls seen under Alternative Policy 1 and Alternative Policy 2 translate into financial losses across Pennsylvania hospitals. Thus, if the state were to increase the QCA amounts without compensating with increased supplemental payments, patient care margins, and therefore hospital financial health, would be affected.

Exhibit 6 demonstrates what would happen had the Pennsylvania legislature increased SFY 2015-2016 assessments. Under Policy Alternative 1, the overall patient care margin for Pennsylvania hospitals would decline from 1.6 percent to 0.9 percent, close to the overall U.S. average. Under Policy Alternative 2, the patient care margin for Pennsylvania hospitals would become negative, falling to -1.4 percent. Hospitals of all types in Pennsylvania would collectively experience losses from patient care each year under this scenario.

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<sup>7</sup> Operating margin is generally defined as [(Operating Revenue – Operating Costs) / Operating Revenue].

# Adequacy of Medicaid Program Payments to Hospitals

Exhibit 6 also provides the patient care margins under Policy Alternative 1 and Policy Alternative 2 for Pennsylvania’s rural general acute care hospitals. Such facilities already experienced a negative patient care margin in FFY 2016 (-0.8 percent), and would see further decline to -1.3 percent under Policy Alternative 1 and to -3.7 percent under Policy Alternative 2.

**Exhibit 6: Patient Care Margins for Pennsylvania Hospitals in FFY 2016 by Rural Classification**

	Number of Hospitals	2016 Patient Care Margin	Patient Care Margin Under Policy Alternative 1	Patient Care Margin Under Policy Alternative 2
All Pennsylvania Hospitals	200	1.6%	0.9%	-1.4%
<b>By Rural Classification</b>				
Rural General Acute Care	38	-0.8%	-1.3%	-3.7%
All Other Hospitals	160	1.7%	1.0%	-1.3%

Source: Dobson | DaVanzo analysis of FY 2016 Medicare Cost Reports and Pennsylvania QCA Data

Notes: Only hospitals with both QCA data and FY 2016 cost reports were included in this analysis (200 hospitals). Two hospitals with missing rural classification are not included in the breakout, so components do not sum to total.

In conclusion, these financial losses indicate that Pennsylvania hospitals could experience a reduced ability to invest in technological improvements and infrastructure updates should provider assessments increase but payments remain at current levels. The reduced resources available for infrastructure, maintenance, modernization, and technological advances would affect not just Medicaid patients, but all patients in the Commonwealth of Pennsylvania.



# Pennsylvania Hospital Efficiency

## KEY FINDINGS

- ***Pennsylvania ranks among the top 15 states nationally for hospital economic efficiency. Its national ranking has risen consistently over the last 5 years.***
  - *This suggests hospitals have adjusted their costs to reflect incentives for enhanced efficiency of changing hospital payment systems.*
  - *Therefore, potential efficiency improvements are not likely to be sufficient to offset current and anticipated future Medicaid underpayment of the magnitude presented in this report.*
- ***Actual costs were below predicted costs in 2010, 2012, 2014, 2015, and 2016, and were approximately equal to predicted costs in 2011 and 2013.***

Under federal statute 42 U.S.C. § 1396a(a)(30)(A), a state plan for medical assistance must “...assure that payments are consistent with efficiency, economy, and quality of care...” Thus, it is reasonable to expect that Medicaid payments cover Medicaid costs for efficient hospitals. However, there is no single standard for evaluating hospital efficiency. This section of the report evaluates the efficiency of Pennsylvania hospitals, and thus the reasonableness of hospital costs, using a multivariate regression analysis.

### **The Hospital Efficiency Model**

The regression-based hospital efficiency model works by recognizing that certain characteristics of hospitals are associated with higher (or lower) costs. It estimates a set of parameters that reflect the relationship between these characteristics and Medicare per-case hospital costs. The estimated model is used to predict Medicare costs per discharge for a hospital or hospitals with a given set of characteristics, including patient severity and the local costs of providing services. (Please refer to Appendix B for a detailed methodological discussion of the hospital efficiency model, including the hospital characteristics used in the model.)

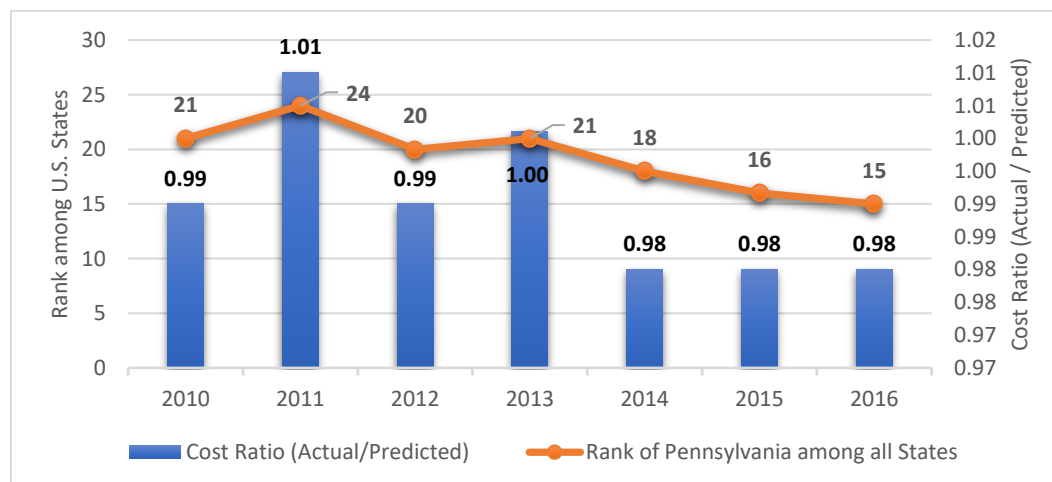
# Pennsylvania Hospital Efficiency

If a hospital's actual cost is higher than the predicted cost, the cost ratio (actual costs divided by predicted costs) will be greater than one, and the hospital is presumed relatively cost inefficient because the hospital has higher costs than the average predicted costs of all the hospitals with similar characteristics. On the other hand, if a hospital's actual cost is lower than the predicted cost, the cost ratio will be lower than one and the hospital is presumed to be relatively cost efficient because it has lower costs than the average predicted costs of the hospitals in other states with similar characteristics.

## Findings from the Hospital Cost Efficiency Model for Pennsylvania Hospitals

Exhibit 7 presents the weighted average results of the hospital efficiency model for all Pennsylvania hospitals. It demonstrates that short-term hospitals in Pennsylvania have consistently been of average or above average efficiency since 2010. Actual costs were below predicted costs in 2010, 2012, 2014, 2015, and 2016, and were approximately equal to costs in 2011 and 2013. This finding indicates that Pennsylvania hospitals have adjusted their costs to reflect incentives for enhanced efficiency of changing hospital payment systems better than hospitals in other states. The results further indicate improvement in efficiency over time, and that the overall costs of Pennsylvania hospitals are reasonable and can be used as a basis to assess payment adequacy. The efficiency analysis also suggests that increases in efficiency are not likely to be sufficient to counteract higher levels of Medicaid underpayment anticipated in the future should Medicaid program payment levels decline relative to costs as a result of increased QCA amounts.

**Exhibit 7: Results of the Hospital Efficiency Model for Pennsylvania Hospitals, 2010-2016**



Source: Dobson | DaVanzo analysis of Medicare cost reports and the IPPS Final Rule Correction Notice

# *Total Economic Impact of Medicaid Program Payments to Hospitals*

## **KEY FINDINGS**

- *Based on expenditures of \$5.1 billion, the IMPLAN economic analysis estimates a total economic impact of \$10.2 billion from net Pennsylvania Medicaid/uninsured expenditures to hospitals.*
- *Pennsylvania Medicaid/uninsured expenditures to hospitals are associated with 65,481 jobs.*
- *Increasing QCA amounts by \$322 million under Policy Alternative 1 would result in a loss of economic impact totaling \$642 million and a loss of 4,103 jobs.*
- *Increasing QCA amounts by \$1.3 billion under Policy Alternative 2 would result in a loss of economic impact totaling \$2.7 billion and a loss of 17,142 jobs.*
- *Without the QCA or general fund taxes, Pennsylvania would have lost \$822 million in federal matching funds. Assuming an economic multiplier of 2.0, Pennsylvania would have lost economic impact of \$1.6 billion.*

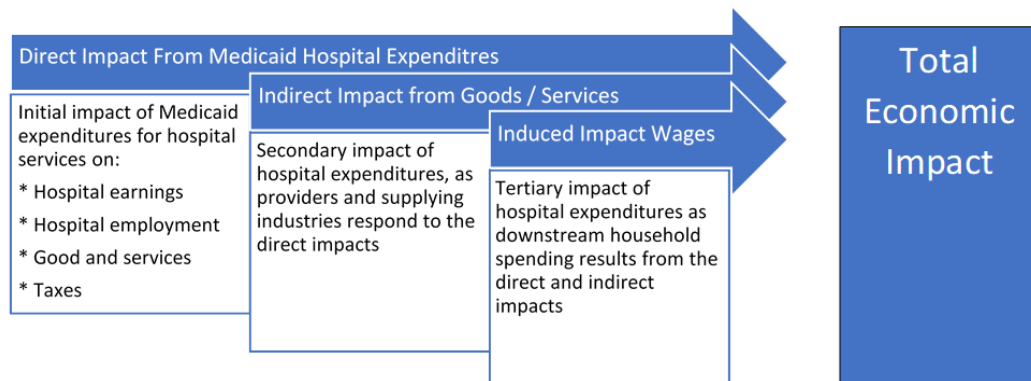
Analysis of data from the Pennsylvania Health Care Cost Containment Council (Pennsylvania Health Care Cost Containment Council, 2017) indicates that revenues for hospital services in Pennsylvania totaled \$43.7 billion in 2016, or 6.3 percent of the Commonwealth's Gross Domestic Product of \$724.7 billion (U.S. Bureau of Economic Analysis). While these revenues were a significant part of the Pennsylvania economy, the economic impact was approximately \$87 billion, double the revenues. Similarly, we found

# Total Economic Impact of Medicaid Program Payments to Hospitals

that the Medicaid/uninsured revenues for hospital services in Pennsylvania exceeded \$5 billion in 2016, with an economic impact of over \$10 billion.

To estimate the impact of Medicaid/uninsured expenditures for hospital services in Pennsylvania, we used Impact Analysis for Planning (IMPLAN) software (IMPLAN Group LLC).<sup>8</sup> Under the IMPLAN model, the total impact of Pennsylvania hospitals is due to economic activity that results from the initial financial transaction, known as the “multiplier impact.” The multiplier impact is the total economic activity that occurs from the initial transaction, immediate downstream transactions, and subsequent transactions further downstream. That is, payments to hospitals for services provided ripple outward, initially to direct suppliers of goods and services, such as equipment companies and linen services. In turn, the initial revenue to direct suppliers of good and services ripples further outward to retail stores as households purchase goods and services. As shown in Exhibit 8, hospitals are *directly* impacted by Medicaid expenditures for hospital services they receive from the Commonwealth, using these payments to generate income, support employment, and purchase goods and services associated with the provision of care.

**Exhibit 8: The Flow of the Impacts of Medicaid Hospital Expenditures through the Economy**



Please refer to Appendix B for additional details about the IMPLAN model and analytic methodology.

## Total Economic Output

In SFY 2015-2016, Pennsylvania Medicaid/uninsured expenditures to hospitals in the Commonwealth totaled about \$5.1 billion, net of the provider assessment. The IMPLAN economic analysis estimates a total economic impact of \$10.2 billion, from the combined direct economic impact of this \$5.1 billion, an indirect economic impact of \$2.2 billion, and an induced economic impact of \$2.9 billion. These IMPLAN analyses are summarized in

<sup>8</sup> IMPLAN is an input-output model that is used to examine the impact of changes that occur in an industry or the overall economy.

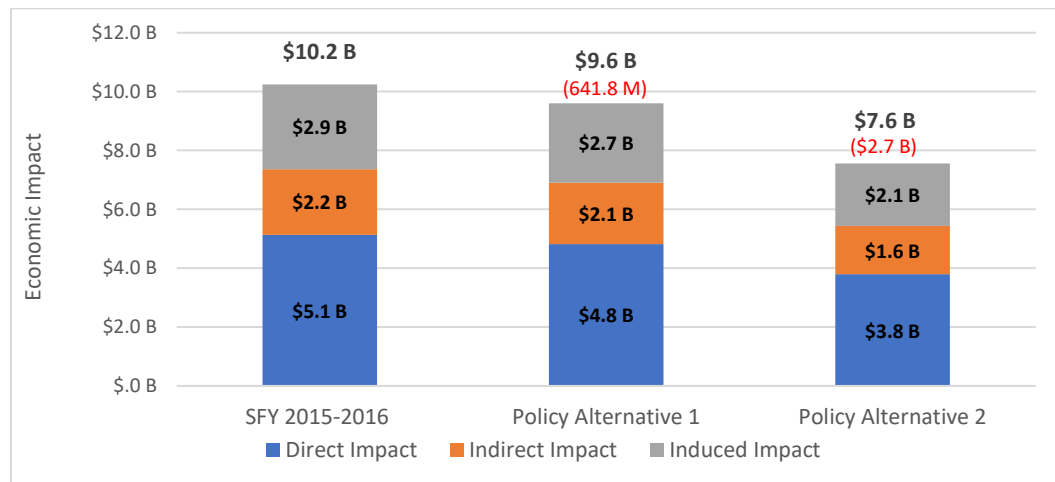
# Total Economic Impact of Medicaid Program Payments to Hospitals

Exhibit 9. Also displayed in Exhibit 9 are impact estimates on the Pennsylvania economy of the potential net reduction in Medicaid revenue that would result from Policy Alternative 1 and Policy Alternative 2.

Under Policy Alternative 1, the economic analysis estimates a total loss in economic impact of \$641.8 million, from the combined direct economic loss of the \$321.8 million, an indirect economic loss of \$139.6 million, and an induced economic impact of \$180.3 million. After the increase in the assessment, the IMPLAN total economic output of hospital services to Medicaid enrollees and the uninsured is estimated to be \$9.6 billion. The IMPLAN economic estimate is calculated from a direct economic impact of \$4.8 billion, an indirect impact of \$2.1 billion, and an induced impact of \$2.7 billion.

Under Policy Alternative 2, the economic analysis estimates a total loss in economic impact of \$2.7 billion, from the combined direct economic loss of \$1.3 billion, an indirect economic loss of \$0.6 billion, and an induced economic impact of \$0.8 billion. After the increase in the assessment, the IMPLAN total economic output of hospital services to Medicaid enrollees is estimated to be \$7.6 billion. The IMPLAN economic estimate is calculated from a direct economic impact of \$3.8 billion, an indirect impact of \$1.6 billion, and an induced impact of \$2.1 billion.

**Exhibit 9: Impact of Medicaid Hospital Expenditures on Economic Output in Pennsylvania (in billions)**



Source: Dobson | DaVanzo analysis of SFY 2015-2016 Pennsylvania MA Cost Reports and QCA Data using IMPLAN software  
 Note: Component impacts do not sum to totals due to rounding

# Total Economic Impact of Medicaid Program Payments to Hospitals

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## Economic Output of Federal Contribution to Medicaid

As described above, Medicaid hospital expenditures in Pennsylvania create downstream economic activity from initial revenues to hospitals. That is, direct expenditures ripple through the economy and produce indirect impacts from additional expenditures and wages unrelated to hospital care which, in turn, produce induced impacts from additional expenditures. The economic activity that occurs from direct, indirect, and induced impacts is known as the multiplier impact.

Our analyses using the IMPLAN software produced a multiplier for hospital services in the Commonwealth of Pennsylvania of 2.0. That is, for every \$1 dollar in hospital expenditures in Pennsylvania, another dollar of downstream economic activity is generated. Because Medicaid is jointly funded by states and the federal government, the multiplier impact on state budget dollars is larger. We call this impact the “super multiplier.”

As discussed previously, the Pennsylvania FMAP was 0.5201 in 2016 and the state contribution was 0.4799. Each \$1.00 directly contributed to Medicaid by the Commonwealth in 2016 was matched by \$1.08 in direct Medicaid expenditures contributed by the federal government due to the FMAP.<sup>9</sup> **Accordingly, we calculate a 2016 “super multiplier” from the perspective of Pennsylvania Medicaid budget spending of approximately 4.1**, as each \$0.4799 from Pennsylvania is matched by \$0.5201 from the federal government, and then this total is doubled to estimate the overall economic impact. That is, \$2.00 in economic input divided by \$0.4799 in Pennsylvania contribution yields a super multiplier of approximately 4.1 ( $\$2.00 / \$0.4799 \approx 4.1$ ).

## Output by Industry

As downstream financial transactions occur, the economic impact of Medicaid/uninsured expenditures to hospitals affect a number of industries in addition to hospitals. For example, Medicaid expenditures also impact insurance carriers, real estate, owner occupied dwellings, the wholesale trade, and various other industry categories. Exhibit 10 summarizes the total economic impact of Medicaid hospital expenditures in Pennsylvania for the top industry categories. It demonstrates that while the hospital industry is impacted by Medicaid/uninsured expenditures to hospitals to the greatest extent (52 percent), nearly half (48 percent) of the total statewide economic impact of Medicaid/uninsured expenditures to hospitals benefits non-hospital industries. These industries would also be negatively affected by changes to QCA policy as modeled under Policy Alternative 1 and Policy Alternative 2.

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<sup>9</sup>  $\$1.00 * (0.5201 / 0.4799)$

# Total Economic Impact of Medicaid Program Payments to Hospitals

**Exhibit 10: Impact of Medicaid Hospital Expenditures on Economic Output by Industrial Category (millions)**

Industry	SFY 2015-2016 Medicaid/Uninsured Net Revenue	Percent Impact	Policy Alternative 1		Policy Alternative 2	
			Revenue Loss	Post-Assessment	Revenue Loss	Post-Assessment
Hospitals	\$5,334.64	52%	(\$334.30)	\$5,000.34	(\$1,396.53)	\$3,938.11
Insurance carriers	\$372.49	4%	(\$23.30)	\$349.19	(\$97.51)	\$274.97
Real estate	\$355.36	3%	(\$22.30)	\$333.06	(\$93.03)	\$262.33
Owner-occupied dwellings	\$303.32	3%	(\$19.00)	\$284.32	(\$79.41)	\$223.92
Wholesale trade	\$243.63	2%	(\$15.30)	\$228.33	(\$63.78)	\$179.85
Other financial investment activities	\$189.08	2%	(\$11.80)	\$177.28	(\$49.50)	\$139.59
Employment services	\$145.37	1%	(\$9.10)	\$136.27	(\$38.06)	\$107.31
Insurance agencies, brokerages, and related activities	\$144.90	1%	(\$9.10)	\$135.80	(\$37.93)	\$106.97
Management of companies and enterprises	\$113.69	1%	(\$7.10)	\$106.59	(\$29.76)	\$83.93
Management consulting services	\$108.47	1%	(\$6.80)	\$101.67	(\$28.40)	\$80.08
Other	\$2,931.37	29%	(\$183.70)	\$2,747.67	(\$767.39)	\$2,163.98
<b>Total</b>	<b>\$10,242.33</b>	<b>100%</b>	<b>(\$641.80)</b>	<b>\$9,600.53</b>	<b>(\$2,681.28)</b>	<b>\$7,561.05</b>

Source: Dobson | DaVanzo analysis of SFY 2015-2016 Pennsylvania MA Cost Reports and QCA Data using IMPLAN software

Note: Component impacts to not sum to totals due to rounding

## Employment Impact

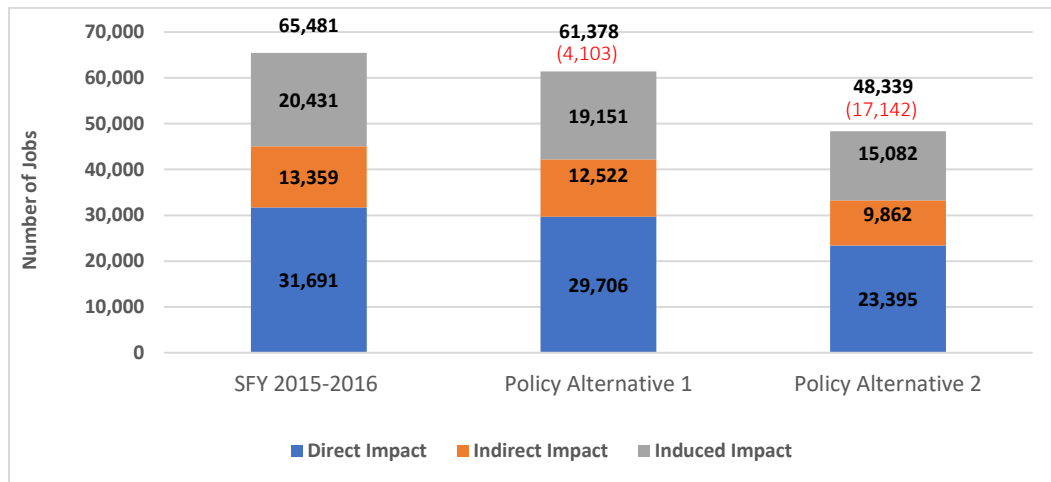
IMPLAN estimates model impacts on employment. As shown in Exhibit 11, the SFY-2015-2016 \$5.1 billion in direct Medicaid expenditures to hospitals is associated with 65,481 jobs, from the combined direct employment economic impact of 31,691 jobs, an indirect employment impact of 13,359 jobs, and an induced employment impact of 20,431 jobs. Also displayed in Exhibit 11 are impact estimates on Pennsylvania employment of the potential net reduction in Medicaid/uninsured revenue that would result from Policy Alternative 1 and Policy Alternative 2.

Under Policy Alternative 1, the IMPLAN economic analysis estimates a total loss in employment impact of 4,103 jobs, from the combined direct employment loss of 1,986 jobs, indirect employment loss of 837 jobs, and induced employment loss of 1,280 jobs.

Under Policy Alternative 2, the IMPLAN economic analysis estimates a total loss in employment impact of 17,142 jobs, from the combined direct employment loss of 8,296 jobs, indirect employment loss of 3,497 jobs, and induced employment loss of 5,348 jobs.

# Total Economic Impact of Medicaid Program Payments to Hospitals

**Exhibit 11: Impact of Medicaid Hospital Expenditures on Employment (Number of Jobs)**



Source: Dobson | DaVanzo analysis of SFY 2015-2016 Pennsylvania MA Cost Reports and QCA Data using IMPLAN software.  
 Note: Component impacts do not sum to totals due to rounding

Exhibit 12 summarizes the total employment impact of Medicaid hospital expenditures in Pennsylvania for the top industry categories. While the inclusion of some categories may seem surprising, such categories are due to the scale and scope of the downstream employment created by the economic activity hospitals generate. In addition to hospitals, hospital expenditures also affect employment in the industries of employment services, full-service restaurants, real estate, and wholesale trade, as well as various other categories.



# Total Economic Impact of Medicaid Program Payments to Hospitals

**Exhibit 12: Impact of Medicaid Hospital Expenditures on Employment by Industrial Category**

Industry	SFY 2015-2016 Jobs	Policy Alternative 1		Policy Alternative 2	
		Job Loss	Jobs Post-Assessment	Job Loss	Jobs Post-Assessment
Hospitals	32,918	(2,063)	30,855	(8,618)	24,301
Employment services	1,884	(118)	1,766	(493)	1,391
Full-service restaurants	1,736	(109)	1,627	(454)	1,282
Real estate	1,724	(108)	1,616	(451)	1,272
Wholesale trade	1,012	(63)	949	(265)	747
Limited-service restaurants	971	(61)	910	(254)	717
Other financial investment activities	957	(60)	897	(251)	707
Management consulting services	869	(54)	815	(228)	642
Other ambulatory health care services	814	(51)	763	(213)	601
Insurance carriers	775	(49)	726	(203)	572
Other	43,659	(1,367)	20,455	(5,713)	32,230
<b>Total</b>	<b>65,481</b>	<b>(4,103)</b>	<b>61,378</b>	<b>(17,142)</b>	<b>48,339</b>

Source: Dobson | DaVanzo analysis of SFY 2015-2016 Pennsylvania MA Cost Reports and QCA Data using IMPLAN software.

Note: Component impacts to not sum to totals due to rounding

## Tax Impact

IMPLAN estimates the impacts of economic impacts on state, local, and federal tax revenues, including income taxes, sales taxes, and property taxes. As shown in Exhibit 13, the \$5.1 billion in direct Medicaid expenditures to hospitals is associated with \$1.3 billion in taxes, from the combined tax impact of \$935.5 million in federal taxes and \$372.4 million state and local taxes. Also displayed in Exhibit 13 are impact estimates on taxes from Policy Alternative 1 and Policy Alternative 2.

**Exhibit 13: Impact of Medicaid Hospital Expenditures on Federal and State Taxes (in millions)**

Tax Type	SFY 2015-2016 Tax	Policy Alternative 1		Policy Alternative 2	
		Tax Loss	Tax Post-Assessment	Tax Loss	Tax Post-Assessment
Federal	\$935.5	(\$58.6)	\$876.9	(\$254.1)	\$681.4
State and Local	\$372.4	(\$23.3)	\$349.0	(\$101.1)	\$271.2
<b>Total</b>	<b>\$1,307.9</b>	<b>(\$81.9)</b>	<b>\$1,225.9</b>	<b>(\$355.2)</b>	<b>\$952.7</b>

Source: Dobson | DaVanzo analysis of SFY 2015-2016 Pennsylvania MA Cost Reports and QCA Data using IMPLAN software.

Note: Component impacts to not sum to totals due to rounding

# Total Economic Impact of Medicaid Program

## Payments to Hospitals

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Under Policy Alternative 1, the IMPLAN economic analysis estimates a total loss in taxes of \$81.9 million, from the combined federal tax loss of \$58.6 million and state and local tax loss of \$23.3 million. After the increase in the assessment, the IMPLAN total economic output on state, local, and federal taxes is estimated to be \$1.2 billion. The IMPLAN economic estimate is associated with \$876.9 million in federal taxes and \$349.0 million in state and local taxes.

Under Policy Alternative 2, the IMPLAN economic analysis estimates a total loss in taxes of \$355.2 million, from the combined federal tax loss of \$254.1 million and state and local tax loss of \$101.1 million. After the increase in the assessment, the IMPLAN total economic output on state, local, and federal taxes is estimated to be \$952.7 million. The IMPLAN economic estimate is associated with \$681.4 million in federal taxes and \$271.2 million in state and local taxes.

### Impact of the QCA on State Finances

Medicaid finances the provision of health-related services to low-income people through federal partnerships with individual states. The federal share of financing is provided by the U.S. Department of Health and Human Services, managed by the Centers for Medicare and Medicaid Services. The nonfederal Medicaid payment amounts are provided by individual states through various mechanisms, including state general funds, provider taxes, and intergovernmental transfers.

In order to meet requirements of the Medicaid program, provider taxes “must be broad-based, uniformly imposed, and cannot hold providers harmless from the burden of the tax” (Henry J Kaiser Family Foundation, 2017) Additionally, there are limits on the amount of tax, as follows:

“Under current regulations, states may not use provider tax revenues for the state share of Medicaid spending unless the tax meets three requirements: must be broad-based, uniformly imposed, and cannot hold providers harmless from the burden of the tax. Federal regulations create a safe harbor from the hold-harmless test for taxes where collections are 6.0 percent or less of net patient revenues” (Henry J Kaiser Family Foundation, 2017)

Provider taxes are associated with a type of special revenue fund, which are used “for reporting specific revenue sources that are limited to being used for a particular purpose” (Governmental Accounting Standards Board, 2006). Special funds for provider taxes contrast with general funds, which are “where a government accounts for everything not reported in another fund” (Governmental Accounting Standards Board, 2006) with

# *Total Economic Impact of Medicaid Program Payments to Hospitals*

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“revenues from broad-based state taxes” (National Association of State Budget Officers, 2018)

In SFY 2015-2016, the QCA totaled approximately \$759 million for the hospitals analyzed. This special tax yielded a federal match of \$822 million, assuming the entire assessment yielded a federal FMAP of 0.5201 and that it met federal requirements.

The \$759 million generated by the QCA represented 2.5 percent of the Commonwealth’s general fund in SFY 2015-2016 (\$29.9 billion). Had the \$759 million been provided to fund Medicaid through the general fund instead of the special revenue fund, reductions in funding to other supported programs totaling 2.5 percent of the general fund would have been required. Alternatively, each Pennsylvania resident<sup>10</sup> could have been assessed an additional tax of \$60.32 (on average) to increase the general fund and maintain Medicaid funding levels without affecting other programs.

Without the QCA or general fund taxes, Pennsylvania would have lost \$822 million in federal matching funds. Assuming an economic multiplier of 2.0, Pennsylvania would have lost economic impact of \$1.6 billion.

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<sup>10</sup> We assumed that Pennsylvania had 12,579,422 residents.

# Potential Consequences of Medicaid Shortfalls

## KEY FINDINGS

- **Medicaid shortfalls necessitate cost reduction efforts by hospitals, including delayed investments in property and equipment, unit closures, reductions in staffing costs, consolidation, and hospital closures.**
- **Communities are impacted by loss of jobs, loss of services, and potential loss of hospitals.**
- **The burden of underpayment could be shifted to residents with private health insurance. That is, Medicaid and uninsured shortfalls can potentially be allocated to each privately insured Pennsylvania resident.**
  - **The SFY 2015-2016 shortfalls could translate to an additional \$165.22 for single coverage and \$495.66 for family coverage per privately insured resident.**
  - **Under Policy Alternative 1, the Medicaid and uninsured shortfalls could translate to an additional \$209.60 for single coverage and \$628.80 for family coverage per privately insured resident.**
  - **Under Policy Alternative 2, the Medicaid and uninsured shortfalls could translate to an additional \$350.64 for single coverage and \$1051.92 for family coverage per privately insured resident.**

Interviews with senior hospital administrators conducted for this report<sup>11</sup> revealed that historically, Pennsylvania reimbursement for services provided to Medicaid have been below cost. Over the last several years, these payments for services have been relatively flat while input costs to provide these services have increased. Hospitals have faced increasing

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<sup>11</sup> Please refer to Appendix B for a description of the interview participants

# Potential Consequences of Medicaid Shortfalls

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payment shortfalls from flat payments in these periods of increasing costs. That is, “revenue inflation has not kept pace with expense inflation,” as one hospital administrator stated.

When public insurance programs such as Medicaid reimburse hospitals below the cost of treating their patients, hospitals are forced to either absorb the payment shortfall through increased operating efficiency and/or curtailment of services, or shift the burden of underpayment to other payers to recoup some portion of the loss. However, not all underpayments can be offset because, as one administrator stated, “Our ability to offset isn’t there anymore.”

We have seen that Pennsylvania hospitals are efficient, relative to hospitals in other states, and thus increases in efficiency are not likely to be sufficient to counteract higher levels of Medicaid underpayment. As a result, hospitals would need to consider further measures of cost reduction if the QCA is increased for Pennsylvania hospitals.

## Cost Reduction

Cost reduction is an option that hospitals can employ in the short-term in response to Medicaid shortfalls. Short-term options include:

- Delayed investments in property and equipment;
- Closures of money-losing units, such as obstetric services;
- Reducing staff costs, such as by lay-offs;
- Consolidation; and
- Closure

### Delayed Investments in Property and Equipment

Hospitals that need to reduce costs in response to Medicaid underpayment may delay or curtail investment in hospital infrastructure, as they may lack the financial strength required to support capital investment. Such delays may mean that a hospital is not keeping its facilities up-to-date, or is unable to invest in innovative care delivery models such as freestanding emergency rooms, urgent care centers, and telehealth platforms. Ultimately, a deterioration of hospital infrastructure threatens access to care, particularly in rural and urban safety-net communities (Cooper, 2019). Hospitals in precarious financial positions may face a compromised ability to invest in innovations or quality improvement activities that may provide value for patients (Bazzoli, Fareed, & Waters, 2014). The hospital administrators interviewed for this report confirmed that Pennsylvania hospitals are delaying equipment investments in response to Medicaid shortfall. The analyses presented in this report indicate that increases to the QCA could exacerbate this position.

# Potential Consequences of Medicaid Shortfalls

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## Closing of Units

Closing money-losing units and service lines allows hospitals to both reduce negative margins and focus efforts on other services. Units and service lines that face closure include obstetric services, pediatric services, emergency rooms, and behavioral health services (Paavola, 2018). Hospital administrators confirmed that obstetrics and psychiatry are service lines that are typically at risk for closure because of overall financial losses.

Closure of obstetric services may be especially evident in rural communities. In the United States between 2004 and 2014, over 200 hospitals in rural areas closed obstetric services (or closed altogether). In Pennsylvania, HAP estimates that 23 obstetric units closed between 1999 and 2017 (The Hospital and Healthsystem Association of Pennsylvania, 2019). Such closures “further [isolate] some rural communities from access to hospital-based obstetric care” and result from “low Medicaid reimbursement,” as well as other reasons, including recruiting challenges (Hung, Kozhimannil, Henning-Smith, & Casey, 2017).

## Reducing Staff Costs

As staff costs are among the cost drivers for a hospital, efforts to reduce costs can focus on staff members. Cost reduction efforts include reducing overtime, reducing staff turnover, and increasing outsourcing of some positions, such as housekeeping (Henry, 2016). Interviews with hospital administrators revealed that other options include substituting licensed practical nurses (LPNs) and technicians for staff with a Bachelor of Science in nursing (BSN) and for registered nurses (RNs), as well as continually adjusting staff levels for immediate demands. However, hospital administrators also indicated that regulatory requirements and shortages of professional clinicians increase staffing costs, even while payments decrease.

Cost reduction efforts may especially focus on eliminating positions. Job eliminations may be permanent or temporary. However, at the same time, hospital administrators indicated that new positions must be added to ensure compliance with newly emerging regulations.

The hospital administrators that we interviewed also indicated that shortfalls may also impact the future workforce from closure of residency programs, schools of nursing, and other professional education services. These programs are usually money-losers for hospitals, and closures are typically included as possible options during financial crises. A hospital administrator indicated that the residency programs are evaluated for closure “all the time” in response to financial constraints.

# Potential Consequences of Medicaid Shortfalls

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## Hospital Consolidation

Consolidation and system affiliations are next level efforts to reduce costs. The hospital administrators interviewed for this report indicated that not only do consolidation and affiliation provide hospitals enhanced negotiation ability with commercial payers, but overall costs can be reduced with economics of scale, especially for back office support functions, such as accounting. Economies of scale and scope can also be achieved across health systems by developing Centers of Excellence at some facilities, rather than offering the same services at each hospital.

However, hospital consolidation has the potential to affect communities. Our interviews indicate that consolidated services at some facilities means that units in some hospitals may close. In addition, there may be job losses within the community of the acquired hospital, as jobs are moved or eliminated. Additionally, hospital administrators reported that cost reductions from hospital consolidations occur once, at the time of consolidation. Any future reductions from the post-consolidation operating costs require additional consolidations or other changes.

## Hospital Closures

In the long-term, payment shortfalls contribute to hospital closures and closures may especially impact rural areas. In 2016, the Kaiser Family Foundation (KFF) examined the recent and projected closures of hospitals in rural communities. In its publication, “A Look at Rural Hospital Closures and Implications for Access to Care: Three Case Studies” (Wishner, Solleveld, Rudowitz, Paradise, & Antonisse, 2016), KFF summarized its findings as follows:

- Hospital closures reduce access to emergency care;
- Many physicians and other providers leave the community immediately following rural hospital closure;
- Closures can have a significant impact on access to primary care;
- Hospital closures exacerbate gaps in access to specialty care;
- Hospital closures result in job losses and have other ripple effects in the surrounding community; and
- Hospital closures can make it more challenging for rural communities to attract employers.

In Pennsylvania, HAP estimates that over twenty hospitals have closed in the last two decades.

# Potential Consequences of Medicaid Shortfalls

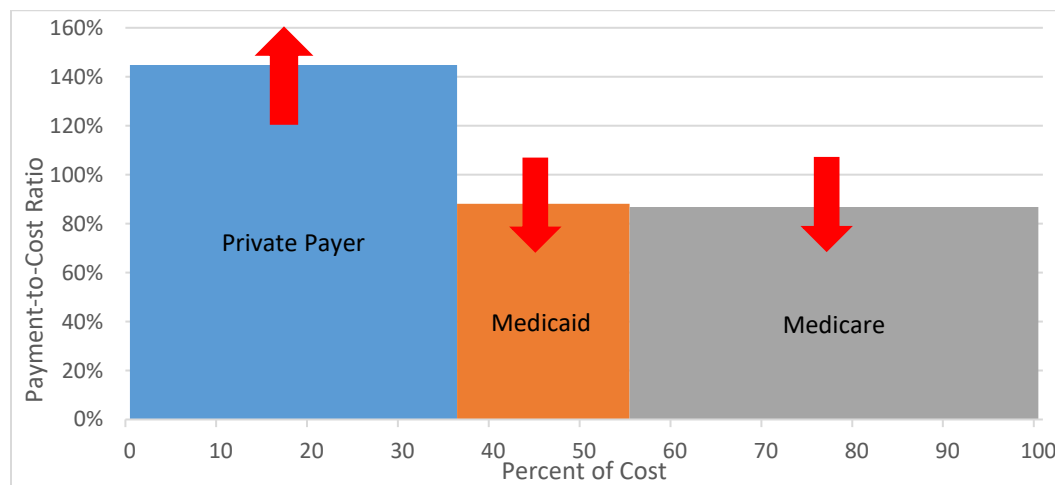
## The Cost-Shift

In addition to temporary measures of cost reduction, hospitals may shift the burden of Medicaid underpayment to other payers to recoup some portion of the loss. The cost-shift is “systematically higher prices (above cost) paid by one payer group to offset lower prices (below cost) paid by another” (Dobson, DaVanzo, & Sen, 2006). For hospital services, payment shortfalls from public payers are typically shifted to the private payer group, which is comprised of individuals with employer-based health insurance and individuals with direct-purchase health insurance.

Cost-shifting can be seen as a form of taxation. It “places hospitals in the unenviable position of playing the role of private-sector tax collectors, to maintain their financial solvency” (Dobson, DaVanzo, & Sen, 2006). In this case, a “cost-shifting tax” attributable to Pennsylvania Medicaid program payment shortfalls is imposed upon the private payer group.

Exhibit 14 illustrates the “cost shift payment hydraulic” based on data from the American Hospital Association (American Hospital Association, 2018) for U.S. hospitals in 2016. This is an illustration of hospital payment policy dynamics. Each bar in the figure represents a payer group. The height of each bar indicates the payment-to-cost ratio, and the width of each bar shows the percentage of hospital costs associated with each payer, which indicates the importance of the payer to hospital total patient volume. In this hydraulic, if the payment-to-cost for one payer (e.g., Medicaid) goes down, the ratio for another payer (e.g., private) must go up.

**Exhibit 14: Cost-Shift Hydraulic for U.S. Hospitals, 2016**



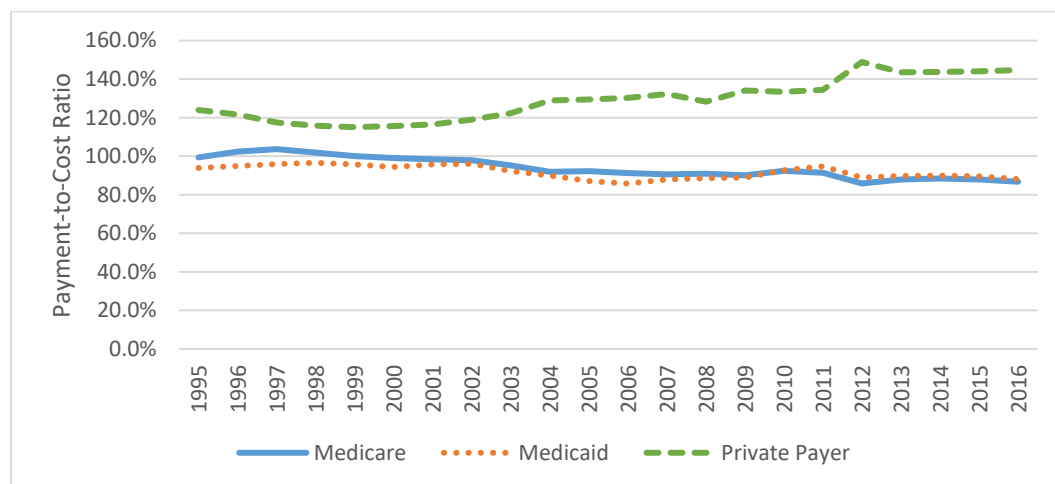
Source: American Hospital Association Trendwatch Chartbook 2018 (American Hospital Association, 2018)



# Potential Consequences of Medicaid Shortfalls

In fact, national trends have indicated a decrease in public payer payment-to-cost ratios since 1995 and a corresponding increase in private payer payment-to-cost ratios. National data from the American Hospital Association demonstrate this trend, as shown in Exhibit 15 (American Hospital Association, 2018).

**Exhibit 15: Medicare, Medicaid, and Private Payer Payment-to-Cost Ratios for U.S. Hospitals, 1995-2016**



Source: American Hospital Association Trendwatch Chartbook 2018 (American Hospital Association, 2018)

The increase of private payer payment-to-cost ratios over time in conjunction with decreased public payer ratios indicate that some of the shortfall is covered through increased payments from private insurers. More importantly, the ability to shift-costs varies by hospital. As the health insurance industry has consolidated over the past several years, the ability of individual hospitals to negotiate reimbursement levels from payers may have diminished. Conversely, consolidation of hospitals may increase their ability to cost-shift. The ability to cost-shift underpayments is especially limited by hospitals with relatively high percentages of Medicaid (and Medicare) patients, as the impacts of shortfalls increase and the proportion of private payers decreases. Without the ability to cost-shift, “a financial breakdown of the pluralistic U.S. health care delivery system” could result (Dobson, DaVanzo, & Sen, 2006). For individual hospitals, an inability to cost-shift may be marked by bankruptcy and closure.

## The Potential Impact of Medicaid Shortfalls on Private Health Care Insurance Premiums

The shifting of costs from public to private payers in order to mitigate public payment shortfalls leads private insurers to pass on some portion of these increased costs to consumers. This cost-shift may be achieved through higher premiums, co-pays, and co-

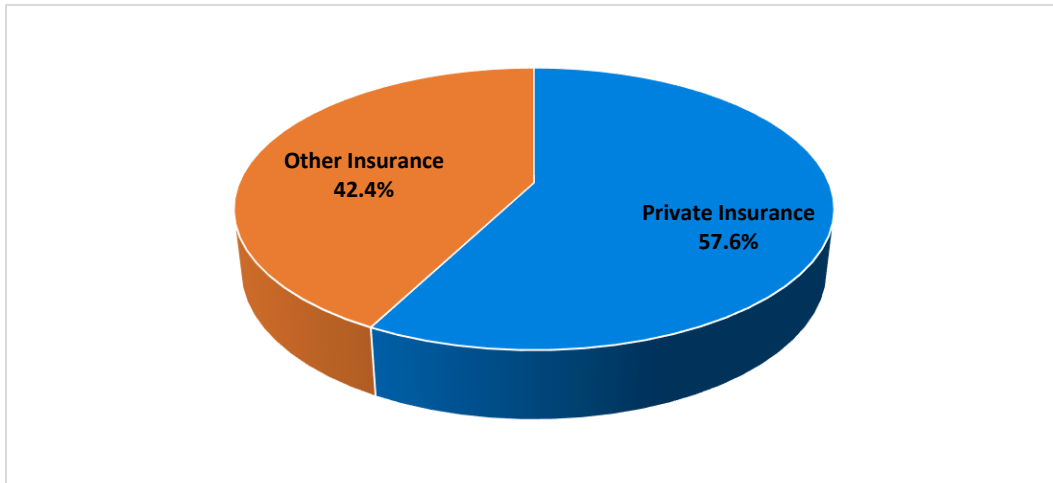
# Potential Consequences of Medicaid Shortfalls

insurance for private health insurance. Our estimates below indicate the potential cost-shift tax to employers and employees in the form of increased premiums and out-of-pocket costs.

## Medicaid Hospital Shortfalls per Resident in 2016

Over 7.2 million Pennsylvania residents had private health insurance in 2016. As illustrated in Exhibit 16, the private health insurance coverage category was the largest health care coverage group in Pennsylvania, with over 57 percent of Pennsylvania residents in this payer group (U.S. Census Bureau, 2016).

**Exhibit 16: Insurance Coverage by Category in Pennsylvania, 2016**



Source: U.S. Census Bureau; American Community Survey, 2016 American Community Survey 1-Year Estimates, Table B27010 (U.S. Census Bureau, 2016)

As shown previously (see Exhibit 2), the SFY 2015-2016 Medicaid/uninsured shortfalls to hospitals totaled \$1,198,031,214. Accordingly, the 2016 Medicaid shortfall to hospitals represents \$165.22 for each of the 7,251,062 residents of Pennsylvania with private health insurance (U.S. Census Bureau, 2016), as illustrated in Exhibit 17.

**Exhibit 17: Medicaid Hospital Shortfall per Resident Calculation in Pennsylvania, 2016**

$$\$165.22 = \frac{\$1,198,031,214 \text{ Medicaid and uninsured hospital shortfall}}{7,251,062 \text{ Residents with private insurance}}$$

# Potential Consequences of Medicaid Shortfalls

## Allocating Pennsylvania Medicaid/ Uninsured Shortfalls to Employers and Employees

Each Pennsylvania resident with direct-purchase private health insurance could be directly allocated up to the full \$165.22 in Medicaid/uninsured shortfalls. For residents with employer-sponsored health insurance, cost-shifted Medicaid shortfalls are borne by both employers, for the cost of health insurance premiums, and employees, for premium contributions and out-of-pocket costs (deductibles and copayments), as illustrated in Exhibit 18. Employers bear health care costs in expenditures for health insurance premiums. Employees bear health care costs in expenditures for contributions to health insurance premiums and for out-of-pockets costs (deductibles and copayments). Employees may also experience lower wages as an opportunity cost of being provided health insurance by their employers.

**Exhibit 18: Employer Portion of Health Insurance Premiums as Percentages of Total Health Care Expenditures**

	Health Insurance Percentage of Health Care Spending	Employer Portion of Health Insurance Premiums	Employer Contribution to Health Insurance	Employee Contribution to Health Care Spending
Type of Coverage	[A]	[B]	[C] = [A * B]	[D] = 100% - [C]
Single	84.0%	78.4%	65.9%	34.1%
Family	84.0%	74.5%	62.6%	37.4%

Sources: Dobson | DaVanzo analysis of data from the U.S. Agency for Healthcare Research and Quality, Medical Expenditure Panel Survey, 2019, and the Centers for Medicare & Medicaid Services, Office of the Actuary, National Health Statistics Group, National Health Expenditure Data.

The Medicaid/uninsured shortfall per employee, i.e., the costs potentially shifted to Pennsylvania residents with employer-sponsored private health insurance, varies with the number of individuals covered by the policy. As illustrated in Exhibit 19, the potential costs from Medicaid/uninsured shortfalls shifted to *employers* in 2016 was \$108.88 for each employee with single coverage and \$310.28 for each employee with family coverage.

As illustrated in Exhibit 19, the SFY 2015-2016 Medicaid/uninsured shortfalls that could be cost-shifted to each *employee* with employer-sponsored health insurance coverage was \$56.34 for each employee with single coverage and \$185.38 for each employee with family coverage.

# Potential Consequences of Medicaid Shortfalls

**Exhibit 19: Potential Cost-Shift to Employers and Employees from Medicaid/Uninsured Shortfalls in Pennsylvania**

Type of Coverage	Contribution Source (Employer/Employee)	Potential Costs Shifted to Private Insurance		
		SFY 2015-2016	Policy Alternative 1	Policy Alternative 2
Single Coverage	Employer Contribution	\$108.88	\$138.13	\$231.07
	Employee Contribution	\$56.34	\$71.47	\$119.57
	<b>Total</b>	<b>\$165.22</b>	<b>\$209.60</b>	<b>\$350.64</b>
Family Coverage	Employer Contribution	\$310.28	\$393.63	\$658.50
	Employee Contribution	\$185.38	\$235.17	\$393.42
	<b>Total</b>	<b>\$495.66</b>	<b>\$628.80</b>	<b>\$1,051.92</b>

Sources: Dobson | DaVanzo analysis of data from U.S. Census Bureau; American Community Survey, 2016 American Community Survey 1-Year Estimates, Table B27010, the U.S. Agency for Healthcare Research and Quality, Medical Expenditure Panel Survey, 2019, and the Centers for Medicare & Medicaid Services, Office of the Actuary, National Health Statistics Group, National Health Expenditure Data.

Note: We assume that number of individuals covered under a family plan is 3. Data from MEPS indicates that the total premium in Pennsylvania for single coverage is \$6,201 and the total premium for family coverage is \$17,900. The implicit number of individuals covered by a family policy is 2.9 (\$17,000 family premium / \$6,201 single premium = 2.9).

If the QCA amounts were increased, there would be additional Medicaid/uninsured shortfalls cost-shifted to private payers. Exhibit 19 also presents the Medicaid cost-shift that we estimate could be attributable to each resident with employer-sponsored health insurance coverage under Policy Alternatives 1 and 2.

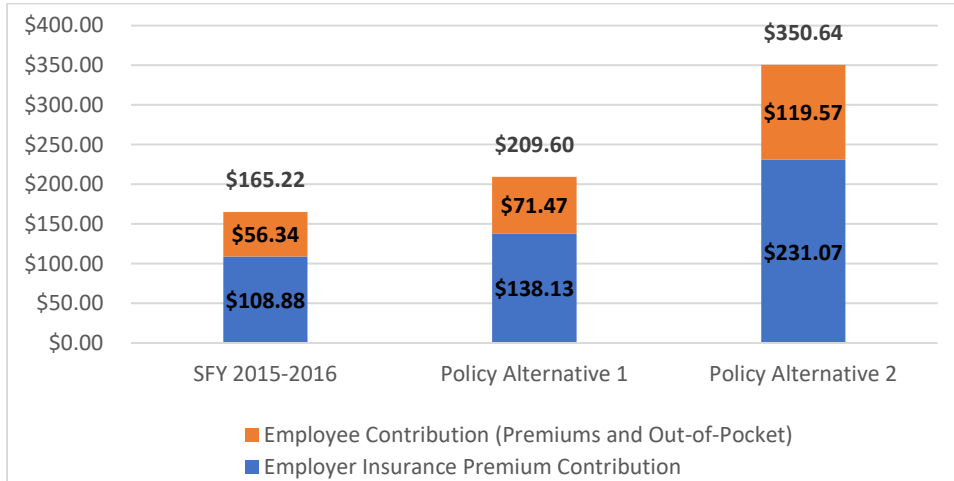
Under Policy Alternative 1, for each resident with single coverage, we estimate a total potential cost-shift to the employer of \$138.13 and to the employee of \$71.47. For each resident with family coverage, we estimate a total cost-shift to the employer of \$393.63 and to the employee of \$235.17.

Under Policy Alternative 2, for each resident with single coverage, we estimate a total potential cost-shift to the employer of \$231.07 and to the employee of \$119.57, and for each resident with family coverage, we estimate a total cost-shift to the employer of \$658.50 and to the employee of \$393.42.

These costs are depicted graphically below, in Exhibit 20 and Exhibit 21.

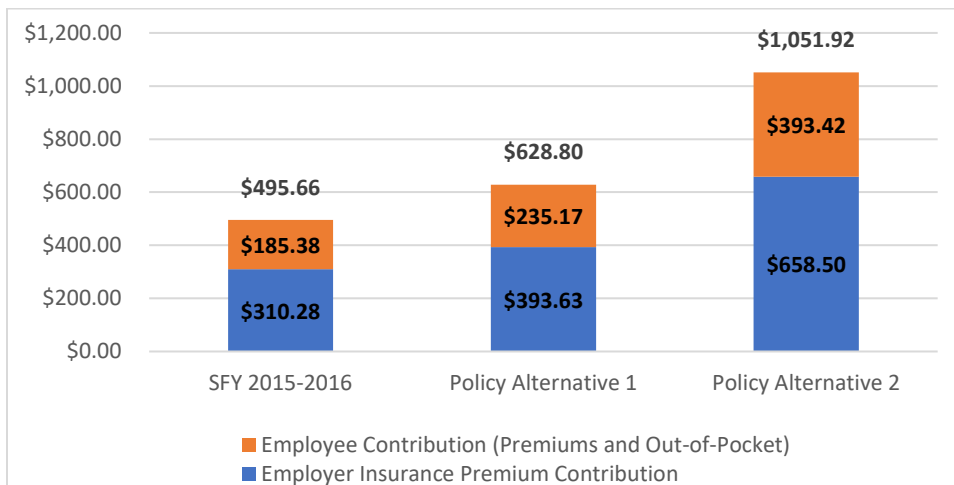
# Potential Consequences of Medicaid Shortfalls

**Exhibit 20: Potential Cost-Shift to Employers and Employees from Medicaid/Uninsured Shortfalls in Pennsylvania (Single Coverage)**



Sources: Dobson | DaVanzo analysis of data from U.S. Census Bureau; American Community Survey, 2016 American Community Survey 1-Year Estimates, Table B27010, the U.S. Agency for Healthcare Research and Quality, Medical Expenditure Panel Survey, 2019, and the Centers for Medicare & Medicaid Services, Office of the Actuary, National Health Statistics Group, National Health Expenditure Data.

**Exhibit 21: Potential Cost-Shift to Employers and Employees from Medicaid/Uninsured Shortfalls in Pennsylvania (Family Coverage)**



Sources: Dobson | DaVanzo analysis of data from U.S. Census Bureau; American Community Survey, 2016 American Community Survey 1-Year Estimates, Table B27010, the U.S. Agency for Healthcare Research and Quality, Medical Expenditure Panel Survey, 2019, and the Centers for Medicare & Medicaid Services, Office of the Actuary, National Health Statistics Group, National Health Expenditure Data.

# Potential Consequences of Medicaid Shortfalls

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## Limits to the Cost-Shift

Hospital administrators indicate that hospitals currently have less ability to subsidize payment shortfalls from Medicaid and others than in the past. Increased consolidation in the insurance industry leads to increased negotiating strength of payers, resulting in decreased negotiating strength of hospitals. Concurrently, pressures by employers on payers on health insurance premiums have led to coverages with high deductibles and copayments, resulting in lower payments because of patient bad debt from high deductibles, which places the lack of insurance coverage burden back on hospitals. One hospital administrator indicated that there is a “huge increase in year-over year bad debt . . . because people just aren’t paying” cost sharing requirements.

Additionally, the ability to negotiate higher payments from commercial insurance payers varies by hospital. Each hospital’s negotiating power depends on the importance of the individual hospital to the commercial payer’s network.

## Community Impact of Medicaid Shortfalls from Hospitals’ Perspective

The interviews conducted with senior hospital administrators confirmed that many of the cost reduction measures discussed in this report have become necessary. The impact of Medicaid program payment shortfalls ripples outward from the hospital, and are especially felt by small communities and individuals with chronic diseases. As stated by one hospital administrator, “A community’s access to healthcare is an indicator of quality of life.”

In addition to the effects on the community noted above, hospital administrators indicated several additional ways that Medicaid shortfalls impact the community. First, the impact of unit closures negatively impacts all community residents. Some patients may have better outcomes being in the comfortable, local environment, rather than travelling away from home to Centers of Excellence. Time and costs to travel away from the local area for services negatively impacts patients, especially those patients with chronic disease who must travel frequently for care.

Additionally, the shifting of services away from the local communities likely results in higher costs for emergency room visits. As some patients are unable to travel frequently for care at Centers of Excellence, these patients visit the local emergency rooms for urgent health needs because of access constraints.

Finally, the loss of health care services can diminish the community’s attractiveness to potential employers. As many potential employers consider several alternative areas when expanding or relocating, communities with reduced health care access are less competitive than communities with more robust options.

# Discussion and Conclusion

The analyses and estimates presented in this report are sobering. The current Medicaid program in Pennsylvania does not cover its costs for Medicaid and uninsured patients, with a shortfall of over \$1 billion. Additionally, rural general acute care hospitals are substantially underpaid for the provision of services to Medicaid and uninsured patients. Increases to the QCA amounts without corresponding increases in Medicaid reimbursement could substantially decrease future Commonwealth hospital financial stability.

***The hospital industry cannot be considered as a source of additional tax revenue without the consideration of the serious externalities associated with the taxing effort outlined in this report.***

As demonstrated by the options modeled in this report, Medicaid/uninsured PCRs could fall to the 60 percent range under alternative QCA policies. This is due to the fact that the quality care assessments are determined based on a percentage upon the net patient revenue of the entire hospital, not just Medicaid revenue. Revenues for hospital services in Pennsylvania totaled \$43.7 billion in 2016, whereas the Medicaid program represents about \$5 billion in expenditures. This ratio of almost 9:1 implies that a tax applied to total hospital net revenue has a nine-fold multiplier effect on the Medicaid program payment-to-cost ratios. Hence, seemingly small changes to the QCA could have a profound effect on the Medicaid program. This is why Medicaid PCRs declined so precipitously under the modeled QCA options.

The impact of the QCA on the hospital patient care margin is equally apparent. If, for instance, the QCA amount were increased by approximately three percent, hospital patient care margins would be reduced by about three percent as well, from 1.6 percent to -1.4

## Discussion and Conclusion

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percent. This level of financial dislocation caused by negative patient margins in the hospital industry could have serious repercussions on service delivery and access to care. It could also affect the operational viability of large segments of the industry. The primary conclusion of the study is that small changes in the QCA could have a profound impact upon the financial and operational viability of hospitals in the Commonwealth.

The broader implications of Medicaid underpayment are complex. While the Commonwealth might expect that Medicaid underpayments, or QCA tax assessment increases, be made up with increased hospital efficiencies, this is unlikely given the results of our efficiency analyses. We found that Pennsylvania hospitals are efficient as compared to the nation's hospitals with similar case mix, cost outlier profiles, teaching industry, local area wage index levels and urban rural location.

This leaves hospitals with two broad alternatives to Medicaid underpayments. First, hospitals can cut back on services, cut programs, or ultimately close. Or, they can attempt to shift costs to private payers. As indicated in the report, to the extent that cost-shifting occurs, it acts as a "tax" on private payers which will likely take the form of increased healthcare insurance premiums for privately insured employees. We detail these results in the text, but the end result is that increases to the QCA, without corresponding increases in hospital payments, could ultimately be paid by Commonwealth workers through increased health insurance premiums, amounting to hundreds of dollars per insured person.

Finally, the report addresses the economic output, employment and tax implications of spending on hospitals in the Commonwealth. Our analyses using the IMPLAN software produced a multiplier for hospital services in the Commonwealth of Pennsylvania of 2.0. This means that for every dollar spent on hospital services, another dollar of downstream economic activity is generated, for a total of \$2 in economic impact. The Medicaid program is unique in its economic impact upon the Commonwealth given the federal match rate of about 50 percent. The economic multipliers mean that for every dollar of state expenditure on Medicaid services, four dollars of economic activity and associated employment follow. This outsized multiplier is the primary economic reason that states support the Medicaid program; it is clearly in their economic interests to do so. And, of course, the process is reversible. Fewer Medicaid expenditures lead to economic contraction, which may be concentrated in Medicaid dependent communities where jobs are at a premium.

The implications of Medicaid program payment adequacy are multifaceted and reverberate throughout the Commonwealth's social and economic infrastructure. The hospital industry cannot be considered as a source of additional tax revenue without the consideration of the serious externalities associated with the taxing effort outlined in this report.



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# Appendix A:

## Data Tables

**Exhibit A-1: SFY 2015-2016 Net Medicaid and Medicaid/Uninsured Payments, Costs, Shortfall, and Payment-to-Cost Ratios for Pennsylvania Hospitals**

	Medicaid	Medicaid/Uninsured
Payments	\$5,038,730,806	\$5,135,815,976
Costs	\$5,833,836,793	\$6,333,847,190
Payment Shortfall	(\$795,105,987)	(\$1,198,031,214)
Payment-to-Cost Ratio	86.4%	81.1%

Source: Dobson | DaVanzo analysis of SFY 2015-2016 Pennsylvania MA Cost Reports and QCA Data

Note: Analysis is based on 210 Pennsylvania hospitals. Calculations include all Medicaid payments, including DSH and supplemental payments, net of the QCA amount.

**Exhibit A-2: SFY 2015-2016 Net Medicaid and Medicaid/Uninsured Payment-to-Cost Ratios for Pennsylvania Hospitals by Rural Classification**

	Number of Hospitals	Medicaid PCR	Medicaid/Uninsured PCR
Total (All Pennsylvania Hospitals)	210	86.4%	81.1%
<b>By Rural Classification</b>			
Rural General Acute Care	42	67.0%	64.5%
All Other Hospitals	165	87.5%	82.1%

Source: Dobson | DaVanzo analysis of SFY 2015-2016 Pennsylvania MA Cost Reports and QCA Data

Note: Analysis is based on 210 Pennsylvania hospitals. Calculations include all Medicaid payments, including DSH and supplemental payments, net of the QCA amount. Three hospitals with missing rural classification are not included in the breakout, so components do not sum to total.

## Appendix A: Data Tables

**Exhibit A-3: Net Medicaid and Medicaid/Uninsured Payments, Costs, Shortfall, and Payment-to-Cost Ratios for Pennsylvania Hospitals Under Increased QCA Amounts**

	Policy Alternative 1		Policy Alternative 2	
	Medicaid	Medicaid/ Uninsured	Medicaid	Medicaid/ Uninsured
Payments	\$4,716,924,064	\$4,814,009,235	\$3,694,254,462	\$3,791,339,632
Costs	\$5,833,836,793	\$6,333,847,190	\$5,833,836,793	\$6,333,847,190
Payment Shortfall	(\$1,116,912,729)	(\$1,519,837,955)	(\$2,139,582,332)	(\$2,542,507,558)
Payment-to-Cost Ratio	80.9%	76.0%	63.3%	59.9%

Source: Dobson | DaVanzo analysis of SFY 2015-2016 Pennsylvania MA Cost Reports and QCA Data

Note: Analysis is based on 210 Pennsylvania hospitals. Calculations include all Medicaid payments, including DSH and supplemental payments, net of the QCA amount.

**Exhibit A-4: Net Medicaid and Medicaid/Uninsured Payment-to-Cost Ratios for Pennsylvania Hospitals by Rural Classification Under Policy Alternatives 1 and 2**

	Number of Hospitals	Policy Alternative 1		Policy Alternative 2	
		Medicaid PCR	Medicaid/ Uninsured PCR	Medicaid PCR	Medicaid/ Uninsured PCR
Total (All Pennsylvania Hospitals)	210	80.9%	76.0%	63.3%	59.9%
<b>By Rural Classification</b>					
Rural	42	62.7%	60.6%	41.8%	41.8%
All Other Hospitals	165	81.9%	76.9%	64.6%	61.0%

Source: Dobson | DaVanzo analysis of SFY 2015-2016 Pennsylvania MA Cost Reports and QCA Data

Note: Analysis is based on 210 Pennsylvania hospitals. Calculations include all Medicaid payments, including DSH and supplemental payments, net of the QCA amount. Three hospitals with missing rural classification are not included in the breakout, so components do not sum to total.

# Appendix B:

# Methods

This appendix describes the methodology and data sources for the analyses presented in this report.

## Payment-to-Cost Ratios

Policymakers typically use the relationship of payment to costs for a given payer to evaluate the adequacy of payment rates for health care providers. The payment-to-cost ratio (PCR) divides payment by cost, as illustrated in Exhibit B-1. Accordingly, payments that equal costs yield a PCR of 1.0, payments that are less than cost yield a PCR less than 1.0, and payments that are greater than cost yield a PCR greater than 1.0.

### Exhibit B-1: Illustration of Payment-to-Cost Ratio

$$\text{Payment-to-Cost Ratio} = \frac{\text{Payment}}{\text{Cost}}$$

However, even within this measure, there is no one single definition of what constitutes either payments or costs for a PCR. The following tables (Exhibit B-2 and Exhibit B-3) illustrate a number of components that may be included in the calculation of Medicaid payments and Medicaid costs.

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**Exhibit B-2: Components of Payments that May be Included in a Medicaid Payment-to-Cost Ratio**

Components of Medicaid Payments	Definition
“Standard” Medicaid Hospital Payments	Payments made directly for services rendered to Medicaid patients
Supplemental Payments	Payments made by state Medicaid programs to providers, most commonly hospitals, outside of regular Medicaid payment mechanisms
DSH Payments	Payments to qualifying hospitals that serve a large number of Medicaid and uninsured individuals
Hospital Provider Tax or Assessment	Imposed by states on health care services where the burden of the tax falls mostly on providers, such as a tax on inpatient hospital services or nursing facility beds. The hospital assessment program in Pennsylvania is known as the QCA
“Net” Medicaid Payments	All payments made to hospitals, including standard, supplemental, and DSH payments, and other local government contributions, net of the QCA

**Exhibit B-3: Components of Costs that May be Included in a Medicaid Payment-to-Cost Ratio**

Components of Medicaid Costs	Definition
Medicaid costs	The cost of services rendered to Medicaid patients
Uninsured costs	The cost of services rendered to patients without health insurance

### Hospital Payments and Costs

Data on inpatient and outpatient hospital payments and costs were derived from the SFY 2015-2016 Medical Assistance (MA) Cost Reports. Cost reports from SFY 2015-2016 were selected for use as they are the most recently available complete source of data for Pennsylvania hospitals. Only those currently existing Pennsylvania hospitals with payments and costs on an MA Cost Report for SFY 2015-2016 were included in these analyses (210 hospitals).<sup>12</sup> Payments and costs were summed across hospitals to determine statewide estimates.

The MA Cost Reports are a series of worksheets and schedules that describe a hospital’s characteristics and present financial information, revenues, and charges. Worksheet S7 provides, for each hospital, inpatient and outpatient Medicaid revenues and gross Medicaid charges.<sup>13</sup> The data fields from Worksheet S7 used in the calculation of hospital Medicaid

<sup>12</sup> A total of 223 hospitals had MA cost report data. Of these, two were out of state, eight did not have Medicaid payments and/or costs, two had closed, and one contained partial year data and were excluded from analyses.

<sup>13</sup> Gross charges are total charges before discounts.



## Appendix B: Methods

revenue and charges are presented in Exhibit B-4. To obtain total hospital Medicaid revenue, values were summed across the revenue data fields identified in this table.

**Exhibit B-4: Data Fields from Worksheet S7 of the Pennsylvania Medical Assistance Cost Reports Used to Calculate Hospital Medicaid Revenues and Charges**

Revenues	Gross Charges
PA Medicaid (Title XIX) FFS Inpatient Revenues	PA Medicaid (Title XIX) FFS Inpatient Charges
PA Medicaid (Title XIX) FFS Outpatient Revenues	PA Medicaid (Title XIX) FFS Outpatient Charges
PA Medicaid (Title XIX) Managed Care Inpatient Revenues	PA Medicaid (Title XIX) Managed Care Inpatient Charges
PA Medicaid (Title XIX) Managed Care Outpatient Revenues	PA Medicaid (Title XIX) Managed Care Outpatient Charges
General Assistance FFS Inpatient Revenues	General Assistance FFS Inpatient Charges
General Assistance FFS Outpatient Revenues	General Assistance FFS Outpatient Charges
General Assistance Managed Care Inpatient Revenues	General Assistance Managed Care Inpatient Charges
General Assistance Managed Care Outpatient Revenues	General Assistance Managed Care Outpatient Charges

To obtain total hospital Medicaid costs, the charges identified in Exhibit B-4 were converted to costs. Worksheet S6 of the MA cost reports provides the hospital’s total inpatient and outpatient charges, and Worksheet S3 provides the hospital’s total inpatient and outpatient cost. Taking the ratio of these two variables allows for the calculation of each hospital’s overall inpatient and outpatient ratio of costs to charges (RCC), as shown in Exhibit B-5:

**Exhibit B-5: Calculation of Inpatient and Outpatient Ratio of Cost to Charges (RCC)**

$$Total\ Hospital\ Inpatient\ RCC = \frac{Total\ Hospital\ Inpatient\ Cost}{Total\ Hospital\ Inpatient\ Charges}$$

$$Total\ Hospital\ Outpatient\ RCC = \frac{Total\ Hospital\ Outpatient\ Cost}{Total\ Hospital\ Outpatient\ Charges}$$

Multiplying a hospital’s Medicaid inpatient charges by its inpatient RCC results in hospital’s inpatient Medicaid costs, as shown in the formula in Exhibit B-6, below. A similar calculation results in a hospital’s outpatient Medicaid costs. Thus, the gross charges identified in Exhibit B-6 were converted to costs and then summed to obtain total hospital Medicaid costs.

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## Exhibit B-6: Calculation of Inpatient and Outpatient Medicaid Costs

$$\text{Inpatient Medicaid Costs} = \text{Inpatient Medicaid Charges} * \text{Inpatient Hospital RCC}$$
$$\text{Outpatient Medicaid Costs} = \text{Outpatient Medicaid Charges} * \text{Outpatient Hospital RCC}$$

### Supplemental and Disproportionate Share Hospital Payments

Data on hospital supplemental payments, including DSH payments, were obtained from the MA cost reports. Worksheet S6 provides the inpatient and outpatient fee-for-service supplemental revenues for SFY 2015-2016, as well as cash subsidies from the state and local government. Inpatient supplemental payments include, but are not limited to, inpatient DSH, medical education, access to care, academic medical center, community access funds, burn center, Critical Access Hospital, obstetrics/neonatal intensive care unit (OB/NICU), tobacco, and trauma payments. Outpatient supplemental revenues include outpatient DSH.<sup>14</sup> Because supplemental payments for managed care Medicaid are incorporated into the managed care reimbursement rates, these payments are already included in the inpatient and outpatient Medicaid managed care revenues (taken from Worksheet S7) and were not broken out separately. Supplemental payments for fee-for-service Medicaid as well as cash subsidies from the state and local governments were added to Medicaid hospital revenues to obtain total Medicaid hospital payments. Thus, the calculation of total Medicaid payments for each hospital is given in Exhibit B-7.

## Exhibit B-7: Calculation of Total Medicaid Payments

$$\text{Total Medicaid Payments} = \text{Medicaid Hospital Payments} + \text{DSH/Supplemental Payments} \\ + \text{Cash Subsidies Received from State and Local Government}$$

### Self-Pay / Uninsured Payments and Costs

DSH payments are made to qualifying hospitals that serve a large number of low-income individuals (including Medicaid and uninsured patients), and these payments are included in the calculation of total Medicaid payments, as described above. As such, it is also relevant to consider all payments and costs related to those who are uninsured/self-pay in a discussion of Medicaid program payment adequacy. Worksheet S7 of the MA cost reports provides uninsured/self-pay revenues and charges (which were converted to costs using the hospital inpatient and outpatient RCCs.) Thus, this report includes a second, separate

<sup>14</sup> We note that outpatient and emergency department payments associated with the Philadelphia hospital assessment were not included in this analysis since the assessment amounts paid by hospitals were not available.

## Appendix B: Methods

calculation of total Medicaid/uninsured payments to include those for the uninsured/self-pay, as shown in Exhibit B-9:

### Exhibit B-9: Calculation of Total Medicaid/Uninsured Payments

$$\text{Total Medicaid/Uninsured Payments} = \text{Medicaid Hospital Payments} + \text{Uninsured/Self-Pay Revenue}$$

Similarly, each hospital's Medicaid/uninsured costs were calculated as the sum of the Medicaid and uninsured/self-pay inpatient and outpatient costs, as shown in Exhibit B-8.

### Exhibit B-8: Calculation of Total Medicaid/Uninsured Costs

$$\text{Total Medicaid/Uninsured Costs} = [(\text{Inpatient Medicaid Charges} + \text{Inpatient Uninsured/Self-Pay Charges} * \text{Inpatient RCC})] + [(\text{Outpatient Medicaid Charges} + \text{Outpatient Uninsured/Self-Pay Charges}) * \text{Outpatient RCC}]$$

### Quality Care Assessment (QCA)

Because a portion of the non-federal share of Medicaid is funded with revenue collected from provider taxes and fees, we include the QCA in our calculation of Medicaid hospital payments. Data on the QCA was derived from actual expenditure figures from DHS budget documentation for SFY 2015-2016. QCA amounts were subtracted from SFY 2015-2016 Medicaid hospital payments (including supplemental payments, as noted above) to obtain a net Medicaid payment, as shown in Exhibit B-10.

### Exhibit B-10: Calculation of Net Medicaid and Net Medicaid/Uninsured Payments

$$\text{Net Medicaid Payments} = \text{Total Medicaid Payments} - \text{QCA Amount}$$

$$\text{Net Medicaid/Uninsured Payments} = \text{Total Medicaid/Uninsured Payments} - \text{QCA Amount}$$

### Analysis of Alternative QCA Scenarios

In SFY 2015-2016, quality care assessments were calculated as 3.71 percent of a hospital's net inpatient revenue from a base year of SFY 2010-2011 with no assessments on net outpatient revenue. At that time, the Commonwealth returned approximately 71 percent of the assessment to the hospitals and retained 29 percent as the "state contribution." Since that time, the Commonwealth modified the manner in which assessments were determined. Beginning in SFY 2018-2019, the assessments were calculated as 2.98 percent of net inpatient revenue and 1.55 percent of net outpatient revenue from a base year of SFY 2014-

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2015 (Pennsylvania Department of Human Services, September 2018). The “state contribution” for SFY 2018-2019 is 32 percent, while the hospitals will retain 68 percent.

Two Policy Alternative models, Policy Alternative 1 and Policy Alternative 2, were considered in this analysis in order to examine the impact of QCA increases to hospitals. These alternatives are described below.

### **POLICY ALTERNATIVE 1**

The first Policy Alternative model, “Policy Alternative 1,” assumes that the level of the “state contribution” is increased to 50 percent. However, under this alternative scenario, payments to hospitals remain constant. Thus, the portion of the assessment marked for the “state contribution” must equal the amount used to fund improved hospital payments. The QCA amounts must therefore be increased to ensure this equality. As demonstrated in Exhibit 2 and using assessment levels from FY 2015-2016, the Pennsylvania hospitals included in this analysis paid \$758.8 million in quality care assessments. The Commonwealth retained approximately 29 percent of this, or \$218.5 million, while the remainder, approximately \$540.3 million, was used for improved hospital payments. Under Policy Alternative 1, the portion used for improved hospital payments would remain constant at \$540.3 million. Because the “state contribution” would be increased to 50 percent, this amount would be identical to the hospital portion, or \$540.3 million. The total assessment would therefore be \$1.1 billion, or an assessment increase of \$321.8 million over actual assessment levels (1.1 billion minus 758.8 million).

### **POLICY ALTERNATIVE 2**

A second assessment model, “Policy Alternative 2,” examines what would happen if the Commonwealth had increased the assessment to maximum levels in SFY 2015-2016, or 6 percent of net patient revenue. To estimate these assessments, we utilized the net patient revenue from SFY 2014-2015.<sup>15</sup> To ensure consistency, these figures needed to be deflated to SFY 2010-2011 levels, as this was the revenue base year for SFY 2015-2016 QCA. Analysis of data from the Pennsylvania Health Care Cost Containment Council (Pennsylvania Health Care Cost Containment Council, 2016) indicated an approximate ten percent increase in net patient revenue among Pennsylvania hospitals between SFY 2010 and SFY 2014. As such, we decreased the SFY 2014-2015 net patient revenue by ten percent for each hospital. The resulting figure served as the revenue base for Policy Alternative 2, and six percent of this calculated net patient revenue represented the maximum assessment level for each hospital. In this model, the total assessment would

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<sup>15</sup> Net patient revenue for the unique subset of hospitals used in this analysis was not available for this report. Net patient revenue for SFY 2014-2015 was available for this subset of hospitals as it was the revenue base of the QCA calculations for SFY 2018-2019.

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therefore be \$2.1 billion, or an assessment increase of \$1.3 billion over actual assessment levels (2.1 billion minus 758.8 million).

### Patient Care Margins

In health care, both total margins and patient care margins are frequently used as measures of overall profitability. Total margins, which calculate the difference between total revenue and costs as a proportion of total revenue, include both operating income and non-operating income as revenue. When a hospital's margin is computed only with revenues related to patient medical care, it is called a patient care margin, and expresses the difference between patient care revenue and operating costs as a proportion of patient care revenue.

The patient care margin is similar to an operating margin; however, it has a different definition of revenues. The Pennsylvania Health Care Cost Containment Council (PHC4) includes both patient care revenue and revenue from other related functions in its definition of operating margins. That is, it also includes revenues and expenses related to “medical education, cafeteria services, community health education and screening programs, and parking services.” The inclusion of revenues and expenses from these other related functions results in operating margins that are more similar to total margins.

The revenues and costs used for analyses in this report are focused on revenues directly related to patient medical care and all operating costs. We use data from federal fiscal year (FFY) 2016 Medicare cost reports, obtained from the December 2018 extract of the Healthcare Cost Report Information System (HCRIS). The formula we use to calculate the total (all-payer) patient care margin is shown in Exhibit B-11. We obtain operating revenue from Worksheet G-3, Line 3 (net patient revenues) and operating costs from Worksheet G-3, Line 4 (total operating expenses).

#### Exhibit B-11: Calculation of Total (All-Payer) Patient Care Margin

$$\text{Patient Care Margin} = \frac{(\text{Patient Care Revenue} - \text{Total Operating Expenses})}{\text{Patient Care Revenue}}$$

### Hospital Efficiency Model

To further assess whether Pennsylvania Medicaid hospital payments cover Medicaid costs for efficient hospitals, this analysis evaluates the cost efficiency of Pennsylvania hospitals using a multivariate regression analysis of hospitals across the United States using publicly available data from CMS. These data allow for state-level comparisons of efficiency through time. The data relate to Medicare costs per discharge as these are the only national data for which we have case mix measures. The multivariate regression analysis was

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chosen because the approach is both straightforward and statistically robust. This analysis is based upon observed data and is therefore empirical, not theoretical.<sup>16</sup>

The regression-based efficiency model works by recognizing that certain characteristics of hospitals are associated with higher (or lower) costs. It estimates a set of parameters that reflect the relationship between these characteristics and Medicare per-case hospital costs. The estimated model is used to predict Medicare costs per discharge for a hospital or hospitals with a given set of characteristics.

The regression model uses inputs from multiple years of Medicare Cost Reports and the annual “Impact File,” used by CMS to calculate Medicare payment rates for inpatient hospitals as well as to estimate the impact of policy changes (Centers for Medicare and Medicaid Services, 2017). As the variables in the Impact File are tied to national Medicare policies, variation associated with multiple accounting frameworks is largely reduced. The annual Impact File includes data for short-term acute care hospitals that participate in the Medicare acute inpatient prospective payment system (IPPS). Most acute inpatient hospitals that participate with Medicare are IPPS hospitals. Payment variables for over 3,000 hospitals across the United States were used in the efficiency model.<sup>17</sup>

These data are tied to various Medicare measures, including Medicare allowed costs, and are available for most hospitals in the United States. Characteristics incorporated in this regression model and used to estimate per-case hospital costs are as follows:

- **Medicare case mix index (CMI)** - CMI is a measure that indicates the severity of patient conditions, as sicker patients are most costly to treat, and is sourced from annual Impact Files;
- **Outlier payments to total payments or outlier index (OI)** - OI is a measure that assesses a hospital’s burden associated with treating abnormally costly cases, known as outliers, and is sourced from annual Impact Files (nearly all CMS payment systems account for outliers);
- **Ratio of Interns and Residents to Beds (IRB)** - IRB is a measure that assesses a hospital’s teaching intensity, as many indirect costs are associated with training interns and residents, and is sourced from annual Impact Files;
- **Medicare wage index (WI)** - WI is a measure that assesses cost of living, which can vary by locale, and is sourced from annual Impact Files; and

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<sup>16</sup> Assessing a hospital’s costs is more complex than assessing the costs of service providers in other industries. In order to measure cost efficiency, different researchers have used different models. However, CMS has typically used regression based approaches in its cost analyses.

<sup>17</sup> Children’s hospitals, cancer hospitals, and critical access hospitals were not included in this analysis, given their exclusion from the IPPS.

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- **Urban versus rural location** - a variable that recognizes that rural hospitals can have increased costs from reduced efficiencies, and is sourced from annual Impact Files.

These characteristics, known as “payment variables,” are considered to be key cost drivers in the efficiency model. Most Medicare (and other payer) prospective payment systems adjust payments to account for these characteristics, including the Medicare IPPS. Inclusion of these payment variables in the efficiency model is purposeful, given that the close relationship of these variables to hospital inpatient costs has been widely accepted, and that payment systems generally need to cover costs associated with these variables.

By definition under a regression model, the predicted costs associated with a given set of hospital characteristics are, on average, equal to actual average costs associated with all the hospitals modeled with a similar set of characteristics. From this standpoint, the model is effective in assessing the overall efficiency of a subset of hospitals relative to all hospitals. As with most statistical approaches, estimates at the group level are more accurate than those at the individual level. In any case, given that the predicted cost reflects the average cost for hospitals with a given set of characteristics, the actual cost of the hospital relative to the predicted (or average) cost for hospitals with similar characteristics is a robust measure of cost efficiency. More specifically, if a hospital’s actual cost is higher than the predicted cost, the hospital is presumed relatively cost inefficient because the hospital has higher costs than the average costs of all the hospitals with similar characteristics. On the other hand, if a hospital’s actual cost is lower than the predicted cost, the hospital is presumed to be relatively cost efficient because the hospital has lower costs than the average costs of all the hospitals with similar characteristics. The model has been peer reviewed upon several occasions. Core aspects of the Efficiency Model were originally developed in the early 1990s for the U.S. Department of Health and Human Services and the Association of American Medical Colleges (Mechanic, Coleman, & Dobson, 1998). Since then, the model has been continually utilized (Jha, Orav, Dobson, Book, & Epstein, 2009; Koenig, et al., 2003). The formula in Exhibit B-12 details the general regression formula used in the efficiency model.

### Exhibit B-12: Efficiency Model Regression Formula

$$\ln(CPC) = \beta_0 + \beta_1 \ln(CMI) + \beta_2 \ln(I+OI) + \beta_3 \ln(I+IRB) + \beta_4 \ln(WI) + \beta_5 (Rural) + \mu$$

The dependent variable in the above model is Medicare operating costs per discharge (CPC). The Medicare operating costs per discharge is sourced from the Medicare hospital cost reports and is calculated for each hospital by dividing Medicare inpatient operating costs, excluding capital and direct medical education costs, by the number of Medicare discharges. The regression models utilize Medicare case-mix index (CMI), fraction of

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outlier payments to total payments or outlier index (OI), Ratio of Interns and Residents to Bed (IRB), Medicare wage index (WI), and urban versus rural location as explanatory variables. These explanatory variables (except urban versus rural status), as well as the dependent costs per discharge, were all transformed using the natural logarithm to account for the skewed distribution of costs and the technical fact that using the logarithmic transformation on both the independent and dependent variables allows for interpretive elasticity (e.g., a given percent change in the independent variable produces a given percent change in the dependent variable). A constant value of 1 was added to OI and IRB to avoid problems with the logarithmic transformation of the value “0” which is undefined.

The result of the multivariate regression analysis is a formula that predicts estimated costs for an individual hospital, based on the average cost relationships associated with the modeled set of characteristics, in this case the series of payment variables. The Efficiency Model was run separately for each of the years from 2010 through 2016. The formula in Exhibit B-13 details the formula used to calculate the predicted costs per discharge, that is, the costs per discharge for each hospital for each year. As the inputs varied each year, the resulting parameter estimates, or coefficients changed each year.

### Exhibit B-13: Efficiency Model Regression Formula to Calculate Predicted Cost per Discharge

$$\ln(\widehat{CPC})_i = \widehat{\beta}_0 + \widehat{\beta}_1 \ln(CMI)_i + \widehat{\beta}_2 \ln(1 + OI)_i + \widehat{\beta}_3 \ln(1 + IRB)_i + \widehat{\beta}_4 \ln(WI)_i + \widehat{\beta}_5 (Rural)_i$$

where  $i$  = individual hospital,  $\beta_0$  = intercept term, and  $\hat{\beta}$  = estimated value

When the estimated regression formula is applied, we can obtain values for predicted Medicare inpatient costs for a given hospital in that year. Those hospitals with actual costs approximately equal to predicted costs are presumed to provide services with average efficiency. Hospitals with actual costs higher than predicted costs are presumed to be relatively less efficient than the average hospital, and those with actual costs lower than predicted costs are presumed to be relatively more efficient than the average hospital.

### IMPLAN Economic Impact Analysis

To estimate the impact of Medicaid expenditures for hospital services in Pennsylvania, we used Impact Analysis for Planning (IMPLAN) software (IMPLAN Group LLC). IMPLAN is an input-output model that is used to examine the impact of changes that occur in an industry or, the overall economy. It also estimates employment and state and local tax impacts commensurate with estimated economic impacts.

IMPLAN creates its tax estimates based upon the tax table estimates taxes paid to all federal, state, and local units of government in the study area. The status of for-profit and



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not-for-profit entities are treated as stable proportions within the study area. That is if 10% of an industry's economic assets/activity were deemed not-for-profit in the recent past, they would not be considered taxable under our modeling.

Dobson | DaVanzo has used IMPLAN software to conduct economic impact analyses for a variety of healthcare industry stakeholders. For example, we used IMPLAN to model the economic impact of Medicaid expansion in Missouri and Kentucky. It was also used to determine the value of community health centers to local communities in Washington state, and to help assess the future value of a major hospital construction plan in Louisiana. Dobson | DaVanzo also used IMPLAN to determine the economic footprint of the dietary supplement industry.

Components of IMPLAN analyses used in our analyses are described as follows:

- **Total economic impact:** the combined impact, or sum, of direct, indirect, and induced impacts.
  - **Direct impact:** the initial impact of Medicaid expenditures for hospital services in Pennsylvania on hospital earnings, taxes, the use of goods and services, and hospital employment (jobs).
  - **Indirect impact:** the secondary impact of Medicaid expenditures for hospital services in Pennsylvania on earnings, taxes, and employment (jobs), as providers and supplying industries respond to the direct impacts of Medicaid expenditures to hospitals.
  - **Induced impact:** the tertiary impact of Medicaid expenditures for hospital services in Pennsylvania on earnings, taxes, and employment (jobs), as downstream household spending results from the direct and indirect impacts of hospital expenditures.
- **Employment impacts:** the impact that discrete spending in a given sector or sectors of the economy has on the overall local employment.
- **Tax impacts:** the impact on tax revenues that discrete spending in a given sector has on state and local, as well as federal, taxes.
- **Multipliers:** values calculated by IMPLAN that quantify the relationship between the direct impact and the total economic impact. The value-added direct impact times the multiplier produces the total economic impact. In this study, the multiplier is about 2.0. When combined with the federal match in Medicaid, the Pennsylvania multiplier increases to over 4.0, as will be discussed below.

We explored three different levels of economic impact in this analysis. The baseline analysis used net Medicaid/uninsured hospital expenditures from SFY 2015-2016. This included Medicaid payments to hospitals for the care of Medicaid patients, including the

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net impact of the existing quality care assessment and supplemental payments. We then considered two different potential increases to the QCA amounts, as described previously. Policy Alternative 1 assumes that the level of the “state contribution” is increased to 50 percent while payments to hospitals remain constant. Under this model, the total assessment would therefore be \$1.1 billion, or an assessment increase of \$321.8 million over baseline assessment levels.

A second assessment model, “Policy Alternative 2,” examines what would happen if the Commonwealth had increased the assessment to maximum levels in SFY 2015-2016, or 6 percent of net patient revenue. In this model, the total assessment would therefore be \$2.1 billion, or an assessment increase of \$1.3 billion over baseline assessment levels

The result of these analyses provided below reflects the impact of Medicaid hospital expenditures across hospitals within the Commonwealth. As the IMPLAN analyses are industry specific, shifts in Commonwealth expenditures to different industries would produce different distributional impacts. This economic shift could especially impact communities with a high proportion of Medicaid enrollees. This economic shift may also disproportionately impact communities in which hospitals are major employers. That is, once a hospital closes or downsizes, in many communities the economic activity will likely never be replaced.

### **Interviews with Hospital Administrators**

We conducted five interviews with senior leaders of hospitals and health systems in Pennsylvania to gain insight into Pennsylvania Medicaid program payment policy from the hospitals’ perspective. These hospital administrators interviewed were C-level executives. They were selected purposefully to represent hospitals and health systems with varying characteristics, including the five regions of Pennsylvania, small and large hospitals, teaching and non-teaching hospitals, and urban and rural hospitals. The interviews were semi-structured, each following the same interview guide while allowing participants to provide detail on specific topic areas.