Evaluation of the Rural Community Hospital Demonstration

Interim Report Two (Covering 2016–2018)

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American Institutes for Research® (AIR®) Headquarters
1400 Crystal Drive, 10th Floor
Arlington, VA 22202-3289
202.403.5000

www.air.org

Project

Evaluation of the Rural Community Hospital Demonstration

Authors

Daniela Zapata, Ph.D., American Institutes for Research
Tanvi Rao, Ph.D., American Institutes for Research
Angshuman Gooptu, Ph.D., American Institutes for Research
Chelsea Swete, Ph.D., American Institutes for Research
Marni Yoffe, M.A., American Institutes for Research
Drew Wood-Palmer, M.P.H., American Institutes for Research
Margaret (Peggy) O'Brien, Ph.D., Mission Analytics
Ellie Coombs, M.P.P., Mission Analytics
Nick Theobald, Ph.D., Mission Analytics
Elizabeth Crane, M.P.H., Mission Analytics

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Executive Summary

The Rural Community Hospital Demonstration (RCHD) was authorized under the Medicare Prescription Drug, Improvement, and Modernization Act (MMA) of 2003 "to test the feasibility and advisability of the establishment of rural community hospitals to furnish covered inpatient hospital services to Medicare beneficiaries." The goal of the RCHD is to strengthen the financial condition of small, rural community hospitals and help them to meet the needs of Medicare beneficiaries who reside in their market areas by providing the potential for higher Medicare payments for covered inpatient hospital services. To be eligible for the RCHD, participant hospitals must:

- Be located in rural areas;
- Have fewer than 51 beds;
- Maintain a 24-hour emergency department; and
- Be ineligible for designation as a Critical Access Hospital.

Since its original authorization, the demonstration has been extended three times: 1) by the Patient Protection and Affordable Care Act (ACA) of 2010, 2) by the 21st Century Cures Act (CCA) of 2016, and 3) by the Consolidated Appropriations Act of 2021.

Under the initial five-year MMA authorization, the demonstration was implemented in the 10 least populated states, and within those states, only up to 15 hospitals could participate. The ACA authorized the demonstration for another five years. Under this extension, the demonstration included the 20 least densely populated states and allowed up to 30 participating hospitals. The CCA authorized the demonstration for another five years. Hospitals from any state could participate, but those in the 20 least densely populated states were given priority. The Consolidated Appropriations Act of 2021 recently authorized the demonstration for another five years. This report covers the start of the CCA authorization period and features 12 hospitals that were new to the demonstration and 17 hospitals that continued their participation.

Evaluation Goals

This is the second interim evaluation report under this contract[1] and the first one to include quantitative data for hospitals that joined the RCHD during the CCA extension. This report uses settled Medicare cost reports (available through Fiscal Year [FY] 2018), qualitative interviews with hospital representatives, and other secondary data sources to:

- Describe the characteristics of the 29 RCHD hospitals that were active as of FY 2018,[2] *before* they joined the demonstration, in comparison to eligible non-participant hospitals;
- Describe the demonstration payments RCHD hospitals received between FYs 2005 and 2018; and
- Estimate the impact of the RCHD on key hospital financial measures including:
  - Medicare inpatient margins and Medicare combined margins (inpatient and outpatient);
  - Operating and total profit margins, which include revenue and costs from non-Medicare sources;
  - Other Medicare revenue indicators: Medicare share of inpatient discharges, Medicare share of inpatient days, and Medicare swing-bed revenue share; and
  - Financial indicators: days cash on hand, long-term debt to capitalization ratio, the ratio of salaries to net patient revenue, and hospital full-time equivalents per occupied bed.

This evaluation report covers the same topic areas covered by *Interim Report One,* but it is important to note that it uses a different sample of hospitals (i.e., those that were active as of FY 2018 instead of all hospitals that participated in the RCHD at any point between FY 2005 and FY 2017). In addition, the impact analyses in this report use a different baseline period than the one used in *Interim Report One*. Due to these differences, results across reports are not directly comparable.

The intent of the analyses in this report is:

1) to investigate whether hospitals that continued to participate in the RCHD under the CCA extension after having already participated in the demonstration under the ACA

[1] *Interim Report One* was publicly released in 2021 and is available at https://innovation.cms.gov/data-and-reports/2021/rchd-1st-interim-report. *Interim Report One* analyzed participant hospital characteristics, payments participants received under the demonstration, and the impact of the RCHD on hospitals' financial condition between Fiscal Year (FY) 2005 and FY 2017 for all hospitals that ever participated in the demonstration.

[2] At the time the quantitative analyses were conducted, verified cost report data was only available up to FY 2018.

authorization experienced additional changes to their financial condition beyond those already realized previously, and

2) to determine the impact of the RCHD on hospitals that joined the demonstration for the first time under the CCA extension.

RCHD Payment Methodology

Hospitals in the RCHD are paid differently than the standard Inpatient Prospective Payment System (IPPS) which pays nationally standardized rates per discharge, adjusted for patient case-mix, market conditions, and other factors. Participating hospitals in the demonstration instead use a cost-based payment methodology for acute inpatient stays in the first year and afterward, annual payments based on trended acute inpatient costs in subsequent years.

A hospital's first inaugural year in the demonstration is referred to as its **base year** and, in this year, a hospital is paid on the basis of reasonable costs of care for Medicare beneficiaries treated for inpatient acute care and swing-bed stays. In the years following the base year, hospitals are paid the lesser of reasonable costs or a target amount. The target amount is calculated as a hospital's Medicare acute inpatient cost per diem in the base year adjusted for inflation using the Prospective Payment System (PPS) market basket update factor, the change in the hospital's case-mix relative to the base year, and the number of Medicare inpatient discharges.

After an initial 5-year participation period, hospitals can choose to continue their participation in subsequent demonstration extensions. Hospitals that decide to continue their participation (*continuing* hospitals) are paid on the basis of reasonable costs of care for Medicare beneficiaries treated for inpatient acute care or swing-bed stays in the first year of their participation during the extension period. This first year of continued participation is referred to as the **rebase year**. The target amount is calculated as a hospital's Medicare acute inpatient cost per diem in the base year adjusted for inflation using the Prospective Payment System (PPS) market basket update factor, the change in the hospital's case-mix relative to the base year, and the number of Medicare inpatient discharges.

RCHD payments are composed of a payment for acute inpatient stays and a payment for swing-bed stays, which are determined separately. A swing bed is an acute care bed used to furnish either acute or skilled nursing facility (SNF)-level care.[3]

[3] CMS. (2018, October). *Report to Congress: Rural Community Hospital Demonstration,* p. 8. https://innovation.cms.gov/files/reports/rch-rtc.pdf

Data and Methods

Data from Medicare cost reports (for each hospital and year) were analyzed using descriptive statistics (e.g., averages, percentages, *t*-tests) and multivariate regression statistical techniques. All quantitative analyses include hospitals that were active in the demonstration as of FY 2018. Qualitative information was provided through interviews with RCHD hospital executives conducted in FYs 2020 and 2021. This report presents all results separately for:

- ***New* hospitals:** This group includes 12 hospitals that first joined the RCHD in FY 2018, under the CCA authorization.
- ***Continuing* hospitals:** This group includes 17 hospitals that first joined the RCHD under the MMA authorization (in FYs 2005 or 2009) or ACA extension (in FYs 2011 or 2012).

The impact on key hospital financial measures was estimated using multivariate difference-in-differences (DID) regressions, a technique that can provide a more robust approximation of the RCHD impacts by comparing participating hospitals to a comparison group of similar hospitals not participating in the demonstration. The DID model relies on a comparison group of eligible non-participant hospitals. To create a comparison group of similar hospitals, we used a method that creates a nearly perfect balance in observable characteristics between the participant and non-participant hospitals. In addition, we examined whether the outcomes of the RCHD and comparison groups have parallel trends in the baseline, which increases the likelihood that results are driven by demonstration participation. When reporting the results, we note when outcomes do not have parallel baseline trends. Due to the relatively small number of active RCHD hospitals, we used a statistical technique called "randomization inference" which can more accurately determine if the DID coefficient estimates are statistically significant when the number of participants is small.

Key Findings

When examining the characteristics of RCHD hospitals relative to eligible non-participant hospitals, the findings show that prior to joining the demonstration, hospitals tended to have lower Medicare inpatient margins than eligible non-participant hospitals. Once hospitals joined the RCHD, they received payments for inpatient services that were, in general, much higher than they would have received under either IPPS or SNF PPS.

For *new RCHD* hospitals, DID results show that, on average, participation in the RCHD resulted in large, positive, and statistically significant increases in their Medicare inpatient and combined margins, bringing hospitals closer to the break-even point. For *continuing* RCHD hospitals, DID results show that, on average, the RCHD did not result in any additional changes in their Medicare inpatient and combined margins relative to the changes they already experienced

during the prior ACA extension. For both *continuing* and *new RCHD* hospitals, there was no evidence that participation in the RCHD resulted in improvements in total profit margins.

Characteristics of RCHD hospitals prior to joining the demonstration:

1. **Prior to joining the demonstration, both *continuing* and *new* RCHD hospitals had negative Medicare inpatient margins.** The demonstration attracted hospitals that, prior to the start of the demonstration, had substantially lower, and negative Medicare margins compared to eligible non-participant hospitals.
2. **Prior to joining the demonstration, *continuing* RCHD hospitals were in a slightly stronger overall financial position than *new* RCHD hospitals.** Before joining the RCHD, *continuing* RCHD hospitals had higher total profit and operating margins than *new* RCHD hospitals. Total profit margins are more variable among *new* hospitals than among *continuing* hospitals.
3. **Prior to joining the demonstration, *new* RCHD hospitals were located in different hospital markets and served a different population than *continuing* RCHD hospitals.** *New* RCHD hospitals were more likely to operate in a Frontier market (defined as having two hospitals or fewer within 35 miles and stable or growing county-level population growth over a five-year period), while *continuing* RCHD hospitals were more likely to operate in Competitive markets (defined as having three or more hospitals within 35 miles). *New* RCHD hospitals tended to be located in counties that had slightly older, more educated, and more affluent (based on lower unemployment rates and higher median home value) populations than *continuing* RCHD hospitals. *New* RCHD hospitals tended to be located in states that did not expand Medicaid under the ACA since 2014 as compared to *continuing* RCHD hospitals.
4. **Comparing RCHD hospitals to eligible non-participant hospitals, both *continuing* and *new* RCHD hospitals were largely non-profits with higher patient volumes and located in higher-income areas.** Prior to joining the demonstration, participating hospitals were more likely to be non-profits, have higher inpatient discharges, and treat more clinically complex patients compared to non-participants. Participant hospitals were also more likely to be located in less densely populated, but less poor and more educated, counties compared to non-participants. RCHD hospitals were also less likely to be in markets that were Competitive prior to joining the demonstration when compared to eligible non-participant hospitals.
5. **Comparing RCHD hospitals to non-participant hospitals, both *continuing* and *new* RCHD hospitals had older capital infrastructure compared to non-participant hospitals.** Prior to joining the demonstration, both *continuing* and *new* hospitals had older assets (measured by age of plant) when compared to non-participant hospitals.

Payments RCHD hospitals received:

1. ***New* RCHD hospitals received annual payments for inpatient services that were, on average, $2.15 million higher than what *new* participant hospitals would have received under IPPS.** This represents, on average, a 50 percent higher payment than what *new* hospitals would have received if they had not participated in the demonstration.
2. ***Continuing* RCHD hospitals received annual payments for inpatient services[4] that were, on average, $2.6 million higher than what participant hospitals would have received under IPPS.[5]** This represents, on average, a 41 percent higher payment over what *continuing* hospitals would have received if they had not participated in the demonstration.
3. **The magnitude of the additional RCHD payments across all RCHD hospitals varied significantly across hospitals.** The standard deviation of additional RCHD payments over IPPS ranges from $1.35 million to $2.48 million per FY, suggesting that participant hospitals are not monolithic and that the magnitude of the additional payments they receive varies.

Impact of the RCHD on key hospital financial measures:

1. **For *new* hospitals, the RCHD resulted in large, positive, and statistically significant increases in their Medicare inpatient and combined margins, bringing them closer to the break-even point.** However, the RCHD did not cause improvements in total profit margins. Total profit margins are calculated from a large number of components across payers and sectors of the hospital and only bear a weak association with Medicare inpatient margins. Unlike Medicare inpatient margins that are derived from operating revenues and costs related to the patient care of Medicare beneficiaries (and the target of the demonstration), revenue streams used in total margin calculations include non-operating, non-patient care income such as revenue from diverse contributions such as public appropriation and other government transfers,[6] and are collectively much larger than any additional RCHD payments for inpatient services that hospitals might receive
2. **For *continuing* RCHD hospitals, the RCHD did not result in any changes in their Medicare inpatient and combined margins beyond the changes hospitals already experienced during the ACA extension.** In addition, participation in the CCA authorization extension was associated with slightly lower total profit margins, which suggests that these hospitals may have experienced a decline in non-Medicare sources of revenue or increases in non-Medicare costs during this period.

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[4] Inpatient services include acute care and swing-bed services.

[5] Unless otherwise noted, "IPPS" includes both IPPS and SNF PPS payments.

[6] Dalton, K., & Slifkin, R. (2003, July). *A primer on interpreting hospital margins.* North Carolina Rural Health Research and Policy Analysis Center, Cecil G. Sheps Center for Health Services Research. https://www.shepscenter.unc.edu/wp-content/uploads/2014/10//Primer.pdf

3. **Hospital leaders emphasized the importance of the demonstration in supporting their financial viability and service lines**. In interviews conducted as part of this evaluation, some hospitals, operating with negative margins, reported that the demonstration helped prevent even worse financial losses.
4. **For *new* hospitals, the RCHD was associated with an increase in the Medicare swing-bed revenue share.** In interviews, hospitals generally reported perceiving swing beds as important to their RCHD payments and, in some cases, central to their decision to continue with the demonstration. Many hospitals reported trying to increase swing-bed utilization or start new swing-bed programs altogether, in part because they view swing beds to be favorable to their financial margins.

In general, results are consistent with those found in previous reports, suggesting that the RCHD has reached a stable status, in terms of its impact on hospitals' financial conditions, as described in more detail in the Conclusions section.

1.0 Introduction

The Rural Community Hospital Demonstration (RCHD) was authorized under the Medicare Prescription Drug, Improvement, and Modernization Act (MMA) of 2003 to "test the feasibility and advisability of the establishment of rural community hospitals to furnish covered inpatient hospital services to Medicare beneficiaries."[7] The goal of the demonstration is to strengthen the financial condition of small, rural community hospitals and help them to meet the needs of Medicare beneficiaries who reside in their market areas by providing the potential for higher Medicare payments for covered inpatient hospital services. Rural hospitals with fewer than 51 beds that maintained a 24-hour emergency department and that were ineligible to be designated a Critical Access Hospital (CAH) were eligible for the demonstration. Since its original authorization, the demonstration has been extended three times by 1) the Patient Protection and Affordable Care Act (ACA) of 2010, 2) the 21st Century Cures Act (CCA) of 2016, and 3) the Consolidated Appropriations Act (CAA) of 2021.

Under the initial five-year MMA authorization, the demonstration was implemented in the 10 least populated states, and within those states, only up to 15 hospitals could participate. The ACA authorized the demonstration for another five years. Under this extension, the demonstration included the 20 least densely populated states and allowed up to 30 participating hospitals. The CCA authorized the demonstration for another five years. Hospitals from any state could participate, but those in the 20 least densely populated states were given priority. The Consolidated Appropriations Act of 2021 recently authorized the demonstration for another five years.

In September 2019, the Centers for Medicare and Medicaid Services (CMS) selected IMPAQ International, LLC (now American Institutes for Research [AIR]), to evaluate the RCHD under the CCA authorization extension.[8] The evaluation team includes AIR, Mission Analytics Group, and an advisory group of subject matter experts from the Healthcare Financial Management Association (HFMA) and the University of Iowa's Rural Policy Research Institute (RUPRI) Center for Rural Health Policy Analysis. This report is *Interim Evaluation Report Two* under this

[7] Centers for Medicare and Medicaid Services. (2017). *Rural Community Hospital Demonstration request for applications: Frequently asked questions*. https://innovation.cms.gov/files/x/rch-faqs.pdf

[8] The results of the first evaluation of the RCHD are reported in the *Interim Evaluation Report of the Rural Community Hospital Demonstration* (unpublished report submitted August 30, 2011, to CMS), which studied the experience of RCHD hospitals under the initial MMA authorization. The results of the second evaluation, which focused on the experience under the ACA extension, can be found in the October 2018 *Report to Congress*, available at https://innovation.cms.gov/Files/reports/rch-rtc.pdf, and in the *Rural Community Hospital Demonstration Evaluation: Expansion under the Affordable Care Act, Final Report* (unpublished report submitted September 13, 2017, to CMS).

contract.[9] This is the first report to include hospitals that first joined the RCHD under the CCA extension.

1.1 What This Evaluation Covers

This report uses the latest available hospital cost report data of the 29 RCHD hospitals that were active in the demonstration as of Fiscal Year (FY) 2018 complemented with information from interviews with hospital administrators to do the following:[10]

1. Describe the characteristics of these RCHD hospitals before they joined the demonstration and compare them to eligible non-participant hospitals.
2. Calculate the payments these RCHD hospitals received under the demonstration. RCHD payments are calculated *over* (or *under*) what hospitals would have received if they had not been part of the RCHD (i.e., over the amounts hospitals would have received under Medicare's Inpatient Prospective Payment System [IPPS] and Skilled Nursing Facility [SNF] Prospective Payment System [PPS]) for swing beds stays.
3. Estimate the impact of the RCHD on hospitals' financial condition using a difference-in-differences (DID) approach. The report uses a comparison group of non-participant hospitals, with characteristics similar to those of participants at baseline, to examine the impact of the RCHD on key hospital financial outcomes. These outcomes are classified according to the following five categories:
    1) Medicare margins (i.e., Medicare inpatient margins and Medicare combined [inpatient and outpatient] margins);
    2) overall profitability margins (i.e., total profit margins (inclusive of non-operating/non-patient care revenues) and operating margins);
    3) a capital investment indicator (age of the plant, which measures the financial age of the fixed assets of the hospital).
    4) Medicare revenue indicators (Medicare share of inpatient discharges, Medicare share of inpatient days, and Medicare swing-bed revenue share); and
    5) other financial indicators (days cash on hand, long-term debt to capitalization ratio, ratio of salaries to net patient revenue, and hospital full-time equivalents [FTEs] per occupied bed).

This evaluation report covers the same topic areas covered by *Interim Report One* but uses a different sample of hospitals (i.e., those that were active as of FY 2018 instead of all hospitals

[9] *Interim Report One* is available at https://innovation.cms.gov/data-and-reports/2021/rchd-1st-interim-report.

[10] As of June 2021, verified cost report data were available only up to FY 2018.

that participated in the RCHD at any point between FY 2005 and FY 2017). In addition, the impact analyses in this report use a different baseline period (FYs 2015–2017, for most hospitals)[11] than the pre-demonstration one used in *Interim Report One* (2004–2007). Due to these differences, results across reports are not directly comparable.

1.2 The Rural Community Hospital Demonstration

Hospitals in the RCHD are paid differently than the standard IPPS that pays nationally standardized rates per discharge, adjusted for patient case-mix, market conditions, and other factors. Participating hospitals in the demonstration instead use a cost-based payment methodology for acute inpatient stays in the first year and afterward, annual payments based on trended acute inpatient costs in subsequent years. A hospital's inaugural first year in the demonstration is referred to as its **base year** and, in this year, a hospital is paid on the basis of reasonable costs of care for Medicare beneficiaries treated for inpatient acute care or swing-bed stays. In the years following the base year, hospitals are paid the lesser of reasonable costs or a target amount. The target amount is calculated as a hospital's Medicare acute inpatient cost per diem in the base year adjusted for inflation using the PPS market basket update factor, the change in the hospital's case-mix relative to the base year, and the number of Medicare inpatient discharges.

Hospitals that continue their participation in a demonstration extension are paid on the basis of reasonable costs of care for Medicare beneficiaries treated for inpatient acute care or swing-bed stays in the first year of participation during the extension period. This first year of continued participation period is referred to as the **rebase year**. The updated target amount for the demonstration extension period for each hospital is calculated as the hospital's Medicare acute inpatient cost per diem in the rebased year adjusted for inflation using the PPS market basket update factor, the change in the hospital's case-mix relative to the rebase year, and the number of Medicare inpatient discharges.

RCHD payments are composed of a payment for acute inpatient stays and a payment for swing-bed stays, which are determined separately. A swing bed is an acute care bed used to furnish either acute or SNF-level care.[12]

[11] In this report, the hospital-specific baseline period is three years before the beginning of the hospital participation in the CCA authorization. RCHD hospitals started their participation in the CCA authorization extension in slightly different years. See section 1.6 for more details.

[12] CMS. (2018, October). *Report to Congress: Rural Community Hospital Demonstration,* p. 8. https://innovation.cms.gov/files/reports/rch-rtc.pdf

1.2.1 Reasonable Costs

Under the RCHD payment methodology, reasonable costs are calculated separately for both acute and swing-bed services. The swing-bed payment methodology itself blends costs for acute care *and* swing-bed services. Because costs for acute beds are generally much higher, blending the two together makes swing-bed reimbursement under the RCHD higher than swing-bed reimbursement outside of the RCHD. This payment structure is not unique to the demonstration; rather, it is also a feature of the CAH payment methodology.

1.2.2 Target Amounts in Years After the Base (or Rebase) Year

The target amounts for each participating hospital are calculated annually after the base year by the Medicare Administrative Contractors (MACs). The methodology MACs use to calculate acute care service target amounts is very similar to the methodology MACs use to calculate swing-bed service target amounts. Target amounts for both types of services are determined by adjusting upward the average cost per discharge in the base year by three adjustors:

- The PPS update factor, to account for inflation (IPPS or SNF PPS, depending on the target amount being calculated).[13]
- A case-mix index (CMI) adjustment (current year index relative to base year index), based on changes in disease severity among the hospital's Medicare patients. A separate CMI for acute care and swing-bed services is used depending on the target amount being calculated.
- The number of Medicare discharges (acute or swing-bed discharges depending on the target amount being calculated) in the current year (volume).

1.2.3 RCHD Payments

In each year after the base (or rebase) year, RCHD payments for both inpatient acute care and swing-bed services are equal to the lesser of two values: current year costs *or* the hospital's target amount. We note that the methodology used to calculate swing-bed costs results in substantially higher payment under the RCHD for swing beds compared to the payment that would have been made under the SNF PPS, which is the traditional payment mechanism for swing beds. Moreover, because Medicare represents a larger proportion of swing-bed days than other payers, the allocation attributes more overall costs to Medicare and fewer costs to

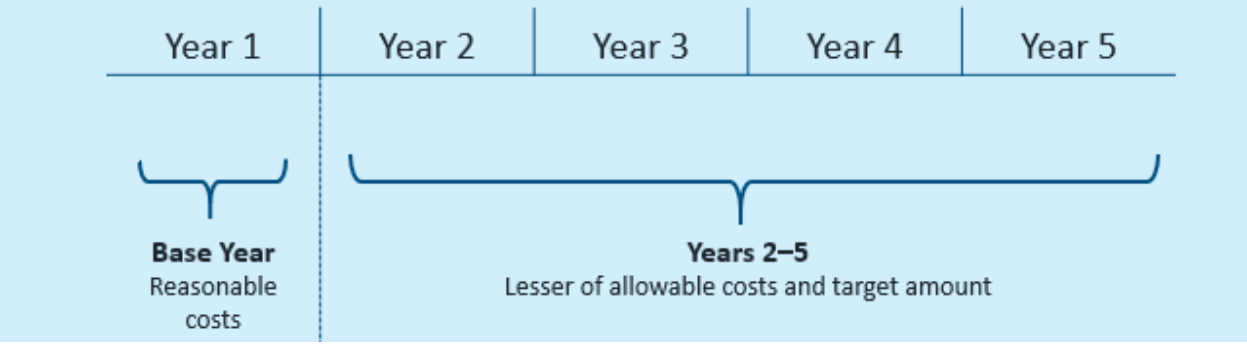
[13] In this report, "year" refers to the 12-month cost reporting period. Different hospitals may have cost reporting periods that start and end on different dates. The IPPS update is the market basket adjustment that CMS implements annually to update the operating rate component of the IPPS. The market basket index measures the price increases of goods and services hospitals buy to provide patient care. https://www.cms.gov/newsroom/fact-sheets/fy-2023-hospital-inpatient-prospective-payment-system-ipps-and-long-term-care-hospitals-ltch-pps

other payers.[14] Because swing-bed reimbursements under the RCHD are higher than swing-bed reimbursements outside of the RCHD, participants may have an unintended incentive to provide more SNF services to Medicare patients in swing beds to the extent possible.[15]

Because RCHD hospitals receive payments for inpatient hospital services based on a "reasonable cost" methodology, they are not eligible to receive IPPS add-on payments, such as the low-volume payment adjustment.[16]

In addition, because RCHD payments are required to be budget-neutral, IPPS payments to all non-RCHD hospitals are reduced each year to reflect the total amount of RCHD payments that exceed IPPS payments. This reduction is minimal given the small scale of this demonstration. Exhibit 1.1 gives an overview of the RCHD payment methodology.

Exhibit 1.1: Overview of the RCHD Payment Methodology



The higher RCHD payment is appealing to hospitals that have Medicare inpatient costs higher than their IPPS reimbursement (i.e., negative inpatient margins). Although this is infrequent, sometimes RCHD payments are lower than the IPPS payments (as described in Section 5).

1.2.4 Rebasing

Similar to what happens in base years, in rebase years participant hospitals are paid on the basis of their rebased reasonable costs for inpatient services delivered in acute care beds or swing beds. Target amounts in subsequent years are calculated by adjusting upward the rebase year cost by the PPS update factor to account for inflation, a CMI adjustment, and the number

[14] CMS. (2018, October). *Report to Congress: Rural Community Hospital Demonstration,* p. 8. https://innovation.cms.gov/files/reports/rch-rtc.pdf

[15] The RCHD payment methodology and a detailed explanation of why hospitals stand to gain by delivering more care to Medicare patients in swing beds rather than acute care beds are provided in Section A.1 of Appendix A.

[16] The low-volume adjustment is discussed in more detail in Section 1.2.4.

of Medicare discharges. Each re-authorizing statute requires updating the base year, which in this report we call *rebasing*.

As described in Exhibit 1.2, under the initial MMA authorization, hospitals had base years beginning in FY 2005 or FY 2009, depending on when they joined the RCHD. Under the ACA extension, hospitals that started participating in FY 2005 were rebased to FY 2010, and those that started in FY 2009 were rebased to FY 2011. Hospitals were paid based on their costs in the rebased years.

Hospitals joining for the first time under the ACA extension had base years in FY 2011 or FY 2012, depending on when their hospital fiscal year began. Under the CCA extension, hospitals that initially joined the RCHD in FY 2005 and FY 2009 were rebased to FY 2015 and FY 2016, and hospitals that initially joined the RCHD in FY 2011 and FY 2012 were rebased to FY 2016 and FY 2017. Under the CAA extension, the base year will be the first 12 months falling within the new five-year demonstration period.

Exhibit 1.2: Rebase Years for Hospitals Continuing Participation in RCHD Under the ACA and CCA, by RCHD Authorization

Authorization	Base Year	Rebase Year Under ACA	Rebase Year Under CCA
MMA Authorization	FY 2005	FY 2010	FY 2015
	FY 2009	FY 2011	FY 2016
ACA extension	FY 2011	N/A	FY 2016
	FY 2012	N/A	FY 2017
CCA Authorization	FY 2018	N/A	N/A

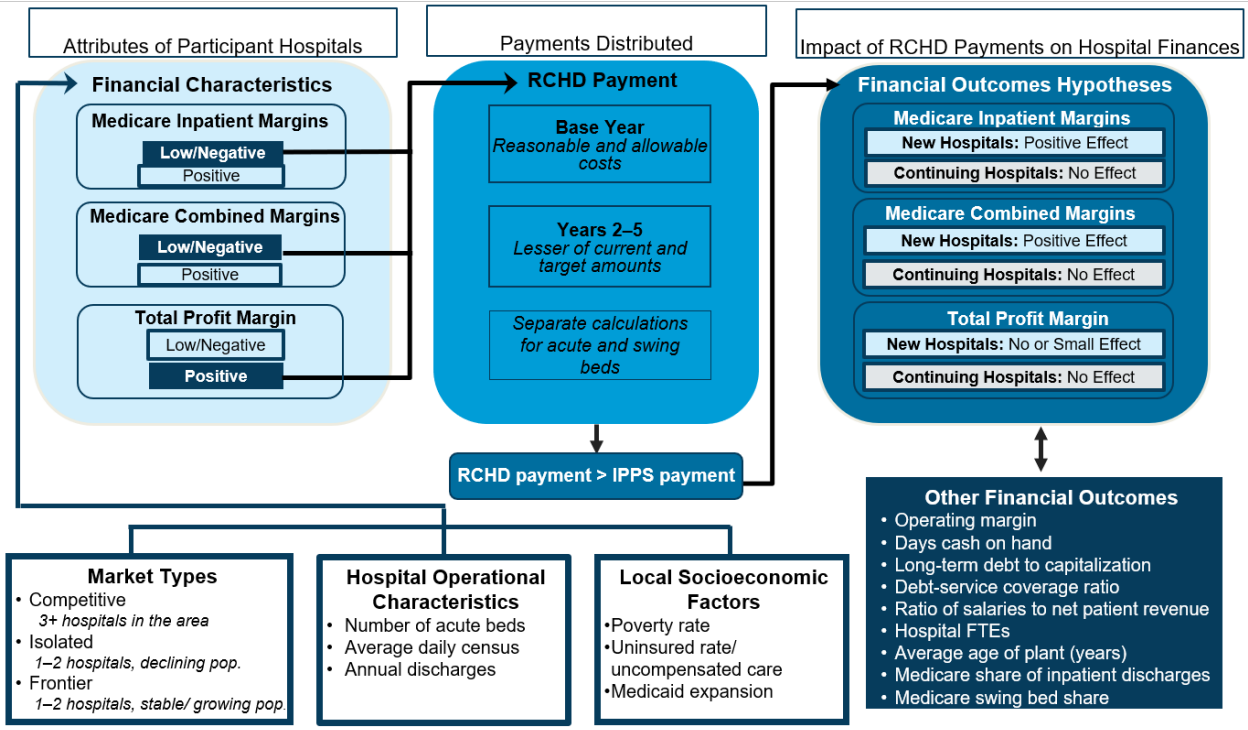
Appendix A.1 describes the payment mechanisms and other rural hospital policy changes that may be relevant to RCHD hospitals and that hospitals might consider as they decide to join or exit the RCHD.

1.3 Conceptual Model for the RCHD Evaluation

The conceptual model shown in Exhibit 1.3 illustrates the relevant factors identified in the 2018 *Report to Congress* and in *Interim Report One* for hospitals' decisions to participate in the RCHD, how participation in the demonstration affects hospitals' payments for inpatient stays, and the hypothetical effects that RCHD payments can have on hospitals' overall financial condition. In this report, RCHD hospitals are divided into two groups: *new* hospitals, which includes hospitals that first joined the demonstration in FY 2018 (i.e., CCA authorization hospitals) and are

analyzed in this report for the first time, and *continuing* hospitals, which include hospitals that first joined the demonstration under the initial MMA initial authorization (either in FYs 2005 or 2009) or the prior ACA authorization extension (either in 2011 or 2012).

Exhibit 1.3: RCHD Evaluation Conceptual Model



Abbreviations: FTE, Full-Time Equivalent; IPPS, Inpatient Prospective Payment System; RCHD, Rural Community Hospital Demonstration.

Notes: The effect of the RCHD on total profit margins is unclear, as there is not a strong connection between Medicare inpatient margins, the outcome most directly affected by the RCHD, and a hospital's total profit margins.

1.3.1 Decision to Participate in the RCHD

The prior findings from the 2018 *Report to Congress* and *Interim Report One,* reflected in the left-hand side of the conceptual model in dark highlighted boxes, show that the RCHD attracted predominantly hospitals with low or negative Medicare inpatient margins. However, RCHD participants' *overall* financial condition was not necessarily weaker than that of eligible non-participant hospitals, as reflected by their total profit margins, which include revenues and costs from all payers, as well as revenue from contributions, public appropriation and other government transfers, investments, and income from subsidiaries or affiliates.

In this report, we examine the attributes of both *new* and *continuing* RCHD hospitals prior to joining the demonstration. Since the RCHD eligibility criteria did not change substantially over

time, we do not anticipate observing differences between *new* and *continuing* hospitals' characteristics. We also compare the characteristics of *new* and *continuing* RCHD hospitals to eligible non-participant hospitals.

1.3.2 RCHD Payments to Hospitals

The middle box in the center of the conceptual model reflects the findings in the 2018 *Report to Congress* and *Interim Report One* that hospitals that participated in the RCHD received, on average, higher Medicare inpatient payments than what they would have received under the IPPS or SNF PPS. Following the approach that we used for *Interim Report One*, this report also examines the RCHD payments to hospitals albeit using a different group of RCHD hospitals, those that were active as of FY 2018, instead of hospitals that participated in the RCHD at any point between FY 2005 and FY 2017, which was the cohort examined in *Interim Report One*. The group of hospitals examined in this report includes the *new* RCHD hospitals which first joined the RCHD during the CCA extension.

1.3.3 Impact of the RCHD on Hospitals' Financial Condition

The right-hand side of the conceptual model shows the potential impact of the RCHD on hospitals' financial margins. *Interim Report One* showed that, relative to a comparison group of hospitals, RCHD hospitals experienced improvement in Medicare inpatient and combined margins, but not total profit margins. There was some evidence that participation in the RCHD was associated with higher capital investments for some hospitals.[17]

The conceptual model is affected at every stage by contextual characteristics that include the type of market in which hospitals operate, hospitals' operational characteristics, and local socioeconomic factors (the lower part of the conceptual model). We describe these factors in more detail in sections 1.3.5 and 1.3.6.

1.3.4 Differences between Prior Reported Numbers and This Report

Interim Report One investigated the impact of the RCHD on hospitals' financial condition. Average impact effects were estimated for *all* hospitals that ever participated in the demonstration. Impact effects were also estimated separately for hospitals that first joined the demonstration under the MMA authorization and for those that first joined under the ACA extension. The goal of the analysis was to understand whether the demonstration had a different effect depending on when hospitals first joined the demonstration.

In contrast, this report examines the impact of the RCHD during the CCA authorization extension for *new* and *continuing* hospitals separately. For the *new* hospitals (those that started

[17] The full list of outcomes that we will examine in this report is shown in Exhibit 3.1.

during the CCA authorization), this report investigates the impact of participating in the demonstration (relative to non-participation). This is similar to what was done in *Interim Report One*. As a result, impact estimates for *new* hospitals in this report are comparable to those presented in *Interim Report One*, though the hospitals and time periods analyzed in the two reports are different.

For *continuing* hospitals, this report examines whether hospitals that continued to participate in the RCHD under the CCA extension after having already participated in the demonstration under the prior ACA extension experienced additional changes to their financial condition beyond those already realized previously. In other words, for *continuing* hospitals, we estimate whether continued participation in the RCHD has an additional effect on their financial condition *beyond* the original impact it had when these hospitals first joined the demonstration. We hypothesize that there will be no net effect of continued participation because there is no element in the RCHD payment methodology that could result in higher or lower payments for hospitals over time. In other words, we hypothesize that participating in the RCHD will have an initial effect that does not change over time.

1.3.5 Hospital Operational Characteristics

Hospitals' operational characteristics, such as the number of swing-bed discharges or average cost per discharge, can influence the size of the RCHD payments hospitals receive. For example, as the introduction to Section 1.1 describes, RCHD target amounts for each hospital are a function of the average cost per discharge in the base year, a case-mix adjustment, and the number of Medicare discharges in a given payment year. All these elements can potentially affect the size of the RCHD reimbursement hospitals receive. For example, multivariate regression analysis conducted in *Interim Report One* showed that hospitals with higher discharges and costs per discharge during their base or rebase year had, on average, higher additional RCHD payments.

The operational characteristics of participant and non-participant hospitals are described in Section 4. These characteristics are also used to select a comparison group of similar non-participant hospitals and as covariates to estimate the impact of the RCHD on hospitals' financial condition (Section 6). Finally, the use of swing beds is one hospital characteristic that affects RCHD payments, and so we examine whether the RCHD increased participant hospitals' share of Medicare revenue from swing beds (Section 6.4).

1.3.6 Market Typology

Following the approach used in the 2018 *Report to Congress* and *Interim Report One,* we summarized the contextual characteristics of hospitals in terms of population demographics, economic conditions, and the local health care systems by classifying hospitals as being in

Competitive, Frontier, or Isolated markets. These three categories are based on the number of nearby hospitals and whether the population in the area is declining. According to the 2018 *Report to Congress,* the financial condition of hospitals eligible for the RCHD varied by the type of market where the hospital was located. Hospitals in Competitive markets tended to have more robust margins, reflecting their larger market populations, but this was tempered by the presence of a larger number of competing hospitals. Hospitals in Frontier markets with growing populations and limited competition exhibited the strongest total profit margins. Hospitals in Isolated markets, which tend to have smaller and shrinking populations, had the most tenuous finances.[18]

An important contextual characteristic for future investigation will be the effect of the COVID-19 pandemic on hospitals' financial outcomes. The final evaluation design report will include a discussion of how COVID-19 affected the RCHD and the evaluation. This report is prior to the pandemic.

In this report, we follow the approach in the 2018 *Report to Congress* and define Competitive markets as those that have three or more hospitals within 35 miles, Frontier markets as those that have low levels of competition (a maximum of two hospitals within 35 miles) and stable or growing county-level population growth over a five-year period, and Isolated markets as those that have low levels of competition and declining county-level population growth over a five-year period.[19]

We include market typology as one of our matching covariates and also as regression controls to investigate whether the variation in additional RCHD payments can be explained by the type of market in which hospitals operate, as described in Section 5.

1.3.7 Local Socioeconomic Factors

The market typology is a useful way to classify hospitals in different and distinct groups depending on a few salient characteristics of the markets in which they operate. However, there are other socioeconomic factors not fully captured by this market typology that could also affect hospitals' financial conditions. For example, a state's poverty rate and the proportion of uninsured residents could mean that a hospital provides more uncompensated care than hospitals that operate in more economically stable states. These factors also interact with a hospital's market typology and operational characteristics, as shown in the conceptual model. Variables that measure local socioeconomic factors are listed in Exhibit 3.2 and are analyzed in Section 4 to describe how participants and non-participants compare. A subset of

[18] CMS. (2018, October). *Report to Congress: Rural Community Hospital Demonstration,* p. 13. https://innovation.cms.gov/files/reports/rch-rtc.pdf

[19] As noted, this report closely follows the market typology used in the 2018 *Report to Congress.* Only small variations have been implemented to account for the availability of information during the long period of analysis covered by this report. For example, the 2018 *Report to Congress* uses population change at the market level over a 10-year window, instead of population changes during five-year windows at the county level.

these characteristics is used to select a comparison group of similar non-participant hospitals and to serve as covariates to estimate the impact of the RCHD on hospitals' financial condition (Section 6).

1.4 RCHD Evaluation Research Questions and Analytical Approach Overview

The overarching goal of the RCHD evaluation is to examine the effects of the RCHD on Medicare payments and hospitals' financial conditions. Not all the questions answered in *Interim Report One* are further analyzed in *Interim Report Two* due to the shorter period of analysis used for this report. In addition, the wording of some of the research questions included in *Interim Report One* was modified to reflect better what the results of the analyses will show. Research questions are still grouped into the following three topic areas (TPAs) used in *Interim Report One*:

TPA-1 (Attributes):

Attributes of participant hospitals compared to eligible non-participant hospitals characterizes RCHD hospitals in terms of their financial status and their operational and contextual characteristics and contrasts those characteristics with those of eligible non-participant hospitals.

TPA-2 (Payments):

Payments distributed describes the additional RCHD payments (relative to IPPS) RCHD hospitals received.

TPA-3 (Impacts):

Impact of the RCHD payments on hospital finances estimates the impact of the RCHD on hospitals' financial condition using a quasi-experimental approach.

Exhibit 1.4 describes the data sources and analytic approach that we used to answer each of the research questions in this report.

Exhibit 1.4: Data Sources and Analytical Approach for *Interim Report Two*'s Research Questions

Research Topic Area and Question	Data Type/ Source	Analytic Approach
TPA-1: Attributes of participant hospitals compared to eligible non-participant hospitals		
a. What are the characteristics of participant hospitals, and how are they related to the design of the payment approach? Are other market or hospital factors important for understanding the characteristics of participant hospitals?	Document Review Interviews HCRIS SEER	Thematic Analysis Descriptive Statistics
b. How do participant hospitals compare to eligible but non-participant hospitals in terms of market area, staffing, utilization, and margins?	HCRIS SEER	Descriptive Statistics
c. If any hospitals left the demonstration, what were their reasons for doing so?	*Interim Report One* Findings	Summary of Results of *Interim Report One* Findings
TPA-2: Payments distributed		
a. What payments were distributed under the demonstration to participant hospitals relative to what they would otherwise have received under IPPS?[a]	Settled Cost Reports HCRIS	Descriptive Statistics
b. Does the size of the RCHD payment vary by the organizational characteristics of hospitals (e.g., swing beds, independent vs. multi-chain hospital, base year costs)?[b]	*Interim Report One* Findings	Summary of Results of *Interim Report One* Findings
TPA-3: Impact of the RCHD payments on hospital finances		
a. How did participation in the CCA authorization extension affect the financial condition of continuing and new participant hospitals?	HCRIS SEER	Descriptive Statistics
b. How does the impact of the RCHD payments on the financial condition of continuing and new participant hospitals compare to the financial condition of eligible and similar non-participant hospitals during the CCA authorization extension?	Interviews HCRIS SEER	Thematic Analysis Multivariate DID Analysis
c. What share of RCHD hospital revenues (Medicare and total) are derived from SNF swing beds, and how has this share changed since the start of the CCA authorization extension?	Interviews HCRIS SEER	Thematic Analysis Multivariate DID Analysis

Abbreviations: CCA, 21st Century Cures Act; DID, Difference-in-Differences; HCRIS, Healthcare Cost Report Information System; SEER, Surveillance, Epidemiology, and End Results; SNF, Skilled Nursing Facility.
Notes: a Data ranges from federal FYs 2005 to 2018; b data ranges from federal FYs 2005 to 2017.

1.5 Hospitals Included in This Evaluation Report

This report focuses on the 29 RCHD hospitals that were active as of FY 2018.[20] Exhibit 1.5 shows how many of these hospitals are classified as *new* versus *continuing* and the authorization when they first joined.

Exhibit 1.5: Categorization of RCHD Hospitals in This Report

Interim Report Group	Original Authorization	Number of Hospitals
Continuing Participants	MMA	4
	ACA	13
New Participants	CCA	12
All Participants (Continuing + New)	MMA, ACA, or CCA	29

Exhibit 1.6 shows where *continuing* and *new* hospitals are located across the country. The different shades of yellow on the map denote the RCHD authorization that allowed states to participate in the demonstration. As mentioned above, the MMA authorization allowed hospitals located in the 10 least densely populated states[21] (darkest shaded states in the map) to participate, and the ACA extension expanded eligibility to the 20 least densely populated[22] states (medium darkest shaded states in the map). The CCA authorization opened participation in the demonstration to hospitals in all states nationwide (lightest shaded states), giving preference to the 20 least populated states. Despite these changes in eligibility over time, *continuing* RCHD hospitals (dark blue triangles) and *new* RCHD hospitals (light blue triangles) tend to come from the same states. Exhibit A.1 in Appendix A lists the names of all the hospitals included in this report. In addition, *Interim Report Two* includes information from second round interviews with representatives from nine participant hospitals[23] and from first round interviews with representatives of 26 hospitals. The results of first round interviews were initially discussed in *Interim Report One*.

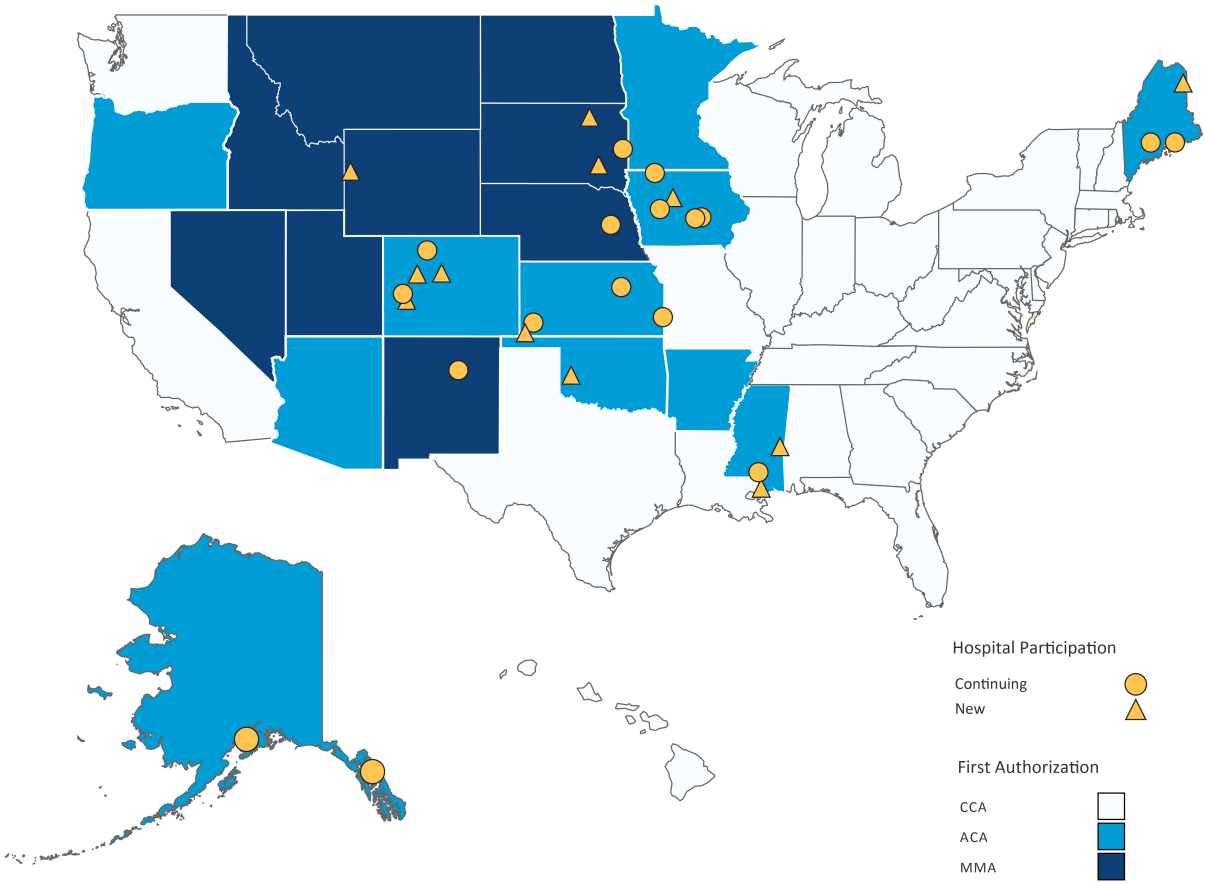
[20] In contrast, *Interim Report One* used quantitative information from the 33 participant hospitals that first joined the RCHD under the MMA (17 hospitals) and ACA (16 hospitals) authorizations.

[21] The initial 10 eligible states were Alaska, Idaho, Montana, Nebraska, Nevada, New Mexico, North Dakota, South Dakota, Utah, and Wyoming.

[22] The ACA extension added Arizona, Arkansas, Colorado, Iowa, Kansas, Maine, Minnesota, Mississippi, Oklahoma, and Oregon to the list of eligible states.

[23] Under the original qualitative approach described in the EDR for *Interim Report One*, we planned to interview nine exiting hospitals for *Interim Report Two*. However, after that EDR was submitted and approved, the RCHD was extended one more time. All participant hospitals extended their participation under the new authorization, which required us to adopt a new criterion to select which hospitals we would interview. That criterion is described in Section 2.1.1.

Exhibit 1.6: Location and Status of Participant Hospitals in the RCHD as of FY 2018



Notes: The different shades in the map denote the first RCHD authorization that allowed the state to participate in the demonstration.

1.5.1 Reference Groups

It is important to note that the research questions in TPA-1 (Attributes), TPA-2 (Payments), and TPA-3 (Impact) describe results relative to different reference groups. While the reference group under each TPA is the most appropriate to answer the research questions in that TPA, care should be taken when comparing results across TPAs. Exhibit 1.7 describes the reference groups that are used for each topic area.

Exhibit 1.7: Reference Groups Used in Each Topic Area

Topic Area	Reference Group
TPA-1: Attributes	Non-participant eligible hospitals: rural, not eligible to be CAHs, fewer than 51 beds, and hospitals that provide 24-hour emergency services. TPA-1 presents the following 3 comparisons between RCHD and Eligible Non-Participants: A. Continuing RCHD Hospitals vs. Eligible Non-Participants B. New RCHD Hospitals vs. Eligible Non-Participants C. All RCHD Hospitals vs. Eligible Non-Participants
TPA-2: Payments	RCHD hospital themselves. Results are presented separately for: A. Continuing RCHD Hospitals B. New RCHD Hospitals C. All RCHD Hospitals RCHD payments for acute care and swing beds are calculated relative to the standard IPPS and SNF PPS payments RCHD hospitals would have received in the absence of the demonstration.
TPA-3: Impact	Comparison groups constructed using entropy balancing and hospitals' baseline characteristics during the three-year period prior to the start of the CCA authorization (described in more detail in Section 3.1.2.3). Before using entropy balancing to construct the comparison group, we excluded hospitals that: • Did not satisfy the RCHD eligibility restrictions in the baseline period • Were a CAH in every year in our sample TPA-3 presents the following 2 comparisons: A. Continuing RCHD Hospitals vs. comparison group: In this case the comparison group provides information about what would have happened to continuing RCHD hospitals if they had participated in the ACA extension, but not in the CCA authorization. B. New RCHD Hospitals vs. comparison group: In this case the comparison group provides information about what would have happened to the RCHD hospitals in the absence of the demonstration.

1.6 Period of Analysis

The overall period of analysis for this report includes FY 2002 to FY 2018,[24] one more year than *Interim Report One*. However, the period of analysis varies depending on the TPA being analyzed, as described in Exhibit 1.8.

[24] Hospital cost reports correspond to one hospital cost reporting period. Each hospital can select its own cost reporting period, typically the hospital's fiscal year. Cost reports occasionally cover longer or shorter periods if hospitals change their fiscal years. The start and end dates of cost reports differ by hospital. In this report, cost reports are grouped based on the federal FY associated with the start date of the hospital's cost reporting period. For example, hospitals with cost reporting start dates between October 1, 2017, and September 30, 2018, will be assigned to FY 2018.

Exhibit 1.8: Periods of Analysis for Each Topic Area

Topic	Period of Analysis
TPA-1: Attributes	Pre-demonstration baseline: Three FYs prior to the hospital first joining the RCHD. • FYs 2002–2004 for continuing hospitals that first joined the RCHD under the MMA authorization • FYs 2008–2010 for continuing hospitals that first joined the RCHD under the ACA extension • FYs 2015–2017 for new hospitals that first joined the RCHD under the ACA extension
TPA-2: Payments	FYs 2005 to 2018
TPA-3: Impact	Baseline period: Three FYs prior to the start of the CCA authorization phase Demonstration period: CCA authorization phase. It varies across hospitals. It includes FYs 2015 to 2018.

As described in Exhibit 1.9, the period of analysis for TPA-3 includes the three FYs prior (baseline period) and the CCA authorization phase (demonstration period) [25]. and RCHD hospitals started the CCA authorization in different FYs depending on when the hospital first joined the demonstration. Exhibit 1.9 shows how the demonstration and baseline periods vary depending on when the hospital first joined the demonstration, which determines when the CCA authorization starts for each hospital.

It is important to note that since the baseline period is defined as three years prior to the beginning of the CCA phase, for *continuing* RCHD hospitals this period falls within the prior ACA extension phase. In other words, for *continuing* hospitals the baseline period identifies a time when these hospitals were already part of the demonstration. In contrast, the baseline period for *new* RCHD hospitals identifies a time when these hospitals were not yet part of the demonstration. As a result, the interpretation of the effects of the RCHD on hospitals' financial condition is different for *continuing* versus *new* hospitals. For *continuing* hospitals, the impact estimates measure the effect of participating in the CCA extension beyond the effects already realized when participating in the ACA authorization. For *new* hospitals, the impact estimates measure the effect of participating in the RCHD for the first time relative to not participating.

[25] In contrast, in *Interim Report One*, the baseline period was defined as the three years prior to the start of the MMA and ACA cohorts (the CCA cohort was not analyzed in *Interim Report One*).

Exhibit 1.9: Baseline and Demonstration Periods for TPA-3 Vary Depending on When Hospitals First Joined the RCHD

Hospital Type	Type of Hospital *(No. of RCHD Hospitals)*	FY When the CCA Authorization Began	Baseline Period	Demonstration Period
Continuing	First joined the RCHD in FY 2005 under the MMA authorization *(N = 3)*	FY 2015	FY 2012–FY 2014	FY 2015–FY 2018
	First joined the RCHD in FY 2009 under the MMA authorization *(N = 1)*	FY 2016	FY 2013–FY 2015	FY 2016–FY 2018
	First joined the RCHD in FY 2011 under the ACA extension *(N = 6)*	FY 2016	FY 2013–FY 2015	FY 2016–FY 2018
	First joined the RCHD in FY 2012 under the ACA extension *(N = 7)*	FY 2017	FY 2014–FY 2016	FY 2017–FY 2018
New	First joined the RCHD in FY 2018 under the CCA extension *(N = 12)*	FY 2018	FY 2015–FY 2017	FY 2018–FY 2018

2.0 Data Sources

This section discusses the primary and secondary data sources used in this evaluation.

2.1 Primary Data

The experiences and perspectives of RCHD hospitals under the CCA authorization extension were collected by conducting telephone interviews with hospital administrators and reviewing relevant documents. This primary data mainly supported the analyses under TPA-1 (Attributes), helping us to understand the characteristics of participating hospitals and how they relate to the payment approach and to hospitals' decisions to participate in the RCHD. The primary data also provided context for the quantitative analyses conducted under TPA-2 (Payments) and TPA-3 (Impact), such as aspects of hospital operations that may have contributed to a change in RCHD payments (e.g., change in case-mix, increasing costs). Similarly, hospitals' perceptions of the RCHD's impact on financial performance and community benefits, including the uses of RCHD funds and plans for sustainability after the end of the demonstration, were captured via interviews. Finally, for hospitals that decided to withdraw from the demonstration, the interviews were used to capture the decision-making process and the value of the RCHD compared to alternative payment mechanisms.

2.1.1 Key Informant Interviews

Interim Report Two is informed by two rounds of hospital interviews. Between December 2019 and April 2020, the evaluation team conducted 26 interviews related to 26 RCHD hospitals, 14 of which were *continuing* hospitals and 12 of which were *new* hospitals.[26] Interviews addressed hospital and market characteristics and the impact of the RCHD on their financial performance. In August 2021 (in FY 2021), we conducted interviews with nine hospitals, eight of which had been interviewed in FY 2020, to provide context for quantitative findings identified in *Interim Report One*. Hospitals were selected to represent all authorization periods and market designations, in addition to specific hospital characteristics and trends in financial performance. Interviews addressed reasons for continued participation in the RCHD under CAA, the impact of COVID-19 on hospital operations and finances, and perceptions of hospital characteristics that may impact performance under the RCHD.

[26] Some hospitals within the same health care system participated in a joint interview (Marion and Highland from the Forrest Health System, and Inland and Maine Coast from the Northern Light System). We were unable to interview any representatives from three hospitals—one declined to participate in an interview, another canceled the interview due to the COVID-19 pandemic, and the third did not participate in the scheduled interview and did not respond to follow-up requests.

2.1.2 Document Review

Prior to the interviews, the evaluation team gained a thorough understanding of hospital finances and operations and the general market environment by reviewing the hospitals' RCHD applications, hospital websites, and Healthcare Cost Report Information System (HCRIS) data, including Medicare inpatient margins, total profit margins, FTEs, and acute and swing-bed discharges. For the interviews with staff from *continuing* hospitals, we also reviewed interview summaries and analyses developed in the previous evaluations. In preparation for the interviews, information from these sources was abstracted and developed into hospital-specific questions. For example, if a hospital indicated in a previous interview that a competitor was closing, we probed about the impact this event had on the hospital's overall financial performance.

2.2 Secondary Data

Numerous secondary data sources were used to evaluate hospital and market characteristics, as well as financial information, for both the RCHD hospitals and the comparison group of small rural hospitals in *Interim Report One*. Except for settled cost reports obtained directly from the MACs for the RCHD hospitals, all secondary data sources are publicly available and do not contain private information. Exhibit 2.1 summarizes the secondary data sources used.

Exhibit 2.1: Summary of Secondary Data Used Across Topic Areas

Data Source	TPA-1: Attributes	TPA-2: Payments	TPA-3: Impact
Healthcare Cost Report Information System (HCRIS)	Hospital margins Hospital characteristics	RCHD payments	Hospital margins (outcomes) Hospital characteristics (matching covariates and control variables)
Settled Cost Reports	N/A	RCHD payments	N/A
Hospital/Medicare IPPS Impact File	Rural status to determine eligible non-participants and comparison group	N/A	Rural status to determine eligible non-participants and comparison group
Surveillance, Epidemiology, and End Results (SEER)	County-level characteristics	N/A	County-level characteristics (matching covariates and control variables) Market typology (matching variable and stratification variable)

Notes: N/A = not applicable because the data source was not used for that topic area.

Below we describe each secondary data source in greater detail.

2.2.1 Healthcare Cost Report Information System (HCRIS)

HCRIS was used to provide the following types of information:

- Hospital financial outcomes (described in more detail in Exhibit 3.1)
- Measures of hospital characteristics (described in more detail in Exhibit 3.2) including:
  - Patient volumes and characteristics
  - Hospital staffing
  - Hospital capacity
  - Organizational characteristics
  - Other hospital characteristics
- Cost and charges, in total and for Medicare

HCRIS files are created from the annual cost reports submitted by hospitals and reviewed by the CMS MACs. Hospital annual cost reports are the only source of information that provides the level of detail required by the analyses. HCRIS files typically become publicly available nine months after the end of the cost reporting year. Because of the audit and settlement process, data included in HCRIS may change over time for previously submitted cost reports. Thus, the data are updated quarterly as the cost reports are audited and settled.

For this reason, the financial data in HCRIS are more stable two to three years after the end of a hospital's FY. As of the April 2021 HCRIS update, 83 percent of all FY 2019 reports for hospitals were still in the "as-submitted" state. For FY 2018, 52 percent of all cost reports were in this state, with the remaining reports shown as either audited or settled.

2.2.2 Hospital/Medicare IPPS Impact File

The CMS Hospital Impact File provides the hospital-specific case-mix needed to calculate the target payments in the years following the base year. The file also indicates rural status, which was used to define the comparison hospitals. The impact files are updated annually and are currently available through 2019.

2.2.3 Settled Cost Reports for RCHD Hospitals

The MACs are responsible for calculating the reasonable costs and the target amounts and reconciling the interim payments based on the lesser of these amounts. The RCHD payments are included in the settled cost reports, which contain special worksheets (worksheets E–H), to calculate the target amount and determine whether the hospital will receive the target amount or reasonable costs. This worksheet is now included in the publicly available HCRIS data, but not the supporting documentation. The final settled cost reports contain the final reconciled Medicare inpatient revenues that were used to compare the IPPS and RCHD payments.

2.2.4 Surveillance, Epidemiology, and End Results (SEER)

County-level population characteristics are obtained from the National Cancer Institute SEER data. These characteristics include the percentage of the population 65 years of age and older, the percentage of the population in poverty, and the total population. In addition, we calculated population density using the total county population divided by the number of square miles in the county. This is the only dataset with regional data available for our entire period of analysis.

3.0 Methodology

In this section, we discuss the quantitative and qualitative evaluation methodologies used to assess the effects of the RCHD for *new* and *continuing* hospitals. A mixed-methods approach was used to answer the various research questions of interest and triangulate results from quantitative and qualitative analyses as appropriate. The qualitative analysis helped to provide background and context for the results from the quantitative analysis and to explore the mechanisms driving observed results.

3.1 Quantitative Methodology

This section describes the quantitative methodology used in this evaluation. Sections 3.1.1 and 3.1.2 describe the evaluation measures.

3.1.1 Evaluation Measures

This section discusses the evaluation outcomes and the variables used to measure hospital characteristics and the context in which hospitals operate. These variables were analyzed descriptively to answer research questions within TPA-1 (Attributes). Some of these variables were also used as DID controls under TPA-3 (Impact) and as matching covariates to find a comparison group within this topic area.

3.1.1.1 Hospital Financial Outcomes

Exhibit 3.1 describes the specifications of the financial outcomes that were analyzed in this evaluation report. Under TPA-1 (Attributes), outcomes were analyzed using descriptive statistics to summarize the financial condition of *new* and *continuing* RCHD hospitals and how they compare to eligible non-participants prior to the start of the demonstration. TPA-2 (Payments) summarizes the additional RCHD acute care payments (over IPPS) and swing-bed payments (over SNF PPS) that hospitals received, using descriptive statistics. Under TPA-3 (Impact), these outcomes were used as the dependent variables for the DID regressions in the impact analysis.

The following section presents the list of outcome measures that were analyzed and their interpretation.

Outcome 1: **Medicare inpatient margin** measures Medicare inpatient profits as a percentage of Medicare inpatient revenue. Positive values indicate that allowable Medicare inpatient costs are less than total Medicare inpatient revenue; negative values indicate that allowable Medicare inpatient costs are greater than total Medicare inpatient revenue. This outcome includes SNF care

delivered in swing beds. Higher Medicare inpatient margins as a result of demonstration participation imply a positive impact on hospitals' financial condition.

Outcome 2: **Medicare combined margin** measures total Medicare profits as a percentage of total Medicare revenue. Total Medicare margins include both inpatient and outpatient revenue and costs. Positive values indicate profits, and negative values indicate loss.[27] Higher Medicare combined margins as a result of demonstration participation imply a positive impact on hospitals' financial condition.

Outcome 3: **Total profit margin** measures the percentage of total revenue from all sources that is profit or loss. A positive value indicates that total expenses are less than total revenues (a profit or positive net income). A negative value indicates that total expenses are greater than total revenues (a loss or negative net income). Total profit margin includes revenues and costs from all payers, as well as investment income. Higher total profit margins as a result of demonstration participation imply a positive impact on hospitals' financial condition.

Outcome 4: **Operating margin** measures the percentage of operating revenue that is profit or loss. A positive value indicates that total operating expenses are less than operating revenues (an operating profit). A negative value indicates that total operating expenses are greater than operating revenues (an operating loss). Operating revenues are a sum of net patient revenues and other revenue from sources such as the rental of hospital space. Higher total profit margins as a result of demonstration participation imply a positive impact on hospitals' financial condition.

Outcome 5: **Days cash on hand (DCOH)** is a measure of liquidity that broadly represents the number of days a hospital can continue to pay its operating expenses with the current cash it has available. DCOH is a criterion used by lenders and rating

[27] Both Medicare inpatient margins and Medicare combined margins are inclusive of Medicare sequestration. When applying outpatient-sequestration, adjustments were made to 10 out of 5,382 hospital-year cost reports (0.19 percent) to account for incomplete or plausibly invalid data. For seven cost reports, we set Medicare outpatient revenue to $0 if their Medicare outpatient costs were $0 and set Medicare outpatient margins to missing. For three cost reports, we set Medicare outpatient margins to missing if their reported Medicare sequestration was greater than 40 percent. For cases where Medicare outpatient margins were set to missing, Medicare combined margins reflect Medicare inpatient margins.

agencies to gauge the financial health of hospitals.[28] While very high levels of DCOH may indicate that cash is not being deployed to areas of the business generating higher returns, generally, the higher the DCOH, the better hospitals are able to weather circumstances such as unexpected changes in admission rates or natural calamities and thus avoid closure.[29] More DCOH as a result of demonstration participation imply a positive impact on hospitals' financial condition.

Outcome 6: **Long-term debt to capitalization ratio**, expressed as a percentage, shows how much debt a hospital has compared to the hospital's overall equity. Higher values indicate worse hospital financial positions because they imply a greater reliance on debt financing and a reduced ability to carry additional debt. A greater debt service burden also increases a hospital's sensitivity to sudden changes in service volume or payer mix. High-performing hospitals rely less on debt and more on equity, and higher bond ratings are usually associated with lower long-term debt to capitalization ratio values. A lower long-term debt to capitalization ratio as a result of demonstration participation implies a positive impact on a hospital's financial condition.

Outcome 7: **Debt-service coverage ratio** indicates the organization's ability to meet its debt repayments and is typically a measure placed in bond covenants. It indicates the ability of a hospital to take on additional debt for investments. A higher ratio indicates a stronger financial position.[30] A higher debt-service coverage ratio as a result of demonstration participation implies a positive impact on hospitals' financial condition.

Outcome 8: **Ratio of salaries to net patient revenue,** expressed as a percentage, is an important indicator of the expense structure of hospitals. Higher values imply lower staffing efficiency on the part of hospitals, which is detrimental to

[28] Jacob, D., & Hinkle, S. (2018, September 27). *Solving the "days cash on hand yield dilemma" for hospitals and medical clinics in a low interest rate environment.* Aldrich: Insights. https://aldrichadvisors.com/healthcare/days-cash-hand-yield-dilemma

[29] Allen, J. (2018, May 5). How many days cash on hand should a hospital have? *The Hospital Medical Director*. https://hospitalmedicaldirector.com/how-many-days-cash-on-hand-should-a-hospital-have

[30] When conducting data quality checks for *Interim Report Two*, the debt-service coverage ratio outcome was found to have a large amount of missing data and a much higher coefficient of variation (indicator of volatility) than other outcomes. Around 21 percent of RCHD hospitals active as of FY 2018 had 10 years or more of missing data between FY 2002 and FY 2018. The coefficient of variation, which is the ratio of standard deviation to mean, was over 30,000 percent. Due to these issues, results for this outcome were not reported.

hospital finances.[31] A lower ratio of salaries to net patient revenue as a result of demonstration participation implies a positive impact on hospitals' financial condition.

Outcome 9: **Hospital FTEs per occupied bed,** expressed as a ratio, is a measure of the efficiency of the provision of health care services. Higher values of FTEs per occupied bed imply that the hospital is spending more resources than other hospitals to provide health care services to the same number of beds. Lower FTEs per occupied bed as a result of demonstration participation may indicate an increase in the efficiency of the provision of health care services (and thus a positive impact on hospitals' financial condition). However, since lower values could also reflect lower quality of care, this measure should be interpreted with caution.

Outcome 10: **Average age of physical plant** (years) indicates the financial age of the fixed assets of the hospital. The older the average age of the plant, the greater the short-term need for capital investments.[32] A lower average age of plant as a result of demonstration participation is a positive outcome, as it indicates that hospitals were able to invest in their fixed assets.

Outcome 11: **Medicare share of inpatient discharges and Medicare share of inpatient days**, expressed as percentages are measures of hospitals' dependence on Medicare reimbursement. A decline in Medicare's share of discharges/inpatient days indicates reduced dependence on Medicare and an increase in the share of Medicaid or commercial payers. Lower values for these two shares as a result of demonstration participation are a positive outcome provided that these declines are driven by an increase in overall discharges/inpatient days.

Outcome 12: **Medicare swing-bed revenue share***,* expressed as a percentage, is a measure of how much Medicare inpatient revenue is coming from SNF care delivered in swing beds. Higher values for Medicare swing-bed revenue share as a result of demonstration participation may be a positive outcome for hospitals' financial condition, due to RCHD payment methodology for swing beds, which results in

[31] Johnson, J. M. (2015). *Critical Access Hospitals: Top 10 key financial indicators.* National Rural Health Resource Center.

[32] HFMA. (2012, October 17). *Key hospital financial statistics and ratio medians: Glossary of formulas.* https://www.hfma.org/topics/research_reports/1113.html

improved hospital Medicare inpatient margins if hospitals substitute Medicare acute care beds for swing beds.

Outcome 13: **Additional RCHD payments** reflect RCHD acute care and swing-bed payments over IPPS plus SNF PPS expressed in dollar terms. This outcome is calculated as the difference between the total RCHD payments (sum of the acute care and swing-bed payments hospitals received under RCHD) and the sum of the IPPS and SNF PPS payments that the hospital would have received under its previous rural hospital status. A positive number indicates that the hospital benefits from participating in the demonstration. A negative number indicates that the hospital can earn higher payments by going back to its original rural hospital status than by participating in the demonstration.

Outcome 14: **Percent increase in additional RCHD payments** measures additional RCHD payments in percentage terms. The numerator is *additional RCHD payments* (Outcome 13), and the denominator is the IPPS and SNF PPS payments the hospital would have received under its previous rural status. A higher number indicates that hospitals received larger RCHD payments relative to payments they would have received under their previous rural hospital status.

Outcome 15: **Additional RCHD acute care payments** are the difference between the RCHD acute care payments and the IPPS payments that the hospital would have received under its previous rural hospital status, expressed in dollar terms. The larger the difference, the more the hospital benefits from Medicare acute care payments as an RCHD participant. This outcome allows us to compare the results to a similar outcome calculated for swing-bed payments (additional RCHD swing-bed payments [Outcome 17]).

Outcome 16: **Acute care share of additional RCHD payments** is expressed in percentage terms. The numerator of this outcome is the *additional RCHD acute care payments* (Outcome 15). The denominator is the *additional RCHD payments* (Outcome 13). A higher acute care share of additional RCHD payments indicates that additional RCHD acute care payments play a larger role in the additional RCHD payments. This outcome allows us to compare the results to a similar outcome calculated for swing-bed payments (swing-bed share of additional RCHD payments [Outcome 18]).

Outcome 17: **Additional RCHD swing-bed payments** are the difference between the RCHD swing-bed payments and the SNF PPS payments that the hospital would have received under its previous rural hospital status, expressed in dollar terms. The larger the difference, the more the hospital benefits from Medicare swing-bed service SNF payments as an RCHD participant.

Outcome 18: **Swing-bed share of additional RCHD payments** is expressed in percentage terms. The numerator is the *additional RCHD swing-bed payments* (Outcome 17). The denominator is the *additional RCHD payments* (Outcome 13). A higher swing-bed share of additional payments indicates that additional RCHD swing-bed payments play a larger role in the additional RCHD payments.

Outcome 19: **Additional RCHD payments, per discharge,** are expressed in dollar terms. The numerator is the *additional RCHD payments* (Outcome 13). The denominator is the total discharges (acute care and swing beds). Hospitals with a larger value for this measure have higher average RCHD payments per acute care and swing-bed SNF discharge.

Outcome 20: **Additional RCHD acute care payments, per discharge,** are expressed in dollar terms. The numerator is *additional RCHD acute care payments* (Outcome 15). The denominator is total acute care discharges. Hospitals with larger values for this outcome have higher average RCHD acute care payments per acute care discharge. This outcome allows us to compare the results to a similar outcome calculated for swing-bed payments (additional RCHD swing-bed payments, per discharge [Outcome 21]).

Outcome 21: **Additional RCHD swing-bed payments, per discharge,** are expressed in dollar terms. The numerator is *additional RCHD swing-bed payments* (Outcome 17). The denominator is total swing-bed discharges. Hospitals with larger values for this outcome have higher RCHD swing-bed payments per swing-bed discharge.

Exhibit 3.1: Evaluation Outcome Specifications

Measure	Specification
Medicare margins	
Medicare inpatient margin[†,‡]	$\left(\frac{\text{Medicare inpatient revenue} - \text{Medicare inpatient costs}}{\text{Medicare inpatient revenue}}\right) * 100$
Medicare combined margin[†,‡]	$\left(\frac{\text{Medicare inpatient \& outpatient revenue} - \text{Medicare inpatient \& outpatient costs}}{\text{Medicare inpatient \& outpatient revenue}}\right) * 100$
Overall profitability margins	
Total profit margin*[,†]	$\left(\frac{\text{Net income}}{\text{Net patient revenue + Total other income}}\right) * 100$
Operating margin*[,†]	$\left(\frac{\text{Net patient revenue + Other revenue} - \text{Total operating expenses}}{\text{Net patient revenue + Other revenue}}\right) * 100$
Capital investment indicator	
Average age of physical plant*[,¥]	$\frac{\text{Accumulated depreciation}}{\text{Depreciation expense} * \left(\frac{365}{\text{Days in period}}\right)}$
Other financial indicators	
Days cash on hand*	$\frac{(\text{Cash + Temporary investments + Investments}) * \text{Days in period}}{\text{Total expenses} - \text{Depreciation}}$
Long-term debt to capitalization ratio*	$\left(\frac{\text{Long-term debt}}{\text{Long-term debt + Net assets}}\right) * 100$
Debt-service coverage ratio*	$\frac{\text{Net income + Depreciation + Interest expense}}{\text{Notes and loans payable (short-term)} * \left(\frac{365}{\text{Days in period}}\right) + \text{Interest expense}}$
Ratio of salaries to net patient revenue*	$\left(\frac{\text{Salary expense}}{\text{Net patient revenue}}\right) * 100$
Hospital FTEs per occupied bed[§]	$\frac{\text{Number of FTEs}}{\text{Adjusted occupied beds}^{**}}$

Measure	Specification
Medicare revenue indicators	
Medicare share of inpatient discharges	$\left(\frac{\text{Medicare discharges}}{\text{Total discharges}}\right) * 100$
Medicare share of inpatient days*	$\left(\frac{\text{Medicare inpatient days}}{\text{Total inpatient days} - \text{Nursery bed days} - \text{Nursing facility (NF) swing-bed days}}\right) * 100$
Medicare swing-bed revenue share	$\left(\frac{\text{Medicare swing-bed revenue}}{\text{Medicare inpatient revenue}}\right) * 100$
RCHD payments	
Additional RCHD payments	$(\text{RCHD acute care payments}_{FY} + \text{RCHD swing-bed payments}_{FY}) - (\text{Medicare IPPS payments}_{FY} + \text{Medicare SNF PPS payments}_{FY})$
Percent increase in additional RCHD payments	$\left(\frac{\text{RCHD acute care and swing-bed payments}}{\text{IPPS + SNF PPS payments}}\right)_{FY} * 100$
Additional RCHD acute care payments	$\text{RCHD acute care payments}_{FY} - \text{Medicare IPPS payments}_{FY}$
Additional RCHD swing-bed payments	$\text{RCHD swing-bed payments}_{FY} - \text{Medicare SNF PPS payments}_{FY}$
Acute care share of additional RCHD payments	$\frac{\text{Additional RCHD acute care payments}}{\text{Additional RCHD payments}} * 100$
Swing-bed share of additional RCHD payments	$\frac{\text{Additional RCHD swing-bed payments}}{\text{Additional RCHD payments}} * 100$
Additional RCHD payments, per discharge	$\frac{\text{Additional RCHD payments}_{FY}}{(\text{Medicare acute care discharges} + \text{Medicare swing-bed discharges})_{FY}}$
Additional RCHD acute care payments, per discharge	$\frac{\text{Additional RCHD acute care payments}_{FY}}{\text{Medicare acute care discharges}_{FY}}$
Additional RCHD swing-bed payments, per discharge	$\frac{\text{Additional RCHD swing-bed payments}_{FY}}{\text{Medicare swing-bed discharges}_{FY}}$

Notes & Sources: (1)* Definitions for these outcomes are from the Flex Monitoring Team's primer "How State Flex Coordinators Can Use Critical Access Hospital Measurement & Performance Assessment System (CAHMPAS) Data" and HCRIS. (2) † In this evaluation, these outcomes are winsorized at -100 and 100. (3) ‡ Definitions for these outcomes are from MedPAC and HCRIS. (4) § In all analyses in this report, this outcome will be winsorized at the 99th percentile. (5) ** (Inpatient days – NF swing days – Nursery days) * (Total patient revenue / (Total inpatient revenue – Inpatient NF revenue – Other long-term care revenue)) / Days in period. (6) ¥ In all analyses in this report, this outcome will be winsorized at 60. Any value of this outcome for a hospital year that is greater than 60 will be set to 60.

3.1.1.2 Hospital Operational and Contextual Characteristics

Exhibit 3.2 lists the variables that were used to measure hospital operational and contextual characteristics. As described in the conceptual model in Section 1.3, these variables may determine hospitals' use of RCHD payments and the impact RCHD payments might have on hospital financial outcomes.

Under TPA-1 (Attributes), standard descriptive statistics and *t*-tests were used to describe and compare the attributes of *new* and *continuing* hospitals. *T*-tests were also used to compare the means of these variables across RCHD hospitals and eligible non-participants during the pre-demonstration baseline to understand which characteristics are associated with hospitals' decision to participate in the demonstration.

Under TPA-3 (Impact), a subset of the characteristics shown in Exhibit 3.2, measured at baseline, were used to construct the comparison group. Additionally, some of these variables were used as covariates in the DID regressions.

Exhibit 3.2: Hospital Operational and Contextual Characteristics

Hospital Operational & Contextual Characteristics	Included in TPA-1: Attributes	Included in TPA-2: Payments	Included in TPA-3: Impact Matching Variable	Included in TPA-3: Impact Covariate
Hospital Operational Characteristics				
Organizational Characteristics				
Hospital for-profit status (public, non-profit, for-profit)	✓		✓	✓
Hospital system status (independent vs. system)	✓		✓	
Patient Volumes				
Average daily census (ADC), acute care beds	✓			
ADC, swing beds	✓			
Number of acute inpatient beds	✓			
Inpatient Discharges				
Number of Medicare discharges	✓			
Medicare acute care discharges		✓		
Swing-bed discharges		✓		

Hospital Operational & Contextual Characteristics	Included in TPA-1: Attributes	Included in TPA-2: Payments	Included in TPA-3: Impact Matching Variable	Included in TPA-3: Impact Covariate
Number of Medicaid discharges	✓			
Number of total discharges	✓			
Clinical Complexity & Disproportionate Share				
Hospital case-mix index	✓			
Disproportionate share status	✓			✓
Hospital Base or Rebase Characteristics				
Total Medicare inpatient cost in base or rebase year		✓		
Total swing-bed cost in base or rebase year		✓		
Medicare acute care discharges in base or rebase year		✓		
Swing-bed discharges in base or rebase year		✓		
Hospital Contextual Characteristics				
Market Typology & Market Area Characteristics				
Market typology (Competitive, Frontier, Isolated)	✓	✓	✓	
Number of hospitals within 35-mile radius	✓			✓
Miles to the nearest acute care hospital	✓			✓
Number of CAHs within 35-mile radius	✓			✓
Local Socioeconomic Factors				
Total population	✓			
Population density	✓			✓
Population change				✓
Percentage of residents aged 65 years and over	✓		✓	✓
Percentage of residents with high school education or less	✓			✓
Percent White non-Hispanic	✓		✓	✓
Percentage of residents below 150% of poverty line	✓		✓	✓

Hospital Operational & Contextual Characteristics	Included in TPA-1: Attributes	Included in TPA-2: Payments	Included in TPA-3: Impact Matching Variable	Included in TPA-3: Impact Covariate
Percentage of residents who are unemployed	✓		✓	✓
Median household income	✓			✓
Median home value	✓			✓
State Medicaid expansion status	✓		✓	✓

3.1.1.1.2.1 Hospital Operational Characteristics

Hospital operational characteristics include measures of patient volumes, discharges, and patient clinical complexity as measured by the case-mix index, as well as additional organizational characteristics that are important determinants of hospital finances. For instance, low patient volumes impact rural hospitals' ability to generate the revenues needed to cover fixed costs, update infrastructure, and invest in new services.[33] Organizational characteristics, such as hospital system membership, can help rural hospitals improve their financial and operational performance. For instance, hospital system membership may offer rural hospitals access to technology that would otherwise be costly to procure and maintain; it may also help with staff recruitment and retention, provide a stable source of referrals, and reduce hospital costs via group purchasing.[34]

3.1.1.1.2.2 Hospital Contextual Characteristics

Hospital contextual characteristics include different measures of competition hospitals face in their markets, which are described in more detail in the Market Typology and Market Area Characteristics subsection, and socioeconomic measures, described in the Local Socioeconomic subsection.

3.1.1.1.2.3 Market Typology and Market Area Characteristics

This evaluation used the definition of a hospital's geographic market, given in the 2018 *Report to Congress,* as the ZIP Codes within a 35-mile radius of the hospital.[35] The CAH and SCH rural

[33] Mueller, K. J., Alfero, C., Coburn, A. F., Lundblad, J. P., MacKinney, A. C., McBride, T. D., & Weigel, P. (2018, December). *Assessing the unintended consequences of health policy on rural populations and places.* RUPRI Health Panel, University of Iowa. http://www.rupri.org/wp-content/uploads/Evaluating-the-Impact-of-Policy-Changes-on-Rural-Populations.pdf

[34] Oyeka, O., Ullrich, F., MacKinney, A. C., Lupica, J., & Mueller, K. J. (2018, November). *The rural hospital and health system affiliation landscape—a brief review.* RUPRI, University of Iowa. https://rupri.public-health.uiowa.edu/publications/policypapers/Rural%20Hospital%20and%20Health%20System%20Affiliation.pdf

[35] CMS. (2018, October). *Report to Congress: Rural Community Hospital Demonstration,* p. 32. https://innovation.cms.gov/files/reports/rch-rtc.pdf

payment methodologies also use this radius in their eligibility criteria. As noted in Section 1.3 of this report, the 2018 *Report to Congress* divided hospital markets into three separate groups (or typologies) based on population changes and market competition:

- Competitive markets have three or more hospitals within 35 miles,
- Frontier markets have low levels of competition (maximum of two hospitals within 35 miles) and a stable or growing population, and
- Isolated markets have low levels of competition (maximum of two hospitals within 35 miles) and a declining population.[36]

Because of data limitations in getting consistent ZIP Code-level data for all demonstration years, we used county-level data to measure population change.

3.1.1.1.2.4 Local Socioeconomic Factors

Variables to measure county demographics and state policy were included because these can influence hospitals' patient volumes and finances. State Medicaid expansion can favorably impact rural hospitals because increased Medicaid coverage for previously uninsured patients reduces uncompensated care expenditures, thereby strengthening hospitals' financial positions.[37]

3.1.2 Evaluation Methods

3.1.2.1 Descriptive Analysis of RCHD Participants and Comparison Hospitals

Under TPA-1 (Attributes) descriptive statistics were used to analyze the financial outcomes described in Section 3.1.1.1 and the contextual and operational characteristics described in Section 3.1.1.2. The focus of this topic area was on understanding how pre-demonstration baseline characteristics of *continuing* participants from previous authorization phases differ from those of *new* participants (those that joined under the CCA extension).

The evaluation also involved comparing the outcomes and characteristics of RCHD hospitals prior to when they joined the RCHD to outcomes and characteristics of eligible non-participant hospitals (see Section 1.3 for the definition of eligible non-participants). As described in Section 1.6, for *continuing* hospitals, the evaluation involved the comparison of outcomes and characteristics to those of eligible non-participant hospitals using pre-demonstration baselines of FY 2002–2004 and FY 2008–2010, depending on when participating hospitals first joined the

[36] CMS. (2018, October). *Report to Congress: Rural Community Hospital Demonstration,* p. 32. https://innovation.cms.gov/files/reports/rch-rtc.pdf

[37] Lindrooth, R. C., Perraillon, M. C., Hardy, R. Y., & Tung, G. J. (2018). Understanding the relationship between Medicaid expansions and hospital closures. *Health Affairs, 37*(1), 111–120.

demonstration.[38] For *new* hospitals joining the demonstration in FY 2018 as part of the CCA extension, we compared outcomes and characteristics to those of eligible non-participant hospitals using a pre-demonstration baseline of FY 2015–2017.

Pre-demonstration baseline means, in each case, are simple averages of year-specific means. When reporting overall results for *continuing* and *new* hospitals combined, the pre-demonstration baseline pools hospital-year observations for FY 2002–2004, FY 2008–2010, and FY 2015–2017.

Bivariate *t*-tests were used to assess differences in attributes between *continuing* and *new* hospitals and to compare participants with non-participants. In addition, distributions were determined for select hospital-level variables (e.g., Medicare and overall profitability margins). These data appear later in this section.

As described in Section 1.5, TPA-1 (Attributes) uses all eligible non-participants as a benchmark. The objective of TPA-1 (Attributes) is to compare RCHD participants to a broad and representative group of non-participants that also meet RCHD eligibility criteria but do not participate in the demonstration.

3.1.2.2 RCHD Payment Analysis

In the TPA-2 (Payments) section of this report (Section 5), several summary statistics (means standard deviations, 25th, 50th percentile, and 75th percentiles) are presented on the five payment outcomes—additional RCHD payments, additional RCHD acute care payments, additional RCHD swing-bed payments, swing-bed share of additional RCHD payments, and acute care share of additional RCHD payments (which are defined in Section 3.1.1.1) between FY 2005 and FY 2018.

3.1.2.3 Difference-in-Differences Analysis

The impact of the RCHD on the financial condition of hospitals was examined using a quasi-experimental impact evaluation methodology that employs a two-step approach. In the first step, a comparison group of hospitals with characteristics similar to those of the participant hospitals was constructed. In the second step, a DID approach was used that accounted for hospitals joining the demonstration at different times. This approach, referred to as staggered DID, was implemented by defining hospital-specific post-demonstration (and baseline) periods, depending on when the hospital first joined the demonstration.

[38] Continuing hospitals joining the demonstration between FY 2005 and FY 2010 as part of the MMA authorization have a pre-demonstration baseline of FY 2002–2004. Continuing hospitals joining the demonstration between FY 2011 and FY 2015 as part of the ACA extension have a pre-demonstration baseline of FY 2008–2010.

In contrast to *Interim Report One* where pre-demonstration baselines were used for all hospitals, for the second report, a more contemporaneous baseline was used for hospitals continuing participation in the CCA authorization extension. This was defined to be the three-year period prior to which a hospital first continued to the CCA extension phase of the demonstration. The specific years used depend on the hospital's first RCHD participation year, which dictates the start of the CCA authorization extension phase for the hospital. These years are described in Exhibit 1.10.

There are several implications of selecting the baseline years for *continuing* hospitals in this way. For these hospitals, the baseline years are, in fact, years during which these hospitals were already participating in the demonstration, though under a different authorization. As a result of this, the DID model captures only demonstration effects that are *in addition* to the effects the demonstration already exerted in previous years for these same hospitals. For these reasons, all effects for these hospitals are to be interpreted relative to levels during the previous authorization phase (i.e., ACA extension). It follows that finding no effects of the RCHD among *continuing* hospitals should be interpreted as the RCHD having "no additional effect beyond the effect the demonstration already exerted under a previous authorization," which does not imply that the demonstration had no effect at all.

For *new* hospitals that first joined the RCHD under the CCA authorization extension, a three-year pre-demonstration baseline was used, which makes their estimates contemporaneous, by definition, because these hospitals first began demonstration participation in FY 2018. During this pre-demonstration baseline, these RCHD hospitals had not yet joined the demonstration.

3.1.2.3.1 Identifying Assumption

The identifying assumption of the DID model is that the outcome trend of the comparison group would have been parallel to the outcome trend of the RCHD group if the demonstration had not occurred. While the outcome trend of the RCHD group in the absence of the demonstration cannot be observed, standard statistical tests are usually conducted to show that the assumption is *likely* satisfied. These tests are discussed below. A comparison group constructed by improving the balance between the RCHD and comparison groups is more likely to satisfy the identifying assumption required to obtain valid DID estimates. Next, the construction of these comparison groups is described.

3.1.2.3.2 Selection Criteria Applied to RCHD and Non-Participant Hospitals

For TPA-3 (Impact), the following criteria were applied that altered the number of hospitals and hospital-year observations for both RCHD and non-participant hospitals. Before any criteria were applied, there were 29 RCHD hospitals active as of FY 2018 and 2,137 non-participant hospitals. This universe of non-participant hospitals includes all hospitals ever classified as rural

during FY 2000–FY 2018. The following are the criteria that were applied, and the number of hospitals reduced by each criterion, where the numbers removed are sequential from each step and the percentages are relative to the sample sizes before any criteria are applied:

1. Excluded all hospital-year observations where a hospital was a CAH[39]
    - RCHD hospitals removed: **0**
    - Non-participant hospitals removed: **493 (23.1 percent)**
2. Applied eligibility criteria to non-participant hospitals (rural status in all baseline years, not a CAH in any baseline year, fewer than 51 beds in all baseline years, offered emergency department services in all baseline years)
    - RCHD hospitals removed: **0**
    - Non-participant hospitals removed: **1,208 (56.5 percent)**
3. Removed all hospitals that were missing all baseline data for a matching covariate
    - RCHD hospitals removed: **0**
    - Non-participant hospitals removed: **60 (2.8 percent)**

After applying all criteria, there were **29** RCHD hospitals and **376** comparison hospitals overall.

3.1.2.3.3 Selection of the Comparison Groups

The following are the steps followed to construct comparison groups for *continuing* and *new* RCHD hospitals:

1. The RCHD hospitals were divided into matching groups by year of entry into the CCA authorization extension.
2. A baseline period was defined for each hospital, depending on when it first joined the demonstration under the CCA authorization extension, as described in Exhibit 1.10. For the weighting algorithm in step 3, which uses observed variables in the baseline period, non-participant hospitals were assigned the same baseline period as the RCHD hospitals. For example, if a non-participant hospital has data for FY 2012–2018 and met the eligibility criteria in the baseline periods for hospitals joining the CCA phase in both FY 2015 and FY 2018, it could be potentially matched to both sets of hospitals using its baseline characteristics in FY 2012–2014 and FY 2015–2017, respectively.
3. Next, the pool of non-participant hospitals was restricted, within each baseline period, to those that are not CAHs, offer emergency department services, have rural status, and have fewer than 51 beds for all years of the baseline period.

[39] In the first interim report, these hospitals were removed because they were CAHs for every FY for which they had data in our sample. We will follow the same approach for this interim report.

4. Weighted comparison groups were constructed for each matching group by assigning weights to each non-participating hospital using baseline data. These weights were assigned using an entropy balancing[40] algorithm. This algorithm assigns weights to non-participant hospitals so that the means of the observed variables included in the algorithm are nearly exactly equal. In contrast to other weighting methodologies, such as propensity score weighting, entropy balancing directly incorporates the condition of equality of means of the matching variables into the weighting algorithm, which helps achieve baseline covariate balance in a more efficient and less iterative manner.
5. Finally, the weighted comparison groups were appended, as necessary, to create the *continuing* and *new* hospital comparison groups. For constructing the *continuing* hospital comparison group, weighted comparison groups constructed were appended using FY 2012–2014, FY 2013–2015, and FY 2014–2016 data. The *new* hospital comparison group simply consists of the comparison group constructed using FY 2015–2017 data.

Hospital market area (and a subset of baseline outcomes), hospital characteristics, and county-level characteristics were used in the entropy balancing algorithms for each cohort due to issues achieving convergence of the algorithm that sometimes occur when balance conditions cannot simultaneously be satisfied across all specified matching variables. The strategy followed was to include in the algorithm a set of variables that we deemed to be the most important theoretically.[41] If the algorithm converged with all these variables, then we added additional variables from the full set of variables (Exhibits 3.1 and 3.2). The full list of matching variables used is provided in Appendix E, Exhibit E1.

3.1.2.3.4 Comparison Group Testing

To evaluate the quality of the weighted comparison groups, two statistical tests were conducted. First, the RCHD and comparison hospitals were evaluated to check whether they were similar based on observable characteristics by conducting standardized bias tests. For such tests, a 10 percent threshold (in absolute value) is suggested for the standardized

[40] Hainmueller, J. (2012). Entropy balancing for causal effects: A multivariate reweighting method to produce balanced samples in observational studies. *Political Analysis, 20*(1), 25–46.

[41] We first prioritized baseline levels or trends of Medicare inpatient margins and total profit margins. Next, we prioritized market area category, poverty rate, percentage White, state Medicaid expansion status, percentage of residents aged 65 years and older, and unemployment rate.

difference after adjustment.[42,43] These results are presented in Appendix E, Exhibit E2, and discussed in Section 6.3.1.

Second, regression analysis and event-study graphs were used to evaluate whether the RCHD and comparison hospitals have parallel outcome trends during the baseline period. To increase the likelihood that the identifying assumption of the DID model would be satisfied, entropy-weighted comparison groups were chosen with baseline outcome trends parallel to the outcome trends of the RCHD group.[44] To assess whether RCHD and comparison groups have parallel baseline trends, thus providing evidence of satisfying the identifying assumption, a regression model was specified that estimates impacts of the RCHD for each relative year, where a relative year was defined as the number of years from the first year in which the hospital entered the CCA phase of the demonstration. This model, detailed below in equation (1), was used only to test for parallel baseline trends, not to estimate the impacts of the demonstration (the model we used to estimate average impacts of the demonstration is detailed subsequently, in equation [2]).[45]

$$Y_{ht} = \alpha_h + \alpha_t + \gamma_1 rel\ year\ minus\ 2 + \gamma_2 rel\ year\ minus\ 1 + \gamma_3 rel\ year\ 1 + \ldots + \gamma_6 rel\ year\ 4 + X_{ht} + \varepsilon_{ht} \qquad (\textbf{Equation 1})$$

Where:

- Y_{ht} is the outcome of interest for hospital h in year t.
- α_t denotes fiscal year fixed effects. That is, there is one indicator for each fiscal year.
- α_h are hospital fixed effects. That is, there is one indicator for each hospital. These fixed effects control for all time-invariant (fixed) hospital characteristics.
- $rel\ year\ minus\ 2$ = 1 if an RCHD hospital started in the CCA phase three years after that year, and 0 for all comparison group hospitals in all time periods and all RCHD hospitals in any year that is not three years before the first year of the hospital in the CCA phase.

[42] Rosenbaum, P., & Rubin, D. (1985). Constructing a control group using multivariate matched sampling methods that incorporate the propensity score. *American Statistician, 39,* 33–38.

[43] The calculation of standardized bias is defined by the formula:

$$\text{Bias} = \frac{\bar{X}_D - \bar{X}_C}{\left(\frac{\left(\sigma_D^2 + \sigma_C^2\right)}{2}\right)^{1/2}}$$

where $\bar{X}_D$ and $\bar{X}_C$ represent the sample means in the matched demonstration and comparison groups, respectively, for a given covariate, and σ_D^2 and σ_C^2 represent the variances in the full demonstration group and the full comparison group, respectively.

[44] We focused on achieving parallel baseline trends for Medicare inpatient margins and total profit margins.

[45] Borusyak, K., & Jaravel, X. (2022, April). *Revisiting event study designs.* https://ssrn.com/abstract=2826228

- $rel\ year\ minus\ 1$= 1 if an RCHD hospital started in the CCA phase two years after that year, and 0 for all comparison group hospitals in all time periods and all RCHD hospitals in any year that is not two years before the first year of the hospital in the CCA phase.
- $rel\ year\ 0$ = 1 if an RCHD hospital started in the CCA phase one year after that year, and 0 for all comparison group hospitals in all time periods and all RCHD hospitals in any year that is not one year before the first year of the hospital in the CCA phase. This indicator is omitted from the model (due to perfect multicollinearity), so the coefficients on each relative year indicator are interpreted relative to this time period.
- $rel\ year\ 1 \ldots rel\ year\ 4$ = 1 if an RCHD hospital started one to four years before that year, and 0 for all comparison group hospitals in all time periods and all RCHD hospitals in any year that is not one to four years after the first year of the hospital in the CCA phase.
- γ_1 and γ_2 are the coefficients of interest from this model. They represent the difference in baseline trends between the RCHD and comparison groups.
- X_{ht} represents time-varying hospital and market characteristics for hospital *h* in year *t*.
- ε_{ht} is the error term.

To assess parallel baseline trends, we assessed whether γ_1 and γ_2 were jointly significantly different from 0, using an *F*-test. If they were, we interpreted this as evidence of the lack of parallel baseline trends. The results of this test are reported in Appendix E, Exhibits E3–E4. Accompanying event-study graphs are reported in Appendix E, Exhibits E5–E7. These results are discussed in Section 6.3.1.

3.1.2.3.5 Assessment of RCHD Impacts on Hospital Financial Outcomes

A staggered DID model was used to evaluate the impact of the RCHD on the financial condition of participant hospitals. This model is identical to the model used to test for parallel baseline trends except that demonstration period relative year indicators are collapsed into a single indicator in order to obtain average effects of the demonstration, and the baseline relative year indicators are not included. The model is specified as follows:

$$Y_{ht} = \alpha_h + \alpha_t + \gamma_{DD} D_{ht} + X_{ht} + \varepsilon_{ht} \qquad (\boldsymbol{Equation\ 2})$$

Where:

- Y_{ht} is the outcome of interest for hospital h in year t.
- α_t denotes fiscal year fixed effects. That is, there is one indicator for each fiscal year.
- α_h denotes hospital fixed effects. That is, there is one indicator for each hospital. These fixed effects control for all time-invariant (fixed) hospital characteristics.

- D_{ht} is the treatment dummy variable. In year t, $D_{ht} = 1$ if an RCHD hospital is in the CCA phase of the demonstration in that year. $D_{ht} = 0$ for all comparison group hospitals in all time periods and all RCHD hospitals not yet in the CCA phase of the demonstration in year t.
- γ_{DD} is the coefficient of interest that measures the impact of the CCA phase of the demonstration on RCHD hospitals. It measures the average change in outcome *Y* in the post-demonstration period compared to the baseline period for RCHD hospitals after it differences out the same change for comparison hospitals. The comparison group hospital trend serves as a counterfactual to measure what would have been the trend of the RCHD hospitals in the absence of the CCA phase of the demonstration.
- X_{ht} represents time-varying hospital and market characteristics for hospital *h* in year *t*.
- ε_{ht} is the error term.

3.1.2.3.6 Reporting and Interpretation of Results

In this report, the impact estimate results for *continuing* and *new* hospitals are presented separately by estimating equation (2) separately for hospitals in each group.

Presenting impact results separately for *continuing* versus *new* hospitals is important because impact estimates for each group have different interpretations. For *continuing* hospitals, γ_{DD} in equation (2) measures the additional impact of continuing participation in the CCA authorization extension phase of the demonstration, for hospitals that already participated in the ACA extension. For *new* hospitals, γ_{DD} in equation (2) measures the impact of participating in the RCHD, relative to not participating.

3.1.2.3.7 Randomization Inference

In addition to using traditional parametric methods of inference, the randomization inference technique was used to calculate *p*-values. Randomization inference may be more appropriate than parametric inference in cases with small sample sizes. With only 17 *continuing* hospitals and 12 *new* hospitals, that challenge was present in this evaluation.

A small sample size does not bias the coefficient estimates obtained when the DID specification described in equation (2) is estimated. However, a small sample size implies that inference based on parametric standard errors is unreliable because it depends on asymptotic approximations.[46]

[46] Bloom, N., Eifert, B., Mahajan, A., McKenzie, D., & Roberts, J. (2013). Does management matter? Evidence from India. *Quarterly Journal of Economics, 128*(1), 1–51.

Randomization inference was used to address this concern. Randomization inference, also known as permutation-based inference, is a non-parametric technique for calculating *p*-values. To implement this technique, a placebo demonstration treatment status was randomly assigned to different sets of comparison hospitals. The randomization inference *p*-values represent the proportion of times the placebo treatment effect was larger than the actual estimated treatment effect for RCHD hospitals. A *p*-value smaller than a predetermined threshold (e.g., the 10 percent level) suggests that the RCHD had an impact, whereas the frequent occurrence of large placebo effects compared to estimated treatment effects (i.e., large *p*-values) would suggest that the demonstration had no statistically significant impact.

When presenting results, the results of estimating equation (2) and two sets of *p*-values are shown: parametric (or traditional) *p*-values and non-parametric *p*-values based on randomization inference. In our experience and the existing literature, when sample sizes are large enough, traditional *p*-values and randomization inference *p*-values are almost identical.[47,48,49] However, in cases with smaller sample sizes, randomization inference *p*-values are more appropriate.[50]

The following 3 rules were used to report and interpret traditional and randomization inference *p*-values:

- Both traditional and randomization inference *p*-values are reported for all regression results in the results tables.
- For the purposes of defining whether there is an impact of the RCHD on an outcome, the randomization inference *p*-value takes precedence over the traditional *p*-value, if they are inconsistent.
- When discussing the results, all cases where there are inconsistencies between traditional and randomization inference *p*-values are noted.

[47] Courtemanche, C., Marton, J., Ukert, B., Yelowitz, A., & Zapata, D. (2018). Effects of the Affordable Care Act on health care access and self-assessed health after 3 years. *Inquiry: A Journal of Medical Care Organization, Provision and Financing*, *55*, 46958018796361.

[48] Courtemanche, C., Marton, J., Ukert, B., Yelowitz, A., & Zapata, D. (2017). Early impacts of the Affordable Care Act on health insurance coverage in Medicaid expansion and non-expansion states. *Journal of Policy Analysis and Management, 36*(1), 178–210.

[49] Courtemanche, C., & Zapata, D. (2014). Does universal coverage improve health? The Massachusetts experience. *Journal of Policy Analysis and Management, 33*, 36–69.

[50] Bloom, N., Eifert, B., Mahajan, A., McKenzie, D., & Roberts, J. (2013). Does management matter? Evidence from India. *Quarterly Journal of Economics, 128*(1), 1–51.

3.2 Qualitative Methodology

Two members of the qualitative analysis team conducted all interviews, and, with permission from interviewees, recorded interviews for transcription purposes and subsequent analyses. These same senior researchers coded the interview transcripts using NVivo software, with high-level codes aligned with the key research questions. To ensure coding consistency, they compared and reconciled results, created coding rules for complex themes, and identified common themes for analysis using NVivo groupings. The interview guides and coding schemes are found in Appendix B.

4.0 Topic Area 1: Attributes of Participant Hospitals Compared to Eligible Non-Participant Hospitals

4.1 Key Findings

This section describes the characteristics of participant RCHD hospitals compared to eligible non-participants. Prior to joining the RCHD, participant hospitals tended to have lower Medicare inpatient margins than eligible non-participant hospitals. This finding could be driven by the RCHD payment methodology, which has the potential of increasing Medicare inpatient payments for participant hospitals (see Section 1.1.3 for more details on the payment methodology). Participant hospitals are also different from eligible non-participant hospitals in dimensions not directly related to the RCHD payment methodology. For example, participant hospitals tend to have older capital infrastructure and are more likely to be non-profits than eligible non-participant hospitals.

In addition, when comparing *continuing* RCHD hospitals to *new* RCHD hospitals, findings show that *continuing* hospitals were in a slightly stronger financial condition than *new* hospitals. These differences between *continuing* and *new* hospitals could eventually result in the RCHD having a different impact on *continuing* versus *new* RCHD hospitals. However, this topic is not explored in this report.

- **Prior to joining the demonstration, both new and continuing RCHD hospitals had negative Medicare inpatient margins.** The demonstration attracts hospitals that, prior to the start of the demonstration, had substantially lower, and negative, Medicare inpatient margins compared to eligible non-participant hospitals. This suggests that hospitals joined the demonstration to improve their Medicare inpatient margins. This is expected, as the RCHD payment methodology has the potential to provide higher inpatient reimbursement than traditional Medicare reimbursement. In general, prior to joining the demonstration, **new RCHD hospitals were in a slightly weaker** overall financial position than continuing RCHD hospitals.
- ***New* RCHD hospitals were located in different hospital markets and served a different population than *continuing* RCHD hospitals.** Prior to joining the demonstration, *new* RCHD hospitals were more likely to operate in Frontier markets, while *continuing* RCHD hospitals were more likely to operate in Competitive markets. *New* RCHD hospitals tended to be located in counties that had slightly older, more educated, and more affluent populations (based on lower unemployment rates and higher median home value) than *continuing* RCHD hospitals. *New* RCHD hospitals tended to be located in

states that did not expand Medicaid under the ACA since 2014 as compared to *continuing* RCHD hospitals. This suggests that for *new* hospitals in non-expansion states, it is more important to maximize all other sources of revenue, as there is limited revenue from Medicaid. The hospital market characteristics are not directly related to the RCHD payment methodology, but we include these descriptions to illustrate the differences between *new* RCHD and *continuing* RCHD hospitals, as well as the difference between RCHD and eligible non-participant hospitals.

- **Relative to non-participant hospitals, both *new* and *continuing* RCHD hospitals were largely non-profits with higher patient volumes in somewhat higher-income areas than non-participant hospitals**. Prior to joining the demonstration, participating hospitals were more likely to be non-profits, have higher inpatient discharges, and treat more clinically complex patients compared to non-participants. Participant hospitals were also more likely to be located in less densely populated, but less poor and more educated, counties compared to non-participants. RCHD hospitals were also less likely to be in markets that were Competitive prior to joining the demonstration when compared to eligible non-participant hospitals.

- **Relative to non-participant hospitals, both *new* and *continuing* RCHD hospitals had older capital infrastructure compared to non-participant hospitals**. Prior to joining the demonstration, both *new* and *continuing* hospitals had older physical assets (measured by the variable age of plant) when compared to non-participant hospitals.

4.2 Characteristics of Participant Hospitals Prior to Joining the RCHD

This section describes the characteristics of participant hospitals prior to joining the RCHD (in the **pre-demonstration** period).[51] RCHD hospitals are stratified into *continuing* and *new* hospitals.[52] Unlike the original MMA authorization and the ACA extension when the demonstration was limited to rural hospitals in the 10 and 20 least populous states, respectively, the CCA extension expanded the demonstration to all states. However, the selection of participating hospitals still prioritized hospitals in the 20 least populous states. Consequently, *new* hospitals joining the demonstration in the CCA extension are from the same 20 least populous states as observed during the ACA extension.

Appendix Exhibit A.1 presents the full list of RCHD hospitals actively participating in the demonstration in FY 2018, tabulated by their participation status: *continuing* hospitals vs. *new* hospitals.

4.2.1 Medicare Margins for Continuing and New RCHD Hospitals

Before joining the demonstration, both *continuing* and *new* participants had negative Medicare inpatient and combined margins. Medicare inpatient margins for *new* hospitals were similar to *continuing* hospitals (-19.4 percent vs. -20.6 percent). *New* hospitals had lower Medicare combined margins than *continuing* hospitals (-25.8 percent vs. -20.2 percent). RCHD hospitals generally mentioned similar reasons for negative margins regardless of whether they were *continuing* or *new*. These reasons included declines in their Medicare inpatient utilization and increases in costs. In addition, some hospitals reported that Medicare reimbursement was not always sufficient to cover the complete cost of care for sicker populations often requiring costly and intensive services.

Appendix Exhibits D3 and D4 present the distribution of Medicare inpatient margins and Medicare combined margins, respectively, for *continuing*, *new*, and all RCHD hospitals.

4.2.2 Overall Profitability Margins[53] for Continuing and New RCHD Hospitals

Operating margins and total profit margins (inclusive of non-operating/non-patient care revenues) are grouped as overall profitability margins in this discussion. Compared to *continuing RCHD hospitals*, prior to joining the demonstration, *new RCHD hospitals* were in a more difficult financial condition.

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[51] The pre-demonstration period is described in Section 3.1.2.1.

[52] As described in Section 1 (Introduction) continuing hospitals are those that first joined the RCHD during the MMA authorization or ACA extension and continued their participation during the CCA extension. New hospitals are those that first joined the demonstration during the CCA authorization extension.

[53] Operating margins and total profit margins (inclusive of non-operating/non-patient care revenues) are both grouped as overall profitability margins.

Before joining the demonstration, operating margins of *new RCHD hospitals were lower* as compared to *continuing* RCHD hospitals (-7.8 percent vs. -0.3 percent, although this difference is not statistically significant).

Before joining the RCHD, total profit margins of *new* hospitals *were also lower* as compared to *continuing* hospitals (-3.2 percent vs. 4.4 percent, a statistically significant difference). For *new* participants, the average total profit margins were negative and lower than *continuing* hospitals for two reasons. First, one of the *new* participant hospitals (RCHD Hospital A) had a total profit margin of -100.0 percent in one of the years prior to joining the demonstration (FY 2015). RCHD Hospital A's negative profit margin is a significant outlier as the average total profit margin would be close to 0.3 percent if RCHD Hospital A was excluded from the *new* RCHD hospital sample. During the interviews, RCHD Hospital A reported that they faced financial troubles due to the loss of revenue-generating providers and high costs associated with contract clinicians and the purchase of new equipment. The hospital has since stabilized financially, in part due to new management. Second, after excluding RCHD Hospital A, the average total profit margin for *new* hospitals compared to *continuing* hospitals was still low (0.3 percent vs. 4.4 percent) because more *new* hospitals (33 percent) had negative profit margins prior to joining the RCHD than *continuing* hospitals (18 percent).

Appendix Exhibits D5 and D6 present the distribution of total profit margins and operating margins, respectively, for *continuing*, *new*, and all RCHD hospitals.

4.2.3 Financial Indicators for Continuing and New RCHD Hospitals

For most financial indicators, averages prior to joining the demonstration for *continuing* and *new RCHD hospitals are similar,* and the magnitude of the differences is small and not statistically significant. However, there is an approximately 25 percentage point difference in long-term debt to capitalization ratio between *continuing* and *new* participants. While the average long-term debt to capitalization ratio is positive for *continuing* participants, it is negative for *new* participants. However, the differences are not statistically significant. The negative average long-term debt to capitalization ratio is particularly driven by one *new* RCHD hospital reporting negative ratios[54] throughout the pre-demonstration baseline. This *new* RCHD hospital is an outlier for long-term debt to capitalization ratio, as excluding the hospital from the *new* participants' group increased average long-term debt to capitalization ratio to 24 percent, which is similar to *continuing* hospitals.

[54] As detailed in Exhibit 3.1, long-term debt to capitalization ratio is the ratio of liabilities (long-term debt) and the sum of liabilities and net assets. The new RCHD hospital has reported negative net assets such that the sum of liabilities and net assets are negative leading to a negative long-term debt to capitalization ratio.

4.2.4 Hospital Characteristics for Continuing and New RCHD Hospitals

Prior to joining the demonstration, *continuing* and *new* participants had some differences in hospital characteristics. Relative to *continuing* RCHD hospitals, *new* RCHD hospitals had fewer beds and a sicker patient population. Despite having fewer beds, *new* hospitals had a similar average daily census and patient discharges when compared to *continuing* hospitals. This signals that *new* hospitals had less revenue and fewer economies of scale as evidenced by their weaker overall profitability margins.

The evaluation found other differences prior to the demonstration between *continuing* and *new* hospitals:

- About a third of the *continuing* participants were non-profit, while most of *new* participants (three-quarters) were non-profit.
- *Continuing* participants had (on average) four more total acute care beds than *new* participants.
- *Continuing* participants had a lower case-mix index as compared to *new* participants (1.13 vs. 1.44). The higher case-mix index for *new* participants could be driven by the differences in market area characteristics for *new* participants as compared to continuing participants.

New hospitals joined the demonstration in FY 2018 but did not participate between FY 2005 and 2017 as they were uninformed about the RCHD. In interviews, *new* hospitals that were eligible to participate in the demonstration in previous rounds reported they did not initially apply because they simply did not know about the program. For example, one *new* RCHD hospital, which is an independent non-profit organization, reported that "lack of awareness" was the main reason for not applying.

4.2.5 Market Area Characteristics for Continuing and New RCHD Hospitals

There were also several differences in market area characteristics when comparing *continuing* and *new* participants. These differences in market area characteristics prior to joining the demonstration may be associated with *new* RCHD hospitals finding the demonstration more or less beneficial as compared to *continuing* hospitals.

New RCHD hospitals are more likely to be in Frontier markets than continuing hospitals. As a result, we would expect *new* RCHD hospitals to have more market power than *continuing* RCHD hospitals. During interviews with *new* hospitals, almost half of them reported very little competition, primarily because they provide more services than other nearby hospitals. As reported by one *new* the hospital, "There's no competition up here. There's more work than all of us can accomplish." Another *new* RCHD hospital noted there is "no real significant competition" because there are no large hospitals nearby, and the ones of similar size (or

smaller) are still at least 60 miles away. A third RCHD hospital reported its market is "pretty contained" given that the nearest cities are over an hour away. A fourth *new* RCHD hospital, located in Jackson, Wyoming, also reported that the hospital has "people driving, 80, 100 miles on a regular basis coming here for inpatient surgery as well as outpatient services and diagnostics and oncology services."

Even though *new* hospitals face less competition than *continuing* hospitals, *new* hospitals have lower Medicare combined margins, total profit margins, and operating margins, which could be the result of new hospitals being smaller and attending sicker patients than *continuing* hospitals.

4.2.6 County and State Characteristics for Continuing and New RCHD Hospitals

Prior to joining the demonstration, *continuing* versus *new* participants had some significant differences in state and county characteristics. These differences are unlikely to result in dissimilar hospital Medicare margins during the demonstration. However, it is possible that the observed differences may generate distinctive hospital operating and total margins.

In particular, in reviewing averages for specific county and state characteristics for *continuing* versus *new* participant hospitals, we found some notable differences. Relative to *continuing* participants, *new* participants were more likely to be located in counties:

- where more of the population was older adults (17 percent vs. 14 percent over 65 years old),
- with a slightly more educated population (41 percent vs. 44 percent with a high school education or less),
- with a slightly lower unemployment rate (4.8 percent vs. 6.4 percent unemployed), and
- with higher median home values ($236,000 vs. $142,000).

New participants were less likely than *continuing* participants to be located in a state that expanded Medicaid under the ACA since 2014 (42 percent vs. 71 percent).

During interviews, four *new* RCHD participant hospitals mentioned that they struggle less with population base, but their staff struggle more with finding affordable housing and childcare in the vicinity. In contrast, many *continuing RCHD hospitals* reported being in areas with sluggish economies. Two *continuing* RCHD hospitals reported that declines in coal mining have negatively impacted their economies. Another *continuing* hospital noted that their market area has experienced a shift away from professional to more "blue collar" jobs. Other economies primarily rely on agriculture.

Exhibit 4.1: Hospitals' Attributes During Pre-Demonstration Baseline Period, by Continuing and New RCHD Hospitals

Attribute	Continuing RCHD Hospitals *Average (SD)*	New RCHD Hospitals *Average (SD)*	Difference
Margins & Financial Indicators			
Medicare Inpatient Margin	-20.55% (14.17%)	-19.41% (20.97%)	-1.14
Medicare Combined (Inpatient & Outpatient) Margin	-20.22% (10.56%)	-25.78% (18.68%)	5.56
Total Profit Margin	4.36% (10.58%)	-3.20% (22.48%)	7.56*
Operating Margin	-0.31% (9.64%)	-7.80% (26.76%)	7.49
Days Cash on Hand	119 (147)	128 (132)	-9
Long-Term Debt to Capitalization Ratio	20.55% (17.38%)	-4.33% (111.50%)	24.88
Ratio of Salaries to Net Patient Revenue	44.99% (8.26%)	43.08% (11.25%)	1.91
FTEs per Adjusted Occupied Beds	7.36 (2.28)	8.24 (2.76)	-0.88
Average Age of Physical Plant (years)	16 (17)	19 (17)	-3
Medicare Share of Inpatient Discharges	44.37% (11.44%)	43.44% (19.93%)	0.93
Medicare Share of Inpatient Days	58.04% (12.14%)	54.44% (19.60%)	3.60
Medicare Swing-Bed Revenue Share	3.90% (4.11%)	9.46% (26.61%)	-5.56
Hospital Characteristics			
Member of a Health System	80.39% (40.10%)	66.67% (47.81%)	13.73
Non-Profit	35.29% (48.26%)	75.00% (43.92%)	-39.71***
For-Profit	11.76% (32.54%)	0.00% (0.00%)	11.76**

Attribute	Continuing RCHD Hospitals *Average (SD)*	New RCHD Hospitals *Average (SD)*	Difference
Public	52.94% (50.41%)	25.00% (43.92%)	27.94***
Average Daily Census (ADC), Acute Care Beds	16.10 (5.43)	17.89 (11.46)	-1.80
ADC, Swing Beds	1.62 (1.48)	2.40 (4.73)	-0.78
Total Acute Care Beds	41.53 (7.61)	37.03 (11.38)	4.50**
Total Medicare Discharges	800 (326)	847 (580)	-47
Total Medicaid Discharges	326 (185)	280 (216)	45
Total Discharges	1,856 (692)	1,989 (1,150)	-134
Case-Mix Index	1.13 (0.12)	1.44 (0.24)	-0.31***
Disproportionate Share Hospital Year Observations	74.51% (44.01%)	63.89% (48.71%)	10.62
Market Area Characteristics			
Number of Hospitals within Market Area	5 (3)	4 (3)	1
Miles to Nearest Acute Care Hospital	27 (21)	17 (9)	10***
CAHs within Market Area	3 (2)	2 (2)	1**
Isolated Market Area	5.88% (23.76%)	16.67% (37.80%)	-10.78
Frontier Market Area	23.53% (42.84%)	50.00% (50.71%)	-26.47**
Competitive Market Area	70.59% (46.02%)	33.33% (47.81%)	37.25***

Attribute	Continuing RCHD Hospitals *Average (SD)*	New RCHD Hospitals *Average (SD)*	Difference
County/State Characteristics			
Population	33,977 (25,062)	39,598 (21,187)	-5,621
Population per Square Mile	38 (33)	36 (30)	2
Percentage over 65	14% (5%)	17% (3%)	-3***
Percentage with High School Education or Less	44% (9%)	41% (9%)	4*
Percentage White Non-Hispanic	82% (21%)	80% (11%)	2%
Percentage of Residents below 150% of Poverty Line	22% (8%)	23% (6%)	-1
Percentage Unemployed	6.4% (2%)	4.8% (2%)	1.6***
Median Household Income (in tens of $)	5,605 (1,351)	5,407 (1,431)	198
Median Home Value (in thousands of $)	142 (81)	236 (217)	-94**
Medicaid Expansion States	71% (46%)	42% (50%)	29***

Notes: *** p-value < 0.01; ** 0.01 ≤ p-value < 0.05; * 0.05 ≤ p-value < 0.10.
N = 29 RCHD hospitals (17 continuing and 12 new hospitals) and N = 87 RCHD hospital-year observations (51 continuing and 36 new hospital-year observations) for all variables. The pre-demonstration baseline years for continuing RCHD hospitals are pooled from FY 2002 to FY 2004 (for hospitals joining the RCHD between FY 2005 and FY 2010) and FY 2008 to FY 2010 (for hospitals joining the RCHD between FY 2011 and FY 2015). The pre-demonstration baseline years for new RCHD hospitals are from FY 2015 to FY 2017 (for hospitals joining the RCHD after FY 2017).

4.3 Characteristics of Participant vs. Non-Participant Hospitals Prior to Joining the RCHD

This section presents descriptive statistics showing the financial condition and hospital operational and contextual characteristics of RCHD hospitals (participants) relative to eligible non-participant hospitals during the pre-demonstration baseline years. For participant hospitals, results are presented separately for *continuing*, *new*, and all RCHD hospitals. Section 3.1.2.1 describes the approach we used to process this information. The quantitative findings are supplemented by qualitative findings that often highlight additional nuances. Appendix Exhibit D-2 provides a more detailed breakdown of the distribution for each characteristic in this section at the 10th percentile, median, and 90th percentile for participants (*new* and *continuing* separately and combined) and non-participants.

4.3.1 Hospitals' Financial Condition

This section compares the financial condition of *continuing* and *new* RCHD participant hospitals prior to joining the demonstration to the financial condition of eligible non-participant hospitals. Exhibit 4.2 shows financial indicators listed in the categories first introduced in Exhibit 3.1: hospital margins and non-margin indicators, including other financial indicators and Medicare revenue indicators.

Comparing hospital margins, other financial indicators, and Medicare revenue indicators during the pre-demonstration baseline between RCHD hospitals and eligible non-participants, RCHD hospitals (both *new* and *continuing*) had lower Medicare inpatient margins, higher liquidity and staffing efficiency, and older capital infrastructure.

4.3.1.1 Hospital Margins

Exhibit 4.2 shows that the demonstration attracted hospitals that had substantially lower Medicare margins (i.e., both Medicare inpatient and combined margins) and varied overall financial conditions relative to non-participant hospitals. Low Medicare margins prior to joining the demonstration for both *new* and *continuing* hospitals were a motivating factor to join the demonstration. Prior to joining the demonstration, *continuing* RCHD hospitals were in an overall stronger financial position (higher total profit and operational margins) compared to eligible non-participants. This is a result that is consistent with the findings of the 2018 *Report to Congress* and *Interim Report One*, both of which use different RCHD hospitals for their analysis. However, in contrast, prior to joining the demonstration, *new* RCHD hospitals were in a similar overall financial position to eligible non-participants.

A. *Continuing RCHD Hospitals vs. Eligible Non-Participants*

Compared to eligible non-participants, *continuing* hospitals had significantly lower Medicare margins prior to joining the demonstration. *Continuing* hospitals had lower

Medicare inpatient margins (-20.6 percent vs. 1.2 percent) and lower Medicare combined margins (-20.2 percent vs. -3.5 percent). In contrast, *continuing* hospitals had higher total profit margins (4.4 percent vs. -0.02 percent) and operating margins (-0.3 percent vs. -5.7 percent).

B. *New RCHD Hospitals vs. Eligible Non-Participants*
Compared to eligible non-participants, *new* hospitals had significantly lower Medicare inpatient margins (-19.4 percent vs. -4.3 percent) and Medicare combined margins (-25.8 percent vs. -12.5 percent) prior to joining the demonstration. However, *new* hospitals had similar total profit margins (3.2 percent vs. -1.3 percent) and operational margins (-7.8 percent vs. -9.7 percent).

C. *All RCHD Hospitals vs. Eligible Non-Participants*
Compared to eligible non-participant hospitals, *all RCHD participant hospitals* as a group *(continuing and new)* had significantly lower Medicare inpatient margins (-20.1 percent vs. -2.0 percent) and Medicare combined margins (-22.5 percent vs. -5.7 percent). These participant hospitals also had similar total profit margins (1.2 percent vs. -0.3 percent) and operating margins (-3.4 percent vs. -6.7 percent).

4.3.1.2 Other Financial Outcomes

While other financial outcomes such as days cash on hand (DCOH) are distal measures of the demonstration's impact, we compare their differences between RCHD and eligible non-participating hospitals prior to the Demonstration as these measures may be used as a point of sensitivity analyses for indirect effects of the demonstration.

As evident from the results shown in Exhibit 4.2, RCHD participants tended to be in an overall stronger financial position than non-participating hospitals (even though their Medicare inpatient margins were lower than non-participant hospitals). Both *continuing* and *new* RCHD participant hospitals exhibited higher liquidity (measured by DCOH) and higher staffing efficiency (measured by the ratio of salaries to net patient revenue) when compared to non-participant hospitals. One exception is that RCHD participants tended to have older assets (measured by age of plant) relative to eligible non-participants.

A. *Continuing RCHD Hospitals vs. Eligible Non-Participants*
Compared to eligible non-participants, *continuing* hospitals had significantly more DCOH (119 days vs. 84 days), significantly lower long-term debt to capitalization ratios (20.6 percent vs. 36.7 percent), and lower ratios of salaries to net patient revenue (45.0 percent vs. 47.3 percent). *Continuing* hospitals had similar FTEs per adjusted occupied beds (7.4 vs. 6.8), and slightly higher average age of plant (16 vs. 12 years, but both differences were not statistically significant).

B. *New RCHD Hospitals vs. Eligible Non-Participants*

Relative to eligible non-participant hospitals, *new* hospitals had significantly more DCOH (128 days vs. 72 days). However, on average, *new* hospitals had lower long-term debt to capitalization ratios (-4.3 percent vs. 32.6 percent). Of note, the negative average long-term debt to capitalization ratio is driven by one *new* RCHD hospital with negative net assets during the three-year period prior to joining the demonstration. While *new* hospitals had slightly lower ratios of salaries to net patient revenue (43.1 percent vs. 45.5 percent), they had a slightly higher FTE per adjusted occupied bed (8.2 vs. 7.1, but this difference is not statistically significant). *New* hospitals had a significantly higher average age of plant (19 vs. 13 years).

C. *All RCHD Hospitals vs. Eligible Non-Participants*

When comparing *all (continuing and new) RCHD participant hospitals* to eligible non-participant hospitals, we found that RCHD hospitals had more DCOH (123 days vs. 81 days), lower long-term debt to capitalization ratios (10.3 percent vs. 35.7 percent), slightly lower ratios of salaries to net patient revenues (44.2 percent vs. 46.9 percent), and slightly higher FTEs per occupied bed (7.7 vs. 6.9). However, all RCHD hospitals had higher average age of physical plant (17 years vs. 12 years).

4.3.1.3 Medicare Revenue Indicators

Since the demonstration's focus is on providing financial viability to serve Medicare beneficiaries, hospitals struggling with low Medicare inpatient volume and revenue may have more of an incentive to join the demonstration. Therefore, we investigate if there are differences in the Medicare revenue indicators between RCHD and eligible, but non-participating hospitals prior to joining the demonstration.

Prior to joining the demonstration[55], *continuing* RCHD hospitals had lower Medicare revenue indicators (measured by Medicare share of inpatient discharges and Medicare share of inpatient days) relative to non-participants. In contrast, *new* RCHD hospitals had similar Medicare revenue indicators relative to non-participants.

A. *Continuing RCHD Hospitals vs. Eligible Non-Participants*

Compared to eligible non-participant hospitals, *continuing* hospitals had lower Medicare share of inpatient discharges (44.4 percent vs. 51.0 percent) and lower Medicare share

[55] For *continuing* RCHD hospitals that joined demonstration during the original MMA authorization, the pre-demonstration years used are 2002-2004. For continuing RCHD hospitals that joined the demonstration during the ACA extension, the pre-demonstration years used are 2008-2010. For new RCHD hospitals joining the demonstration during the CCA extension, the pre-demonstration years used are 2015-2017.

of inpatient days (58.0 percent vs. 61.9 percent). *Continuing* hospitals, on average, had similar Medicare swing-bed revenue share (3.9 percent vs. 3.9 percent).

B. *New RCHD Hospitals vs. Eligible Non-Participants*

Compared to eligible non-participants, *new* hospitals had similar Medicare share of inpatient discharges (43.4 percent vs. 45.2 percent) and Medicare share of inpatient days (54.4 percent vs. 52.9 percent). *New* hospitals had higher Medicare swing-bed revenue share (9.5 percent vs. 2.4 percent, but the difference is not statistically significant).

C. *All RCHD Hospitals vs. Eligible Non-Participants*

Compared to eligible non-participant hospitals, all RCHD hospitals (*continuing* and *new*) had slightly lower Medicare share of inpatient discharges (44 percent vs. 50 percent, and statistically significant) and Medicare share of inpatient days (57 percent vs. 60 percent, also statistically significant). RCHD hospitals had slightly higher Medicare swing-bed revenue share (6.2 percent vs. 3.5 percent, but the difference is not statistically significant).

Exhibit 4.2: Mean Hospital Margins and Other Financial Outcomes During Pre-Demonstration Baseline Period, RCHD Hospitals Compared to Eligible Non-Participant Hospitals

Hospital Type	Continuing Hospitals			New Hospitals			Full Sample		
Outcomes	Continuing RCHD	Eligible Non-Participants	Difference	New RCHD	Eligible Non-Participants	Difference	RCHD (Continuing and New)	Eligible Non-Participants	Difference
Hospital Margins									
Medicare Inpatient Margin	-20.55% (14.17%)	-1.23% (24.76%)	-19.32%***	-19.41% (20.97%)	-4.27% (27.95%)	-15.14%***	-20.08% (17.20%)	-1.95% (25.58%)	-18.12%***
Medicare Combined (Inpatient and Outpatient) Margin	-20.22% (10.56%)	-3.54% (20.56%)	-16.68%***	-25.78% (18.68%)	-12.51% (25.14%)	-13.28%***	-22.52% (14.64%)	-5.68% (22.07%)	-16.84%***
Total Profit Margin	4.36% (10.58%)	-0.02% (12.85%)	4.38%***	-3.20% (22.48%)	-1.29% (18.59%)	-1.91%	1.23% (16.88%)	-0.32% (14.43%)	1.55%
Operating Margin	-0.31% (9.64%)	-5.70% (18.50%)	5.40%***	-7.80% (26.76%)	-9.72% (24.99%)	1.92%	-3.41% (18.96%)	-6.66% (20.30%)	3.25%
Other Financial Indicators									
Days Cash on Hand	119 (147)	84 (353)	36	128 (132)	72 (114)	56**	123 (140)	81 (313)	42***
Long-Term Debt to Capitalization Ratio	20.55% (17.38%)	36.65% (263.99%)	-16.10%***	-4.33% (111.50%)	32.63% (263.19%)	-36.96%*	10.26% (73.40%)	35.69% (263.78%)	-25.44%***
Ratio of Salaries to Net Patient Revenue	44.99% (8.26%)	47.34% (38.52%)	-2.35%*	43.08% (11.25%)	45.41% (19.03%)	-2.33%	44.20% (9.60%)	46.88% (34.88%)	-2.68%**

Hospital Type	Continuing Hospitals			New Hospitals			Full Sample		
Outcomes	Continuing RCHD	Eligible Non-Participants	Difference	New RCHD	Eligible Non-Participants	Difference	RCHD (Continuing and New)	Eligible Non-Participants	Difference
FTEs per Adjusted Occupied Beds	7.36 (2.28)	6.81 (6.08)	0.55	8.24 (2.76)	7.06 (6.01)	1.18**	7.72 (2.51)	6.87 (6.06)	0.86***
Average Age of Physical Plant	16 (17)	12 (13)	4	19 (17)	13 (11)	6*	17 (17)	12 (13)	5**
Medicare Share of Inpatient Discharges	44.37% (11.44%)	51.00% (14.19%)	-6.62%***	43.44% (19.93%)	45.16% (13.14%)	-1.72%	43.99% (15.43%)	49.61% (14.17%)	-5.62%**
Medicare Share of Inpatient Days	58.04% (12.14%)	61.92% (14.71%)	-3.88%**	54.44% (19.60%)	52.91% (14.01%)	1.54%	56.55% (15.66%)	59.77% (15.04%)	-3.22%*
Medicare Swing-Bed Revenue Share	3.90% (4.11%)	3.89% (5.76%)	0.02%	9.46% (26.61%)	2.41% (5.05%)	7.05%	6.20% (17.48%)	3.53% (5.63%)	2.67%

Notes: Standard deviations are in parentheses. *** p-value < 0.01; ** 0.01 ≤ p-value < 0.05; * 0.05 ≤ p-value < 0.10. N = 29 RCHD hospitals (17 continuing and 12 new) or 87 hospital-years and N = 1,081 non-participant hospitals (989 during pooled pre-demonstration baseline years FYs 2002–2004 and FYs 2008–2010 and 384 during pre-demonstration baseline years FYs 2015–2017) or 4,392 hospital-years r. The pre-demonstration years for continuing RCHD and eligible non-participant hospitals are pooled from FYs 2002–2004 and FYs 2008–2010. The pre-demonstration years for new RCHD and eligible non-participant hospitals is from FYs 2015–2017. In the full sample, pre-demonstration years are pooled from FYs 2002–2004, FYs 2008–2010, and FYs 2015–2017.

4.3.2 Hospital Operational and Contextual Characteristics

In this section, we examine the operational and contextual characteristics of RCHD participant and non-participant hospitals—at the hospital, market area, and county/state level—prior to hospitals joining the demonstration. We note characteristics that are overrepresented among participants because they may be important inputs for the matching algorithm in TPA-3. We present results in Exhibit 4.3.

4.3.2.1 Hospital Operational Characteristics

The hospital operational characteristics we analyzed in this section and present in Exhibit 4.3 include organizational structure, patient volumes, inpatient discharges, and case-mix severity. Within organizational structure, we analyzed health system membership and the distribution of hospitals' ownership across three mutually exclusive categories—non-profit, for-profit, or public.

4.3.2.1.1 Organizational Structure

As shown in Exhibit 4.3, both *continuing* and *new* RCHD participant hospitals were significantly more likely than eligible non-participant hospitals to belong to health systems.

The composition of hospital ownership (non-profit, for-profit, and public) among *continuing* RCHD participant hospitals was similar to eligible non-participants. However, when comparing the composition of hospital ownership among *new* RCHD participant hospitals to eligible non-participants, more *new* hospitals were non-profit hospitals, while none of the *new* hospitals were for-profits.

A. *Continuing RCHD Hospitals vs. Eligible Non-Participants*
   Compared to eligible non-participant hospitals, *continuing* hospitals were more likely to be members of a health system (80.4 percent vs. 67.2 percent). When comparing hospital ownership, we found similar shares of *continuing* and eligible non-participant hospitals that were non-profit (35.3 percent vs. 42.9 percent), for-profit (11.8 percent vs. 15.3 percent), and public (52.9 percent vs. 41.8 percent).

B. *New RCHD Hospitals vs. Eligible Non-Participants*
   Compared to eligible non-participants, *new* hospitals, on average, were more likely to be members of a health system (66.7 percent vs. 53.7 percent), but the difference was not statistically significant. Comparing hospital ownership, a significantly larger share of the *new* hospitals was non-profit (75.0 percent vs. 47.4 percent), and none of the *new* hospitals were for-profit (0.0 percent vs. 18.1 percent). A similar share of *new* hospitals was public (25.0 percent vs. 34.6 percent).

C. *All RCHD Hospitals vs. Eligible Non-Participants*

Compared to eligible non-participant hospitals, all RCHD participant hospitals combined had a larger share of hospitals that were members of a health system (74.7 percent vs. 64.0 percent). Comparing the composition of hospital ownership, a significantly smaller share of RCHD hospitals was for-profit hospitals (6.9 percent vs. 16.0 percent), a slightly larger share of RCHD hospitals was non-profit hospitals (51.7 percent vs. 43.9 percent), and a similar share of RCHD hospitals were public hospitals (41.4 percent vs. 40.1 percent).

4.3.2.1.2 Patient Volumes, Discharges, and Patient Profile

As shown in Exhibit 4.3, prior to joining the demonstration, both *continuing* and *new* RCHD participant hospitals had higher patient volumes (measured by average daily censuses [ADCs] for acute care and Medicare, Medicaid, and total patient discharges).

Continuing and *new* RCHD participant hospitals also had more medically complex patients (measured by a higher case-mix index). In contrast, *new* hospitals had a higher volume of swing beds (measured by ADCs) and were less likely to be DSHs. A hospital's DSH designation can vary over the years.

A. *Continuing RCHD Hospitals vs. Eligible Non-Participants*

Compared to eligible non-participant hospitals, *continuing* RCHD hospitals had significantly higher ADCs for acute care beds (16 patients per day vs. 13 patients per day), total acute care beds (42 beds vs. 35 beds), total Medicare discharges (800 patients vs. 677 patients), and total Medicaid discharges (326 patients vs. 236 patients). In addition, *continuing* hospitals had a significantly higher case-mix index (1.13 vs. 1.05). *Continuing* hospitals had similar ADCs for swing beds (1.6 patients per day vs. 1.4 patients per day) and were less likely to be classified as DSHs (74.5 percent vs. 77.2 percent).

B. *New RCHD Hospitals vs. Eligible Non-Participants*

Relative to eligible non-participants, *new* RCHD hospitals had significantly greater ADCs for acute care beds (18 patients per day vs. 11 patients per day), ADCs for swing beds (2 patients per day vs. 1 patient per day), total Medicare discharges (800 patients vs. 677 patients), and total Medicaid discharges (326 patients vs. 236 patients). In addition, *new* hospitals had a significantly higher case-mix index (1.4 vs. 1.2). *New* hospitals had significantly fewer DSH-years (63.9 percent vs. 86.1 percent). *New* hospitals had similar total acute care beds (37 vs. 36).

C. *All RCHD Hospitals vs. Eligible Non-Participants*

Compared to eligible non-participants, all RCHD participant hospitals, as a group, had significantly more ADCs for acute care beds (17 patients per day vs. 13 patients per day), ADCs for swing beds (2 patients per day vs. 1 patient per day), total acute care beds (40 beds vs. 35 beds), total Medicare discharges (820 patients vs. 640 patients), total Medicaid discharges (307 patients vs. 214 patients), and total discharges (1,911 patients vs. 1,366 patients). In addition, RCHD hospitals had a significantly higher case-mix index (1.3 vs. 1.1). RCHD participants had significantly fewer DSH-years (70.1 percent vs. 79.3 percent).

4.3.2.2 Market Area Characteristics

We examined the distribution of participants across three mutually exclusive market typologies—Competitive markets, Frontier markets, and Isolated markets. Competitive markets are areas where three or more acute care hospitals operate. Hospitals in Frontier and Isolated markets have more market power and have fewer than three hospitals in their market area. Frontier market areas differ from Isolated market areas in that the former have stable/growing populations whereas the latter have declining populations. We defined the market area of a hospital as the 35-mile radius around the hospital.

As shown in Exhibit 4.3, in the period prior to joining the demonstration more RCHD participant hospitals (*continuing* and *new*) were in market areas that were Frontier markets relative to eligible non-participant hospitals. In contrast, fewer RCHD hospitals were in market areas that were Competitive markets relative to eligible non-participant hospitals. Compared to *new* RCHD hospitals, *continuing* hospitals were farther away from the nearest acute care hospital and had more CAHs within the market area when compared to eligible non-participants.

A. *Continuing RCHD Hospitals vs. Eligible Non-Participants*

Compared to eligible non-participants, *continuing* hospitals had fewer hospitals within the market area (5 hospitals vs. 6 hospitals) and were farther away from the nearest acute care hospital (27 miles vs. 19 miles). However, *continuing* hospitals had more CAHs within their market area (3 hospitals vs. 1 hospital).

A substantially higher share of *continuing* hospitals were in market areas that were Frontier markets (23.5 percent vs. 10.7 percent) while a smaller share of *continuing* hospitals were in market areas that were Competitive markets (70.6 percent vs. 81.9 percent). Similar shares of *continuing* hospitals and eligible non-participant hospitals were in market areas that were Isolated markets (5.9 percent vs. 7.4 percent).

B. *New RCHD Hospitals vs. Eligible Non-Participants*

Compared to eligible non-participants, *new* hospitals had fewer hospitals within their market area (4 hospitals vs. 6 hospitals), but they were located a similar distance from the nearest acute care hospital (17 miles vs. 19 miles). *New* hospitals and eligible non-participants also had similar numbers of CAHs within their market areas (2 hospitals for both groups).

A substantially higher share of *new* hospitals were in market areas that were Frontier markets (50.0 percent vs. 9.3 percent) while a smaller share of *new* hospitals were in market areas that were Competitive markets (33.3 percent vs. 80.9 percent). Similar shares of *new* hospitals and eligible non-participant hospitals were in market areas that were Isolated markets (16.7 percent vs. 9.8 percent).

C. *All RCHD Hospitals vs. Eligible Non-Participants*

Compared to eligible non-participants, all (*continuing* and *new*) RCHD participant hospitals had fewer hospitals within their market area (4 hospitals vs. 6 hospitals) and were farther away from the nearest acute care hospital (23 miles vs. 19 miles). RCHD hospitals had more CAHs within the market area (2 hospitals vs. 1 hospital).

Comparing market area typologies prior to joining the demonstration for all RCHD participant hospitals to eligible non-participants, we found that a higher share of RCHD hospitals were in market areas that were Frontier markets (34.5 percent vs. 10.4 percent) while a smaller share of RCHD hospitals was in market areas that were Competitive markets (55.2 percent vs. 81.7 percent). Similar shares of RCHD hospitals and eligible non-participant hospitals were in market areas that were Isolated markets (10.3 percent vs. 8.0 percent).

4.3.2.3 County/State Characteristics

This section describes pre-demonstration county and state characteristics of participating hospitals compared to eligible non-participants with the goal of describing the local and state context that could affect the demand for hospitals' services.

Prior to joining the demonstration, both *continuing* and *new* RCHD participant hospitals were located in less densely populated counties (county population and population per square mile) as compared to non-participants.

The sociodemographic composition of a hospital's market is related to its patient composition and the availability of local resources such as Meals on Wheels or Area Agencies on Aging. Hospitals in areas with higher median incomes and lower poverty rates may be more likely to attract patients with more generous insurance coverage, providing higher total profit margins. Comparing RCHD participant hospitals to eligible non-participants, we found that both *continuing* and *new* RCHD participant hospitals were located in counties with residents who were (1) younger (measured by percentage over 65 years), (2) more educated (measured by percentage with a high school education or less), and (3) more affluent (measured by percentage unemployed, percentage of residents below 150 percent of the poverty line, and median household income).

More *continuing* hospitals were in states that expanded Medicaid under the ACA since 2014 as compared to eligible non-participants. In contrast, similar shares of *new* hospitals and eligible non-participant hospitals were in states that expanded Medicaid under the ACA since 2014. Hospitals in states expanding Medicaid may have a higher case-mix index due to more complex patient cases from a larger Medicaid eligible population.

A. *Continuing RCHD Hospitals vs. Eligible Non-Participants*

   Prior to joining the demonstration, compared to eligible non-participants, *continuing* hospitals were in counties that were less populated (33,997 vs. 52,202), had a lower population per square mile (38.2 vs. 60.6), had a smaller elderly population (14 percent vs. 16 percent over 65 years old), and had a larger adult population with more than a high school education (44 percent vs. 59 percent with a high school education or less). *Continuing* hospitals were in counties that had a slightly smaller unemployed population (6 percent vs. 7 percent unemployed), a smaller proportion of residents in poverty (22 percent vs. 29 percent of residents below 150 percent of the poverty line), and higher median household income ($56,060 vs. $47,400). Although the state-level Medicaid expansions under the ACA were not passed prior to the *continuing* hospitals joining the demonstration, a larger share of *continuing* hospitals were located in states that subsequently expanded Medicaid under the ACA since 2014 (71 percent vs. 48 percent).

B. *New RCHD Hospitals vs. Eligible Non-Participants*

   Prior to joining the demonstration, compared to eligible non-participants, *new* hospitals were in counties that were slightly less populated (39,598 vs. 32,492); had a lower population per square mile (35.9 vs. 47.7); had a slightly smaller elderly population (17 percent vs. 18 percent over 65 years old); and had a larger adult population with more than a high school education (41 percent vs. 53 percent with a high school education or less). *New* hospitals were in counties that had a slightly smaller unemployed population (5 percent vs. 7 percent), a smaller number of residents in poverty (23 percent vs. 30

percent of residents below 150 percent of the poverty line), and higher median household incomes ($54,070 vs. $45,380). Similar shares of *new* and eligible non-participant hospitals were in states that expanded Medicaid under the ACA since 2014 (42 percent vs. 44 percent).

C. *All RCHD Hospitals vs. Eligible Non-Participants*

Prior to joining the demonstration, compared to eligible non-participants, all RCHD hospitals were in counties that were slightly less populated (36,303 vs. 47,503); had lower population levels per square mile (37.3 vs. 57.6); had a slightly smaller elderly population (15 percent vs. 16 percent over 65 years old), and had a larger adult population with more than a high school education (43 percent vs. 57 percent with a high school education or less). RCHD hospitals were in counties that had a slightly smaller unemployed population (6 percent vs. 7 percent), a smaller number of residents in poverty (23 percent vs. 29 percent of residents below 150 percent of the poverty line), and higher median household incomes ($55,230 vs. $46,910). A larger share of RCHD hospitals was in states that expanded Medicaid under the ACA since 2014 (59 percent vs. 47 percent).

Exhibit 4.3: Mean Hospital Attributes During Pre-Demonstration Baseline, RCHD Hospitals Compared to Eligible Non-Participant Hospitals

Hospital Type	Continuing Hospitals			New Hospitals			Full Sample		
Attribute	Continuing RCHD	Eligible Non-Participants	Difference	New RCHD	Eligible Non-Participants	Difference	RCHD (Continuing and New)	Eligible Non-Participants	Difference
Hospital Characteristics									
Member of a Health System	80.39% (40.10%)	67.20% (46.95%)	13.19%**	66.67% (47.81%)	53.68% (49.89%)	12.99%	74.71% (43.72%)	63.98% (48.01%)	10.73%**
Non-Profit	35.29% (48.26%)	42.87% (49.50%)	-7.58%	75.00% (43.92%)	47.37% (49.95%)	27.63%***	51.72% (50.26%)	43.94% (49.64%)	7.78%
For-Profit	11.76% (32.54%)	15.34% (36.04%)	-3.57%	0.00% (0.00%)	18.05% (38.48%)	-18.05%***	6.90% (25.49%)	15.98% (36.65%)	-9.09%***
Public	52.94% (50.41%)	41.79% (49.33%)	11.15%	25.00% (43.92%)	34.57% (47.58%)	-9.57%	41.38% (49.54%)	40.07% (49.01%)	1.31%
ADC, Acute Care Beds	16 (5)	13 (9)	3***	18 (11)	11 (9)	7***	17 (8)	13 (9)	4***
ADC, Swing Beds	2 (1)	1 (3)	0[a]	2 (5)	1 (2)	2**	2 (3)	1 (3)	1*
Total Acute Care Beds	42 (8)	35 (10)	7***	37 (11)	36 (10)	1	40 (10)	35 (10)	5***
Total Medicare Discharges	800 (326)	677 (372)	123**	847 (580)	521 (326)	326***	820 (446)	640 (368)	179***
Total Medicaid Discharges	326 (185)	236 (234)	90***	280 (216)	145 (189)	135***	307 (199)	214 (227)	93***
Total Discharges	1,856 (692)	1,404 (802)	451***	1,989 (1,150)	1,243 (811)	746***	1,911 (906)	1,366 (807)	545***

Hospital Type	Continuing Hospitals			New Hospitals			Full Sample		
Attribute	Continuing RCHD	Eligible Non-Participants	Difference	New RCHD	Eligible Non-Participants	Difference	RCHD (Continuing and New)	Eligible Non-Participants	Difference
Case-Mix Index	1.13 (0.12)	1.05 (0.15)	0.08***	1.44 (0.24)	1.17 (0.21)	0.27***	1.26 (0.23)	1.08 (0.17)	0.18***
DSH-Years	74.51% (44.01%)	77.22% (41.95%)	-2.71%	63.89% (48.71%)	86.06% (34.66%)	-22.17%**	70.11% (46.04%)	79.33% (40.50%)	-9.21%*
Market Area Characteristics									
Number of Hospitals within Market Area	5 (3)	6 (5)	-1***	4 (3)	6 (4)	-2***	4 (3)	6 (5)	-2***
Miles to Nearest Acute Care Hospital	27 (21)	19 (16)	8***	17 (9)	19 (9)	-1	23 (17)	19 (15)	4**
CAHs within Market Area	3 (2)	1 (1)	2***	2 (2)	2 (2)	0	2 (2)	1 (2)	1***
Isolated Market Area	5.88% (23.76%)	7.38% (26.16%)	-1.50%	16.67% (37.80%)	9.84% (29.80%)	6.83%	10.34% (30.63%)	7.97% (27.08%)	2.38%
Frontier Market Area	23.53% (42.84%)	10.70% (30.92%)	12.83%**	50.00% (50.71%)	9.26% (29.01%)	40.74%***	34.48% (47.81%)	10.36% (30.48%)	24.12%***
Competitive Market Area	70.59% (46.02%	81.91% (38.50%)	-11.33%*	33.33% (47.81%)	80.90% (39.33%)	-47.56%***	55.17% (50.02%)	81.67% (38.69%)	-26.50%***
County/State Characteristics									
Population	33,977 (25,062)	52,202 (251,592)	-18,224***	39,598 (21,187)	32,492 (22,385)	7,106*	36,303 (23,571)	47,503 (219,989)	-11,200***
Population per Square Mile	38.2 (32.7)	60.6 (200.2)	-22.4***	35.9 (30.0)	47.7 (40.1)	-11.8**	37.3 (31.4)	57.6 (175.9)	-20.3***

Hospital Type	Continuing Hospitals			New Hospitals			Full Sample		
Attribute	Continuing RCHD	Eligible Non-Participants	Difference	New RCHD	Eligible Non-Participants	Difference	RCHD (Continuing and New)	Eligible Non-Participants	Difference
Percentage over 65	14% (5%)	16% (4%)	-2%**	17% (3%)	18% (3%)	-1%**	15% (4%)	16% (4%)	-1%**
Percentage with High School Education or Less	44% (9%)	59% (10%)	-15%***	41% (9%)	53% (9%)	-13%***	43% (10%)	57% (10%)	-15***
Percentage White Non-Hispanic	82% (21%)	79% (20%)	4%	80% (11%)	75% (21%)	5%***	81% (17%)	78% (21%)	4%*
Percentage of Residents below 150% of Poverty Line	22% (8%)	29% (9%)	-6%***	23% (6%)	30% (8%)	-7%***	23% (7%)	29% (9%)	-6%***
Percentage Unemployed	6% (2%)	7% (3%)	-1%**	5% (2%)	7% (3%)	-2%***	6% (2%)	7% (3%)	-1%***
Median Household Income (in tens)	5,605 (1,351)	4,740 (965)	865***	5,407 (1,431)	4,538 (1,074)	869***	5,523 (1,380)	4,691 (996)	831***
Median Home Value (in thousands)	142 (81)	382 (17,289)	-241	236 (217)	2,024 (43,680)	-1,788	181 (159)	774 (26,127)	-593
Medicaid Expansion States	71% (46%)	48% (50%)	22%***	42% (50%)	44% (50%)	-2%	59% (50%)	47% (50%)	11%**

Notes: Standard deviations are in parentheses. *** p-value < 0.01; ** 0.01 ≤ p-value < 0.05; * 0.05 ≤ p-value < 0.10. N = 29 RCHD hospitals (17 continuing and 12 new) or 87 hospital-years and N = 1,081 non-participant hospitals (989 during pooled pre-demonstration baseline years FYs 2002–2004 and FYs 2008–2010 and 384 during pre-demonstration baseline years FYs 2015–2017) or 4,392 hospital-years r. The pre-demonstration years for continuing RCHD and eligible non-participant hospitals are pooled from FYs 2002–2004 and FYs 2008–2010. The pre-demonstration years for new RCHD and eligible non-participant hospitals are from FYs 2015–2017. In the full sample, pre-demonstration years are pooled from FYs 2002–2004, FYs 2008–2010, and FYs 2015–2017. [a] The difference is 0.20 that when rounded is 0.

5.0 Topic Area 2: Additional Payments Received from Participation in the RCHD

5.1 Key Findings

Participating hospitals received RCHD payments that were, in general, much higher than they would have received under IPPS.[56] This was true for both *new* and *continuing* RCHD hospitals, although there was significant variation across hospitals and years. The **variation in additional RCHD payments across hospitals** highlights the fact that RCHD hospitals are not monolithic as some hospitals may obtain higher additional payments compared to others. The **variation in additional RCHD payments over time** could be explained by the change in the number of RCHD hospitals and the resulting compositional change over the years analyzed. The differences in the RCHD payment methodology used to calculate payments during hospitals' base or rebase years (described in Section 5.2) can affect both the variation in RCHD payments across hospitals and the variation in RCHD payments over time.

Other noteworthy findings from Topic Area 2 include the following:

- *Continuing* RCHD hospitals received annual payments for inpatient services[57] that were, on average, $2.6 million higher than what participant hospitals would have received under Medicare IPPS.
  - This amount represents, on average, an annual increase of 41 percent over what *continuing* RCHD hospitals would have received if they had not participated in the demonstration—that is, under Medicare IPPS.
- *New* RCHD hospitals received annual payments for inpatient services that were, on average, $2.15 million higher than what they would have received under IPPS.
  - This represents, on average, an annual increase of 50 percent over what *new* hospitals would have received if they had not participated in the demonstration.
- The magnitude of the additional RCHD payments across all RCHD hospitals varied significantly, with the standard deviation of additional RCHD payments over IPPS ranging from $1.35 million to $2.48 million per FY.

[56] Unless otherwise noted, "IPPS" includes both IPPS and SNF PPS payments.

[57] Inpatient services include acute care and swing-bed services.

- Additional RCHD swing-bed payments over SNF PPS were higher for *new* hospitals compared to *continuing* RCHD hospitals in FY 2018, although they still fell within the distribution of the previous years. The swing bed payments for *continuing* hospitals were relatively stable conditional on sample size.

5.2 Payments under the RCHD Relative to Payments under IPPS

This section describes the additional RCHD payments participant hospitals received for inpatient acute and swing-bed services over what hospitals would have received over the usual IPPS payments, as well as the variation of these additional payments across hospitals and over time between FY 2005 and FY 2018. Understanding the variation of RCHD payments across hospitals and over time is important because while most RCHD hospitals receive higher RCHD payments than they would have received in the absence of the demonstration, some hospitals have left the demonstration when their payments were too low.

RCHD hospitals are stratified into *continuing* and *new* hospitals for the graphical analysis that reports average trends by year, and the distributional yearly results for *all* hospitals together are also presented.[58] Section 5.2.1 reports the total RCHD payment amount, Section 5.2.2 separates out the RCHD swing-bed payments, and Section 5.2.3 separates out the RCHD acute care payments.

Graphs in this section show the trends in average additional payments and percent increases in payments compared to IPPS. The averages are calculated over the group of *continuing* hospitals from FY 2005 through FY 2018 and separately for the group of *new* hospitals in FY 2018. The tables present additional information about the distribution of these additional payments for all hospitals pooled together for each year.

Note that there are a few considerations when interpreting the results in this section. First, some of the variation in reimbursements within and across FYs could be due to some hospitals being on their base or rebase years. RCHD payments are likely to be higher in base or rebase years because hospitals are reimbursed on their allowable costs at those times.[59] Second, the overall sample size of RCHD hospitals increased from three in FY 2005 to 29 in FY 2018, with a marked increase in the number of RCHD

[58] As described in Section 1 (Introduction), continuing hospitals are those that first joined the RCHD during the MMA authorization or ACA extension and continued their participation during the CCA authorization extension. New hospitals are those that first joined the demonstration during the CCA authorization extension.

[59] FYs 2005, 2009, 2010, 2011, 2015, 2016, and 2017 were base or rebase years in which some continuing hospitals were paid on cost. FY 2018 was a base year for new hospitals, while continuing hospitals were in their non-rebase year, which means that continuing hospitals received payments equal to the minimum of target amount and actual cost.

hospitals starting in FY 2011. Prior to FY 2011, the averages and distributions are calculated using only two to four hospitals, depending on the analysis. Third, the variation in reimbursements may be the result of changes in the composition of *continuing* participant hospitals. Combined with the large sample size change in FY 2011, this means that shifts in the averages in FY 2011 should not necessarily be viewed as meaningful changes because any difference before and after FY 2011 would be especially affected by the change in the composition of the sample.

As an example of how the composition of hospitals in the sample can affect the variation in RCHD payments hospitals receive, the results of the analysis we described in *Interim Report One* (and summarized in Section 5.3) show that hospitals with higher Medicare inpatient acute care discharges received higher additional RCHD payments over IPPS. As the characteristics of hospitals in the sample under analysis change, the across-year variation in payments can increase. Fourth, changing macroeconomic conditions over time can affect the overall trend for the *continuing* hospitals that are observed over FYs 2005–2018.

Additionally, the compositional differences between *new* and *continuing* hospitals, which are described in more detail in Section 4, can contribute to differences in additional RCHD payments reported in FY 2018. It is important to remember that direct comparisons between *new* and *continuing* hospitals in FY 2018 may be partially attributable to these factors outside of the demonstration itself.

5.2.1 Additional RCHD Payments over IPPS, by Fiscal Year

In this section, we explore the distribution of hospitals' additional RCHD total payments, including both inpatient acute and swing-bed services, over what hospitals would have received under IPPS between FY 2005 and FY 2018.

A. *Continuing RCHD Hospitals*

   RCHD payments to *continuing* hospitals were higher by $2.66 million (representing a 45 percent increase relative to IPPS), per hospital per year, on average than what hospitals would have received under IPPS. The year-to-year average additional payments ranged from $2.04 million per hospital (in FY 2012) to $3.44 million (in FY 2006) in additional RCHD payments over IPPS. The yearly percent increase in RCHD payments relative to IPPS also varied, and ranged from 34.0 percent in FY 2011 to 54.1 percent in FY 2006. Several of the base or rebase years, where some hospitals were paid on cost, had among the highest percentage increases in comparison to what they would have received

under IPPS. For example, FY 2010 averaged 48.3 percent higher, and FY 2017 averaged 46.7 percent higher.

In addition, some of the changes in average additional payments over time are likely due to the differing number of hospitals used for the analysis in each FY. The number of hospitals in each fiscal year increased from three hospitals (FY 2005–FY 2008) to 17 hospitals (FY 2012–FY 2015 and FY 2017–FY 2018) depending on the hospitals that were part of the RCHD and the cost reports available at the time of this report. The RCHD payments were lower, on average, starting in FY 2011, but as discussed above, a large change in the number of hospitals means that a change in average additional payments should not be interpreted as a meaningful change in the program because it is likely attributable to the additional hospitals being different in general than the first three. Additionally, changing macroeconomic conditions over time could have disproportionately affected patient volume in some hospital market areas, and consequently impacted RCHD additional payments.

B. *New RCHD Hospitals*

For *new* RCHD hospitals, RCHD payments to hospitals were higher by $2.15 million (representing a 42.6 percent increase) per hospital per year, on average, than what hospitals would have received under IPPS.

The percent increase in additional RCHD payments for *new* hospitals was slightly lower than *continuing* hospitals by 7.5 percentage points (42.6 percent vs. 50.1 percent), even though FY 2018 was the base year for all *new* hospitals (when hospitals were reimbursed on actual cost) while it was a non-base year for *continuing* hospitals (when hospitals were reimbursed on the lower amount of target cost or actual cost).

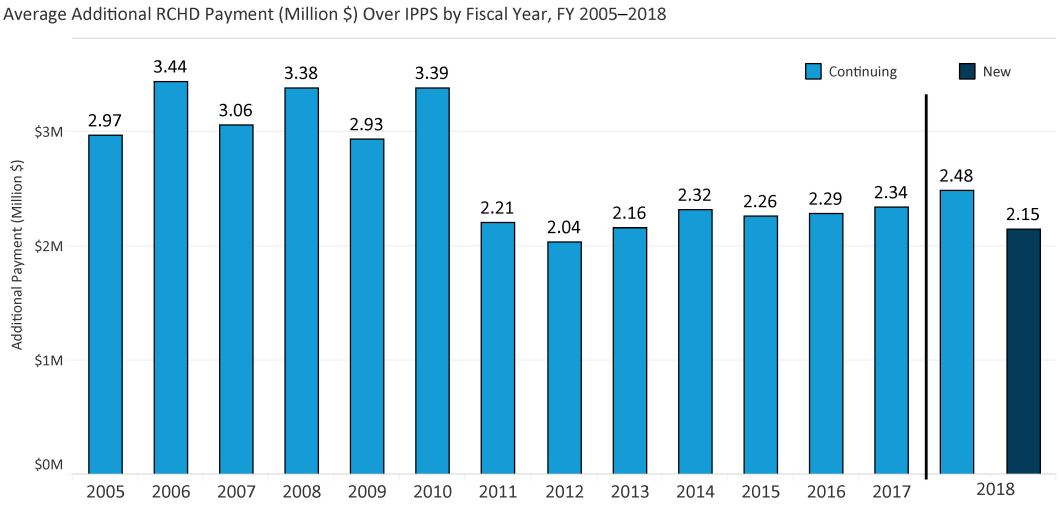
According to the RCHD payment methodology, hospitals are paid on cost in their base years, so it is surprising that RCHD payments in FY 2018 for *new* hospitals in their base year are lower than the payments of *continuing* hospitals not in their base year. Qualitative evidence provides some possible explanations for this finding. In interviews, *new* hospitals indicated some concern that base year costs would not fully reflect their ongoing costs. One *new* RCHD hospital rented space to an independent physicians' group during half of its base year. This space was not included in their cost calculation, even though the space was eventually used for swing beds when the group found a new location.

Another *new* RCHD hospital's base year did not include the costs associated with a second full-time clinician recently hired. Yet another *new* RCHD hospital

added rural health clinics to its system prior to the base year, which shifted the allocation of costs away from inpatient care. Finally, another reported that the hospital planned to make capital improvements in its 70-year-old building, but related costs would be excluded from future payments. It is possible that the cumulative effect of having some expenses excluded from their base year calculations contributed to lower RCHD payments for *new* hospitals relative to *continuing* hospitals.

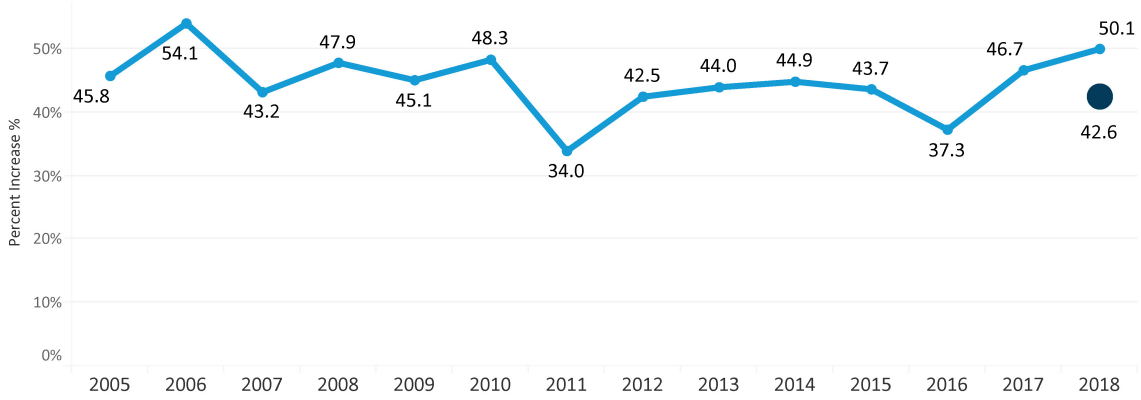
Exhibit 5.1 shows additional RCHD payments over IPPS in millions of dollars and percentage[60] terms per hospital by fiscal year (between FY 2005 and FY 2018) for *continuing* and *new* hospitals. Exhibit 5.2 expands on this by reporting distributional information for all hospitals in a table.

Exhibit 5.1: Additional RCHD Payments per Hospital



[60] Percentage increase in RCHD payments relative to IPPS = $\frac{RCHD_{Diff}}{IPPS+SNF\ PPS}$ where $RCHD_{Diff} = RCHD - (IPPS + SNF\ PPS)$.

Percent Increase in RCHD Payment (%)



Number of Hospitals

Group	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018
Continuing	3	3	3	3	4	4	12	17	17	17	17	15	17	17
New	-	-	-	-	-	-	-	-	-	-	-	-	-	12

Notes: *(1) Data from 161 settled cost reports were used for this analysis. (2) The analysis included at least one cost report from 29 unique RCHD hospitals. (3) "-" indicates that no hospitals were in that group in that year. Source: Hospital cost reports.*

C. *All RCHD Hospitals*

Across *all RCHD hospitals* combined, there was substantial across-year variation in additional RCHD payments per hospital over IPPS that ranged from increases of 34.0 to 54.1 percent.

Exhibit 5.2 summarizes distributional information about the additional RCHD payments over IPPS between FY 2005 and FY 2018 for all RCHD hospitals. In FY 2011, additional RCHD payments over IPPS among 12 participating hospitals ranged from $0.7 million to $5.6 million. In FY 2017, the additional RCHD payments over IPPS among the 17 participating hospitals ranged from -$1.0 million to $8.1 million (or -14.4 to 177.3 percent).

The standard deviations reported in Exhibit 5.2 reflect broad within-year variation across hospitals within a given FY. For example, in FY 2010, the percentage increase in RCHD payments relative to IPPS among the four participating hospitals ranged from 35.8 percent to 58.4 percent.

Exhibit 5.2: Additional RCHD Payments over IPPS and SNF PPS by Fiscal Year, FY 2005–2018, in Million $

Measure	Year 1 FY 2005	Year 2 FY 2006	Year 3 FY 2007	Year 4 FY 2008	Year 5 FY 2009	Year 6 FY 2010	Year 7 FY 2011	Year 8 FY 2012	Year 9 FY 2013	Year 10 FY 2014	Year 11 FY 2015	Year 12 FY 2016	Year 13 FY 2017	Year 14 FY 2018
Average (millions)	$2.97	$3.44	$3.06	$3.38	$2.93	$3.39	$2.21	$2.04	$2.16	$2.32	$2.26	$2.29	$2.34	$2.35
(Standard Deviation)	($2.37)	($2.10)	($2.13)	($2.47)	($2.29)	($1.50)	($1.35)	($1.47)	($1.66)	($1.64)	($1.74)	($2.42)	($2.48)	($2.03)
RCHD Payments Relative to IPPS per Hospital	45.80%	54.07%	43.23%	47.87%	45.12%	48.35%	33.96%	42.52%	44.01%	44.88%	43.69%	37.32%	46.69%	46.95%
(Standard Deviation)	(35.59%)	(27.41%)	(29.12%)	(36.17%)	(27.07%)	(9.97%)	(15.02%)	(30.91%)	(31.42%)	(27.69%)	(30.81%)	(31.06%)	(47.55%)	(45.91%)
25th Percentile	$0.51	$1.16	$0.70	$0.64	$1.06	$2.44	$1.30	$0.97	$1.22	$1.34	$1.57	$0.95	$0.53	$1.09
50th Percentile	$3.15	$3.87	$3.67	$4.07	$2.68	$3.46	$1.92	$1.72	$1.84	$2.00	$1.94	$1.32	$2.01	$2.22
75th Percentile	$5.24	$5.29	$4.82	$5.43	$4.80	$4.34	$2.78	$2.74	$2.37	$2.34	$2.27	$3.08	$2.78	$2.64
# of Hospitals	3	3	3	3	4	4	12	17	17	17	17	15	17	29

Notes: (1) Data from 161 settled cost reports were used for this analysis. (2) The analysis included at least one cost report from 29 unique RCHD hospitals.
Source: HCRIS.

5.2.2 Additional RCHD Swing-Bed Payments over SNF PPS, by Fiscal Year

This section explores the distribution of hospitals' additional RCHD payments for swing-bed services over what hospitals would have received under SNF PPS between FY 2005 and FY 2018 using only the information from settled hospital cost reports with swing-bed discharges.[61] Under the RCHD payment methodology, reasonable costs are calculated *separately* for both acute and swing-bed services. Swing-bed reimbursements under the RCHD have the potential to be higher than costs due to the payment methodology under RCHD where swing bed costs blend acute and swing-bed services. We investigate the breakdown of additional payments by swing beds vs acute care to see if this payment differential incentivized hospitals to disproportionately shift in favor of higher swing-bed utilization.[62] This section presents annual payments per hospital for swing-bed discharges and the percentage by which the RCHD swing-bed payment exceeds payments under SNF PPS. The data is presented across all hospitals with swing beds.

Exhibit 5.3 shows the additional RCHD swing-bed payments over SNF PPS (depicted as the portion of the bars colored in light blue), calculated using only the information from RCHD hospitals with at least one swing-bed discharge.[63] To contextualize this information, Exhibit 5.3 also shows the additional RCHD payments (including payments for both inpatient acute care and swing-bed services) over IPPS including SNF PPS (depicted as dark blue bars in the exhibit), which was also shown in Exhibit 5.1, and was calculated using the information from both *new* and *continuing* RCHD hospitals. In addition, the bottom part of the exhibit shows the swing-bed share of additional RCHD payments over IPPS (depicted as a line).

RCHD swing-bed payments to *continuing* hospitals were higher by $0.94 million (representing a 36 percent increase relative to SNF PPS) per hospital per year. For *new* RCHD hospitals, RCHD swing-bed payments were higher by $1.1 million per hospital per year, on average, than what hospitals would have received under SNF PPS (representing a 53 percent increase relative to SNF PPS).

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[61] Swing bed payments are determined through the SNF PPS.

$$\text{The share of Additional RCHD Reimbursement from Swing Beds} = \frac{\text{Additional RCHD swing bed payments over SNF PPS}}{\text{Additional RCHD payments (acute care and swing bed) over IPPS plus SNF PPS}}$$

[62] Under the RCHD payment methodology, reasonable costs are calculated separately for acute and swing-bed services. The swing-bed payment methodology itself blends costs for acute care *and* swing-bed services. Because costs for acute beds are generally much higher, blending the two together makes swing-bed reimbursement under the RCHD higher than swing-bed reimbursement outside of the RCHD. Previous reports, including the 2018 *Report to Congress* and *Interim Report One*, flagged this as a topic for additional study.

[63] A total of 124 hospital-year observations out of 161 were considered as having swing beds. Most observations report positive swing bed discharges (greater than 0). Three cost reports (Central Peninsula Hospital in FY 2005, Great Plains Regional Medical Center in FY 2018, and St. John's Medical Center FY 2018) reported no swing-bed discharges but positive swing-bed RCHD payments.

A. *Continuing RCHD Hospitals*

Between FY 2005 and FY 2018, RCHD swing-bed payments to *continuing* participant hospitals per hospital per year were, on average, higher than what hospitals would have received for swing-bed services under SNF PPS by $0.94 million (representing a 36 percent increase relative to SNF PPS). The average additional RCHD swing-bed payment over SNF PPS ranged across fiscal years from $0.82 million (in FY 2011) to $1.1 million (in FY 2007) for *continuing* hospitals.

Some of the across-year variation in swing-bed shares of additional RCHD payments over IPPS could be due to the increasing number of hospitals receiving RCHD swing-bed payments over time. Two to three hospitals were in the sample from FY 2005–FY 2010, followed by a jump to 10–14 *continuing* hospitals from FY 2011 to FY 2018.

Qualitative findings for these hospitals mention difficulties faced by *continuing* hospitals such as increased competition with neighboring facilities for swing-bed care. One *continuing* hospital experienced a decrease and then an increase in RCHD swing-bed payments with the opening and subsequent closure of a neighboring SNF, and a second mentioned competition with local facilities as a factor in swing-bed utilization and thus RCHD payments. A third hospital has tried to increase swing-bed referrals but finds that patients tend to seek acute care there and then get follow-up swing-bed care at the nearby tertiary center. A fourth *continuing* hospital reported that a decrease in swing-bed utilization due to a new long-term care facility nearby has impacted the benefits of the demonstration. Two additional *continuing* hospitals reported relatively low swing-bed utilization or declining utilization due to numerous contextual factors, including widespread availability of local nursing homes, physician practices and preferences, and shorter lengths of hospitalization.

B. *New RCHD Hospitals*

For *new* hospitals, the average additional RCHD swing-bed payment over SNF PPS per hospital was $1.1 million in FY 2018, which is slightly higher than the maximum for the *continuing* hospital trend.[64] In comparison, average additional overall RCHD payments in FY 2018, composed of both SNF and acute care payments, were lower for *new* hospitals compared to *continuing* hospitals ($2.15 million vs. $2.48 million).

In FY 2018, 52.6 percent of the additional RCHD payments over IPPS are attributed to additional RCHD swing-bed payments, which are higher than the 42.4 percent maximum

[64] Although $1.1 million is higher than any yearly average for the *continuing* hospitals, it is still under the 75th percentile value for *continuing* hospitals in 2017 of $1.3 million.

of the *continuing* hospital trend. Therefore, swing-bed revenue seems to take up a somewhat larger share of additional payments from the RCHD for *new* hospitals in their first year of participation than it does for *continuing* hospitals.

Qualitative interview responses from *new* hospitals about swing beds reinforce our quantitative findings. *New* RCHD hospitals with swing beds typically reported that swing beds help enhance their RCHD payments, sometimes to a significant degree. The bulk of one *new* hospital's care is related to swing beds since acute care is provided by the neighboring, affiliated hospital. Another indicated that "the swing-bed portion of this [program] makes it work for us." Hospitals also mentioned the benefits of swing beds outside of enhanced RCHD payments. For example, one *new* hospital reported that swing beds improve patient health outcomes by reducing hospital readmissions and maintaining continuity of care.

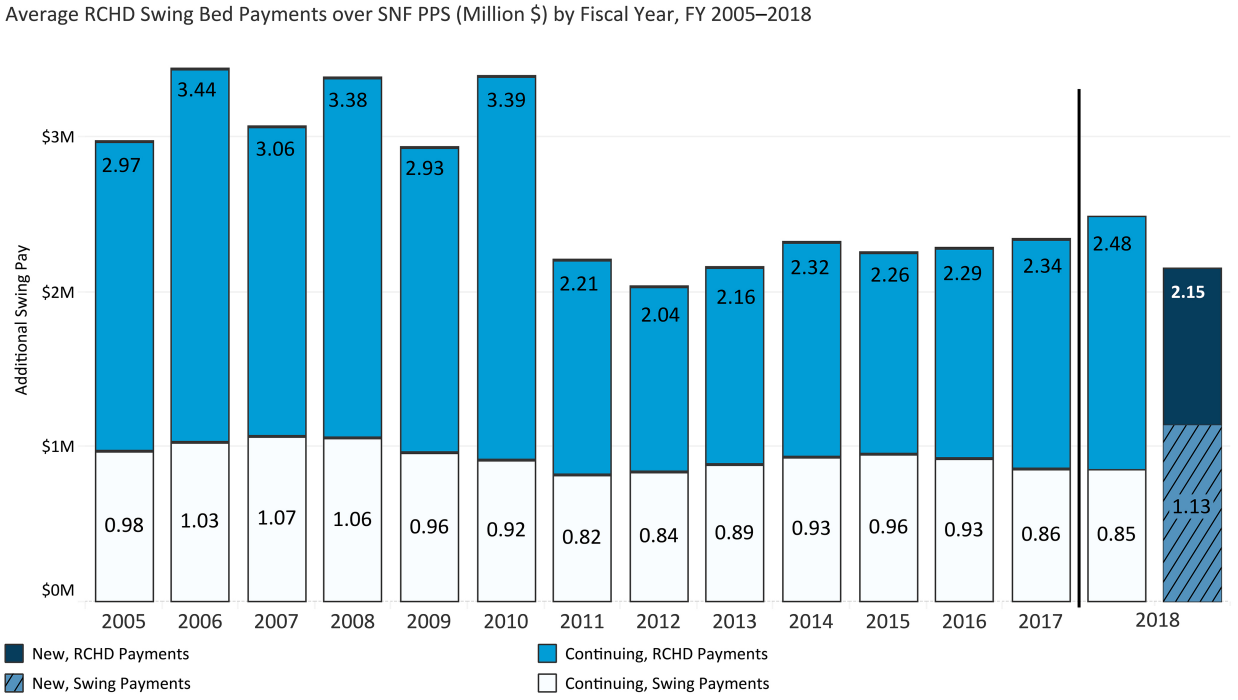
There was wide across-year variation in the distribution of additional RCHD swing-bed payments for the group of all RCHD hospitals with swing beds over SNF PPS. This variation could be due to compositional differences in the sample over time, variation in reimbursement in base and rebase years, and factors external to the demonstration.

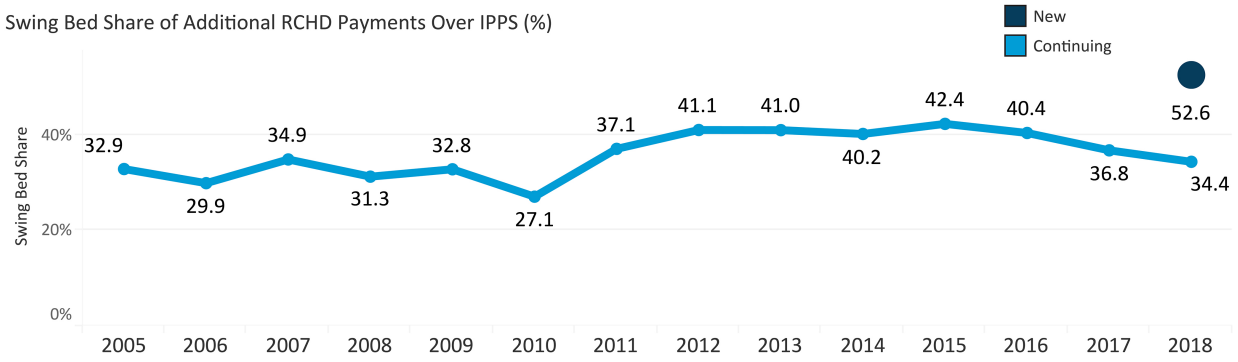
C. *All RCHD Hospitals*

There was also within-year variation in the additional RCHD swing-bed payments over SNF PPS across participant hospitals. Exhibit 5.4 summarizes distributional information about additional RCHD swing-bed payments over SNF PPS per hospital between FY 2005 and FY 2018. The standard deviation in additional RCHD swing-bed payment over SNF PPS ranged from $0.37 million (in FY 2005) to $0.72 million (in FY 2018). In FY 2005, additional RCHD swing-bed payment over SNF PPS among the two participating hospitals with swing-bed discharges ranged from $0.72 million to $1.2 million. In FY 2018, additional RCHD swing-bed payments over SNF PPS among the 23 participating hospitals with swing-bed discharges ranged from $0.07 million to $2.6 million.

In addition, average per-discharge additional RCHD swing-bed payment over SNF PPS increased between FY 2005 and FY 2008, decreased from FY 2008 to FY 2011, and then increased between FY 2011 and FY 2018. Some of this is likely due to the increasing number of *continuing* hospitals with swing-bed discharges as well as external macroeconomic conditions disproportionately impacting the volume of swing-bed discharges in some hospital market areas. Different base and rebase years among RCHD hospitals may also affect this distribution.

Exhibit 5.3: Average Additional Swing-Bed Payments over SNF PPS per Hospital





Number of Hospitals

Group		2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018
Continuing	Swing Bed	2	2	2	2	3	3	10	14	13	12	13	11	14	14
	RCHD	3	3	3	3	4	4	12	17	17	17	17	15	17	17
New	Swing Bed	-	-	-	-	-	-	-	-	-	-	-	-	-	9
	RCHD	-	-	-	-	-	-	-	-	-	-	-	-	-	12

Notes: (1) In each fiscal year there was one cost report associated with each hospital. (2) Data from 161 settled cost reports were used for this analysis; 124 settled cost reports had additional RCHD swing-bed payments over SNF PPS. (3) The analysis includes at least one cost report from 29 unique RCHD hospitals. (4) "-" indicates that no hospitals were in that group in that year.

Source: Hospital cost reports.

Exhibit 5.4: Additional RCHD Swing-Bed Payments over SNF PPS, in Million $

Measure	Year 1 FY 2005	Year 2 FY 2006	Year 3 FY 2007	Year 4 FY 2008	Year 5 FY 2009	Year 6 FY 2010	Year 7 FY 2011	Year 8 FY 2012	Year 9 FY 2013	Year 10 FY 2014	Year 11 FY 2015	Year 12 FY 2016	Year 13 FY 2017	Year 14 FY 2018
Average (millions)	$0.98	$1.03	$1.07	$1.06	$0.96	$0.92	$0.82	$0.84	$0.89	$0.93	$0.96	$0.93	$0.86	$0.96
(Standard Deviation)	($0.37)	($0.48)	($0.38)	($0.38)	($0.40)	($0.42)	($0.38)	($0.40)	($0.41)	($0.59)	($0.69)	($0.64)	($0.70)	($0.72)
25th Percentile	$0.72	$0.69	$0.80	$0.79	$0.73	$0.53	$0.55	$0.74	$0.70	$0.40	$0.42	$0.38	$0.21	$0.29
50th Percentile	$0.98	$1.03	$1.07	$1.06	$0.73	$0.86	$0.89	$0.84	$0.85	$0.80	$0.84	$0.77	$0.68	$0.85
75th Percentile	$1.24	$1.37	$1.34	$1.33	$1.43	$1.36	$1.03	$1.05	$1.04	$1.29	$1.34	$1.33	$1.29	$1.64
Per-Discharge Average (thousand $)	$10,048	$12,292	$11,936	$13,133	$11,362	$9,320	$8,115	$10,039	$9,879	$9,370	$10,104	$12,023	$12,770	$11,707
# of Demonstration Hospitals with Swing-Bed Discharges	2	2	2	2	3	3	10	14	13	12	13	11	14	23
# of Hospitals	3	3	3	3	4	4	12	17	17	17	17	15	17	29

Notes: (1) In each FY there was one cost report associated with each hospital. (2) Data from 161 settled cost reports were used for this analysis; 124 settled cost reports had additional RCHD swing-bed payments over SNF PPS. (3) The analysis includes at least one cost report from 29 unique RCHD hospitals. **Source**: HCRIS.

5.2.3 Additional RCHD Acute Care Payments over IPPS, by Fiscal Year

As mentioned earlier, under the RCHD payment methodology, reasonable costs are calculated separately for both acute and swing-bed services. Section 5.2.2 shows annual payments per hospital for swing-bed discharges and the percentage by which the RCHD swing-bed payment exceeds what payments would have been under SNF PPS. In this section, we explore the distribution of hospitals' additional RCHD payments for acute care services over what hospitals would have received under IPPS between FY 2005 and FY 2018.

Exhibit 5.5 shows the additional RCHD acute care payments over IPPS (depicted as the portion of the bars colored in light blue) for *new* and *continuing* hospitals. To contextualize this information, Exhibit 5.5 also shows the additional RCHD payments (including payments for both inpatient care acute and swing-bed services) over IPPS (depicted as dark blue bars in the exhibit), which was also shown in Exhibit 5.1, and was calculated using the information from *new* and *continuing* RCHD hospitals. In addition, the exhibit shows the acute care share of additional RCHD payments over IPPS (depicted as a line). RCHD acute care payments were higher than what hospitals would have received under IPPS. The share of acute care RCHD payments over IPPS were higher for *continuing* RCHD hospitals than *new* hospitals, although that finding should be interpreted with caution due to compositional differences and potential external influences.

A. *Continuing RCHD Hospitals*

   Between FY 2005 and FY 2018, RCHD acute care payments to participant hospitals per hospital per year were on average higher than what hospitals would have received for acute care services under IPPS by $1.97 million (or 73 percent). The average additional RCHD acute care payment over IPPS per hospital varied across fiscal years from $1.35 million (in FY 2012) to $2.75 million (in FY 2006) for *continuing* hospitals.

   RCHD acute care payments to participant hospitals per year for *continuing* hospitals from FY 2005 to FY 2010 ranged from $2.21 million (in FY 2009) to $2.75 million (in FY 2006). The average acute care payments for *continuing* hospitals were lower between FY 2011 and FY 2018, ranging from $1.35 million (in FY 2012) to $1.78 million (in FY 2018). Part of this may be attributable to the changing and increasing sample; FY 2005–FY 2010 had three to four participating hospitals, while FY 2011–FY 2018 had 12–17 participating hospitals. The across-year variation in average payments may also be affected by base and rebase years.

B. *New RCHD Hospitals*

For *new* hospitals, average additional payments for acute care were $1.3 million in FY 2018, which falls slightly below the minimum observed for *continuing* hospitals. The average acute care share of additional RCHD payments over IPPS for *new* hospitals was 61 percent, which is below the lowest average fiscal year observed for *continuing* hospitals of 66 percent in 2012.

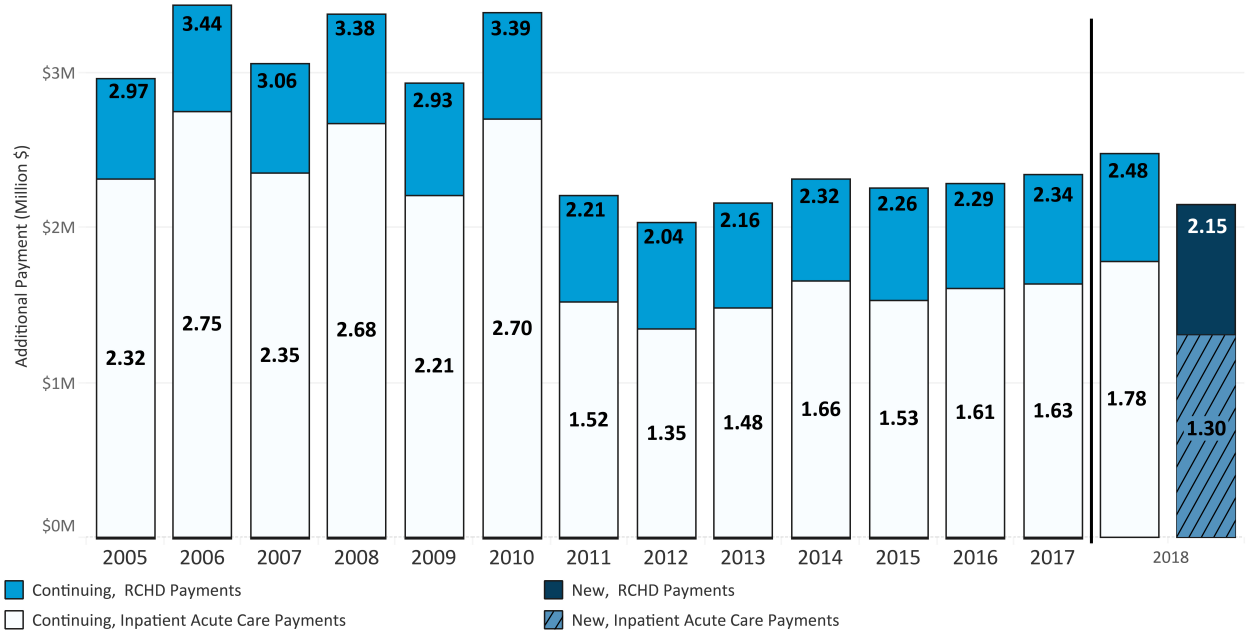
There was large across-year variation in the distribution of additional RCHD acute care payments for the group of all RCHD hospitals over IPPS.

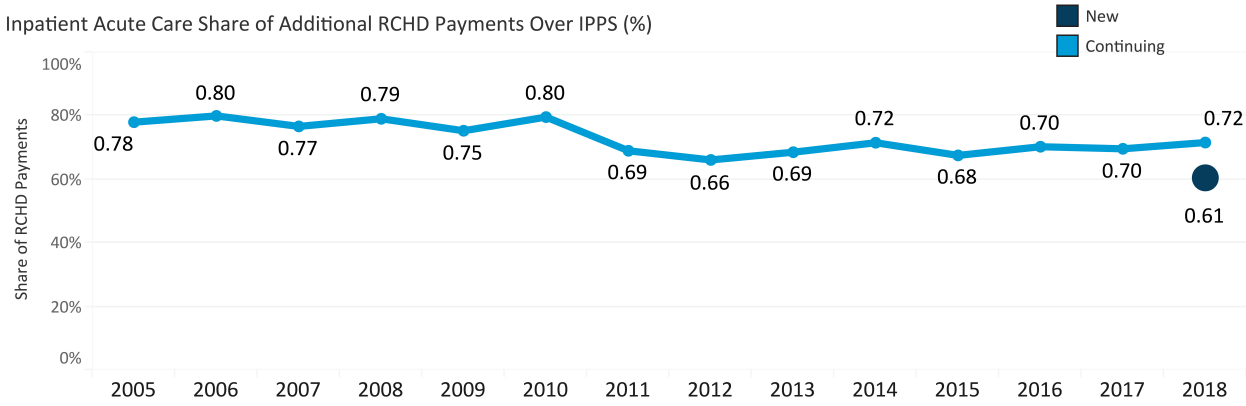
C. *All RCHD Hospitals*

There was also within-year variation in the additional RCHD acute care payments over IPPS across participant hospitals. Exhibit 5.6 summarizes distributional information about the additional RCHD acute care payments over IPPS per hospital between FY 2005 and FY 2018 for all RCHD participant hospitals. The standard deviation in additional RCHD acute care payments over IPPS ranged from $1.3 million (in FY 2011) to $2.4 million (in FY 2017). In FY 2011, additional RCHD acute care payments over IPPS among the 12 participating hospitals ranged from $0.05 million to $4.60 million. In FY 2017, additional RCHD acute care payments over IPPS among the 17 participating hospitals ranged from -$0.96 million to $7.5 million.

Exhibit 5.5: Average Additional Inpatient Acute Care Payments over IPPS per Hospital

Average RCHD Acute Inpatient Payments over IPPS by Fiscal Year, FYs 2005-2018





Number of Hospitals

	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018
Continuing	3	3	3	3	4	4	12	17	17	17	17	15	17	17
New	-	-	-	-	-	-	-	-	-	-	-	-	-	12

Notes: (1) In each fiscal year there was one cost report associated with each hospital. (2) Data from 161 settled cost reports were used for this analysis. (3) The analysis includes at least one cost report from 29 unique RCHD hospitals. (4) "-" indicates that no hospitals were in that group in that year.

Source: Hospital cost reports.

Exhibit 5.6: Additional RCHD Inpatient Acute Care Payments over IPPS, in Million $

Measure	Year 1 FY 2005	Year 2 FY 2006	Year 3 FY 2007	Year 4 FY 2008	Year 5 FY 2009	Year 6 FY 2010	Year 7 FY 2011	Year 8 FY 2012	Year 9 FY 2013	Year 10 FY 2014	Year 11 FY 2015	Year 12 FY 2016	Year 13 FY 2017	Year 14 FY 2018
Average (millions)	$2.32	$2.75	$2.35	$2.68	$2.21	$2.70	$1.52	$1.35	$1.48	$1.66	$1.53	$1.61	$1.63	$1.58
(Standard Deviation)	($1.75)	($1.43)	($1.46)	($1.81)	($1.80)	($1.70)	($1.27)	($1.34)	($1.52)	($1.72)	($1.73)	($2.34)	($2.43)	($1.87)
25th Percentile	$0.51	$1.16	$0.70	$0.64	$0.70	$1.40	$0.86	$0.30	$0.59	$0.76	$0.58	$0.22	-$0.16	$0.48
50th Percentile	$2.44	$3.18	$2.87	$3.28	$1.97	$2.78	$1.16	$0.95	$0.96	$1.21	$1.15	$0.70	$0.91	$0.96
75th Percentile	$4.00	$3.92	$3.48	$4.11	$3.72	$4.00	$1.63	$1.82	$1.74	$1.82	$2.01	$2.77	$2.34	$2.25
Per-Discharge Average (thousand $)	$2,700	$3,404	$2,734	$3,074	$2,657	$3,856	$2,283	$2,237	$2,538	$2,776	$2,238	$2,872	$2,780	$2,640
# of Demonstration Hospitals with Inpatient Acute Care Discharges	3	3	3	3	4	4	12	17	17	17	17	15	17	29
# of Hospitals	3	3	3	3	4	4	12	17	17	17	17	15	17	29

Notes: (1) In each fiscal year there was one cost report associated with each hospital. (2) Data from 161 settled cost reports were used for this analysis. (3) The analysis includes at least one cost report from 29 unique RCHD hospitals.
Source: HCRIS.

6.0 Topic Area 3: Impact of the RCHD Payments on Hospital Finances

This section describes the impact of the RCHD on participant hospitals' financial conditions by integrating results from the quantitative analysis with insights from interviews with hospital staff.[65] The focus of this section is on participating hospitals' experiences during the CCA authorization extension phase of the demonstration. The sample of hospitals analyzed includes those that were active in the demonstration as of FY 2018. Results are shown separately for *continuing* and *new* hospitals.

The impacts of the RCHD on hospitals' financial outcomes described in this section have a different interpretation for continuing versus new hospitals and results are shown for both separately.

Continuing Hospitals	New Hospitals
Impact estimates show whether continued participation in the CCA authorization extension had any additional effect on hospitals' financial condition beyond the effect due to their participation in the prior ACA authorization extension	Impact estimates for new hospitals show the effect of the RCHD on hospitals' financial condition relative to not participating in the demonstration

To estimate these impacts, we used DID regressions and comparison groups of hospitals that were constructed to be similar to the RCHD hospitals on select characteristics measured at baseline, defined as three years prior to the start of the CCA authorization extension. For *continuing* hospitals, the baseline falls within the period when these hospitals were already participating in the demonstration under the prior ACA extension. For *new* hospitals, in contrast, the baseline falls prior to them joining the RCHD. The demonstration period for *continuing* hospitals is between two and four years long, depending on when they started in the CCA phase (described in Exhibit 1.11), while the demonstration period for *new* hospitals includes only one year because all *new* hospitals joined the RCHD at the same time. The DID regression analyses in this section also control for hospital and FY fixed effects and select contextual characteristics presented in Exhibit 3.2.

Section 6.1 presents the key findings for the chapter. Section 6.2 presents descriptive analyses of outcomes in the baseline and demonstration periods for the RCHD and comparison hospitals. These analyses show financial outcomes of RCHD and comparison hospitals at baseline and

[65] The quantitative methodology for this section is discussed in Section 3.1.2.3. Data sources for the regression outcomes, matching variables, and covariates are discussed in Section 2.

present unadjusted (i.e., without DID controls) pre-post changes for RCHD and comparison hospitals, to help set the stage for the DID results subsequently presented. This section also presents graphs plotting outcome trends over time. Section 6.3 first describes the quality of the selected comparison group by presenting balancing statistics on the matching variables used in the entropy balancing algorithm and the results of a parallel baseline trends test to assess whether the identifying assumption of the DID approach is satisfied. Next, impact estimates for the demonstration are presented, using entropy balancing comparison groups and DID regressions. These findings are also triangulated against insights from hospital leaders gathered from key informant interviews. Section 6.4 presents results for the Medicare swing-bed revenue share outcome.

6.1 Key Findings

The key findings for *continuing* and *new* hospitals include:

- For *continuing* RCHD hospitals, the results in this section show that on average:
  - The RCHD did not result in any additional changes in their Medicare inpatient and combined margins relative to the changes they already experienced during the ACA authorization extension.
  - Participation during the CCA authorization extension was associated with slightly lower total profit margins, which suggests that these hospitals may be vulnerable to variations in non-Medicare sources of revenue.
- For *new RCHD* hospitals, the results in this section show that on average:
  - The RCHD resulted in large, positive, and statistically significant increases in their Medicare inpatient and combined margins which is consistent with the design of the demonstration. Increases as a result of the Demonstration help these hospitals get closer to the break-even point for Medicare inpatient margins, though these margins remain negative.
  - The RCHD did not result in improvements in total profit margins. Although operating margins for *new* hospitals improved as a result of demonstration participation, total profit margins for these hospitals did not change. Total profit margins are calculated from a large number of other income components across payers and sectors of the hospital and only bear a weak association with any increase in Medicare inpatient margins.
  - The RCHD was associated with a significant increase in the Medicare swing-bed revenue share. Since we observe only one year of participation data for *new* hospitals, with the year being a base year, these effects might reflect efforts by hospitals to boost base year costs and maximize revenue under the demonstration.

The demonstration was also associated with a reduction in the average age of plant; this reduction which reflects investment in hospital physical infrastructure may also be reflective of hospitals' efforts to maximize demonstration revenue.

- In interviews, hospital leaders emphasized the importance of the demonstration in supporting their financial viability and service lines. Some hospitals, operating with negative overall margins, reported that the demonstration helped prevent even worse financial losses. However, hospitals also spoke of declining inpatient volumes as a challenge that prevented them from fully realizing the benefits of the demonstration, as current programs and payment structures incentivize preventive and outpatient care over inpatient utilization.[66]
- Hospital leaders expressed in interviews that they perceive swing beds to be an important aspect of their RCHD payments and, in some cases, central to their decisions to continue with the demonstration. Many hospitals mentioned that they are trying more broadly to increase swing-bed utilization or start new swing-bed programs altogether, in part, because they view this to be favorable to their financial margins. Our quantitative findings indicate that *new* RCHD hospitals increase swing-bed utilization when they join the demonstration for the first time, though *continuing* hospitals do not further increase utilization beyond levels they had in the prior ACA authorization extension.

  Chapter 5 findings also indicate that over time *continuing* hospitals derive a fairly stable share of additional RCHD payments from swing beds. Beyond their financial motivations, some hospitals reported that swing beds improve patient health outcomes by reducing hospital readmissions, maintaining higher quality of care, and/or stabilizing hospital bed utilization and staffing. Some hospitals have a higher need for swing beds in their surrounding community, while others reported less need for swing bed expansion or lower swing-bed utilization overall because local nursing homes or home health agencies already meet the community need for care.

6.2 Descriptive Analysis of the Demonstration's Impact

We start with presenting descriptive statistics to set the stage for interpreting the results of the DID regression analyses (Section 6.3). To do this, mean financial outcomes for participant and comparison hospitals for the baseline and demonstration periods were analyzed using bivariate *t*-tests. Stated broadly, the analysis finds that, for *new* RCHD participants, the demonstration

[66] Hospitals often spoke about the "shift to outpatient care" in the context of declining inpatient volumes. Specific programs/payers were rarely mentioned, but contributing factors include a general shift in certain types of procedures that used to be performed on an inpatient basis now being performed on an outpatient basis (partially due to new technologies), payer rules/guidelines and pressures to perform more procedures on a less costly outpatient basis, and the growth of ACOs or other specific models that incentivize preventive/outpatient care.

has the expected positive association with increased Medicare inpatient margins, a weaker association with Medicare combined margins, and no association with total profit margins. For *continuing* RCHD hospitals, the demonstration has no association with any additional changes in their Medicare margins, relative to the changes they already experienced during the prior ACA authorization extension.

6.2.1 Medicare Margins – inpatient and combined

In this subsection, descriptive analysis results are reported for the two Medicare margins that are most relevant to this evaluation—Medicare inpatient and Medicare combined margins. Because the RCHD specifically alters Medicare inpatient reimbursement by design, Medicare inpatient margins are expected to be most directly impacted by the demonstration. Medicare combined margins (inpatient and outpatient) may also be affected by demonstration participation, though the magnitude of change depends on the ratio of Medicare inpatient revenues and costs to Medicare outpatient revenues and costs for each hospital.

A. *Continuing RCHD Hospitals*

   Exhibits 6.1 and 6.2 compare *continuing* RCHD hospitals' Medicare margin trends for RCHD and comparison hospitals. Exhibit 6.1 shows that for *continuing* RCHD hospitals there were no statistically significant changes in Medicare inpatient margins between the baseline and demonstration periods, indicating that Medicare inpatient margins for these hospitals did not change relative to their levels in the previous authorization period. Similarly, Medicare combined margins also did not change for RCHD hospitals, and both margins saw no statistically significant change for comparison hospitals during the same time period.

   These trends align with the results in Section 5, which show that *continuing* RCHD hospitals received roughly similar additional payments over IPPS in each year in the period FYs 2012–2018 (see Exhibit 5.1). In other words, *continuing* RCHD hospitals received similar RCHD payments over IPPS during both their baseline (during the ACA authorization extension) and the demonstration (CCA authorization extension) periods. Since RCHD payments over IPPS directly affect Medicare inpatient margins and also have an effect on Medicare combined margins, these results suggest that *continuing* RCHD hospitals can expect to have similar Medicare margins during the CCA authorization extension period as compared to the baseline.

Exhibit 6.1: No Statistically Significant Change in RCHD and Comparison Hospital Medicare Margins During the CCA Authorization Extension for Continuing RCHD Hospitals

Measure	RCHD Hospitals	Comparison Hospitals
Medicare Inpatient Margin		
Baseline Period Mean	-3%	-3%
Demonstration Period Mean	-1%	1%
Difference *(in percentage points)*	2	4
Medicare Combined Margin		
Baseline Period Mean	-15%	-10%
Demonstration Period Mean	-18%	-8%
Difference (in percentage points)	-3	2
Number of Hospitals	17	354
Sample Size in Hospital-Years	100	5,424

Notes: *** indicates that the difference between baseline period means and demonstration period means is statistically significant at the 1% level, ** indicates that the difference between baseline period means and demonstration period means is statistically significant at the 5% level, and * indicates that the difference between baseline period means and demonstration period means is statistically significant at the 10% level, using traditional inference. Differences may not add-up due to rounding. The maximum sample sizes for the set of outcomes in the table are reported; sample sizes may be slightly smaller for some outcomes due to missing data in some years.

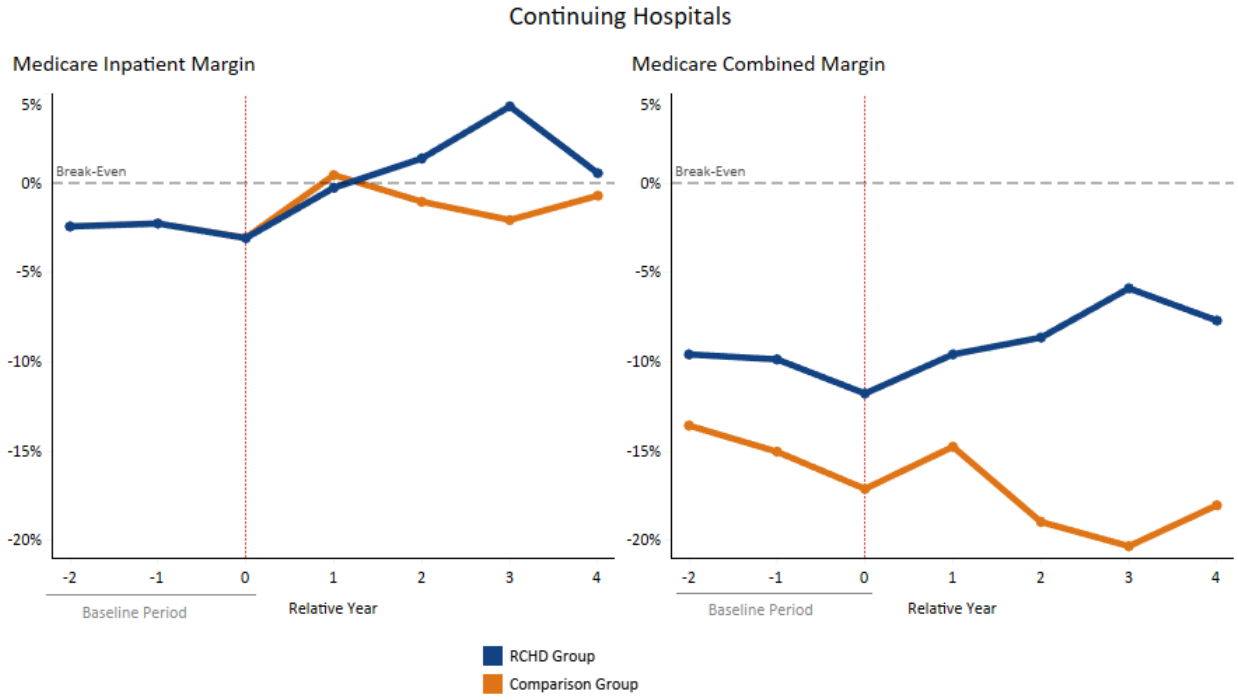
Exhibit 6.2 shows that Medicare inpatient margins for *continuing* RCHD hospitals were slightly below the break-even point prior to the start of the CCA authorization extension (baseline period), and this overall trend continued during the CCA extension (demonstration period). An exception to this trend is found during Relative year 1, which is the rebase year for the CCA extension period when Medicare inpatient margins were marginally positive during this year. This trend shows that the RCHD is successful in meeting its goal of helping participant hospitals stay close to the break-even point for Medicare inpatient margins in a consistent manner.

Exhibit 6.2 also shows that Medicare combined margin trends for RCHD hospitals worsened slightly relative to comparison hospitals during the demonstration period, though results of the *t*-test in Exhibit 6.1 show that, on average, changes from baseline to the demonstration period for RCHD hospitals are not statistically significantly different than the changes from the baseline to demonstration periods for the comparison group.

For both Medicare inpatient and combined margins, the higher margins in relative year 1 as compared to relative years 2 through 4 likely reflect the fact that relative year 1 is the rebase year for these hospitals under the CCA authorization extension. As explained in Section 1.1, hospitals are reimbursed based on cost during the rebase year, which is the most financially beneficial arrangement, but are subsequently reimbursed the lower of the current year target amount or cost in relative years 2–4.

In interviews with hospital staff, most *continuing* RCHD hospitals emphasized the importance of the demonstration in supporting their financial viability and service lines. Hospitals often reported having thin margins and being either in a break-even or close to break-even status; one hospital reported, "*In some years, the demo dollars have been our margin*."

Exhibit 6.2: Medicare Margin Trends for Continuing Hospitals, RCHD and Comparison Groups



B. *New RCHD Hospitals*

Exhibits 6.3 and 6.4 compare *new* hospitals' Medicare margin trends for RCHD and comparison hospitals. Exhibit 6.3 shows that for *new* RCHD hospitals, Medicare inpatient margins increased by 24 percentage points between the baseline and

demonstration period (from −19 percent to 4 percent), and Medicare combined margins increased by 17 percentage points (from −26 percent to −9 percent). Medicare margins for comparison group hospitals also increased, but by a smaller magnitude. For these hospitals, Medicare inpatient margins increased by 11 percentage points between the baseline and demonstration period (from -19 percent to -9 percent), and Medicare combined margins increased by 9 percentage points (from -29 percent to -20 percent).

These trends align with the results in Section 5, which show that *new* RCHD hospitals that first joined the demonstration in FY 2018 received, on average, 42.6 percent higher inpatient reimbursement in their first year of participation than what they would have received under IPPS.[67] Since IPPS reimbursement represents the payments hospitals would have received if they were not participating in the demonstration, we should expect Medicare margins for these hospitals to improve as a result of demonstration participation.

Exhibit 6.3: Stronger Improvements in New RCHD Hospitals' Medicare Margins relative to Comparison Group Hospitals During the CCA Authorization Extension

Measure	RCHD Hospitals	Comparison Hospitals
Medicare Inpatient Margin		
Baseline Period Mean	-19%	-19%
Demonstration Period Mean	4%	-9%
Difference‡ *(in percentage points)*	24***	11*
Medicare Combined Margin		
Baseline Period Mean	-26%	-29%
Demonstration Period Mean	-9%	-20%
Difference (in percentage points)	17***	9*
Number of Hospitals	12	314
Sample Size in Hospital-Years	48	1,243

Notes: *** indicates that the difference between baseline period means and demonstration period means is statistically significant at the 1% level, ** indicates that the difference between baseline period means and demonstration period means is statistically significant at the 5% level, and * indicates that the difference between baseline period means and demonstration period means is statistically significant at the 10% level, using traditional inference. Differences may not add-up due to rounding. The maximum sample sizes for the set of outcomes in the table are reported; sample sizes may be slightly smaller for some outcomes due to missing data in some years.

Exhibit 6.4 visualizes the trends presented in Exhibit 6.3. A central goal of the demonstration is to help small, rural hospitals break even with respect to their Medicare

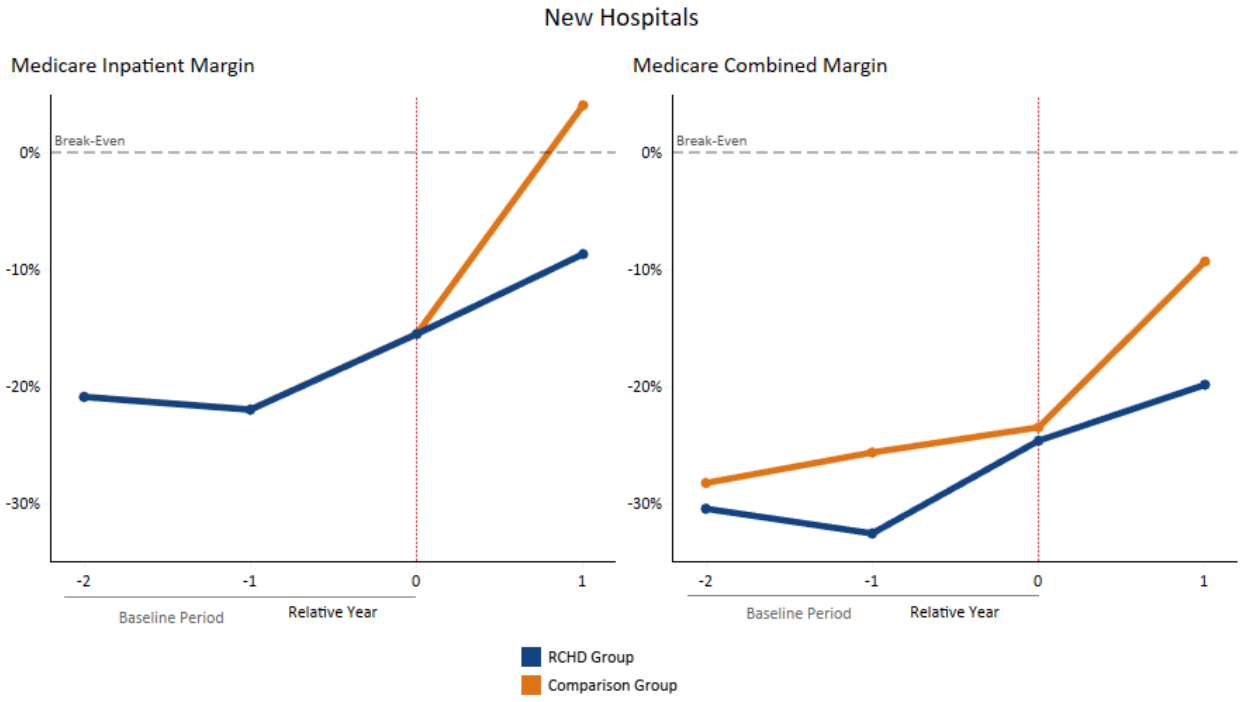
[67] Note that in this report we only analyze one year of demonstration data for new hospitals, FY 2018, which is their base year.

inpatient margins. The demonstration achieves this goal for *new* hospitals,[68] and the trends shown establish that these hospitals' Medicare inpatient margins would be substantially below the break-even point in the absence of the demonstration. On the other hand, even though Medicare combined margins improved substantially after demonstration participation for *new* hospitals, they were, in the end, still negative, indicating that these hospitals have had substantially negative Medicare outpatient margins while participating in the demonstration.

In interviews, *new* hospitals expressed feedback similar to that of *continuing* RCHD hospitals about the importance of the RCHD in supporting their overall viability. While the demonstration mostly supports overall viability and general operations, some hospitals mentioned its importance in supporting staffing and infrastructure improvements.

[68] The average of demonstration period Medicare inpatient margins for new RCHD hospitals is 4 percent. Hospitals receive cost-based reimbursement during their first year of participation (or base year), suggesting that average Medicare inpatient margins should be 0 percent for new hospitals. However, it is possible for RCHD hospitals with swing beds to have Medicare inpatient margins that are greater than 0 percent due to the RCHD's reimbursement methodology for swing beds (see Appendix A for further explanation), which is something that has been documented in previous evaluation reports.

Exhibit 6.4: Medicare Margin Trends for New Hospitals, RCHD and Comparison Groups



Notes: For new RCHD hospitals, the follow-up or post-demonstration period is only one year, due to the lack of reliable HCRIS data beyond FY 2018 at the time of producing this report.

6.2.2 Overall Profitability Margins

This section discusses total profit margins and operating margins, which are inclusive of revenues and costs from all payers,[69] separately for *continuing* and *new* hospitals. Medicare revenue and costs are just two components of both operating and total profit margins. Operating margins also include non-Medicare revenue and costs due to patient care. Total profit margins additionally include other types of revenue such as contributions, public appropriations, and other government transfers, investments, and income from subsidiaries or affiliates.

There is little relationship between hospitals' total profit margins and their Medicare margins as shown by previous analysis from the Medicare Payment Advisory Commission (MedPAC) .[70] MedPAC discusses this phenomenon as to be expected because a number of factors other than

[69] Dalton, K., & Slifkin, R. (2003). *A primer on interpreting hospital margins.* North Carolina Rural Health Research and Policy Analysis Center, Cecil G. Sheps Center for Health Services Research.

[70] MedPAC. (2003). *Relationship among Medicare inpatient, overall Medicare, and total margins for hospitals.*

Medicare payment determine total margins.[71] Income from Medicare is only one component of a hospital's total income stream. The lack of a direct and consistent relationship between Medicare margins and total margins suggests that changes in Medicare's payment policies may not likely impact the overall financial performance of a RCHD hospital in isolation, and hence it is unrealistic to expect that this demonstration would be able to impact participant hospitals' total profit margins.[72]

There is also a lack of data to reliably estimate total margins, signaling further caution in interpreting the findings regarding these margins. No single data source reports all revenue streams for a given hospital and its related organizations, and hospital cost reports lack critical details that are necessary to comprehensively capture all the inputs that make up a hospital's total margins.[73]

A. *Continuing RCHD Hospitals*

Exhibit 6.5 shows that for *continuing* RCHD hospitals, total profit margins decreased by 4 percentage points between the baseline and demonstration periods (from 2 percent to -2 percent). In contrast, total profit margins for comparison group hospitals did not change over this period, suggesting that their margins are flat. Participating RCHD hospitals continuing in the demonstration may be more vulnerable to decreases in revenue or increases in costs due to external, non-Medicare factors relative to their comparison group hospitals. In addition, the results in Exhibit 6.5 show that operating margins for *continuing* RCHD hospitals decreased during the CCA authorization extension, while no change was observed for comparison group hospitals.

Exhibit 6.5: Total Profit Margins for Continuing RCHD Hospitals Declined During the CCA Authorization Extension

Measure	RCHD Hospitals	Comparison Hospitals
Total Profit Margin		
Baseline Period Mean	2%	2%

[71] These factors include the amount of private sector business; the policies of the insurers with whom providers have contracts; Medicaid payment policy and the amount of Medicaid business; the amount of uncompensated care provided; and revenue earned from non-patient care services, investment income, and donations.

[72] MedPAC. (2004, March). Assessing payment adequacy and updating payments in fee-for-service Medicare. In MedPAC, *Report to the Congress: Medicare payment policy* (pp. 55–204). https://www.medpac.gov/wp-content/uploads/import_data/scrape_files/docs/default-source/reports/Mar04_Entire_reportv3.pdf

[73] Kane, N. M., & Magnus, S. A. (2001). The Medicare Cost Report and the limits of hospital accountability: Improving financial accounting data. *Journal of Health Politics, Policy and Law, 26*(1), 81–105.

Measure	RCHD Hospitals	Comparison Hospitals
Demonstration Period Mean	-2%	3%
Difference *(in percentage points)*	-4*	1
Operating Margin		
Baseline Period Mean	0%	-6%
Demonstration Period Mean	-5%	-5%
Difference *(in percentage points)*	-4*	1
Number of Hospitals	17	354
Sample Size in Hospital-Years	100	5,418

Notes: *** indicates that the difference between baseline period means and demonstration period means is statistically significant at the 1% level, ** indicates that the difference between baseline period means and demonstration period means is statistically significant at the 5% level, and * indicates that the difference between baseline period means and demonstration period means is statistically significant at the 10% level, using traditional inference. Differences may not add-up due to rounding. The maximum sample sizes for the set of outcomes in the table are reported; sample sizes may be slightly smaller for some outcomes due to missing data in some years.

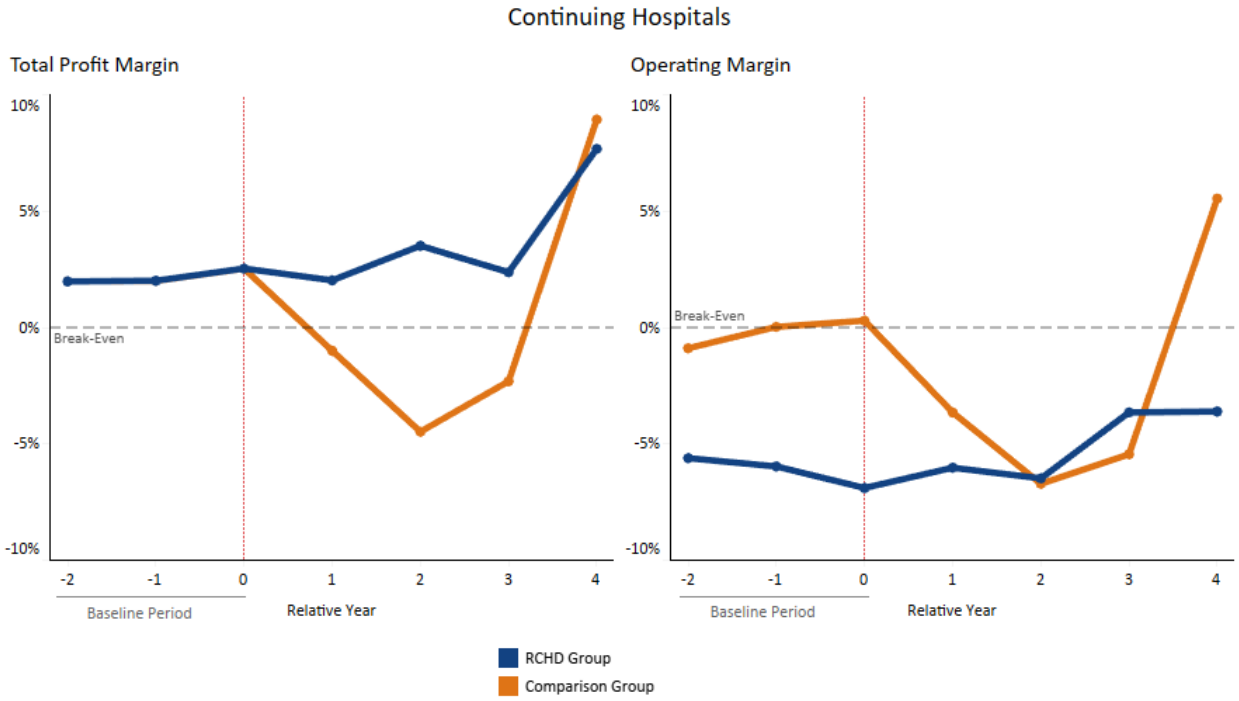
Exhibit 6.6 plots year-wise trends for total profit and operating margins. The graph for total margins shows *continuing* RCHD hospitals dropping below the break-even line during the first three years of participation in the CCA authorization extension. Separate trend analysis by hospital reported in Exhibit E11 of Appendix E shows that total profit margin declines were experienced by RCHD hospitals in different years, suggesting that there could be multiple external/non-Medicare factors responsible for this trend and they are not the result of a common external shock.

During interviews, some *continuing* RCHD hospitals that operated with negative margins reported that the demonstration prevented them from experiencing even worse financial losses. However, not all *continuing* hospitals operated at a loss, and two hospitals reported that, if not for the demonstration, they would have been at an operating loss and that the demonstration remained essential for "tweener"[74] hospitals that did not otherwise qualify for CAH status. Nevertheless, despite the support provided by the demonstration, a hospital pointed out that its RCHD payments have

[74] In the literature, 'tweener' hospitals refer to facilities too large to be considered Critical Access Hospitals (CAH: 25 beds or less) and too small to be rural referral centers (RRC: 275 beds or more or meeting alternative criteria that may include source and volume of patient admissions) that face unique challenges. For one instance, see https://www.ruralhealth.us/NRHA/media/Emerge_NRHA/Advocacy/Policy%20documents/2020-NRHA-Policy-Document-Tweener-Hosptials-Crisis.pdf.

decreased year over year, partially due to the shift in services from inpatient to outpatient.

Exhibit 6.6: Overall Profitability Margin Trends for Continuing Hospitals, RCHD and Comparison Groups



B. *New RCHD Hospitals*

Exhibits 6.7 and 6.8 show that there were no statistically significant changes in total profit margins between the baseline and demonstration periods for *new* RCHD hospitals. Even though these hospitals saw considerable improvements in their Medicare margins, these improvements were not reflected in improvements in overall profitability. This finding reinforces the decoupled relationship between Medicare margins and total profitability margins previously discussed.

As with *continuing* hospitals, numerous *new* hospitals emphasized that even if their margins were very thin or negative, the demonstration had prevented even worse financial performance. One *new* hospital credited the demonstration with supporting service expansion and financial sustainability but noted that the demonstration merely

reduced the negative profit margin and was not enough to create a positive margin in its very rural setting with high-cost pressures.

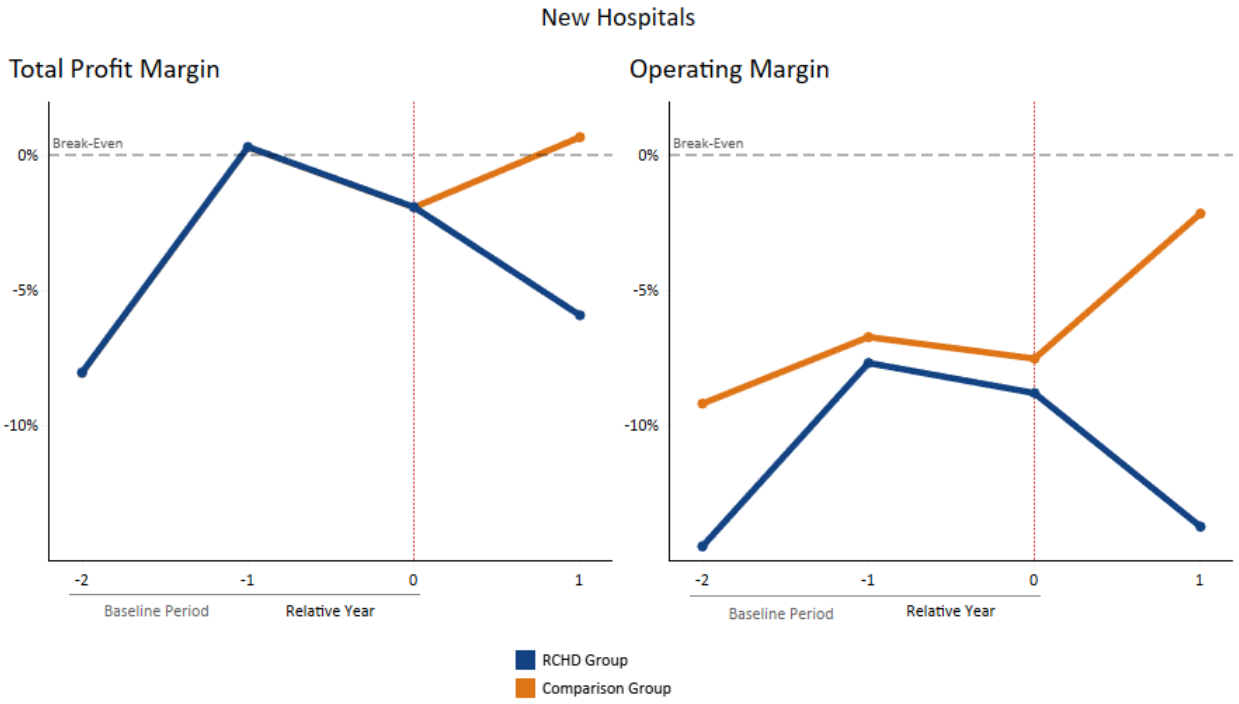
These findings suggest that the demonstration may not be enough to support sustained positive profit margins at RCHD hospitals, but that its support reduces negative profit margins and increases confidence to the point where hospitals feel comfortable maintaining their clinical sites and service lines, particularly "loss leader" services that remain vital to the community.

Exhibit 6.7: No Changes in Other Profitability Margins for New Hospitals During the CCA Authorization Extension

Measure	RCHD Hospitals	Comparison Hospitals
Total Profit Margin		
Baseline Period Mean	-3%	-3%
Demonstration Period Mean	1%	-6%
Difference *(in percentage points)*	4	-3
Operating Margin		
Baseline Period Mean	-8%	-10%
Demonstration Period Mean	-2%	-14%
Difference (in percentage points)	6	-3
Number of Hospitals	12	314
Sample Size in Hospital-Years	47	1,242

Notes: *** indicates that the difference between baseline period means and demonstration period means is statistically significant at the 1% level, ** indicates that the difference between baseline period means and demonstration period means is statistically significant at the 5% level, and * indicates that the difference between baseline period means and demonstration period means is statistically significant at the 10% level, using traditional inference. Differences may not add-up due to rounding. The maximum sample sizes for the set of outcomes in the table are reported; sample sizes may be slightly smaller for some outcomes due to missing data in some years.

Exhibit 6.8: Overall Profitability Margin Trends for New Hospitals, RCHD and Comparison Groups



Notes: For new RCHD hospitals, the follow-up or post-demonstration period is only one year, due to the lack of reliable HCRIS data beyond FY 2018 at the time of producing this report.

6.2.3 Other (Non-Margin) Outcomes

Descriptive statistics for the non-margin financial outcomes are reported in Appendix Exhibits E8 and E9, for *continuing* and *new* hospitals, respectively. Appendix Exhibit E10 contains the trends graphs for these outcomes. In general, these statistics do not show statistically significant changes for either *continuing* or *new* RCHD hospitals for any of the outcomes between the baseline and the demonstration periods. In addition, apart from one exception (an increase in average of age of plant for *continuing* RCHD hospitals' comparison group), no statistically significant changes were observed for comparison group hospitals.

In the next section, regression results from a DID model are reported, along with traditional and randomization inference *p*-values. These results show a few statistically significant changes in these outcomes (for example, an increase in Medicare swing-bed revenue share for *new* hospitals). This indicates the importance of the DID controls (hospital fixed effects, year fixed effects, and other time-varying controls), and of randomization inference, in accurately measuring demonstration impacts.

6.3 Difference-in-Differences Analysis of the Demonstration's Impact

Next the impact estimates produced using a DID model are discussed. First, the quality of the comparison groups used is discussed, as measured by standard statistical tests (Section 6.3.1), and then the impact estimates (Section 6.3.2).

6.3.1 Quality of the Comparison Groups

Section 3.1.2.3 outlines the steps we followed to construct comparison groups for this evaluation report. As previously discussed, RCHD hospitals were divided into matching groups according to their year of entry into the CCA authorization extension, with a separate baseline period being defined for each group. An entropy balancing algorithm was used to find a comparison group for each matching group, and then the matched comparison groups were appended to create the *continuing* and *new* hospital comparison groups. The matching variables used for the construction of each comparison group are given in Appendix Exhibit E1.

In general, the following matching variables were used: *baseline levels of total profit margins and Medicare inpatient margins, indicators for hospitals in Competitive and Frontier market areas, county racial composition, and county-level percentage of population over 65 years of age*. The following additional variables were also used for one or more matching groups: *indicator for hospital non-profit status, indicator for hospital government-run status, indicator for a hospital being in a health system, county-level poverty incidence, county unemployment rate, and a state Medicaid expansion indicator*.

In Appendix Exhibit E2 balancing statistics on the matching variables used in the entropy balancing algorithm are reported. In all cases, the magnitudes of the post-balancing standardized differences are well below the 10 percent threshold, indicating that the entropy balancing algorithm was successful in balancing the means of these variables between the RCHD and comparison groups.

A test of parallel baseline trends to assess the identifying assumption of the DID model was also conducted. The specification for this test is described in Section 3.1.2.3, equation (1). These results are presented in Appendix Exhibits E3 (Continuing) and E4 (New). Appendix Exhibit E5 plots the baseline and demonstration period coefficient estimates (note that the tables in E3 and E4 only show baseline coefficient estimates) to help visualize the lack (or existence) of pre-trends and the direction of changes during the demonstration period. The criterion used to assess the existence of the parallel baseline trends test (or the lack of pre-trends) was that the joint *F*-test, of the two baseline period coefficients, is not statistically significant.

Results show that for *continuing* hospitals, parallel baseline trends did not pass for three outcomes: days cash on hand, FTEs per occupied bed, and the average age of plant. As a result,

we do not consider the impact estimates for these three outcomes to be valid for *continuing* hospitals. Results show that for *new* hospitals, the parallel baseline trends passed for all evaluation outcomes. Additionally, it is important to note that parallel baseline trends pass for the margin outcomes for both groups of hospitals. These outcomes are the most important outcomes from the evaluation standpoint as they are hypothesized to be most directly influenced by the demonstration.

In sum, the constructed comparison groups provide a high degree of confidence with regard to the validity of the impact results.

6.3.2 Impact Estimates

This section discusses the results obtained as a result of estimating the DID model described in Section 3.1.2.3 (equation [2]). Entropy-balanced comparison groups were used to estimate this model. As mentioned in the introduction to this section (Section 6), results are presented and discussed separately for *continuing* and *new* hospitals because DID regressions for each group of hospitals investigate different hypotheses. For *continuing* RCHD hospitals, DID results measure the additional impact of *continued* participation in the CCA authorization extension phase of the demonstration beyond the impact already obtained while participating in the ACA authorization extension. For *new* hospitals, DID results measure the impact of participating in the demonstration (relative to not participating).

6.3.2.1 Medicare Margins

This section presents the impact effects that the RCHD had on Medicare inpatient margins and Medicare combined margins.

A. *Continuing Hospitals*

The DID results for *continuing* RCHD hospitals (Exhibit 6.9) show that participating in the CCA authorization extension phase did not statistically significantly change hospitals' Medicare inpatient and Medicare combined margins relative to the changes hospitals already experienced due to their prior participation in the prior ACA phase. These estimates are consistent with the descriptive results presented in Section 6.2 and show that there are no additional impacts of participating in the CCA phase beyond those already obtained while participating in the ACA phase.

Exhibit 6.9: Difference-in-Differences Results: No Change in RCHD and Comparison Hospital Medicare Margins During the CCA Authorization Extension for Continuing Hospitals

Measure	Medicare Inpatient Margin	Medicare Combined Margin
Average Impact Estimate	0	-2
90% Confidence Interval	(-4, 3)	(-6, 1)
Standard Error	(2)	(2)
Regression *p*-value	[0.86]	[0.31]
Randomization Inference *p*-value	[0.92]	[0.48]
Baseline Mean for RCHD Hospitals	-3%	-15%
Average Impact Estimate as a Percentage of the RCHD Group Baseline Mean	-16%	-16%
Sample Size in Hospital-Years[§]	5,510	5,512
Number of RCHD Hospitals	17	17
Number of Comparison Hospitals	354	354

Notes: Standard errors, clustered at the hospital level and robust to heteroscedasticity, are in parentheses. *** indicates statistical significance at the 1% level, ** at the 5% level, and * at the 10% level, using traditional inference. ^^^ indicates statistical significance at the 1% level, ^^ at the 5% level, and ^ at the 10% level, using randomization inference. The comparison group was defined using an entropy balancing method. [§] Differences in sample sizes across outcomes may exist on account of missing data for some outcomes. Regression p-values and randomization inference p-values are complementary and reflect two ways of establishing inference. When inconsistent, randomization inference p-values take precedence over regression p-values in this report, as the former are more appropriate for small samples.

B. New RCHD Hospitals

The DID results for *new* RCHD hospitals (Exhibit 6.10) show that hospitals participating in the RCHD for the first time increased their Medicare margins by 16 percentage points relative to the comparison group, from a baseline mean of -19 percent, or an 82 percent increase. Medicare combined margins also increased as a result of the RCHD, but by a smaller percentage than Medicare inpatient margins: 12 percentage points from a baseline mean of −26 percent, or by 45 percent. The smaller magnitude of increase for Medicare combined margins can be explained by the fact that Medicare inpatient revenues represent about 50 percent of Medicare revenues for these hospitals, with outpatient revenues accounting for the rest.

Results for both sets of margins are only significant according to randomization inference *p*-values, and not per traditional inference *p*-values. As randomization

inference is more accurate for small samples, and we only have 12 *new* RCHD hospitals in the sample, these *p*-values are given precedence.

Hospitals highlighted their local contexts to discuss the importance of the demonstration in maintaining crucial services to respond to community need. One hospital indicated that the demonstration has been particularly important for supporting mental health services, which tend to be less profitable, but vital to the community. Similarly, another hospital spoke about the importance of maintaining unprofitable local dialysis services because "no one else up here would take the risk to run one of those."

At the same time, hospitals emphasized that the demonstration also does not negate the need for ongoing cost-control efforts. One hospital with a very high percentage of Medicare and Medicaid patients (approximately 90 percent) realized financial benefit from the demonstration, but spoke of the importance of sustained, parallel cost-control efforts. Despite their appreciation of the demonstration, some hospitals presented recommendations to CMS to improve the financial impact of the demonstration if it were made permanent. For example, one hospital suggested allowing RCHD hospitals that also qualify for the SCH program to receive PPS payments if the payments are greater than the base year costs. This hospital indicated that it has considered leaving the demonstration due to its concerns about losses under the RCHD payment methodology.

Exhibit 6.10: Difference-in-Differences Results: New RCHD Hospitals' Medicare Margins Improved as a Result of Demonstration Participation

Measure	Medicare Inpatient Margin	Medicare Combined Margin
Average Impact Estimate	16^^	12^^
90% Confidence Interval	(-5, 37)	(-1, 24)
Standard Error	(13)	(8)
Regression *p*-value	[0.21]	[0.13]
Randomization Inference *p*-value	[0.01]	[0.02]
Baseline Mean for RCHD Hospitals	-19%	-26%
Average Impact Estimate as a Percentage of the RCHD Group Baseline Mean	82%	45%
Sample Size in Hospital-Years[§]	1,290	1,291
Number of RCHD Hospitals	12	12

Number of Comparison Hospitals	314	314

Notes: Standard errors, clustered at the hospital level and robust to heteroscedasticity, are in parentheses. *** indicates statistical significance at the 1% level, ** at the 5% level, and * at the 10% level, using traditional inference. ^^^ indicates statistical significance at the 1% level, ^^ at the 5% level, and ^ at the 10% level, using randomization inference. The comparison group was defined using an entropy balancing method. § Differences in sample sizes across outcomes may exist on account of missing data for some outcomes. Regression p-values and randomization inference p-values are complementary and reflect two ways of establishing inference. When inconsistent, randomization inference p-values take precedence over regression p-values in this report, as the former are more appropriate for small samples.

It is also worth considering whether changes to alternative reimbursement systems for small rural hospitals (in particular the CAH, the SCH, and the MDH programs), as well as changes to the IPPS more generally, affected Medicare inpatient reimbursements for hospitals in the comparison group. These changes, if not accounted for by the DID methodology, could bias the estimates produced for *continuing* or *new* hospitals. In Section 1.2, alternative reimbursement systems for small rural hospitals, as well as relevant IPPS adjustments, were reviewed, and changes that have occurred over the timeframe of the demonstration were highlighted. Any major changes to these reimbursement programs in the FY 2012–FY 2018 timeframe can be a potential source of bias for the DID estimates, which use data from this time period.

That said, there were no major legislated updates to most programs during the FY 2012–FY 2018 period, with the exception of the addition of a payment for uncompensated care to qualifying hospitals, under the DSH program, in FY 2014.[75,76] Additional payments to hospitals resulting from this change would depend in part of the level of uncompensated care at the hospital relative to the amount of uncompensated care for all DSHs expressed as a percentage, as well as on the change in the percentage of individuals under the age of 65 who are uninsured.

While the precise direction of bias created by this change is difficult to pin down, it is possible that not fully accounting for this policy change makes our estimates more conservative. It was observed in the data that while comparison group hospitals' participation in the DSH program remained roughly constant across the baseline and demonstration periods (around 84 percent of hospitals participated), fewer RCHD hospitals had DSH status during the demonstration period (with declines from 43 percent participating at baseline to 13 percent participating

[75] CMS. (2022, April 18). *Disproportionate Share Hospital (DSH).* https://www.cms.gov/Medicare/Medicare-Fee-for-Service-Payment/AcuteInpatientPPS/dsh

[76] Additionally, on April 1, 2013, CMS imposed a mandatory 2 percent payment reduction in the Medicare Fee-for-Service (FFS) Program—also known as "sequestration." Even though sequestration was a new policy that started within the timeframe of our analysis, since sequestration is a national policy affecting all hospitals, we do not specifically account for it in our DID model. However, all relevant financial outcomes were constructed by accounting for sequestration.

during the demonstration period). Therefore, this change could have boosted IPPS reimbursement more for comparison group hospitals than RCHD hospitals, and since we are not fully controlling for it, we could be underestimating the impact of the RCHD for a few hospitals. While an indicator variable measuring whether or not a hospital has DSH status in our regressions was controlled for, there could be some remaining bias stemming from not accounting for the DSH amounts for which hospitals are eligible.

6.3.2.2 Overall Profitability Margins

This section presents the impact effects that the RCHD had on total profit margins, operating margins, and other non-margin outcomes. As mentioned before, DID results for *continuing* hospitals measure the impact of continued participation in the CCA authorization extension phase of the demonstration for hospitals that already participated in the ACA extension. For *new* hospitals, DID results measure the impact of participating in the demonstration (relative to not participating).

A. *Continuing RCHD Hospitals*

The DID results for *continuing* RCHD hospitals (Exhibit 6.11) show that, during the CCA authorization extension phase, *continuing* RCHD hospitals experienced a decline in their total profit margins, which is likely unrelated to the demonstration. Total profit margins for *continuing* RCHD hospitals decreased by 6 percentage points relative to the comparison group, from a baseline mean of 2 percent, or a 258 percent decrease (traditional inference *p*-values statistically significant at the 5 percent level and randomization inference *p*-values only marginally significant at the 10 percent level). This, along with the finding that Medicare margins for these hospitals do not change, indicates that hospitals continuing participation in the demonstration may be more vulnerable to decreases in revenue or increases in costs due to external, non-Medicare factors than comparison group hospitals. However, as discussed in Section 6.5, this result is also sensitive to large declines experienced by a few *continuing* RCHD hospitals.

While operating margins for these hospitals were also lower during the CCA authorization extension phase, the decrease in this margin was not statistically significant per randomization inference-based *p*-values.

Exhibit 6.11: Difference-in-Differences Results: Total Profit Margins for Continuing RCHD Hospitals Declined During the CCA Authorization Extension

Measure	Total Profit Margin	Operating Margin
Average Impact Estimate	-6**^	-5**
90% Confidence Interval	(-9, -2)	(-8, -2)
Standard Error	(2)	(2)
Regression *p*-value	[0.01]	[0.01]
Randomization Inference *p*-value	[0.0996]	[0.25]
Baseline Mean for RCHD Hospitals	2%	0%
Average Impact Estimate as a Percentage of the RCHD Group Baseline Mean	-258%	-2,398%
Sample Size in Hospital Years[§]	5,506	5,506
Number of RCHD Hospitals	17	17
Number of Comparison Hospitals	354	354

Notes: Standard errors, clustered at the hospital level and robust to heteroscedasticity, are in parentheses. *** indicates statistical significance at the 1 percent level, ** at the 5 percent level, and * at the 10 percent level, using traditional inference. ^^^ indicates statistical significance at the 1 percent level, ^^ at the 5 percent level, and ^ at the 10 percent level, using randomization inference. The comparison group was defined using an entropy balancing method. [§] Differences in sample sizes across outcomes may exist on account of missing data for some outcomes. Regression p-values and randomization inference p-values are complementary and reflect two ways of establishing inference. When inconsistent, randomization inference p-values take precedence over regression p-values in this report, as the former are more appropriate for small samples.

Several *continuing* RCHD hospitals reiterated that national trends in discharges, including the shift from some inpatient procedures being performed as outpatient procedures. Similarly, the push to discharge patients from inpatient stays quickly, have placed downward pressure on patient discharges overall. However, local contexts also emerged as an important factor influencing bidirectional trends in patient discharges. Some hospitals reported expecting their growing local populations to influence admission and discharge rates in coming years. Others have seen an increase in discharges due to expansions in its inpatient service lines, leading to more locally available care, and also due to the rising population of elderly people within their communities.

Hospitals also face individualized pressures in given years. One hospital noted that losing just one provider type or specialty can impact patient volumes. Another hospital pointed out that rural hospitals sometimes invest in highly specialized physicians and

staff, but miss opportunities to realize profit from conducting the most complex, high-cost surgeries because those cases tend to get referred out to larger hospitals. Another challenge was highlighted by a hospital with a strong focus on cost control that has been struggling with Medicare health maintenance organization plans offering lower reimbursement rates compared to traditional Medicare, which can be a challenge in serving its majority-Medicare patient population.

Hospitals spoke favorably about the demonstration as helping them navigate the challenges and pressures they are facing. They also emphasized that their competitive environments, payer mixes, and unique locations play a large role in determining the financial impact of the demonstration. One *continuing* hospital emphasized that the demonstration payment structure benefits the hospital because it is Medicare-centric. It also reported that the RCHD payments can provide additional flexibility to offer services such as obstetrics care to the non-Medicare population. Another hospital, which serves a very remote population in Alaska, specifically credited the RCHD with supporting its "self-sufficiency" in being able to remain open and called the payments "very valuable." Similarly, an RCHD hospital in Iowa reported that the demonstration has offered "flexibility" to continue offering obstetric services, allowing the hospital to become a critical regional provider of care for women in a region where many CAHs have dropped their obstetrics services.

Most hospitals reported that the demonstration supports overall operations and continuation of existing service lines, indicating that funds are not typically earmarked for specific initiatives or services. One hospital also reported that the demonstration has supported infrastructure improvements, high quality of care, and service line expansion. These expansions, in turn, support the hospital's ability to attract and recruit specialist physicians, further enhancing local service line offerings. Hospitals also spoke about the importance of the demonstration in maintaining crucial services to serve their higher need populations. In some cases, the demonstration has enabled RCHD hospitals to remain the only regional provider of particular services. Similarly, another *continuing* hospital credited the demonstration with its survival and reports that it would have "definitely" closed the intensive care unit without its support, while another emphasized the RCHD's importance in maintaining ambulance services for the local community.

Several hospitals expressed support for making the RCHD permanent to offer consistent support to rural hospitals and to allow for long-range financial planning. One hospital explained, "We were hoping that at some point in time that CMS and Congress would

recognize that this is something that should just be made permanent for . . . hospitals that don't necessarily need a critical access type reimbursement." Conversely, some hospitals spoke about their desire for CMS to revisit the CAH eligibility criteria to consider expansion to additional hospitals, including RCHD hospitals, that provide vital services in rural communities.

Other hospitals presented specific recommendations to CMS to improve the financial impact of the demonstration if it is made permanent. One hospital, for example, advocated for making the RCHD reimbursement criteria more similar to the CAH model, which includes cost-based reimbursement for both inpatient and outpatient services. Several hospitals specifically reported an interest in seeing the RCHD expanded to cover outpatient services. If the demonstration is not made permanent, hospitals do not necessarily have solid contingency plans. One hospital indicated it does not have a plan in place for the discontinuation of the RCHD and that it would possibly have to consider ownership changes or service cuts without that additional financial support.

B. *New RCHD Hospitals*

The DID results for *new* RCHD hospitals (Exhibit 6.12) show that, while these hospitals did not experience a statistically significant increase in their total profit margins, their operating margins increased. *New* hospitals participating in the RCHD increased their operating margins by 13 percentage points relative to the comparison group, from a baseline mean of -8 percentage points, or a 172 percent increase (traditional inference *p*-values statistically significant at the 10 percent level and randomization inference *p*-values statistically significant at the 5 percent level). Since operating margins only include revenues and costs related to patient care, we can expect these margins to be more directly affected by the change in Medicare reimbursement under the demonstration, as compared to total profit margins.

Exhibit 6.12: Difference-in-Differences Results: The Demonstration Did Not Impact New Hospitals' Total Profit Margins, but Their Operating Margins Improved

Measure	Total Profit Margin	Operating Margin
Average Impact Estimate	6	13*^^
90% Confidence Interval	(-5, 18)	(1, 26)
Standard Error	(7)	(8)

Measure	Total Profit Margin	Operating Margin
Regression *p*-value	[0.35]	[0.08]
Randomization Inference *p*-value	[0.17]	[0.04]
Baseline Mean for RCHD Hospitals	-3%	-8%
Average Impact Estimate as a Percentage of the RCHD Group Baseline Mean	198%	172%
Sample Size in Hospital-Years[§]	1,289	1,289
Number of RCHD Hospitals	12	12
Number of Comparison Hospitals	314	314

Notes: Standard errors, clustered at the hospital level and robust to heteroscedasticity, are in parentheses. *** indicates statistical significance at the 1 percent level, ** at the 5 percent level, and * at the 10 percent level, using traditional inference. ^^^ indicates statistical significance at the 1 percent level, ^^ at the 5 percent level, and ^ at the 10 percent level, using randomization inference. The comparison group was defined using an entropy balancing method. [§]Differences in sample sizes across outcomes may exist on account of missing data for some outcomes. Regression p-values and randomization inference p-values are complementary and reflect two ways of establishing inference. When inconsistent, randomization inference p-values take precedence over regression p-values in this report, as the former are more appropriate for small samples.

While the RCHD is targeted to inpatient hospital services and represents an important support for the *new* RCHD hospitals, several hospitals spoke about inpatient services being a "drain on the system" and of the challenges in realizing profit from inpatient discharges. Many hospitals discussed how the general shift toward more outpatient surgical procedures has had a downward effect on their Average Daily Census (ADC) counts and inpatient discharges. One hospital administrator specifically reported that this trend may threaten the hospital's ability to realize financial benefits from the RCHD in the future, even though the hospital itself owns most of the outpatient and ambulatory surgery centers in the community: *". . . it really forces hospitals to have to compete with for-profit, oftentimes physician-owned, outpatient surgery centers."*

Other hospitals reported that local context can accelerate the push toward outpatient procedures. A hospital in a mountain town said that it has a high prevalence of orthopedic trauma cases due to extensive local outdoor recreation opportunities, but many of these cases require treatment on an outpatient basis and do not contribute to the hospital's inpatient reimbursement. Another hospital discussed how its slight decrease in ADC counts may be due to both a shift to outpatient services as well as a shift between hospital bed types (acute versus swing bed). Some hospitals echoed the

continuing RCHD hospitals in reporting that changing population demographics and/or service lines may influence admission and discharge rates in coming years.

Just one hospital outlined a specific internal initiative designed to *reduce* inpatient discharges; this "aggressive strategy" consists of a program providing home care to selected high-need patients, such as patients requiring regular infusions, to prevent hospitalizations. At the same time, the hospital reported that some complex or high-risk cases "drive to the big city" for care, which may reduce lengthier inpatient stays at their facility.

Both *continuing* and *new* hospitals reported that the demonstration remains important to overall financial viability, even when total or Medicare margins remain negative.

6.2.3.3 Other (Non-Margin) Outcomes

DID results for other financial outcomes are reported for *continuing* and *new* hospitals in Appendix Exhibits E12 and E13, respectively. DID results for Medicare revenue indicators are reported for *continuing* and *new* hospitals in Appendix Exhibits E14 and E15, respectively.

A. Continuing RCHD Hospitals

   Statistically significant changes for most non-margin outcomes were not observed, with the exception of a small decrease in the Medicare share of inpatient discharges (an 8 percent decrease, with traditional inference *p*-values significant at the 1 percent level and the more appropriate randomization inference *p*-values significant at the 10 percent level). As previously noted, the parallel baseline trends test did not pass for three outcomes for *continuing* hospitals: days cash on hand, FTEs per occupied bed, and the average age of plant. As a result, we do not consider the DID results for these outcomes to be valid.

B. *New* RCHD Hospitals

   For *new* RCHD hospitals, a statistically significant decrease in average age of plant (Exhibit E13) and a statistically significant increase in Medicare swing-bed revenue share (Exhibit E15) were observed. The Medicare swing-bed revenue share outcome is discussed further in Section 6.4. Since in this report we only observe one year of demonstration participation data for *new* hospitals, it is possible that this change reflects strategic behavior on the part of hospitals. Additionally, hospitals may be timing investments in buildings and equipment to coincide with their base year under the demonstration, in order to maximize Medicare revenue, reflecting decreases in their

average age of plant. The average age of plant for *new* RCHD hospitals decreased by 13 years relative to comparison group hospitals, from a baseline mean of 19 years, roughly a 70 percent decrease.[77]

Hospitals may also be increasing their use of swing beds to maximize Medicare revenue as the RCHD payment methodology for swing beds results in improved hospital Medicare inpatient margins if the hospital substitutes Medicare acute care beds with swing beds (see Section 1.1 and Appendix A for an explanation of the swing-bed payment methodology). Section 6.4 has further insights on hospitals' use of swing beds under the demonstration.

We also observe that *new* hospitals' ratio of salaries to net patient revenue decreased by 6 percentage points relative to comparison group hospitals, from a baseline mean of 43 percent, or a 13 percent decrease. This result is likely a mechanical artifact from increased patient revenues under the demonstration and does not necessarily reflect a real change in hospitals' staffing efficiency (Exhibit E13). The Medicare share of inpatient discharges for *new* hospitals also increased by 9 percentage points relative to comparison group hospitals, from a baseline mean of 43 percent, or a 20 percent increase (Exhibit E15).

6.4 Swing-Bed Reimbursement under the Demonstration

Under the RCHD payment methodology, participant hospitals can receive substantially higher payments from Medicare swing beds under the RCHD than they otherwise would have under SNF PPS. As is explained in Appendix A, it is also possible for RCHD reimbursement for swing beds to be greater than the actual cost of delivering swing bed services, and, in general, the use of Medicare swing beds for post-acute SNF care instead of acute care has a positive impact on hospitals' Medicare inpatient margins. Given this feature of the demonstration, it is important to explore the impact of demonstration participation on hospitals' use of swing beds. In particular, we examine how demonstration participation changes the share of Medicare inpatient revenues that hospitals derive from swing beds and unintentionally induces an increased utilization for them.

In general, we find that hospitals newly joining the demonstration derive a substantially larger share of Medicare inpatient revenue from swing beds during the post-demonstration period relative to their baseline. In interviews, several hospital leaders acknowledged the beneficial

[77] Traditional inference *p*-values are not statistically significant, but randomization inference *p*-values are statistically significant at the 1 percent level.

impact of swing beds on reimbursement under the demonstration. At the same time, they spoke of localized motivations and community need for pursuing or discontinuing swing-bed usage, which indicates that hospitals are not solely using swing beds as 'income enhancers'.

Previous studies have also shown that swing beds tend to provide benefits for both patients and providers for several reasons. First, patients report feeling more comfortable being treated in hospital swing beds than in an SNF because being in a hospital makes them feel more cared for. Providers also report preferring swing beds because they can visit their patients more frequently.[78,79] Second, especially in rural settings, where there is a lack of sufficient SNFs, swing beds are in some cases the only long-term care option for patients.

Therefore, swing beds provide a necessary service to rural communities by providing a long-term care option that is either of higher quality than the alternative or the only possible option for long-term care. Additionally, swing beds provide more time for families of patients to make arrangements for future care or plan for palliative care without having to move the patient out of the community.[80] Several studies have found that swing-bed patients are discharged more quickly and frequently than SNF patients after adjusting for case-mix differences.[81]

In sum, even though the demonstration does seem to have increased hospitals' swing-bed utilization, which may be an unintended consequence of the demonstration, swing-bed usage on the part of hospitals seems to be in line with community need. Below is a discussion of results from the DID model and interview findings for *continuing* and *new* hospitals.

A. *Continuing RCHD Hospitals*

   Both descriptive analysis (Appendix Exhibit E8) and the DID regressions (Appendix Exhibit E14) indicate that *continuing* RCHD hospitals did not increase their Medicare share of revenue from swing beds relative to their share under the previous authorization period. *Continuing* hospitals derived a relatively large share of Medicare inpatient revenues from swing beds during the prior ACA authorization extension

[78] Freeman, V. A., & Radford, A. (2012, April). *Why use swing beds? Conversations with hospital administrators and staff* [Findings brief]. North Carolina Rural Health Research & Policy Analysis Center. https://www.shepscenter.unc.edu/wp-content/uploads/2014/04/FB105.pdf

[79] Azalea Health. (n.d.). *Medicare swing beds: A vital service for rural communities.* https://www.azaleahealth.com/blog/medicare-swing-beds-a-vital-service-for-rural-communities

[88] Parrish, J., Turner, A., & Woeppel, M. (2016). *Impact of swing beds* [Policy paper]. National Rural Health Association. https://www.ruralhealthweb.org/getattachment/Advocate/Policy-Documents/NRHAImpactofSwingBedsPolicyPaperFeb2016-(1).pdf.aspx?lang=en-US

[81] Shaughnessy, P. W., Schlenker, R. E., & Silverman, H. A. (1988). Evaluation of the national swing-bed program in rural hospitals. *Health Care Financing Review, 10*(1), 87–94. https://www.cms.gov/research-statistics-data-and-systems/research/healthcarefinancingreview/downloads/cms1191012dl.pdf

(around 14 percent), and this trend remained stable during their demonstration participation under the CCA extension.

Interviews with hospital leaders revealed that *continuing* RCHD hospitals generally perceive swing beds as important to their RCHD payments and in some cases, central to their decision to continue with the demonstration. A health system that operated two RCHD hospitals reported that one of its hospitals stayed in the demonstration, whereas another withdrew because the former has swing beds whereas the latter did not. Another hospital attributed its fluctuations in RCHD payments to fluctuation in its swing-bed utilization, demonstrating the significant impact of swing beds on overall RCH payment levels. Finally, in their interview, one hospital mentioned, "Swing beds were probably the main reason we entered [the demonstration] because back at that time, we had a large number of swing beds. Now there's an unrelated entity that provides short-term rehab and long-term care. Now our swing beds dropped quite a bit. That's made quite a difference in us choosing whether to remain in the program or go with low volume . . ."

Several hospitals said they are trying to increase swing-bed utilization or start new swing-bed programs. One hospital reported that its case managers planned to visit local hospitals to share information about the swing beds, so clinicians know about the option upon patient discharge. Another hospital, which recently restarted its swing-bed program, also hoped to see an uptick in swing beds with a "change of referral patterns" and the new availability of appropriate beds for patients who "did not have a place to go." One hospital, which did not have swing beds, considered adding swing beds due to high local need in its very remote region in Alaska, but found that it would be ineligible for cost-based reimbursement for the service because the hospital did not have swing beds during the base year.

As with other services, several hospitals reported competing with neighboring facilities for swing-bed care. One hospital experienced a decrease and then an increase in RCHD swing-bed payments with the opening and subsequent closure of a neighboring SNF. Another hospital also mentioned competition with local facilities as a factor in swing-bed utilization and thus RCHD payments. The hospital has tried to increase swing-bed referrals but found that patients tended to seek acute and follow-up swing-bed care at the nearby tertiary center. One hospital reported that a decrease in swing-bed utilization due to a new long-term care facility nearby impacted the benefits of the demonstration. Conversely, another participant expected its swing-bed utilization to

grow due to inadequate staffing and/or limited availability at local long-term care facilities.

Some *continuing* RCHD hospitals perceived swing beds as less impactful in their overall RCHD payments and reimbursement. Two hospitals reported relatively low swing-bed utilization, or declining utilization, due to numerous contextual factors, including widespread availability of local nursing homes, physician practices and preferences, and shorter lengths of hospitalization. One of these hospitals indicated that swing-bed utilization was not impactful, because, like all services at the hospital, utilization had been decreasing. In addition, another hospital reported that historically swing beds have not benefited the hospital financially, so physicians tended to rely on home health care instead. One participant indicated that the hospital is not trying to move the needle on swing beds because it provides care based on patient need, not strategic financial gain. A separate hospital reported that its recently launched swing-bed program has a primary benefit of stabilizing hospital bed utilization and staffing levels, reducing hard-to-manage daily fluctuations. These findings suggest that hospitals consider the impact of swing beds on the RCHD payments, but that they also have localized motivations for pursuing or discontinuing swing-bed usage.

B. New RCHD Hospitals

DID regression results (Appendix Exhibit E15) show that *new* hospitals' Medicare swing-bed revenue share increased by 10 percentage points relative to comparison group hospitals, from a baseline mean of 9 percent, or a 104 percent increase.[82] This is likely explained by the RCHD swing-bed payment methodology, which results in improved hospital Medicare inpatient margins if hospitals substitute Medicare acute care beds for swing beds (see Section 1.1 and Appendix A for an explanation).

Like *continuing* RCHD hospitals, *new* RCHD hospitals with swing beds typically reported that swing beds helped enhance their RCHD payments, sometimes to a significant degree. One hospital reported that the bulk of its care is related to swing beds since acute care is provided by the neighboring, affiliated hospital. One hospital said that as part of its Accountable Care Organization participation, they received a waiver to relax the three-day inpatient stay requirement for swing beds, which resulted in an increase in swing-bed days and thus an increase in RCHD payments. Another *new* hospital indicated that "the swing-bed portion of this [demonstration] makes it work for

[82] traditional inference *p*-values statistically significant at the 5 percent level and randomization inference *p*-values statistically significant at the 1 percent level

us." Hospitals also mentioned the benefits of swing beds outside of enhanced RCHD payments. For example, a hospital reported that swing beds improve patient health outcomes by reducing hospital readmissions and maintaining continuity of care.

Most *new* hospitals anticipate growth in their swing-bed utilization. Factors contributing to this growth include inadequate staffing and/or limited facilities at local long-term care facilities, perceived financial benefit of swing beds for RCHD hospitals, and community need for swing beds and different levels of care. Similar to some *continuing* hospitals, some *new* hospitals are also trying to increase swing-bed utilization or start new swing-bed programs, both in response to financial incentives and community need. One hospital planned to revive its swing-bed program, which it terminated in the early 2010s, because the hospital found it was discharging the vast majority of its patients to other hospitals with swing beds.

Despite the generally favorable view on swing beds, some *new* hospitals reported financial challenges or concerns. One identified a community need for swing beds but did not perceive adding them as financially feasible. Similarly, two other hospitals reported some concerns about rising costs of swing beds, which may not always be captured in the most recent base year, and the subsequent impact on the bottom line. Ultimately, most hospitals perceived swing beds as important to the community and essential to their financial performance under the RCHD.

6.5 Robustness Checks

This section describes the robustness checks performed for the regression analyses reported in previous parts of Section 6. The following robustness checks were conducted:

1. Capping entropy balancing weights at the 95th percentile and re-normalizing the weight distribution, to test whether our regression results are driven by extreme weights assigned to a few comparison group hospitals. As described below, there was little evidence of this happening.
2. A sensitivity analysis was performed by dropping three *continuing* RCHD hospitals with the most negative total profit margins during the demonstration periods from the regression analysis to test whether the demonstration period decline in total profit margins observed for *continuing* hospitals was driven by a few hospitals. After dropping these hospitals, the results show no statistically significant relationship between RCHD participation and total profit margins, reinforcing the hypothesis that the observed decline in total profit margins for continuing hospitals was due to factors unrelated to the demonstration.

The results for the first robustness check are reported in Exhibits E16–E23 of Appendix E, and results for the second robustness check are reported in Exhibit E24 of Appendix E.

6.5.1 Capping Entropy Balancing Weights

One potential limitation of matching methods, which can be severe in the case of entropy balancing, is that the matching algorithm may assign very large weights to a few comparison units because they contribute the most information about the counterfactual of interest.[83] Large weights increase the variance of the subsequent DID analyses (which can limit the ability to detect statistically significant effects) and also make the analysis sensitive to changes in a few comparison group observations.

To test the sensitivity of the analysis to extreme weights, the entropy weights were capped at the 95th percentile and then the weight distribution was re-normalized to ensure that the sum of the weights of the comparison units was equal to the sum of the weights of the treated units. Next, the findings from capping and re-normalizing the entropy weights are discussed.

A. *Continuing RCHD Hospitals*

Upon running this robustness check, impacts for *continuing* RCHD hospitals were found to be qualitatively consistent with the main specification for all outcomes. This means that while magnitudes of impact estimates differed slightly across the two specifications, the sign and significance of the estimates remained the same. Namely, Exhibit E16 shows that Medicare inpatient and Medicare combined margins for *continuing* RCHD hospitals did not experience a statistically significant change relative to their levels during the previous authorization phase. This robustness check specification also indicates that total profit margins for *continuing* hospitals declined during the CCA authorization extension (Exhibit E18). Similar to the main specification, this specification also indicates a small decrease in *continuing* hospitals' Medicare share of inpatient discharges during the CCA authorization extension (Exhibit E22). All other outcomes did not experience a statistically significant change across both specifications.

B. *New RCHD Hospitals*

Impacts for *new* hospitals were also found to be consistent with the main specification. Medicare inpatient and Medicare combined margins for *new* RCHD hospitals improved as a result of participating in the RCHD for the first time (Exhibit E17). Operating margins for these hospitals also improved during the demonstration period (Exhibit E19). This

[83] Hainmueller, J. (2012). Entropy balancing for causal effects: A multivariate reweighting method to produce balanced samples in observational studies. *Political Analysis*, *20*(1), 25–46.

specification also indicates decreases in the ratio of salaries to net patient revenue and in the average age of plant for *new* hospitals (Exhibit E21). In Section 6.3 it is noted that the former is likely a mechanical artifact due to higher patient revenues under the demonstration, and the latter may indicate strategic behavior on the part of participating hospitals to increase base year costs and maximize revenue under the demonstration. Per this specification, similar to the main specification, the Medicare share of inpatient discharges and Medicare swing-bed revenue share increased for *new* RCHD hospitals during the demonstration period (Exhibit E23).

6.5.2 Excluding Total Profit Margin Outliers for Continuing Hospitals

We tested whether excluding a few *continuing* RCHD hospitals with unusually large negative total profit margins during the demonstration periods would change the result that, on average, total profit margins for *continuing* hospitals declined during the CCA extension period. Three hospitals with the most negative total profit margins in the demonstration period were identified; the demonstration period total profit margin average for these three hospitals was -23 percent (ranging from -34 percent to -13 percent), whereas the average of demonstration period total profit margins for the remaining hospitals was 2 percent (ranging from -12 percent to 20 percent).

Exhibit E24 shows that once these three hospitals are removed, the decline in total profit margins for *continuing* hospitals is not statistically significant per randomization inference *p*-values.

7.0 Conclusion

This is the second interim evaluation report under this contract and the first one to include quantitative data for hospitals that joined the RCHD during the CCA extension., In contrast, *Interim Report One* (publicly released in 2021) analyzed participant hospital characteristics, payments participants received under the demonstration, and the impact of the RCHD on hospitals' financial condition between FY 2005 and FY 2017 (the MMA and ACA authorization and extension periods) for all hospitals that ever participated in the demonstration.

Findings in this report show that for *new* hospitals initiating their participation, the RCHD resulted in large, positive, and statistically significant increases in their Medicare inpatient and combined margins, bringing hospitals closer to having break-even Medicare inpatient and combined margins (instead of extremely negative margins). The DID results show that hospitals participating in the RCHD for the first time increased their Medicare margins by 16 percentage points relative to a comparison group of similar non-participant hospitals, from a baseline mean of -19 percent, or an 82 percent increase. Medicare combined margins also increased as a result of the RCHD, but by a smaller percentage than Medicare inpatient margins: 12 percentage points from a baseline mean of −26 percent, or by 45 percent. The smaller magnitude of increase for Medicare combined margins can be explained by the fact that Medicare inpatient revenues represent about 50 percent of Medicare revenues for these hospitals, with outpatient revenues accounting for the rest.

Other findings for *new* hospitals indicate that there is no evidence that participation in the RCHD resulted in improvements in their total profit margins, which is explained small role that Medicare inpatient in total profit margins which include other income components across other payers and sectors of the hospital. For this group of hospitals, participation in the RCHD was associated with improvements in hospitals' fixed assets, as measured by a reduction in average age of plant, and increases in Medicare swing-bed revenue share. All the evaluation findings for *new* hospitals in this report are similar to the ones in *Interim Report One*, which used a different sample of hospitals.

Findings in this report show that for *continuing* hospitals, participating in the CCA extension after having participated in the prior ACA authorization extension did not result in any additional changes in hospitals' Medicare inpatient and combined margins relative to the changes hospitals already experienced during the ACA authorization extension. For this group of hospitals, participation in the RCHD was associated with lower total profit margins, which could be an indication that *continuing* hospitals are in a relatively weaker condition than their comparison group. No other changes associated with continued participation were detected in

any of the additional outcomes that were examined. Results for *continuing* hospitals cannot be compared to previous reports because this is the first time this type of analysis was conducted.

In interviews with hospital representatives, most hospitals reported that the demonstration supports overall operations and continuation of existing service lines. Several hospitals expressed support for making the RCHD permanent to offer consistent support to rural hospitals and to allow for long-range financial planning. Hospitals do not necessarily have solid contingency plans if the demonstration were to be discontinued.

Hospitals leaders expressed in interviews that they perceive swing beds as important to their RCHD payments and, in some cases, central to their decisions to continue with the demonstration. Many hospitals mentioned that they are trying to increase swing-bed utilization or start new swing-bed programs, in part, because they view this to be favorable to their financial margins.

Our quantitative findings indicate that *new* RCHD hospitals increase swing-bed utilization when they join the demonstration for the first time, though *continuing* hospitals do not further increase utilization beyond levels in the ACA authorization. Chapter 5 findings also indicate that over time *continuing* hospitals receive fairly stable share of additional RCHD payments over IPPS from swing beds. Beyond their financial motivations, some hospitals reported that swing beds improve patient health outcomes by reducing hospital readmissions, maintaining higher quality of care, and/or stabilizing hospital bed utilization and staffing.

In general, results for *new* hospitals are consistent with those found in *Interim Report One* and the *Report to Congress.* Participating in the RCHD improves hospitals' Medicare inpatient margins, but has limited impact in other financial measures. Continue participation in the RCHD also does not result in a continuous improvement of hospitals' financial condition. Hospitals that continue to participate in the RCHD do not obtain any additional gains beyond the ones realized when they first made the decision to participate. Overall, these findings suggests that the RCHD has reached a stable status, in terms of its impact on the participating hospitals' financial condition.

Appendix A: Other Payment Systems Available to Small Rural Hospitals Under Medicare, RCHD Payment Methodology, and List of Actively Participant RCHD Hospitals as of FY, 2018

A.1 Other Payment Systems Available to Small Rural Hospitals Under Medicare

This section describes the payment mechanisms and other rural hospital policy changes that may be relevant to RCHD hospitals and that hospitals might consider as they decide to join or exit the RCHD. As Exhibit 1.3 shows, the RCHD is one of five existing payment options Medicare provides to help sustain small rural hospitals. In addition, small rural hospitals are also potentially eligible for several types of IPPS adjustments such as low-volume adjustments, or Disproportionate Share Hospital (DSH) payments. According to the 2018 *Report to Congress,* 50 percent (11 out of 22) of RCHD hospitals participating in FY 2013 also qualified as Sole Community Hospitals (SCHs), and 36 percent (8 out of 22) qualified as Medicare Dependent Hospitals (MDHs) prior to joining the demonstration.[84] The 2018 *Report to Congress* also notes that 18 percent of RCHD hospitals withdrew between 2004 and 2013 to become CAHs, and 12 percent withdrew to become SCHs.[85]

Exhibit A.1 Medicare Payment Programs and Demonstrations for Rural Hospitals[86]

Payment Option	Acute Care Services†	Swing-Bed Services[a]	Outpatient Services
Critical Access Hospital (CAH)*	101% of reasonable costs	101% of reasonable costs	101% of reasonable costs
Rural Community Hospital Demonstration (RCHD)	**Lesser of reasonable costs or target amounts based on base year costs updated to current year, case-mix, and volume**	**Lesser of reasonable costs or target amounts based on base year costs updated to current year, case-mix, and volume**	Federal OPPS rate plus 7.1% for services other than drugs & biologicals if SCH

[84] According to page 16 of the 2018 *Report to Congress,* 11 RCHD hospitals qualified as SCHs prior to the demonstration (11/33 = 33 percent), and eight RCHD hospitals qualified as MDHs (8/33 = 24 percent). In comparison, according to the Medicare Payment Advisory Commission (MedPAC), 64 percent of rural hospitals are CAHs, 17 percent are SCHs, 6 percent are MDHs, and 13 percent are standard PPS hospitals (MedPAC. [2021, November]. *Critical Access Hospitals payment system* [Policy brief]. https://www.medpac.gov/wp-content/uploads/2021/11/medpac_payment_basics_21_cah_final_sec.pdf).

[85] According to page 3 of the 2018 *Report to Congress,* six RCHD hospitals withdrew to become CAHs (6/33 = 18 percent), and four withdrew to become SCHs (4/33 = 12 percent).

[86] CMS. (2018, October). *Report to Congress: Rural Community Hospital Demonstration,* p. 9. https://innovation.cms.gov/files/reports/rch-rtc.pdf

Payment Option	Acute Care Services†	Swing-Bed Services[a]	Outpatient Services
Sole Community Hospital (SCH)	Greater of federal IPPS rate or base year costs updated to current year, case-mix, and volume	Federal SNF PPS rate	Federal OPPS rate plus 7.1% for services other than drugs & biologicals if SCH
Medicare Dependent Hospital (MDH)**	IPPS rates plus 75% of the amount by which updated hospital-specific base year cost exceeds the PPS rate	Federal SNF PPS rate	Federal OPPS rate
Prospective Payment System	Federal IPPS rate	Federal SNF PPS rate	Federal OPPS rate
Low-Volume Adjustment***	Up to 125% of IPPS, MDH, or SCH payment	–	–

Abbreviations: IPPS, Inpatient Prospective Payment System; OPPS, Outpatient Prospective Payment System; PPS, Prospective Payment System; SNF, Skilled Nursing Facility.

Notes: (1) † The RCHD, SCH, and MDH programs use different base years that may result in higher or lower payments to hospitals. (2) * CAHs are technically considered a different provider type. (3) ** This payment provision applies to discharges after October 1, 2006. Enhanced payments for MDHs were extended through FY 2017 (September 30, 2017). (4) *** For FY 2005–2010, hospitals had to have 200 or fewer total annual discharges to receive a low-volume adjustment. For FY 2011–2017, the threshold was increased to 1,600 Medicare discharges. (5) [a] Swing bed refers to the use of hospital beds in providing SNF care.

Sources: MedPAC. (2013, October). Hospital acute inpatient services payment system [Payment Basics policy brief series].
MedPAC. (2013, October). Skilled nursing facility services payment system [Payment Basics policy brief series].
MedPAC. (2013, October). Outpatient hospital services payment system [Payment Basics policy brief series].
CMS. (2011, July 22). CMS Manual System Pub. 100-19 demonstrations, transmittal 77.
CMS. (2015, June). MLN matters (MLN9197-Revised).

A.1.1 Critical Access Hospitals (CAHs)

CAHs are excluded from both IPPS and Outpatient Prospective Payment System (OPPS) payment rules and instead receive cost-based reimbursements. As such, the CAH program provides the highest level of Medicare cost-based reimbursement among the five payment programs or demonstrations in Exhibit 1.3 above. The CAH program was established through the Medicare Rural Hospital Flexibility (Flex) Program, which was authorized in the Balanced Budget Act of 1997. The program is designed to ensure that Medicare beneficiaries in isolated rural communities have access to emergency room services and limited inpatient services.[87]

To be certified as a CAH, rural hospitals must be located more than 35 miles from other hospitals, must be located more than 15 miles from other hospitals in the case of mountainous terrain or only secondary roads, or must have been certified as a CAH prior to January 2006 based on the state's designation as a "necessary provider." A CAH must also maintain no more than 25 inpatient beds (both acute beds and swing beds, provided that the number of beds

[87] MedPAC. (2001, June). *Report to the Congress: Medicare in rural America,* p. 34. https://www.medpac.gov/wp-content/uploads/import_data/scrape_files/docs/default-source/reports/Jun01_Entire_report.pdf

used at a given time for acute care does not exceed 15), have an average annual length of acute care stay of 96 hours or fewer per patient, and provide 24-hour emergency care seven days a week.[88]

As of October 2019, there were 1,349 certified CAHs in the United States, a number that has not grown much in recent years. One reason for this lack of growth is that prior to January 1, 2006, states had the option of waiving the proximity requirement by designating a hospital as a "necessary provider." As of 2011, 56 percent of existing CAHs met the proximity requirement through this option.[89] When the MMA of 2003 eliminated this option, few *new* hospitals obtained the CAH designation. Between 2006 and 2013, only 75 rural hospitals were newly designated as CAHs, but since 2005, 63 CAHs have closed, which has contributed to the stability in the number of CAHs over time.[90]

CAHs receive 101 percent of reasonable costs for acute care and swing-bed services. Eighteen percent of RCHD hospitals withdrew between 2004 and 2013 to become CAHs, according to the 2018 *Report to Congress*. Until the end of 2005, states could waive the CAH "proximity" requirement for hospitals to be designated as necessary providers.[91]

A.1.2 Sole Community Hospitals (SCHs)

Rural hospitals that provide acute care to Medicare beneficiaries but do not qualify as CAHs may be eligible for designation as SCHs. These hospitals may receive inpatient reimbursement greater than the standard IPPS rates. For inpatient care, an SCH receives the greater of the standard IPPS rate or a reimbursement based on cost. Like the RCHD target payment methodology described above, the inpatient SCH cost reimbursement is calculated as base year costs per discharge updated using the IPPS update factor and a case-mix adjustment, multiplied by the current year discharges. Hospitals may select either FY 1982, FY 1987, FY 1996, or FY 2006 cost reporting periods as a base year for determining payments, whichever yields the highest reimbursement. These hospitals receive standard SNF PPS rates for post-acute care services.

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[88] CAHs must also be located in a state that participates in the State Flex Program, under which they can be certified as CAHs. Currently, all but five states participate in the Flex Program.

[89] These estimates are based on the report *Most Critical Access Hospitals Would Not Meet the Location Requirements If Required to Re-Enroll in Medicare* (OEI-05-12-00080) by the Office of Inspector General of the U.S. Department of Health and Human Services and published in August 2013. This report estimates that 64 percent of CAHs (846 of 1,329 CAHs in 2011) would not meet the distance requirement if required to re-enroll and, of those, 89 percent (749 of 846) were "necessary provider" CAHs.

[90] University of North Carolina, Sheps Center. (n.d.). *181 rural hospital closures since January 2005; closures by Medicare payment classification.* https://www.shepscenter.unc.edu/programs-projects/rural-health/rural-hospital-closures

[91] From 1997 to 2005, governors could waive the requirement that CAHs be located more than 35 miles from the nearest hospital (or more than 15 miles in areas with mountainous or otherwise difficult terrain). Since 2006, the distance requirement applies to all hospitals seeking to convert to CAH status.

In addition to the inpatient adjustment, SCHs also receive enhancements to OPPS payments. Starting in FY 2006, SCHs received a 7.1 percent supplemental payment to the OPPS rates for all outpatient services except drugs and biologicals. In addition, the Medicare Improvements for Patients and Providers Act of 2008, or MIPPA, expanded the Medicare hold-harmless transitional outpatient payment to SCHs with 100 or fewer beds for outpatient services in calendar year 2009.

The SCH designation is intended to support hospitals that are the primary inpatient providers for Medicare beneficiaries in their service areas. The hospital's service area is defined as the area that accounts for 75 percent of all inpatient discharges in the most recent 12-month cost reporting period. A rural hospital can qualify for SCH status if it satisfies one of the following criteria:

1. The hospital is located at least 35 miles from other similar acute care hospitals.[92]
2. The hospital is classified as rural, is located between 25 and 35 miles from other similar acute care hospitals, and accounts for 75 percent or more of all hospital inpatient discharges within the 35-mile radius in the most recent 12-month cost reporting period. Hospitals with fewer than 50 beds that do not meet the 75 percent criterion because some of their beneficiaries are forced to seek specialized health services outside of the hospital's service area are treated as satisfying the requirement.
3. The hospital is classified as rural and located between 15 and 25 miles from other similar acute care hospitals, but, due to local topography or periods of prolonged severe weather conditions, those other hospitals are inaccessible for 30 days or more in two of three years.
4. The hospital is rural and, because of distance, speed limits, and predictable weather conditions, the travel time between the hospital and the nearest similar acute care hospital is at least 45 minutes.

RCHD hospitals can simultaneously qualify as SCHs, and, if previously an SCH, they receive OPPS payments. In fact, the 2018 *Report to Congress* shows that 33 percent of RCHD hospitals also qualified to be SCHs, and 12 percent withdrew from the RCHD to become SCHs.

A.1.3 Medicare Dependent Hospitals (MDHs)

Rural hospitals not classified as a CAH or an SCH may receive additional payments if they qualify as MDHs.[93] The MDH program was established to help rural hospitals that are financially vulnerable under the IPPS methodology because Medicare patients constitute a substantial

[92] "Other similar acute care hospitals" refers to hospitals that provide short-term acute care services, are paid under the Medicare acute care hospital IPPS, are not CAHs, and are not paid under any other Medicare PPS.

[93] Congress has extended the MDH program several times since its establishment. At the time of preparing this report, the program had been extended through September 30, 2022.

proportion of their total discharges. Rural hospitals with no more than 100 beds that have at least 60 percent of inpatient days or discharges covered by Medicare may qualify as MDHs.

For Medicare inpatient services, MDHs receive the higher of the IPPS rate or a blended rate. The blended rate is the IPPS rate plus 75 percent of the amount by which base year costs per discharge for Medicare patients trended forward exceed the IPPS rate. Hospitals may choose base year costs per discharge using FY 1982, FY 1987, or FY 2002 as their base year.[94] These hospitals receive SNF PPS rates for post-acute care services and OPPS rates for outpatient services.

The program was not approved for FY 2018, but the August 2019 IPPS Final Rule extended it for five years. Retroactive payments were provided.

RCHD hospitals can simultaneously qualify as MDHs, and, according to the 2018 *Report to Congress,* 24 percent of RCHD hospitals also qualified to be MDHs.

A.1.4 Inpatient Payments for Rural Hospitals

This section discusses the inpatient payment adjustments that the RCHD hospitals could be eligible for if they were to remain under IPPS.

1. Low-Volume Adjustment

Small hospitals with fewer than 1,600 Medicare discharges and located more than 15 miles from the nearest hospital may qualify for low-volume adjustments to their IPPS payments. The low-volume adjustment helps hospitals that have a high cost per discharge associated with low patient volume.

Established under the MMA, the original adjustment was a 25 percent add-on to the IPPS payment for hospitals located more than 25 miles from the nearest hospital and with fewer than 200 total discharges annually. The ACA temporarily expanded the low-volume adjustment to include hospitals at least 15 miles from another hospital and with up to 1,600 Medicare inpatient discharges (including beneficiaries in Medicare Advantage plans) for FY 2011 and FY 2012. Subsequent legislation (American Taxpayer Relief Act of 2012, Bipartisan Budget Act of 2013, Medicare Access and Children's Health Insurance Program Reauthorization Act of 2015, and Bipartisan Budget Act of 2018) extended the temporary changes through FY 2018. Qualifying hospitals receive an add-on payment using a sliding scale ranging from the 25

[94] This payment provision applies to discharges after October 1, 2006. For discharges before October 2006, MDHs received the IPPS rates plus 50 percent of the amount by which the base year costs exceeded the IPPS rate. In addition, MDHs experiencing a significant decline in volume (more than a 5 percent decrease in discharges in one year) may qualify for payment adjustments to cover minimum staffing and fixed operating costs.

percent add-on for hospitals with fewer than 200 Medicare discharges down to a 1.6667 percent add-on for hospitals with 1,500–1,599 Medicare discharges.

Hospitals cannot receive an IPPS low-volume adjustment while participating in the RCHD.

2. Disproportionate Share Hospital (DSH)

The DSH pricing programs also involve payment add-ons available to some small rural hospitals.

The DSH program enhances payments for hospitals that serve a high share of low-income individuals, but the threshold depends on hospital size and location. Section 3133 of the Affordable Care Act amended the program to provide for an additional payment for a hospital's uncompensated care in FY 2014.[95] After the change, 25 percent of the payment is calculated under the original statutory formula. The remaining 75 percent multiplies the remainder of the original statutory formula, the ratio of the hospital's uncompensated care to that of all DSH hospitals, and one minus the annual percent change in uninsured individuals under 65.

3. IPPS Change for Low Wage Index Hospitals

In 2019, CMS issued a final rule (CMS-1716-F) that increased wage index values for hospitals with a wage index value below the 25th percentile.[96] The wage indexes are increased by half the difference between the otherwise applicable wage index value for a qualifying hospital and the 25th percentile wage index value across all hospitals. This policy went into effect in FY 2020 and likely has affected hospitals in rural areas, which have lower wage indexes.[97] These wage indexes affect the IPPS, which in turn affects hospitals with SCH and MDH statuses; RCHD hospitals, however, are not subject to the policy.

A.1.5 Effect of the Public Health Emergency (PHE)

Most of CMS' demonstrations and models are being affected by changes in health care delivery associated with the COVID-19 pandemic PHE. The impact of the pandemic on rural hospitals may vary depending on factors such as increased costs for personnel, personal protective equipment, restrictions on discretionary procedures, and regional outbreaks and the number of cases in each hospital area. These factors are likely to affect evaluation results that use data from FY 2020 and FY 2021. The PHE will not affect the results in this report, which includes data

[95] CMS. (2022, April 18). *Disproportionate Share Hospital (DSH).* https://www.cms.gov/Medicare/Medicare-Fee-for-Service-Payment/AcuteInpatientPPS/dsh

[96] Hospital Inpatient Prospective Payment Systems for Acute Care Hospitals Final Rule, 84 F.R. 42044 (proposed August 16, 2019) (to be codified at 42 C.F.R. Parts 412, 413, and 495). https://www.federalregister.gov/documents/2019/08/16/2019-16762/medicare-program-hospital-inpatient-prospective-payment-systems-for-acute care-hospitals-and-the

[97] CMS. (2019, August 2). *Fiscal Year (FY) 2020 Medicare Hospital Inpatient Prospective Payment System (IPPS) and Long Term Acute Care Hospital (LTCH) Prospective Payment System Final Rule* (CMS-1716-F) [Fact sheet]. https://www.cms.gov/newsroom/fact-sheets/fiscal-year-fy-2020-medicare-hospital-inpatient-prospective-payment-system-ipps-and-long-term-acute-0

up to FY 2018 and thus pre-PHE. The potential impact of the pandemic will be incorporated and discussed in future reports.

A.2 RCHD Payment Methodology

In this appendix, we describe in more detail how RCHD payments are calculated. RCHD payments are calculated by Medicare Administrative Contractors[98] (MACs) using the formulas described below. In the base year, hospitals receive reimbursement set at the current reasonable and allowable costs for inpatient care in acute care beds or swing beds. In the years subsequent to the base year, hospitals receive the lesser of the current year reasonable and allowable costs or a target amount based on base year costs.

Base year cost reimbursement

Hospital reimbursement in the base year, for both acute care and swing-bed services, depends on how routine costs are calculated under the demonstration. Routine costs per day (RCD) are calculated according to the following formula:

$$RCD = \frac{(Days^{IP} \times TICD + Days^{SB} \times MSR)}{(Days^{IP} + Days^{SB})} \qquad (1)$$

Where,

$TICD$ denotes the total inpatient cost per diem across all payers;

MSR denotes the Medicare rate for swing beds at the hospital;

$Days^{IP}$ is the total number of inpatient routine days across all payers; and

$Days^{SB}$ is the total number of swing-bed SNF days across all payers.

Following this, the **total inpatient routine costs** under the demonstration are given by:

$$IP\ ROUTINE\ COST\ = RCD\ X\ Days^{MIP} \qquad (2)$$

Where, $Days^{MIP}$ is the total number of Medicare acute inpatient days.

And, similarly, **total swing-bed SNF routine costs** under the demonstration are given by:

$$SWING\ BED\ SNF\ ROUTINE\ COST\ = RCD\ X\ Days^{MSB} \qquad (3)$$

Where, $Days^{MSB}$ is the total number of Medicare swing-bed days.

Base-year cost reimbursement for hospitals is derived from acute care and/or swing-bed routine costs, depending on the composition of services offered by the hospital and also

[98] A private health care insurer that has been awarded a geographic jurisdiction to process Medicare Part A and Part B (A/B) medical claims or Durable Medical Equipment (DME) claims for Medicare Fee-For-Service (FFS) beneficiaries (https://www.cms.gov/Medicare/Medicare-Contracting/Medicare-Administrative-Contractors/What-is-a-MAC).

includes costs for ancillary services. Ancillary costs are for services other than room, board, and medical and nursing services that are provided to hospital patients in the course of care and can be attributed to a hospital department and billed separately. They include laboratory, radiology, pharmacy, and physical therapy services.[99]

As shown above, the RCD is a weighted average of swing-bed and acute care bed costs, using Medicare rates, but total days across *all payers* and not just Medicare. By contrast, total routine costs are based *only* on Medicare days for each bed type (acute or swing). Since swing beds have lower costs than acute care beds, the following would occur in the case of a 1-to-1 substitution from Medicare acute care beds to Medicare swing beds:

1. RCD would **decrease** because $Days^{IP}$ would decrease by the same as $Days^{SB}$ would increase, and $TICD > MSR$ because swing beds have lower cost than acute care beds.
    a. RCHD payments would therefore be **lower** than if the substitution to swing beds had not occurred, assuming that hospitals did not change their allocation of beds for other payers, which was the case.
2. Swing beds have lower costs than acute care beds, and due to the discrepancy between the calculation of the RCD (using total days) and routine costs (using only Medicare days), the decrease in costs would be **larger** than the **decrease** in the RCHD payments, resulting in **larger** Medicare inpatient margins by substituting Medicare acute care beds for Medicare swing beds.

Therefore, if hospitals can use Medicare swing beds for post-acute SNF care instead of acute care, they would receive slightly lower RCHD payments, but the substitution would have a positive impact on their Medicare inpatient margins. Hospitals receive substantially higher payments from Medicare swing beds under RCHD than they would under SNF PPS.

Additionally, the RCD, and thus RCHD payments, increase if the hospital has acute care beds rather than swing beds for non-Medicare payers. Hospitals thus have an incentive to have a higher number of Medicare swing beds and a higher number of acute care beds for other payers. This is not unique to the demonstration; it is a feature of the CAH swing-bed methodology.

[99] Provider Reimbursement Manual - Part 1 Chapter 22, Determination of Cost of Services to Beneficiaries (2019) Centers for Medicare & Medicaid Services. Retrieved from https://www.cms.gov/Regulations-and-Guidance/Guidance/Transmittals/2018Downloads/R478PR1.pdf

A.3 List of Active Hospitals as of FY, 2018

Exhibit A.1 in Appendix A list all the hospitals that are included in this report quantitative analysis, the authorization under which they first joined the RCHD, and whether they are *continuing* or *new* participant hospitals.

Exhibit A.2: RCHD Hospitals that were active as of FY 2018

Hospital	Authorization	Participation Status in Federal Fiscal Year 2018
Columbus Community Hospital, NE	MMA	Continuing
Bartlett Regional Hospital, AK		
Central Peninsula Hospital, AK		
Brookings Hospital, SD		
Geary Community Hospital, KS	ACA	Continuing
=Lakes Regional Healthcare, IA		
Maine Coast Hospital, ME		
Mercy Hospital Fort Scott, KS		
Skiff Medical Center, IA		
St. Anthony Regional Hospital & Nursing Home, IA		
Alta Vista Regional Hospital, NM		
Inland Hospital, ME		
Marion General Hospital, MS		
Bob Wilson Memorial Grant County Hospital, KS		
Delta County Memorial Hospital, CO		
Grinnell Regional Medical Center, IA		
Yampa Valley Medical Center, CO		
Anderson Regional Medical Center South, MS	CCA	New
Highland Community Hospital, MS		
The Aroostook Medical Center, ME		
Montrose Memorial Hospital, CO		
Morton County Hospital, KS		
Trinity Regional Medical Center, IA		
Valley View Hospital, CO		
Avera Queen of Peace Hospital, SD		
Avera St. Luke's Hospital, SD		
Great Plains Regional Medical Center, OK		
St. Anthony Summit Medical Center, CO		
St. John's Medical Center, WY		

Appendix B: Interview Guides and Qualitative Coding Table

B.1 Interview Guides

B.1.1 Round 1 Interview Discussion Guide - Exiting MMA Hospitals

B.1.1.1 Introduction

My name is ___, and I am a researcher from Mission Analytics Group. Thank you for agreeing to participate in an interview about the Rural Community Hospital Demonstration – the RCHD. IMPAQ International and its partner, Mission Analytics Group, have been contracted by the Centers for Medicare and Medicaid Services (CMS) to serve as the independent evaluator for the RCHD. This evaluation will examine the demonstration's effects on Medicare payments and hospital financial condition, with a focus on hospital experience under the third solicitation. The evaluation team includes a group of researchers who led the previous RCHD evaluations.

In preparation for our interview today, we have reviewed materials related to your hospital, including your application to the RCHD and annual reports, notes from the previous RCHD interview(s), and cost report data. We want to use this interview to learn more about whether the impact of the demonstration on your hospital's finances has changed over time and if so, what might be driving those changes. We would also like to hear any relevant updates on your hospital operations and market environment and your plans for sustainability after the demonstration.

Before we begin, I'd like to take a minute to review the informed consent for the interview and how we will handle the information you provide:

- We will use the information you share with us for research purposes only.
- All of your responses will be kept confidential. You will not be identified in any published materials.
- No one, except the research team, will have access to the specific information you provide, and we will only report summary information from our full set of interviews.
- This interview will last approximately 1 hour.

Now that we have gone through the informed consent information, **do you agree to be interviewed?**

- Yes
- No

With your permission, we would like to audio-record the interview to ensure that we record and analyze your remarks accurately. Only the research team will have access to the recording. **Would it be okay to audio-record the interview?**

[If Yes, start recording by pressing RECORD, then continue]

The recording has started, for the record can you confirm that you agree to have this interview audio-recorded?

Do you have any questions about the interview before we begin?

[If YES, answer any questions]

- When we spoke to you last, your main responsibilities were [*summarize*]. Is that still true?
- Or
- To start, please tell me a little bit about yourself. How long have you been serving as [JOB TITLE] in your hospital? What are your current responsibilities? What did you do before?

B.1.1.2. Demonstration Payments

Let's start by talking about your decision to continue participating in the demonstration under the second extension and factors that might influence your demonstration payments.

1. According to my records, you have been participating in the demonstration since *[year]*. When the demonstration was extended in 2016, what made the hospital decide to continue? Please describe the **decision-making process**.
    a. Did you and others in hospital leadership weigh the pros and cons of other payment options? If so, which ones and what did you consider? Did any recent changes to these programs make you reconsider your participation in the RCHD? *Probe on specific payment options: IPPS, including August 2019 Final Rule, which increased wage index values for some hospitals, Sole Community Hospital (SCH), Critical Access Hospital (CAH), Medicare Dependent Hospital (MDH), Low-Volume Adjustment.*
    b. Did your hospital have any **technical support** during the decision-making process – e.g., through your health care system administrator or a contractor?
    c. What types of analyses were conducted?
2. Now, let's talk about the **payments** themselves and how they have impacted your **Medicare inpatient margins**. According to cost report data from the previous evaluation *[briefly describe Medicare inpatient margins prior to the demonstration until 2016].*

a. How would you describe your hospital's Medicare inpatient margins before and after joining the demonstration?

b. How have they changed since 2016?

3. Now, let's talk about the **aspects of your hospital's finances or operations that may have impacted your hospital's RHC payments**, over time and potentially relative to other eligible hospitals.

    a. After the base year, has your hospital received payments based on the target amount or cost? [*If target amount*] What are the reasons costs were higher in the base year? [*If cost*] How has your hospital contained costs, so they are less than the projected target amount?

    b. How did the rebasing under the most recent extension affect your hospital's payments?

    c. The previous evaluation indicated that swing-bed designation and the provision of skilled nursing services in these beds could affect hospital payments. According to the cost reports, *[briefly describe hospital's use of swing beds and changing average daily census until 2016].* Do you think swing-bed designation could have affected your hospital's demonstration payments? How so?

    d. What other aspects of your hospital's operations do you think could have impacted your hospital's payments?

    e. Has the payment structure affected your cost controls?

4. What would you change about the demonstration payments so they better support your hospital? [*Probe: the equation for calculating the target amount, the auditing/adjustment process*]

5. Have you considered withdrawing from the demonstration? Why? Why did you decide to stay?

B.1.1.3. Overall Financial Performance and Impact of the Demonstration

Now, I'd like to focus our conversation on your hospital's overall financial performance and the impact of the demonstration, including programs and projects that you have implemented with demonstration payments. Based on what I have seen, I understand that *[summarize hospital overall profitability margins].*

1. How would you characterize your hospital's financial viability?

    a. What **factors influence your hospital's viability** (e.g., payer mix, competition, declining population, staff recruitment and retention, other revenue sources, such as a local government subsidy).

b. What is your hospital's strategy for achieving or sustaining **long-term** financial viability (e.g., joining a health care system, adding or removing service lines, marketing, cutting costs)?

2. Now let's talk about the role of the demonstration on hospital finances and other community benefits.

   a. How important is the demonstration to your hospital's financial viability? In other words, how would you describe your overall profitability margins before and after you joined the demonstration?

   b. Based on what I have seen, I understand that [summarize the **programs and projects** the hospital has implemented with demonstration payments]. Is that still accurate?

      i. Have you implemented any new projects?

      ii. Would these projects still be operating without the demonstration payments?

      iii. What have been the community impacts of these projects? How many Medicare and non-Medicare beneficiaries have been impacted? How have you tracked the impact?

B.1.1.3.1. Sustainability: Post-Demonstration Plans

1. What are your hospital's plans to sustain financial viability after the demonstration?

   a. Will your hospital pursue new or revert back to previous payment options, such as CAH, SCH, or MDH?

   b. Will the hospital implement major structural changes (e.g., convert to nursing facility or outpatient health care center, join a health care system, add or remove service lines, cut costs)?

2. What might happen to the projects that have been supported by the demonstration when the payments end? What has your hospital done to improve sustainability of the projects?

B.1.1.3.2. Hospital Profile

Now, I'd like to update the general information I have about the hospital. Based on what I've read, I understand that *[summarize information from other sources about hospital structure, size, operations].* Is that accurate? Let's talk about what has changed regarding:

1. Your hospital's **ownership, governance, or structure**

   a. Free-standing facility versus part of a hospital network

   b. Affiliation with a government entity

   c. Contracts with other organizations

2. Your hospital's **service lines**
    a. Types and levels of inpatient services
    b. When and where patients are transferred if the hospital does not provide the service (inpatient or outpatient)
    c. Services that generate revenue or operate at a loss
    d. Services recently added or dropped
3. Your hospital's **staffing**
    a. Size and skill mix of workforce
    b. Use of temporary, transient, or contract labor
    c. Recruitment/retention
4. Strategic challenges

B.1.1.3.3. Health Care Market

Finally, let's discuss your health care market, including the local economy, population demographics, and other health care providers in the area. Again, based on what I have read, I understand that *[summarize information from other sources about health care environment].* Let's talk about what has changed regarding:

5. The **economy** of the region (or service area) and any anticipated changes
    a. Strength of local economy
    b. Major employers and potential dependency
    c. Ways in which the local economy is affecting hospital operations
6. **Population demographics,** health needs and impact on hospital operations
7. The **health care providers** in the region and the health care services available (e.g., availability of primary care physicians and specialists)
    a. Competition for outpatient care (e.g., physician-owned ambulatory surgery centers, diagnostic tests)
    b. Competition for inpatient care
    c. Strategies to increase competitiveness
8. The **health insurance market** in the area
    a. Managed care penetration
    b. Main insurance providers

c. Payer mix, including uninsured or private pay individuals, hospital participation in the Disproportionate Share Hospital (DSH) program for Medicare or Medicaid, and impact of the Affordable Care Act and or other federal, state or local policies on payer mix

d. Participation in an Accountable Care Organization (ACO) and arrangement

9. The **labor market** for health care professionals in your area

Is there anything else you would like to add about your hospital or its experience under the demonstration? Thank you for taking the time to talk to us today.

B.1.2 Round 1 Interview Discussion Guide - New Hospitals under the CCA

B.1.2.1. Introduction

My name is ___, and I am a researcher from Mission Analytics Group. Thank you for agreeing to participate in an interview about the Rural Community Hospital Demonstration – the RCHD. IMPAQ International and its partner, Mission Analytics Group, have been contracted by the Centers for Medicare and Medicaid Services (CMS) to serve as the independent evaluator for the RCHD. This evaluation will examine the demonstration's effects on Medicare payments and hospital financial condition, with a focus on hospital experience under the third solicitation. The RCHD was initially authorized in 2003 under the Medicare Modernization Act, extended in 2008 under the Affordable Care Act, and then extended once again under the Cures Act. Your hospital joined during this last solicitation. The evaluation team includes a group of researchers who led the previous RCHD evaluations.

In preparation for our interview today, we have reviewed your hospital's website, application to the RCHD, and cost report data through 2016. We have also reviewed public information on your hospital area's economy and demographics. We hope to use this interview as a way to for you to provide us with updated and more detailed information.

Before we begin, I'd like to take a minute to review the informed consent for the interview and how we will handle the information you provide:

- We will use the information you share with us for research purposes only.
- All of your responses will be kept confidential. You will not be identified individually in any published materials.
- No one, except the research team, will have access to the specific information you provide, and we will only report summary information from our full set of interviews.
- This interview will last approximately 1 hour.

Now that we have gone through the informed consent information, **do you agree to be interviewed?**

- Yes
- No

With your permission, we would like to audio-record the interview to ensure that we record and analyze your remarks accurately. Only the research team will have access to the recording. **Would it be okay to audio-record the interview?**

[If Yes, start recording by pressing RECORD, then continue]

The recording has started. For the record can you confirm that you agree to have this interview audio-recorded?

Do you have any questions about the interview before we begin?

[If YES, answer any questions]

To start, please tell me a little bit about yourself. How long have you been serving as [*job title*] in your hospital? What are your current responsibilities? What did you do before?

B.1.2.2. Environment

Now, I'd like to make sure I understand the environment your hospital operates in, including the local economy and population demographics. From what I have read, I understand that *[summarize]*. Is that right? What else can you tell me about:

1. The **economy** of the region (or service area)
    a. What types of jobs are prevalent (e.g., tourism, agriculture, etc.)? Do these jobs tend to be seasonal or stable throughout the year?
    b. Who are the major employers? Is your hospital a major employer in the community?
    c. Is the economy changing? How so? Are any of these changes affecting hospital operations and service use?
2. The **social environment** of the area
    a. Based on what I've read, [describe area demographic characteristics]. Is there something you'd like to add?
    b. Is the population changing in any important way? Has changing demographics affected the hospital's operations, or could it affect operations in the future?

Is there anything else we should know about the environment your hospital operates in that makes it unique or creates particular challenges?

B.1.2.3. Hospital Profile

Now, I'd like to focus on _____ Hospital, in particular. Again, based on what I've read, I understand that *[summarize information from other sources about hospital structure, size, operations].* Is that accurate? What else can you tell me about:

1. Your hospital's **ownership, governance, or structure**
    a. Has your hospital changed ownership structure since you submitted the application? Has your hospital experienced any other major ownership changes? [*If applicable*] Why did the hospital change ownership structure?
    b. Are there any partnerships or affiliations that are a key part of your hospital's operations?
2. Your hospital's **service lines**
    a. What types and levels of inpatient services do you provide? For what services do you typically transfer patients? Where do you transfer them?
    b. What inpatient services are your hospital's primary generators of revenue? Which ones operate at a loss?
    c. How important are outpatient services as a source of revenue?
    d. Have you recently added or dropped service lines, or do you plan to? Why?
3. Your hospital's **staffing**
    a. According to your 2016 cost report, your hospital had [*number*] full-time equivalents (FTEs). How would you describe the mix of your workforce in terms of clinical and non-clinical staff, specialists, and physicians versus other clinical staff, such as PAs and NPs?
    b. To what extent do you rely on temporary, transient, or contract labor? What types of services do these individuals provide?
    c. Does your hospital own any physician practice groups? Have you recently acquired any practice groups? Why did your hospital acquire them? [*Probe: to improve your hospital's financial viability and/or to keep these practices open to maintain community access*]
    d. How would you describe staff recruitment/retention? Turnover?
4. Your hospital's **key strategic challenges**
    a. What do you see as the 2-3 top strategic challenges for the hospital?
    b. How are you responding to these challenges?

B.1.2.4. Health Care Market

What about the health care market in your area? Again, based on what I have read, I understand that *[summarize information from other sources about health care environment].* Is that accurate? What else can you tell me about:

1. The **health care providers** in the region and the health care services available (e.g., availability of primary care physicians and specialists)
    a. Are there competing providers for inpatient care in your community, such as any specialty hospitals, regional hospitals or other small rural hospitals, such as CAHs? What about outpatient care (e.g., physician-owned ambulatory surgery centers)? Is this putting pressure on the hospital to update and expand its facilities?
    b. Is that changing in any important way?
    c. What makes you competitive in your health care market? What service lines are your hospital's most and least competitive?
    d. What could you do/have you done to become more competitive?
2. The **health insurance market** in the area
    a. How would you describe your hospital's payer mix, including uninsured or private pay individuals?
    b. Has it changed over the years? How has the Affordable Care Act or other federal, state or local policies affected your hospital's payer mix?
    c. What share of Medicare beneficiaries are enrolled in Medicare Advantage? Similarly, is your state's Medicaid program primarily managed care or fee for service?
    d. What are the largest health insurers in the area? Are they typically Health Maintenance Organizations (HMOs) or Preferred Provider Organizations (PPOs)? How would you describe competition in the health insurance market and changes in plan types (e.g., high deductible plans) and cost sharing?
3. Is your hospital part of an **Accountable Care Organization** (ACO)?
    a. If so, please describe the model and how it has impacted your hospital operations, quality of care, and finances.
    b. What is the penetration of ACOs in your area?
4. The **labor market** for health care professionals in your area
    a. Are there shortages of key professionals? How do you attract and retain staff to your hospital?

b. Is the labor market for hospital or health care professionals changing in any important way?

5. The **health needs** of the population

   a. Are there particular health care needs that characterize the population of your service area (e.g., prevalence of chronic disease, disability, aging population)?

   b. Are these needs changing in any important way?

B.1.2.5. The Demonstration Compared To Other Payment Options

Now, we'd like to talk about why your hospital chose to apply for the demonstration and its tradeoffs compared to other payment strategies.

1. Why did the hospital **apply** for the RCHD?

2. Please describe the **decision-making process**.

   a. Did you and others in hospital leadership weigh the pros and cons of other payment options? If so, which ones and what did you consider? Did any recent changes to these programs make you reconsider your hospital's participation in the RCHD? [*Probe on specific payment options: IPPS, including August 2019 Final Rule, which increased wage index values for some hospitals, Sole Community Hospital (SCH), Critical Access Hospital (CAH), Medicare Dependent Hospital (MDH), Low-Volume Adjustment.]*

      i. [*If applicable*] As we understand it, your hospital had been **designated as a SCH**, which entitled you to cost-based reimbursement for Medicare inpatient services. Is this correct? If so, were your payments based on current IPPS rates, or base year costs per discharge updated to the current year?

   b. Did your hospital have any **technical support** during the decision-making process – e.g., through your health care system administrator or a contractor?

   c. What types of analyses were conducted?

   d. Why didn't your hospital apply during the **first or second solicitation** (e.g., not eligible)? Did you know about the demonstration? If your hospital had been eligible, would the hospital have applied?

3. Now, let's talk about the **RHC payments themselves.**

   a. After the base year, has your hospital received payments based on the target amount or cost? [*If target amount*] What are the reasons costs were higher in the base year? [*If cost*] How has your hospital contained costs, so they are less than the projected target amount?

b. The previous evaluation indicated that swing-bed designation and the provision of skilled nursing services in these beds could affect hospital payments. Do you think swing-bed designation could have affected your hospital's demonstration payments? How so?

c. What other aspects of your hospital's operations do you think could have impacted your payments?

d. How do RCHD payments compare to other payment options such as IPPS? Are they sufficient to maintain operations?

4. What would you change about the demonstration payments so they better support your hospital? [*Probe: the equation for calculating the target amount, the auditing/adjustment process*]

5. Have you ever considered **withdrawing** from the demonstration? Why?

B.1.2.6. Finance Performance

We have reviewed cost report data as part of this evaluation, but I'd also like to get your perspective on the hospital's financial situation. Let's first talk about what is generally influencing your hospital's financial viability. Then, we can move on to the effects of the demonstration. Based on what I have seen, I understand that *[summarize information from other sources about the hospital's financial situation and influencing factors prior to the demonstration].* Is that accurate?

1. What are the **major positive and negative forces** affecting your hospital's financial condition? Have any of these forces changed since joining the demonstration?

2. How would you describe the **uncompensated care** (bad debt + free care) before the demonstration started?

   a. Are you designated as a Disproportionate Share Hospital (DSH) for purposes of Medicare reimbursement? Medicaid?

   b. Do you receive any compensation from local government authorities or other sources for free care?

3. What **non-operating sources of revenue** have you relied on (e.g., local government subsidy, investments, donations, rent)?

4. What is your perception of your hospital's **access to capital?** Are capital projects funded in part through local bond issues?

5. *[If financial viability is a concern]* How would you describe your hospital's **strategy for achieving or sustaining long-term financial viability**?

B.1.2.7. Impact of the Demonstration on Financial Performance and Community Benefits

Now, let's talk about how the demonstration has affected your hospital's financial viability.

6. How would you describe your hospital's **Medicare inpatient margins** before and after joining the demonstration?

7. How do you think the demonstration's cost-based reimbursement affected your **financial bottom line**? In other words, how would you describe your overall profitability margins before and after you joined the demonstration?

8. Is the demonstration's financial impact what you **expected**?

Now, I'd like to focus our conversation on how your community may have been impacted by the demonstration. Based on what I read in your application, I understand that *[summarize the programs and projects the hospital planned to implement with demonstration payments].* Is that accurate?

1. How are you using the **additional payments** from the demonstration? What were your hospital's initial goals for the demonstration payments? *[If applicable]* Why the change? [*Probe on whether payments were used to support operational costs or were invested in areas that would improve hospital financial viability or efficiency.*]

2. Were these projects or activities **already planned or underway** before you participated in the demonstration, or were they new?

3. Would these projects still be operating without the demonstration payments?

4. What have been the **community impacts** of these projects or activities? How many Medicare and non-Medicare beneficiaries have been impacted? How do you **track** community impacts?

5. Is there anything else that is important for us to understand about your hospital's participation in the demonstration, or the projects you have undertaken?

Thanks for taking the time to talk to us today. This has been very helpful, and we look forward to talking to you one more time before the demonstration ends to see how things are progressing.

B.1.2.8. ALTERNATE PAYMENT OPTIONS

B.1.2.8.1. Separate Designation

1. Inpatient Prospective Payment System (IPPS): Payment per inpatient discharge based on Diagnostic Related Group (DRG) and wage index. The August 2019 IPPS Final Rule increases the wage index for rural hospitals; hospitals that have a wage index value below the 25th

percentile get an increase that is "half the difference between the otherwise applicable wage index value for that hospital and the 25th percentile wage index value across all hospitals." In addition, a hospital's final wage index for FY 2020 will not be less than 95 percent of its final wage index for FY 2019.

2. Sole Community Hospital (SCH): Criteria: 1) At least 35 miles from a like hospital; OR 2a) No more than 25 percent of Medicare inpatient beneficiaries admitted to another hospital within the service area or 35-mile radius or 2b) Fewer than 50 beds and some exceptions to the 25 percent service area rule; OR 3) Between 15 and 25 miles from another hospital but inaccessible due to weather or topography; OR 4) Travel time to nearest hospital is 45 minutes due to speed limits, weather, etc. Inpatient operating payments are based on the higher of the hospital-specific payment rate or the federal rate. Capital payments are like all IPPS hospitals. Payments have not been rebased since 2006. SCHs also receive a 7.1 percent augmentation to the Outpatient Prospective Payment System (OPPS) rates for all outpatient services except drugs and biologicals. RCHD hospitals retain their SCH designation and thus, continue to receive this OPPS enhancement.
3. Medicare Dependent Hospital (MDH): Criteria: Have least 60 percent of inpatient days or discharges attributable to Medicare beneficiaries, located in a rural area, have 100 or fewer beds, and not be classified as a SCH. Inpatient operating payments are based on the higher of the hospital-specific payment rate or the federal rate. The MDH program was not approved for FY 2018, but the August 2019 IPPS Final Rule extended the program for five years. Retroactive payments will be provided. Payments have not been rebased since 2002.
4. Critical Access Hospital: Criteria: Fewer than 26 acute care beds, located more than 35 miles from another hospital, average length of stay of 96 hours, and 24/7 emergency care services. States could waive the proximity limit prior to 2006. Hospitals receive 101 percent of inpatient and outpatient costs, but payments were affected by sequestration.

B.1.2.8.2. Payment Add-ons

1. Low-Volume Adjustment (*offset by RCHD payment*): 2011-2017 criteria: Have fewer than 1,600 Medicare discharges and be located 15 miles or more from the nearest subsection (d) hospital. Extended with the same criteria for 2018 under the Bipartisan Budget Act of Feb. 2018. For 2020-2023, the August 2019 IPPS Final Rule increases the number of total discharges to 3,800. Payments are adjusted by number of discharges, starting with a 25 percent add-on for hospitals with fewer than 500 discharges.
2. Disproportionate Share Hospital (DSH): Criteria: Serve a significantly disproportionate number of low-income individuals. Payment add-on is based on number of beds and the "disproportionate patient percentage (DPP).

B.1.3 Round 1 Interview Discussion Guide - Continuing, ACA Hospitals

B.1.3.1. Introduction

My name is ___, and I am a researcher from Mission Analytics Group. Thank you for agreeing to participate in an interview about the Rural Community Hospital Demonstration – the RCHD. IMPAQ International and its partner, Mission Analytics Group, have been contracted by the Centers for Medicare and Medicaid Services (CMS) to serve as the independent evaluator for the RCHD. This evaluation will examine the demonstration's effects on Medicare payments and hospital financial condition, with a focus on hospital experience under the third solicitation. The evaluation team includes a group of researchers who led the previous RCHD evaluation.

In preparation for our interview today, we have reviewed materials related to your hospital, including your application to the RCHD and annual reports, notes from the previous interview(s), and cost report data. We want to use this interview to learn more about whether the impact of the demonstration on your hospital's finances has changed over time and if so, what might be driving those changes. We would also like to hear any relevant updates on your hospital operations and market environment.

Before we begin, I'd like to take a minute to review the informed consent for the interview and how we will handle the information you provide:

- We will use the information you share with us for research purposes only.
- All of your responses will be kept confidential. You will not be identified in any published materials.
- No one, except the research team, will have access to the specific information you provide, and we will only report summary information from our full set of interviews.
- This interview will last approximately 1 hour.

Now that we have gone through the informed consent information, **do you agree to be interviewed?**

- Yes
- No

With your permission, we would like to audio-record the interview to ensure that we record and analyze your remarks accurately. Only the research team will have access to the recording. **Would it be okay to audio-record the interview?**

[If Yes, start recording by pressing RECORD, then continue]

The recording has started, for the record can you confirm that you agree to have this interview audio-recorded?

Do you have any questions about the interview before we begin?

*[**If YES, answer any questions**]*

- When we spoke to you last, your main responsibilities were [*summarize*]. Is that still true?

Or

To start, please tell me a little bit about yourself. How long have you been serving as [JOB TITLE] in your hospital? What are your current responsibilities? What did you do before?

B.1.3.2. Demonstration Payments

Let's start by talking about your hospital's decision to continue participating in the demonstration when it was extended and factors that might influence your hospital's demonstration payments.

1. According to my records, the hospital joined the demonstration under the ACA in *[year]*. When the demonstration was extended, what made the hospital decide to continue? Please describe the **decision-making process**.
    a. Did you and others in hospital leadership weigh the pros and cons of other payment options? If so, which ones and what did the hospital consider? Did any recent changes to these programs make you reconsider your hospital's participation in the RCHD? [*Probe on specific payment options: IPPS, including August 2019 Final Rule, which increased wage index values for some hospitals, Sole Community Hospital (SCH), Critical Access Hospital (CAH), Medicare Dependent Hospital (MDH), Low-Volume Adjustment]*
    b. Did your hospital have any **technical support** during the decision-making process – e.g., through your health care system administrator or a contractor?
    c. What types of analyses were conducted?
    d. *[If hospital is in one of the original eligible states]* Why did the hospital decide not to participate in the demonstration when it began in 2004?
2. Now, let's talk about the **payments** themselves and how they have impacted your **Medicare inpatient margins**. According to cost report data from the previous evaluation *[briefly describe Medicare inpatient margins prior to the demonstration until 2016].*
    a. How would you describe your Medicare inpatient margins before and after joining the demonstration?

b. How have payments and your Medicare inpatient margins changed since 2016?

3. Now, let's talk about the **aspects of your hospital's finances or operations that may have impacted your hospital's RHC payments**, over time and potentially relative to other eligible hospitals.
    a. After the base year, has your hospital received payments based on the target amount or cost? [*If target amount*] What are the reasons costs were higher in the base year? [*If cost*] How has your hospital contained costs, so they are less than the projected target amount?
    b. How did the rebasing under the extension affect your hospital's payments?
    c. The previous evaluation indicated that swing-bed designation and the provision of skilled nursing services in these beds could affect hospital payments. According to the cost reports, *[briefly describe hospital's use of swing beds and changing average daily census until 2016].* Do you think swing-bed designation could have affected your hospital's demonstration payments? How so?
    d. What other aspects of your hospital's operations do you think could have impacted your hospital's payments?
    e. How do RCHD payments compare to other payment options such as IPPS? Are they sufficient to maintain operations?
    f. Has the payment structure affected your cost controls?
4. What would you change about the demonstration payments so they better support your hospital? [*Probe: the equation for calculating the target amount, the auditing/adjustment process.*]
5. Have you considered withdrawing from the demonstration? Why? Why did you decide to stay?

B.1.3.3. Overall Financial Performance and Impact of the Demonstration

Now, I'd like to focus our conversation on your hospital's overall financial performance and the impact of the demonstration, including programs and projects that you have implemented with demonstration funds. Based on what I have seen, I understand that *[summarize hospital overall profitability margins].*

1. How would you characterize your hospital's financial viability?
    a. What **factors influence your hospital's viability** (e.g., payer mix, competition, declining population, staff recruitment and retention, other revenue sources, such as local government subsidy).

b. What is your hospital's strategy for achieving or sustaining **long-term** financial viability (e.g., joining a health care system, adding or removing service lines, marketing, cutting costs)?

2. Now let's talk about the role of the demonstration on hospital finance and other community benefits.
   a. How important is the demonstration to your hospital's financial viability? In other words, how would you describe your overall profitability margins before and after you joined the demonstration?
   b. Based on what I have seen, I understand that [*summarize the **programs and projects** the hospital has implemented with demonstration payments*]. Is that still accurate?
   c. Have you implemented any new projects or activities? [*Probe on whether payments were used to support operational costs or were invested in areas that would improve hospital financial viability or efficiency.*]
   d. Would these projects still be operating without the demonstration payment?
   e. What have been the community impacts of these projects? How many Medicare and non-Medicare beneficiaries have been impacted? How do you **track** community impacts?
3. Is there anything else that is important for us to understand about your hospital's participation in the demonstration, or the projects you have undertaken?

B.1.3.4. Hospital Profile

Now, I'd like to update the general information I have about the hospital. Based on what I've read, I understand that *[summarize information from other sources about hospital structure, size, operations].* Is that accurate? Let's talk about what has changed regarding:

1. Your hospital's **ownership, governance, or structure**
   a. Free-standing facility versus part of a hospital network
   b. Affiliation with a government entity
   c. Contracts with other organizations
2. Your hospital's **service lines**
   a. Types and levels of inpatient services
   b. When and where patients are transferred if the hospital does not provide the service (inpatient and outpatient)
   c. Services that generate revenue or operate at a loss

d. Services recently added or dropped

3. Your hospital's **staffing**
    a. Size and skill mix of workforce
    b. Use of temporary, transient, or contract labor
    c. Recruitment/retention
4. Strategic challenges

B.1.3.5. Health Care Market

Finally, let's discuss your health care market, including the local economy, population demographics, and other health care providers in the region. Again, based on what I have read, I understand that *[summarize information from other sources about health care environment].* Let's talk about what has changed regarding:

1. The **economy** of the region (or service area)
    a. Strength of local economy and any anticipated changes
    b. Major employers
    c. Ways in which the local economy is affecting hospital operations
2. **Population demographics**, health needs and impact on hospital operations
3. The **health care providers** in the area and the health care services available (e.g., availability of primary care physicians and specialists)
    a. Competition for outpatient care (e.g., physician-owned ambulatory surgery centers, diagnostic tests)
    b. Competition for inpatient care
    c. Strategies to increase competitiveness
4. The **health insurance market** in the area
    a. Managed care penetration
    b. Main insurance providers
    c. Payer mix, including uninsured or private pay individuals, hospital participation in the Disproportionate Share Hospital (DSH) program for Medicare or Medicaid, and impact of the Affordable Care Act and or other federal, state or local policies on payer mix
5. Is your hospital part of an **Accountable Care Organization** (ACO)?

6. If so, please describe the model and how it has impacted your hospital operations, quality of care, and finances.
7. What is the penetration of ACOs in your area?
8. The **labor market** for health care professionals in your area

Thanks for taking the time to talk to us today. This has been very helpful, and we look forward to talking to you one more time before the demonstration ends to see how things are progressing.

B.1.3.6. ALTERNATE PAYMENT OPTIONS

B.1.3.6.1. Separate Designation

1. Inpatient Prospective Payment System (IPPS): Payment per inpatient discharge based on Diagnostic Related Group (DRG) and wage index. The August 2019 IPPS Final Rule increases the wage index for rural hospitals; hospitals that have a wage index value below the 25th percentile get an increase that is "half the difference between the otherwise applicable wage index value for that hospital and the 25th percentile wage index value across all hospitals." In addition, a hospital's final wage index for FY 2020 will not be less than 95 percent of its final wage index for FY 2019.
2. Sole Community Hospital (SCH): Criteria: 1) At least 35 miles from a like hospital; OR 2a) No more than 25 percent of Medicare inpatient beneficiaries admitted to another hospital within the service area or 35-mile radius or 2b) Fewer than 50 beds and some exceptions to the 25 percent service area rule; OR 3) Between 15 and 25 miles from another hospital but inaccessible due to weather or topography; OR 4) Travel time to nearest hospital is 45 minutes due to speed limits, weather, etc. Inpatient operating payments are based on the higher of the hospital-specific payment rate or the federal rate. Capital payments are like all IPPS hospitals. Payments have not been rebased since 2006. SCHs also receive a 7.1 percent augmentation to the Outpatient Prospective Payment System (OPPS) rates for all outpatient services except drugs and biologicals. RCHD hospitals retain their SCH designation and thus, continue to receive this OPPS enhancement.
3. Medicare Dependent Hospital (MDH): Criteria: Have least 60 percent of inpatient days or discharges attributable to Medicare beneficiaries, located in a rural area, have 100 or fewer beds, and not be classified as a SCH. Inpatient operating payments are based on the higher of the hospital-specific payment rate or the federal rate. The MDH program was not approved for FY 2018, but the August 2019 IPPS Final Rule extended the program for five years. Retroactive payments will be provided. Payments have not been rebased since 2002.

4. Critical Access Hospital: Criteria: Fewer than 26 acute care beds, located more than 35 miles from another hospital, average length of stay of 96 hours, and 24/7 emergency care services. States could waive the proximity limit prior to 2006. Hospitals receive 101 percent of inpatient and outpatient costs, but payments were affected by sequestration.

B.1.3.6.2. Payment Add-ons

1. Low-Volume Adjustment (*offset by RCHD payment*): 2011-2017 criteria: Have fewer than 1,600 Medicare discharges and be located 15 miles or more from the nearest subsection (d) hospital. Extended with the same criteria for 2018 under the Bipartisan Budget Act of Feb. 2018. For 2020-2023, the August 2019 IPPS Final Rule increases the number of total discharges to 3,800. Payments are adjusted by number of discharges, starting with a 25 percent add-on for hospitals with fewer than 500 discharges.
2. Disproportionate Share Hospital (DSH): Criteria: Serve a significantly disproportionate number of low-income individuals. Payment add-on is based on number of beds and the "disproportionate patient percentage (DPP)."

B.1.4 Round 2 Interview Discussion Guide

B.1.4.1. Introduction

My name is ___, and I am a researcher from Mission Analytics Group. Thank you for agreeing to participate in an interview about the Rural Community Hospital Demonstration—the RCHD. IMPAQ International and its partner, Mission Analytics Group, have been contracted by the Centers for Medicare and Medicaid Services (CMS) to serve as the independent evaluator for the RCHD. This evaluation examines the demonstration's effects on Medicare payments and hospital financial condition, with a focus on hospital experience under the third solicitation. The evaluation team includes a group of researchers who led the previous RCHD evaluation.

In preparation for our interview today, we have reviewed materials related to your hospital, including your application to the RCHD, notes from the previous interview(s), and cost report data. We'll also be sharing cost report data with you to explore some evaluation themes. We want to use this interview to learn more about:

- Your decision to continue participation in the demonstration under the Consolidated Appropriations Act (CAA) extension.
- How the demonstration has impacted your Medicare and overall profitability margins and what might be driving that impact.
- Your perceptions of why some hospitals decide to participate in the demonstration and do better under the demonstration than others.

- We would also like to hear any relevant updates on your hospital operations and market environment.

Before we begin, I'd like to take a minute to review the informed consent for the interview and how we will handle the information you provide:

- We will use the information you share with us for research purposes only.
- All of your responses will be kept confidential. You will not be identified in any published materials.
- No one, except the research team, will have access to the specific information you provide, and we will only report summary information from our full set of interviews.
- This interview will last approximately one hour.

Now that we have gone through the informed consent information, **do you agree to be interviewed?**

- Yes
- No

With your permission, we would like to audio-record the interview to ensure that we record and analyze your remarks accurately. Only the research team will have access to the recording. **Would it be okay to audio-record the interview?**

[If Yes, start recording by pressing RECORD, then continue]

The recording has started. For the record, can you confirm that you agree to have this interview audio-recorded?

Do you have any questions about the interview before we begin?

[If YES, answer any questions]

- When we spoke to you last, your main responsibilities were [*summarize*]. Is that still true?

Or

To start, please tell me a little bit about yourself. How long have you been serving as [JOB TITLE] in your hospital? What are your current responsibilities? What did you do before?

B.1.4.2. Decision to Continue/ Discontinue Participation

Let's start by talking about your hospital's decision to continue participating in the demonstration when it was extended under the CAA.

1. According to my records, the hospital joined the demonstration under the [*MMA/ACA/CCA*] in *[year]*. When the demonstration was extended under the CAA, what made the hospital decide to continue? Please describe the **decision-making process**.
    a. Did you and others in hospital leadership weigh the pros and cons of other payment options?
    b. If so, which ones and what did the hospital consider?
    c. Have there been any recent changes to these programs to make you reconsider your hospital's participation in the RCHD? (*e.g., extension of the Low Volume Adjustment)*
    d. Did your hospital have any **technical support** during the decision-making process—e.g., through your health care system administrator or a contractor? What types of analyses were conducted?

B.1.4.3. RCH Payments and Impact on Hospital Medicare Margins

1. Let's talk about the RCH **payments** themselves and the **aspects of your hospital's finances or operations that may have impacted your hospital's RCH payments**, over time and potentially relative to other eligible hospitals. *[Share fact sheet via screen sharing and talk through payments over time.]*
    a. After the base year, has your hospital received payments based on the target amount or cost? [*If target amount*] Why have costs been higher than the projected target amount? [*If cost*] How has your hospital contained costs, so they are less than the projected target amount?
    b. What is your most recent base year? Did the types of costs included in the base year affect your hospital's payments? Do you think the costs in the base year are reflective of your typical costs? Why or why not?
    c. [*Describe how costs will be rebased under the CAA extension.*] What are the implications of the rebasing on your RCH payments? [*Probe: impact of the COVID-19 pandemic on 2020 or 2021 costs, depending on the new base year.*]
    d. [*For MMA hospitals*] Was there a gap in RCH payments? How did that gap impact your hospital?
    e. Evaluation findings indicate that the provision of skilled nursing services in these beds affect hospital payments. According to the cost reports, *[briefly describe hospital's use of swing beds, swing-bed discharges, and share of RCH payments attributable to swing*

beds]. Do you think the provision of skilled nursing services in swing beds has affected your hospital's demonstration payments? How so? Have you changed your use of swing beds or do you plan to under the demonstration? Why or why not?

f. Evaluation findings also indicate that hospitals with more discharges receive relatively higher payments under the demonstration than hospitals with fewer discharges. How does this trend relate to your hospital? Have your hospital's discharges changed over time? Why or why not?

g. What other aspects of your hospital's operations do you think could have impacted your hospital's RCH payments, especially over time (e.g., case-mix)?

2. Has the payment structure affected your cost controls?

3. RCH payments are related to Medicare inpatient margins. According to data from the most current cost report *[share fact sheet via screen sharing and talk through Medicare margins over time].*

a. How would you describe your Medicare inpatient margins before and after joining the demonstration?

b. How have payments and your Medicare inpatient margins changed over time since joining the demonstration? [*relate discussion to previous conversation on RCH payments*]

B.1.4.4. Overall Financial Performance

Now, I'd like to focus our conversation on your hospital's overall financial performance.

1. How would you characterize your hospital's financial performance?
2. What **factors influence your hospital's performance** (e.g., competition; changing inpatient discharges [*relate back to previous discussion*]; declining population)?
3. How did the COVID-19 pandemic affect your hospital's operations and financial performance? Are any of these changes long-lasting?
4. What strategies is your hospital implementing to remain financially viable (e.g., cutting costs, adding new services, improving infrastructure, marketing)?

B.1.4.5. Impact of the Demonstration

We'd like to understand the impact of the demonstration on your hospital, including programs and projects that you have implemented with demonstration funds.

1. How important is the demonstration to your hospital's financial viability? In other words, how would you describe your overall profitability margins before and after you joined the demonstration? *[Share fact sheet via screen sharing]*

2. *[If applicable]* It looks like your Medicare margins have improved under the demonstration, but your overall profitability margins have not increased in a significant way. Why do you think that is?
3. How has your hospital used demonstration funds?
    a. Based on what I have seen, I understand that [*use of funds as described in previous interviews*]. Is that still accurate or have you changed your approach? [*Probe on whether payments were used to support operational costs or were invested in areas that would improve hospital financial viability or efficiency.*]
    b. Would these projects still be operating without the demonstration payment?
    c. Evaluation findings indicate that hospitals that participate in the demonstration have younger physical plants, including equipment, than eligible hospitals that do not participate. Has your hospital made investments in plans during the demonstration, relative to investments made prior to participating in the demonstration? Did demonstration funds support these upgrades?
    d. What have been the community impacts of these projects? How many Medicare and non-Medicare beneficiaries have been impacted? How do you **track** community impacts?

B.1.4.6. Perceptions of Why Some Hospitals Decide to Participate in the Demonstration

We'd like to share some other evaluation findings with you to get your perceptions of why some of these trends may exist. We found that hospitals that participate in the demonstration are more likely at baseline to [s*hare list via screen sharing*]:

- Have higher patient volumes and acute care average daily census (focusing on discharges)
- Treat more clinically complex patients compared to eligible non-participants
- Be in non-Competitive markets
- Have more acute care beds (42 beds vs. 35)
- Be in a better financial situation, despite having lower Medicare margins

It's understandable that participating RCHD hospitals tend to have lower Medicare margins than eligible non-participating hospitals; this motivates their participation in the demonstration. However, at baseline, they also tend to do better overall financially and share characteristics that are indicators of financial strength.

1. Why do you think hospitals that decided to join the demonstration have higher overall profitability margins than hospitals that decided not to join the demonstration?

2. Hospitals that decided to join the demonstration are also more likely to be non-profit hospitals. Why do you think this is? Do you think that ownership status affects demonstration participation? Why or why not?

B.1.4.7. Updates to Hospital Profile (Time Permitting)

Finally, I'd like to update the general information I have about the hospital. Let's talk about what has changed regarding the following since we last spoke and how these changes have impacted your hospital:

1. **Market competition** within and outside of 35-mile service area
2. Your hospital's **ownership, governance, or structure**
3. Your hospital's **service lines**
4. Your hospital's **staffing**
5. The **economy** of the region (or service area)
6. **Population demographics,** health needs, and impact on hospital operations
7. The **health care providers** in the area and the health care services available (e.g., availability of primary care physicians and specialists)
8. The **health insurance market** in the area
9. The **labor market** for health care professionals in your area

Thanks for taking the time to talk to us today. This has been very helpful.

B.1.4.8. ALTERNATE PAYMENT OPTIONS

B.1.4.8.1. Separate Designation

1. Inpatient Prospective Payment System (IPPS): Payment per inpatient discharge based on Diagnosis Related Group (DRG) and wage index. The August 2019 IPPS Final Rule increases the wage index for rural hospitals; hospitals that have a wage index value below the 25th percentile get an increase that is "half the difference between the otherwise applicable wage index value for that hospital and the 25th percentile wage index value across all hospitals." In addition, a hospital's final wage index for FY 2020 will not be less than 95 percent of its final wage index for FY 2019.
2. Sole Community Hospital (SCH): Criteria: 1) At least 35 miles from a like hospital; OR 2a) No more than 25 percent of Medicare inpatient beneficiaries admitted to another hospital within the service area or 35-mile radius or 2b) Fewer than 50 beds and some exceptions to the 25 percent service area rule; OR 3) Between 15 and 25 miles from another hospital but inaccessible due to weather or topography; OR 4) Travel time to nearest hospital is 45

minutes due to speed limits, weather, etc. Inpatient operating payments are based on the higher of the hospital-specific payment rate or the federal rate. Capital payments are like all IPPS hospitals. Payments have not been rebased since 2006. SCHs also receive a 7.1 percent augmentation to the Outpatient Prospective Payment System (OPPS) rates for all outpatient services except drugs and biologicals. RCHD hospitals retain their SCH designation and thus continue to receive this OPPS enhancement.

3. Medicare Dependent Hospital (MDH): Criteria: Have least 60 percent of inpatient days or discharges attributable to Medicare beneficiaries, located in a rural area, have 100 or fewer beds, and not be classified as an SCH. Inpatient operating payments are based on the higher of the hospital-specific payment rate or the federal rate. The MDH program was not approved for FY 2018, but the August 2019 IPPS Final Rule extended the program for five years. Retroactive payments will be provided. Payments have not been rebased since 2002.
4. Critical Access Hospital: Criteria: Fewer than 26 acute care beds, located more than 35 miles from another hospital, average length of stay of 96 hours, and 24/7 emergency care services. States could waive the proximity limit prior to 2006. Hospitals receive 101 percent of inpatient and outpatient costs, but payments were affected by sequestration.

B.1.4.8.2. Payment Add-Ons

1. Low-Volume Adjustment (*offset by RCHD payment*): 2011–2017 criteria: Have fewer than 1,600 Medicare discharges and be located 15 miles or more from the nearest subsection (d) hospital. Extended with the same criteria for 2018 under the Bipartisan Budget Act of February 2018. For 2020 to 2023, the August 2019 IPPS Final Rule increases the number of total discharges to 3,800. Payments are adjusted by number of discharges, starting with a 25 percent add-on for hospitals with fewer than 500 discharges.
2. Disproportionate Share Hospital (DSH): Criteria: Serve a significantly disproportionate number of low-income individuals. Payment add-on is based on number of beds and the disproportionate patient percentage (DPP).

B.1.5 Round 2 CCA Hospital Fact Sheet Template

Exhibit B.1. Rural Community Hospital Demonstration (RCHD) Fact Sheet: [Hospital Name]

Indicators	3-Year Prior Average	FY 2018
Financial Performance		
Total Margins		
Hospital		

Indicators	3-Year Prior Average	FY 2018
Average across RCHD Hospitals		
Average all Eligible Non-Participating Hospitals		
Medicare Inpatient Margins		
Hospital		
Average across RCHD Hospitals		
Average all Eligible Non-Participating Hospitals		
RCH Payments		
Total RCH Payments		
Hospital		
Average across RCHD Hospitals		
Share of Total RCH Payments for Swing Beds		
Hospital		
Average across RCHD Hospitals with Swing Beds		
Percentage of Per Discharge Payment over IPPS for Swing Beds		
Hospital		
Average across RCHD Hospitals with Swing Beds		
Percentage of Per Discharge Payment over IPPS for Acute Care		
Hospital		
Average across RCHD Hospitals		
Hospital Operations		
For-Profit Status		
Hospital (Yes/No)		
Share of RCHD Hospitals That Are For-Profit		
Share of All Eligible Non-Participating Hospitals		
Average Age of Plant		
Hospital		
Average across RCHD Hospitals		
Average all Eligible Non-Participating Hospitals		
Acute Care Discharges		
Hospital		
Average across RCHD Hospitals		
Average All Eligible Non-Participating Hospitals		

Indicators	3-Year Prior Average	FY 2018
Swing Bed Average Daily Census		
Hospital		
Average across RCHD Hospitals with Swing Beds		
Average all Eligible Non-Participating Hospitals		

B.1.6 Round 2 MMA and ACA Hospital Fact Sheet Template

Exhibit B.2. Rural Community Hospital Demonstration (RCHD) Fact Sheet: [Hospital Name]

Indicators	FY 2015	FY 2016	FY 2017	FY 2018
Financial Performance				
Total Margins				
Hospital				
Average across RCHD Hospitals				
Average all Eligible Non-Participating Hospitals				
Medicare Inpatient Margins				
Hospital				
Average across RCHD Hospitals				
Average all Eligible Non-Participating Hospitals				
RCH Payments				
Total RCH Payments				
Hospital				
Average across RCHD Hospitals				
Share of Total RCH Payments for Swing Beds				
Hospital				
Average across RCHD Hospitals with Swing Beds				
Percentage of Per Discharge Payment over IPPS for Swing Beds				
Hospital				
Average across RCHD Hospitals with Swing Beds				
Percentage of Per Discharge Payment over IPPS for Acute Care				
Hospital				
Average across RCHD Hospitals				

Indicators	FY 2015	FY 2016	FY 2017	FY 2018
Hospital Operations				
For-Profit Status				
Hospital (Yes/No)				
Share of RCHD Hospitals That Are For-Profit				
Share of All Eligible Non-Participating Hospitals				
Average Age of Plant				
Hospital				
Average across RCHD Hospitals				
Average All Eligible Non-Participating Hospitals				
Acute Care Discharges				
Hospital				
Average across RCHD Hospitals				
Average All Eligible Non-Participating Hospitals				
Swing-bed Average Daily Census				
Hospital				
Average across RCHD Hospitals with Swing Beds				
Average All Eligible Non-Participating Hospitals				

The evaluation team identified interview topics for analysis (i.e., codes) based on interview protocols, research questions, and themes that emerged from initial interviews. The coding table presents the high-level codes (i.e., parent codes), their subtopics (i.e., sub codes), and definitions. The evaluation team programmed these parent and sub codes and uploaded transcripts of interviews with hospitals into the NVivo software. Two members of the evaluation team then coded segments of transcripts in NVivo, following definitions provided. The NVivo software allowed the evaluation team to group segments of the same code (parent or sub code) for analysis.

Exhibit. B.3 Qualitative Coding Table

Parent Code	Sub Code	Description
1. Financial Motivation and Performance	a. Reason for joining/continuing demonstration and decision-making process	Why hospital joined/remains in the demonstration; who was involved in decision-making; whether motivation has changed over time (*potential cross-code with 1d, 3a, or 3b)*
	b. Other payment options	Pros and cons of other payment options (e.g., CAH, SCH) compared to the demonstration; hospital's payment mechanism prior to joining the demonstration; what the hospital would move to if it withdraws
	c. Reasons for not participating under previous solicitations	Why (if applicable) the hospital did not participate under a previous RCHD solicitation
	d. Overall financial stressors	Discussion of financial margins and overall performance and changes over time
	e. Major financial facilitators	Major factors stressing the hospital financially (*cross-code with at least one other code*)
2. Demonstration Payments	a. Receiving payments based on target versus cost	Whether the hospital receives payments based on target versus cost and why
	b. Role of swing beds	Whether the hospital has swing beds and how they have affected payments; whether the hospital is considering swing beds in the future
	c. Role of base year and rebasing	Discussion about how the base year and/or rebasing has affected payment
	d. Changes in payments over time	Whether the hospital's payments have changed over time or are expected to change; factors influencing these changes (potential cross-code)

Parent Code	Sub Code	Description
	e. Comments/ feedback on demonstration	Perceptions of demonstration overall, criticism, and/or suggestions for improvement; comments on the calculation method not previously coded (e.g., consumer price index, allocation of costs); reconciliation process
3. Impact of the Demonstration	a. Role of demonstration in hospital financial viability	Whether and/or how the demonstration affects long-term financial viability
	b. Role of demonstration in supporting specific projects/ initiatives	Whether and/or how the demonstration supports specific projects or initiatives, e.g., new service lines (*potential cross-code with at least one other code*)
4. Hospital Profile, Services, Staffing	a. Ownership/ governance	Details about current hospital ownership and governance and/or recent structural changes; pros and cons of being part of a healthcare systems versus independent
	b. Service lines	Details about hospital inpatient and/or outpatient service lines; utilization over time; discharges; inpatient days; services that are profitable or not; services that might be cut (including without the demonstration) (*potential cross-code with 3b*)
	c. Staffing practices and recruitment/ retention	Details about hospital staffing practices, recruitment, and retention (*potential cross-code with 4d*)
	d. Strategic challenges	Top non-financial strategic challenges identified by hospital leadership (*cross-code with at least one other code*). *Note that most strategic challenges are financial in nature, so this code should be used sparingly. Instead, use code 1e.*
	e. Participation in ACO	Discussion of ACO structure, incentives, shared savings; reasons for participating or not
	f. Payer mix	Hospital's typical payer mix (private pay, private insurance, Medicaid, etc.)
5. Health Care Market	a. Competitive landscape	Discussion of competition with other hospitals or providers; recent or potential changes to the landscape
	b. Insurance market and policy landscape	Discussion of insurance market, reimbursement rates, largest insurers in region, or relevant federal/state policies and programs (e.g., ACA)
	c. Competitive advantages	What makes the hospital competitive in the market (e.g., specific service lines, location) (*Potential cross-code)*
	d. Competitive disadvantages	What makes the hospital less competitive in the market (*Potential cross-code)*
6. Economic, Social, and	a. Economy of region	Details about regional economy and/or recent economic changes; major employers; hospital's role in the local economy as an employer

Parent Code	Sub Code	Description
Geographic Environment	b. Social and demographic environment	Details about hospital's social and demographic environment and/or social/demographic characteristics of patient population; immigration; out-migration; age of population
	c. Major community health needs	Most significant health needs in community (e.g., chronic illness, cancer)
	d. Unique geography	Geographical features and/or barriers that are unique to hospital's region (e.g., mountainous)
7. Good Quotes	a. Good quotes	Quotes that can be used in final report/publications

Appendix C: Reasons for Exiting from the RCHD

There were a large number of hospitals that exited the demonstration between FY 2005 and FY 2017 - 16 hospitals of the 33 hospitals (48 percent). Of these, two hospitals closed, eight withdrew prematurely, and six discontinued participation when the RCHD was reauthorized. We summarize here findings from *Interim Report One,* which detailed the reasons for hospitals exiting the RCHD between FY 2005 and FY 2017. Section C.1 discusses hospitals' considerations when choosing to participate in other Medicare payment systems and why hospitals that exited the RCHD decided to opt for other payment systems. Section C.2 briefly describes hospitals that closed.

C.1. Participation in Other Medicare Payment Systems

Critical Access Hospitals (CAHs)

Of the eight hospitals that withdrew prematurely, six eventually became CAHs. Of the six hospitals that discontinued participation, three became CAHs. While the CAH program arguably has the most advantageous financial arrangements, many RCHD hospitals do not meet the distance requirements. The decision to join the CAH program or remain in IPPS (or RCHD) can be a challenging one because hospitals struggle to predict long-term growth.

Sole Community Hospitals (SCHs)

Eight hospitals became SCHs after exiting the demonstration (three of which eventually converted to CAH status), and slightly less than 30 percent of all RCHD hospitals had participated in the SCH program in the year prior to joining the demonstration. Two hospitals exited the RCHD when the SCH program rebased from FY 1996 costs to FY 2006 costs. Hospitals that preferred participating in the RCHD vis-à-vis the SCH program either did not meet the SCH distance requirements (at least 35 miles from a like hospital) or found inpatient costs based on FY 2006 under the SCH program to be less favorable than the RCHD payments.

C.2. Hospital Closures

Two RCHD hospitals exited the demonstration when they closed. One hospital (Holy Infant) was located in a town with a declining population of fewer than 1,000 people and closed in 2010 due to unsustainable operating costs. Another hospital (Mercy Hospital – Independence) closed in 2016 due to declining population in its area and competition from a nearby CAH and a regional hospital.

Exhibit C.1: Exiting Hospitals (Hospitals That Participated in the RCHD but Withdrew, Discontinued Participation, or Closed by FY 2018)

Authorization under Which Hospital First Joined the RCHD	Hospital	RCHD Start Date	RCHD End Date	Reason for Exit	Prior Payment	Eligible for	Status after Leaving RCHD
MMA	Beatrice Community Hospital, NE	10/1/2004	11/30/2005	Withdrew	SCH	340B	CAH
MMA	Community Hospital, NE	7/1/2005	11/30/2005	Withdrew	SCH		CAH
MMA	Lexington Regional Health Center, NE	7/1/2005	11/30/2005	Withdrew	SCH	340B	CAH
MMA	Phelps Memorial Health Center, NE	1/1/2005	11/30/2005	Withdrew	SCH	340B	CAH
MMA	Holy Rosary Healthcare, MT	6/1/2005	12/31/2008	Withdrew	SCH	340B	First SCH, then CAH
MMA	Spearfish Regional Hospital, SD	7/1/2005	6/30/2009	Withdrew	SCH	340B Terminated LVA DSH SCH	SCH
MMA	St. Joseph's Hospital, ND	7/1/2008	6/30/2009	Withdrew	SCH		CAH
MMA	Holy Cross Hospital, NM	6/1/2005	5/31/2010	Discontinued	SCH	340B LVA DSH SCH	SCH
MMA	Northern Montana Healthcare, MT	7/1/2005	6/30/2010	Discontinued	SCH	340B LVA DSH SCH	SCH

Authorization under Which Hospital First Joined the RCHD	Hospital	RCHD Start Date	RCHD End Date	Reason for Exit	Prior Payment	Eligible for	Status after Leaving RCHD
MMA	Holy Infant Hospital, SD	1/1/2009	10/31/2010	Closed	SCH		Closed
ACA	Franklin Memorial Hospital, ME	7/1/2011	6/30/2013	Withdrew	SCH	340B Terminated LVA DSH SCH	SCH
MMA	Banner Churchill Hospital, NV	1/1/2005	12/31/2014	Discontinued	SCH	340B	CAH
MMA	Garfield Memorial Hospital, UT	1/1/2005	12/31/2014	Discontinued	SCH	340B	First SCH, then CAH
MMA	Mt. Edgecumbe Hospital, AK	10/1/2008	9/30/2015	Discontinued	Unknown	340B	First SCH, then CAH
ACA	Mercy Hospital – Independence, KS	7/1/2011	6/30/2016	Closed	MDH	340B Terminated	Closed
ACA	Sterling Regional Medical Center, CO	1/1/2012	12/31/2016	Discontinued	SCH	340B LVA DSH SCH	SCH

Notes: Eligibility for 340B refers to whether the hospital is an active 340B entity. Data on active 340B status were obtained from the HRSA Office of Pharmacy Affairs (OPA), 340B OPA Information System (OPAIS) database, in June 2020. "340B Terminated" refers to hospitals that previously had 340B status but lost eligibility either due to failure to recertify or to changing DSH percentages. CAH denotes Critical Access Hospital, DSH denotes Disproportionate Share Hospital, LVA denotes low-volume adjustment, MDH denotes Medicare Dependent Hospital, and SCH denotes Sole Community Hospital.

Appendix D: Topic Area 1 Exhibits

D.1 Characteristics of Participant Hospitals

Exhibit D-1 displays the distribution (at the 10th percentile, median, and 90th percentile) of select characteristics prior to the demonstration separately for *continuing* and *new* RCHD hospitals.

Exhibit D-1: Pre-Demonstration Baseline Attributes of Continuing and New RCHD Participants. Distributions of Select Characteristics

Hospital Type	Continuing Hospitals			New Hospitals		
Attribute	10th Percentile	Median	90th Percentile	10th Percentile	Median	90th Percentile
Hospital Margins						
Medicare Inpatient Margin	-39.00%	-19.78%	-4.48%	-43.18%	-11.69%	-2.79%
Medicare Combined Margin	-33.06%	-19.35%	-6.32%	-50.96%	-23.03%	-5.07%
Total Profit Margin	-5.67%	3.55%	13.19%	-23.75%	1.62%	9.41%
Operating Margin	-11.08%	1.01%	8.19%	-49.09%	-0.78%	8.16%
Financial Indicators						
Days Cash on Hand	2	80	293	0	92	317
Long-Term Debt to Capitalization Ratio	0.00%	20.46%	42.92%	0.00%	20.19%	50.35%
Ratio of Salaries to Net Patient Revenue	36.22%	43.90%	53.00%	32.40%	41.21%	53.23%
FTEs per Adjusted Occupied Beds	5.18	7.16	9.66	5.17	8.27	12.86
Average Age of Physical Plant	3	11	57	2	12	47
Medicare Share of Inpatient Discharges	25.15%	46.48%	56.72%	17.02%	44.87%	73.01%
Medicare Share of Inpatient Days	39.71%	58.31%	70.77%	26.49%	57.21%	86.23%
Medicare Swing-bed Revenue Share	0.00%	2.29%	9.45%	0.00%	0.50%	8.11%

Hospital Type	Continuing Hospitals			New Hospitals		
Attribute	10th Percentile	Median	90th Percentile	10th Percentile	Median	90th Percentile
Hospital Characteristics						
ADC Acute Care Beds	10	16	22	2	15	34
ADC Swing-beds	0	1	4	0	0	5
Total Acute Care Beds	33	42	53	26	39	44
Total Medicare Discharges	401	744	1218	119	799	1813
Total Medicaid Discharges	102	326	592	0	280	596
Total Discharges	1027	1791	2943	188	1909	3634
Case-mix Index	0.98	1.14	1.25	1.03	1.42	1.74

Notes: N=17 Continuing RCHD hospitals and 12 New RCHD hospitals and N=51 Continuing RCHD hospital-year observations and 36 New RCHD hospital-year observations for all variables. The pre-Demo years for continuing RCHD hospitals is pooled from FY 2002 – 2004 (for hospitals joining the RCHD between FY 2005 and FY 2010) and FY 2008 – 2010 (for hospitals joining the RCHD between FY 2011 and FY 2015). The pre-demonstration baseline years for new RCHD hospitals is from FY 2015 – 2017 (for hospitals joining the RCHD after FY 2017). .

D.2 Characteristics of Participant vs. Non-Participant Hospitals

Exhibit D-2 displays the distribution (at the 10th percentile, median, and 90th percentile) of Medicare-revenue financial indicators prior to the demonstration. We present the distribution for Groups A (*continuing* RCHD hospitals vs. eligible non-participant hospitals), B (*new* RCHD hospitals vs. eligible non-participant hospitals), and C (all RCHD hospitals vs. eligible non-participant hospitals).

Exhibit D-2: Pre-Demonstration Baseline Distribution of Medicare-Revenue Financial Indicators, RCHD Hospitals Compared to Eligible Non-Participant Hospitals

RCHD vs Eligible Non-Participants		10th Percentile	Median	90th Percentile
Medicare Inpatient Margin				
Continuing Hospitals	RCHD	-39.00%	-19.78%	-4.48%
	Eligible Non-Participants	-29.84%	1.37%	25.42%
New Hospitals	RCHD	-50.96%	-23.03%	-5.07%
	Eligible Non-Participants	-40.73%	-8.70%	13.68%
Full Sample (Continuing & New)	RCHD	-39.11%	-21.38%	-5.99%
	Eligible Non-Participants	8.98-29%	0.95%	25.10%
Medicare Combined (Inpatient & Outpatient) Margin				
Continuing Hospitals	RCHD	-33.06%	-19.35%	-6.32%
	Eligible Non-Participants	-25.87%	-2.44%	19.45%
New Hospitals	RCHD	-49.85%	-22.10%	-4.27%
	Eligible Non-Participants	-39.89%	-7.90%	14.32%
Full Sample (Continuing & New)	RCHD	-38.15%	-20.70%	-5.65%
	Eligible Non-Participants	-28.78%	-3.91%	17.90%
Total Profit Margin				
Continuing Hospitals	RCHD	-5.67%	3.55%	13.19%
	Eligible Non-Participants	-11.40%	1.20%	10.76%
New Hospitals	RCHD	-23.75%	1.62%	9.41%
	Eligible Non-Participants	-17.08%	0.03%	15.09%
Full Sample (Continuing & New)	RCHD	-10.56%	2.71%	13.19%
	Eligible Non-Participants	-12.82%	0.94%	11.81%

RCHD vs Eligible Non-Participants		10th Percentile	Median	90th Percentile
Operating Margin				
Continuing Hospitals	RCHD	-11.08%	1.01%	8.19%
	Eligible Non-Participants	-23.55%	-1.88%	8.95%
New Hospitals	RCHD	-49.09%	-0.78%	8.16%
	Eligible Non-Participants	-38.75%	-4.50%	12.40%
Full Sample (Continuing & New)	RCHD	-18.99%	-0.27%	8.19%
	Eligible Non-Participants	-26.54%	-2.35%	9.71%
Days Cash on Hand				
Continuing Hospitals	RCHD	2	80	293
	Eligible Non-Participants	0	43	189
New Hospitals	RCHD	0	92	317
	Eligible Non-Participants	0	32	199
Full Sample (Continuing & New)	RCHD	1	80	294
	Eligible Non-Participants	0	40	191
Long-Term Debt to Capitalization Ratio				
Continuing Hospitals	RCHD	0.00%	20.46%	42.92%
	Eligible Non-Participants	0.00%	26.29%	91.58%
New Hospitals	RCHD	0.00%	20.19%	50.35%
	Eligible Non-Participants	0.00%	18.45%	87.45%
Full Sample (Continuing & New)	RCHD	0.00%	20.46%	46.60%
	Eligible Non-Participants	0.00%	25.08%	90.67%
Ratio of Salaries to Net Patient Revenue				
Continuing Hospitals	RCHD	36.22%	43.90%	53.00%
	Eligible Non-Participants	32.97%	44.30%	57.67%
New Hospitals	RCHD	32.40%	41.21%	53.23%
	Eligible Non-Participants	28.69%	44.69%	63.03%
Full Sample (Continuing & New)	RCHD	33.58%	43.53%	53.23%
	Eligible Non-Participants	31.73%	44.33%	58.71%

RCHD vs Eligible Non-Participants		10th Percentile	Median	90th Percentile
FTEs per Adjusted Occupied Beds				
Continuing Hospitals	RCHD	5.18	7.16	9.66
	Eligible Non-Participants	3.38	5.48	10.25
New Hospitals	RCHD	5.17	8.27	12.86
	Eligible Non-Participants	3.13	5.72	10.96
Full Sample (Continuing & New)	RCHD	5.17	7.56	10.08
	Eligible Non-Participants	3.32	5.53	10.46
Average Age of Physical Plant				
Continuing Hospitals	RCHD	3	11	57
	Eligible Non-Participants	1	9	24
New Hospitals	RCHD	2	12	47
	Eligible Non-Participants	2	11	23
Full Sample (Continuing & New)	RCHD	2	11	49
	Eligible Non-Participants	1	10	23
Medicare Share of Inpatient Discharges				
Continuing Hospitals	RCHD	25.15%	46.48%	56.72%
	Eligible Non-Participants	32.63%	51.24%	68.85%
New Hospitals	RCHD	17.02%	44.87%	73.01%
	Eligible Non-Participants	29.15%	43.97%	62.75%
Full Sample (Continuing & New)	RCHD	23.71%	46.45%	57.86%
	Eligible Non-Participants	31.29%	49.73%	67.57%
Medicare Share of Inpatient Days				
Continuing Hospitals	RCHD	39.71%	58.31%	70.77%
	Eligible Non-Participants	42.03%	63.05%	79.95%
New Hospitals	RCHD	26.49%	57.21%	86.23%
	Eligible Non-Participants	35.75%	52.32%	70.77%
Full Sample (Continuing & New)	RCHD	32.72%	58.01%	76.58%
	Eligible Non-Participants	40.14%	60.40%	78.64%

RCHD vs Eligible Non-Participants		10th Percentile	Median	90th Percentile
Medicare Swing-bed Revenue Share				
Continuing Hospitals	RCHD	0.00%	2.29%	9.45%
	Eligible Non-Participants	0.00%	1.34%	11.17%
New Hospitals	RCHD	0.00%	0.50%	8.11%
	Eligible Non-Participants	0.00%	0.00%	7.66%
Full Sample (Continuing & New)	RCHD	0.00%	1.98%	9.45%
	Eligible Non-Participants	0.00%	0.75%	10.49%

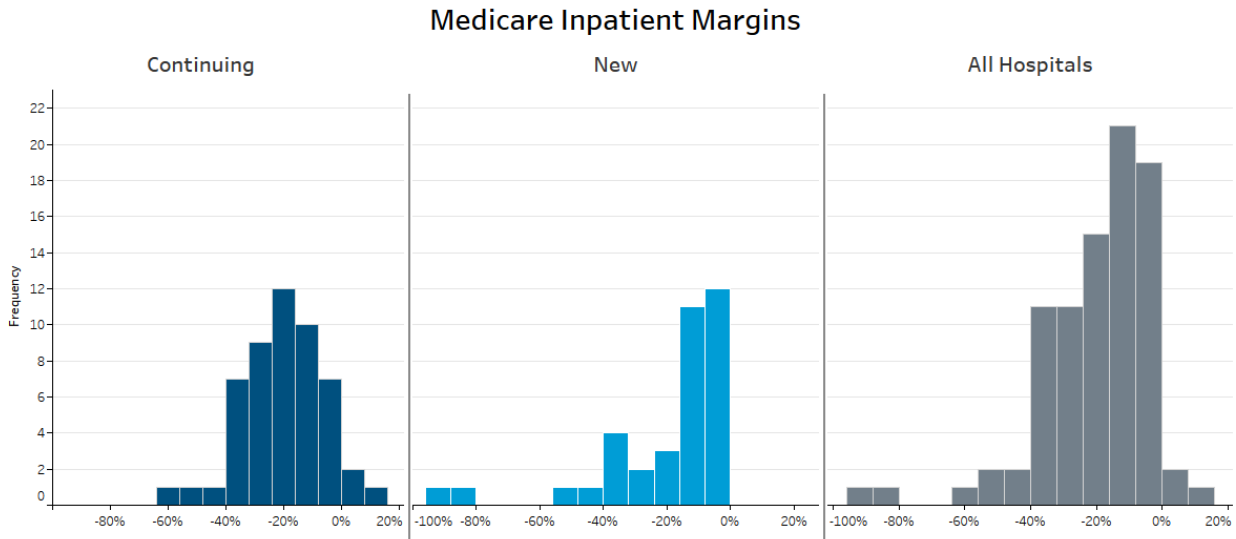
Notes: N=29 RCHD hospitals (17 Continuing and 12 New) and N=1,081 Eligible Non-Participant hospitals (989 during pooled pre-demonstration baseline years FY 2002-2004 and FY 2008-2010 and 384 during pre-demonstration baseline years 2015-2017). N=87 hospital-year observations (51 Continuing and 36 New) and N=4,392 Eligible Non-Participant hospital-year observations (3,345 during pooled pre-demonstration baseline years FY 2002-2004 and FY 2008-2010 and 1,047 during pre-demonstration baseline years FY 2015-2017) for all variables. The pre-Demo years for continuing RCHD hospitals is pooled from FY 2002 – FY 2004 (for hospitals joining the RCHD between FY 2005 and FY 2010) and FY 2008 – FY 2010 (for hospitals joining the RCHD between FY 2011 and FY 2015). The pre-demonstration baseline years for new RCHD hospitals is from FY 2015 – FY 2017 (for hospitals joining the RCHD after FY 2017).

D.3 Distribution of Medicare Inpatient Margin

On average, prior to joining the Demonstration, Exhibit D3 shows that while *continuing* and *new* RCHD participants both had similar average Medicare Inpatient margin prior to joining the Demonstration, *new* hospitals:

- Tended to have more variation as evidenced by the more dispersed distribution (standard deviation of 20.97 vs. standard deviation of 14.17).
- Had a distribution more skewed to the left as evidenced by the lowest (minimum) total margin (-89.14 percent vs. -61.40 percent) and the highest (maximum) total margin (-0.62 percent vs. 8.97 percent) values observed among hospital-by-year observations.

Exhibit D3: Distribution of Medicare Inpatient Margins by Continuing, New, and All RCHD Hospitals



	Continuing	New	All Hospitals
Hospital Years	51	36	87
Min	-61.40%	-89.14%	-89.14%
Median	-19.78%	-11.69%	-16.25%
Max	8.97%	-0.62%	8.97%
Avg	-20.55%	-19.41%	-20.08%

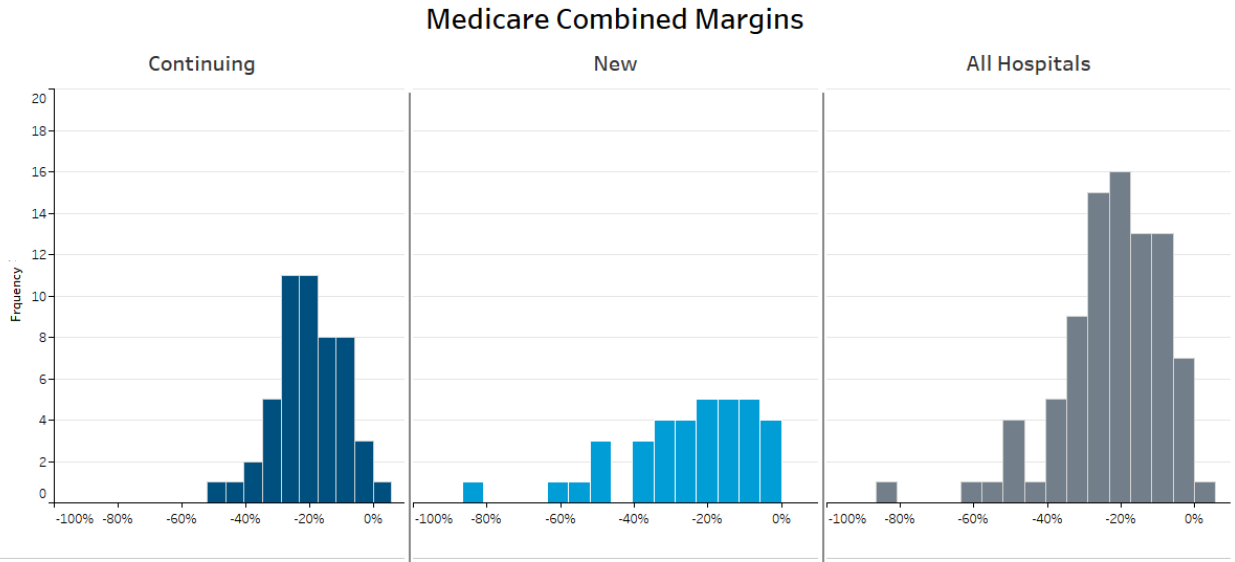
Notes: N = 29 RCHD hospitals (17 continuing and 12 new hospitals) and N = 87 RCHD hospital-year observations (51 continuing and 36 new hospital-year observations). The pre-demonstration baseline years for continuing RCHD hospitals are pooled from FY 2002 to FY 2004 (for hospitals joining the RCHD between FY 2005 and FY 2010) and FY 2008 to FY 2010 (for hospitals joining the RCHD between FY 2011 and FY 2015). The pre-demonstration baseline years for new RCHD hospitals are from FY 2015 to FY 2017 (for hospitals joining the RCHD after FY 2017).

D.4 Distribution of Medicare Combined Margins

On average, prior to joining the Demonstration, *continuing* and *new* RCHD participant hospitals have similar Medicare combined margins. However, Exhibit D4 shows that the distribution of Medicare combined margins for *new* hospitals differs from *continuing* hospitals in that *new* hospitals:

- Tended to have more variation in Medicare combined margins (standard deviation 18.68% of vs. standard deviation of 10.56).
- Had a distribution more skewed to the left as evidenced by the minimum (-86.81 percent vs. -48.20 percent) and maximum (-1.20 percent vs. 2.90 percent) values observed among hospital-by-year observations.

Exhibit D4: Distribution of Medicare Combined Margins by Continuing, New, and All RCHD Hospitals



	Continuing	New	All Hospitals
Hospital Years	51	36	87
Min	-48.20%	-86.61%	-86.61%
Median	-19.35%	-23.03%	-21.38%
Max	2.90%	-1.20%	2.90%
Avg	-20.22%	-25.78%	-22.52%

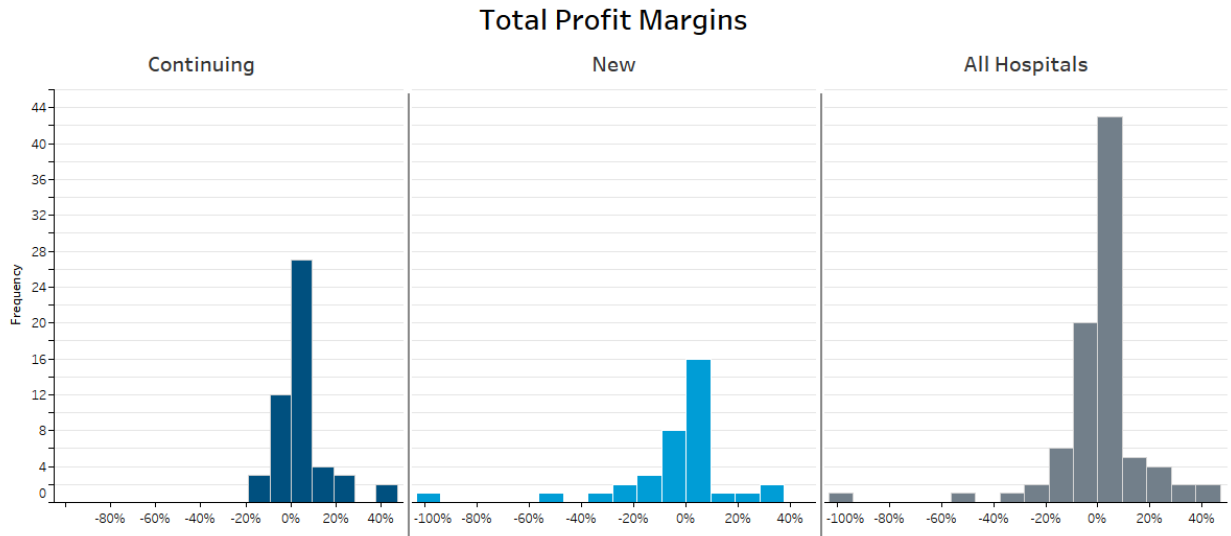
Notes: N = 29 RCHD hospitals (17 continuing and 12 new hospitals) and N = 87 RCHD hospital-year observations (51 continuing and 36 new hospital-year observations). The pre-demonstration baseline years for continuing RCHD hospitals are pooled from FY 2002 to FY 2004 (for hospitals joining the RCHD between FY 2005 and FY 2010) and FY 2008 to FY 2010 (for hospitals joining the RCHD between FY 2011 and FY 2015). The pre-demonstration baseline years for new RCHD hospitals are from FY 2015 to FY 2017 (for hospitals joining the RCHD after FY 2017).

D.5 Distribution of Total Profit Margin

On average, prior to joining the Demonstration, *continuing* and *new* RCHD participant hospitals have generally similar total profit margins. However, Exhibit D5 shows that *new* hospitals:

- Tended to have a much lower average total profit margin as compared to *continuing* hospitals (-3.20 percent vs. 4.36 percent) mainly due one or two outlier hospitals with negative total profit margins below -40 percent. One of the *new* participant hospitals, had total profit margin of -100.00 percent in one of the years prior to joining the Demonstration (FY 2015). Another *new* participant hospital had an average total profit margin of -34.00 percent in three years prior to joining the Demonstration (FY 2013 – FY 2015).
- Apart from a few outliers, for a majority of *new* hospitals, total profit margin is very similar to total profit margin among *continuing* hospitals. If we exclude the outlier *new* hospital year observations (hospital year observation in FY 2015 with -100.00 percent total profit margin, and hospital year observations from FY 2013 to FY 2015 with an average total profit margin of -34.00 percent), the average total profit margin for *new* hospitals is 2.72 percent.

Exhibit D5: Distribution of Total Profit Margins by Continuing, New, and All RCHD Hospitals



	Continuing	New	All Hospitals
Hospital Years	51	36	87
Min	-11.39%	-100.00%	-100.00%
Median	3.55%	1.62%	2.71%
Max	46.06%	31.29%	46.06%
Avg	4.36%	-3.20%	1.23%

Notes: N = 29 RCHD hospitals (17 continuing and 12 new hospitals) and N = 87 RCHD hospital-year observations (51 continuing and 36 new hospital-year observations). The pre-demonstration baseline years for continuing RCHD hospitals are pooled from FY 2002 to FY 2004 (for hospitals joining the RCHD between FY 2005 and FY 2010) and FY 2008 to FY 2010 (for

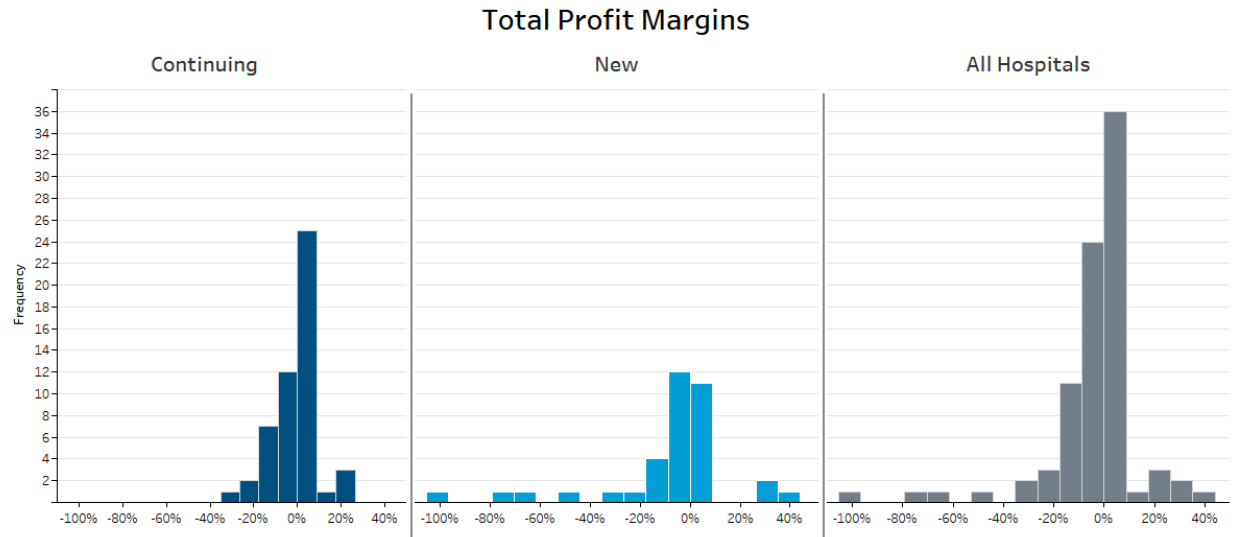
hospitals joining the RCHD between FY 2011 and FY 2015). The pre-demonstration baseline years for new RCHD hospitals are from FY 2015 to FY 2017 (for hospitals joining the RCHD after FY 2017).

D.6 Distribution of Operating Margin

On average, prior to joining the Demonstration, n*ew* hospitals had a lower operating margin than *continuing* hospitals (-7.80 percent vs. -0.31 percent). The operating margin distribution for *new* hospitals is more dispersed than *continuing* hospitals. Exhibit D6 shows that:

- While the median operating margin for *new* hospitals is slightly lower when comparing *continuing* hospitals (-0.78 percent vs. 1.01 percent), there is a lot more variation in operating margins across *new* hospitals.
- Comparing the minimum operating margin hospital-by-year observations between *new* and *continuing* hospitals, it is much lower for *new* hospitals (-100.00 percent vs. -27.07 percent).
- Comparing the maximum operating margin hospital-by-year observations between *new* and cont*inuing* hospitals, it is higher for *new* hospitals (36.25 percent vs. 21.43 percent).

Exhibit D6: Distribution of Operating Margins by Continuing, New, and All RCHD Hospitals



	Continuing	New	All Hospitals
Hospital Years	51	36	87
Min	-27.07%	-100.00%	-100.00%
Max	21.43%	36.25%	36.25%
Avg	-0.31%	-7.80%	-3.41%

Notes: N = 29 RCHD hospitals (17 continuing and 12 new hospitals) and N = 87 RCHD hospital-year observations (51 continuing and 36 new hospital-year observations). The pre-demonstration baseline years for continuing RCHD hospitals are pooled from FY 2002 to FY 2004 (for hospitals joining the RCHD between FY 2005 and FY 2010) and FY 2008 to FY 2010 (for hospitals joining the RCHD between FY 2011 and FY 2015). The pre-demonstration baseline years for new RCHD hospitals are from FY 2015 to FY 2017 (for hospitals joining the RCHD after FY 2017).

Appendix E: Topic Area 3 Exhibits

E.1 Entropy Balancing Variables & Comparison Group Diagnostics

The exhibits in this section present information on matching/balancing variables used to construct comparison groups, and results of diagnostic tests performed to assess the quality of the comparison groups.

Exhibit E1 presents the variables used in the entropy balancing algorithm to construct the comparison groups for the 4 groups of RCHD hospitals, where a RCHD hospital's group is defined depending on when they first start participation in the CCA authorization extension. Group 1 hospitals are those that began participation in the CCA extension in FY 2015, Group 2 hospitals are those that began participation in FY 2016. Group 3 hospitals began participation in FY 2017, and Group 4 in FY 2018. Hospitals in Groups 1-3 are *continuing* hospitals that continued participation in the CCA extension having participated in the RCHD previously under the ACA authorization phase. Group 4 hospitals are *new* hospitals participating in the RCHD for the first time as part of the CCA extension.

Exhibit E2 presents balancing statistics which compare the means of the variables used in the entropy balancing algorithm pre and post balancing.

Exhibits E3 and E4 report results for the parallel baseline trends test for *continuing* and *new* hospitals, respectively. This test is described in section 3.1.2.3. **Exhibits E5-E7** report event-study graphs that accompany the parallel baseline trends test. Event-study graphs plot DID coefficient estimates before and after the start of the demonstration to assess whether the trajectory of estimated impacts are in line with expectation; i.e., whether impacts are zero prior to the start of demonstration participation and positive after the start of demonstration participation.

Exhibit E1: Entropy Balancing Variables

Matching Group	Entropy Balancing Variables
1 – Continuing	Total profit margin in 2012, total profit margin in 2013, total profit margin in 2014, Medicare inpatient margin in 2012, Medicare inpatient margin in 2013, Medicare inpatient margin in 2014, indicator for competitive hospital, indicator for frontier hospital, percentage white in county, percentage of county over 65, indicator for hospital is a non-profit, indicator for hospital is government-run, indicator for hospital is in a system
2 – Continuing	Total profit margin in 2013, total profit margin in 2014, total profit margin in 2015, Medicare inpatient margin in 2013, Medicare inpatient margin in 2014, Medicare inpatient margin in 2015, indicator for competitive hospital, indicator for frontier hospital, poverty rate, percentage white in county, indicator for ever expanded Medicaid, percentage of county over 65, unemployment rate
3 – Continuing	Total profit margin in 2014, total profit margin in 2015, total profit margin in 2016, Medicare inpatient margin in 2014, Medicare inpatient margin in 2015, Medicare inpatient margin in 2016, indicator for competitive hospital, indicator for frontier hospital, poverty rate, percentage white in county, indicator for ever expanded Medicaid, percentage of county over 65, unemployment rate
4 – New	Total profit margin in 2015, total profit margin in 2016, total profit margin in 2017, Medicare inpatient margin in 2015, Medicare inpatient margin in 2016, Medicare inpatient margin in 2017, indicator for competitive hospital, indicator for frontier hospital, poverty rate, percentage white in county, indicator for ever expanded Medicaid, percentage of county over 65, indicator for hospital is a non-profit, indicator for hospital is government-run, indicator for hospital is in a system, unemployment rate

Notes: Groups 1,2, and 3 were appended to create the matched comparison group for continuing hospitals and Group 4 formed the matched comparison group for new hospitals.

Exhibit E2: Balance Statistics

Variable	Matching Group	RCHD Group Mean	Pre-Balancing Comparison Group Mean	Pre-Balancing Standardized Difference (%)	Post-Balancing Comparison Group Mean	Post-Balancing Standardized Difference (%)
Total Profit Margin, 2012	1 – Continuing	10%	1%	224	10%	-0.5
Total Profit Margin, 2013	1 – Continuing	9%	-1%	102	9%	-0.3
Total Profit Margin, 2014	1 – Continuing	11%	-1%	141	11%	-0.3
Medicare Inpatient Margin, 2012	1 – Continuing	-7%	-3%	-31	-7%	-0.3
Medicare Inpatient Margin, 2013	1 – Continuing	-4%	-5%	22	-4%	-0.5
Medicare Inpatient Margin, 2014	1 – Continuing	-5%	-3%	-34	-5%	-0.3
Percentage Competitive Hospital	1 – Continuing	33%	81%	-83	33%	0.1
Percentage Frontier Hospital	1 – Continuing	67%	8%	102	67%	0.0
Percentage White in County	1 – Continuing	79%	76%	48	79%	-0.1
Percentage of County over 65	1 – Continuing	13%	17%	-148	13%	0.1
Percentage Non-Profit	1 – Continuing	67%	41%	44	66%	0.4
Percentage Government-Run	1 – Continuing	33%	38%	-8	33%	0.1
Percentage in a Hospital System	1 – Continuing	67%	51%	26	67%	0.0
Total Profit Margin, 2013	2 – Continuing	1%	-2%	38	1%	0.1
Total Profit Margin, 2014	2 – Continuing	2%	0%	22	2%	-0.1
Total Profit Margin, 2015	2 – Continuing	3%	0%	29	3%	0.0
Medicare Inpatient Margin, 2013	2 – Continuing	-2%	-5%	60	-2%	0.4
Medicare Inpatient Margin, 2014	2 – Continuing	-5%	-2%	-29	-5%	0.1
Medicare Inpatient Margin, 2015	2 – Continuing	-7%	-4%	-18	-7%	0.2
Percentage Competitive Hospital	2 – Continuing	89%	80%	26	89%	0.4

Variable	Matching Group	RCHD Group Mean	Pre-Balancing Comparison Group Mean	Pre-Balancing Standardized Difference (%)	Post-Balancing Comparison Group Mean	Post-Balancing Standardized Difference (%)
County Poverty Rate	2 – Continuing	25%	31%	-67	25%	0.0
Percentage White in County	2 – Continuing	83%	75%	29	83%	0.1
Percentage in Medicaid Expansion State	2 – Continuing	67%	42%	50	67%	0.1
Percentage of County over 65 years	2 – Continuing	17%	17%	-3	17%	0.1
County Unemployment Rate	2 – Continuing	5%	8%	-140	5%	0.0
Total Profit Margin, 2014	3 – Continuing	-2%	-1%	-15	-2%	0.1
Total Profit Margin, 2015	3 – Continuing	-2%	0%	-39	-2%	0.0
Total Profit Margin, 2016	3 – Continuing	-4%	-1%	-21	-4%	-0.1
Medicare Inpatient Margin, 2014	3 – Continuing	0%	-3%	225	0%	0.7
Medicare Inpatient Margin, 2015	3 – Continuing	3%	-5%	141	3%	0.4
Medicare Inpatient Margin, 2016	3 – Continuing	5%	-6%	130	5%	0.4
Percentage Competitive Hospital	3 – Continuing	60%	80%	-36	60%	0.0
Percentage Frontier Hospital	3 – Continuing	20%	9%	24	20%	0.0
County Poverty Rate	3 – Continuing	26%	31%	-44	26%	-0.1
Percentage White in County	3 – Continuing	77%	75%	9	77%	0.1
Percentage in Medicaid Expansion State	3 – Continuing	60%	44%	30	60%	0.1
Percentage of County over 65 years	3 – Continuing	17%	18%	-15	17%	0.0
County Unemployment Rate	3 – Continuing	6%	7%	-56	6%	-0.1
Total Profit Margin, 2015	4 – New	-8%	0%	-27	-8%	0.0
Total Profit Margin, 2016	4 – New	0%	0%	2	0%	-0.1

Variable	Matching Group	RCHD Group Mean	Pre-Balancing Comparison Group Mean	Pre-Balancing Standardized Difference (%)	Post-Balancing Comparison Group Mean	Post-Balancing Standardized Difference (%)
Total Profit Margin, 2017	4 – New	-2%	-1%	-5	-2%	-0.1
Medicare Inpatient Margin, 2015	4 – New	-21%	-3%	-75	-21%	0.1
Medicare Inpatient Margin, 2016	4 – New	-22%	-3%	-79	-22%	0.1
Medicare Inpatient Margin, 2017	4 – New	-15%	-2%	-87	-15%	0.2
Percentage Competitive Hospital	4 – New	33%	82%	-99	33%	0.0
Percentage Frontier Hospital	4 – New	50%	9%	79	50%	0.0
County Poverty Rate	4 – New	23%	30%	-111	23%	0.0
Percentage White in County	4 – New	80%	75%	45	80%	0.0
Percentage in Medicaid Expansion State	4 – New	42%	44%	-4	42%	0.0
Percentage of County over 65 years	4 – New	17%	18%	-38	17%	0.0
Percentage Non-Profit	4 – New	75%	47%	62	75%	0.1
Percentage Government-Run	4 – New	25%	35%	-23	25%	0.0
Percentage in a Hospital System	4 – New	67%	53%	29	67%	0.0
County Unemployment Rate	4 – New	5%	7%	-91	5%	0.0

Notes: Groups 1,2, and 3 were appended to create the matched comparison group for Continuing hospitals and Group 4 formed the matched comparison group for new hospitals.

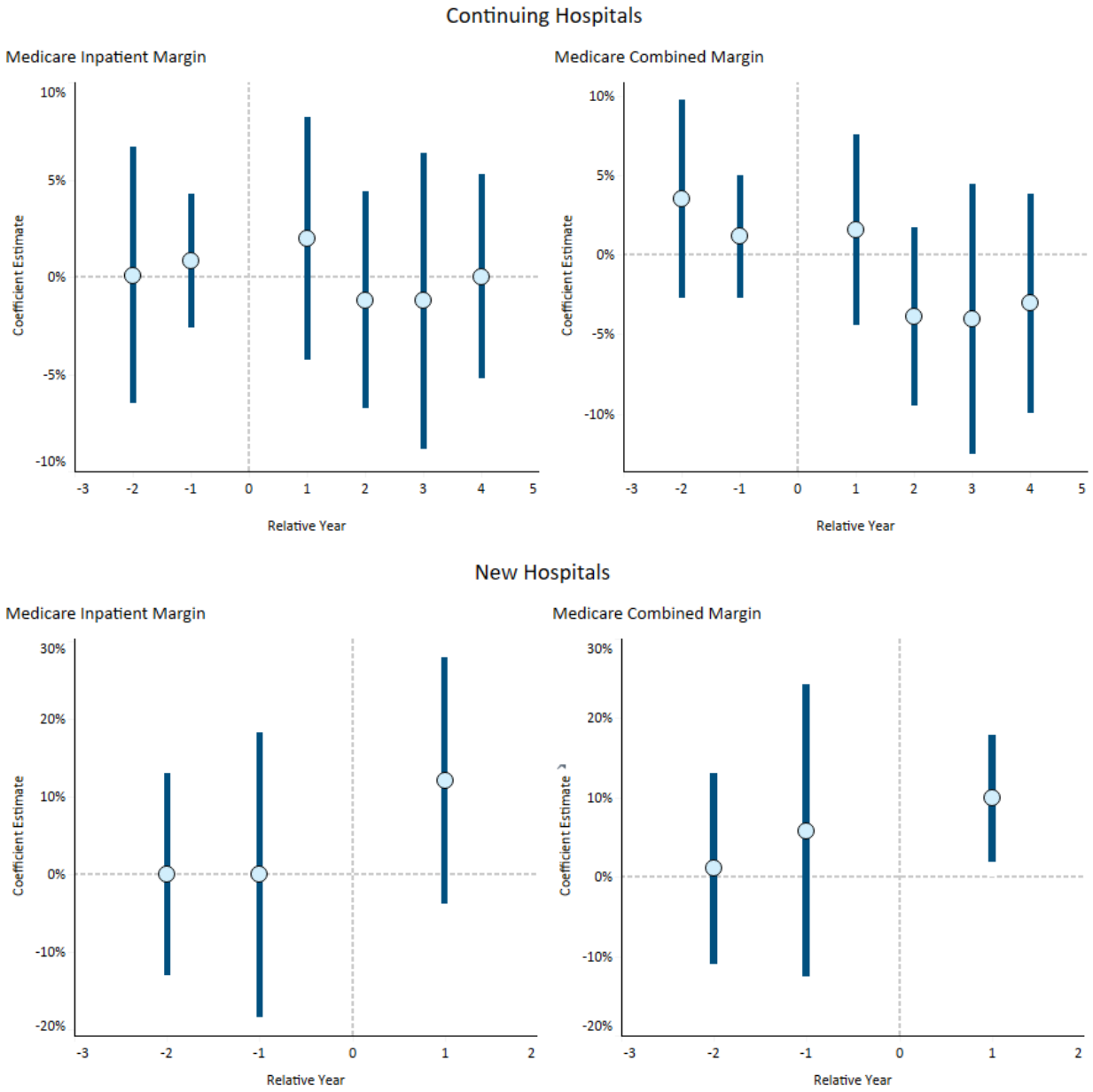
Exhibit E3: Test of Parallel Baseline Trends for Continuing Hospitals

Outcome	Baseline Year 1 Estimate	Baseline Year 1 p-value	Baseline Year 2 Estimate	Baseline Year 2 p-value	Joint F-Test p-Value	Sample Size in Hospital-Years
Medicare Inpatient Margin	0%	0.90	0%	0.85	0.98	5,510
Medicare Combined Margin	1%	0.62	1%	0.45	0.74	5,512
Total Profit Margin	0%	0.91	-1%	0.64	0.50	5,506
Operating Margin	-2%	0.52	-1%	0.59	0.81	5,506
Days Cash on Hand	30	0.00	9.5	0.48	0.00	5,512
Long-Term Debt-to-Capitalization	-11%	0.28	-4%	0.36	0.55	5,499
Ratio of Salaries to Net Patient Revenue	1%	0.38	2%	0.06	0.16	5,506
Full Time Equivalents per Occupied Bed	0.7	0.12	0.9	0.01	0.05	5,474
Average Age of Plant	-1.5	0.53	-0.2	0.92	0.08	5,080
Medicare Inpatient Share	1%	0.36	1%	0.49	0.65	5,510
Medicare Inpatient Payer Mix	0%	0.68	1%	0.46	0.76	5,510
Medicare Swing-bed Revenue Share	-1%	0.67	-1%	0.54	0.82	5,510

Exhibit E4: Test of Parallel Baseline Trends for New Hospitals

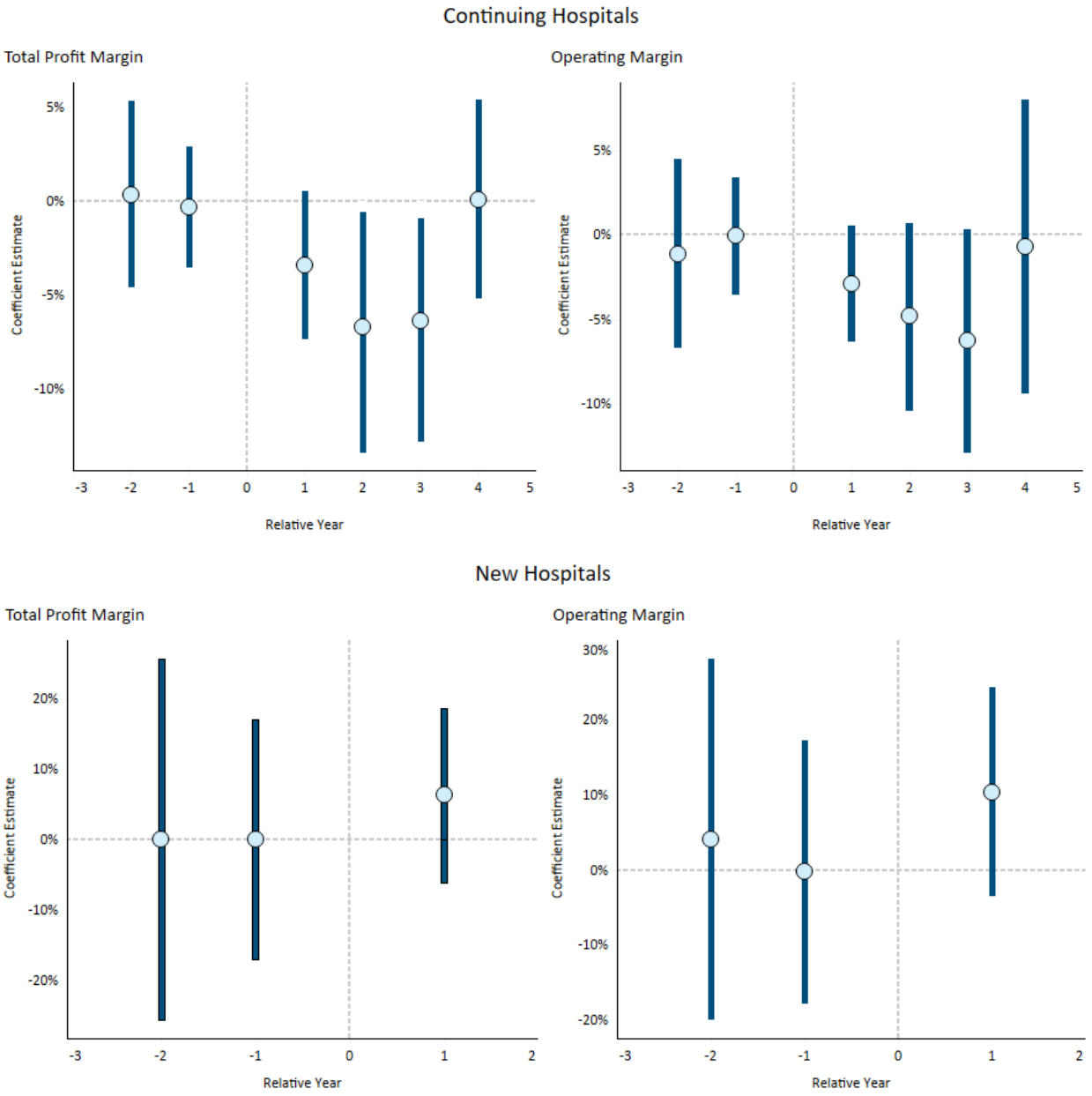
Outcome	Baseline Year 1 Estimate	Baseline Year 1 p-value	Baseline Year 2 Estimate	Baseline Year 2 p-value	Joint F-Test p-Value	Sample Size in Hospital-Years
Medicare Inpatient Margin	9%	0.13	5%	0.53	0.31	1,290
Medicare Combined Margin	5%	0.29	9%	0.22	0.37	1,291
Total Profit Margin	0%	0.93	-6%	0.34	0.60	1,289
Operating Margin	1%	0.86	-8%	0.26	0.42	1,289
Days Cash on Hand	36	0.06	23	0.07	0.14	1,291
Long-Term Debt-to-Capitalization	10%	0.85	-32%	0.37	0.65	1,288
Ratio of Salaries to Net Patient Revenue	-2%	0.48	4%	0.32	0.45	1,289
Full Time Equivalents per Occupied Bed	-0.03	0.98	0.3	0.52	0.70	1,285
Average Age of Plant	-0.1	0.98	4	0.59	0.27	1,162
Medicare Inpatient Share	-6%	0.33	-10%	0.29	0.57	1,290
Medicare Inpatient Payer Mix	-1%	0.77	0%	0.95	0.94	1,290
Medicare Swing-bed Revenue Share	2%	0.27	1%	0.48	0.47	1,290

Exhibit E5: Event-Study of Medicare Margins, Continuing and New Hospitals



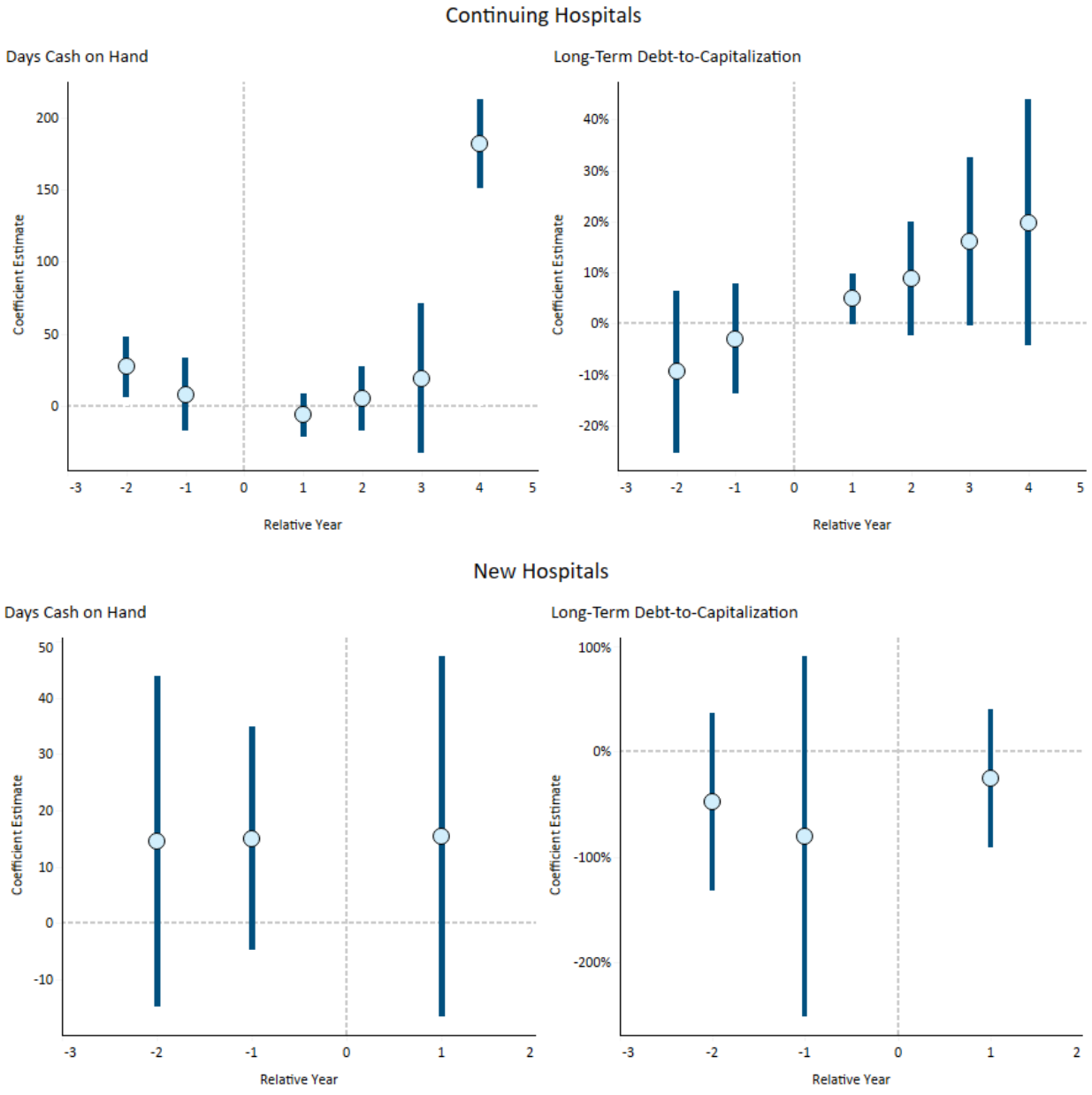
Notes: An event-study graph plots DID coefficient estimates before and after the start of the demonstration to assess whether the trajectory of estimated impacts are in line with expectation; i.e., whether impacts are zero prior to the start of participation in the CCA extension and positive after the start of participation in the CCA extension. Relative years -2 to 0 are the baseline period for the evaluation, where 0 is the final baseline year or the year prior to the year in which a hospital started participation in the CCA extension.

Exhibit E6: Event-Study of Other Profitability Margins, Continuing and New Hospitals



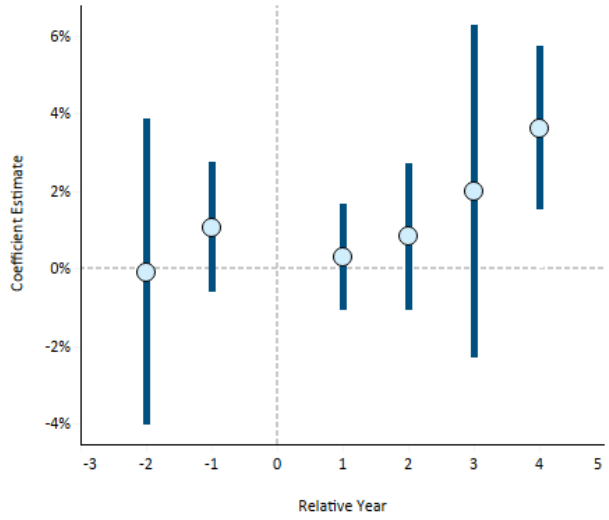
Notes: An event-study graph plots DID coefficient estimates before and after the start of the demonstration to assess whether the trajectory of estimated impacts are in line with expectation; i.e., whether impacts are zero prior to the start of participation in the CCA extension and positive after the start of participation in the CCA extension. Relative years -2 to 0 are the baseline period for the evaluation, where 0 is the final baseline year or the year prior to the year in which a hospital started participation in the CCA extension.

Exhibit E7: Event-Study of Other Financial Outcomes and Medicare Revenue Indicators, Continuing and New Hospitals

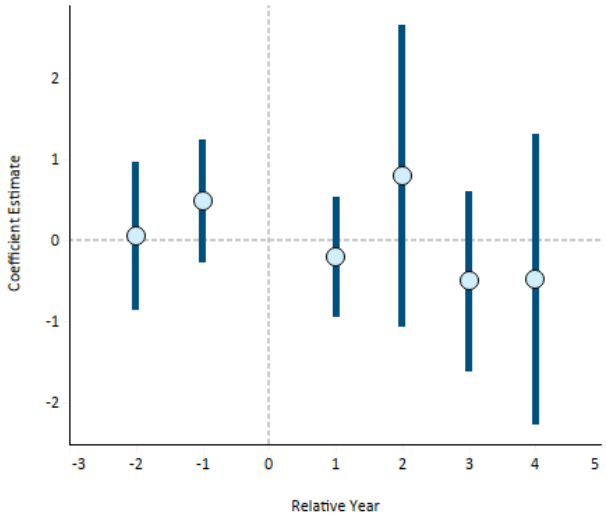


Continuing Hospitals

Ratio of Salaries to Net Patient Revenue

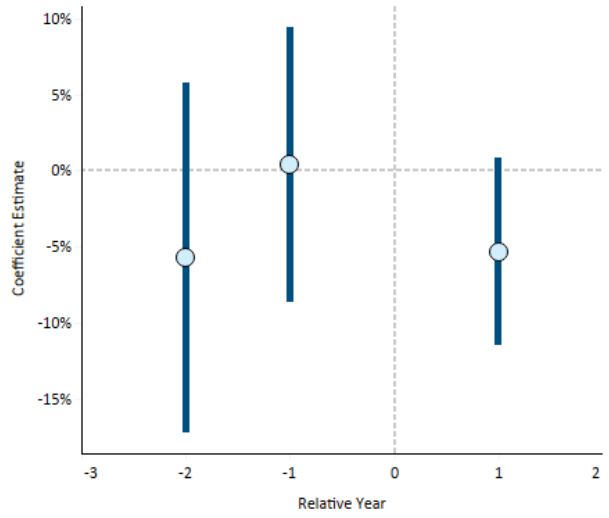


Hospital Full Time Equivalents per Occupied Bed

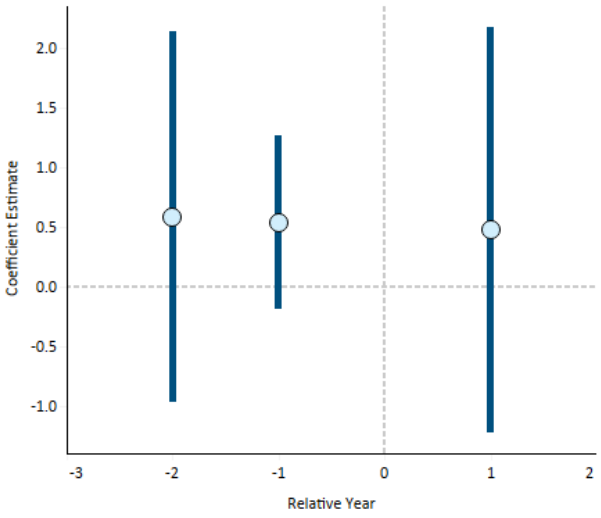


New Hospitals

Ratio of Salaries to Net Patient Revenue

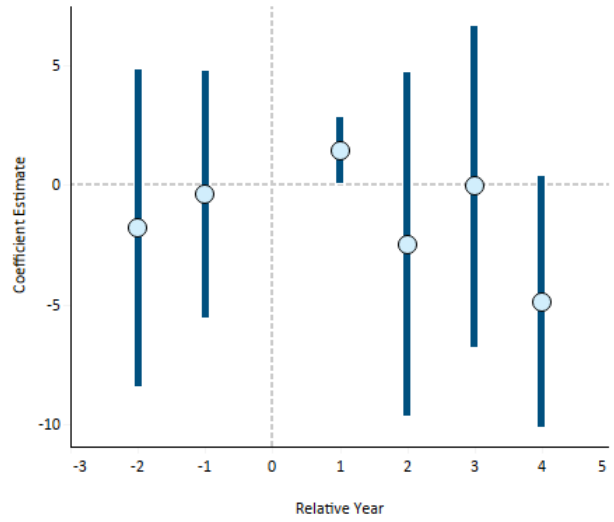


Hospital Full Time Equivalents per Occupied Bed

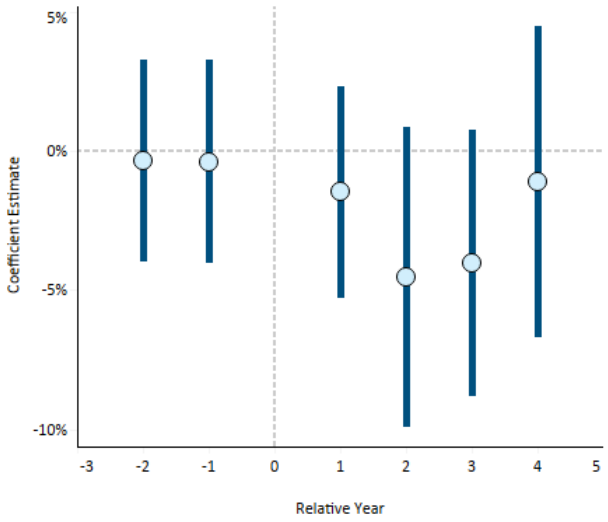


Continuing Hospitals

Hospital Full Time Equivalents per Occupied Bed

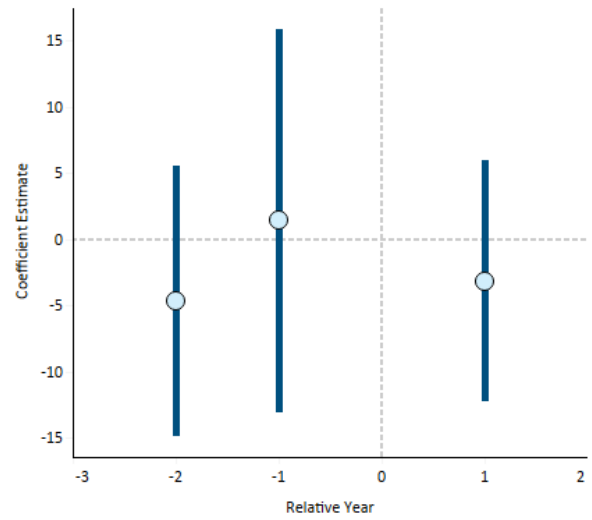


Medicare Share of Inpatient Days

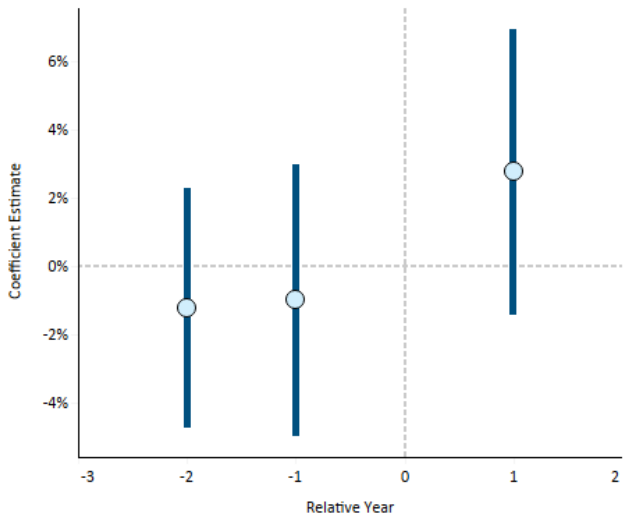


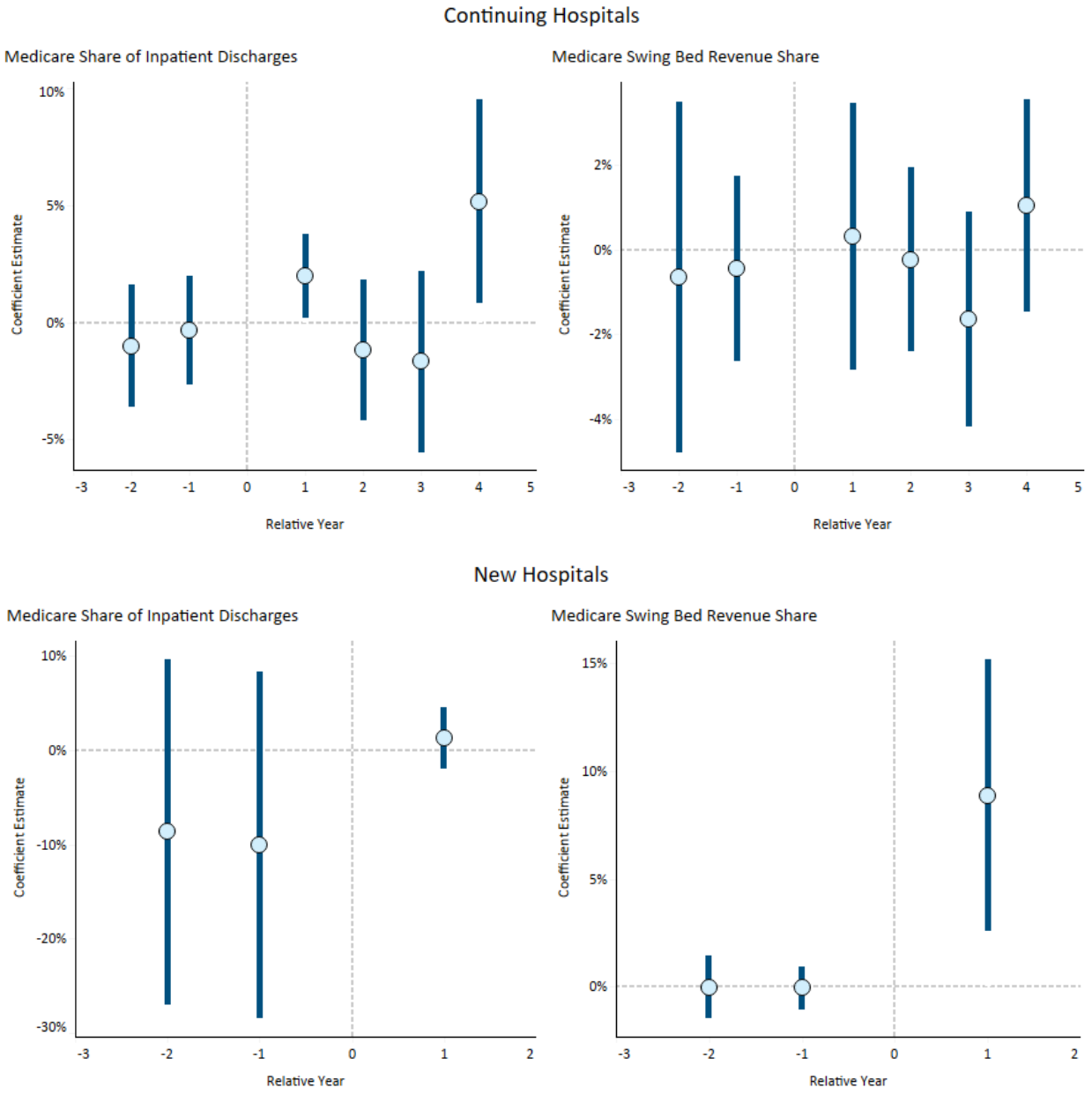
New Hospitals

Average Age of Plant



Medicare Share of Inpatient Days





Notes: An event-study graph plots DID coefficient estimates before and after the start of the demonstration to assess whether the trajectory of estimated impacts are in line with expectation; i.e., whether impacts are zero prior to the start of participation in the CCA extension and positive after the start of participation in the CCA extension. Relative years -2 to 0 are the baseline period for the evaluation, where 0 is the final baseline year or the year prior to the year in which a hospital started participation in the CCA extension.

E.2 Additional Results

The exhibits in this section include descriptive and regression results for other (non-margin) outcomes and well as results of the robustness checks conducted.

Exhibits E8 and E9 present descriptive analysis results accompanying section 6.2 for other (non-margin) outcomes, for *continuing* and *new* hospitals respectively. **Exhibit E10** presents trend-graphs for the non-margin outcomes, that are parallel to the trend graphs for the margin outcomes in section 6.2. Separate trend analysis by hospital, for *continuing* hospitals, is reported in **Exhibit E11**. This trend analysis was performed to further explore the total profit margin declines that were experienced by *continuing* RCHD hospitals in the CCA extension. The time-dimension is useful to explore whether shocks were experienced by hospitals in the same or in different years. This helps understand whether there were multiple external/non-Medicare factors responsible for this trend or if the observed decline was attributable to a common external shock. The results for this exhibit are discussed in section 6.2.

Exhibits E12 through E15 present DID regression results accompanying section 6.3 for other (non-margin) outcomes for *continuing* and *new* hospitals.

Exhibits E16 through E23 present DID regression results for the robustness check reported in section 6.5.1 which examines whether estimated impacts are robust to capping and renormalizing entropy balancing weights at the 95th percentile.

Exhibit E24 presents DID regression results for the robustness check reported in section 6.5.2 which examines whether estimated impacts for the total profit margin outcome, for *continuing* hospitals, is robust to removing outliers.

Exhibit E8: RCHD and Comparison Hospital Other (Non-Margin) Outcomes for Continuing Hospitals

Measure	All RCHD Participant Hospitals	Comparison Hospitals
Days Cash on Hand		
Baseline Period Mean	142	92
Demonstration Period Mean	149	82
Difference *(in days)*	7	-10
Long-Term Debt-to-Capitalization		
Baseline Period Mean	19%	19%
Demonstration Period Mean	24%	6%

Measure	All RCHD Participant Hospitals	Comparison Hospitals
Difference *(in percentage points)*	0.05	-0.13
Ratio of Salaries to Net Patient Revenue		
Baseline Period Mean	42%	46%
Demonstration Period Mean	43%	42%
Difference *(in percentage points)*	1	4
Hospital Full Time Equivalents per Occupied Bed		
Baseline Period Mean	8	7
Demonstration Period Mean	8	7
Difference *(in FTEs)*	0	0
Average Age of Plant		
Baseline Period Mean	11	12
Demonstration Period Mean	13	14
Difference *(in years)*	2	1*
Medicare Share of Inpatient Discharges		
Baseline Period Mean	46%	41
Demonstration Period Mean	43%	41
Difference *(in percentage points)*	-2	0
Medicare Share of Inpatient Days		
Baseline Period Mean	58%	50%
Demonstration Period Mean	57%	49%
Difference *(in percentage points)*	-1	-1
Medicare Swing-bed Revenue Share		
Baseline Period Mean	14%	2%
Demonstration Period Mean	13%	2%
Difference *(in percentage points)*	-1	0
Sample Size in Hospital-Years	100	5424
Number of Hospitals	17	354

Notes: *** indicates that the difference between baseline period means and demonstration period means is statistically significant at the 1% level, ** indicates that the difference between baseline period means and demonstration period means is statistically significant at the 5% level, and * indicates that the difference between baseline period means and demonstration period means is statistically significant at the 10% level, using traditional inference. Differences may not add-up due to rounding. The maximum sample-sizes for the set of outcomes in the table are reported; sample sizes may be slightly smaller for some outcomes due to missing data in some years.

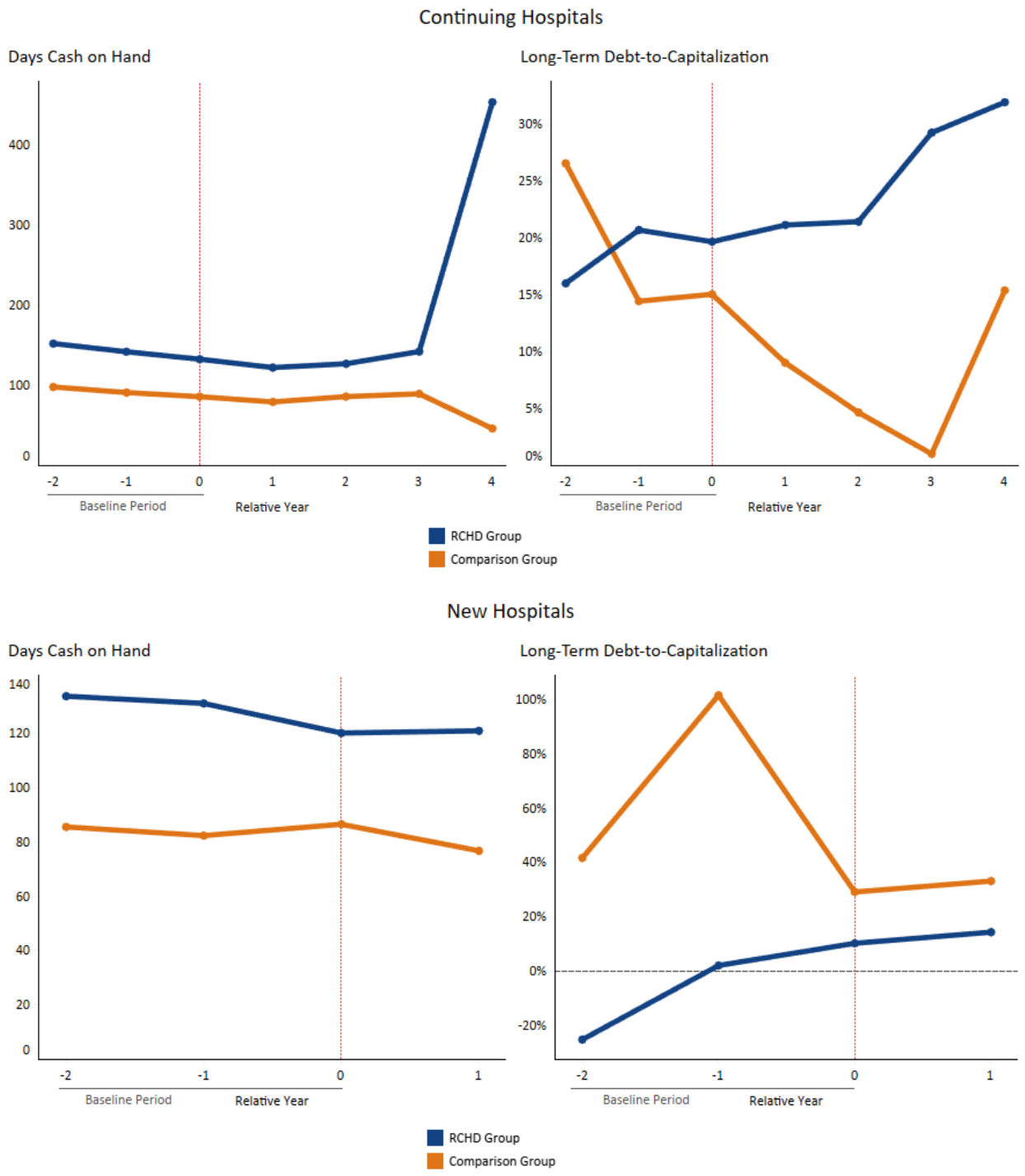
Exhibit E9: RCHD and Comparison Hospital Other (Non-Margin) Outcomes for New Hospitals

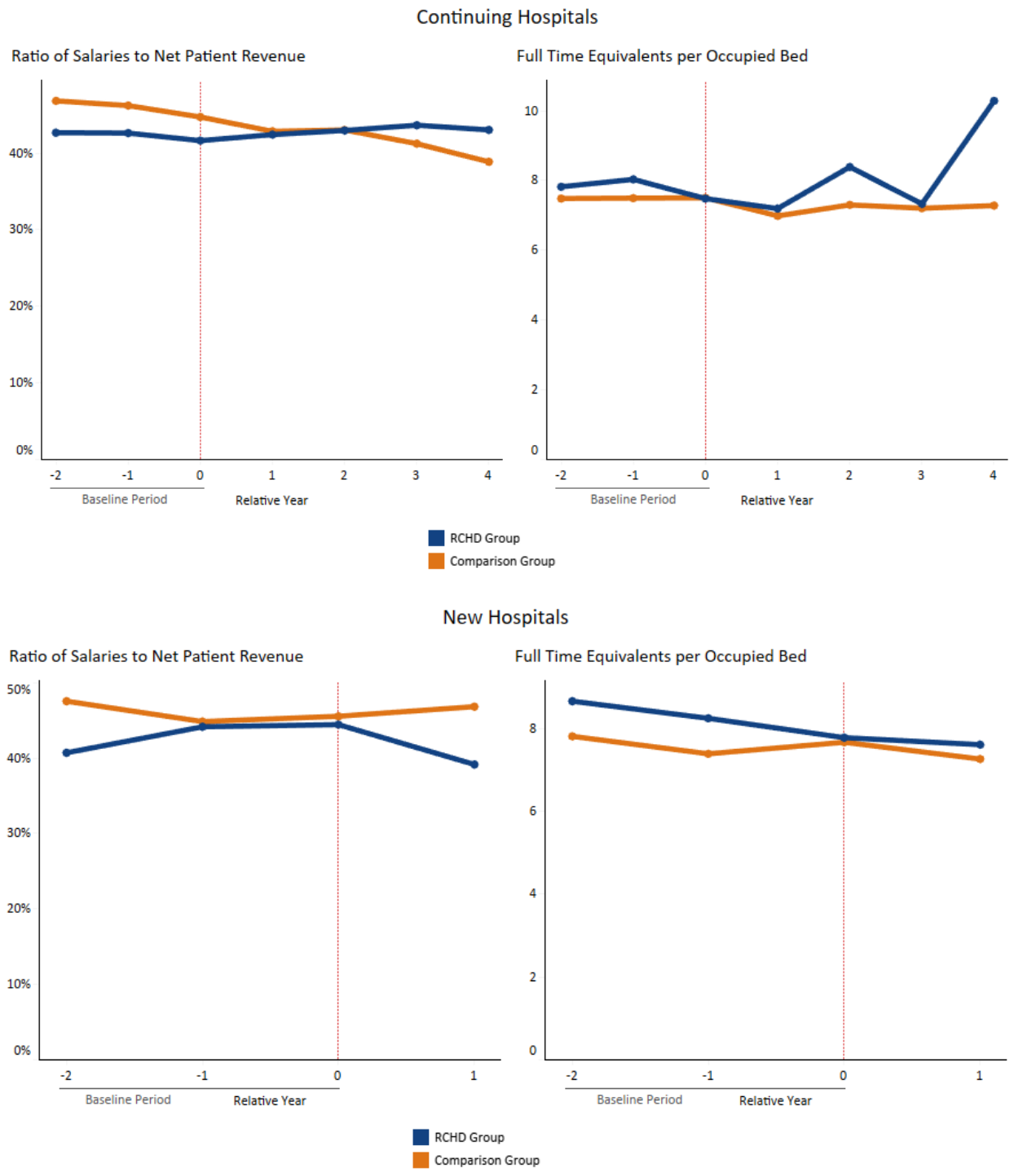
Measure	All RCHD Participant Hospitals	Comparison Hospitals
Days Cash on Hand		
Baseline Period Mean	128	85
Demonstration Period Mean	121	77
Difference *(in days)*	-7	-8
Long-Term Debt-to-Capitalization		
Baseline Period Mean	-4%	58%
Demonstration Period Mean	14%	33%
Difference *(in percentage points)*	19	-24
Ratio of Salaries to Net Patient Revenue		
Baseline Period Mean	43%	46%
Demonstration Period Mean	39%	47%
Difference *(in percentage points)*	-4	1
Hospital Full Time Equivalents per Occupied Bed		
Baseline Period Mean	8.2	7.6
Demonstration Period Mean	7.6	7.3
Difference *(in FTEs)*	-0.6	-0.4
Average Age of Plant		
Baseline Period Mean	18.6	10.5
Demonstration Period Mean	20.2	13.7
Difference *(in years)*	1.6	3.2
Medicare Share of Inpatient Discharges		
Baseline Period Mean	43%	40%
Demonstration Period Mean	48%	37%
Difference	5	-3
Medicare Share of Inpatient Days		
Baseline Period Mean	54%	50%
Demonstration Period Mean	56%	48%
Difference	1	-2

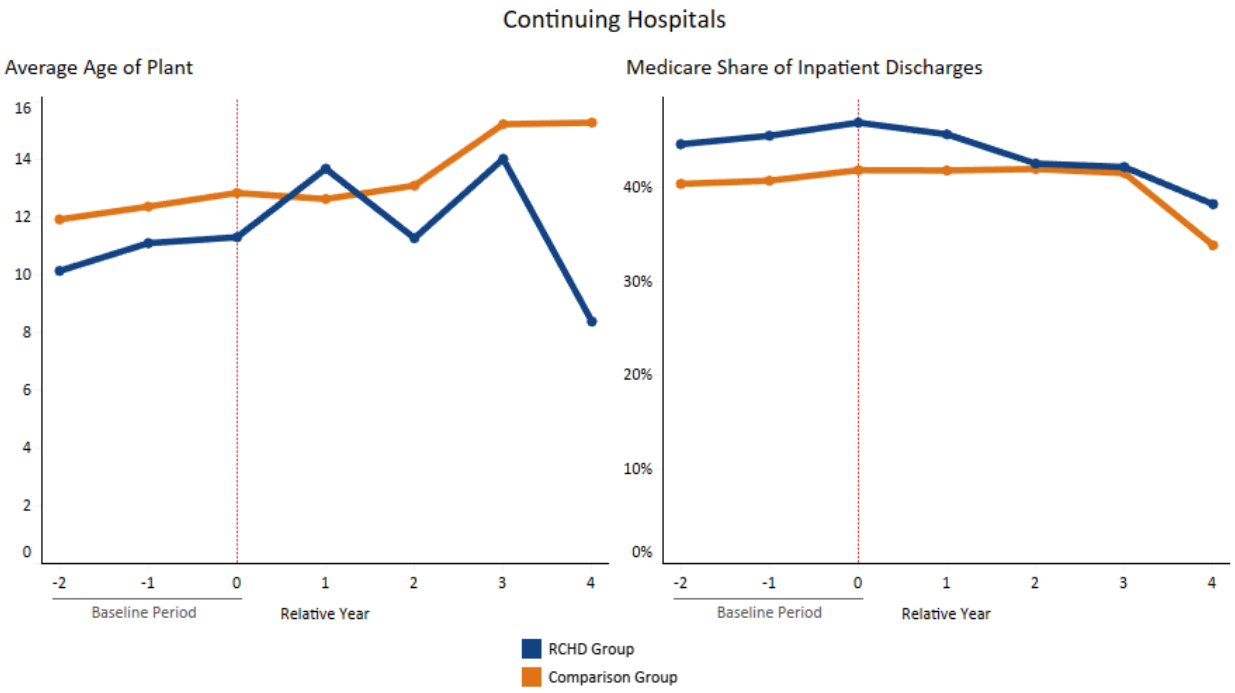
Measure	All RCHD Participant Hospitals	Comparison Hospitals
Medicare Swing-bed Revenue Share		
Baseline Period Mean	9%	2%
Demonstration Period Mean	18%	2%
Difference	9	0
Sample Size in Hospital-Years	48	1242
Number of Hospitals	12	314

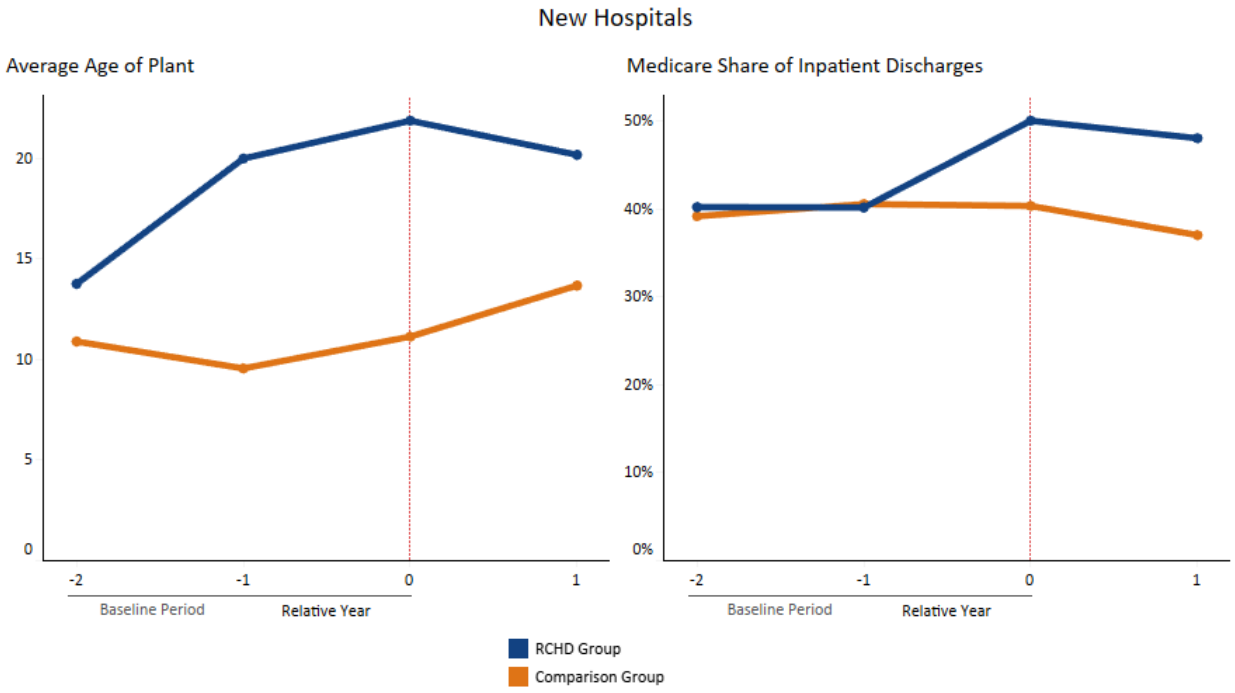
Notes: *** indicates that the difference between baseline period means and demonstration period means is statistically significant at the 1% level, ** indicates that the difference between baseline period means and demonstration period means is statistically significant at the 5% level, and * indicates that the difference between baseline period means and demonstration period means is statistically significant at the 10% level, using traditional inference. Differences may not add-up due to rounding. The maximum sample-sizes for the set of outcomes in the table are reported; sample sizes may be slightly smaller for some outcomes due to missing data in some years.

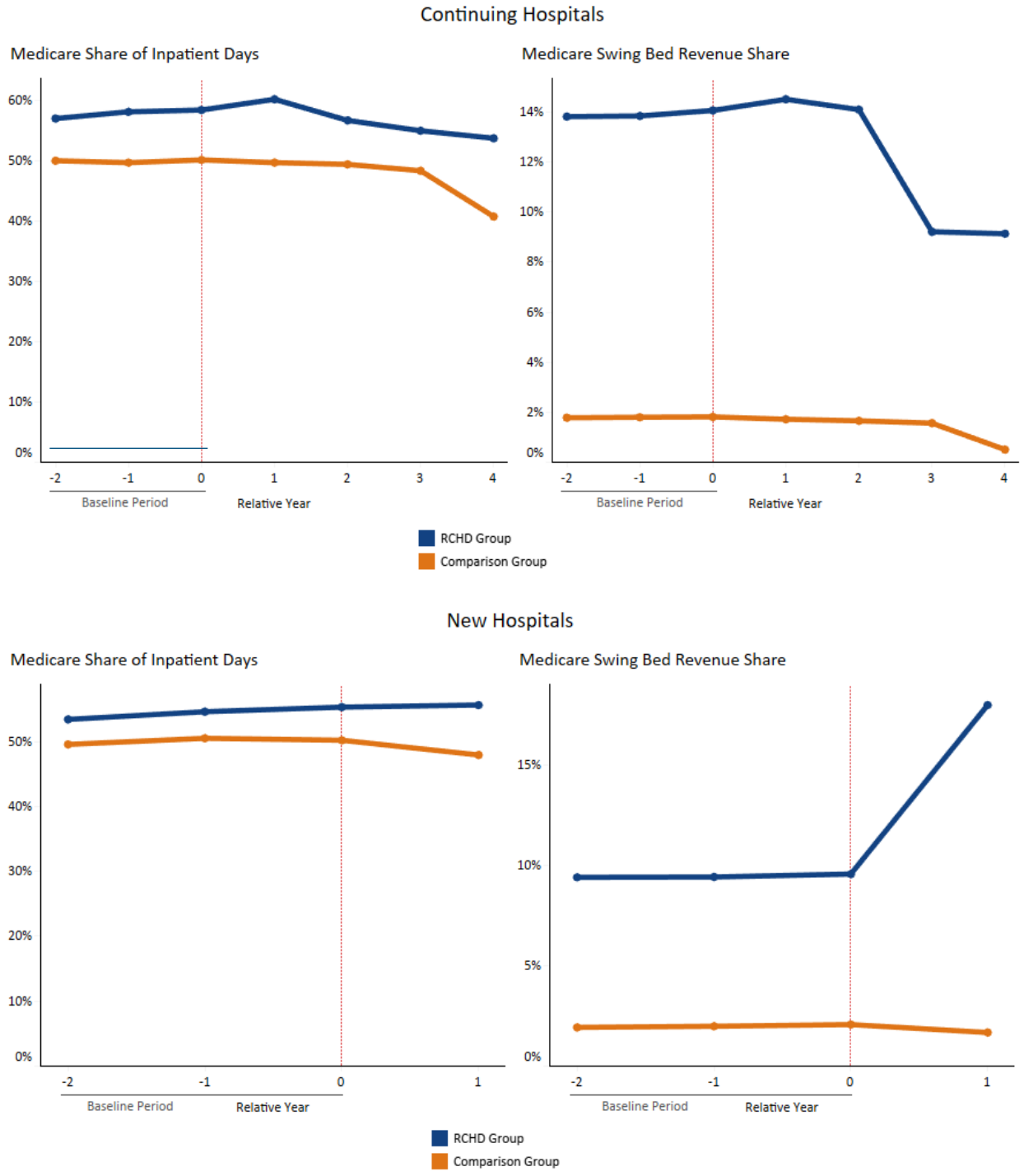
Exhibit E10: RCHD and Comparison Hospital Other (Non-Margin) Outcome Trends for Continuing and New Hospitals




Continuing Hospitals
Ratio of Salaries to Net Patient Revenue
Full Time Equivalents per Occupied Bed
40%
30%
20%
10%
0%
10
8
6
4
2
0
-2
-1
0
1
2
3
4
Baseline Period
Relative Year
RCHD Group
Comparison Group
New Hospitals
Ratio of Salaries to Net Patient Revenue
Full Time Equivalents per Occupied Bed
50%
40%
30%
20%
10%
0%
8
6
4
2
0
-2
-1
0
1
Baseline Period
Relative Year
RCHD Group
Comparison Group

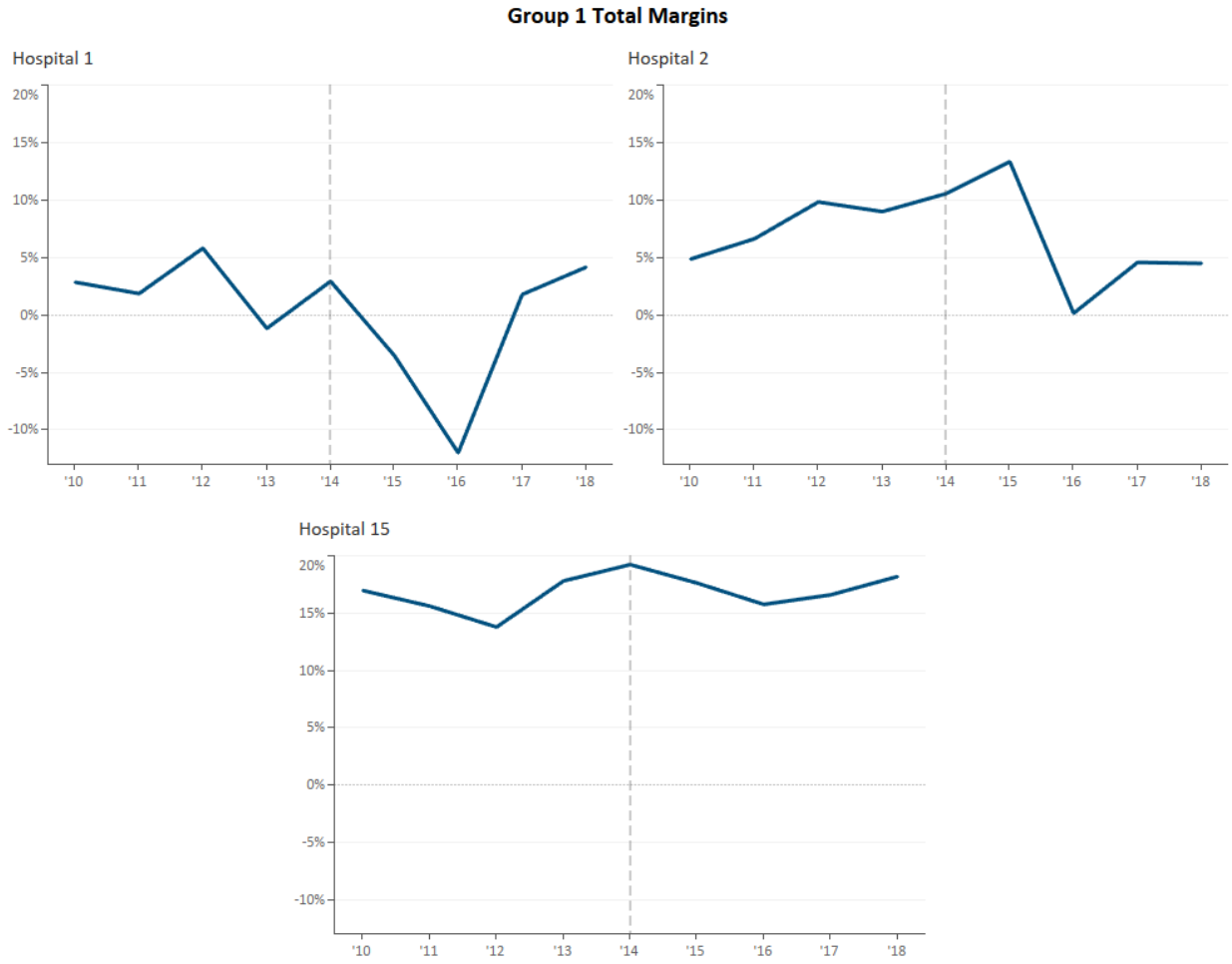

Continuing Hospitals
Average Age of Plant
16
14
12
10
8
6
4
2
0
-2
-1
0
1
2
3
4
Baseline Period
Relative Year
Medicare Share of Inpatient Discharges
40%
30%
20%
10%
0%
-2
-1
0
1
2
3
4
Baseline Period
Relative Year
RCHD Group
Comparison Group

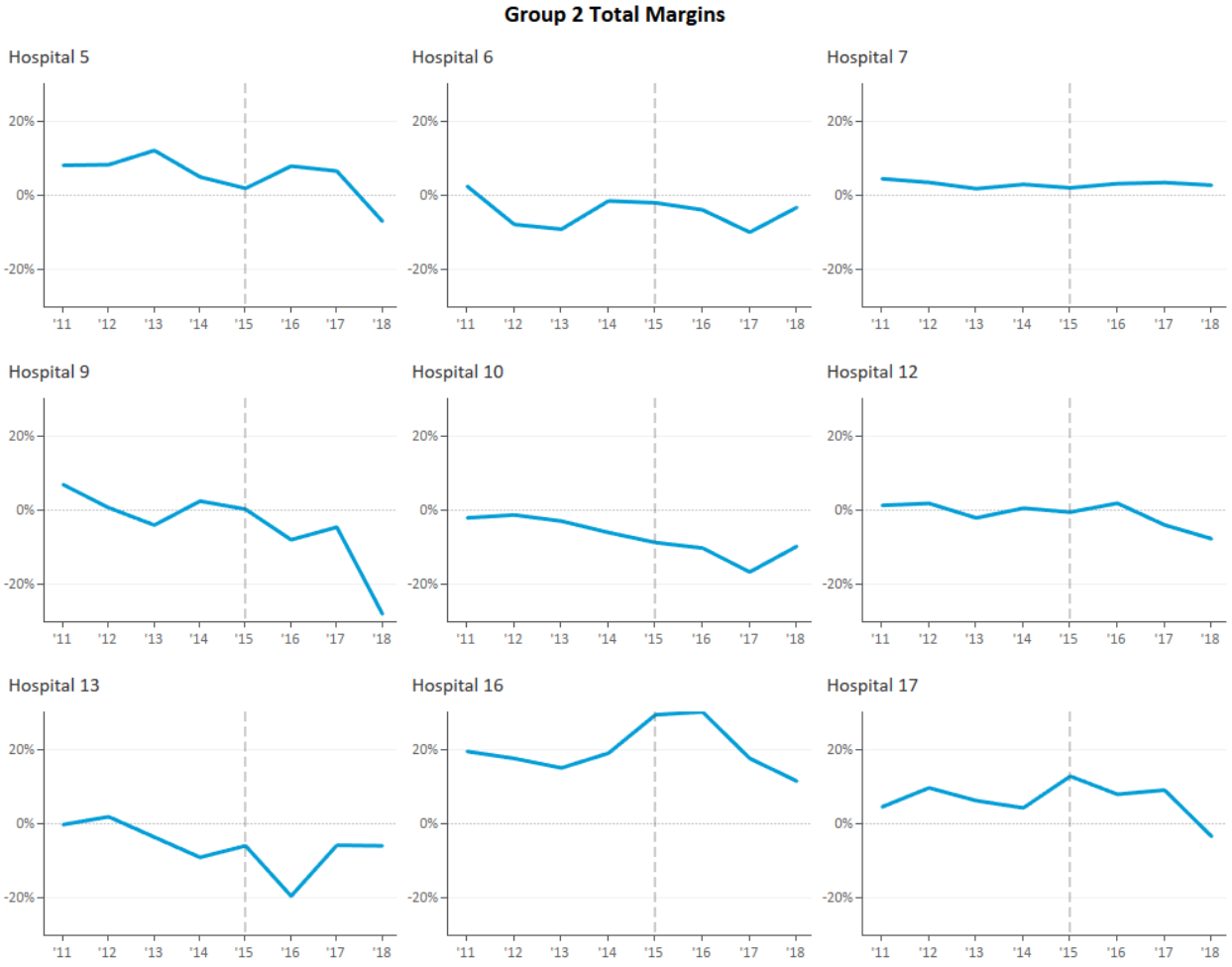

New Hospitals
Average Age of Plant
20
15
10
5
0
-2
-1
0
1
Baseline Period
Relative Year
Medicare Share of Inpatient Discharges
50%
40%
30%
20%
10%
0%
-2
-1
0
1
Baseline Period
Relative Year
RCHD Group
Comparison Group

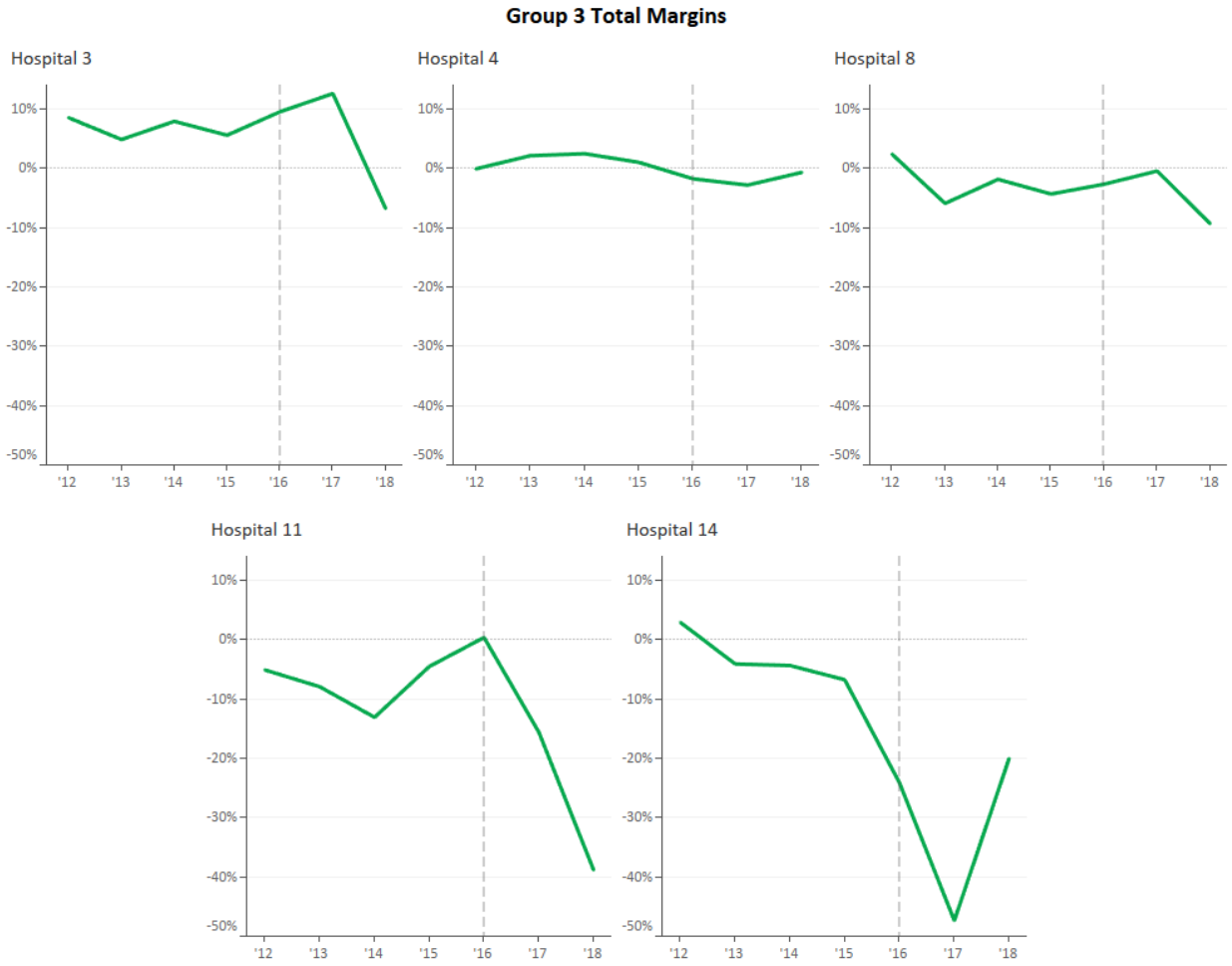


Notes: For new RCHD hospitals, the follow-up or post-Demonstration period is only 1 year, due to the lack of reliable HCRIS data beyond FY2018 at the time of producing this report.

Exhibit E11: Hospital-Level Total Profit Margins for Continuing Hospitals




Group 2 Total Margins
Hospital 5
Hospital 6
Hospital 7
Hospital 9
Hospital 10
Hospital 12
Hospital 13
Hospital 16
Hospital 17
20%
0%
-20%
'11
'12
'13
'14
'15
'16
'17
'18



Notes: Group 1 hospitals are those that began participation in the CCA extension in FY 2015, Group 2 hospitals are those that began participation in FY 2016. Group 3 hospitals began participation in FY 2017. Hospitals in Groups 1-3 are continuing hospitals that continued participation in the CCA extension having participated in the RCHD previously under the ACA extension.

Regression results tables accompanying Section 6.3

Exhibit E12: Difference-in-Differences Results: Other Financial Outcomes for Continuing Hospitals

Measure	Days Cash on Hand	Long-Term Debt-to-Capitalization Ratio	Ratio of Salaries to Net Patient Revenue	Full-Time Equivalents per Occupied Bed	Average Age of Plant
Average Impact Estimate	-14.06	9*	0	-0.16	0.28
90% Confidence Interval	(-31.33, 3.22)	(0, 18)	(-3, 3)	(-0.89, 0.58)	(-1.58, 2.13)
Standard Error	(10.49)	(5)	(2)	(0.44)	(1.13)
Regression *p*-value	[0.18]	[0.08]	[0.98]	[0.73]	[0.80]
Randomization Inference *p*-value	[0.42]	[0.67]	[0.99]	[0.81]	[0.83]
Baseline Mean for RCHD Hospitals	142.32	19%	42%	7.78	10.84
Average Impact Estimate as a Percentage of the RCHD Group Baseline Mean	-10%	49%	0%	-2%	3%
Sample Size in Hospital-Years[§]	5,512	5,499	5,506	5,474	5,080
Number of RCHD Hospitals	17	17	17	17	17
Number of Comparison Hospitals	354	354	354	353	343

Notes: Standard errors, clustered at the hospital level and robust to heteroscedasticity, are in parentheses. *** indicates statistical significance at the 1% level, ** at the 5% level, and * at the 10% level, using traditional inference. None of the coefficient estimates in this table are statistically significant at the 10% level using randomization inference. The comparison group was defined using an entropy balancing method. [§] Differences in sample sizes across outcomes may exist on account of missing data for some outcomes. Parallel baseline trends did not pass for three outcomes: days cash on hand, FTEs per occupied bed, and the average age of plant. As a result, we do not consider the impact estimates for these three outcomes to be valid for continuing hospitals. Regression p-values and randomization inference p-values are complementary and reflect two ways of establishing inference. When inconsistent, randomization inference p-values take precedence over regression p-values in this report, as the former are more appropriate for small samples.

Exhibit E13: Difference-in-Differences Results: Other Financial Outcomes for New Hospitals

Measure	Days Cash on Hand	Long-Term Debt-to-Capitalization Ratio	Ratio of Salaries to Net Patient Revenue	Full-Time Equivalents per Occupied Bed	Average Age of Plant
Average Impact Estimate	-8.02	18	-6**^	1.01	-13.09^^^
90% Confidence Interval	(-35.39, 19.38)	(-21, 57)	(-10, -1)	(-0.65, 2.68)	(-27.82, 1.63)
Standard Error	(16.61)	(24)	(3)	(1.01)	(8.94)
Regression *p*-value	[0.63]	[0.44]	[0.04]	[0.32]	[0.14]
Randomization Inference *p*-value	[0.61]	[0.36]	[0.09]	[0.19]	[0.00]
Baseline Mean for RCHD Hospitals	128.45	-4%	43%	8.24	18.58
Average Impact Estimate as a Percentage of the RCHD Group Baseline Mean	-6%	423%	-13%	12%	-70%
Sample Size in Hospital-Years[§]	1,291	1,288	1,289	1,285	1,162
Number of RCHD Hospitals	12	12	12	12	11
Number of Comparison Hospitals	314	314	314	314	295

Notes: Standard errors, clustered at the hospital level and robust to heteroscedasticity, are in parentheses. *** indicates statistical significance at the 1% level, ** at the 5% level, and * at the 10% level, using traditional inference. None of the coefficient estimates in this table are statistically significant at the 10% level using randomization inference. The comparison group was defined using an entropy balancing method. [§] Differences in sample sizes across outcomes may exist on account of missing data for some outcomes. Regression p-values and randomization inference p-values are complementary and reflect two ways of establishing inference. When inconsistent, randomization inference p-values take precedence over regression p-values in this report, as the former are more appropriate for small samples.

Exhibit E14: Difference-in-Differences Results: Medicare revenue indicators for Continuing Hospitals

Measure	Medicare Share of Inpatient Discharges	Medicare Share of Inpatient Days	Medicare Swing-bed Revenue Share
Average Impact Estimate	-4***^	0	0
90% Confidence Interval	(-6, -2)	(-2, 1)	(-2, 2)
Standard Error	(1)	(1)	(1)
Regression *p*-value	[0.00]	[0.68]	[0.85]
Randomization Inference *p*-value	[0.05]	[0.79]	[0.69]
Baseline Mean for RCHD Hospitals	46%	58%	14%
Average Impact Estimate as a Percentage of the RCHD Group Baseline Mean	-8%	-1%	-2%
Sample Size in Hospital-Years[§]	5,510	5,510	5,510
Number of RCHD Hospitals	17	17	17
Number of Comparison Hospitals	354	354	354

Notes: Standard errors, clustered at the hospital level and robust to heteroscedasticity, are in parentheses. *** indicates statistical significance at the 1% level, ** at the 5% level, and * at the 10% level, using traditional inference. ^^^ indicates statistical significance at the 1% level, ^^ at the 5% level, and ^ at the 10% level, using randomization inference. [§] Differences in sample sizes across outcomes may exist on account of missing data for some outcomes. Regression p-values and randomization inference p-values are complementary and reflect two ways of establishing inference. When inconsistent, randomization inference p-values take precedence over regression p-values in this report, as the former are more appropriate for small samples.

Exhibit E15: Difference-in-Differences Results: Medicare revenue indicators for New Hospitals

Measure	Medicare Share of Inpatient Discharges	Medicare Share of Inpatient Days	Medicare Swing-bed Revenue Share
Average Impact Estimate	9^^^	3	10**^^^
90% Confidence Interval	(-2, 19)	(-2, 8)	(4, 16)
Standard Error	(6)	(3)	(4)
Regression *p*-value	[0.18]	[0.27]	[0.01]
Randomization Inference *p*-value	[0.007]	[0.15]	[0.00]
Baseline Mean for RCHD Hospitals	43%	54%	9%
Average Impact Estimate as a Percentage of the RCHD Group Baseline Mean	20%	6%	104%
Sample Size in Hospital-Years[§]	1,290	1,290	1,290
Number of RCHD Hospitals	12	12	12
Number of Comparison Hospitals	314	314	314

Notes: Standard errors, clustered at the hospital level and robust to heteroscedasticity, are in parentheses. *** indicates statistical significance at the 1% level, ** at the 5% level, and * at the 10% level, using traditional inference. ^^^ indicates statistical significance at the 1% level, ^^ at the 5% level, and ^ at the 10% level, using randomization inference. [§] Differences in sample sizes across outcomes may exist on account of missing data for some outcomes. Regression p-values and randomization inference p-values are complementary and reflect two ways of establishing inference. When inconsistent, randomization inference p-values take precedence over regression p-values in this report, as the former are more appropriate for small samples.

Robustness checks tables

Regressions Results after Capping and Re-normalizing Entropy Balancing Weights at the 95th Percentile

Exhibit E16: Difference-in-Differences Results: Medicare margins after Capping and Re-normalizing Entropy Balancing Weights at 95th Percentile, for Continuing Hospitals

Measure	Medicare Inpatient Margin	Medicare Combined Margin
Average Impact Estimate	-1	-3
90% Confidence Interval	(-4, 3)	(-7, 1)
Standard Error	(2)	(2)
Regression *p*-value	[0.72]	[0.24]
Randomization Inference *p*-value	[0.83]	[0.40]
Baseline Mean for RCHD Hospitals	-3%	-15%
Average Impact Estimate as a Percentage of the RCHD Group Baseline Mean	-31%	-18%
Sample Size in Hospital-Years[§]	5,510	5,512
Number of RCHD Hospitals	17	17
Number of Comparison Hospitals	354	354

Notes: Standard errors, clustered at the hospital level and robust to heteroscedasticity, are in parentheses. *** indicates statistical significance at the 1% level, ** at the 5% level, and * at the 10% level, using traditional inference. ^^^ indicates statistical significance at the 1% level, ^^ at the 5% level, and ^ at the 10% level, using randomization inference. The comparison group was defined using an entropy balancing method. [§] Differences in sample sizes across outcomes may exist on account of missing data for some outcomes. Regression p-values and randomization inference p-values are complementary and reflect two ways of establishing inference. When inconsistent, randomization inference p-values take precedence over regression p-values in this report, as the former are more appropriate for small samples.

Exhibit E17: Difference-in-Differences Results: Medicare margins after Capping and Re-normalizing Entropy Balancing Weights at 95th Percentile, for New Hospitals

Measure	Medicare Inpatient Margin	Medicare Combined Margin
Average Impact Estimate	20*^^^	16**^^^
90% Confidence Interval	(1, 40)	(5, 27)
Standard Error	(12)	(7)
Regression *p*-value	[0.09]	[0.02]
Randomization Inference *p*-value	[0.001]	[0.001]
Baseline Mean for RCHD Hospitals	-19%	-26%
Average Impact Estimate as a Percentage of the RCHD Group Baseline Mean	104%	62%
Sample Size in Hospital-Years[§]	1,290	1,291
Number of RCHD Hospitals	12	12
Number of Comparison Hospitals	314	314

Notes: Standard errors, clustered at the hospital level and robust to heteroscedasticity, are in parentheses. *** indicates statistical significance at the 1% level, ** at the 5% level, and * at the 10% level, using traditional inference. ^^^ indicates statistical significance at the 1% level, ^^ at the 5% level, and ^ at the 10% level, using randomization inference. The comparison group was defined using an entropy balancing method. [§] Differences in sample sizes across outcomes may exist on account of missing data for some outcomes. Regression p-values and randomization inference p-values are complementary and reflect two ways of establishing inference. When inconsistent, randomization inference p-values take precedence over regression p-values in this report, as the former are more appropriate for small samples.

Exhibit E18: Difference-in-Differences Results: Overall Profitability Margins after Capping and Re-normalizing Entropy Balancing Weights at 95th Percentile, for Continuing Hospitals

Measure	Total Profit Margin	Operating Margin
Average Impact Estimate	-5**^	-5**
90% Confidence Interval	(-8, -2)	(-8, -2)
Standard Error	(2)	(2)
Regression *p*-value	[0.01]	[0.01]
Randomization Inference *p*-value	[0.0996]	[0.21]
Baseline Mean for RCHD Hospitals	2%	0%
Average Impact Estimate as a Percentage of the RCHD Group Baseline Mean	-239%	-2,627%
Sample Size in Hospital-Years[§]	5,506	5,506
Number of RCHD Hospitals	17	17
Number of Comparison Hospitals	354	354

Notes: Standard errors, clustered at the hospital level and robust to heteroscedasticity, are in parentheses. *** indicates statistical significance at the 1% level, ** at the 5% level, and * at the 10% level, using traditional inference. ^^^ indicates statistical significance at the 1% level, ^^ at the 5% level, and ^ at the 10% level, using randomization inference. The comparison group was defined using an entropy balancing method. [§] Differences in sample sizes across outcomes may exist on account of missing data for some outcomes. Regression p-values and randomization inference p-values are complementary and reflect two ways of establishing inference. When inconsistent, randomization inference p-values take precedence over regression p-values in this report, as the former are more appropriate for small samples.

Exhibit E19: Difference-in-Differences Results: Overall Profitability Margins after Capping and Re-normalizing Entropy Balancing Weights at 95th Percentile, for New Hospitals

Measure	Total Profit Margin	Operating Margin
Average Impact Estimate	7^	14**^^
90% Confidence Interval	(-1, 16)	(4, 24)
Standard Error	(5)	(6)
Regression *p*-value	[0.15]	[0.02]
Randomization Inference *p*-value	[0.09]	[0.03]
Baseline Mean for RCHD Hospitals	-3%	-8%
Average Impact Estimate as a Percentage of the RCHD Group Baseline Mean	231%	183%
Sample Size in Hospital-Years[§]	1,289	1,289
Number of RCHD Hospitals	12	12
Number of Comparison Hospitals	314	314

Notes: Standard errors, clustered at the hospital level and robust to heteroscedasticity, are in parentheses. *** indicates statistical significance at the 1% level, ** at the 5% level, and * at the 10% level, using traditional inference. ^^^ indicates statistical significance at the 1% level, ^^ at the 5% level, and ^ at the 10% level, using randomization inference. The comparison group was defined using an entropy balancing method. [§] Differences in sample sizes across outcomes may exist on account of missing data for some outcomes. Regression p-values and randomization inference p-values are complementary and reflect two ways of establishing inference. When inconsistent, randomization inference p-values take precedence over regression p-values in this report, as the former are more appropriate for small samples.

Exhibit E20: Difference-in-Differences Results: Other Financial Outcomes after Capping and Re-normalizing Entropy Balancing Weights at 95th Percentile, for Continuing Hospitals

Measure	Days Cash on Hand	Long-Term Debt-to-Capitalization Ratio	Ratio of Salaries to Net Patient Revenue	Full-Time Equivalents per Occupied Bed	Average Age of Plant
Average Impact Estimate	-13.45	9*	1	-0.19	0.20
90% Confidence Interval	(-29.84, 2.95)	(0, 18)	(-1, 3)	(-1.05, 0.66)	(-1.72, 2.12)
Standard Error	(9.95)	(6)	(1)	(0.52)	(1.17)
Regression *p*-value	[0.18]	[0.09]	[0.52]	[0.71]	[0.86]
Randomization Inference *p*-value	[0.39]	[0.66]	[0.70]	[0.77]	[0.89]
Baseline Mean for RCHD Hospitals	142.32	19%	42%	7.78	10.84
Average Impact Estimate as a Percentage of the RCHD Group Baseline Mean	-9%	49%	2%	-2%	2%
Sample Size in Hospital-Years §	5,512	5,499	5,506	5,474	5,080
Number of RCHD Hospitals	17	17	17	17	17
Number of Comparison Hospitals	354	354	354	353	343

Notes: Standard errors, clustered at the hospital level and robust to heteroscedasticity, are in parentheses. *** indicates statistical significance at the 1% level, ** at the 5% level, and * at the 10% level, using traditional inference. None of the coefficient estimates in this table are statistically significant at the 10% level using randomization inference. The comparison group was defined using an entropy balancing method. § Differences in sample sizes across outcomes may exist on account of missing data for some outcomes. Regression p-values and randomization inference p-values are complementary and reflect two ways of establishing inference. When inconsistent, randomization inference p-values take precedence over regression p-values in this report, as the former are more appropriate for small samples.

Exhibit E21: Difference-in-Differences Results: Other Financial Outcomes after Capping and Re-normalizing Entropy Balancing Weights at 95th Percentile, for New Hospitals

Measure	Days Cash on Hand	Long-Term Debt-to-Capitalization Ratio	Ratio of Salaries to Net Patient Revenue	Full-Time Equivalents per Occupied Bed	Average Age of Plant
Average Impact Estimate	-0.89	17	-5**^	0.06	-12.02^^^
90% Confidence Interval	(-30.64, 28.85)	(-16, 50)	(-9, -1)	(-1.28, 1.41)	(-24.85, 0.81)
Standard Error	(18.06)	(20)	(2)	(0.82)	(7.79)
Regression *p*-value	[0.96]	[0.39]	[0.03]	[0.94]	[0.12]
Randomization Inference *p*-value	[0.96]	[0.38]	[0.08]	[0.92]	[0.003]
Baseline Mean for RCHD Hospitals	128.45	-4%	43%	8.24	18.58
Average Impact Estimate as a Percentage of the RCHD Group Baseline Mean	-1%	393%	-12%	1%	-65%
Sample Size in Hospital-Years[§]	1,291	1,288	1,289	1,285	1,162
Number of RCHD Hospitals	12	12	12	12	11
Number of Comparison Hospitals	314	314	314	314	295

Notes: Standard errors, clustered at the hospital level and robust to heteroscedasticity, are in parentheses. *** indicates statistical significance at the 1% level, ** at the 5% level, and * at the 10% level, using traditional inference. None of the coefficient estimates in this table are statistically significant at the 10% level using randomization inference. The comparison group was defined using an entropy balancing method. [§] Differences in sample sizes across outcomes may exist on account of missing data for some outcomes. Regression p-values and randomization inference p-values are complementary and reflect two ways of establishing inference. When inconsistent, randomization inference p-values take precedence over regression p-values in this report, as the former are more appropriate for small samples.

Exhibit E22: Difference-in-Differences Results: Medicare revenue indicators after Capping and Re-normalizing Entropy Balancing Weights at 95th Percentile, for Continuing Hospitals

Measure	Medicare Share of Inpatient Discharges	Medicare Share of Inpatient Days	Medicare Swing-bed Revenue Share
Average Impact Estimate	-4**^^	0	-1
90% Confidence Interval	(-6, -1)	(-2, 2)	(-3, 2)
Standard Error	(1)	(1)	(1)
Regression *p*-value	[0.01]	[0.74]	[0.61]
Randomization Inference *p*-value	[0.048]	[0.81]	[0.29]
Baseline Mean for RCHD Hospitals	46%	58%	14%
Average Impact Estimate as a Percentage of the RCHD Group Baseline Mean	-8%	-1%	-5%
Sample Size in Hospital-Years[§]	5,510	5,510	5,510
Number of RCHD Hospitals	17	17	17
Number of Comparison Hospitals	354	354	354

Notes: Standard errors, clustered at the hospital level and robust to heteroscedasticity, are in parentheses. *** indicates statistical significance at the 1% level, ** at the 5% level, and * at the 10% level, using traditional inference. ^^^ indicates statistical significance at the 1% level, ^^ at the 5% level, and ^ at the 10% level, using randomization inference. [§] Differences in sample sizes across outcomes may exist on account of missing data for some outcomes. Regression p-values and randomization inference p-values are complementary and reflect two ways of establishing inference. When inconsistent, randomization inference p-values take precedence over regression p-values in this report, as the former are more appropriate for small samples.

Exhibit E23: Difference-in-Differences Results: Medicare revenue indicators after Capping and Re-normalizing Entropy Balancing Weights at 95th Percentile, for New Hospitals

Measure	Medicare Share of Inpatient Discharges	Medicare Share of Inpatient Days	Medicare Swing-bed Revenue Share
Average Impact Estimate	8^^	2	10**^^^
90% Confidence Interval	(-3, 19)	(-3, 6)	(4, 16)
Standard Error	(7)	(3)	(4)
Regression *p*-value	[0.24]	[0.58]	[0.01]
Randomization Inference *p*-value	[0.01]	[0.47]	[0.00]
Baseline Mean for RCHD Hospitals	43%	54%	9%
Average Impact Estimate as a Percentage of the RCHD Group Baseline Mean	18%	3%	107%
Sample Size in Hospital-Years[§]	1,290	1,290	1,290
Number of RCHD Hospitals	12	12	12
Number of Comparison Hospitals	314	314	314

Notes: Standard errors, clustered at the hospital level and robust to heteroscedasticity, are in parentheses. *** indicates statistical significance at the 1% level, ** at the 5% level, and * at the 10% level, using traditional inference. ^^^ indicates statistical significance at the 1% level, ^^ at the 5% level, and ^ at the 10% level, using randomization inference. [§] Differences in sample sizes across outcomes may exist on account of missing data for some outcomes. Regression p-values and randomization inference p-values are complementary and reflect two ways of establishing inference. When inconsistent, randomization inference p-values take precedence over regression p-values in this report, as the former are more appropriate for small samples.

Regressions Results for Total Profit Margins after Removing Outliers, for Continuing Hospitals

Exhibit E24: Difference-in-Differences Results: Overall Profitability Margins after Removing Outliers, for Continuing Hospitals

Measure	Total Profit Margin	Operating Margin
Average Impact Estimate	-2*	-2
90% Confidence Interval	(-5, 0)	(-4, 1)
Standard Error	(1)	(1)
Regression *p*-value	[0.08]	[0.24]
Randomization Inference *p*-value	[0.41]	[0.68]
Baseline Mean for RCHD Hospitals	4%	2%
Average Impact Estimate as a Percentage of the RCHD Group Baseline Mean	-62%	-89%
Sample Size in Hospital-Years[§]	5,490	5,490
Number of RCHD Hospitals	14	14
Number of Comparison Hospitals	354	354

Notes: Standard errors, clustered at the hospital level and robust to heteroscedasticity, are in parentheses. *** indicates statistical significance at the 1% level, ** at the 5% level, and * at the 10% level, using traditional inference. ^^^ indicates statistical significance at the 1% level, ^^ at the 5% level, and ^ at the 10% level, using randomization inference. The comparison group was defined using an entropy balancing method. [§] Differences in sample sizes across outcomes may exist on account of missing data for some outcomes. Regression p-values and randomization inference p-values are complementary and reflect two ways of establishing inference. When inconsistent, randomization inference p-values take precedence over regression p-values in this report, as the former are more appropriate for small samples.

Appendix F: Data Cleaning

HCRIS data sometimes have outlier values. As a result, we examined the distribution of each variable through a variety of methods such as summary statistics, percentile values, and manually examining trends of hospitals with exceptionally large or small values of a certain variable. Through this process, we identified seven variables (six outcomes and one hospital market characteristic) to which we performed data cleaning. The list of variables we modified from the raw values in this report are the following:

HCRIS Variable	Winsorization Thresholds
Total profit margins	-100 percent and 100 percent
Operating margins	-100 percent and 100 percent
Medicare inpatient margins	-100 percent and 100 percent
Medicare combined margins	-100 percent and 100 percent
Average age of physical plant	-60 years and 60 years
Median home value	99th percentile
Full time equivalents per occupied bed	99th percentile

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1400 Crystal Drive, 10th Floor
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