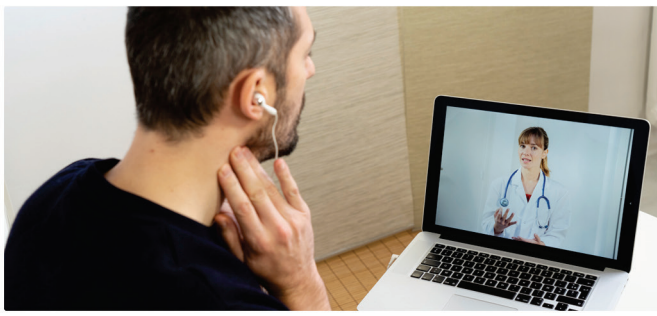

Frontier Community Health Integration Project (FCHIP) Demonstration Evaluation

Final Evaluation Report

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by

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Acronym	Definition
CAH	critical access hospital
CAHMPAS	Critical Access Hospital Measurement and Performance Assessment System
CMS	Centers for Medicare & Medicaid Services
ED	emergency department
EMS	emergency medical services
EMT	emergency medical technician
FCHIP	Frontier Community Health Integration Project
MIPPA	Medicare Improvements for Patients and Providers Act of 2008
MHREF	Montana Health Research and Education Foundation
MRI	magnetic resonance imaging
SNF/NF	skilled nursing facility/nursing facility

Executive Summary

ES.1 Introduction

In August 2016, the Centers for Medicare & Medicaid Services (CMS) began the Frontier Community Health Integration Project (FCHIP) Demonstration, jointly administered with the Federal Office of Rural Health Policy (FORHP), an office within the Health Resources and Services Administration (HRSA). This was a three-year demonstration project with a goal of improving access to health care for Medicare beneficiaries in the most rural regions of the United States by changing certain regulations and reimbursing critical access hospitals (CAHs) differently for select services. The demonstration was authorized by Section 123 of the Medicare Improvements for Patients and Providers Act (MIPPA) of 2008 (P.L. 110-275), as amended by Section 3126 of the Affordable Care Act of 2010 (P.L. 111-148), and the demonstration was in effect from August 1, 2016 through July 31, 2019. The FCHIP Demonstration was designed to address three service areas: ambulance, skilled nursing facility/nursing facility (SNF/NF) care, and telehealth. CAHs located in Alaska, Montana, Nevada, North Dakota, and Wyoming were eligible to apply to participate in the FCHIP Demonstration project. Ten CAHs (summarized in ***Table ES-1***) were selected in Montana, Nevada, and North Dakota to participate in one or more of three FCHIP interventions:

1. **Ambulance Services:** Participating CAHs are reimbursed 101 percent of reasonable costs of furnishing Medicare Part B ambulance services instead of being paid under the Medicare ambulance fee schedule. All other rules affecting the provision of ambulance services still apply.
2. **Skilled Nursing Facility/Nursing Facility (SNF/NF) Care:** CAHs can increase inpatient bed capacity from 25 beds (the maximum number of beds for CAHs) up to 35 beds, and the extra beds can only be used to provide SNF/NF levels of care. CAHs continue to receive cost-based reimbursement for inpatient and skilled nursing care delivered in the extra beds.
3. **Telehealth:** Participating CAHs serving as originating sites hosting telehealth services are reimbursed 101 percent of cost for overhead, salaries, and fringe benefits and for the depreciation value of the telemedicine equipment.

ES.2 Overview of Evaluation Questions and Methods

The FCHIP evaluation was designed to understand *what* activities CAHs implemented, *how* they implemented them, and *whether* any impact occurred because of the additional reimbursement (for ambulance and telehealth) or additional beds (for SNF/NF). For each of the three FCHIP interventions, we conducted a mixed-methods qualitative and quantitative evaluation to answer four evaluation questions as described in ***Table ES-2***.

Table ES-1. FCHIP Interventions in Which CAHs Are Participating

State	Participating Hospital	Ambulance Intervention	SNF/NF Intervention	Telehealth Intervention
Montana	Dahl Memorial Healthcare Association			✓
	McCone County Health Center		✓	✓
	Roosevelt Medical Center	✓	✓	✓
Nevada	Battle Mountain General Hospital			✓
	Grover C. Dils Medical Center			✓
	Mount Grant General Hospital			✓
	Pershing General Hospital			✓
North Dakota	Jacobson Memorial Hospital Care Center		✓	
	McKenzie County Healthcare Systems			✓
	Southwest Healthcare System	✓		

This evaluation relied heavily on key informant interviews and analyses of Medicare claims data to understand the impacts of FCHIP activities on participating CAHs. Due to the small size of the CAHs and the small number of participating CAHs, the results presented here are limited in the conclusions we can draw and their generalizability outside of the demonstration participants. In any given community in which the FCHIP CAHs reside, the number of Medicare beneficiaries participating in an FCHIP activity (e.g., eligible for SNF services or ambulance transports, or in need of telehealth services) is small. Changes in CAHs' delivery of medical services before and after FCHIP are not easily detected within small numbers of beneficiaries. When changes in trends in service counts or rates were observed, for example, an increase in the number of telehealth encounters for Medicare beneficiaries at a specific CAH, the overall change may not be large by more conventional standards applied in larger study samples, but for a singular FCHIP CAH serving only a few hundred beneficiaries, the change may be considered quite substantial. Moreover, CAHs operate within a very localized context, and what services are provided and how they are provided are contingent upon available workforce, proximity to other resources, and the needs of individuals in their communities. As such, FCHIP CAHs' trends in service use could differ quite substantially from other CAHs that have different workforce demands, available resources, and community needs.

Table ES-2. Evaluation Questions and Data Sources Used to Answer the Questions

FCHIP Evaluation Questions	Key Informant Interviews	Document Review	Medicare Fee-for-Service Claims Analysis
	Conducted 39 in-person interviews and 56 telephone interviews with hospital leaders, clinical staff, and patients from August 2016-July 2019	Reviewed quarterly and annual monitoring reports and technical assistance reports	Analyzed enrollment data and claims from 3 years before FCHIP (August 1, 2013–July 31, 2016) and 3 years during FCHIP (August 1, 2016–July 31, 2019)
1. Did the demonstration interventions affect hospital administration, such as the number and type of staff, equipment/infrastructure, or resources?	✓	✓	
2. What did participants think of the demonstration interventions' impact on hospital finances?	✓		
3. Did the demonstration interventions change consumer access to health services?	✓	✓	✓
4. Did the demonstration interventions affect the surrounding regional health delivery system, providers of community-based services, and payers or have other spillover effects?	✓		

ES.3 Findings

ES.3.1 Key Findings on Impact across the Three Interventions

Ambulance—Two Participating CAHs

- With higher cost-based payments, CAHs reportedly used the additional funds to bolster stipends for volunteer emergency medical technicians (EMTs), hold additional EMT training classes, and purchase equipment.
- Ambulance transports declined by 25 percent over the 3-year demonstration, but this was attributed by ambulance staff to normal variations in demand.
- One of the hypothesized savings, substituting lower cost land ambulance transports for more expensive air transports, could not be tested due to very low number of transports.

Skilled Nursing Facility (SNF/NF) Bed Expansion—Three Participating CAHs

- Only one CAH (in North Dakota) used the additional beds, whereas the other two CAHs (in Montana) experienced declining SNF admissions due to reduced local demand.
- CAHs reported that the FCHIP SNF/NF bed intervention allowed the hospitals to showcase their commitment to the community by treating patients in the community for medical care.

Telehealth—Eight Participating CAHs

- Before FCHIP, only one of the eight participating CAHs had billed Medicare for telehealth encounters. Over the 3-year period, five CAHs provided 289 encounters, but utilization was concentrated at three CAHs.
- All CAHs reported high patient satisfaction with telehealth because care could be received locally without extensive travel.
- Some CAHs already had telehealth before FCHIP and used FCHIP to revise operations to ensure a better telehealth experience for the patient, the CAH, and the specialist. Other CAHs used FCHIP to establish telehealth for specialty care for the first time.
- CAHs strengthened relationships with distant site providers, making it easier to establish referral processes and to offer the right mix of telehealth services.
- There was little evidence that the demonstration improved access to telehealth more than what would have occurred without the demonstration. Non-FCHIP CAHs located in the same three states also experienced rapid growth in providing Medicare telehealth services, despite not receiving cost-based reimbursement or technical implementation assistance.

The following sections present more detailed descriptions of the experiences of the CAHs participating in each of the three FCHIP interventions.

ES.3.2 Ambulance Intervention

Ambulance Intervention: Cost Based Reimbursement
Two CAHs in Montana and North Dakota

Hospital Administration:

- CAH administrators reported that because of the cost-based reimbursement they were able to bolster stipends for volunteer EMTs, hold EMT training classes, purchase ambulance equipment, and pay for advanced life support training for EMTs.
- Without cost-based reimbursement, CAHs expressed uncertainty about their ability to sustain investments, such as additional EMT training, they made under the intervention.

Hospital Financial Performance:

- Early in the intervention, CAH administrators believed the change in reimbursement from the Medicare fee schedule to cost-based reimbursement would have little impact on hospital revenue. However, by the third year of the intervention, administrators gave examples (not based on results of Medicare cost report data) of positive financial gains from cost-based reimbursement.

Consumer Access to Health Services:

- CAHs reported that the number and type (ground versus air) of ambulance transports decreased, which was corroborated by the analyses of Medicare land transports in the claims data. Ambulance transports volumes were not expected to be affected by the FCHIP Demonstration, because the reimbursement does not directly influence demand for ambulance services.
- In the 3 years before FCHIP, the two participating CAHs had a total of 502 Medicare ambulance transports, and during FCHIP, they had 457 Medicare ambulance transports for 269 unique Medicare beneficiaries. Medicare ambulance transports declined during the FCHIP period for one CAH and fluctuated between increases and decreases at the other CAH.
- Because of their remote locations, CAHs have historically had challenges recruiting EMTs, and they have low volumes of ambulance transports. CAHs reported that the reimbursement model for the FCHIP ambulance intervention was not designed to help CAHs overcome these barriers.

Impact on the Regional Health Delivery System and Other Spillover Effects:

- Changes in the coordination of area ambulance services resulting from the FCHIP Demonstration could not be determined. Changes were not expected, since CAHs were too far from other hospitals or ambulance providers to routinely share ambulances or ambulance equipment in the case of serious emergencies.

ES.3.2 SNF/NF Bed Expansion Intervention

SNF/NF Bed Expansion Intervention
Three CAHs in Montana and North Dakota

Hospital Administration:

- CAHs updated their physical space to add more beds, and staffing and workflow changes were implemented to accommodate more bed days in the hospital.
- CAHs made efforts to fill the extra beds by reaching out to hospitals where CAH patients received care to make them aware that the CAH had available beds and could take patients back to the CAH for SNF services.
- Some CAHs reported that marketing and outreach helped increase community awareness of the CAHs' SNF services and create a positive image of the hospital. However, other CAH administrators saw community-based marketing as less useful because the need for SNF care was predicated on clinical need, not general community awareness.

Hospital Financial Performance:

- Only one CAH consistently used the extra allowed beds, so the intervention had limited impact on improved financial performance across the three participating CAHs.

Consumer Access to Health Services:

- In the 3 years before FCHIP, the three participating CAHs had a total of 266 Medicare SNF admissions. During FCHIP, there were 301 Medicare SNF admissions for 204 unique Medicare beneficiaries.
- Even though an increase in SNF admissions was expected (CAHs participated in the intervention because they thought they needed the extra beds), the increase was driven by one CAH. The other two CAHs' administrators noted that before the FCHIP Demonstration they were maximizing the 25 beds and had wait lists to admit patients but that during FCHIP demand for inpatient and SNF care declined at the CAH, and they were able to meet community needs for SNF care without the FCHIP policy change. They were unsure why demand declined.

Impact on the Regional Health Delivery System and Other Spillover Effects:

- CAH administrators and clinical staff reported that the SNF/NF bed intervention had no discernable impact on the surrounding regional health delivery system, providers of community-based services, or payers.

ES.3.3 Telehealth Intervention

Telehealth Originating Site Cost Based Reimbursement Intervention
Eight CAHs in Montana, Nevada, and North Dakota

Hospital Administration:

- Administrative and clinical champions were viewed as essential to the success of telehealth programs. Hospital leaders secured physical space to hold telehealth appointments, telehealth equipment, and personnel to operate the equipment. Clinical champions modeled the telehealth referral process for other providers at the CAH.
- CAH administrators found value in training providers to adapt their workflows to support specialty referrals through telehealth.
- CAHs and distant site providers had to work through operational challenges together, like scheduling appointments, engaging in patient follow-up, and billing insurance, to ensure a positive telehealth experience for the patient, the CAH clinical practitioner, and the distant site provider.
- Technical assistance, including advertising, telehealth-specific education for CAHs' clinicians, and suggested telehealth process improvements, was well-received by the CAHs.
- Participating CAHs expected to sustain telehealth after the intervention because they considered telehealth to be a valuable service for their community members.

Hospital Financial Performance:

- CAHs indicated that the overall volume of Medicare telehealth encounters was too low to have a substantial impact on hospital financial performance. Some CAHs perceived the cost-based reimbursement to be adequate, but others disagreed.

Consumer Access to Health Services:

- In the 3 years before FCHIP, only one of the eight participating CAHs had billed Medicare for telehealth encounters. During FCHIP six CAHs billed 289 Medicare telehealth encounters for 150 unique Medicare beneficiaries. However, only three of the eight CAHs billed Medicare for a relatively "large" number of telehealth encounters (i.e., more than 50 encounters over 3 years). Two CAHs never billed Medicare for telehealth encounters during FCHIP.
- Telehealth encounters billed to Medicare were most frequently used for cardiology, physical medicine and rehabilitation, nurse practitioners, nephrology, and mental health.
- Telehealth was perceived by CAH staff as having provided a solution to reducing travel distance and transportation barriers to care, particularly for the elderly.
- CAHs made efforts to identify community members' specialty care needs, but delivering needed services was sometimes limited by distant site providers' telehealth offerings, policies, and procedures.

Impact on the Regional Health Delivery System and Other Spillover Effects:

- Community knowledge of telehealth varied, so CAHs marketed telehealth to improve uptake. CAHs hoped that patients who had positive experiences with telehealth would share those experiences via word of mouth with other community members.

ES.4 Cross-Intervention Take-Aways

Despite the differences in service delivery impact by intervention, commonalities emerged across the three FCHIP service areas that influenced the effectiveness of the intervention activities. These commonalities offer insights that may inform future demonstrations among rural providers.

The CAHs' environmental and organizational context was instrumental in determining what the hospitals could achieve through the demonstration.

Remote location and low population density. Because of the remote location of frontier CAHs, there are not many people residing in CAHs' surrounding communities. Medicare cost report data showed that relative to other CAHs, FCHIP CAHs had a lower daily census for Medicare SNF and acute inpatient beds. FCHIP CAHs were also experiencing financial hardships (negative operating margins) in the time period leading up to their participation in the FCHIP Demonstration. A payment change (for ambulance and telehealth services) or an increase in capacity (for SNF/NF services) alone cannot significantly increase demand for services, and demand is hard to influence when there are relatively few individuals within a community in need of FCHIP-related services. As a result, substantially increasing service use under the FCHIP Demonstration was seen by participating hospitals as a challenge.

Leadership. CAHs have limited staff capacity to take on new or different activities, so administrative and clinical champions are needed to keep staff focused on demonstration activities. Almost all CAHs had high turnover in key leadership positions, which led to disruptions in demonstration activities, and often CAHs did not regain their momentum until a new leader arrived or another staff member was energized to re-engage staff around the activities.

Commitment to the community. Regardless of the intervention type, participating CAHs reiterated the importance of leveraging the FCHIP Demonstration to better serve their communities and garner community good will and trust. Each CAH spoke repeatedly of a sense of responsibility to do what they could to provide access to high-quality health services that would allow individuals to stay within the community for medical care.

CAHs used the demonstration to develop their workforce.

Workforce. The CAHs were already engaged, to some degree, in their FCHIP activities before the demonstration started, yet the demonstration was a catalyst for CAHs to provide more advanced training and education to staff. In addition, the CAHs noted that due to the remote location, finding and keeping staff was a challenge. Lack of staff and staff's overcommitments, which left little time to focus on demonstration activities, may have impacted CAHs' success.

The demonstration gave CAHs a reason to make changes in service delivery, but those changes were perceived by CAHs to have little impact on hospital financial performance or the CAHs' surrounding clinical provider community.

Operational changes. The types of changes implemented varied across CAHs, but all changes were designed to remediate CAH-identified gaps in operations or administration. For example, CAHs participating in the ambulance intervention invested in EMS staff training and pay; CAHs participating in the SNF/NF intervention reorganized hospital space and implemented staffing changes to accommodate more bed use. CAHs participating in the telehealth intervention trained their providers to identify and refer patients to telehealth when needed, to use the CAHs' telehealth equipment, and to bill insurers for the encounter. CAHs also used their time in the demonstration to develop stronger relationships with their existing distant site providers and to develop relationship with new distant site providers.

Relationships with other organizations. CAHs noted the importance of establishing and nurturing relationships with other organizations to successfully carry-out demonstration activities. For example, CAHs participating in the SNF/NF intervention reiterated the importance of coordinating with other hospitals to bring patients back to the CAH for SNF care. For telehealth, CAHs reported that well-established referral relationships with distant site organizations improved uptake of telehealth services and bolstered CAH staff confidence in the positive impacts of telehealth.

Technical Assistance, Peer-to-Peer Learning, Marketing, and Outreach. CAHs reported that implementation support was helpful in establishing the necessary workflows and billing procedures that accompanied FCHIP activities. CAHs also appreciated peer-to-peer learning opportunities to share their ideas to operationalize or improve upon a service delivery change. Marketing and outreach activities were critical for sharing information about demonstration activities with the community and improving community awareness about the CAHs capacity to provide needed medical care.

Hospital financial performance. Most CAHs administrators shared their perspectives that participating in the demonstration had minimal impact on hospital finances, with the exception of the ambulance CAHs, which reported that cost-based reimbursement did result in more funding relative to the ambulance fee schedule. However, CAHs noted that, in general, achieving positive financial gains from cost-based reimbursement is a challenge when the number of patients engaging in FCHIP-related services is low.

1. Introduction

This evaluation report presents results from RTI International's mixed-methods evaluation of 10 frontier critical access hospitals (CAHs) in Montana, Nevada, and North Dakota that are participating in the Frontier Community Health Integration Project (FCHIP) Demonstration, which was authorized by Section 3126 of the Affordable Care Act of 2010 (P.L. 111-148).[1] The FCHIP Demonstration began August 1, 2016, jointly administered by the Centers for Medicare & Medicaid Services (CMS) and the Federal Office of Rural Health Policy (FORHP) of the Health Resources and Services Administration (HRSA), with a goal of improving access to health care for Medicare beneficiaries in the most rural regions of the United States by relaxing Medicare regulations and changing Medicare reimbursement for ambulance, skilled nursing, and telehealth services. The FCHIP Demonstration lasted for 3 years, from August 1, 2016 through July 31, 2019.

The Center for Medicare and Medicaid Innovation (the Innovation Center) contracted with RTI and its partner, the North Carolina Rural Health Research Center at the University of North Carolina at Chapel Hill's Cecil G. Sheps Center for Health Services Research, to conduct an independent evaluation of the FCHIP Demonstration. This report covers the 3 years of the FCHIP Demonstration and focuses on CAHs' successes and challenges in implementing FCHIP activities, factors that supported or hindered implementation, CAHs' perspectives on the impact of their activities on CAHs' patients and surrounding community, and sustainability of changes made during their demonstration participation. This report also provides an assessment of the impact of the FCHIP Demonstration on a select set of health utilization and expenditure measures using Medicare fee-for-service claims. The evaluation did not assess the extent of additional payments made to the CAHs under cost-based reimbursement or assess the quality of care. This report is organized to evaluate each of the three FCHIP interventions separately as well as highlight common facilitators and barriers to implementation that emerged across the three interventions.

Section 2 of this report provides an overview of the FCHIP Demonstration and the context in which it operates. ***Section 3*** details our evaluation methods. ***Sections 4, 5, 6,*** and *7* describe implementation findings and trends in health care utilization among the CAHs participating in the ambulance, SNF beds, and telehealth interventions. ***Section 8*** offers a discussion of the commonalities that influenced implementation across the three interventions and of CAHs' perspectives on the sustainability of changes made under the FCHIP Demonstration. ***Appendix A: Methods*** provides additional details on claims-based analyses. ***Appendix B: Technical Assistance by MHREF to FCHIP Critical Access Hospitals***

[1] The FCHIP Demonstration's authorizing legislation can be found at https://www.govinfo.gov/content/pkg/PLAW-111publ148/pdf/PLAW-111publ148.pdf.

summarizes high-level technical assistance activities delivered to each participating CAH. ***Appendix C: Beneficiary Analysis*** provides additional details on analytic methods for a claims-based beneficiary-level analysis examining whether the FCHIP payment and policy changes had any impact on how often beneficiaries who used an FCHIP CAH received different types of care.

2. Overview of the Frontier Community Health Integration Project Demonstration: Background and Context

2.1 Key Considerations in Frontier Health Care

Key Considerations in Frontier Health Care
• Low population density means low volume for CAHs. • Growing aging population in rural communities is a challenge. • Underutilization of care due to accessibility is a critical concern: few or no local medical specialists are available, and the few available primary care providers are expected to provide 24/7 care. • Recruiting and retaining medical and support staff is difficult. • Local economies often rely heavily on a rural hospital as a primary employer for the community, so financial stability for the hospital is a local economic concern. • Out-migration of patients to other health systems for care frequently occurs. • Patients travel long distances to receive care at a CAH or other hospitals. • Rural populations face a higher burden of chronic conditions physical and behavioral health conditions.
Sources: National Rural Health Association; About Rural Health Care; https://www.ruralhealthweb.org/about-nrha/about-rural-health-care Bipartisan Policy Center. Reinventing Rural Health Care: A Case Stud of Seven Upper Midwest States. https://bipartisanpolicy.org/wp-content/uploads/2018/01/BPC-Health-Reinventing-Rural-Health-Care-1.pdf Rural health Information Hub; https://www.ruralhealthinfo.org/

Strengthening the financial viability of our country's rural health system has long been a focus of rural communities. Facing a unique demographic challenge of younger community members migrating to more urban areas, rural communities have a growing, aging patient population. Recognizing this reality and the related strains it places on rural health care providers, over the past several decades lawmakers have focused on leveraging Medicare program and payment policy to support rural providers in achieving a sustainable rural health system (Rural Health Information Hub [RHIhub], 2002–2019). Efforts focused primarily on changing how Medicare reimburses rural hospitals, physicians, community health centers, and rural health clinics. Changes in payment policy have gone hand-in-hand with programs to grow the pipeline of a rural, medical workforce, to strengthen supports for the workforce already in rural areas, and to introduce new technologies (e.g., electronic health records and telehealth) that improve access to and coordination of care for patients (Bipartisan Policy Center, 2018, January).

The CAH is a central (and sometimes the only) component to rural communities' health systems (Breneman et al., 2019). To be designated by Medicare as a CAH, rural hospitals must meet specific regulatory requirements, including the following:

- Located in a state that established a rural health plan from Medicare Rural Hospital Flex Program state grants.
- Located in a rural area or are treated as rural under special provisions that allow treating qualified hospital providers in urban areas as rural.
- Provide 24-hour emergency services, 7 days a week, using either on-site or on-call staff, with specific staff response times.
- Have no more than 25 inpatient beds that can also be used for SNF/NF services, and may operate a distinct part rehabilitation and/or psychiatric unit, each with up to 10 beds.
- Must report an annual average acute care inpatient length of stay of 96 hours or less, excluding SNF and distinct part unit beds.
- Must be located more than a 35-mile drive (or in the case of mountainous terrain or in areas with only secondary roads available, a 15-mile drive) from any other CAH or hospital (Medical Learning Network, 2019).

CAHs are the primary provider of emergency, inpatient, and outpatient services in their rural and frontier communities (Rural Health Information Hub [RHIhub], 2018a). Many CAHs also operate rural health clinics to provide primary care services, and the medical staff provide care in both the hospital and the clinic (Rural Health Information Hub [RHIhub], 2018b). CAHs are frequently beset by staffing challenges, with just a few clinical practitioners and administrative staff fulfilling multiple roles within hospital administration. Moreover, low population density in the communities in which CAHs operate inherently leads to lower volumes of inpatient care because only a small percentage of a population will need emergency or inpatient services at any time. Low patient volumes pose a real threat to the financial stability and sustainability of CAHs. Many of the key infrastructure expenses such as facility costs and core staffing requirements are fixed regardless of patient volume, so CAHs often have higher operating expenses per patient than hospitals with a larger patient volume over which the hospital can spread its fixed costs. Cost-based reimbursement, whereby a payer reimburses a CAH for the average costs of providing certain services to the payers' enrolled individuals, can help a CAH cover the costs of these higher operating expenses. Medicare provides cost-based reimbursement to CAHs for costs associated with Medicare patients, but other payers, like some Medicaid programs or commercial payers, may not provide cost-based reimbursement (Rural Health Information Hub [RHIhub], 2018a).

2.2 FCHIP Demonstration

Section 123 of the Medicare Improvements for Patients and Providers Act (MIPPA) of 2008 (P.L. 110-275), as amended by Section 3126 of the Affordable Care Act of 2010 (P.L. 111-148), authorized the "Demonstration Project on Community Health Integration Models in Certain Rural Counties." The Department of Health and Human Services implemented the demonstration project as the Frontier Community Health Integration Project Demonstration (FCHIP).

Key provisions of MIPPA integral to the design of the demonstration project include the purpose, payments, and affected services, as follows:

- **Purpose**: "(1) explore ways to increase access to, and improve the adequacy of, payments for acute care, extended care, and other essential health care services provided under the Medicare and Medicaid programs in eligible counties; and (2) evaluate regulatory challenges facing such providers and the communities they serve."
- **Payment**: "Health care providers in eligible counties selected to participate…shall…instead of the payment rates otherwise applicable under the Medicare program, be reimbursed at a rate that covers at least the reasonable costs of the provider in furnishing acute care, extended care, and other essential health care services to Medicare beneficiaries."
- **Services**: The demonstration focuses on acute care, extended care, and other essential health care services. Extended care services means "(A) home health services, (B) covered skilled nursing facility services, [and] (C) hospice care." Other essential health care services mean "(A) ambulance services, (B) physician services…, (C) public health services…, [and] (D) other health care services determined appropriate by the Secretary."

In accordance with MIPPA, CMS focused their efforts on CAHs specifically in areas of the country with the frontier designation.[2] Frontier regions were chosen to address the needs of the most vulnerable CAHs, that is those providing care in particularly low volume settings with extensive provider shortages. MIPPA required eligible participants (i.e., CAHs) in the demonstration to be (1) a Rural Hospital Flexibility Program grantee under Section 1820(g) of the Social Security Act (42 USC 1395i-4(g)); and (2) located in a state in which at least 65 percent of the counties in the state are counties that have six or fewer residents per square mile. Based on these criteria, only CAHs located in five states were eligible to participate in this demonstration project: Alaska, Montana, Nevada, North Dakota, and Wyoming. The legislation limited participation in the demonstration to no more than four states.

[2] Frontier areas are located in counties with six or fewer residents per square mile and located in states where 65 percent of the state's counties have six or fewer residents per square mile.

The FCHIP Demonstration was initially designed to address four service areas:

1. Ambulance
2. Skilled nursing facility/nursing facility (SNF/NF) care
3. Telehealth
4. Home health services

Waivers of Medicare payment rules and regulations related to these four service areas were offered to frontier CAHs. In the area of SNF/NF care, CAHs were allowed to expand hospital bed capacity within their facilities. Waivers were offered to allow increases in Medicare payments through cost-based reimbursement for ambulance and telehealth services rendered to Medicare beneficiaries. For home health services, an enhanced payment rate was to be provided to account for the costs of traveling extended distances.

The primary goals of the different reimbursement and the additional beds were to increase access to care, increase the integration and coordination of care among providers within the community, and improve the quality of care for Medicare (and Medicaid) beneficiaries. A secondary goal of the FCHIP Demonstration was to support CAHs in treating patients in the community who might otherwise be transferred to or choose to go to other facilities for medical care.

The FCHIP Demonstration focused on Medicare reimbursement. It did not explicitly change Medicaid payment or policy for the chosen FCHIP CAHs. However, participating states were allowed to propose Medicaid policy changes to align with FCHIP activities, and Nevada was the only state to make changes. In 2017, Nevada's Medicaid program agreed to cost-based reimbursement for telehealth services for Medicaid patients receiving telehealth services at the Nevada CAHs participating in the FCHIP telehealth intervention.

Ten hospitals in Montana, Nevada, and North Dakota were chosen by CMS to participate in three of the four possible interventions of the demonstration (no CAHs in Alaska or Wyoming applied to participate). No CAH selected for participation chose to implement the home health intervention. CAHs implemented their FCHIP activities over a 3-year demonstration period (August 1, 2016–July 31, 2019). ***Figure 2-1*** describes the interventions pursued under the FCHIP Demonstration. ***Figure 2-2*** shows the participating CAHs, their geographic location, and their FCHIP interventions(s).

Figure 2-1. FCHIP overview: participating states and interventions

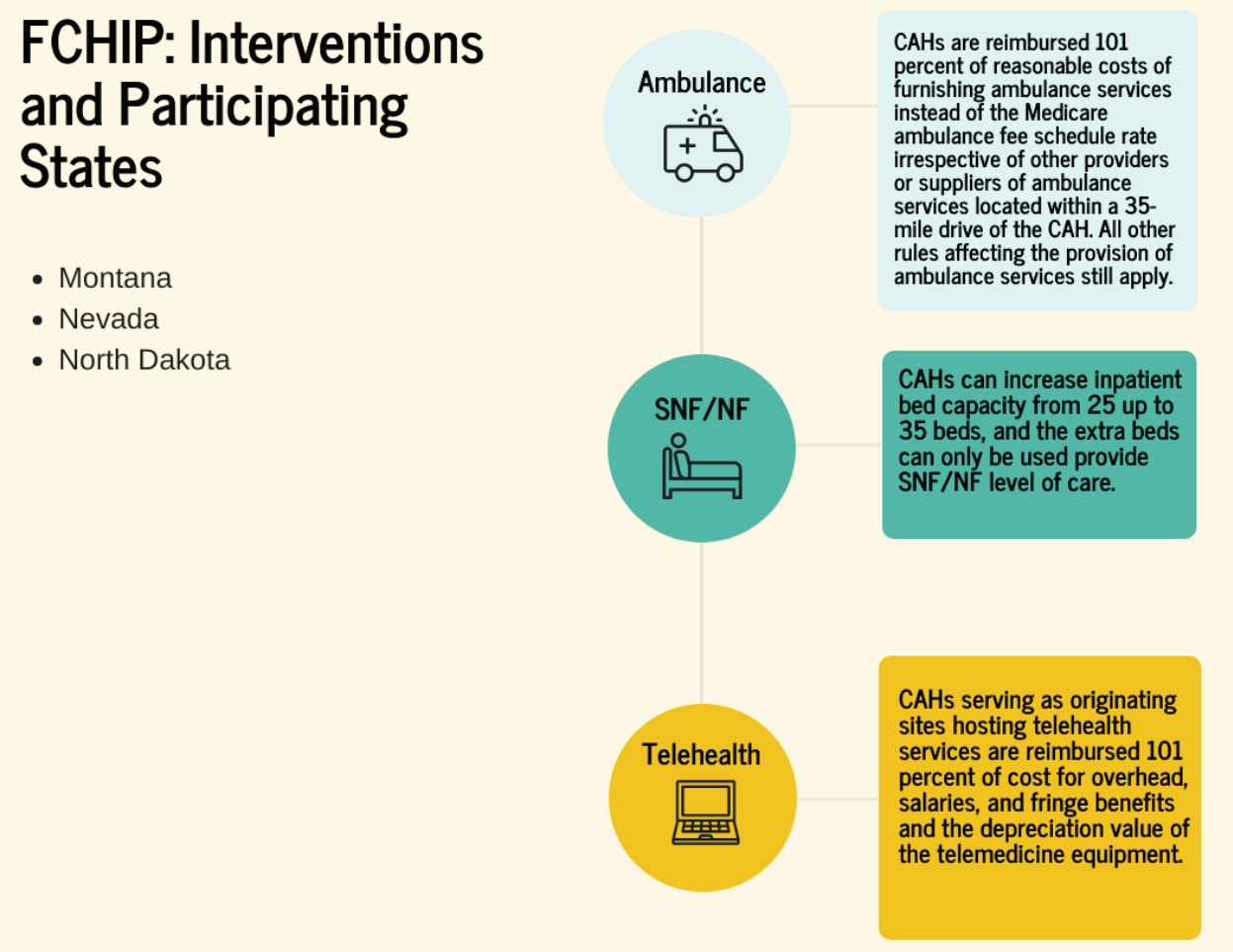
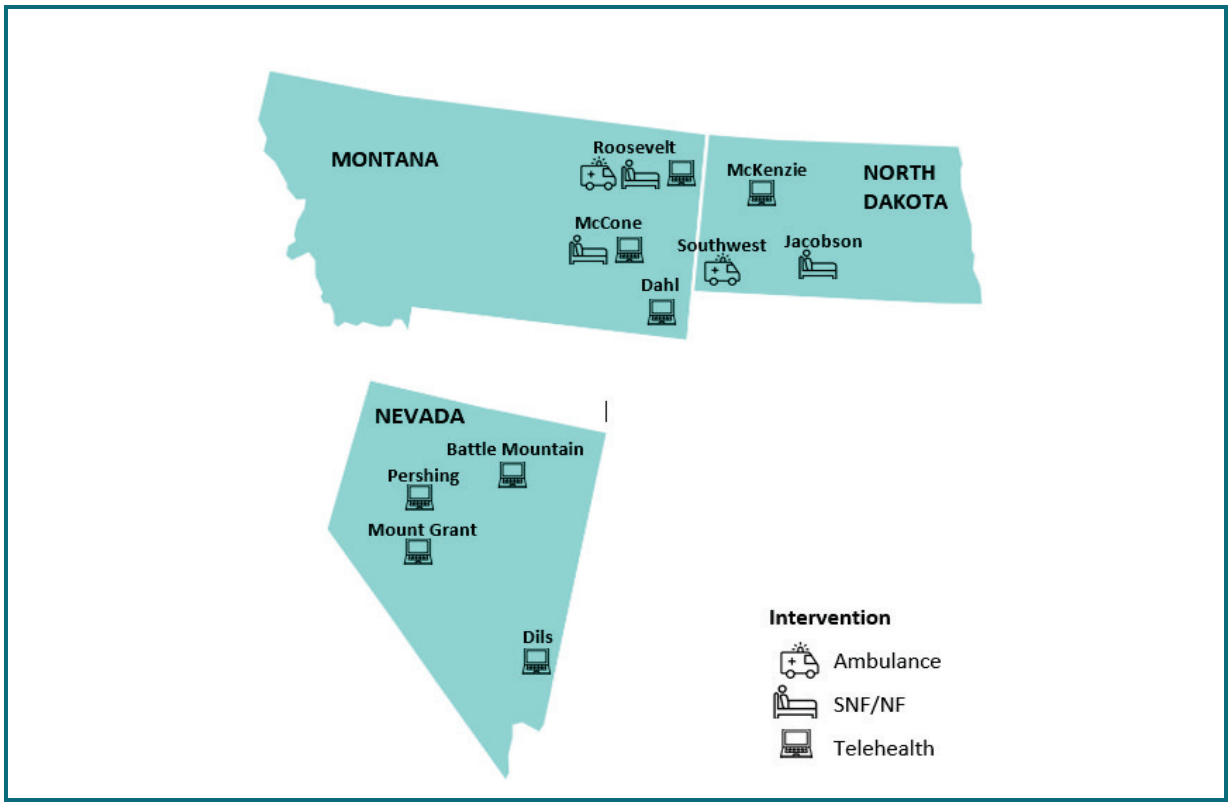


Figure 2-2. FCHIP interventions in which CAHs are participating



2.3 FCHIP Demonstration Technical Assistance

As part of the demonstration, FCHIP CAHs also received implementation technical assistance. The statute authorizing the FCHIP Demonstration required the Federal Office of Rural Health Policy (FORHP) within the Health Resources and Services Administration (HRSA) to provide technical assistance to the selected participants related to the requirements of the demonstration project. In 2012, a cooperative agreement between HRSA/FORHP and the Montana Health Research and Education Foundation (MHREF) of the Montana Hospital Association produced materials to inform the design of the demonstration project. Under this cooperative agreement, HRSA/FORHP supported MHREF to conduct stakeholder engagement of eligible CAHs and identify key policy issues and areas of need that could inform CMS's development of the demonstration. Through this process, MHREF conducted fieldwork in collaboration with the Montana Office of Rural Health and administrators from nine Montana hospitals to identify unique challenges facing hospitals in frontier communities. This culminated in a report providing an overview of the challenges facing frontier providers and communities and introduced a potential model for a new integrated Frontier Health System, along with a series of six white papers providing a more in-depth analysis and data reflecting specific frontier health

care service delivery issues (Montana Health Research and Education Foundation, 2012).[3] In 2014 and 2017, HRSA/FORHP awarded MHREF two subsequent cooperative agreements to provide technical assistance to participating FCHIP CAHs with the following goals:

- Improve community awareness of new or expanded health services to facilitate local residents' access by providing hospital marketing and advertising assistance.
- Establish beneficial provider partnerships for telehealth specialty care by helping hospitals identify and refine process improvements for referring patients to specialty care through telehealth.
- Improve integration of new or expanded services into the CAHs' clinical delivery systems through improving connections to rural health experts. For example, MHREF connected FCHIP CAHs with HRSA/FORHP-funded Telehealth Resource Centers to provide assistance, education, and information to expand the availability of telehealth services to underserved populations. In the third year of the demonstration, MHREF partnered with an organization to help CAHs explore the possibility of designing a Chronic Care Management Program.

A discussion of the types of technical assistance provided to the CAHs in each of the three interventions can be found in ***Sections 4, 5,*** and ***6,*** and ***Appendix B: Technical Assistance Activities by CAH*** summarizes high-level technical assistance activities delivered to each participating CAH.

2.4 Characteristics of FCHIP Participating CAHs

In this section, we present geographic, health system, and financial characteristics of the 10 FCHIP CAHs and sociodemographic characteristics of Medicare beneficiaries who use these hospitals. Hospital and health system characteristics provide context to help understand the settings in which FCHIP interventions eventually unfolded. Sociodemographic characteristics of the Medicare beneficiaries gives insight into how similar or different FCHIP Medicare beneficiaries are from Medicare beneficiaries receiving care at other CAHs.

Geographic and Health System Characteristics. Table 2-1 provides an overview of the geographic location, county population and density, numbers and types of medical staff, total number of employed staff, number of beds, and nearest urban tertiary hospital for each participating CAH. All participating hospitals were in low population density areas located far from a tertiary hospital, had relatively few medical staff (some of which were visiting staff), and had low inpatient admissions.

[3] See "Frontier Community Health Integration Project (FCHIP)" at https://www.ruralhealthinfo.org/new-approaches/frontier-community-health-integration-program for access to the white papers.

Table 2-1. Baseline Geographic and Health System Characteristics of the Frontier Community Health Integration Project CAHs

Geographic Characteristics			Pre-FCHIP Health System Characteristics		
CAH Name and Location	County Population (density)[1]	Nearest Tertiary Urban Hospital[2]	Medical Staff[3]	Number of Acute Care Beds[4]	Medicare Admissions per Year[5]
Battle Mountain General Hospital Battle Mountain, Lander County, Nevada	5,775 (1.1 people per square mile)	Renown Regional Medical Center • Reno, NV • 220 miles by road 170 miles by air	• 3.5 MDs • 3 Mid-level providers • 11 Nurses	7	26
Dahl Memorial Healthcare Association Ekalaka, Carter County, Montana	1,160 (0.3 people per square mile)	Billings Clinic Hospital • Billings, MT • 240 miles by road 190 miles by air	• 1 DO • 2 Mid-level providers	8	23
Grover C. Dils Medical Center Caliente, Lincoln County, Nevada	5,345 (0.5 people per square mile)	Sunrise Hospital and Medical Center • Las Vegas, NV • 155 miles by road 105 miles by air	• 2 MDs • 2 Mid-level providers • 13 Nurses	20	62
Jacobson Memorial Hospital Care Center Elgin, Grant County, North Dakota	2,394 (1.4 people per square mile)	CHI St. Alexius Medical Center • Bismarck, ND • 85 miles by road 55 miles by air	• 1 MD	21	73
McCone County Health Center Circle, McCone County, Montana	1,734 (0.7 people per square mile)	Billings Clinic Hospital • Billings, MT • 240 miles by road 180 miles by air	• 1 MD • 2 Mid-level providers	8	26
McKenzie County Healthcare System Watford City, McKenzie County, North Dakota	6,360 (2.3 people per square mile)	CHI St. Alexius Medical Center • Bismarck, ND • 180 miles by road 135 miles by air	• 4 MDs	24	46

(continued)

Table 2-1. Baseline Geographic and Health System Characteristics of the Frontier Community Health Integration Project Critical Access Hospitals (continued)

Geographic Characteristics			Pre-FCHIP Health System Characteristics		
CAH Name and Location	County Population (density)[1]	Nearest Tertiary Urban Hospital[2]	Medical Staff[3]	Number of Acute Care Beds[4]	Medicare Admissions per Year[5]
Mount Grant General Hospital Hawthorne, Mineral County, Nevada	4,223 (3.5 people per square mile)	Renown Regional Medical Center • Reno, NV • 135 miles by road 95 miles by air	• 5 MDs • 2 Mid-level providers • 19 Nurses	11	166
Pershing General Hospital Lovelock, Pershing County, Nevada	6,753 (1.1 people per square mile)	Renown Regional Medical Center • Reno, NV • 95 miles by road 85 miles by air	• 3 MDs • 29 Nurses	5	24
Roosevelt Medical Center Culbertson, Roosevelt County, Montana	10,425 (4.4 people per square mile)	CHI St. Alexius Medical Center • Bismarck, ND • 260 miles by road 200 miles by air	• 1 MD • 3 Mid-level providers	10	19
Southwest Healthcare System Bowman, Bowman County, North Dakota	3,151 (2.7 people per square mile)	CHI St. Alexius Medical Center • Bismarck, ND • 175 miles by road 130 miles by air	• 5 Mid-level providers	23	51

Notes: CAH = critical access hospital; DO = doctor of osteopathy; FMP = family medicine provider; FNP = family nurse practitioner; IP = inpatient; MD = medical doctor; N/A = not available; OB/GYN = doctor of obstetrics and gynecology; PA = physician assistant

[1] County total population and population density based on the 2010 Census.

[2] Distance by road calculated by finding the distance between the CAH and the closest tertiary hospital in an urban area using Google Maps. Distance by air is the straight-line distance between the CAH and the tertiary hospital per Google Maps.

[3] Data from the CAH's FCHIP application.

[4] Data for the number of beds was retrieved from https://www.flexmonitoring.org/data/critical-access-hospital-locations/. The values provided from this data source did not always match information in the FCHIP Demonstration applications. However, bed size was not available on all FCHIP applications. Therefore, we used this source as a consistent and universal source. Accessed March 15, 2017. Specifically, Grover C. Dil's application indicates that it has 4 beds, rather than 20; Jacobson's application indicates that it has 25 beds, rather than 21; McCone's application indicates that it has 25 beds, rather than 8; Pershing's application indicates that it has 13 beds, rather than 5; and Roosevelt's application indicates that it has 25 beds, rather than 10.

[5] Medicare inpatient admissions per year are based on Medicare claims analyses from August 2015–July 2016, which was the 12-month period before FCHIP began.

Financial Characteristics. To better understand the context in which FCHIP hospitals were operating before FCHIP began, we analyzed financial metrics derived from 2016 hospital Medicare cost reports for CAHs in Montana, Nevada, and North Dakota.[4] These data were provided through the Critical Access Hospital Measurement and Performance Assessment System (CAHMPAS). The hospital-level financial performance metrics included profitability, liquidity, age of infrastructure, revenue, cost, and utilization. To protect confidentiality of CAHs financial performance data, FCHIP CAHs are grouped together, and the metrics shown are averaged across the 10 FCHIP CAHs. We show how FCHIP CAHs compare with all other CAHs in Montana, Nevada, and North Dakota to give a sense of how similar (and different) these FCHIP CAHs are relative all other CAHs in these states.

CAHMPAS data. As seen in ***Table 2-2***, before FCHIP began, FCHIP CAHs were operating at a loss based on total and operating margins,[5] whereas other CAHs in Montana, Nevada, and North Dakota were not operating at a loss based on total margins. To understand if the margins were an anomaly or were indicative of a history of financial challenges, we examined operating losses over time in ***Figure 2-3*** and ***Figure 2-4***. Both total and operating margins had been declining for some time, and operating margins, in particular, have always been lower for the FCHIP CAHs relative to other CAHs in the three states. Furthermore, FCHIP CAHs' share of inpatient and outpatient care paid for by Medicare was similar to other CAHs in Montana, Nevada, and North Dakota. However, FCHIP CAHs' average daily census for SNF and acute inpatient beds were lower than all other CAHs.

The total and operating margin findings suggest that the FCHIP CAHs were experiencing financial hardships leading up to their participation in FCHIP, and the low daily census demonstrates that the hospitals were contending with relatively low volumes of Medicare patients before FCHIP began.

[4] CAHMPAS data were taken from the CAH Financial Indicators Report (CAHFIR), which is derived from Medicare hospital reports and compiled annually by the Flex Monitoring Team at the University of Minnesota, University of North Carolina at Chapel Hill, and the University of Southern Maine. More details about CAHMPAS can be found at https://cahmpas.flexmonitoring.org/.

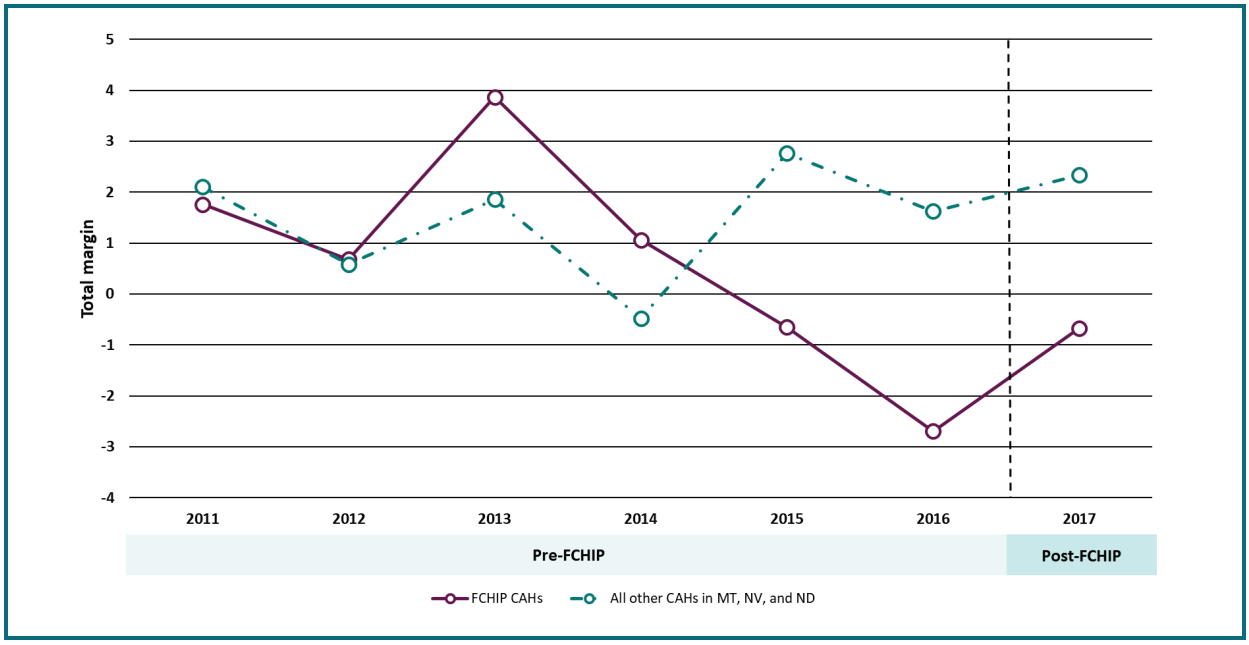
[5] A hospital margin is the ratio of hospital profits to hospital revenue. Total margin = (total revenue-total cost)/total revenue. Operating margin = (operating revenue − operating cost)/operating revenue

Table 2-2. Baseline Measures of Financial Performance, FCHIP CAHs and All Other CAHs in Montana, Nevada, and North Dakota, Fiscal Year 2016

CAHMPAS Measure from the 2016 Hospital Cost Report	Measure Description	FCHIP CAHs, Median	All Other CAHs in MT, NV, and ND, Median
Total Margin (%)	Net income/total revenue from all payers Measures the percentage of total revenues that is profit or loss Negative value indicates total expenses are greater than total revenues (a loss)	−2.69	2.58
Operating Margin (%)	Net operating income/operating revenue from all payers Measures the percentage of operating revenues that is profit or loss Negative value indicates the CAH is operating at a loss	−15.22	−0.68
Medicare Inpatient Payer Mix (%)	Measures the percentage of total inpatient days that is provided to Medicare patients	83.19	83.46
Hospital Medicare Outpatient Payer Mix (%)	Measures the percentage of total outpatient charges that is for Medicare patients	39.05	39.69
Average Age of Plant (years)	Measures the average accounting age in years of the buildings and equipment of an organization	12.64	11.20
Average Daily Census SNF beds (days)	Measures the average number of Medicare SNF beds per day	0.56	1.21
Average Daily Census Acute Beds (days)	Measures the average number of Medicare acute care beds occupied per day	0.42	1.34

Notes: Data source is the 2017 Critical Access Hospital Measurement and Performance Assessment System (CAHMPAS). CAHMPAS data are taken from the CAH Financial Indicators Report (CAHFIR). 2017 CAHMPAS data are derived from 2016 hospital Medicare cost reports.

Figure 2-3. Median total margins of FCHIP and all other CAHs in Montana, Nevada, and North Dakota, 2011–2017



Source: 2018 Critical Access Hospital Measurement and Performance Assessment System (CAHMPAS).

Note: CAHMPAS financial performance metrics for 2018 cost reports were not available as of January 2020.

Figure 2-4. Median operating margins of FCHIP and all other CAHs in Montana, Nevada, and North Dakota, 2011–2017

Source: 2018 Critical Access Hospital Measurement and Performance Assessment System (CAHMPAS).

Note: CAHMPAS financial performance metrics for 2018 cost reports were not available as of January 2020.

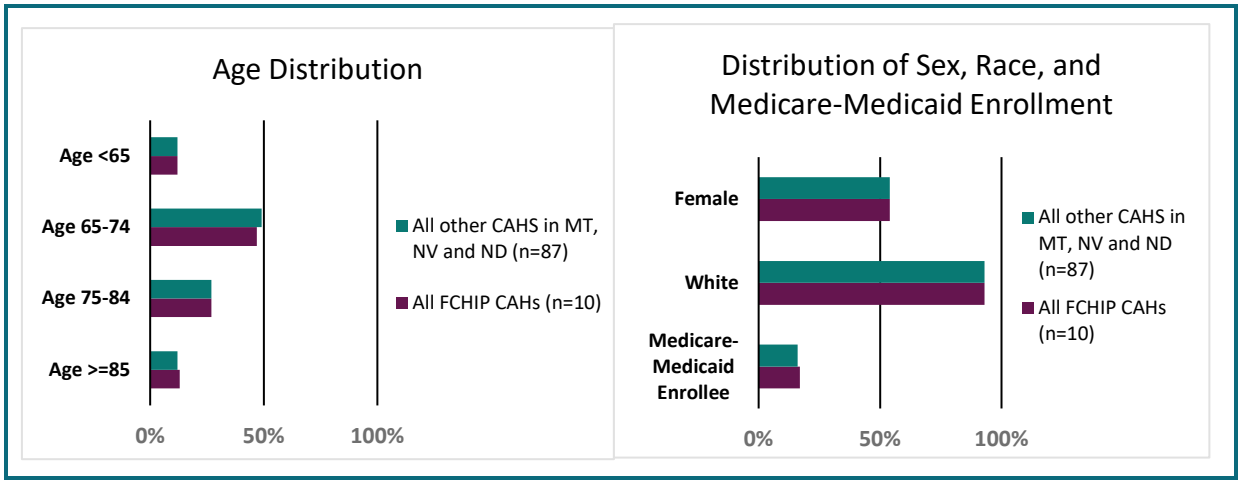
Preponderance of care furnished by the CAH. In addition to the hospital cost report data, we also analyzed Medicare fee-for-service claims to calculate the proportion of a Medicare beneficiary's total fee-for-service expenditures that was paid to the CAH versus another provider. We call this metric "preponderance of spending," and we examined this measure to better understand how important CAHs are to a Medicare beneficiary's total cost of care. In 2016, 38.7 percent of Medicare expenditures among beneficiaries using an FCHIP CAH were incurred at an FCHIP CAH. Beneficiaries going to other CAHs in Montana, Nevada, and North Dakota had a similar proportion; 40.2 percent of their total Medicare expenditures were incurred at a CAH.

Medicare fee-for-service beneficiaries who use CAHs incur a little over one-third of their total expenditures at that CAH in any given year, highlighting the important role that CAHs have in providing medical care to rural Medicare beneficiaries. The preponderance of spending percentages are fairly similar between Medicare beneficiaries using FCHIP CAHs and beneficiaries using other CAHs, suggesting that the experience for FCHIP Medicare beneficiaries is not unlike the experience for other rural Medicare beneficiaries.

The remaining two-thirds of total spending (i.e., spending not incurred at an FCHIP CAH) for beneficiaries who use the FCHIP CAHs was as follows: 28 percent for inpatient services provided at another CAH or hospital, 18 percent for professional services provided by a provider within the Medicare claims carrier file, 17 percent for outpatient services received elsewhere, and 4 percent for SNF care at another CAH, hospital, or facility.

Sociodemographic Characteristics of Medicare Beneficiaries. Finally, to understand how Medicare beneficiaries who used FCHIP CAHs differed from Medicare beneficiaries who have used all other CAHs in Montana, Nevada, and North Dakota, we present select sociodemographic characteristics for the two groups of Medicare beneficiaries in ***Figure 2-5***.

Figure 2-5. Sociodemographic characteristics of Medicare beneficiaries who ever used a CAH during the FCHIP Demonstration period (August 1, 2016–July 31, 2019)



Medicare beneficiaries who ever used FCHIP CAHs during the FCHIP Demonstration were very similar to Medicare beneficiaries who ever used all other CAHs in Montana, Nevada, and North Dakota based on gender, race, and Medicare eligibility. FCHIP CAHs and all other CAHs had about the same percentage of beneficiaries who were female, white, and dually eligible for Medicare and Medicaid. FCHIP CAHs had a slightly higher percentage of beneficiaries who were slightly older (>75 years vs. 65–74 years) relative to beneficiaries at other CAHs.

Table 2-3 below provides additional detail on the sociodemographic characteristics of Medicare fee-for-service beneficiaries who used each of the FCHIP CAHs. We will refer to this table in ***Sections 4.4.2, 5.4.2,*** and ***6.4.2*** when we describe the sociodemographic characteristics of Medicare beneficiaries receiving care at the different FCHIP intervention CAHs.

Table 2-3. Sociodemographic Characteristics of Medicare Beneficiaries Who Ever Used FCHIP CAHs or Who Used Other CAHs in MT, ND, and NV During the FCHIP Demonstration Period (August 1, 2016–July 31, 2019)

Intervention/CAH	Age <65 %	Age 65–74 %	Age 75–84 %	Age >=85 %	White %	Female %	Dually eligible for Medicare and Medicaid %	Total N
Ambulance Intervention								
FCHIP ambulance CAHs (n=2)	8%	46%	29%	17%	90%	55%	14%	1,282
Other ambulance billing CAHs in MT and ND (n=21)	12%	49%	27%	13%	92%	54%	17%	46,967
SNF/NF Intervention								
FCHIP SNF/NF CAHs (n=3)	7%	44%	28%	20%	92%	53%	16%	1,871
Other SNF/NF billing CAHs in MT and ND (n=79)	11%	49%	27%	13%	93%	53%	16%	152,116
Telehealth Intervention								
FCHIP telehealth CAHs (n=8)	14%	49%	27%	11%	92%	54%	17%	6,344
Other telehealth billing CAHs in MT, NV, and ND (n=38)	12%	48%	27%	13%	94%	54%	16%	91,038
FCHIP Participating CAHs								
Montana								
McCone County 	4%	51%	28%	17%	97%	55%	8%	405
Dahl Memorial 	3%	45%	29%	23%	98%	56%	10%	240
Roosevelt 	11%	49%	28%	12%	76%	54%	18%	481
Nevada								
Battle Mountain 	17%	51%	25%	8%	91%	54%	20%	999
Mount Grant 	17%	46%	28%	9%	92%	54%	23%	1,253
Grover C. Dils 	3%	45%	29%	23%	98%	56%	10%	240
Pershing 	18%	45%	27%	10%	90%	54%	23%	867
North Dakota								
McKenzie 	14%	52%	23%	11%	92%	54%	12%	1,084
Southwest 	7%	44%	30%	19%	98%	56%	12%	801
Jacobson Memorial 	6%	40%	29%	26%	98%	52%	19%	985

Notes: CAH = critical access hospital; FCHIP = Frontier Community Health Integration Project; MT = Montana; ND = North Dakota; NV = Nevada; SNF/NF = skilled nursing facility/nursing facility.

3. Overview of Evaluation Methods

3.1 Evaluation Questions and Data Sources

The FCHIP evaluation was designed to collect and analyze data to understand what activities CAHs implemented, how they implemented them, and whether any impact occurred because of the additional reimbursement (for ambulance and telehealth) or additional beds (for SNF/NF). For each of the three FCHIP interventions, we conducted a mixed-methods qualitative and quantitative evaluation to answer four evaluation questions (***Table 3-1***).

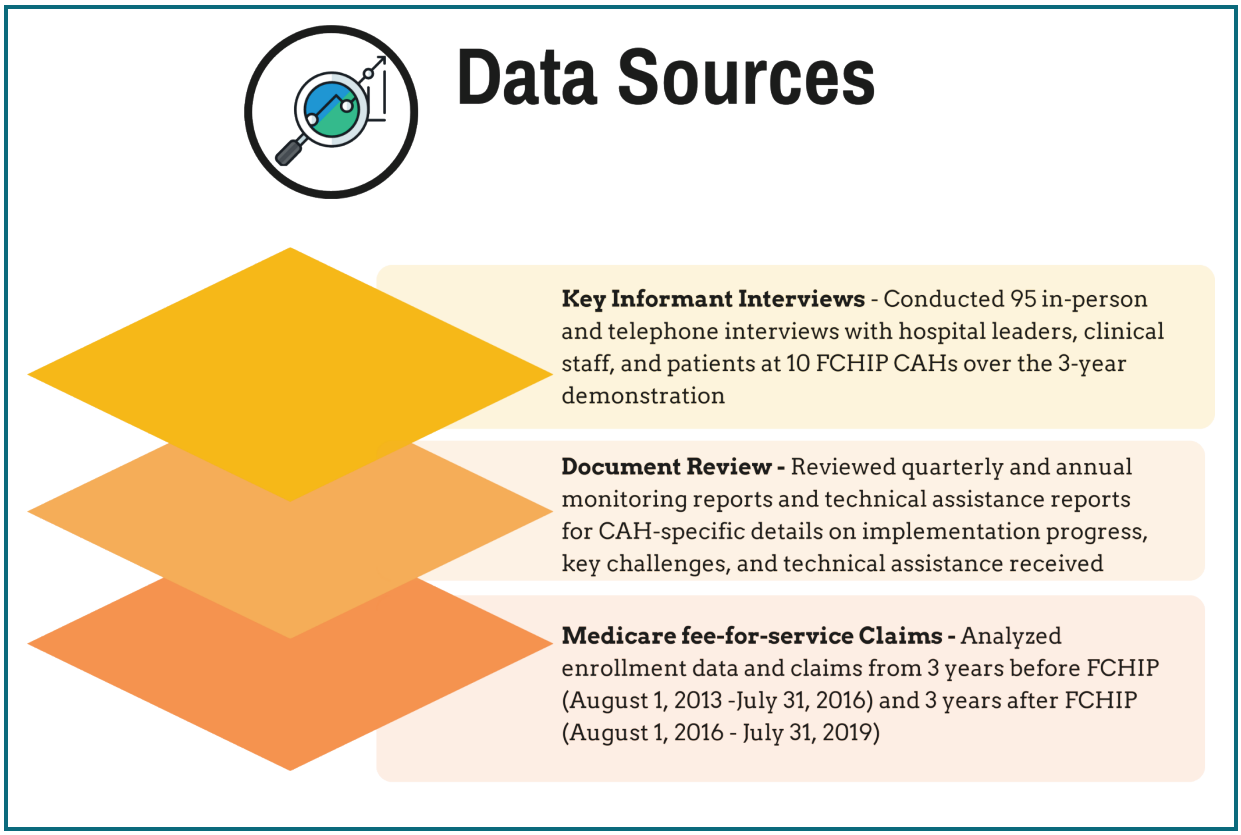
Table 3-1. Evaluation Questions and Data Sources Used to Answer the Questions

	FCHIP Evaluation Questions	Key Informant Interviews	Document Review	Medicare Fee-for-Service Claims Analysis
1.	Did the demonstration interventions affect hospital administration, such as the number and type of staff, equipment/infrastructure, or resources?	✓	✓	
2.	What did participants think of the demonstration interventions' impact on hospital finances?	✓		
3.	Did the demonstration interventions change consumer access to health services?	✓	✓	✓
4.	Did the demonstration interventions affect the surrounding regional health delivery system, providers of community-based services, and payers or have other spillover effects?	✓		

3.2 Data Sources

As described in ***Figure 3-1***, we leveraged both qualitative data (key informant interviews and document review) and quantitative data (Medicare fee-for-service claims and cost report data) through July 31, 2019 to answer the evaluation questions.

Figure 3-1. Data sources for the evaluation



3.3 Data Analysis

Qualitative data analysis. We synthesized the qualitative information from the document review and the key informant interviews. We used qualitative data software (NVivo) to code key informant interviews, identifying key themes that described the FCHIP CAHs' experiences and activities. The key themes were developed using the interview discussion guides, document reviews, and discussions with CMS and North Carolina Rural Health Research Center. Themes from the interviews were combined with data abstracted from the document review to produce the overall findings for this report.

Limitations. A primary data source for this report was key informant interviews. Although the goal of the interviews was to obtain feedback (including viewpoints) from a variety of stakeholders, there is no guarantee that the individuals who participated in the interviews are representative of the entire staff at the FCHIP CAHs. Therefore, the conclusions derived from qualitative data analysis may not represent all possible perspectives or viewpoints.

Quantitative data analysis. To measure the potential impacts of the FCHIP Demonstration on health services provided to fee-for-service Medicare beneficiaries, we conducted two complementary analyses:

1. A **hospital-level analysis**, examining patterns of services delivered within FCHIP CAHs. The hospital analysis focuses on service delivery within the walls of each facility. Service patterns observed for FCHIP CAHs were compared against service patterns observed for other CAHs within the same FCHIP states (i.e., a comparison group).
2. A **beneficiary analysis**, examining patterns of health care utilization among beneficiaries using FCHIP CAHs, regardless of where the services were delivered. This analysis takes a broader view of the potential impact of FCHIP by focusing on the community of beneficiaries who use the hospital. This analysis explores how beneficiaries who receive care at CAHs utilize the health care system (regardless of if care was delivered within a CAH or another setting). Service patterns for beneficiaries who used FCHIP CAHs were compared against service patterns for beneficiaries who used other CAHs within the same FCHIP states.

Together, these analyses measure the changes in service delivery patterns for both hospitals and the beneficiary communities that the hospitals serve.

3.3.1 Quantitative Data: Hospital Analysis

The hospital analysis serves as the primary analysis, directly examining services provided by participating CAHs and comparison CAHs drawn from the same FCHIP states under the assumption that cost-based reimbursement for telehealth and ambulance transports and increased beds for SNF/NF services may improve access to care for these health services. For this claims-based analysis, access to care is measured by examining changes in the number of health services delivered by a CAH before and during the FCHIP Demonstration. More services delivered during the FCHIP Demonstration suggests greater access to care for a CAH's surrounding community. A drawback to the hospital analysis is that the unit of analysis is the hospital. With so few participating CAHs (i.e., two ambulance CAHs, three SNF/NF CAHs, and eight telehealth CAHs), it is not feasible to test for statistically significant increases or decreases in service delivery after FCHIP starts within a specific CAH or between groups of CAHs (i.e., between two ambulance CAHs and a group of non-FCHIP CAHs providing ambulance services).

Using Medicare claims data from Montana, Nevada, and North Dakota, we conducted a descriptive analysis of counts and rates of select health services provided by CAHs in Montana, Nevada, and North Dakota during a pre-FCHIP baseline period (August 1, 2013–July 31, 2016) and an FCHIP Demonstration period covering the 3 years of the FCHIP Demonstration (August 1, 2016–July 31, 2019).[6] Counts and rates were calculated for each analytic year in the baseline

[6] Claims data were accessed on November 1, 2019, allowing for 3 months of runout for claims adjustments or revisions.

period and the FCHIP Demonstration period. The analytic year spans the period August 1 through July 31. The unit of analysis is the CAH; that is, we counted the number of services billed to Medicare by the CAH of interest. We identified a CAH of interest using the CAH's CMS Certification Number (CCN). Denied claims were excluded from analysis.

Counts of services rendered are shown to allow the reader to see the magnitude of service units provided by CAHs in frontier areas. However, counts are a direct reflection of the size of a hospital's service area. A hospital in a more densely populated community is more likely to provide more services than a hospital in a less densely populated community, so comparing hospitals based solely on counts of services is misleading. To compare service utilization across groups of hospitals, we created rates of service use based upon the number of Medicare beneficiaries who ever used a hospital of interest during the analytic year.[7] Rates allow a reader to make comparisons between hospitals because the underlying population touched by the hospital is taken into account.

We studied each FCHIP intervention separately, examining how counts and rates varied over time among the FCHIP CAHs participating in the ambulance, SNF/NF, and telehealth interventions respectively (FCHIP Demonstration group). To better understand if observed trends in service utilization were unique to FCHIP CAHs or a reflection of secular trends happening across CAHs more broadly, we also examined how counts and rates of select services varied over time for other CAHs within the same states who also provided the FCHIP service of interest (comparison group).

We did not test for statistical differences in trends between the FCHIP Demonstration and comparison groups because of the small number of CAHs. For example, the ambulance intervention had two participating CAHs. With a sample size of two hospitals, it is hard to detect a meaningful statistical difference in rates between groups.

3.3.1.1 Demonstration and Comparison Groups

Each FCHIP intervention had its own set of participating CAHs, and CAHs participating in multiple FCHIP interventions were included in each demonstration group. For example, a CAH participating in the SNF/NF intervention and the telehealth intervention was included in the demonstration group for the SNF/NF intervention and the demonstration group for the telehealth intervention.

Each FCHIP intervention also had its own distinct comparison groups (***Table 3-2***). The first was a comparison group of other FCHIP CAHs that did not participate in the specific

[7] To illustrate, if the 8 telehealth FCHIP CAHs provided 22 telehealth encounters in the year and 2,000 unique Medicare beneficiaries used those 8 CAHs in that year, then the rate of telehealth encounters per 1,000 Medicare beneficiaries is calculated as (22/2,000)*1000 = 11 telehealth encounters per 1,000 Medicare beneficiaries in that year. This rate can then be compared with a similarly calculated rate for comparison group CAHs.

intervention but did bill for that intervention's services. The second comparison group was comprised of other CAHs in the FCHIP states that billed for the FCHIP service but did not receive cost-based reimbursement payments or technical assistance offered under the FCHIP Demonstration. These CAHs were located in rural areas but not necessarily frontier areas. The sample size for this group is much larger, making it easier to detect trends in service use.

Table 3-2. Demonstration and Comparison Groups for the Hospital Analysis

Intervention	Groups
Ambulance Intervention	
Demonstration Group	FCHIP CAHs participating in the ambulance intervention (Roosevelt, Southwest; n=2).
Comparison Group 1: Other FCHIP CAHs Billing for Ambulance Services	FCHIP CAHs that billed for ambulance transports during the FCHIP Demonstration (August 1, 2016–July 31, 2019) but did not participate in the ambulance intervention (Battle Mountain, Dahl Memorial; n=2).
Comparison Group 2: Within State CAHs Billing for Ambulance Services	All non-FCHIP CAHs in Montana and North Dakota that billed for an ambulance transport during the FCHIP Demonstration (August 1, 2016–July 31, 2019; n=21). The comparison group was limited to ambulance billing CAHs in Montana and North Dakota because participating FCHIP ambulance intervention CAHs were within those two states.
SNF/NF Intervention	
Demonstration Group	FCHIP CAHs participating in the SNF/NF intervention (Jacobson, McCone, and Roosevelt; n=3).
Comparison Group 1: Other FCHIP CAHs Billing for SNF Services	FCHIP CAHs that billed for SNF/NF admissions during the FCHIP Demonstration (August 1, 2016–July 31, 2019) but did not participate in the SNF/NF intervention (Battle Mountain, Dahl Memorial, Grover C. Dils, McKenzie, Mount Grant, Pershing, and Southwest; n=7).
Comparison Group 2: Within State CAHs Billing for SNF Services	All non-FCHIP CAHs in Montana and North Dakota that billed for an SNF/NF admission during the FCHIP Demonstration (August 1, 2016–July 31, 2019; n=73). The comparison group was limited to SNF/NF billing CAHs in Montana and North Dakota because participating FCHIP SNF/NF intervention CAHs were within those two states.
Telehealth Intervention*	
Demonstration Group	FCHIP CAHs participating in the telehealth intervention (Battle Mountain, Dahl Memorial, Grover C. Dils, McCone, McKenzie, Mount Grant, Pershing, Roosevelt; n=8).
Comparison Group 1: Within State CAHs Billing for Telehealth Services	All non-FCHIP CAHs in Montana, Nevada, and North Dakota that billed for a telehealth encounter during the FCHIP Demonstration (August 1, 2016–July 31, 2019; n=38).

*The telehealth intervention does not have a comparison group of other FCHIP CAHs billing for telehealth because the two FCHIP CAHs not participating in the telehealth intervention did not bill for telehealth services.

3.3.1.2 Outcome Measures

We examined select utilization outcomes to measure changes in service delivery during the FCHIP Demonstration. Some measures were intervention specific, whereas others were assessed across all FCHIP CAHs to provide context about broader service delivery patterns. We designated several utilization outcomes as primary outcomes because they were directly related to the FCHIP Demonstration. We hypothesized that the change in reimbursement (telehealth) or policy (SNF/NF) would lead participating CAHs to deliver more of these services. The change in reimbursement for ambulance services was not expected to influence the number of ambulance transports delivered because the reimbursement does not directly influence demand for ambulance services, but we examined use of this service to better understand patterns of ambulance use within the CAHs' surrounding communities. ***Table 3-3*** shows the primary outcomes for the hospital analysis.

Table 3-3. Primary Outcomes for the Hospital Analysis

Outcome	FCHIP Intervention		
	Ambulance 	SNF/NF 	Telehealth 
Ambulance transports	✓		
Average distance per ambulance transport	✓		
SNF admissions		✓	
Length of stay per SNF admission		✓	
Average daily SNF census		✓	
Telehealth encounters			✓
Type of specialty of the telehealth provider			✓

We designated other utilization outcomes as secondary. CAHs' focus on improving processes of care for current patients and engaging in more marketing and outreach could hypothetically lead to more use of the CAH by current patients and other community members. Therefore, we examined these secondary outcomes of interest across the three interventions. Moreover, examining rates of these secondary outcomes also provided an opportunity to look for patterns or "shocks" in health service use in the FCHIP communities that could provide an explanation for changes in FCHIP-related primary outcomes. For example, if a spike in

ambulance transports happened at the same time as a spike in inpatient and ED visits, we could consider the possibility that an event within the FCHIP communities may have led to increased ambulance transports and not the FCHIP intervention. ***Table 3-4*** shows the secondary outcomes for the hospital analysis, and ***Section 7*** presents findings for these secondary outcomes.

Table 3-4. Secondary Outcomes for the Hospital Analysis

Outcome	FCHIP Intervention		
	Ambulance 	SNF/NF 	Telehealth 
Inpatient admissions	✓	✓	✓
Emergency department visits	✓	✓	✓

A complete description of the outcomes and variable construction is in ***Appendix A: Methods.***

3.3.2 Quantitative Data: Beneficiary Analysis

The beneficiary analysis is a secondary analysis. Because it is not the primary analysis, we include a brief description here and include more detailed methods in ***Appendix C: Beneficiary Analysis***. A beneficiary-level analysis examines whether the FCHIP payment and policy changes had any impact on how often beneficiaries who used an FCHIP CAH received different types of care.

In the beneficiary analysis, we assigned (or attribute) Medicare beneficiaries to FCHIP CAHs or comparison group CAHs based upon their service use at the hospital.[8] We then tallied all services paid for by Medicare fee-for-service that the assigned beneficiary received, regardless of if the service was provided by the CAH of interest or another provider (i.e., we gathered all service use for an assigned beneficiary), and we then used regression analyses to determine if service use differed between individuals assigned to FCHIP CAHs and individuals assigned to comparison CAHs. This approach has the benefit of significantly increasing sample size because the unit of analysis is now the beneficiary, not the hospital. With increased sample size, we can use a difference-in-differences regression analyses to test for significant differences in service utilization patterns between beneficiaries receiving care at FCHIP CAHs and beneficiaries receiving care at comparison CAHs. This approach does have one key limitation

[8] Examples of evaluations in which beneficiaries were attributed to a health care provider and then beneficiary-level analyses were conducted include the Evaluation of the Comprehensive Primary Care Initiative and the Evaluation of the Maryland All-Payer Model.

that must be considered: beneficiaries are assigned to a particular hospital; however, they often receive health care from numerous providers during a year (see ***Section 2.4*** for additional discussion on proportion of a Medicare beneficiary's total fee-for-service expenditures that was paid to the CAH versus another provider). We cannot account for the influence non-FCHIP providers and initiatives may have on an individual's utilization patterns.

3.3.3 Quantitative Data: Limitations

Several limitations to working with claims data should be considered when interpreting results presented here. First, Medicare claims represent only those services rendered for which a hospital sought reimbursement; actual service delivery may be underreported in claims. As an example, anecdotally, we heard that all CAHs participating in the telehealth intervention provided telehealth encounters to Medicare beneficiaries. However, not all CAHs were billing Medicare for the originating site fee, so telehealth encounters were likely underreported.

To construct rates for the hospital analysis, we assigned beneficiaries to CAHs based upon utilizing the hospital at least once during the analytic year. Our methodology yields one primary limitation: beneficiaries could receive services at more than one CAH in a single analytic year. We examined the threat of this limitation and determined the occurrences to be extremely rare. Therefore, we do not believe this introduces significant bias.

The hospital-level analysis compared FCHIP CAHs with non-FCHIP CAHs in the FCHIP states, and these CAHs were not a perfect match for the FCHIP CAHs. Even though non-FCHIP CAHs were located in the same states as the FCHIP CAHs, they were not all located in frontier areas. Moreover, observed differences in service patterns for non-FCHIP comparison CAHs could be explained by characteristics such as more access to a potential pool of patients and/or hospital workforce, different referral relationships and partnerships with other health systems, and greater financial resources.

The primary limitation of the beneficiary analysis is that we did not isolate services to those directly rendered at the FCHIP or comparison group CAHs. Given that beneficiaries often receive health care from numerous providers and facilities each year, we must interpret significant changes with the caveat that we cannot be certain they were driven by FCHIP reimbursement or policy changes under the demonstration.

Both the hospital and beneficiary analyses sample sizes were relatively small. In any given community in which the FCHIP CAHs reside, the number of Medicare beneficiaries participating in an FCHIP activity (e.g., eligible for SNF services or ambulance transports, or in need of telehealth services) is small. As such, the hospital-level analyses were under powered to detect statistically significant changes in utilization, so we did not test for statistically significant differences in CAH-specific counts/rates before and after FCHIP participation or in differences between FCHIP CAHs' counts/rates and comparison group CAHs' counts/rates. Thus, the

numbers provided in this report should be viewed as descriptive only. We cannot be sure whether any changes observed are "true" changes or just random variation. When we do see changes in trends in service counts or rates, for example, an increase the number of telehealth encounters for Medicare beneficiaries at a specific CAH, the overall change may not be large by more conventional standards applied in larger study samples, but for a singular FCHIP CAH serving only a few hundred beneficiaries, the change may be considered quite substantial from the perspective of the CAH.

Finally, we must consider the lack of generalizability of our sample when drawing conclusions and their applicability to other CAHs within or outside of Montana, Nevada, and North Dakota. These CAHs operate within a very localized context, and what services are provided and how they are provided are contingent upon available workforce, proximity to other resources, and the needs of individuals in their communities. As such, the experiences of the FCHIP CAHs described here could reasonably differ quite substantially from other CAHs that have different workforce demands, available resources, and community needs.

3.4 Presenting Results

Results from the Medicare claims analysis can be found in ***Sections 4.4, 5.4, 6.4, 7,*** and ***Appendix C: Beneficiary Analysis***. In ***Sections 4.4., 5.4,*** and ***6.4***, we first discuss the sociodemographic characteristics of Medicare beneficiaries who ever used the FCHIP CAHs participating in the intervention of interest and of Medicare beneficiaries who ever used comparison group CAHs. We do this to give the reader a better understanding of the population utilizing services from CAHs. We then present the results of the hospital analysis**,** including data tables of counts/rates and trend graphs of the rates over time for the primary outcome of interest. We then present results from difference-in-difference regression model for the beneficiary analysis, with a more detailed presentation of methods and results in ***Appendix C: Beneficiary Analysis***. ***Section 7*** includes trend graphs of rates for the secondary outcomes of interest for the hospital analysis. Trend graphs for the secondary outcomes can be found in ***Appendix A: Methods***. We conclude each section with a discussion of the implications of the findings from the Medicare claims analysis.

4. Ambulance Intervention: Findings

Key Results from the Ambulance Intervention
August 1, 2016–July 31, 2019
Two CAHs in Montana and North Dakota

Intervention Impact

- During the 3-year intervention, the two participating FCHIP CAHs made 457 Medicare ambulance transports. From the year before FCHIP began to Year 3 of the demonstration, the number of transports declined by 25 percent. CAHs reported at the start of the demonstration that they did not expect the FCHIP cost-based reimbursement to change demand or supply of ambulance services within their communities. However, CAHs did report delivering more advanced training to their EMTs, so the quality of ambulance services may have increased with the CAHs' greater capacity to deliver more advanced life support care, when needed.

Progress and Accomplishments

- CAHs used cost-based reimbursements to invest in emergency medical technician staff training, ambulance equipment, and ambulance maintenance.
- Early in the intervention, CAH administrators believed the change in reimbursement from the Medicare fee schedule to cost-based reimbursement would have little impact on hospital revenue. However, by the third year of the intervention, administrators gave examples of positive financial gains from cost-based reimbursement.

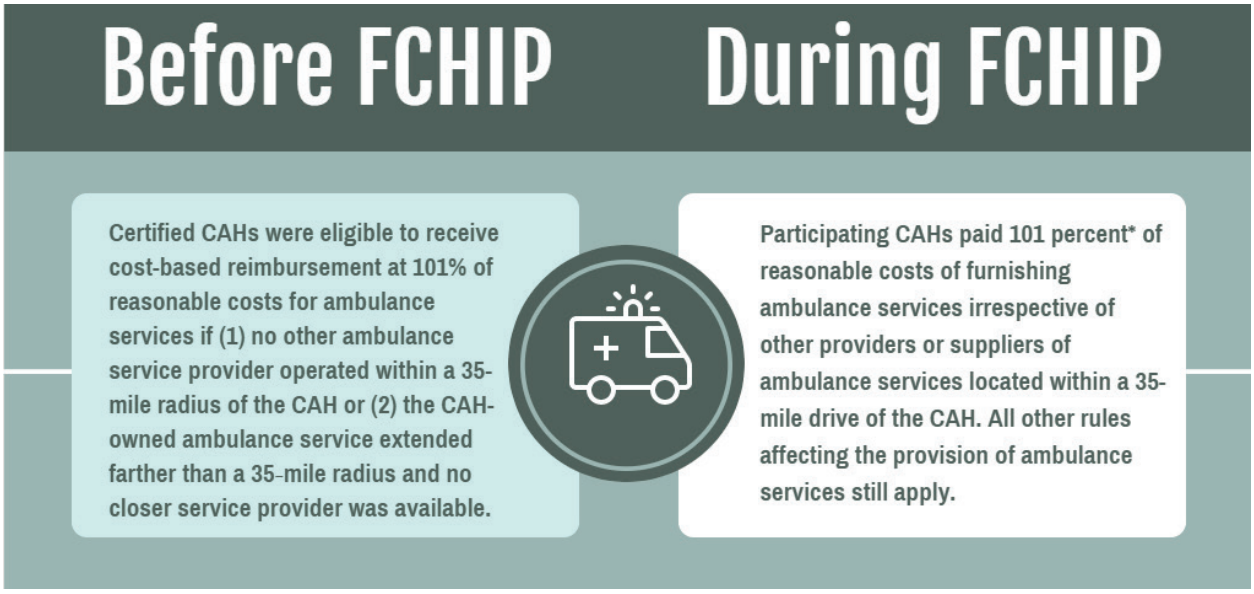
Challenges

- Because of their remote locations, CAHs have historically had challenges recruiting EMTs, and they have low volumes of ambulance transports. CAHs reported that the reimbursement model for the FCHIP ambulance intervention was not designed to help CAHs overcome these barriers.

Lessons Learned

- With the end of the FCHIP Demonstration and its associated cost-based reimbursement, CAHs expressed uncertainty about their ability to sustain investments, such as additional EMT training, they made under the intervention.
- The ambulance intervention had no clear impact on the use of air transports.

4.1 Overview of the payment model change



* Effective April 1, 2013, the Budget Control Act of 2011 required a mandatory 2 percent payment reduction in the Medicare fee-for-service program, known as sequestration. This policy is currently in effect, so 101 percent of reasonable costs, less the mandatory 2 percent reduction, results in actual reimbursement of 99 percent of reasonable costs for CAHs.

4.2 Did the ambulance intervention affect hospital administration?

The ambulance intervention gave one of the two participating CAH focused time to plan for additional emergency medical services (EMS). For example, one CAH used MHREF's technical assistance services to think through the design of a community paramedic program,[9] even though the program was not implemented during the FCHIP Demonstration. The EMS staff at this hospital also credited the intervention with giving them focused time to create more robust stroke and cardiac emergency services at the hospital.

Recruitment and retention of EMTs was a challenge before FCHIP and throughout the intervention. Because low population density in frontier regions requires fewer ambulance runs than more populous areas, full-time EMTs were generally considered unnecessary, and participating CAHs relied almost exclusively on volunteer EMTs before and during the demonstration period. CAH administrators and EMS directors routinely expressed challenges recruiting and retaining these volunteer staff. Small communities surround the FCHIP CAHs, so there were fewer individuals from whom the CAHs could recruit additional EMTs. As a result, the same volunteers routinely answered ambulance calls, and CAH administrators noted that this led to EMT burnout. CAH staff discussed their approaches to EMT recruitment (e.g., advertising

[9] A community paramedic program uses EMTs to provide certain types of medical care (e.g., medication management or wound care) in a patient's home. The expectation is that this in-home service will reduce inpatient readmission rate and expand access to medical services in the community.

on social media or allowing "ride-alongs" with EMTs to expose potential recruits to the job) and retention (e.g., training staff on more advance life support skills and paying stipends).

> *"…it's been a very large impact, we're at the place where we could get cost reimburse[ment] if we're a couple miles where there is another ambulance service, it's helped us beef up our staffing and we've been able to get equipment we wouldn't otherwise have been able to spend money on if we didn't have money to cover the staff."*
>
> –CAH Administrator

Cost-based reimbursement enabled CAHs to invest in EMT staff, ambulance equipment, and ambulance maintenance, but the reimbursement change did not significantly alter how CAHs delivered EMS services. As noted, recruitment and retention of EMTs is a constant challenge for CAHs. CAH administrators reported that cost-based reimbursement gave them the financial flexibility to bolster stipends for volunteer EMTs, hold one or more EMT training classes, purchase equipment, pay for trainings for their EMTs, and hire more full-time EMT staff. For example, one CAH implemented special weekend pay structures to compensate volunteers, and they found that this pay change promoted retention of EMTs. Another CAH also provided more staff training on advanced life support services, thereby offering more robust access to care for patients in need of emergency medical care. The additional funding that came with cost-based reimbursement was uniformly appreciated by CAH administrators. However, CAH administrators also noted that that the reimbursement change did not fundamentally change how they thought about staffing and delivering EMS services.

With cost-based reimbursement ending after the FCHIP Demonstration, CAHs expressed uncertainty about their ability to sustain the additional investments they made. Without cost-based reimbursement, both participating CAH administrators reported that they were unsure how or if they could continue to invest in their ambulance staff the way they did under the FCHIP Demonstration.

4.3 What did participants think of the ambulance intervention's impact on hospital finances?

By the final year of the intervention, participating CAHs reported that cost-based reimbursement provided more funding relative to the traditional Medicare fee schedule for ambulance services, resulting in improved hospital financial performance. Throughout the first 2 years of the ambulance intervention, the overall perception of participating CAHs was that the change was not enough to make an appreciable impact on hospital revenue. However, by the third year of the intervention, CAH administrators reported positive financial gains from cost-based reimbursement. A cost audit performed by another contractor found payments increased for Medicare Part B ambulance services under cost-based reimbursement.

> *"The program was very good for us financially."*
>
> –CAH Administrator

4.4 Did the ambulance intervention change consumer access to health services?

The ambulance intervention provided a different reimbursement structure which could, theoretically, allow the CAHs to invest in needed staff and equipment. To assess if the provision of emergency services improved, first, we report on ambulance CAHs' perceptions of the impact of their demonstration participation on how they delivered services to their communities. Then, we present trends in ambulance transports for the ambulance CAHs using Medicare fee-for-service claims data. We also show median distance traveled for a ground transport. To put the FCHIP CAHs' trends in providing key services in the context of other CAHs, we also report on trends in providing services among (1) other FCHIP CAHs not participating in the ambulance intervention and (2) other CAHs in Montana and North Dakota that also billed Medicare for ambulance transports.

4.4.1 CAHs' Perceptions

Throughout the FCHIP Demonstration, CAHs reported that ambulance transports did not significantly change due to the ambulance intervention. In the first year of the demonstration, CAHs reported that they had been and would continue to provide ambulance services, regardless of changes in Medicare reimbursement and that the reimbursement change did not directly influence demand for ambulance services or their ability to meet that demand. This perspective did not change over the course the 3-year demonstration. In addition, administrators and EMS staff at both participating CAHs reported that the demonstration did not impact the type of ambulance runs made by the CAHs. However, the intervention was not necessarily designed to improve access because the reimbursement change does not directly influence demand for ambulance services. More details about ambulance transports from the Medicare claims analysis can be found in ***Table 4-2***. Even though the intervention had no impact on the number of transports, one CAH administrator reported that the increased reimbursement helped fund EMT advanced life support training, so the CAH was able to provide advanced life support services when needed, thereby delivering access to complex care.

The ambulance intervention had no clear impact on the use of air transports. Emergency air transportation is very expensive for insurers like Medicare, and it can be very costly for patients (high out-of-pocket costs). When responding to an emergency, frontier CAHs must decide whether to use a ground ambulance to transport a patient directly to a level-one or level-two trauma center or request an air ambulance to transport the patient to another hospital. The choice to use ground or air transport depends on many factors, including the patient's condition and the advanced life support training of the EMTs in the ground ambulance. One CAH had hoped that the additional advanced life support training they were able to deliver to some of their EMTs because of the reimbursement change might obviate the need for some air transports, which would reduce patients' and Medicare's transportation costs. Over the course of the demonstration, CAHs provided anecdotes of when they thought they may have avoided air

transports. A systematic analysis of whether CAHs changed their ground versus air transport patterns under the ambulance intervention could not be performed under this evaluation because to do so, the CAHs would have needed to assess if each ground transport made was a case of an air transport averted.

The core design element of the ambulance intervention—cost-based reimbursement—could not address participating CAHs' most difficult challenges to providing emergency services in rural areas. CMS designed the ambulance intervention expecting that CAHs would re-invest the higher payments allowed under cost-based reimbursement into their emergency services operations (U.S. Department of Health and Human Services, 2018). CAHs reported using this money for items such as staff reimbursements, training, purchasing of ambulance equipment, ambulance maintenance and other necessary ambulance supports (see ***Section 4.2*** for additional discussion of CAHs use of the higher payments). At the same time, CAH administrators and EMS staff noted many challenges to providing emergency care in frontier areas that payments alone could not address. Challenges included availability of EMTs to respond to ground transport needs and logistic challenges related to rural settings, including lack of reliable telephone services between potential patients, EMTs, and hospitals; difficult road conditions particularly during inclement weather; and the long distances to trauma care centers and related travel time concerns. CAH administrators believed, as a result, that there remain opportunities to test other policy, program, and payment levers to improve emergency services in rural areas.

4.4.2 Claims Analysis

Key Findings: Ambulance Transports

- Before FCHIP, the two participating CAHs had a total of 502 Medicare ambulance transports, and during FCHIP, they had 457 Medicare ambulance transports for 269 unique Medicare beneficiaries. From the year before FCHIP began to Year 3 of the demonstration, the number of transports declined by 25 percent.
- Both ambulance FCHIP CAHs experienced yearly fluctuations in the number of ambulance transports. Southwest Hospital experienced fluctuations in the rate of transports before FCHIP, and transports declined during the intervention resulting in a 40 percent decrease between 2017 and 2019. Roosevelt Hospital's rate of transports fluctuated up and down before and during the intervention, so no clear pattern emerged.
- These fluctuations are likely due to the frontier nature of these CAHs having a small surrounding community. With a small community, the need for ambulance transports in any given year is not stable. Because of these fluctuations among only two participating CAHs, we cannot deduce a clear pattern or conclude that FCHIP caused changes in rates of transports.
- According to CAH administrators and EMS staff who were interviewed throughout the intervention period, they were not expecting the cost-based FCHIP reimbursement change to directly influence demand for ambulance services within the surrounding community.
- Among ambulance FCHIP CAHs, there was no substantial change in the average distance of transports before and during the intervention. FCHIP CAHs typically traveled longer distances as compared with other CAHs providing hospital-based ambulance services in Montana and North Dakota, suggesting that FCHIP CAHs may be the sole service provider across their frontier areas compared with other CAHs.

4.4.2.1 Sociodemographic Characteristics of Medicare Beneficiaries

Beneficiaries receiving care at ambulance FCHIP CAHs were majority white and between 65 and 84 years of age. A little over half were female. As shown in ***Table 2-3,*** this distribution of characteristics was similar to beneficiaries receiving care at other ambulance billing CAHs in Montana and North Dakota, with a few exceptions. One ambulance FCHIP CAH, Southwest, had a greater percentage of beneficiaries who were older than 85 years of age (19% were ≥85 years in the FCHIP CAHs vs. 13% in other ambulance billing CAHs in Montana and North Dakota). The high percentage of beneficiaries over 85 years old may potentially impact ambulance use as age is correlated with greater need for transports (Clark & FitzGerald, 1999; Svenson, 2000). The ambulance FCHIP CAHs also had proportionally fewer beneficiaries dually eligible for Medicare and Medicaid (14% in ambulance FCHIP CAHs vs. 17% in other ambulance billing CAHs in Montana and North Dakota). The relatively similar distribution in characteristics between beneficiaries served by ambulance FCHIP CAHs and beneficiaries served by other ambulance billing CAHs suggest that sociodemographic characteristics likely would not account solely for any observed differences in trends in ambulance transports between

FCHIP CAHs and comparison CAHs, except perhaps in the case of Southwest, which had more older (>85 years) beneficiaries.

4.4.2.2 Hospital Analysis: Trends in Service Delivery at CAHs

In this section, we report on ambulance transports using Medicare claims.

4.4.2.2.1 Delivery of ambulance transports to Medicare beneficiaries

Land-based ambulance transports are the primary outcome of interest for this intervention. In ***Table 4-1*** and ***Figure 4-1***, we present the number of ambulance transports as well as the rate of transports per 1,000 Medicare beneficiaries who have used the CAHs across (1) two ambulance FCHIP CAHs, (2) other FCHIP CAHs not participating in the ambulance intervention, and (3) other CAHs in Montana and North Dakota that also billed Medicare for ambulance transports. In ***Figure 4-2***, we present the rate of ambulance transports per 1,000 Medicare beneficiaries for each participating FCHIP CAH.

Only two of the eight other FCHIP CAHs ever billed Medicare for hospital-supplied ambulance services between 2013–2019, so we used those two FCHIP CAHs as a comparison group (see ***Table 3-2*** for more detail). The non-billing FCHIP CAHs likely relied on community-based or other third-party ambulance services to transport patients; in one study of emergency medical services reported by rural hospitals, almost three-quarters of rural hospitals never supported EMS services.[10] We did not test for statistical differences in rates of transports between groups because of the small number of CAHs. We also provide the number of unique Medicare beneficiaries who had a transport at the FCHIP CAHs and the proportion of beneficiaries who had one or more transports.

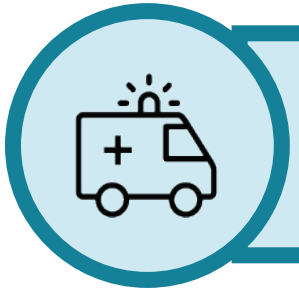
This analysis is based only on those ambulance services billed directly by a hospital using the Healthcare Common Procedure Coding System (HCPCS) codes A0425–A0436 (includes all modes of transportation and both basic and advanced life support services). By searching for land transports billed by a CAH-supplied ambulance, we do not capture transports provided by ambulance companies not owned by a hospital, which leads to underestimation of total ambulance services utilized by Medicare beneficiaries.

[10] NC Rural Health Research & Policy Analysis Center. Rural hospital support for emergency medical series. November 2010. https://www.shepscenter.unc.edu/wp-content/uploads/2014/10/FB99.pdf

Table 4-1. Counts and Rates of Ambulance Transports Billed to Medicare at FCHIP CAHs and Other CAHs That Bill for Ambulance Transports in Montana and North Dakota, 2014–2019

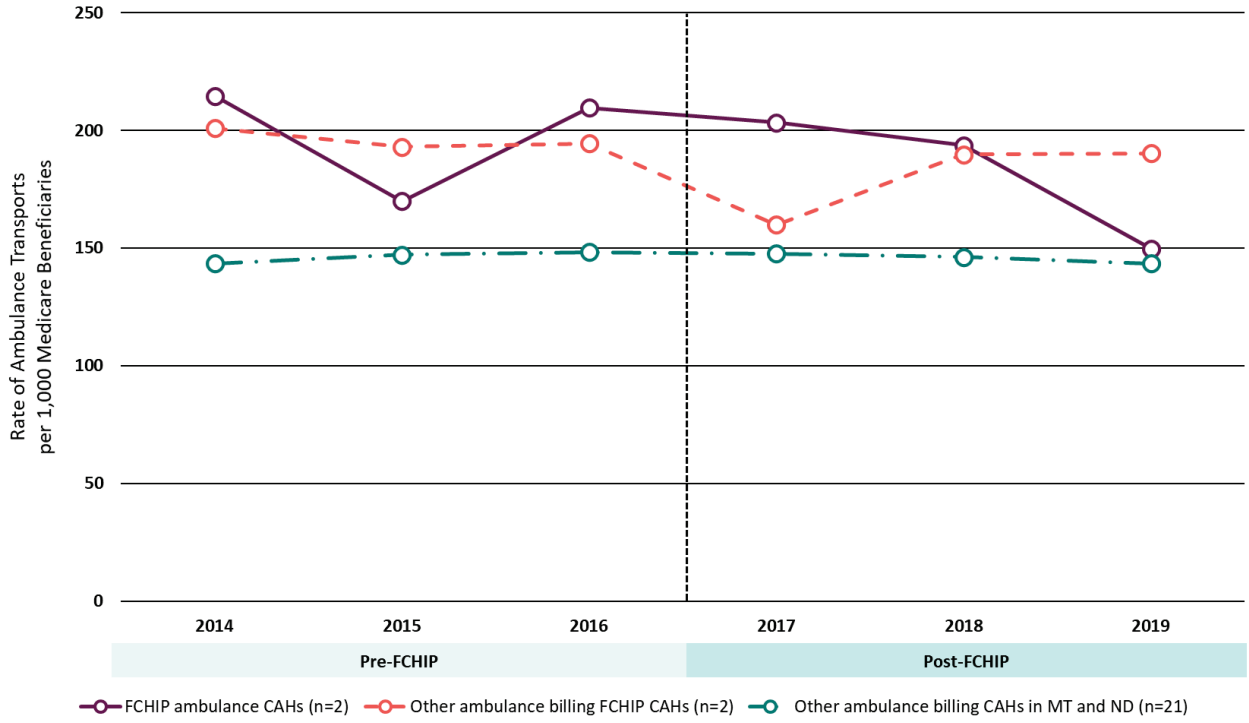
	Ambulance Transports (count)						Ambulance Transports (rate= [count/unique beneficiaries per hospital] *1,000)						Unique Beneficiaries per Hospital					
	Pre-FCHIP			Post-FCHIP			Pre-FCHIP			Post-FCHIP			Pre-FCHIP			Post-FCHIP		
CAH	2014	2015	2016	2017	2018	2019	2014	2015	2016	2017	2018	2019	2014	2015	2016	2017	2018	2019
FCHIP ambulance CAHs (n=2)	182	145	175	160	165	132	214.6	170.0	209.6	203.3	193.7	149.8	848	853	835	787	852	881
Roosevelt (MT)	44	43	63	38	64	51	170.5	159.3	226.6	134.3	212.6	161.4	258	270	278	283	301	316
Southwest (ND)	138	102	112	122	101	81	233.9	175.0	201.1	242.1	183.3	143.4	590	583	557	504	551	565
Other ambulance billing FCHIP CAHs (n=2)	118	122	136	120	146	157	201.0	193.0	194.6	160.0	189.9	190.3	587	632	699	750	769	825
Battle Mountain (NV)	90	99	117	93	137	139	200.4	198.0	212.0	159.5	218.5	207.5	449	500	552	583	627	670
Dahl Memorial (MT)	28	23	19	27	*	18	202.9	174.2	129.3	161.7	*	116.1	138	132	147	167	142	155
Other ambulance billing CAHs in MT and ND (n=21)	3,492	3,590	3,659	3,695	3,763	3,754	143.4	147.2	148.3	147.7	146.2	143.4	24,348	24,391	24,667	25,014	25,732	26,175

Notes: (1) The FCHIP Demonstration started August 1, 2016, so 2014=August 2013-July 2014; 2015=August 2014-July 2015; 2016=August 2015-July 2016; 2017=August 2016-July 2017; 2018=August 2017-July 2018; 2019=August 2018-July 2019. (2) Cells containing either a non-zero value less than 10 or a number derived from a non-zero value less than 10 are denoted with "*".



Among the two FCHIP CAHs, there were 457 ambulance transports billed to Medicare during the FCHIP Demonstration. Among those transports, there were 269 unique Medicare beneficiaries. Of the Medicare beneficiaries who received a Medicare-billed ambulance transport during the FCHIP Demonstration at a participating site, 162 (60%) had one transport, 73 (27%) had two transports, 20 (7%) had three transports, and 14 (5%) had four or more transports.

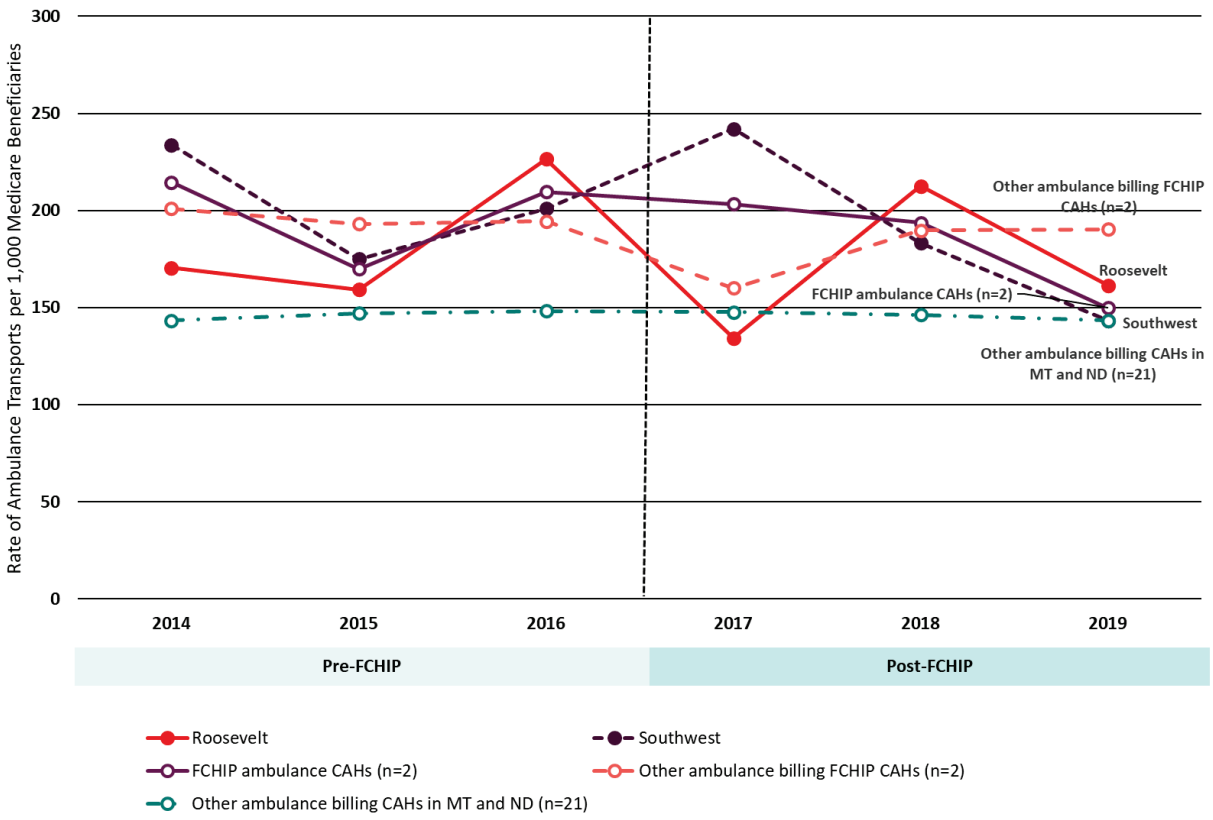
Figure 4-1. Annual rate of ambulance transports per 1,000 Medicare beneficiaries using CAHs in Montana and North Dakota, 2014–2019



Note: The FCHIP Demonstration started August 1, 2016, so 2014=August 2013–July 2014; 2015=August 2014–July 2015; 2016=August 2015–July 2016; 2017=August 2016–July 2017; 2018=August 2017–July 2018; 2019=August 2018–July 2019.

- Before FCHIP, the two participating CAHs had a total of 502 Medicare ambulance transports, and during FCHIP, they had 457 Medicare ambulance transports. From the year before FCHIP began to Year 3 of the demonstration, the number of transports declined by 25 percent.
- FCHIP CAHs and the other billing FCHIP CAHs had fluctuations in transport rates, whereas all other billing CAHs had steady rates of transports during the intervention. The larger fluctuations within FCHIP CAHs are likely due in part to the small number of hospitals and transports involved in calculating these rates.
- Fluctuations in use were corroborated by FCHIP CAH site visit interviewees who noted that the need for ambulance transports has always fluctuated over time.

Figure 4-2. Annual rate of ambulance transports per 1,000 Medicare beneficiaries at participating CAHs in Montana and North Dakota, 2014–2019



Note: The FCHIP Demonstration started August 1, 2016, so 2014=August 2013–July 2014; 2015=August 2014–July 2015; 2016=August 2015–July 2016; 2017=August 2016–July 2017; 2018=August 2017–July 2018; 2019=August 2018–July 2019.

- During the final year of the demonstration, Roosevelt's and Southwest's transport rates declined by 24 percent and 21 percent, respectively from Year 2 to Year 3 leading to an overall 23 percent decrease for participating FCHIP CAHs.
- Roosevelt Hospital's rate of transports fluctuated up and down before and during the intervention, so no clear trend emerged.
- Southwest Hospital experienced fluctuations in the rate of transports before FCHIP, and transports declined during the intervention resulting in a 40 percent decrease between 2017 and 2019.

4.4.2.2.2 Average distance of ambulance transports to Medicare beneficiaries.

In ***Table 4-2***, we present the average distance traveled for ambulance transports captures in ***Table 4-1***. All distances are miles on land.

Table 4-2. Average Distance Driven Per Ambulance Transport Billed to Medicare at FCHIP CAHs and Other CAHs That Bill for Ambulance Transports in Montana and North Dakota, 2014–2019

	Average distance driven per ambulance transport (miles)					
	Pre-FCHIP			Post-FCHIP		
CAH	2014	2015	2016	2017	2018	2019
FCHIP ambulance CAHs (n=2)	46.9	49.9	33.0	55.2	41.8	47.1
Roosevelt (MT)	33.8	19.3	25.6	51.4	23.0	64.9
Southwest (ND)	51.1	63.0	37.2	56.4	53.4	36.0
Other ambulance billing FCHIP CAHs (n=2)	44.3	51.5	38.0	42.5	21.6	42.4
Battle Mountain (NV)	40.6	39.1	36.4	23.2	17.8	32.3
Dahl Memorial (MT)	56.1	104.6	48.1	109.0	78.8	120.2
Other ambulance billing CAHs in MT and ND (n=21)	27.2	25.6	25.0	25.2	26.5	30.6

Notes: The FCHIP Demonstration started August 1, 2016, so 2014=August 2013–July 2014; 2015=August 2014–July 2015; 2016=August 2015–July 2016; 2017=August 2016–July 2017; 2018=August 2017–July 2018; 2019=August 2018–July 2019.

- Among ambulance FCHIP CAHs, there was no substantive change in the average distance per transport before and during the intervention.

- FCHIP CAHs traveled longer distances on average when compared with other CAHs billing for ambulance services in Montana and North Dakota ***(Table 4-2)***. FCHIP CAHs drove an average of 48 miles per transport over the 3 years of the intervention, and other ambulance billing CAHs in Montana and North Dakota drove an average of 27 miles per transport over the 3 years. This suggests that ambulance FCHIP CAHs may be the sole service provider across larger geographic regions as compared with other CAHs.

4.4.2.3 Beneficiary Analysis: Trends in Service Utilization Among CAH Users

Key Findings

- The percentage of beneficiaries with an inpatient admission and total expenditures increased more for ambulance CAH beneficiaries relative to within state comparison CAH beneficiaries. There was no difference in the probability of having an ambulance transport or ED visit and no difference in inpatient expenditures between the FCHIP beneficiaries and comparison beneficiaries. These findings should be interpreted with caution; with only two ambulance FCHIP CAHs, the sample size of FCHIP beneficiaries is quite small and estimates are unstable in small sample sizes.

In this section, we report findings from the beneficiary-level analysis. This analysis takes a broader view of the potential impact of FCHIP by focusing on the community of beneficiaries who use the hospital. The assumption is that receipt of technical assistance to do more marketing, outreach, and engagement with patients and when needed, engagement with surrounding clinical and social providers, could potentially influence demand for and receipt of medical care by beneficiaries who used the FCHIP CAH.

The beneficiary analysis assigned (or attributed) individuals to a particular FCHIP or comparison group (Comparison Group 2 in ***Table 3-2***) CAH each year based upon whether the beneficiary had used the CAH. We then tallied all services paid for by Medicare fee-for-service that the assigned beneficiary received, regardless of if the service was provided the by CAH of interest or another provider (i.e., we gathered all service use for an assigned beneficiary). Then, we used regression analyses to determine if service use differed between individuals assigned to FCHIP CAHs and individuals assigned to comparison CAHs.

Because this is a secondary analysis, in this section we provide a high-level overview of findings; a comprehensive discussion of the methodology and detailed numeric results can be found in ***Appendix C: Beneficiary Analysis***. Up arrows in the results ***Table 4-3*** indicate an increase in the outcome after FCHIP began for the attributed beneficiaries. Down arrows indicate a decrease in the outcome after FCHIP began for the attributed beneficiaries, and the equal sign indicates no change in the outcome after FCHIP began for the attributed beneficiaries.

The percentage of beneficiaries with an inpatient admission and total expenditures increased more for ambulance CAH beneficiaries relative to within state comparison CAH beneficiaries (***Table 4-3***). There was no statistically significant difference in the probability of having an ambulance transport or ED visit and no difference in inpatient expenditures between the FCHIP beneficiaries and comparison beneficiaries. These results and any resulting conclusions about CAHs' ability to influence more health care use among their beneficiaries need to be interpreted with caution because of the small sample sizes of attributed beneficiaries,

particularly within the two FCHIP CAHs. Estimates are often unstable within small sample sizes because individuals with outlier utilization or costs can skew population-based estimates.

Table 4-3. Beneficiary Analysis: Changes in Utilization and Expenditures for Beneficiaries Attributed to FCHIP CAHs and Other CAHs That Bill for Ambulance Transports in Montana and North Dakota

Outcome	Ambulance FCHIP CAH Beneficiaries Pre/post change for attributed beneficiaries	Comparison Group CAH Beneficiaries Pre/post change for attributed beneficiaries	Was the pre/post change for beneficiaries at FCHIP CAHs statistically significantly different than the pre/post change for beneficiaries at comparison CAHs?
Beneficiaries with at least one ambulance transport (%)	=	=	No
Beneficiaries with at least one inpatient admission (%)	↑	↓	Yes—After FCHIP began, more FCHIP beneficiaries had at least one inpatient admission and fewer comparison group beneficiaries had at least one admission
Beneficiaries with at least one ED visit (%)	=	=	No
Total annual inpatient expenditures ($)	↑	↑	No
Total annual expenditures ($)	↑	↑	Yes—After FCHIP began, FCHIP beneficiaries had a larger increase in total annual expenditures than comparison group beneficiaries

Notes:

1. FCHIP CAH Beneficiaries=All Medicare beneficiaries who used an FCHIP CAH participating in the ambulance intervention in an analytic year.
2. Comparison Group CAH Beneficiaries=All Medicare beneficiaries who used a CAH in Montana and North Dakota that billed for ambulance transports during the FCHIP Demonstration and did not use an FCHIP CAH in an analytic year.
3. Pre-FCHIP=August 1, 2013–July 31, 2016. Post-FCHIP=August 1, 2016–July 31, 2019.
4. Each unique beneficiary in the sample had multiple observations during the analysis period (each analytic year), which we refer to as beneficiary-years. n=number of beneficiary-years; FCHIP pre n=2,301; FCHIP post n=2,260; Comparison group pre n=64,875; Comparison group post n=68,073
5. Adjusted difference-in-difference regression models were used to determine if the pre/post change among FCHIP beneficiaries was different from the pre/post change among comparison group beneficiaries; all models controlled for observable demographic characteristics included within claims data including age, sex, race, disability status, and dual eligibility for Medicare and Medicaid. Statistical significance was determined at $p<0.05$.

4.4.2.4 Discussion of Changes to Health Service Utilization

In summary, the rate of ambulance transports declined over the intervention period for the two ambulance FCHIP CAHs. However, with only two CAHs having participated in this intervention, we cannot deduce a clear pattern or conclude that FCHIP alone affected access to care as measured by increases in rates of transports. According to CAH administrators and EMS staff who were interviewed over 3 years, fluctuations in ambulance transports were common, and they were not expecting the cost-based FCHIP reimbursement change to directly influence demand for ambulance services within the surrounding community. Therefore, they were not expecting any noticeable changes in ambulance transports because of the intervention. FCHIP CAHs also typically traveled longer distances as compared with other CAHs providing hospital-based ambulance services in Montana and North Dakota, reinforcing that FCHIP CAHs are often the sole service provider across their frontier areas compared with less rural CAHs. CAHs did report delivering more advanced training to their EMTs, so access to higher quality ambulance services in these frontier areas may have increased with the CAHs' greater capacity to deliver more advanced life support care when needed.

4.5 Did the ambulance intervention affect the surrounding regional health delivery system, providers of community-based services, or have other spillover effects?

The intervention likely resulted in no changes in coordination with neighboring ambulance services in adjacent service areas. Generally, the FCHIP CAHs were too far from other hospitals or ambulance providers to routinely share ambulances or ambulance equipment. Throughout the FCHIP Demonstration, CAH administrators and EMS staff indicated that they collaborated with other ambulance providers in case of serious emergencies, just as they did prior to the demonstration. Furthermore, throughout the demonstration period, site visit interviewees reported the ambulance intervention had no discernable impact on the surrounding regional health delivery system, providers of community-based services, or payers.

Site visit interviewees appreciated networking with other rural hospitals to share best practices in providing ambulance services. Throughout the FCHIP Demonstration, MHREF convened the participating CAHs to talk about success, ongoing challenges, and lessons learned through demonstration activities, and in some instances, MHREF also helped CAHs apply to speak at conferences in rural health. The participating ambulance CAHs valued these peer-to-peer learning opportunities, particularly around the exchange of ideas to develop a community paramedic program.

5. SNF/NF Bed Expansion Intervention: Findings

Key Results from the SNF/NF Bed Expansion Intervention
August 1, 2016–July 31, 2019
Three CAHs in Montana and North Dakota

Intervention Impact

- During the 3-year intervention, the three SNF/NF FCHIP CAHs had 301 Medicare SNF admissions. SNF admissions were higher among the group of SNF FCHIP CAHs after FCHIP began than before FCHIP. However, the increase was driven by one hospital that experienced an increase in SNF admission rates early in the intervention. The other two CAHs were, for the most part, able to meet community needs for SNF care without the FCHIP policy change. The other two CAHs' administrators observed that demand for inpatient care declined at the CAH during the intervention, which they thought might have led to a decrease in the demand for post-acute SNF care as well.

Progress and Accomplishments

- The SNF/NF bed intervention motivated CAHs to make changes to physical infrastructure, clinical staffing, and workflow. CAHs also reported that the demonstration reinforced hospital commitment to engagement with the local community.
- CAHs received positive feedback from patients and their families who were pleased that they could receive more skilled nursing care in the community.
- Regular follow-up with other hospitals had the potential to increase patient transfers back to the CAHs for care, so CAHs made efforts to fill the extra beds by reaching out to other hospitals where community members receive care to make them aware that the CAH could take patients back for SNF care.

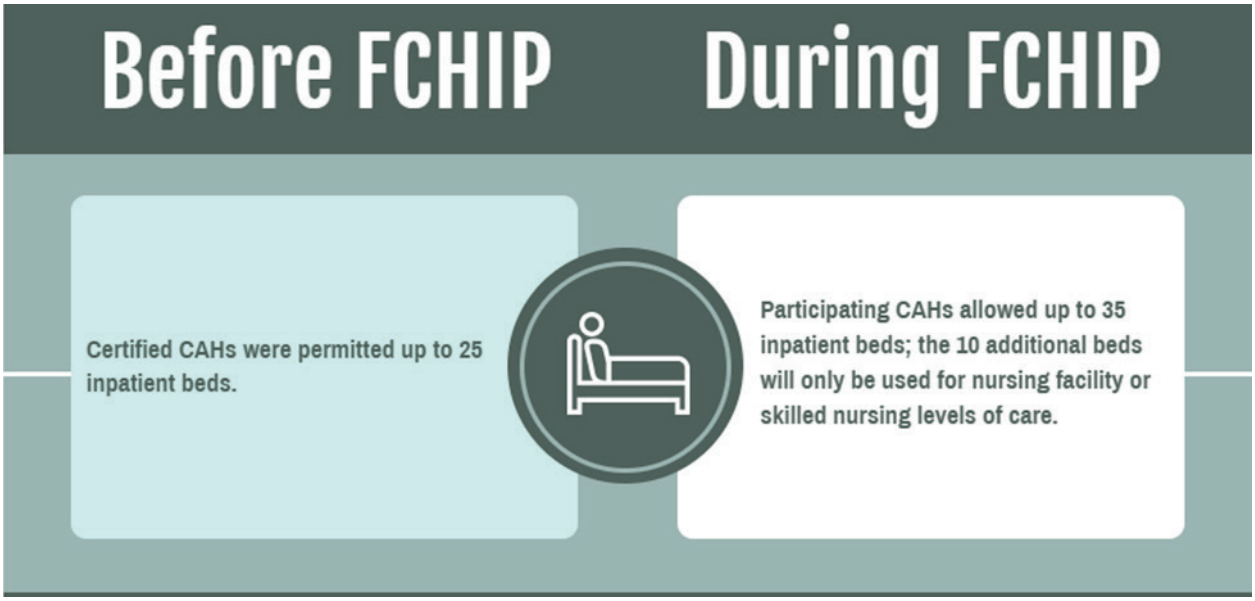
Challenges

- Shortages of clinical practitioners available to provide nursing facility levels of care to patients in the additional SNF/NF beds continued to be a concern.
- Because only one CAH consistently used the extra beds, the SNF/NF bed intervention had limited impact on improved financial performance across the three participating CAHs.

Lessons Learned

- Some CAHs reported that marketing and outreach helped increase community awareness of the CAHs' SNF services and create a positive image of the hospital. However, other CAH administrators saw community-based marketing as less useful because the need for SNF care was predicated on clinical need, not general community awareness.

5.1 Overview of the policy change



5.2 Did the SNF/NF bed expansion intervention affect hospital administration?

The SNF/NF bed intervention enabled participating CAHs to reorganize hospital spaces to add extra beds and in some cases change staffing and workflow to accommodate more bed days. Of the three SNF/NF bed intervention CAHs, two added five additional beds. The third hospital intended to add ten but was only able to expand by eight SNF/NF beds due to limited space and expected utilization. Early in the intervention, staff reported making some renovations to patient care rooms to add the extra beds. Throughout the intervention, administrators observed that the renovations improved functionality of the physical space, and some also hypothesized that change in physical space engendered good will among community members because they liked the renovated space.

> *"I think FCHIP program was a good reason to change layout and to function better with more patients [than] we had."*
>
> –CAH Administrator

Some staffing and workflow changes were implemented to accommodate more inpatient care in the hospital, but clinical staffing shortages continued to be a concern. Increases in contracted physical therapy time, hiring of an additional bath aids, and shifts in daily patient care panels for nursing staff were examples of changes in staffing needed to ensure appropriate levels of care were delivered to skilled nursing patients. Throughout the FCHIP Demonstration, recruiting, hiring, and retaining clinical staff proved to be a challenge. CAHs have historically found it difficult to find staff to serve in frontier areas, and CAH administrators discussed, in each year of the FCHIP Demonstration, the continued reliance on locums and travel staff to meet care delivery needs.

Patient-provider trust played a role in influencing use of the CAH for inpatient and skill nursing care. Some CAH staff noted the importance of building trust between the community and CAH providers. Long-standing relationships are important, and several CAH administrators observed that community members were more comfortable being admitted to the CAH for inpatient or skilled nursing care when they knew the CAH's clinical staff and felt comfortable being treated by them.

> *"It's about building trust in our community. It's slowly getting better now that we have [provider]. If [provider's] around, they feel more comfortable."*
>
> –Nursing Director

Locums' skill sets can be a barrier to expanding skilled nursing care. To meet staffing needs, CAHs often had to bring in temporary, locum (or traveling) clinical staff. One CAH's administrator and clinical staff observed that their locums were more inclined to transfer a potential patient to a different facility because the locums felt less comfortable providing inpatient and skilled nursing care. As a result, provider skill, in this particular situation, proved to be a barrier to expanding CAHs' use of skilled nursing care.

Regular follow-up with other hospitals had the potential to increase patient transfers back to the CAHs for care. CAHs' patients frequently received care at other hospitals. One participating CAH stressed the importance of making other hospitals aware that the CAH had the bed space and expertise to take a patient back for skilled nursing or post-acute care. Even if that hospital-to-hospital communication did not always result in patient transfers back to the CAH, the CAH stressed the importance of keeping area hospitals aware of the fact that the CAH had the bed space to bring patients back to their community for care.

With the end of the FCHIP Demonstration, the use of additional beds for nursing or skilled nursing care will not be sustained. The end of the FCHIP Demonstration means the end of the CAHs' ability to fill more than 25 beds. Interviewed administrators and clinical staff at all three participating CAHs expressed regret that the intervention was ending. Even CAHs that did not consistently use the extra beds (see ***Section 5.4.1*** for more detail on bed use) were reluctant to see the option to have additional beds taken away. Administrators at the one CAH that often had a bed day census over 25 were unsure if the end of the SNF/NF bed intervention would impact their staffing plans; they did note that they were going to determine if they needed to scale back staff time as a result of returning to fewer beds.

5.3 What did participants think of the SNF/NF bed expansion intervention's impact on hospital finances?

A CAH's perception of the SNF/NF bed expansion intervention's impact on hospital finances was directly related to whether the CAH consistently used the extra beds. If the extra beds are used, bed days will increase; when hospital fixed and operating costs are spread

across more bed days, the Medicare cost of care per bed day is reduced. Only one CAH administrator reported in key informant interviews that decreases in daily costs occurred because this CAH was consistently using the extra beds. The other two CAHs' administrators reported that they did not use the extra beds with enough frequency to positively impact hospital finances (see ***Section 5.4*** for more discussion on hospital-level changes in skilled nursing care use).

5.4 Did the SNF/NF bed expansion intervention change consumer access to health services?

The SNF/NF intervention was intended to improve access to SNF care and to reduce the need to transfer Medicare patients out of the community for rehabilitative, post-acute, or long-term care. To assess if access improved, first, we report on SNF CAHs' perceptions of the impact of their demonstration participation on how they delivered services to their communities. Then, we present trends in SNF admissions. To put the FCHIP CAHs' trends in providing key services in the context of other CAHs, we also report on trends in providing services among (1) other FCHIP CAHs not participating in the SNF/NF bed intervention and (2) other CAHs in Montana and North Dakota that also billed Medicare for SNF admissions.

5.4.1 CAHs' Perceptions

Only one participating CAH consistently used the extra SNF/NF beds allowed under the FCHIP Demonstration, and the other two CAHs were, for the most part, able to meet community needs for SNF care without the FCHIP policy change. Only one CAH reported consistently using more than 25 beds over the course of the SNF/NF bed intervention. This CAH reported average monthly bed occupancy of 22 to 30;[11] this bed occupancy estimate includes bed days for Medicare, Medicaid, commercial, and uninsured patients. The other two CAHs' administrators and clinical staff noted some occasional seasonal adjustments that led to more use of the extra SNF/NF beds (additional beds tended to be used in winter), but overall, they could not sustain use of the extra beds. These CAHs self-reported average monthly bed occupancy, inclusive of all payers, of about 20 to 24 beds in one CAH and about 16 beds in the other CAH.[10] For both of these CAHs, administrators noted that before the FCHIP Demonstration they were maximizing the 25 beds and had wait lists to admit patients, which was the primary motivation for applying to participate in the SNF/NF bed intervention. After the start of the intervention, requests for SNF/NF beds declined. Although the reason for fewer requests remained unknown, some administrators hypothesized the decline could be due to patients'

> *"…At the time [when we could apply to participate in the FCHIP Demonstration] we had a waiting list, and Murphy's Law, once we got them, we didn't need them."*
>
> –CAH Nursing Director

[11] Social & Scientific Systems, Inc. Quarterly monitoring report: Covering January 1, 2019 through March 31, 2019.

concerns over the cost of nursing facility care, personal or family's desire to care for the patient at home, or a small decline in the elderly population due to death or out-migration.

> *"We were able to get the patients back to us so families could visit them, and even though they were not home, they were in their home area and their passing was more peaceful."*
>
> –CAH Nursing Director
>
> *"She started and finished her care at [CAH name]. We believe that she healed a lot better because she had her friends and neighbors taking care of her."*
>
> –CAH Administrator

Throughout the FCHIP Demonstration, the three participating CAHs reported that a success of the SNF/NF bed intervention was their ability to showcase their commitment to the community by keeping patients in the community for medical care. Even if SNF/NF bed use did not increase substantially overall, staff unanimously agreed that the additional SNF/NF bed capacity gave them the flexibility to keep more patients in their communities and provide them with quality care close to home. Knowing that extra beds were available, if needed, was very important to all interviewees across the entire demonstration period. CAHs were not enthusiastic about the alternative—having to send patients to a facility further away from the community because of a lack of skilled nursing beds. CAH administrators and clinical staff reiterated that patients appreciated the ability to receive post-acute care in their communities, and all CAHs shared examples of patients receiving either post-acute care or end-of-life care at the CAH.

Throughout the FCHIP Demonstration, participating CAHs reported that more use of SNF/NF beds allowed for the possibility of reducing hospital transfers to other hospitals and of increasing use of ancillary services. Participating CAHs hypothesized that with extra SNF/NF bed availability, they would make fewer transfers to other hospitals. Although none of the hospitals reported systematically examining whether they averted transfers, most believed that they likely averted some transfers over the course of the SNF/NF intervention. Moreover, the one CAH that consistently used more than 25 beds reported that the use of ancillary services, such as physical therapy and speech therapy, increased over the life of the SNF/NF intervention because beneficiaries in the additional SNF beds needed those services. As a result, CAH staff were able to provide those needed therapies.

All SNF CAHs used MHREF's technical assistance to provide outreach and marketing to the community about additional bed availability. MHREF provided technical assistance to FCHIP CAHs, including marketing and outreach services across interventions. These services included drafting social media posts, press releases, newspaper inserts, brochures, banners, radio advertisements, mailing postcards to the community to inform them of bed availability and hospital services, and one-on-one, targeted technical assistance with each hospital on how to outreach to patients, their families, and hospital staff to fill inpatient and SNF/NF beds. Some CAH administrators reported that the technical assistance and marketing

and outreach support helped to engage the community, increase awareness of the services the CAHs provide including skilled nursing/post-acute care services, and create a positive image of the hospital. However, not all CAH staff saw the value in marketing; some administrators indicated that marketing activities specific to SNF/NF bed availability were not that useful or relevant because need for SNF care was predicated on clinical need, not general community awareness. Other CAH staff expressed surprise that all the marketing did not result in more inpatient or SNF admissions.

5.4.2 Claims Analysis

Key Findings: SNF Admissions

- Before FCHIP, the three participating CAHs had a total of 266 Medicare SNF admissions, and during FCHIP, there were 301 Medicare SNF admissions for 204 unique Medicare beneficiaries. However, the increase in admission rates after FCHIP began was driven by one hospital (Jacobson Memorial) that experienced an increase in SNF admission rates early in the intervention.
- The rate of SNF admissions for SNF/NF FCHIP CAHs increased by 8 percent from Year 1 to Year 2 of the intervention, and this increase was driven by Jacobson Memorial.
- Although Jacobson experienced a steady increase in the SNF admission rate early in the intervention (a 24% increase in its SNF admission rate from Year 1 to Year 2), the rate declined by 18 percent from Year 2 to Year 3.
- The SNF admission rate consistently declined at both other participating CAHs. This decline was corroborated by site visit interviewees who observed that demand for inpatient care declined at the CAH during the intervention, which they thought might have led to a decrease in the demand for SNF care as well.
- With a sample size of three CAHs and only one experiencing increasing rates of SNF admissions after FCHIP, we cannot conclude that the policy change of allowing more hospital beds led to more SNF admissions.
- The median length of stay per SNF admission was variable at SNF FCHIP CAHs, although McCone and Jacobson Memorial both trended toward longer stays, whereas Roosevelt's stays became shorter over time.

5.4.2.1 Sociodemographic Characteristics of Medicare Beneficiaries

The demographic characteristics of Medicare patients served by the FCHIP CAHs may have been a motivating factor for adding more SNF/NF beds under the FCHIP Demonstration. As shown in ***Table 2-3***, beneficiaries receiving care at SNF/NF FCHIP CAHs were majority white and between 65 and 84 years of age. A little over half were female. SNF/NF FCHIP CAHs collectively had similar percentages of beneficiaries who were female, white, and dually eligible compared with other CAHs billing for SNF services. Although similar on aggregate, Roosevelt had a smaller population of white beneficiaries than any other FCHIP site. The SNF/NF

intervention FCHIP CAHs had a greater percentage of beneficiaries who were older than the other CAHs (20 percent of SNF/NF FCHIP beneficiaries were >85 years vs. 13 percent of other SNF billing CAHs), though this average was driven by Jacobson Memorial. During the demonstration, 26 percent of Medicare beneficiaries being served at Jacobson were at least 85 years old as compared with 17 percent and 12 percent at McCone and Roosevelt, respectively. Older beneficiaries may be more likely to need post-acute, skilled nursing care, so age could be a factor in any observed differences in SNF admission rates between FCHIP CAHs and comparison CAHs. McCone also had a particularly low percentage of the population served (8%) that was dually eligible for Medicare and Medicaid.

5.4.2.2 Hospital Analysis: Trends in Service Delivery at CAHs

In this section, we report on SNF admissions and SNF lengths of stay using Medicare claims.

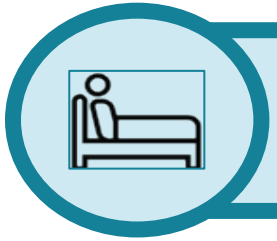
5.4.2.2.1 Delivery of SNF services to Medicare beneficiaries

SNF admissions are the primary outcome of interest for this intervention. In ***Table 5-1*** and ***Figure 5-1***, we present the number of SNF admissions as well as the rate of admissions per 1,000 Medicare beneficiaries who have used the CAHs across (1) the three SNF/NF FCHIP CAHs, (2) other FCHIP CAHs not participating in the SNF/NF intervention, and (3) other CAHs in Montana and North Dakota that also billed Medicare for SNF services (see ***Table 3-2*** for more detail). In ***Figure 5-2***, we present the rate of SNF admissions per 1,000 Medicare beneficiaries for each participating FCHIP CAH. In ***Table 5-2***, we present the median number of days per SNF admission and average daily census billed to Medicare. Medicare only pays for skilled nursing facility services; Medicare does not pay for long-term nursing facility services. Therefore, we examined admissions for skilled nursing care only. We do not test for statistical differences in rates of admissions between groups because of the small number of CAHs. We also provide the number of unique Medicare beneficiaries who had a SNF stay at the FCHIP CAHs and the proportion of beneficiaries who had one or more SNF stays.

Table 5-1. Counts and Rates of SNF Admissions Billed to Medicare at FCHIP CAHs and Other CAHs That Bill for SNF/NF Admissions in Montana and North Dakota, 2014–2019

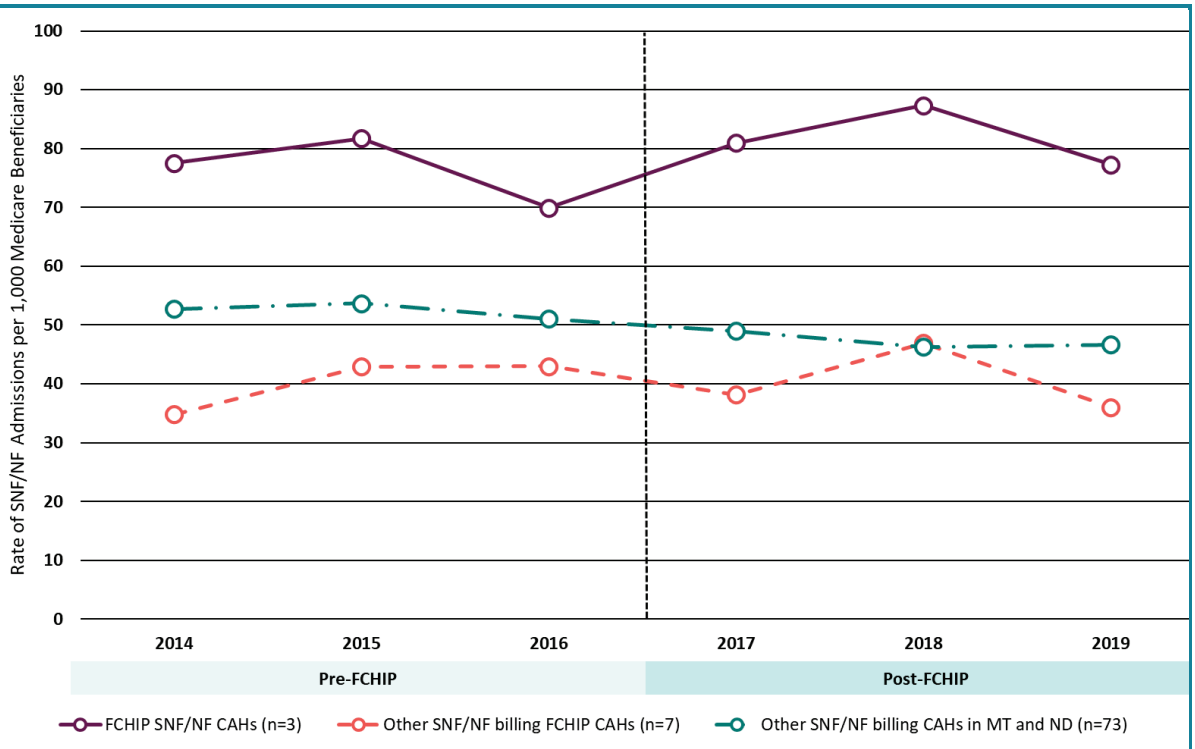
CAH	SNF/NF Admissions (count)						SNF/NF Admissions (rate= [count/unique beneficiaries per hospital] *1,000)						Unique Beneficiaries per Hospital					
	Pre-FCHIP			Post-FCHIP			Pre-FCHIP			Post-FCHIP			Pre-FCHIP			Post-FCHIP		
	2014	2015	2016	2017	2018	2019	2014	2015	2016	2017	2018	2019	2014	2015	2016	2017	2018	2019
FCHIP SNF/NF CAHs (n=3)	91	94	81	94	107	100	77.5	81.7	69.9	81.0	87.3	77.3	1,174	1,150	1,158	1,161	1,225	1,294
Jacobson (ND)	37	38	36	41	56	56	56.5	59.7	57.1	67.0	83.2	81.0	655	636	630	612	673	691
McCone County (MT)	26	22	13	22	20	15	99.6	90.2	52.0	82.7	79.7	52.3	261	244	250	266	251	287
Roosevelt (MT)	28	34	32	31	31	29	108.5	125.9	115.1	109.5	103.0	91.8	258	270	278	283	301	316
Other SNF/NF billing FCHIP CAHs (n=7)	129	159	165	147	188	157	34.8	42.9	43.0	38.2	46.9	36.1	3,703	3,705	3,836	3,853	4,007	4,355
Battle Mountain (NV)	0	0	0	*	*	*	0.0	0.0	0.0	*	*	*	449	500	552	583	627	670
Dahl Memorial (MT)	*	10	16	15	*	*	*	75.8	108.8	89.8	*	*	138	132	147	167	142	155
Grover C. Dils (NV)	22	23	15	17	28	26	31.9	33.3	22.5	26.0	42.2	38.3	690	691	666	653	664	678
McKenzie (ND)	14	15	16	18	17	21	26.1	29.3	29.7	31.9	28.2	26.3	536	512	538	564	603	800
Mount Grant (NV)	25	45	76	61	77	50	30.4	57.1	90.6	71.9	90.6	57.1	823	788	839	848	850	876
Pershing (NV)	22	22	21	16	24	21	46.1	44.1	39.1	30.0	42.1	34.4	477	499	537	534	570	611
Southwest (ND)	42	44	21	19	29	26	71.2	75.5	37.7	37.7	52.6	46.0	590	583	557	504	551	565
Other SNF/NF billing CAHs in MT and ND (n=79)	4,038	4,178	4,025	3,956	3,891	4,038	52.8	53.7	51.0	49.0	46.3	46.7	76,545	77,812	78,878	80,797	84,070	86,496

Notes: (1) The FCHIP Demonstration started August 1, 2016, so 2014=August 2013–July 2014; 2015=August 2014–July 2015; 2016=August 2015–July 2016; 2017=August 2016–July 2017; 2018=August 2017–July 2018; 2019=August 2018–July 2019. (2) Cells containing either a non-zero value less than 10 or a number derived from a non-zero value less than 10 are denoted with "*".



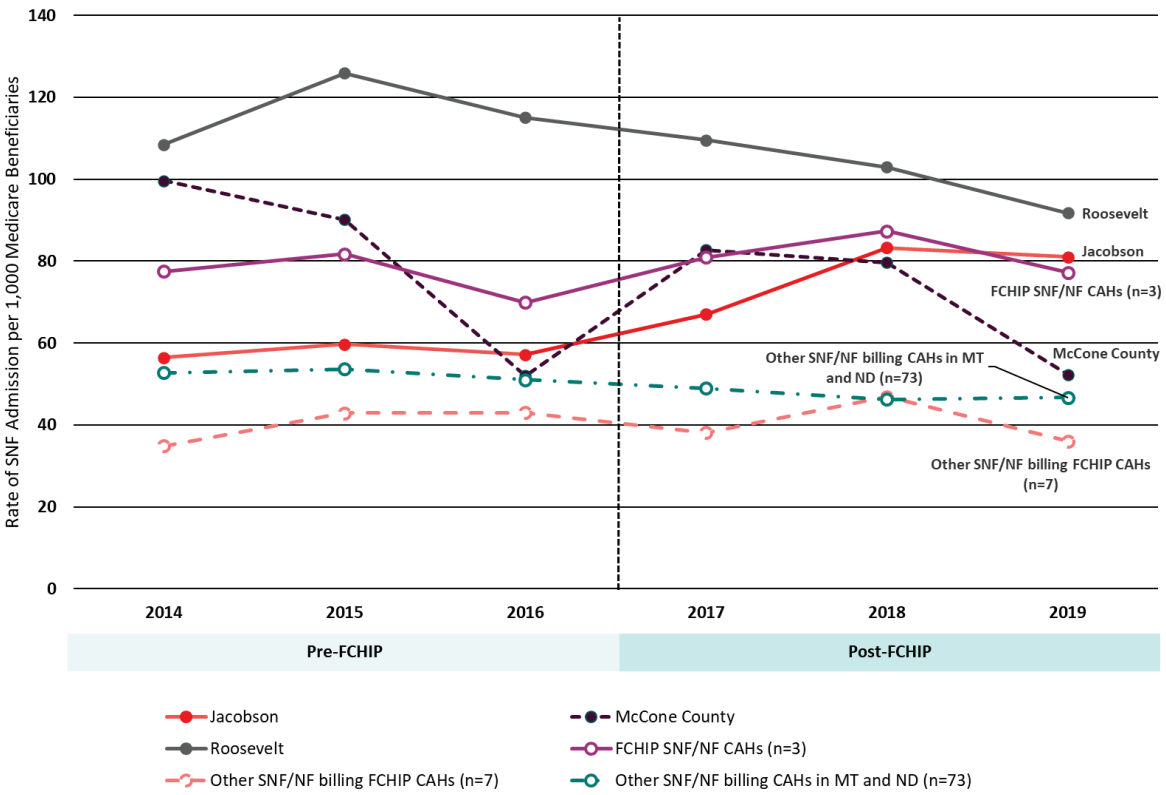
Among the three FCHIP CAHs, there were 301 SNF admissions billed to Medicare during the FCHIP Demonstration. Among those admissions, there were 204 unique Medicare beneficiaries. Of the Medicare beneficiaries, 145 (71%) had one admission, 41 (20%) had two admissions, 11 (5%) had three admissions and 7 (3%) had four or more admissions.

Figure 5-1. Annual rate of SNF admissions per 1,000 Medicare beneficiaries among FCHIP and comparison CAHs, 2014–2019



- Before FCHIP, the three participating CAHs had a total of 266 Medicare SNF admissions, and during FCHIP, there were 301 Medicare SNF admissions.
- Among the three participating CAHs, the rate of SNF admissions increased by 8 percent from Year 1 to Year 2 of the intervention. However, the increase in admission rates after FCHIP began was driven by Jacobson Memorial. From Year 2 to Year 3 of the intervention, SNF admissions fell by 11.5 percent for the SNF/NF FCHIP CAHs.
- The three SNF/NF FCHIP CAHs had higher SNF admission rates relative to the other FCHIP CAHs, which was expected. Not all FCHIP CAHs saw a need to increase their SNF/NF bed capacity based on community demand for SNF care and their own capacity to provide more SNF care.
- The three SNF/NF FCHIP CAHs also had higher SNF admissions rates than other CAHs in Montana and North Dakota that billed for SNF services.

Figure 5-2. Annual rate of SNF admissions per 1,000 Medicare beneficiaries at participating FCHIP CAHs in Montana and North Dakota, 2014–2019



- The increase in admission rates after FCHIP began for the three SNF/NF FCHIP CAHs as a group was driven by Jacobson Memorial. Although Jacobson Memorial experienced a steady increase in the SNF admission rate early in the intervention (a 24% increase in its SNF admission rate from Year 1 to Year 2 of FCHIP), the rate declined slightly from Year 2 to Year 3.
- Although McCone initially had an increase in SNF admission from the baseline period to the first year of FCHIP, their admissions declined over the last 2 years of FCHIP.
- Roosevelt admissions began decreasing in 2015 and continued to steadily decline throughout the intervention.

Table 5-2. Median Length of Stay per SNF Admission and Average Daily Census Billed to Medicare at FCHIP CAHs and Other CAHs in Montana and North Dakota, 2014–2019

CAH	Median length of stay (days)						Average Daily Census—SNF					
	Pre-FCHIP			Post-FCHIP			Pre-FCHIP			Post-FCHIP		
	2014	2015	2016	2017	2018	2019	2014	2015	2016	2017	2018	2019
FCHIP SNF/NF CAHs (n=3)	9.0	7.0	10.0	7.0	8.0	10.0	0.9	0.9	0.9	1.1	1.3	1.2
Jacobson (ND)	5.0	5.0	9.0	6.0	6.0	9.0	0.8	1.0	1.1	0.9	1.6	1.9
McCone County (MT)	10.0	8.5	8.0	5.0	7.5	15.0	0.9	0.8	0.4	0.5	0.6	0.7
Roosevelt (MT)	*	*	11.0	14.0	15.5	10.0	*	*	1.1	1.8	1.6	1.0
Other SNF/NF billing FCHIP CAHs (n=7)	11.0	9.0	11.0	11.0	10.0	12.0	0.8	0.9	0.9	0.8	1.0	1.0
Battle Mountain (NV)	n/a	n/a	n/a	15.0	14.0	11.0	n/a	n/a	n/a	0.0	0.3	0.3
Dahl Memorial (MT)	4.0	7.0	7.5	13.0	8.5	16.5	0.0	0.2	0.5	0.8	0.2	0.2
Grover C. Dils (NV)	16.0	11.0	13.0	7.0	11.0	20.5	1.0	1.0	0.7	0.5	1.0	1.7
McKenzie (ND)	8.5	11.0	11.5	13.0	8.0	9.0	0.6	0.7	0.6	0.9	0.8	0.7
Mount Grant (NV)	11.0	8.0	14.5	10.0	10.5	11.5	1.0	2.0	3.3	2.0	3.2	2.5
Pershing (NV)	10.0	9.0	7.0	12.5	9.0	15.0	0.7	0.7	0.5	0.6	0.7	0.9
Southwest (ND)	11.0	9.5	10.0	10.0	13.0	9.0	1.4	1.3	0.6	0.8	1.1	0.8
Other SNF/NF billing CAHs in MT and ND (n=79)	7.0	8.0	8.0	8.0	8.0	8.0	1.6	1.7	1.6	1.6	1.6	1.7

Notes:

1. Notes: The FCHIP Demonstration started August 1, 2016, so 2014=August 2013–July 2014; 2015=August 2014–July 2015; 2016=August 2015–July 2016; 2017=August 2016–July 2017; 2018=August 2017–July 2018; 2019=August 2018–July 2019.
2. n/a=not applicable because the hospital did not have any SNF admissions.
   *Due to probable data inaccuracies, we have omitted Roosevelt length of stay estimates for 2014 and 2015.

- The median length of stay per SNF admission was variable at SNF FCHIP CAHs, although McCone and Jacobson both trended toward longer stays, whereas Roosevelt stays became shorter over time. SNF/NF FCHIP CAHs had shorter lengths of stay than other FCHIP CAHs and somewhat similar lengths of stay as other SNF/NF billing CAHs. ***(Table 5-2)***.

- The Medicare average daily census for SNF beds measures how many patients per day were in a hospital swing bed receiving SNF care that was paid for by Medicare. The measure can convey whether a CAH was trending toward more or less Medicare SNF patients per day, and subsequently if the CAH was using more or less of their swing beds for Medicare-funded SNF care. The census for CAHs were low (***Table 5-2***), suggesting that on any given day not many hospital beds are being used for Medicare reimbursed SNF care. The Medicare census number does not include bed occupancy per day for SNF care reimbursed by other payers like Medicaid or private payers.

  As a group, the three FCHIP CAHs had a slightly higher daily census during FCHIP than before FCHIP, so CAHs were providing a little more SNF care to Medicare patients daily. However, FCHIP CAHs as a group had lower daily Medicare census rates during FCHIP relative to the group of other CAHs in Montana, Nevada, and North Dakota. Therefore, they were not providing as much Medicare SNF care as other CAHs in their states (***Table 5-2***).

5.4.2.3 Beneficiary Analysis: Trends in Service Utilization Among CAH Users

Key Findings

- The percentage of beneficiaries with an inpatient admission increased more for SNF/NF CAH beneficiaries relative to within state comparison CAH beneficiaries. There was no difference in the probability of having a SNF admission or ED visit and no difference in inpatient expenditures or total expenditures between the FCHIP beneficiaries and comparison beneficiaries.
- The statistically significant increase in inpatient admission relative to the comparison group raises the possibility that raises the possibility that the SNF/NF CAHs' participation in FCHIP may have influenced receipt of inpatient care for their beneficiaries.

In this section, we report findings from the beneficiary-level analysis. This analysis takes a broader view of the potential impact of FCHIP by focusing on the community of beneficiaries who use the hospital. The assumption is that receipt of technical assistance to do more marketing, outreach, and engagement with patients and when needed, engagement with surrounding clinical and social providers, could potentially influence demand for and receipt of medical care by beneficiaries who used the FCHIP CAH.

The beneficiary analysis assigned (or attributed) individuals to a particular FCHIP or comparison group CAH each year based upon whether the beneficiary had used the CAH. We then tallied all services paid for by Medicare fee-for-service that the assigned beneficiary received, regardless of if the service was provided the by CAH of interest or another provider (i.e., we gathered all service use for an assigned beneficiary). Then, we used regression analyses to determine if service use differed between individuals assigned to FCHIP CAHs and individuals assigned to comparison CAHs.

Because this is a secondary analysis, in this section we provide a high-level overview of findings; a comprehensive discussion of the methodology and detailed numeric results can be found in ***Appendix C: Beneficiary Analysis***. Up arrows the results ***Table 5-3*** indicate an increase in the outcome after FCHIP began for the attributed beneficiaries. Down arrows indicate a decrease in the outcome after FCHIP began for the attributed beneficiaries, and the equal sign indicates no change in the outcome after FCHIP began for the attributed beneficiaries.

The percentage of beneficiaries with an inpatient admission increased more for SNF/NF CAH beneficiaries relative to within state comparison CAH beneficiaries (***Table 5-3***), suggesting that the FCHIP CAHs may have influenced receipt of inpatient care for their beneficiaries. There were no statistically significant differences between FCHIP beneficiaries and comparison group beneficiaries for the other outcomes.

Table 5-3. Beneficiary Analysis: Changes in Utilization and Expenditures for Beneficiaries Attributed to FCHIP CAHs and Other CAHs That Bill for SNF/NF Admissions in Montana and North Dakota

Outcome	SNF/NF FCHIP CAH Beneficiaries Pre/post change for attributed beneficiaries	Comparison Group CAH Beneficiaries Pre/post change for attributed beneficiaries	Was the pre/post change for beneficiaries at FCHIP CAHs statistically significantly different than the pre/post change for beneficiaries at comparison CAHs?
Beneficiaries with at least one SNF admission (%)	=	=	No
Beneficiaries with at least one inpatient admission (%)	↑	↓	Yes—After FCHIP began, more FCHIP beneficiaries had at least one inpatient admission and fewer comparison group beneficiaries had at least one admission
Beneficiaries with at least one ED visit (%)	=	=	No
Total annual inpatient expenditures ($)	↑	↑	No
Total annual SNF expenditures ($)	↑	↑	No
Total annual expenditures ($)	↑	↑	No

Notes:

1. FCHIP CAH Beneficiaries=All Medicare beneficiaries who used an FCHIP CAH participating in the SNF/NF intervention in an analytic year.
2. Comparison Group CAH Beneficiaries=All Medicare beneficiaries who used a CAH in Montana and North Dakota that billed for SNF/NF admissions during the FCHIP Demonstration and did not use an FCHIP CAH in an analytic year.
3. Pre-FCHIP=August 1, 2013–July 31, 2016. Post-FCHIP=August 1, 2016–July 31, 2019.
4. Each unique beneficiary in the sample had multiple observations during the analysis period (each analytic year), which we refer to as beneficiary-years. n=number of beneficiary-years; FCHIP pre n=2,960; FCHIP post n=3,106; Comparison group pre n=208,294; Comparison group post n=223,002
5. Adjusted difference-in-difference regression models were used to determine if the pre/post change among FCHIP beneficiaries was different from the pre/post change among comparison group beneficiaries; all models controlled for observable demographic characteristics included within claims data including age, sex, race, disability status, and dual eligibility for Medicare and Medicaid. Statistical significance was determined at $p<0.05$.

5.4.2.4 Discussion of Changes to Health Service Utilization

In summary, SNF admissions were higher among the three SNF FCHIP CAHs combined after FCHIP began than before FCHIP. Before FCHIP, the three participating CAHs had a total of 266 Medicare SNF admissions, and during FCHIP, there were 301 Medicare SNF admissions for 204 unique Medicare beneficiaries. However, this trend of increasing admissions should be interpreted with caution. Even though an increase in the SNF admission rate was expected (CAHs participated in the intervention because they thought they needed the extra beds), the increase was driven by one CAH, Jacobson Memorial. With a sample size of three CAHs and

only one experiencing increasing rates of SNF admissions after FCHIP, we cannot conclude that the policy change of allowing more beds led to more Medicare SNF admissions.

The decline in SNF admissions in the other two CAHs was corroborated by site visit interviewees who reported that before the FCHIP Demonstration they were maximizing the 25 beds and had wait lists to admit patients but that during FCHIP demand for inpatient and SNF care declined at the CAH. CAH administrators could not explain why this was happening. As a result, they were not keeping their extra SNF/NF beds allowed by FCHIP at maximum capacity. Similarly, other CAHs billing for SNF/NF admissions in Montana and North Dakota were also trending toward fewer SNF admissions over time, so Jacobson Memorial's experience of increasing SNF admissions was unique.

Among Medicare patients who had an SNF admission at an FCHIP CAH, 29 percent have had more than one SNF admission during the FCHIP Demonstration period, which could suggest that these CAHs are able to meet the need for SNF care when patients have repeated needs for skilled nursing care. Moreover, the median length of a Medicare billed SNF stay was under 2 weeks for FCHIP CAHs, suggesting that CAHs are not keeping Medicare patients at the CAH who need prolonged skilled nursing care.

5.5 Did the SNF/NF bed expansion intervention affect the surrounding regional health delivery system, providers of community-based services, or have other spillover effects?

Over the course of the SNF/NF bed intervention, CAHs did not observe specific impacts on the regional health delivery system. Over 3 years of interviews, CAH administrators and clinical staff most often reported that the SNF/NF bed intervention had no discernable impact on the surrounding regional health delivery system, providers of community-based services, or payers. CAH administrators did discuss informal relationships with other area hospitals or health systems (e.g., periodic check-ins between chief executive officers), but the FCHIP Demonstration did not contribute to developing or sustaining those relationships. Occasionally, CAH staff mentioned the importance of building positive relationships with community members to build the CAH's reputation as a trusted source of medical care, and the FCHIP Demonstration provided an avenue to continue the work of building that trust through marketing and outreach efforts.

6. Telehealth Intervention: Findings

Key Results from the Telehealth Intervention
August 1, 2016–July 31, 2019
Eight CAHs in Montana, Nevada, and North Dakota

Intervention Impact

- During the 3-year intervention, all eight telehealth FCHIP CAHs reported providing telehealth to Medicare patients. However, only six of the eight participating FCHIP CAHs billed Medicare for a total of 289 telehealth encounters. Only three of the six billing CAHs billed Medicare for a relatively "large" number of telehealth encounters (e.g., more than 50 encounters over 3 years). Almost no FCHIP CAHs were billing Medicare for telehealth before the intervention, so as a group, the FCHIP CAHs experienced a large increase in telehealth billing during FCHIP. The FCHIP CAHs reported delivering 1,101 telehealth encounters during the intervention, and 33 percent of those encounters (366) were for Medicare beneficiaries. Therefore, FCHIP CAHs were delivering more telehealth services than they were billing Medicare.

Progress and Accomplishments

- CAHs expected to sustain telehealth after the demonstration.
- CAHs used their time in the demonstration and MHREF's implementation support to improve administrative and clinical processes to ensure a better telehealth experience for the patient, the CAH, and the distant site provider specialist and to generate more community awareness of telehealth availability.
- CAHs reported that telehealth services were very well-received by patients.
- CAHs strengthened relationships with distant site providers, making it easier for CAHs to establish referral processes and to offer the right mix of telehealth services.
- Telehealth enhanced the community's access to care by providing a solution to travel distance and transportation barriers to care.

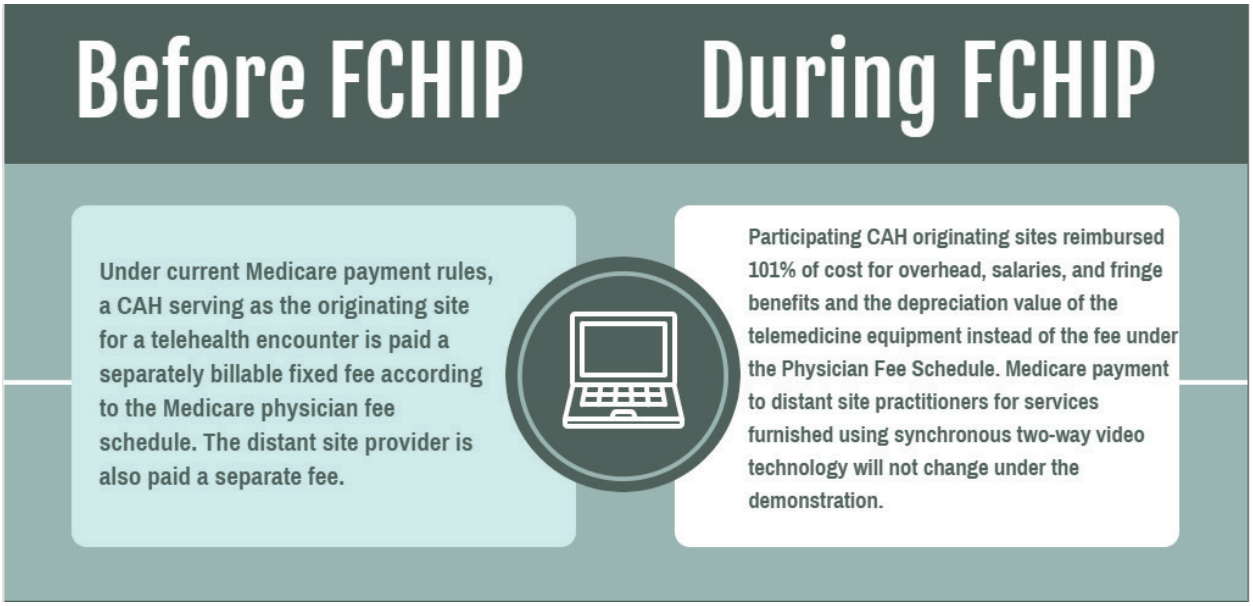
Challenges

- CAHs indicated that the overall volume of telehealth encounters was too low for cost-based reimbursement to have a large impact on hospital financial performance.
- CAHs made efforts to identify community members' specialty care needs, but delivering needed services was sometimes limited by distant site telehealth offerings, policies, and procedures.

Lessons Learned

- Administrative and clinical champions were essential to the growth and sustainability of a telehealth program.
- Training clinical practitioners on how to use telehealth to improve patient care facilitated more referrals for telehealth.
- Community need for specific specialties influenced CAHs decisions about which telehealth services to offer.

6.1 Overview of the payment model change



* Effective April 1, 2013, the Budget Control Act of 2011 required a mandatory 2 percent payment reduction in the Medicare fee-for-service program, known as sequestration. This policy is currently in effect, so 101 percent of reasonable costs, less the mandatory 2 percent reduction, results in actual reimbursement of 99 percent of reasonable costs for CAHs.

6.2 Did the telehealth intervention affect hospital administration?

Administrative and clinical champions are essential to the success of telehealth programs. Support for telehealth from CAH leadership was critical. CAH leadership secured resources such as a physical space to hold telehealth appointments, telehealth equipment, and personnel to operate the telehealth equipment. They also ensured that distant site provider relationships and referral procedures to those providers were established. Leaders also encouraged hospital staff to bill insurers for an originating site fee when telehealth encounters were delivered at the CAH. Clinical practitioner champions (e.g., physicians, physician assistants, nurse practitioners), specifically practitioners who referred patients to telehealth services, helped to secure buy-in and engagement from nurses, medical assistants, and administrative staff. These champions made telehealth referrals and helped teams review cases to determine which patients were good candidates for telehealth. Several CAH telehealth coordinator staff reported that turnover at the CAH chief executive officer position or clinical leadership level often disrupted their telehealth program, with fewer referrals being made for telehealth.

> *"…it's not part of their workflow and they don't want to make it part of their workflow. It's not how they've done it and they don't want to change."*
>
> –CAH Telehealth Coordinator

CAH staff reported that training clinical practitioners on how to use telehealth services to improve patient care facilitated more referrals for telehealth. CAH administrators and telehealth staff observed that over the course of the telehealth intervention, most requests for telehealth came from the CAH's clinical practitioners who thought a patient needed a specialist. However, CAH administrators reported that some of their practitioners mistakenly believed that telehealth was an on-demand service and that any referral process to telehealth was going to be too complicated, so they were reluctant to refer to specialists through telehealth. To secure buy-in, many CAH administrators developed training programs. Practitioners were taught the specialty services that were available through telehealth, how to refer to a particular specialist, and how to successfully follow-up with the specialist and the patient after a telehealth encounter. CAH administrators reported that as clinical practitioners referred more patients to care using telehealth, they became more comfortable with the processes and more confident in the outcomes. CAH administrators reported that peer-to-peer sharing of telehealth success stories also improved telehealth referrals, highlighting the importance that a clinical champion has in promoting uptake of this service.

Physical and technical infrastructure barriers to using telehealth were relatively easy to address throughout the demonstration. Telehealth implementation requires attention to infrastructure. Some infrastructure needs are physical, such as the need for a private location for visits and where to house equipment. Other needs include equipment such as cameras and telehealth carts. Finally, there are technical infrastructure needs, which include internet access. Even though most CAHs already had telehealth prior to the start of the demonstration (although they may not have been consistently promoting telehealth or billing Medicare or other payers for delivery of the service), CAHs used the first year of the demonstration to improve their telehealth infrastructure. For example, one CAH created a dedicated space for telehealth appointments. Other CAHs used mobile telehealth carts so that telehealth services could be delivered in private areas of the facility. After the FCHIP Demonstration startup period, CAHs did not report issues with infrastructure or technology.

Distant Site Provider Telehealth Coordinator Perspective: Relationship Building

"Technology is a big part of it but for us it's a relationship business. We've worked hard over the years to build the relationship and select people who want to do this and are good at it. Some of our smaller locations, these people wear a lot of hats. The biggest thing I can say is develop relationships with these folks."

–Distant Provider Telehealth Coordinator

Building positive relationships with distant site providers takes time and effort and is a critical component to the success of a telehealth program. To successfully schedule telehealth appointments, engage in timely follow-up of specialists' recommendations, and handle billing and insurance, CAH and distant site provider staff must communicate frequently. During the first year of the demonstration, CAHs established relationships with distant site providers, many of whom were large in-state provider

organizations (hospitals, clinics, or health systems). In the second and third year, CAH and distant site provider staff worked through referral challenges to build a better experience for the patient, the CAH clinical practitioner, and the distant site provider. Several CAH staff relayed the importance of having a good working relationship with the telehealth team at the distant site provider, and interviews with distant site provider telehealth coordinators echoed the same sentiment.

One CAH's experience in the third year of the demonstration underscored the importance of this relationship. At the beginning of the FCHIP Demonstration, this CAH was working primarily with one distant site provider health system for their telehealth referrals to specialty care. CAH staff did not enjoy working with this health system and referrals for telehealth were few. In the third year of the demonstration, the CAH decided to switch distant site providers and work primarily with a different health system. This health system and their providers were well-known and trusted by CAH staff (the CAH's patients were known to travel to this health system for additional care). This new distant site provider telehealth team conducted extensive training on the telehealth referral process with CAH staff, and the CAH staff were extremely positive about all interactions. CAH administrators reported that their clinical practitioners were now excited for telehealth and believed that the referral process was easy and seamless.

Distant Site Provider Telehealth Coordinator Perspective: Credentialing

"Credentialing is something that if it were not a requirement, more people would probably do it."

–Distant Provider Telehealth Coordinator

"They're such a small population base [FCHIP CAHs], [specialists] may just have the one patient [at the FCHIP CAH], so they're not going to get credentialing at that [FCHIP] site."

–Distant Provider Telehealth Coordinator

External technical assistance and marketing and outreach helped grow telehealth programs. MHREF provided technical assistance to address a range of challenges specific to telehealth implementation, including difficulty gaining CAH provider acceptance, distant site provider accessibility, general awareness of telehealth as a service available at the hospital, and proper billing. Technical assistance activities included developing employee surveys and questionnaires to determine staff awareness and knowledge of new telehealth services, developing advertising (including billboards, banners, postcard mailings), conducting education and outreach to CAH's clinical practitioners, and suggesting referral process improvements. The CAHs uniformly found the assistance to be helpful. Yet, in the case of the advertising, CAHs were uncertain if increased advertising resulted in more patient requests for telehealth. One CAH also reported that its distant site provider network also helped with advertising and training CAH staff on the telehealth referral process and use of telehealth equipment. Some CAHs received telehealth implementation and billing guides

"We did do social media and we did brochures we take to health fairs and we did a couple post card mailings and we had a billboard placed outside of [county name] and [county name] counties. That's the marketing that we've done for it."

–CAH Telehealth Coordinator

developed by either MHREF or their distant site providers, and these resources were deemed very helpful.

Participating CAHs will continue telehealth after the demonstration. At the conclusion of the demonstration, six telehealth CAHs gave final evaluation interviews, and all indicated they would continue to provide telehealth after the demonstration. All of these CAHs had been providing some type of telehealth (either telehealth for specialists or emergency services) before the demonstration, so the decision to continue was not unsurprising. CAHs reported that they considered telehealth to be a service that increased access to care, saved patients hours of travel time, and enabled patients to remain in the community for specialty services. In addition, some sites had acquired free or low-cost telehealth equipment through other programs, so they were confident in their ability to maintain their equipment and internet connectivity. CAH staff also reported that they will continue to build relationships with distant site providers to expand the number of specialties available to their patients through telehealth. For example, one CAH discussed their hopes to eventually offer telehealth oncology, and another wanted to use telehealth to conduct follow-up when CAH patients were discharged from a distant site provider's hospital.

> *"Absolutely, we have to [continue telehealth]. Our patients have come to rely on it, and I know a great number of people who would simply not get services if we didn't have telehealth."*
>
> –Telehealth Coordinator

6.3 What did participants think of the telehealth intervention's impact on hospital finances?

Generally, CAHs indicated that the overall volume of telehealth encounters was too low to have a direct impact on hospital financial performance. Under this demonstration, CAHs received cost-based reimbursement for the delivery of telehealth services to Medicare beneficiaries. Throughout the demonstration, some CAHs noted that cost-based reimbursement for providing telehealth was adequate; others reported that it did not cover their total costs (there was likely some confusion among CAHs about which telehealth services were cost reimbursable, which may explain perceptions that cost-reimbursement did not cover the costs). A cost audit performed by another contractor found that payments were increased for telehealth origination under cost-based reimbursement.

Despite the fact that all eight participating telehealth CAHs reported delivering telehealth services to Medicare beneficiaries, only six CAHs billed Medicare for and were paid for the originating site fee over the 3-year demonstration period. Three of the six billed very few telehealth encounters (<10 per year), and the other three billed for more encounters (e.g., more than 50 encounters over 3 years). In the first year of the demonstration, some CAHs reported issues with billing the originating site fee but then implemented changes to improve the process (e.g., working with clinical staff on proper documentation, better coordination with distant site

providers to obtain necessary documentation, ensuring coders and billers were accurately coding and using the proper telehealth modifiers). Some implemented changes quickly but others took more time, and, as a result, some sites billed more successfully for telehealth encounters than others. However, that two CAHs still had not billed Medicare an originating site fee and three billed rarely for the site fee suggests that these CAHs either had ongoing billing challenges or they did not think the reimbursement amount was sufficient enough to warrant submitting a claim. Telehealth encounters were low across participating CAHs (see ***Section 6.4*** for additional discussion of the number of telehealth encounters by CAH), and billing was sometimes seen as not worth the CAH staff's time, because the marginal increase in reimbursement was thought to have limited impact on hospital finances.

Despite these reimbursement challenges, for some CAHs, the telehealth intervention led to positive unanticipated financial effects. For example, Nevada received federal approval to allow Medicaid telehealth cost-based reimbursement for FCHIP participating CAHs, and this change was expected to result in improved finances for the FCHIP telehealth CAHs. One CAH reported improvements in overall revenue, not because of telehealth directly, but because distant site providers ordered follow-up services that the CAH could provide directly. For example, a distant site provider will recommend a service (e.g., MRI, physical therapy, certain labs), and then the FCHIP site can provide that service.

6.4 Did the telehealth intervention change consumer access to health services?

The telehealth intervention was intended to encourage increased use of telehealth to improve access to care, reduce travel barriers for patients, and support local providers in coordinating specialty care for their patients. To assess if access improved, first, we report on telehealth CAHs perceptions of the impact of their demonstration participation on how they delivered services to their communities. Then, we present trends in telehealth encounters using Medicare fee-for-service claims data. To put the FCHIP CAHs' trends in providing key services in the context of other CAHs, we also report on trends in providing services among other CAHs not participating in the telehealth intervention and across FCHIP CAHs.

6.4.1 CAHs' Perceptions

Telehealth enhanced the community's access to care by providing a solution to travel distance and transportation barriers to care. CAHs are remote, with trips to distant site providers often requiring a day or more of travel. Thus, transportation can be a major barrier for patients to access care. Some Medicare beneficiaries may not be able to drive themselves to distant providers for visits, in which case another person (e.g., an adult child, paid caregiver, transportation service) may need to provide transportation. Telehealth gave Medicare beneficiaries the option to receive specialty care much closer to home. In addition to transportation for patients, telehealth can help support providers who provide care in remote

areas. Some of the CAHs are located in areas with extreme weather. One CAH reported about a registered dietician who was unable to make it into work yet was able to use telehealth to follow up with patients.

For this evaluation, we made repeated efforts, in partnership with the CAHs, to recruit Medicare patients for informal conversations about their telehealth experiences, but recruitment was a challenge. One Medicare telehealth patient was interviewed; therefore, this interviewee cannot be considered representative of all Medicare telehealth patients served by FCHIP telehealth CAHs. However, this individual relayed a very positive experience, especially as related to telehealth's ability to overcome the significant barrier that long distances to specialty care pose for rural communities (see text box below).

Telehealth Patient Perspective:
How Telehealth Addresses a Significant Barrier to Care, Travel Distances

"Generally, I have a schedule once every 3 months with my nephrologist in […] which is about 350 miles one way from here……For me the drive to […] is difficult. I'm not much of a driver anymore because of health problems […], and I can't drive by myself […] It doesn't sound like a lot, but you have to go the day before and generally come back the day after. So, that's 3 days out of your work week. For me it was heaven sent to have the telemed[icine] set up, and I love it. I only have to drive 14 miles to [FCHIP CAH] to do [the telehealth visit] there."

–Medicare Telehealth Patient at an FCHIP CAH

Community need for specific specialties influenced CAHs decisions about which telehealth services to offer. Telehealth is not for every clinical indication, but it is especially useful for patients who require short follow-up visits that are not dependent on a significant amount of touch during the physical exam (a CAH staff member is often in the room during a telehealth exam to aid the distant specialist by placing certain monitors on patients, but encounters that require more complex or invasive examination are often best done in person). CAHs routinely mentioned efforts to understand services amenable to telehealth that community members need and then to work with distant site providers to deliver those services through telehealth. In response, some CAHs conducted community needs assessments to begin to develop more targeted service offerings going forward.

Several distant site provider telehealth coordinators relayed that cardiology, nephrology, and oncology were the most commonly requested telehealth encounters, and these particular specialties were also often noted by telehealth CAHs as the specialties that they were either delivering or were hoping to deliver in the near due to patient demand. CAH staff also repeatedly raised the need for more behavioral health providers who would be willing to do telehealth for patients of all ages, and several CAHs shared success stories about the impact that behavioral health telehealth services had on their community members (see the text box below for one success story).

Success Story: Offering Behavioral Health Telehealth Services

"A couple times with pediatric patients who had difficulty functioning in school—from common ADHD to detrimental behavioral issues—and to see them come back after 3 months from starting with psychiatrist and psychologist and seeing the changes. They're doing better at school and at home. We don't see many pediatric patients overall, but it takes a lot of courage for parents to admit their child needs outside services. They come here and take that chance and to see how much better that child is doing is pretty amazing."

–Telehealth Coordinator

Distant site providers' telehealth offerings, policies, and procedures impacted access to care. All distant site providers had specific specialties for which telehealth services could be provided, and regional shortages of certain specialists limited what types of specialties distant site providers could offer CAHs. At times, limited specialty offerings by distant site providers was frustrating for CAH staff who wished to expand services to meet community needs. Moreover, clinical processes, such as how to make referrals to telehealth, and administrative processes, such as how to share information between specialists and CAH clinical practitioners, varied. For example, some distant site providers required that a first visit upon referral had to be in person, after which the provider would decide if telehealth for follow-up appointments would work. Others had arrangements whereby a hospitalist at the distant site would prescreen the referral prior to sending it to the specialist. In other cases, CAHs could refer directly to distant site provider specialists with no requirement for an in-person first visit. The first two arrangements, in particular, were sometimes viewed as inflexible and a barrier to care. Some CAHs shared that for telehealth to fulfill its promise of improving access to care and alleviating provider shortages, more flexible arrangements to enable better access were needed.

Success Story: Pain Management and Physical Therapy Services

A Medicaid enrollee had been living with back pain for years. After trying surgery and pain-relieving injections that required numerous trips to the nearest pain management specialist located 2 hours from his home, he was offered access to another pain management specialist through telehealth at the FCHIP CAH. He had a 30-minute appointment with the specialist and was referred to physical therapy. With physical therapy, the individual experienced significant improvements. During a follow-up telehealth encounter with the pain management specialist, he declined pharmaceutical pain management because he was felt much better. He reported that the telehealth encounter and subsequent referral to physical therapy saved him financially, emotionally, and physically.

–As told by a CAH Administrator

State-level policies influenced telehealth uptake for participating CAHs. A Nevada law passed in summer 2017 aimed at reducing opioid misuse impacted FCHIP CAHs' offering of pain management services. As a result of the law, CAHs examined and refined their opioid prescribing protocols and began offering more pain management services via telehealth. CAHs' requests for pain management consults through telehealth increased. Some of these visits

resulted in subsequent referrals for diagnostic imaging and physical therapy. When this occurred, beneficiaries were able to receive these follow-up services locally at the CAH (see text box below for one success story).

6.4.2 Claims Analysis

Key Findings: Telehealth Encounters

- Before FCHIP only one of the eight participating CAHs had billed Medicare for telehealth encounters, and during FCHIP six CAHs billed 289 Medicare telehealth encounters.
- As a group, the participating FCHIP CAHs saw greater use of telehealth encounters that went beyond the secular trend of greater use of telehealth across all CAHs in MT, ND, and NV. However, this observed increase is driven by three of the eight CAHs, which each billed at least 50 telehealth encounters over the 3-year intervention period.
- Roosevelt and Mount Grant had large increases in telehealth billing from Year 1 to Year 2 of the intervention period. Roosevelt increased its telehealth encounter rate from 39 encounters per 1,000 Medicare beneficiaries to 73 encounters per 1,000 beneficiaries, and Mount Grant other increased from 1 encounter per 1,000 beneficiaries to 77 per 1,000 beneficiaries. McKenzie had a fairly steady rate of telehealth encounters (40–48 encounters per 1,000 beneficiaries) through the 3-year intervention period.
- However, these CAHs' telehealth encounters largely plateaued during the final year of the demonstration, which could point to providers' ongoing reluctance to refer to telehealth or providers being restricted to referring for specialty care available through the CAH's telehealth network.
- Telehealth encounters billed to Medicare were most frequently used for cardiology, physical medicine and rehabilitation, nurse practitioners, nephrology, and mental health.
- Three CAHs did not bill Medicare at all for the telehealth originating site fee due to their own administrative hurdles in submitting claims, whereas two CAHs submitted very few telehealth claims.
- The FCHIP CAHs self-reported delivering 1,101 telehealth encounters to Medicare, Medicaid, privately insured, and uninsured individuals during the intervention.

6.4.2.1 Sociodemographic Characteristics of Medicare Beneficiaries

The relatively similar distribution in sociodemographic characteristics between beneficiaries served by telehealth FCHIP CAHs and beneficiaries served by other telehealth billing CAHs suggest that sociodemographic characteristics likely would not account solely for any observed differences in trends in telehealth encounters between FCHIP CAHs and comparison CAHs. Beneficiaries receiving care at telehealth FCHIP CAHs were majority white and between 65 and 84 years of age. A little over half were female. As shown in ***Table 2-3***, the eight telehealth FCHIP CAHs varied in the distribution of sociodemographic characteristics of the beneficiaries served by the CAH, but taken as a collective group, telehealth FCHIP CAHs

had about the same percentage of beneficiaries who were female, white, and dually eligible for Medicare and Medicaid relative to other telehealth billing CAHs. However, the telehealth intervention FCHIP CAHs had a slightly higher percentage of beneficiaries under 65 and a slightly lower percentage of beneficiaries ≥85 years of age relative to other telehealth billing CAHs.

6.4.2.2 Hospital Analysis: Trends in Service Delivery at CAHs

In this section, we report on telehealth encounters using Medicare claims and CAH-reported data on how many telehealth encounters they delivered.

6.4.2.2.1 Delivery of Telehealth Encounters to Medicare Beneficiaries

Telehealth encounters are the primary outcome of interest for this intervention. In ***Table 6-1*** and ***Figure 6-1***, using Medicare claims data we present the number of telehealth encounters as well as the rate of encounters per 1,000 Medicare beneficiaries who have used the CAHs across (1) the eight telehealth FCHIP CAHs and (2) other CAHs in Montana, Nevada, and North Dakota that also billed Medicare for telehealth encounters (see ***Table 3-2*** for more detail). We do not test for statistical differences in rates of telehealth encounters between groups because of the small number of CAHs. In ***Figure 6-2***, we present the rate of telehealth encounters per 1,000 Medicare beneficiaries for each participating FCHIP CAH. In ***Figure 6-3***, we explore the clinical specialties of the distant site providers with whom FCHIP CAHs were partnering to deliver the telehealth encounter. We also provide the number of unique Medicare beneficiaries who had a telehealth encounter at the FCHIP CAHs (***Table 6-2***).

As discussed in ***Section 6.3***, not all participating CAHs were billing Medicare the originating site see, although all CAHs reported that they were conducting telehealth for Medicare patients. Therefore, the claims data under report telehealth encounters, so the Medicare analyses are supplemented with counts of telehealth encounters reported by the CAHs and submitted to CMS. The self-report data included counts of telehealth encounters delivered to all patients at the CAH, not just Medicare beneficiaries.

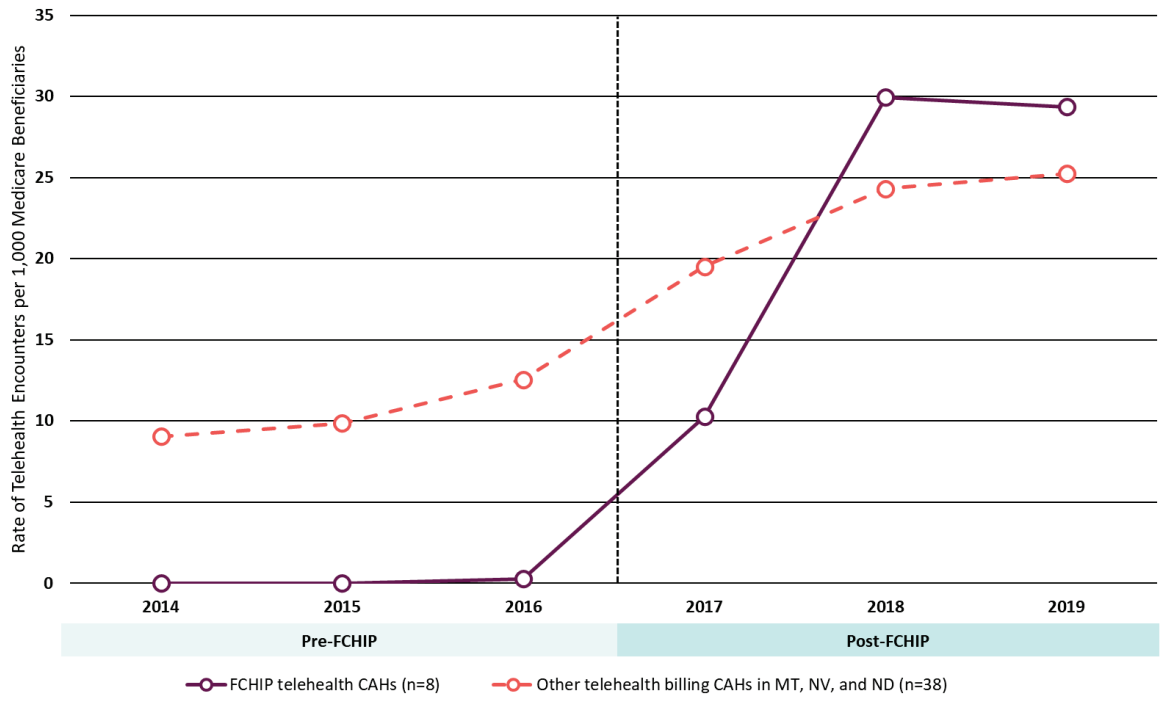
Table 6-1. Counts and Rates of Telehealth Encounters Billed to Medicare at FCHIP CAHs and Other CAHs That Bill for Telehealth Encounters in Montana, Nevada, and North Dakota, 2014–2019

	Telehealth Encounters (count)						Telehealth Encounters (rate= [count/unique beneficiaries per hospital] *1,000)						Unique Beneficiaries per Hospital					
	Pre-FCHIP			Post-FCHIP			Pre-FCHIP			Post-FCHIP			Pre-FCHIP			Post-FCHIP		
CAH	2014	2015	2016	2017	2018	2019	2014	2015	2016	2017	2018	2019	2014	2015	2016	2017	2018	2019
FCHIP telehealth CAHs (n=8)	0	0	*	40	120	129	0.0	0.0	*	10.3	29.9	29.4	3,632	3,636	3,807	3,898	4,008	4,393
Battle Mountain (NV)	0	0	*	*	*	*	0.0	0.0	*	*	*	*	449	500	552	583	627	670
Dahl Memorial (MT)	0	0	0	0	0	0	0.0	0.0	0.0	0.0	0.0	0.0	138	132	147	167	142	155
Grover C. Dils (NV)	0	0	0	0	*	0	0.0	0.0	0.0	0.0	*	0.0	690	691	666	653	664	678
McCone County (MT)	0	0	0	0	0	0	0.0	0.0	0.0	0.0	0.0	0.0	261	244	250	266	251	287
McKenzie (ND)	0	0	0	26	29	32	0.0	0.0	0.0	46.1	48.1	40.0	536	512	538	564	603	800
Mount Grant (NV)	0	0	0	*	66	73	0.0	0.0	0.0	*	77.6	83.3	823	788	839	848	850	876
Pershing (NV)	0	0	0	*	*	*	0.0	0.0	0.0	*	*	*	477	499	537	534	570	611
Roosevelt (MT)	0	0	0	11	22	22	0.0	0.0	0.0	38.9	73.1	69.6	258	270	278	283	301	316
Other telehealth billing CAHs in MT, NV, and ND (n=38)	491	537	696	1,126	1,466	1,554	9.1	9.9	12.6	19.5	24.3	25.2	54,246	54,476	55,413	57,661	60,291	61,555

Notes: (1) The FCHIP Demonstration started August 1, 2016, so 2014=August 2013–July 2014; 2015=August 2014–July 2015; 2016=August 2015–July 2016; 2017=August 2016–July 2017; 2018=August 2017–July 2018; 2019=August 2018–July 2019.

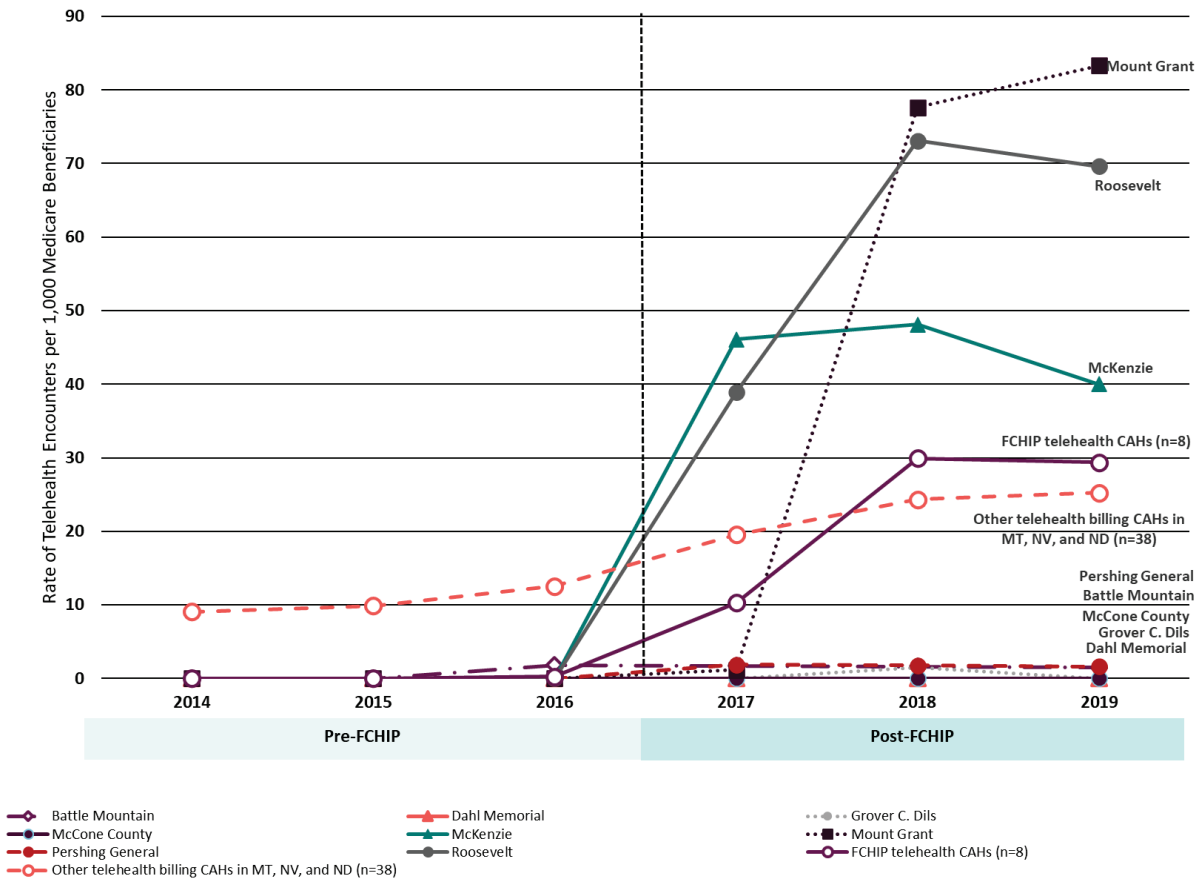
(2) Cells containing either a non-zero value less than 10 or a number derived from a non-zero value less than 10 are denoted with "*".

Figure 6-1. Annual rate of telehealth encounters per 1,000 Medicare Beneficiaries among FCHIP and comparison CAHs, 2014–2019



- Before FCHIP only one of the eight participating CAHs had billed Medicare for telehealth encounters, and during FCHIP, six of the eight participating CAHs billed 289 Medicare telehealth encounters.
- Although the absolute number of telehealth encounters increased from 120 to 129 from Year 2 to Year 3 of the demonstration, the rate declined slightly to 29.4 encounters per 1,000 beneficiaries in Year 3 because of increases in the number of patients served by these telehealth FCHIP CAHs.
- Some CAHs in the comparison group were billing the originating site fee before FCHIP began; others were not. However, all comparison CAHs billed for telehealth at least once during the FCHIP intervention. As a group, these comparison CAHs experienced a steady increase over time in the rate of telehealth encounters, suggesting that other telehealth billing CAHs have been engaged in telehealth for some time and that FCHIP CAHs were catching up.
- FCHIP CAHs were delivering more telehealth services than they were billing Medicare. The FCHIP CAHs self-reported delivering 366 telehealth encounters to Medicare beneficiaries over the intervention period (versus the 289 telehealth encounters billed to Medicare and found in the claims).

Figure 6-2. Annual rate of telehealth encounters per 1,000 Medicare Beneficiaries at participating CAHs in Montana, Nevada, and North Dakota, 2014–2019



- By Year 2 of FCHIP, six FCHIP CAHs (Mount Grant, Roosevelt, McKenzie, Pershing, Battle Mountain, and Grover C. Dils) had billed Medicare an originating site fee, however, in the final year of the demonstration only five billed.
- Three of the six billing CAHs billed Medicare more than 50 encounters over 3 years of the intervention, and another three billed Medicare for very few encounters per year throughout the intervention period.
- Roosevelt and Mount Grant had large increases in telehealth billing from Year 1 to Year 2. However, these CAHs largely plateaued during the final year of the demonstration.
- McKenzie had a fairly steady rate of telehealth encounters (40-48 encounters per 1,000 beneficiaries) through the 3-year intervention period.

Table 6-2. Utilization Patterns of Medicare Beneficiaries Who Had a Telehealth Encounter at FCHIP CAHs in Montana, Nevada, and North Dakota During the FCHIP Demonstration Period (August 1, 2016–July 31, 2019)

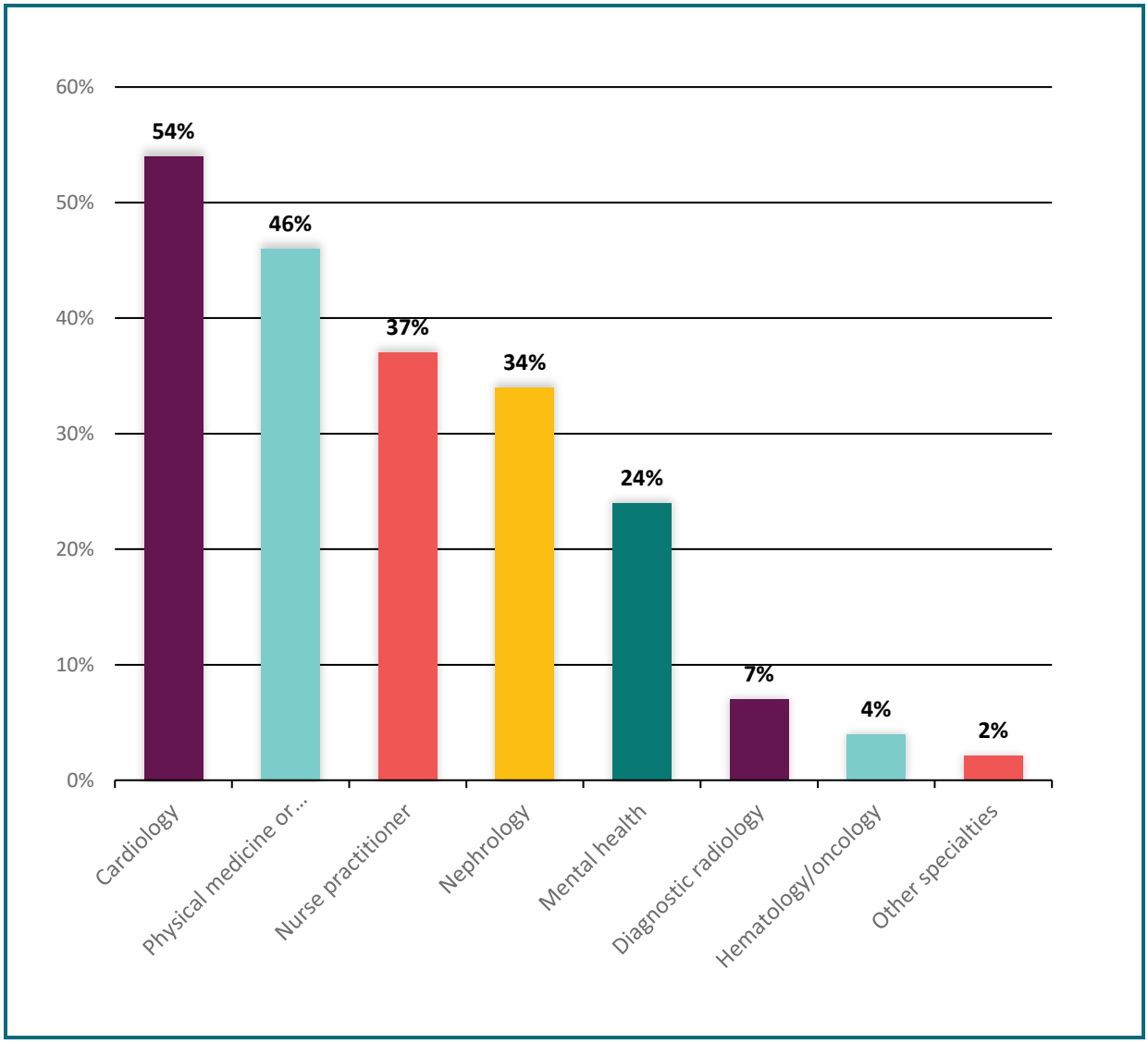
CAH	Total Unique Telehealth Users	Used Once	Used Twice	Used Three Times	Used More than Three Times
Telehealth FCHIP CAHs (n=8)	150	99	22	11	18
Battle Mountain (NV)	*	*	0	0	0
Dahl Memorial (MT)	0	0	0	0	0
Grover C. Dils (NV)	*	*	0	0	0
McCone (MT)	0	0	0	0	0
McKenzie (ND)	34	23	*	*	*
Mount Grant (NV)	92	66	14	*	*
Pershing (NV)	*	*	0	0	0
Roosevelt (MT)	17	*	*	*	*

Notes: (1) The FCHIP Demonstration started August 1, 2016, so 2014=August 2013–July 2014; 2015=August 2014–July 2015; 2016=August 2015–July 2016; 2017=August 2016–July 2017; 2018=August 2017–July 2018; 2019=August 2018–July 2019. (2) Cells containing a non-zero value less than 10 are denoted with "*".

Among the eight hospitals participating in the telehealth intervention, there were 289 telehealth encounters billed to Medicare during the FCHIP Demonstration. Among those encounters, there were 150 unique Medicare beneficiaries. Of the Medicare beneficiaries who received a Medicare-billed telehealth encounter during the FCHIP Demonstration, 99 (66%) had one encounter, 22 (15%) had two encounters, 11 (7%) had three encounters, and 18 (12%) had four or more encounters (***Table 6-2***).

To better understand which specialists Medicare beneficiaries were accessing through FCHIP CAHs telehealth encounters, we linked FCHIP CAHs' originating site fee claim with Medicare claims billed by distant site providers. Of the 289 FCHIP telehealth originating site claims billed by FCHIP CAHs during the demonstration, we could link 79 percent to a distant site provider. From this link, we could identify the provider specialty involved in the beneficiary's telehealth encounter (***Figure 6-3***).

Figure 6-3. Distant provider specialties for telehealth encounters originating in FCHIP CAHs (August 1, 2016–July 31, 2019)



The most common specialties for which telehealth was used included cardiology (diagnostic and interventional), physical medicine and rehabilitation, nurse practitioners, nephrology, and mental health. Specialties in the other category with two or more encounters included pulmonology, endocrinology, gastroenterology, neurology, and gerontology. These findings corroborate reports from site visits interviewees that cardiology and nephrology, in particular, were specialties to which patients were often referred.

6.4.2.3 Beneficiary Analysis: Trends in Service Utilization Among CAH Users

Key Findings

- The percentage of beneficiaries with a telehealth encounter and the percentage of beneficiaries with an ED visit increased more for telehealth FCHIP CAH beneficiaries relative to within state comparison CAH beneficiaries, suggesting that the FCHIP CAHs may have influenced receipt of some care for their beneficiaries. There were no differences in the percentage of patients with an inpatient admission or in inpatient expenditures or total expenditures between the FCHIP beneficiaries and comparison beneficiaries.

In this section, we report findings from the beneficiary-level analysis. The assumption is that receipt of technical assistance to do more marketing, outreach, and engagement with patients and when needed, engagement with surrounding clinical and social providers, could potentially influence demand for and receipt of medical care by beneficiaries who used the FCHIP CAH.

The beneficiary analysis assigned (or attributed) individuals to a particular FCHIP or comparison group CAH each year based upon whether the beneficiary had used the CAH. We then tallied all services paid for by Medicare fee-for-service that the assigned beneficiary received, regardless of if the service was provided the by CAH of interest or another provider (i.e., we gathered all service use for an assigned beneficiary). Then, we used regression analyses to determine if service use differed between individuals assigned to FCHIP CAHs and individuals assigned to comparison CAHs.

Because this is a secondary analysis, in this section we provide a high-level overview of findings, and a comprehensive discussion of the methodology and detailed results can be found in ***Appendix C: Beneficiary Analysis***. Up arrows in the results ***Table 6-3*** indicate an increase in the outcome after FCHIP began for the attributed beneficiaries. Down arrows indicate a decrease in the outcome after FCHIP began for the attributed beneficiaries, and the equal sign indicates no change in the outcome after FCHIP began for the attributed beneficiaries.

The percentage of beneficiaries with a telehealth encounter and the percentage with an ED visit increased more for telehealth CAH beneficiaries relative to within state comparison CAH beneficiaries (***Table 6-3***), suggesting that the FCHIP CAHs may have influenced receipt of some care for their beneficiaries. There were no statistically significant differences in the percentage of patients with an inpatient admission or in inpatient expenditures or total expenditures between the FCHIP beneficiaries and comparison beneficiaries.

Table 6-3. Beneficiary Analysis: Changes in Utilization and Expenditures for Beneficiaries Attributed to FCHIP CAHs and Other CAHs That Bill for Telehealth in Montana, Nevada, and North Dakota

Outcome	Telehealth FCHIP CAH Beneficiaries Pre/post change for attributed beneficiaries	Comparison Group CAH Beneficiaries Pre/post change for attributed beneficiaries	Was the pre/post change for beneficiaries at FCHIP CAHs statistically significantly different than the pre/post change for beneficiaries at comparison CAHs?
Beneficiaries with at least one telehealth encounter (%)	↑	↑	Yes—After FCHIP began, more FCHIP and comparison group beneficiaries had at least one telehealth encounter; however, the increase was larger among FCHIP beneficiaries.
Beneficiaries with at least one inpatient admission (%)	↓	↓	No
Beneficiaries with at least one ED visit (%)	↑	=	Yes—After FCHIP began, more FCHIP beneficiaries had at least one ED visit, whereas there was no change for comparison group beneficiaries at comparison group CAHs.
Total annual inpatient expenditures ($)	↑	↑	No
Total annual expenditures ($)	↑	↑	No

Notes:

1. FCHIP CAH Beneficiaries=All Medicare beneficiaries who used an FCHIP CAH participating in the telehealth intervention in an analytic year.
2. Comparison Group CAH Beneficiaries=All Medicare beneficiaries who used a CAH in Montana, Nevada, and North Dakota that billed for a telehealth encounter during the FCHIP Demonstration and did not use an FCHIP CAH in an analytic year.
3. Pre-FCHIP=August 1, 2013–July 31, 2016. Post-FCHIP=August 1, 2016–July 31, 2019.
4. Each unique beneficiary in the sample had multiple observations during the analysis period (each analytic year), which we refer to as beneficiary-years. n=number of beneficiary-years; FCHIP pre n=10,616; FCHIP post n=11,714; Comparison group pre n=147,785; Comparison group post n=160,970
5. Adjusted difference-in-difference regression models were used to determine if the pre/post change among FCHIP beneficiaries was different from the pre/post change among comparison group beneficiaries; all models controlled for observable demographic characteristics included within claims data including age, sex, race, disability status, and dual eligibility for Medicare and Medicaid. Statistical significance was determined at $p<0.05$.

6.4.2.4 Discussion of Changes to Health Service Utilization

In summary, telehealth encounters increased for FCHIP CAHs and other telehealth billing CAHs in Montana, Nevada, and North Dakota over the FCHIP Demonstration period, indicating a secular trend across all CAHs. The increase in FCHIP CAHs was driven by three of the eight CAHs, with two (Mount Grant and Roosevelt) of the three seeing a large increase in telehealth billing from Year 1 to Year 2 of FCHIP. From Year 2 to Year 3, telehealth billing

among these billing CAHs plateaued, with no large additional increases in billing. A lack of large annual growth could point to limits in provider willingness to refer to telehealth and distant site provider availability. Some CAHs observed that only some of their providers were willing to refer patients to telehealth, which could have caused a "cap" on referrals, and others indicated that they wanted to refer patients for particular types of specialty care but did not have that specialty available through their distant provider networks.

As of July 31, 2019, two of the participating telehealth CAHs (Dahl and McCone) had not submitted claims to Medicare for delivering telehealth, and three of the other CAHs submitted very few telehealth claims per year. Several site visit interviewees reported that they viewed any increase over time in the delivery of telehealth as a real "win" given the challenges in starting a telehealth program and in finalizing the billing processes that need to happen to support the program. The suspicion that not all telehealth FCHIP CAHs were billing Medicare for telehealth services rendered was corroborated by site visit interviewees who reported that although they were delivering telehealth services, they were not always billing due to their own administrative hurdles in submitting claims. These CAHs did also report that MHREF provided technical assistance on appropriate billing practices. Based on self-report data from the CAHs, the FCHIP CAHs delivered 1,101 telehealth encounters during the intervention, and 33 percent of those encounters (366) were for Medicare beneficiaries. Therefore, FCHIP CAHs were delivering more telehealth services than they were billing Medicare (366 through self-report vs. 289 through the claims data).

Analyses of the types of specialists providing care via telehealth for Medicare patients generally aligned with reports from CAHs' administrators and telehealth coordinators. Physical medicine and rehabilitation was a common specialty on telehealth claims, and these specialists often manage pain. Telehealth encounters for pain management were frequently cited, especially by the Nevada CAHs. Interestingly, behavioral health care was noted as a frequent reason for coordinating telehealth for patients, yet only 11 percent of distant site provider claims were for a behavioral health provider. However, 16 percent of claims were for nurse practitioners, and many nurse practitioners have a clinical specialty, although it is not listed on the Medicare claims. Some of these visits with a nurse practitioner could have been for behavioral health.

Among Medicare patients for whom the FCHIP CAHs billed, almost 66 percent used telehealth once, although this may be an undercount since CAHs were not billing for all encounters. However, several hospitals had Medicare patients repeatedly use telehealth (e.g., McKenzie, Mount Grant, and Roosevelt all had multiple beneficiaries with more than three telehealth encounters). Some of the provider specialties for which telehealth was being used, particularly pain management and behavioral health, often require multiple visits, so this finding of repeat use aligns with what CAHs reported in interviews and with the provider specialties for which telehealth was used.

Finally, the use of telehealth for Medicare patients is only one component of FCHIP CAHs' telehealth programs. Based on CAHs self-reported data, the eight FCHIP CAHs delivered 1,101 telehealth encounters, of which 33 percent were for Medicare.[12] Telehealth encounters for privately insured individuals accounted for the largest share of services (41%), and Medicaid accounted for 17 percent. The remaining encounters were delivered to self-pay patients or patients with unknown payers. Therefore, FCHIP CAHs' telehealth programs were reaching more patients than the Medicare analyses would suggest.

6.5 Did the telehealth intervention affect the surrounding regional health delivery system, providers of community-based services, or have other spillover effects?

Community knowledge of telehealth varied, and CAHs needed to focus on community outreach to improve telehealth uptake. Throughout the demonstration period, CAH staff reiterated that many of their community members, especially the elderly, were unaware of telehealth, which is of particular importance for Medicare. Use of telehealth was more driven by clinical practitioner awareness and referrals than community-member awareness. To address this challenge and increase community-member motivation to use telehealth, CAHs spent time trying to engage community members and educate them on telehealth. Efforts included passive marketing such as billboards and ads in local newspapers and active marketing such as hosting lunches and attending local community meetings. CAHs reported that patients who did not previously know about telehealth had positive experiences once they used it, and they expected awareness to increase via word or local advertising (see ***Section 6.2*** for additional discussion about MHREF's technical assistance for marketing and outreach).

Telehealth Patient Perspective: Community Marketing and Outreach

"I know that [FCHIP CAH] has put out several flyers and mail outs in surrounding communities, but I really think I talk it up to whoever I talk to that complains about going to [a distant site provider medical clinic] every so often.

"Word of mouth is probably the best thing in this area, and [in] a three-community area, there's a lot of us that know each other and talk to each other. I find that I talk to someone about it and tell them [telehealth is] really great. I don't know if many people have even looked at [the flyers] because I was on the front page [of the flyer], and no one mentioned it at all….no one said anything to me so I wonder if they even looked at it."

–Medicare Telehealth Patient at an FCHIP CAH

Providing telehealth in one rural community supported other rural communities in the region. Several CAH telehealth coordinators shared anecdotal stories of patients from neighboring communities traveling to the CAH specifically for telehealth, particularly for

[12] Program monitoring documents provided the source for the frequency, by payer, of self-reported telehealth encounters provided by the eight telehealth FCHIP CAHs.

behavioral health and nephrology telehealth encounters. Thus, by providing telehealth, participating CAHs were able to serve not only their own communities but also those beyond their catchment areas.

CAHs reported that patient response to and satisfaction with telehealth were positive. Many efforts were made, in partnership with the telehealth CAHs, to recruit Medicare patients to speak with us about their telehealth experiences, and at the end of the evaluation period, we were able to speak with one Medicare telehealth patient. This patient echoed this sentiment of a positive experience. This satisfaction can contribute to positive word of mouth in the community and increase clinical practitioners' willingness to refer to telehealth since they are more confident that their patients will have a good experience.

> *"Our patients have come to rely on it, and I know a great number of people who would simply not get services if we didn't have telehealth."*
>
> –Telehealth Coordinator

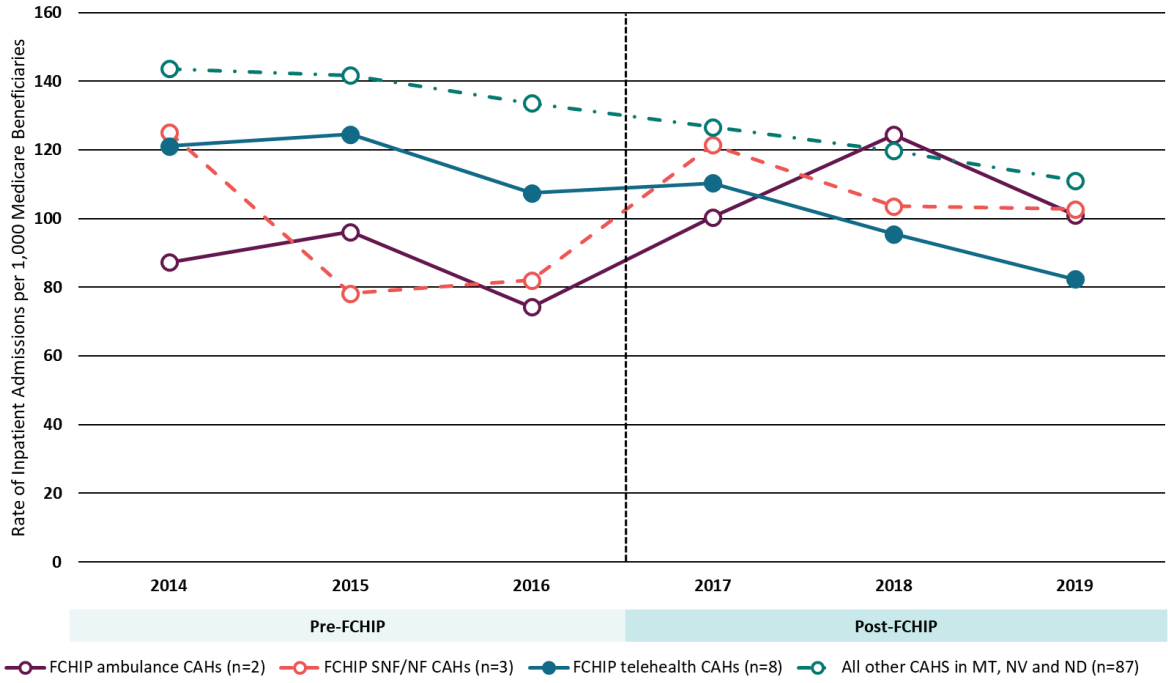
7. Impact of the Interventions on Secondary Medicare Fee-for-Service Utilization Outcomes

Key Findings

- Clear trends in hospitalizations or ED visits did not emerge among FCHIP CAHs, so we do not draw any conclusions as to whether being in the FCHIP Demonstration impacted FCHIP CAHs' ability to deliver more hospital-based services to their communities.

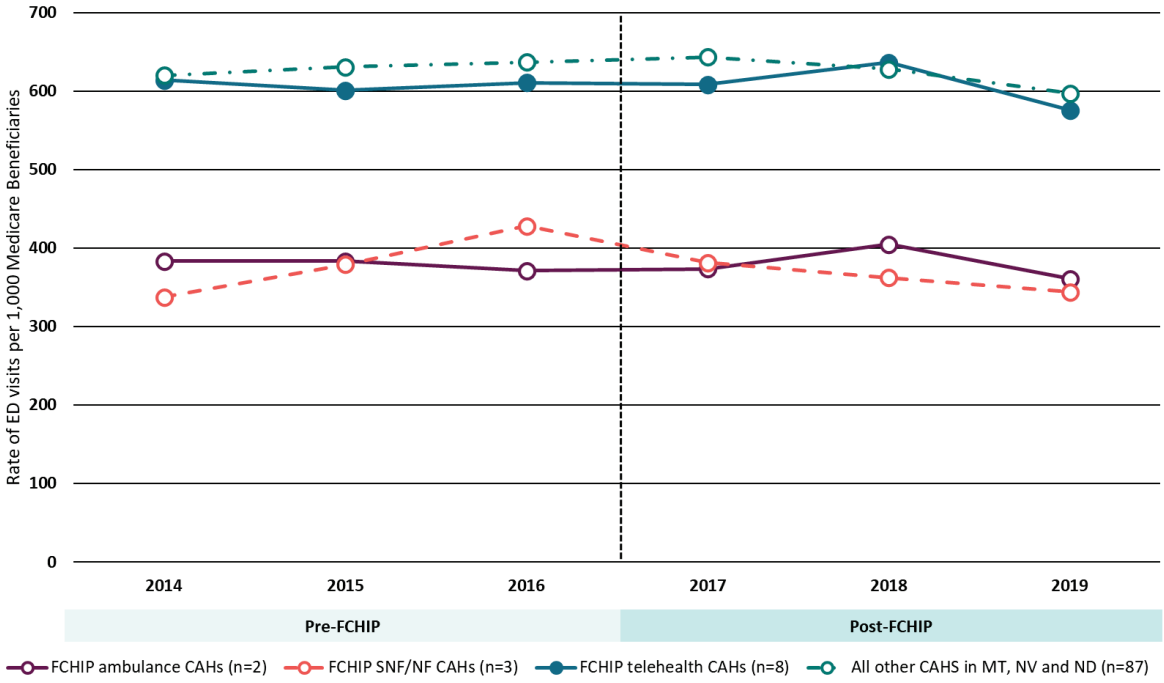
The FCHIP interventions were meant to target very specific outcomes (ambulance services, SNF/NF bed use, and telehealth encounters). However, CAHs' focus on improving processes of care for current patients and engaging in more marketing and outreach could hypothetically lead to more use of the CAH by current patients and other community members. Therefore, we examined inpatient admissions and ED visits as secondary outcomes of interest across the three interventions. ***Figures 7-1*** and ***7-2*** show the rate of inpatient admissions and ED visits, respectively, for the three groups of FCHIP CAHs and all other CAHs in Montana, Nevada, and North Dakota for comparison purposes. Detailed rates by CAH can be found in ***Appendix A: Methods***.

Figure 7-1. Annual rate of inpatient admissions per 1,000 Medicare beneficiaries among FCHIP and comparison CAHs in Montana, Nevada, and North Dakota, 2014–2019



- Rates of inpatient admissions steadily declined among FCHIP telehealth CAHs and all other CAHs in Montana, Nevada, and North Dakota over the 6 years of the study period.
- Inpatient admission rates among ambulance FCHIP CAHs and SNF/NF FCHIP CAHs fluctuated with no clear trend.

Figure 7-2. Annual rate of ED visits per 1,000 Medicare beneficiaries among FCHIP and comparison CAHs in Montana, Nevada, and North Dakota, 2014–2019



- Rates of ED visits among all four groups of CAHs were relatively stable over the 6 years of the study period, with no clear trend toward more ED use during FCHIP.
- There were differences between the groups with respect to year-specific magnitudes. Rates of ED visits were higher among FCHIP telehealth CAHs and all other CAHs in Montana, Nevada, and North Dakota relative to FCHIP ambulance or SNF/NF CAHs. This difference may be attributable to sample size; there were more FCHIP CAHs and other CAHs than there were ambulance or SNF CAHs.

7.1 Discussion of Changes to Health Service Utilization

Given the lack of a clear trend among FCHIP CAHs toward more hospital use, as measured by inpatient admissions and ED visits, we do not draw any conclusions as to whether being in the FCHIP Demonstration impacted FCHIP CAHs ability to deliver more hospital-based services to their communities. CAH site visit interviewees provided anecdotes of situations where they believed that their marketing and community outreach could have had a positive effect in drawing more patients to the hospital, but the number of beneficiaries served in any given year was too low to test this hypothesis.

8. Discussion: Cross-Intervention Take-aways

After 3 years of participating in the FCHIP Demonstration, the impact of the demonstration on CAHs' delivery of FCHIP-related services varied by FCHIP intervention.

Ambulance transports. CAHs reported at the start of the demonstration that they did not expect the FCHIP cost-based reimbursement to change demand or supply of ambulance services within their communities. After the demonstration began, the two ambulance CAHs experienced fluctuating rates of ambulance transports, with no sustained increase in ambulance transports. However, CAHs did report delivering more advanced training to their EMTs, so the quality of ambulance services may have increased with the CAHs' greater capacity to deliver more advanced life support care, when needed.

SNF/NF admissions. Of the three SNF CAHs, only one experienced a consistent increase in SNF admission rates during the FCHIP Demonstration. The other two CAHs' administrators observed that demand for inpatient care declined at the CAH during FCHIP, which they thought might have led to a decrease in the demand for SNF/NF beds as well.

Telehealth encounters. Before FCHIP, one of the eight participating CAHs billed Medicare for telehealth encounters, and during FCHIP, only six CAHs billed 289 Medicare telehealth encounters, even though all eight reported that they were providing telehealth to Medicare patients. Moreover, only three of the eight CAHs billed Medicare for a relatively "large" number of telehealth encounters (e.g., more than 50 encounters over 3 years). FCHIP CAHs were delivering more telehealth services than they were billing Medicare. The FCHIP CAHs reported delivering 1,101 telehealth encounters during the intervention, of which 33 percent of those encounters (366) were for Medicare beneficiaries.

Despite the differences in service delivery impact by intervention, commonalities emerged across the three FCHIP service areas that influenced the effectiveness of the intervention activities. These commonalities offer insights that may inform future demonstrations among rural providers.

8.1 The CAHs' environmental and organizational context was instrumental in determining what the hospitals could achieve through the demonstration.

- **The influence that remote location and low population density has on the demand for FCHIP-related services cannot be over-stated.** Because of the remote location of frontier CAHs, there are not many people residing in CAHs' surrounding communities. Analyses of Medicare cost report data showed that relative to other CAHs, FCHIP CAHs had a lower daily census for Medicare SNF and acute inpatient beds and that FCHIP CAHs were experiencing financial hardships (negative operating margins) leading up to their participation in FCHIP. A payment change (for

ambulance and telehealth services) or an increase in capacity (for SNF/NF services) alone cannot significantly increase demand for FCHIP-related services. Furthermore, demand is hard to influence when there are relatively few individuals within a community in need of FCHIP-related services. As a result, increasing service use under the FCHIP Demonstration to the point of improving a hospital's finances was seen as a challenge by participating CAHs.

- **CAH leadership matters; engaged leaders who will champion demonstration activities enabled success**. CAHs are very often under-staffed, and they have limited capacity to take on new or different activities, including demonstration activities. Despite this constraint, CAHs reported that they engage in a demonstration like FCHIP because they believe it is the "right thing to do" to improve patient care. However, a champion is needed to keep staff focused on demonstration activities. In cases where there are changes to how care is delivered, such as with telehealth, a clinical champion is also needed to engage clinical staff. Almost all CAHs had turnover in key positions such as the chief executive officer, EMS director, or director of nursing, and often these individuals served as an FCHIP champion. Staff departures led to disruptions in activities, and often CAHs did not regain their momentum until a new leader arrived or another staff member was energized to re-engage staff around the activities.
- **Commitment to their communities motivated CAHs to engage in different opportunities, like the FCHIP Demonstration, to change service delivery.** Regardless of the intervention type, each participating CAH reiterated the importance of leveraging the FCHIP Demonstration to better serve their communities and garner community good will and trust. Each CAH spoke repeatedly of a sense of responsibility to do what they could to provide access to high-quality health services that would allow individuals to stay within the community for their medical care. Moreover, FCHIP gave CAHs the opportunity to improve patient care more broadly. Even though FCHIP was a Medicare-focused demonstration, CAHs observed that changes they made, such as adding more SNF/NF beds or offering access to more medical specialists through telehealth, had positive impacts on access to care for any patient, regardless of insurance coverage.

8.2 CAHs used the demonstration to develop their workforce.

- **CAHs leveraged the demonstration to train staff.** The CAHs were already engaged, by and large, in their FCHIP activities before the demonstration started (i.e., the ambulance FCHIP CAHs were already providing ambulance services, the SNF CAHs were already providing SNF care, and most telehealth CAHs were already providing some telehealth to Medicare, Medicaid, private pay, and uninsured patients). Yet, the demonstration was a catalyst for CAHs to provide more advanced training and education. For example, telehealth CAHs trained staff on new or improved workflows to incorporate telehealth, and ambulance CAHs used the demonstration to provide advance life support training for EMS staff; SNF CAHs took the opportunity to train clinical staff to identify patients who may be eligible for SNF care at the CAH.

- **Sustaining an engaged workforce to focus on demonstration activities was a challenge for CAHs.** Because of their remote locations, finding and keeping staff was a challenge for CAHs. Although CAHs relied on traveling or locum staff to bridge staffing gaps, they found that these temporary staff were less likely to exhibit the same level of buy-in or commitment to demonstration activities because of their time-limited involvement with the CAH. With gaps in clinical and administrative staff, CAH employees served multiple functions and did not necessarily have time to focus on the demonstration. Lack of staff, staff turnover, and staff's overcommitments, which left little time to focus on demonstration activities, may have impacted CAHs' success.
- **Peer-to-peer learning opportunities was a value-add**. CAHs recognized that although they vary in community circumstances and available resources, they share some similar facilitators and challenges to service delivery reform. Staff expressed that it would be a useful learning experience for them to visit other CAHs or at least hold telephone conferences to share tips on how to improve hospital operations and clinical workflow and share lessons learned while implementing changes.

8.3 The demonstration gave CAHs a reason to make changes in service delivery, but those changes were perceived by CAHs to have had little impact on hospital financial performance or the CAHs' surrounding clinical provider community.

- **The demonstration afforded CAHs an opportunity to re-assess how they delivered services and make improvements.** The types of changes implemented varied across CAHs, but all changes were designed to remediate CAH-identified gaps in operations or administration. For example, CAHs participating in the ambulance intervention invested in EMS staff training and pay; CAHs participating in the SNF/NF intervention reorganized hospital space and implemented staffing changes to accommodate more bed use. CAHs participating in the telehealth intervention trained their providers and developed relationships with distant site providers.
- **Relationships with other organizations helped CAHs undertake demonstration activities**. CAHs noted the importance of establishing and nurturing relationships with other organizations to successfully carry-out demonstration activities. For example, ambulance CAHs had relationships with other area ambulance operators for specific emergency situations. SNF CAHs reiterated the importance of coordinating with other hospitals to bring patients back to the CAH for post-acute care. Telehealth CAHs valued well-established referral relationships with distant site provider organizations because they believed a good relationship improved uptake of telehealth services and bolstered CAH staff confidence in the positive impacts of telehealth. This was particularly true in cases where access to more and different types of specialty providers was needed to meet community needs.
- **Implementation technical assistance and marketing and outreach support helped CAHs change service delivery.** CAHs reported that implementation support delivered by MHREF and its partners was helpful in establishing the necessary

workflows and billing procedures that accompanied FCHIP activities. MHREF also supported CAHs in integrating or expanding new services; for example, MHREF offered Chronic Care Management Program implementation assistance, and several CAHs participated in webinars and one-on-one tailored assistance to develop and roll-out the program. Implementation support was delivered through multiple modalities, such as education and training webinars and one-on-one assistance applying to rural health conferences, financial conferences, and leadership summits. CAH staff really appreciated the in-person meetings with MHREF to discuss hospital marketing and community outreach, billing challenges, care redesign, and sustainability of demonstration activities. All these efforts were well-received and appreciated by the participating CAHs.

MHREF's marketing and outreach activities were used to promote the CAH itself as well as its telehealth, SNF/NF, and or ambulance interventions and to improve community awareness about the CAHs capacity to provide medical care to community members. Outreach efforts were directed at community members and referring clinical practitioners.

- **Improvements in hospital financial performance were minimal.** The CAHs speculated at the start of the demonstration that there would be minimal impact on hospital finances because of demonstration participation. Minimal impact is related, in part, to the low frequency of FCHIP-related services. With low service use, generating positive financial gains when payment policies are based on volume will always be a challenge, and as a result, expectations that any future volume-based payment policies can bolster CAHs financially should be tempered. By the end of the demonstration, analyses of CAHs' costs conducted by another contractor found that cost-based reimbursement exceeded Medicare fee schedule payments.
- **Impacts on the surrounding regional health delivery system, providers of community-based services, and payers were limited.** Although some CAHs were located in communities with other providers (e.g., private primary care physicians), most reported that they were the sole clinical provider in their community, so their focus was to improve service delivery and integration of services within the CAH.

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Appendix A: Methods

In the Final Evaluation Report, we detail the methods used in our analyses in ***Section 3: Overview of Evaluation Methods***. However, this appendix includes additional detail on select topics.

A.1 Data Source: Medicare Fee-for-Service Claims

We used Medicare claims and enrollment data for calendar years 2013–2019 from the Chronic Conditions Data Warehouse. We also restricted claims to those incurred in Montana, Nevada, and North Dakota. These data include (1) enrollment information that indicates number of beneficiaries alive and enrolled in Medicare during the period; (2) enrollment information that indicates number of days beneficiaries were enrolled in Medicare during the period; and (3) claims experience for each beneficiary. The analyses included in the Final Evaluation Report included inpatient, hospital outpatient, skilled nursing facility, and physician claims. Denied claims were excluded from the analysis. Claims data were accessed on November 1, 2019, allowing for 3 months of runout for claims adjustments or revisions.

A.2 Analysis Period

We constructed analytic years to compare service utilization before and after the Frontier Community Health Integration Project (FCHIP) Demonstration began. The demonstration did not align with the calendar year and began on August 1, 2016, and ***Table A-1*** shows how claims were assigned to an analytic year based on the date of discharge or end of service date on the claim.

Table A-1. Analytic Year Construction

Analytic Period	FCHIP Analytic Year	Actual Dates of Service Included Listed on Claim
Pre-FCHIP period	2014	August 1, 2013–July 31, 2014
	2015	August 1, 2014–July 31, 2015
	2016	August 1, 2015–July 31, 2016
Post-FCHIP period	2017	August 1, 2016–July 31, 2017
	2018	August 1, 2017–July 31, 2018
	2019	August 1, 2018–July 31, 2019

A.3 Hospital Analysis: Counts and Rates

Using Medicare claims data, we conducted a descriptive analysis of counts and rates of select health services provided by critical access hospitals (CAHs) in Montana, Nevada, and North Dakota during a pre-FCHIP baseline period (August 1, 2013–July 31, 2016) and an FCHIP Demonstration period covering the 3 years of the FCHIP Demonstration (August 1, 2016–July 31, 2019). Counts and rates were calculated for each analytic year in the baseline period and the FCHIP Demonstration period.

Counts of services rendered are shown to allow the reader to see the magnitude of service units provided by CAHs in frontier areas. However, counts are a direct reflection of the size of a hospital's community. A hospital in a more densely populated community is more likely to provide more services than a hospital in a less densely populated community, so comparing hospitals based solely on counts of services is misleading. Even within the participating FCHIP CAHs, the number of beneficiaries using the hospital varies, which also impacts counts of services rendered.

To compare service utilization across groups of hospitals, we created rates of service use based upon the number of Medicare beneficiaries who ever used a hospital of interest during the analytic year. We assigned Medicare beneficiaries to a hospital if they ever received a service in an analytic year. Hospital assignments were not mutually exclusive; beneficiaries who received services at multiple CAHs in a given year would be assigned to each CAH. Rates were then defined as the count of events in an analytic year billed by a hospital/the total number of attributed Medicare beneficiaries in the analytic year *1,000 (yielding an event per 1,000 Medicare beneficiaries).

A.4 Supplemental Hospital Specific Counts and Rates of Inpatient Admissions and ED Visits (for Section 7 of the report)

Counts and Rates of Inpatient Admissions Billed to Medicare at FCHIP CAHs and Other CAHs, 2014–2019

	Inpatient Admissions (count)						Inpatient Admissions (rate= [count/unique beneficiaries per hospital] *1000)						Unique Beneficiaries per Hospital					
	Pre-FCHIP			Post-FCHIP			Pre-FCHIP			Post-FCHIP			Pre-FCHIP			Post-FCHIP		
CAH	2014	2015	2016	2017	2018	2019	2014	2015	2016	2017	2018	2019	2014	2015	2016	2017	2018	2019
Montana																		
McCone County	39	35	26	44	26	27	149.4	143.4	104.0	165.4	103.6	94.1	261	244	250	266	251	287
Dahl Memorial	*	22	23	26	13	*	*	166.7	156.5	155.7	91.5	*	138	132	147	167	142	155
Roosevelt	12	16	19	22	18	23	46.5	59.3	68.3	77.7	59.8	72.8	258	270	278	283	301	316
Nevada																		
Battle Mountain	19	15	26	14	19	24	42.3	30.0	47.1	24.0	30.3	35.8	449	500	552	583	627	670
Mount Grant	205	200	166	173	164	127	249.1	253.8	197.9	204.0	192.9	145.0	823	788	839	848	850	876
Grover C. Dils	82	64	62	62	79	80	118.8	92.6	93.1	94.9	119.0	118.0	690	691	666	653	664	678
Pershing	31	19	24	36	27	21	65.0	38.1	44.7	67.4	47.4	34.4	477	499	537	534	570	611
North Dakota																		
McKenzie	41	55	46	34	27	54	76.5	107.4	85.5	60.3	44.8	67.5	536	512	538	564	603	800
Jacobson	73	52	73	86	78	83	111.5	81.8	115.9	140.5	115.9	120.1	655	636	630	612	673	691
Southwest	68	60	51	71	81	66	115.3	102.9	91.6	140.9	147.0	116.8	590	583	557	504	551	565
FCHIP ambulance CAHs (n=2)	80	76	70	93	99	89	94.3	89.1	83.8	118.2	116.2	101.0	848	853	835	787	852	881
FCHIP SNF/NF CAHs (n=3)	124	103	118	152	122	133	105.6	89.6	101.9	130.9	99.6	102.8	1,174	1,150	1,158	1,161	1,225	1,294
FCHIP telehealth CAHs (n=8)	438	426	392	411	373	362	120.6	117.2	103.0	105.4	93.1	82.4	3,632	3,636	3,807	3,898	4,008	4,393
Other ambulance billing CAHs in MT and ND (n=21)	3,764	3,600	3,445	3,337	3,200	2,891	154.6	147.6	139.7	133.4	124.4	110.4	24,348	24,391	24,667	25,014	25,732	26,175
Other SNF/NF billing CAHs in MT and ND (n=79)	11,325	11,357	10,966	10,726	10,372	9,747	148.0	146.0	139.0	132.8	123.4	112.7	76,545	77,812	78,878	80,797	84,070	86,496
Other telehealth billing CAHs in MT, NV, and ND (n=38)	7,630	7,893	7,615	7,479	7,362	7,007	140.7	144.9	137.4	129.7	122.1	113.8	54,246	54,476	55,413	57,661	60,291	61,555

Notes: The FCHIP Demonstration started August 1, 2016, so 2014=August 2013–July 2014; 2015=August 2014–July 2015; 2016=August 2015–July 2016; 2017=August 2016–July 2017; 2018=August 2017–July 2018; 2019=August 2018–July 2019. Cells containing either a non-zero value less than 10 or a number derived from a non-zero value less than 10 are denoted with "*".

Counts and Rates of Emergency Department Visits Billed to Medicare at FCHIP CAHs and Other CAHs, 2014–2019

CAH	ED Visits (count)						ED Visits (rate= [count/unique beneficiaries per hospital] *1000)						Unique Beneficiaries per Hospital					
	Pre-FCHIP			Post-FCHIP			Pre-FCHIP			Post-FCHIP			Pre-FCHIP			Post-FCHIP		
	2014	2015	2016	2017	2018	2019	2014	2015	2016	2017	2018	2019	2014	2015	2016	2017	2018	2019
Montana																		
McCone County	67	78	79	86	83	88	256.7	319.7	316.0	323.3	330.7	306.6	261	244	250	266	251	287
Dahl Memorial	30	44	46	70	38	57	217.4	333.3	312.9	419.2	267.6	367.7	138	132	147	167	142	155
Roosevelt	72	89	96	76	94	81	279.1	329.6	345.3	268.6	312.3	256.3	258	270	278	283	301	316
Nevada																		
Battle Mountain	383	313	391	438	480	435	853.0	626.0	708.3	751.3	765.6	649.3	449	500	552	583	627	670
Mount Grant	541	549	604	579	626	636	657.4	696.7	719.9	682.8	736.5	726.0	823	788	839	848	850	876
Grover C. Dils	310	322	407	366	394	401	449.3	466.0	611.1	560.5	593.4	591.4	690	691	666	653	664	678
Pershing	406	400	341	415	436	420	851.2	801.6	635.0	777.2	764.9	687.4	477	499	537	534	570	611
North Dakota																		
McKenzie	421	390	361	342	399	412	785.4	761.7	671.0	606.4	661.7	515.0	536	512	538	564	603	800
Jacobson	257	269	321	281	267	276	392.4	423.0	509.5	459.2	396.7	399.4	655	636	630	612	673	691
Southwest	253	238	214	218	251	237	428.8	408.2	384.2	432.5	455.5	419.5	590	583	557	504	551	565
FCHIP ambulance CAHs (n=2)	325	327	310	294	345	318	383.3	383.4	371.3	373.6	404.9	361.0	848	853	835	787	852	881
FCHIP SNF/NF CAHs (n=3)	396	436	496	443	444	445	337.3	379.1	428.3	381.6	362.4	343.9	1,174	1,150	1,158	1,161	1,225	1,294
FCHIP telehealth CAHs (n=8)	2,230	2,185	2,325	2,372	2,550	2,530	614.0	600.9	610.7	608.5	636.2	575.9	3,632	3,636	3,807	3,898	4,008	4,393
Other ambulance billing CAHs in MT and ND (n=21)	13,198	13,385	13,267	13,373	13,205	12,849	542.1	548.8	537.8	534.6	513.2	490.9	24,348	24,391	24,667	25,014	25,732	26,175
Other SNF/NF billing CAHs in MT and ND (n=79)	45,141	46,530	46,776	47,973	48,470	48,292	589.7	598.0	593.0	593.7	576.5	558.3	76,545	77,812	78,878	80,797	84,070	86,496
Other telehealth billing CAHs in MT, NV, and ND (n=38)	30,024	30,696	31,002	32,922	33,188	32,762	553.5	563.5	559.5	571.0	550.5	532.2	54,246	54,476	55,413	57,661	60,291	61,555

Notes: The FCHIP Demonstration started August 1, 2016, so 2014=August 2013–July 2014; 2015=August 2014–July 2015; 2016=August 2015–July 2016; 2017=August 2016–July 2017; 2018=August 2017–July 2018; 2019=August 2018–July 2019.

A.5 Outcome Specifications

All cause acute inpatient hospitalizations: We identified all hospital admissions in which the last four digits of the provider values were 0001–0879 (acute inpatient) or 1300–1399 (CAHs). Some records in the inpatient claims files may appear to be multiple admissions but are in fact transfers between facilities; these records are counted as a single admission. To combine transfers into one acute admission, we identified claims that had no more than 1 elapsed day between discharge date of the index claim and admission date of the subsequent claim. We combined the claims into one record by taking earliest admission date and latest discharge date and summing all payment amounts. This same roll-up procedure was applied to claims with overlapping or identical admission and discharge dates (i.e., claims associated with the same visit). If any part of a stay was ever attributed to a CAH, the indicator is turned on.

Emergency department (ED) visits that did not result in an inpatient hospital admission: ED visits, that did not result in an inpatient hospital admission, including observation stays, were identified in the outpatient services file as visits with a revenue center line item equal to 045X or 0981 (ER care) or 0762 (treatment or observation room, thus counting observation stays in the overall count). If the procedure code on every line item of the ED claim equals 70000 through 79999 or 80000 through 89999, and no line items have a revenue center code equal to 0762, we excluded these claims (thus excluding claims where only radiological or pathology/laboratory services were provided, unless it was an observation stay).

Ambulance transports: Ambulance transports billed by a CAH were defined by claims with a HCPCS code of A0425–A0436 which includes all modes of transportation (group and air) and both basic and advanced life support services.

Ambulance distance: The distance traveled by ambulance transports was identified using the value of Revenue Center Unit Count (miles) on the claim line with a HCPCS code of A0425, A0435, or A0436 (ground transportation).

Medicare SNF admissions: Medicare SNF admissions were identified by claims where the provider number has a "Z" in the third digit.

Medicare SNF admission length of stay: This represents the number of days elapsed during an SNF admission (as defined above). The length of stay = (discharge date − admission date).

Telehealth encounter: Telehealth encounters billed by the CAH as the originating site are defined by any claim line where the procedure code is Q3014.

Telehealth encounter matched physician claims: The originating site claim does not provide any information on the type of services/specialty services rendered during a telehealth

encounter. We explored services provided by distant site providers by matching the originating site telehealth claim to carrier claims using the following criteria:

- Same beneficiary ID as originating site claim
- Same date of service as originating site claim
- Place of service = 02 (telehealth)
- Procedure code was approved by CMS for Medicare reimbursement (https://www.cms.gov/Outreach-and-Education/Medicare-Learning-Network-MLN/MLNProducts/downloads/TelehealthSrvcsfctsht.pdf)

Inpatient Expenditures: The sum of all payments made by Medicare for a beneficiary within the inpatient file during an analytic year.

SNF Expenditures: The sum of all payments made by Medicare for a beneficiary within the SNF file during an analytic year.

Total Expenditures: The sum of all payments made by Medicare for a beneficiary within the inpatient, outpatient, SNF and carrier file during an analytic year. Claims for durable medical equipment, home health, and hospice were not included.

Appendix B: Technical Assistance by MHREF to FCHIP Critical Access Hospitals

Table B-1. MHREF Technical Assistance Activities Frequently Reported by CAHs

Critical Access Hospital	Developed hospital marketing materials (e.g., banners, newspapers inserts, tri-folds, radio spots)	Offered educational/ training webinars for staff/providers (e.g., Chronic Care Management program webinars)	Helped CAHs apply to conferences (i.e., rural health conferences, leadership summits)	Scheduled on-site meetings to discuss program operations (e.g., marketing needs, billing assistance, telehealth processes, Chronic Care Management Program operations, demonstration close-out activities)	Taught site how to review CAH visits for future telehealth opportunities	Coordinated meetings with other health care providers (e.g., telehealth distant site providers, other area hospitals)	Provided implementation assistance for the Medicare Chronic Care Management Program
CAH 1 (Pershing - Telehealth)	X	X	X		X	X	X
CAH 2 (Battle Mountain - Telehealth)	X	X			X	X	X
CAH 3 (Dahl - Telehealth)	X	X		X	X	X	X
CAH 4 (Grover C. Dils - Telehealth)	X	X		X	X	X	X
CAH 5 (Jacobson - SNF Bed Expansion)	X	X	X	X		X	X
CAH 6 (McCone - SNF Bed Expansion, Telehealth)	X	X		X	X	X	X
CAH 7 (McKenzie - Telehealth)	X	X	X	X	X	X	X
CAH 8 (Mt. Grant - Telehealth)	X	X		X	X	X	X
CAH 9 (Roosevelt - SNF Bed Expansion, Telehealth, Ambulance)	X	X		X	X	X	X
CAH 10 (Southwest - Ambulance)	X		X	X		X	

Appendix C: Beneficiary Analysis

To complement the hospital service utilization analysis, we also conducted a secondary analysis based upon the fee-for-service Medicare beneficiaries who used critical access hospitals (CAHs) for medical care. A beneficiary-level analysis examines whether the Frontier Community Health Integration Project (FCHIP) payment and policy changes had any impact on how often beneficiaries who used an FCHIP CAH received different types of care, regardless of where the care they received was delivered. This analysis answers the question, does receiving care at an FCHIP CAH have any impact on a beneficiary's overall patterns of utilization (i.e., utilization at the FCHIP CAH and at other providers the beneficiary visited)?

The beneficiary analysis assigned individuals to a particular FCHIP or comparison group CAH each year based upon their utilization patterns. We then tallied all services paid for by Medicare fee-for-service that the assigned beneficiary received, regardless of if the service was provided the by CAH of interest or another provider (i.e., we gathered all service use for an assigned beneficiary). Then, we used regression analyses to determine if service use differed between individuals assigned to FCHIP CAHs and individuals assigned to comparison CAHs. This approach allowed us to aggregate beneficiary-year observations and generate sufficient sample sizes to test for statistically significant differences in utilization patterns across the beneficiaries assigned to FCHIP and comparison group CAHs.

C.1 Demonstration and Comparison Groups

For the beneficiary analysis, we began with the beneficiaries whose service patterns were measured in the hospital analysis; that is, all beneficiaries who ever used an FCHIP or comparison group CAH in Montana, Nevada, and North Dakota during the pre-FCHIP or FCHIP Demonstration period. We then examined how beneficiaries utilized multiple CAHs over time to determine an appropriate attribution methodology that minimized potential contamination across groups (***Table C-1***). We assigned beneficiaries who used a participating FCHIP site to that hospital for the year. We then assigned beneficiaries to the comparison group if they used a relevant CAH but never used an FCHIP site during the year. Attribution was conducted as a repeated cross-section and re-assigned each year, however, once a beneficiary was assigned to an FCHIP CAH they could not be assigned to a comparison CAH in the future.[13] Because we have so few FCHIP CAHs relative to potential comparison CAHs in Montana, Nevada, and North Dakota, the sample size of beneficiaries assigned to FCHIP CAH is much smaller than the number of beneficiaries assigned to comparison group CAHs.

[13] Attribution was reassigned each year based on a beneficiary's eligibility for Medicare and utilization of a CAH. Therefore, we expect and observe slight variation between pre-and post-FCHIP (or comparison group) beneficiary counts because some beneficiaries will not use a CAH in a given year.

Table C-1. Demonstration and Comparison Groups for the Beneficiary Analysis

Intervention	Groups
Ambulance Intervention	
Demonstration Group	All Medicare beneficiaries who used an FCHIP CAH participating in the ambulance intervention in an analytic year. Unique beneficiaries pre-FCHIP (n)=1,216 Unique beneficiaries post-FCHIP (n)=1,206
Comparison Group	All Medicare beneficiaries who used a CAH in Montana and North Dakota that billed for ambulance transports during the FCHIP Demonstration ***and*** did not use an FCHIP CAH in an analytic year. Unique beneficiaries pre-FCHIP (n)=33,266 Unique beneficiaries post-FCHIP (n)=35,088
SNF/NF Intervention	
Demonstration Group	All Medicare beneficiaries who used an FCHIP CAH participating in the SNF/NF intervention in an analytic year. Unique beneficiaries pre-FCHIP (n)=1,586 Unique beneficiaries post-FCHIP (n)=1,665
Comparison Group	All Medicare beneficiaries who used a CAH in Montana and North Dakota that billed for SNF/NF admissions during the FCHIP Demonstration ***and*** did not use an FCHIP CAH in an analytic year. Unique beneficiaries pre-FCHIP (n)=108,278 Unique beneficiaries post-FCHIP (n)=116,237
Telehealth Intervention	
Demonstration Group	All Medicare beneficiaries who used an FCHIP CAH participating in the telehealth intervention in an analytic year. Unique beneficiaries pre-FCHIP (n)=5,583 Unique beneficiaries post-FCHIP (n)=6,269
Comparison Group	All Medicare beneficiaries who used a CAH in Montana, Nevada, and North Dakota that billed for a telehealth encounter during the FCHIP Demonstration ***and*** did not use an FCHIP CAH in an analytic year. Unique beneficiaries pre-FCHIP (n)=79,762 Unique beneficiaries post-FCHIP (n)=85,549

The process of attributing a beneficiary to a CAH was not selective; we attributed a person based on any type of service use at the hospital.[14] However, by taking this approach, we were able to capture the greatest number of people who many have benefited from interactions with the CAH. Maximizing sample size was a consideration in this analysis given the low population density surrounding frontier CAHs.

[14] Attributing patients to a provider (e.g., a primary care provider or an accountable care organization) is common, and the types of services used to attribute patients is very selective. In this regard, the attribution process for this analysis is different because we attribute beneficiaries to a CAH based on any hospital use.

Eligibility weights were applied to account for potentially censored observations due to coverage variations or death. Due to stable enrollment in Medicare, the mean eligibility weight was 0.95 in all years and similar across both the FCHIP and comparison group beneficiaries. See ***Section C.4. Eligibility Weights*** for a description of how weights were constructed and applied to the sample.

C.2 Outcome Measures for the Beneficiary Analysis

Following the approach taken in the hospital-level analysis, we examined select outcomes to measure changes in service utilization and expenditures during the FCHIP Demonstration, designating some outcomes as primary outcomes and others as secondary outcomes. Primary outcomes are directly related to the FCHIP Demonstration, and secondary outcomes are other measures of health service use that could hypothetically change because an FCHIP CAH's participation in the demonstration may lead to more marketing and outreach to promote the CAH and subsequently more beneficiary use of the CAH. In assigning outcomes to a beneficiary, we looked for all instances of a service of interest if the service was rendered in Montana, Nevada, or North Dakota (e.g., all ambulance transports that occurred in Montana, Nevada, and North Dakota for the beneficiary). Doing so allowed us to examine broad patterns of utilization in order to draw conclusions about the impact of a CAH's FCHIP participation on beneficiary health services use. ***Table C-2*** shows the primary outcomes for the beneficiary analysis, and ***Table C-3*** shows the secondary outcomes.

Table C-2. Primary Outcomes for the Beneficiary Analysis

Outcome	Intervention		
	Ambulance 	SNF/NF 	Telehealth 
Having at least one ambulance transport	✓		
Having at least one SNF admission		✓	
Having at least one telehealth encounter			✓

Table C-3. Secondary Outcomes for Beneficiary Analysis

Outcome	Intervention		
	Ambulance	SNF/NF	Telehealth
Having at least one inpatient admission	✓	✓	✓
Having at least one ED visit	✓	✓	✓
Total inpatient expenditures	✓	✓	✓
Total SNF expenditures		✓	
Total expenditures	✓	✓	✓

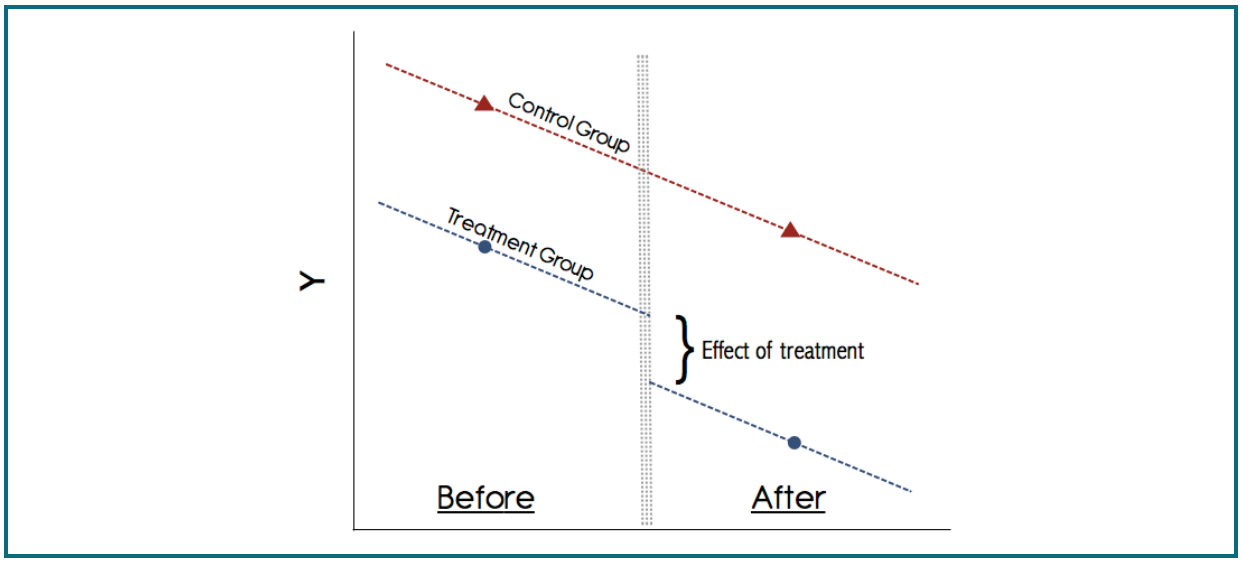
A complete description of how these outcomes were constructed in the data is available in ***Appendix A: Methods.***

C.3 Modeling

To test for potential changes in utilization and expenditures between the FCHIP Demonstration group and comparison groups, we constructed a difference-in-differences (D-in-D) regression analysis, conducted at the beneficiary level. D-in-D analyses compare the change in outcomes (before vs. after demonstration implementation) among Medicare beneficiaries assigned to an FCHIP CAH to the same change (before vs. after demonstration implementation) among Medicare beneficiaries assigned to a comparison group CAH. A key advantage of the D-in-D approach is that it accounts for changes over time relative to a comparison group, which provides more accurate estimates of the impact of receiving care from an FCHIP CAH.

Figure C-1 illustrates this concept. For example, average expenditures among beneficiaries assigned to a treatment group may have decreased from the period prior to the implementation of an intervention to the post-implementation period. However, without comparing this trend to the trend among an appropriate comparison group, we may be under- or over-estimating the change. As shown in ***Figure C-1***, the effect of treatment is estimated by comparing the change-over-time among the treatment group to the change-over-time among the comparison group such that any the estimated effect of treatment is net of the trend observed among the comparison group. Without this comparison, in this example, we would have over-estimated the reduction in average expenditures resulting from the demonstration.

Figure C-1. Graphical representation of the difference-in-differences framework



Equation 1.1 is the mathematical representation of how to estimate the "effect of treatment" from ***Figure C-1***. This equation represents a simple pre-post D-in-D regression model. "FCHIP" is an indicator of whether the beneficiary was assigned to an FCHIP CAH. "Post" is an indicator that equals zero for all years prior to the FCHIP Demonstration and 1 for all years after the start of the FCHIP Demonstration. The regression coefficient β3 is the D-in-D parameter. A regression estimate of β3 measures the difference (or change) in the average outcome before and after the demonstration for FCHIP Demonstration beneficiaries relative to the difference (or change) in the average outcome before and after the demonstration for comparison beneficiaries. Additionally, ***Equation 1*** includes a residual term, denoted by ε, which represents differences in the outcome among beneficiaries not explained by any of the other variables in the model.

$$\text{Outcome} = \beta_0 + \beta_1\,\text{FCHIP} + \beta_2\text{Post} + \beta_3\,\text{FCHIP}{*}\text{Post} + \varepsilon \qquad \text{(C.1)}$$

We used linear, ordinary least squares specification to model expenditure outcomes. In these linear specifications, a *negative* difference-in-differences estimate corresponds to *slower growth* in expenditures for the FCHIP Demonstration beneficiaries relative to comparison beneficiaries, which could occur in one of the following ways:

- Average expenditures increased among comparison beneficiaries and decreased among FCHIP Demonstration beneficiaries;
- Average expenditures increased among both groups but at a slower rate among FCHIP Demonstration beneficiaries; or

- Average expenditures decreased among both groups but at a faster rate among FCHIP Demonstration beneficiaries.

Conversely, a *positive* difference-in-differences estimate corresponds to *faster growth* in expenditures for the FCHIP Demonstration beneficiaries relative to comparison beneficiaries, which could also occur in one of three ways:

- Average expenditures increased among FCHIP Demonstration beneficiaries and decreased among comparison beneficiaries;
- Average expenditures increased among both groups but at a slower rate among comparison beneficiaries; or
- Average expenditures decreased among both groups but at a faster rate among comparison beneficiaries.

For utilization outcomes, we used a binary logistic regression specification to model if a beneficiary ever had an outcome like an ambulance transport within the year; these models have a similar difference-in-differences interpretation to the linear specification used for expenditure outcomes.

We calculated the primary and secondary outcomes of interest for each person-year. Then, we assigned all person-years as either pre-FCHIP (August 1, 2013–July 31, 2016) or post-FCHIP (August 1, 2016–July 31, 2019), and we estimated our difference-in-differences effect sizes using these pre and post observations.

We used a linear regression to model expenditures and logistic regression to model the probability that a beneficiary utilized a particular service (e.g., had at least one inpatient admission within the analytic year). We controlled for observable demographic characteristics included within claims data including age, sex, race, disability status, and dual eligibility for Medicare and Medicaid; incorporating these control variables yields a covariate-adjusted difference-in-differences regression model. We did not use propensity score weighting or matching because the demonstration and comparison groups were already balanced based upon key observable characteristics. We clustered standard errors at the beneficiary level to account for repeated observations per beneficiary during the analysis period.

C.4 Eligibility Weights

To account for beneficiaries who may have had incomplete Medicare coverage or died during an analytic year, we applied an eligibility weight to each beneficiary-year observation in the model based upon their coverage characteristics. For this analysis, we constructed a monthly eligibility factor of one when a beneficiary was alive for the entire month, had both Medicare Part A and Part B coverage, and was enrolled in fee-for-service Medicare. These criteria were used to account for possible censoring of data within fee-for-service claims due to limited

coverage, managed care participation, or death. We then annualized the eligibility factor by summing the months and dividing by 12. The resulting fraction is applied to a beneficiary's observations for that given analytic year. If a beneficiary had an annualized eligibility fraction (i.e., eligibility weight) of zero in a given year, the beneficiary did not contribute to the difference-in-differences regression estimate or to calculation of pre-FCHIP or post-FCHIP means to avoid artificially deflating the estimates. The mean eligibility rate was 0.95 in all years for both the treatment and comparison group (meaning most individuals were alive and eligible for this analysis for most of an analytic year), and the eligibility weight reflects a death rate of approximately 4.5 percent to 5 percent of beneficiaries in the sample each year.

C.5 Results

Ambulance Intervention

The results presented in ***Table C-4*** suggest that receiving care at an FCHIP CAH participating in the ambulance intervention does not have any significant impact on a beneficiaries' use of health care more broadly (i.e., use of health care at the FCHIP CAH and at other health care providers). Even though there were increases in the percentage of FCHIP beneficiaries with inpatient admissions and increases in total expenditures for FCHIP beneficiaries after FCHIP began, results need to be interpreted with caution because of the small sample sizes.

Table C-4. Changes in Beneficiary Utilization and Expenditures Billed to Medicare at FCHIP CAHs and Other CAHs That Bill for Ambulance Transports in Montana and North Dakota, 2014–2019

	Pre-FCHIP Weighted Means		Post-FCHIP Weighted Means			
Outcome	FCHIP CAH Beneficiaries n=2,301	CG CAH Beneficiaries n=64,875	FCHIP CAH Beneficiaries n=2,260	CG CAH Beneficiaries n=68,073	Regression Adjusted D-in-D	p-value
At least one ambulance transport (%)	14.7	9.5	14.0	9.7	−1.0	0.325
At least one inpatient admission (%)	11.6	10.7	13.5	9.1	3.6	<0.001
At least one ED visit (%)	33.7	33.4	33.4	32.7	0.5	0.716
Total annual inpatient expenditures ($)	3,073.22	2,894.11	3,416.74	3,006.11	221.91	0.457
Total annual expenditures ($)	10,788.94	8,483.62	14,366.94	9,425.23	2,370.87	0.004

Notes:

1. FCHIP CAH Beneficiaries=All Medicare beneficiaries who used an FCHIP CAH participating in the ambulance intervention in an analytic year.
2. Comparison Group CAH Beneficiaries=All Medicare beneficiaries who used a CAH in Montana and North Dakota that billed for ambulance transports during the FCHIP Demonstration ***and*** did not use an FCHIP CAH in an analytic year.
3. Pre-FCHIP=August 1, 2013–July 31, 2016. Post-FCHIP=August 1, 2016–July 31, 2019
4. Each unique beneficiary in the sample had multiple observations during the analysis period (each analytic year) which we refer to as beneficiary-years. n=number of beneficiary-years; FCHIP pre n=2,301; FCHIP post n=2,260; Comparison group pre n=64,875; Comparison group post n=68,073
5. Adjusted difference-in-difference regression models were used to determine if the pre/post change among FCHIP beneficiaries was different from the pre/post change among comparison group beneficiaries; all models controlled for observable demographic characteristics included within claims data including age, sex, race, disability status, and dual eligibility for Medicare and Medicaid. Statistical significance was determined at $p<0.05$.

- The percentage of FCHIP beneficiaries with at least one ambulance transport or ED visit per year remained about the same before and after the FCHIP Demonstration; the percentage of comparison group beneficiaries also experienced little change.
- During the FCHIP Demonstration, the percentage of FCHIP beneficiaries with at least one inpatient admission increased by 1.9 percentage points, while the percentage of comparison group beneficiaries with an admission slightly decreased. The change between the two groups was statistically significant ($p<0.001$).
- Inpatient and total expenditures increased after FCHIP began for beneficiaries assigned to FCHIP CAHs participating in the ambulance intervention and comparison CAHs, and the increase among FCHIP beneficiaries was large (a 33% increase), leading to a statistically significant D-in-D estimate of $2,371, $p=0.004$. However, caution is needed in interpreting this result. With two participating FCHIP CAHs, the number of assigned FCHIP beneficiaries is quite small (about 1,200 unique beneficiaries), and expenditures can vary extensively within small samples.

SNF/NF Intervention

The results presented in ***Table C-5*** suggest that receiving care at an FCHIP CAH participating in the SNF/NF intervention does not have any significant impact on a beneficiaries' use of health care more broadly (i.e., use of health care at the FCHIP CAH and at other health care providers).

Table C-5. Changes in Beneficiary Utilization and Expenditure Patterns Billed to Medicare at FCHIP CAHs and Other CAHs That Bill for SNF/NF Admissions in Montana and North Dakota, 2014–2019

	Pre-FCHIP Weighted Means		Post-FCHIP Weighted Means			
Outcome	FCHIP CAH Beneficiaries n=2,960	CG CAH Beneficiaries n=208,294	FCHIP CAH Beneficiaries n=3,106	CG CAH Beneficiaries n=223,002	Regression Adjusted D-in-D	p-value
At least one SNF admission (%)	5.2	3.8	5.7	3.5	0.9	0.131
At least one inpatient admission (%)	9.4	9.9	10.0	8.6	2.1	0.005
At least one ED visit (%)	28.1	34.2	28.5	33.6	0.9	0.413
Total annual inpatient expenditures ($)	3,556.73	3,019.80	3,749.90	3,111.76	87.74	0.780
Total annual SNF expenditures ($)	2,492.43	1,236.41	2,758.00	1,352.76	37.45	0.945
Total annual expenditures ($)	10,968.33	8,994.35	12,552.01	9,907.05	484.77	0.494

Notes:

1. FCHIP CAH Beneficiaries=All Medicare beneficiaries who used an FCHIP CAH participating in the SNF/NF intervention in an analytic year.
2. Comparison Group CAH Beneficiaries=All Medicare beneficiaries who used a CAH in Montana and North Dakota that billed for SNF/NF admissions during the FCHIP Demonstration and did not use an FCHIP CAH in an analytic year.
3. Pre-FCHIP=August 1, 2013–July 31, 2016. Post-FCHIP=August 1, 2016–July 31, 2019
4. Each unique beneficiary in the sample had multiple observations during the analysis period (each analytic year) which we refer to as beneficiary-years. n=number of beneficiary-years; FCHIP pre n=2,960; FCHIP post n=3,106; Comparison group pre n=208,294; Comparison group post n=223,002
5. Adjusted difference-in-difference regression models were used to determine if the pre/post change among FCHIP beneficiaries was different from the pre/post change among comparison group beneficiaries; all models controlled for observable demographic characteristics included within claims data including age, sex, race, disability status, and dual eligibility for Medicare and Medicaid. Statistical significance was determined at $p<0.05$.

- The percentage of FCHIP beneficiaries and comparison group beneficiaries with at least one SNF admission or ED visit remained about the same before and after FCHIP. The percentage of FCHIP beneficiaries with at least one inpatient admission increased slightly while declining slightly for comparison group beneficiaries, and the change between the two groups was statistically significant (p=0.005).

- Expenditures increased in all spending categories for FCHIP and comparison group beneficiaries. However, there was no statistically significant difference in the change between the two groups before and after FCHIP.

Telehealth Intervention

The results presented in ***Table C-6*** suggest that receiving care at an FCHIP CAH participating in the telehealth intervention does not have any significant impact on a beneficiaries' use of health care more broadly (i.e., use of health care at the FCHIP CAH and at other health care providers).

Table C-6. Changes in Beneficiary Utilization and Expenditures Billed to Medicare at FCHIP CAHs and Other CAHs That Bill for Telehealth Admissions in Montana, Nevada, and North Dakota, 2014–2019

	Pre-FCHIP Weighted Means		Post-FCHIP Weighted Means			
Outcome	FCHIP CAH Beneficiaries n=10,616	CG CAH Beneficiaries 147,785	FCHIP CAH Beneficiaries n=11,714	CG CAH Beneficiaries n=160,970	Regression Adjusted D-in-D	p-value
At least one telehealth encounter (%)	0.1	0.5	1.7	1.1	1.5	<0.001
At least one inpatient admission (%)	9.8	10.1	8.9	8.9	0.3	0.452
At least one ED visit (%)	37.2	34.1	38.9	34.0	1.9	0.004
Total annual inpatient expenditures ($)	3,258.24	3,173.36	3,321.36	3,260.00	−25.95	0.873
Total annual expenditures ($)	9,115.42	9,136.80	10,459.27	9,949.97	534.39	0.091

Notes:

1. FCHIP CAH Beneficiaries=All Medicare beneficiaries who used an FCHIP CAH participating in the telehealth intervention in an analytic year.
2. Comparison Group CAH Beneficiaries=All Medicare beneficiaries who used a CAH in Montana, Nevada, and North Dakota that billed for a telehealth encounter during the FCHIP Demonstration and did not use an FCHIP CAH in an analytic year.
3. Pre-FCHIP=August 1, 2013–July 31, 2016. Post-FCHIP=August 1, 2016–July 31, 2019
4. Each unique beneficiary in the sample had multiple observations during the analysis period (each analytic year) which we refer to as beneficiary-years. n=number of beneficiary-years; FCHIP pre n=10,616; FCHIP post n=11,714; Comparison group pre n=147,785; Comparison group post n=160,970
5. Adjusted difference-in-difference regression models were used to determine if the pre/post change among FCHIP beneficiaries was different from the pre/post change among comparison group beneficiaries; all models controlled for observable demographic characteristics included within claims data including age, sex, race, disability status, and dual eligibility for Medicare and Medicaid. Statistical significance was determined at $p<0.05$.

- Although the percentage of FCHIP and comparison group beneficiaries with telehealth encounters increased after FCHIP began, the increase was larger for FCHIP beneficiaries (D-in-D estimate 1.5, $p<0.001$). Despite this increase, it should be noted that the

percentage of beneficiaries with at least one telehealth encounter per year remains low at 1.7 percent among beneficiaries at FCHIP CAHs and 1.1 percent among beneficiaries at comparison CAHs.

- During the FCHIP Demonstration, the percentage of FCHP beneficiaries with at least one ED visit increased by 1.7 percentage points, and the percentage of comparison group beneficiaries remained unchanged. The difference between the two groups was statistically significant ($p=0.004$).
- Inpatient and total expenditures increased for FCHIP and comparison group beneficiaries after FCHIP began. However, there was no statistically significant difference in the change between the two groups before and after FCHIP.