Issue Brief
July 2020

Milbank Memorial Fund
*Using evidence to improve population health*

# Value-Based Primary Care: Insights from a Commercial Insurer in Arkansas

By Clare C. Brown, PhD, MPH, and J. Mick Tilford, PhD
Contributors: Alicia Berkemeyer, Victor Davis, and Adam Whitlock

## Policy Points

- Primary care transformation initiatives involving Arkansas Blue Cross and Blue Shield show reductions in average beneficiary spending and a 2:1 return on investment
- Savings in beneficary spending appear to increase over time for value-based primary care programs involving Arkansas and Blue Cross Blue Shield

## ABSTRACT

Public and private primary care transformation initiatives aim to strengthen primary care and lower costs by using value-based payments for care delivered in innovative care models like patient-centered medical homes (PCMHs). This issue brief examines whether there were changes in health care spending and utilization (years 2011 through 2018) associated with practice-level participation in one of the three Arkansas Blue Cross and Blue Shield value-based primary care programs. Health care spending and utilization were evaluated for a commercially insured population of beneficiaries attributed to practices that participated in either the federal Comprehensive Primary Care (CPC) Classic program, the Arkansas Blue Cross PCMH program, or the federal Comprehensive Primary Care Plus program. Average beneficiary spending decreased by approximately $30 per member per quarter for the CPC Classic and Arkansas Blue Cross PCMH programs, compared to practices that did not participate. Estimated savings suggests a 2:1 return on investment, which indicates that each dollar spent on care management fees among this commercially insured adult population resulted in a $2 savings in beneficiary spending. Reductions in acute inpatient stays and emergency department use likely account for the program savings. Savings were greater for participating practices in later years for each of the programs, suggesting that return on investment may increase over time.

## INTRODUCTION

The Centers for Medicare and Medicaid Services (CMS) projects that national health care expenditures will represent an alarming 19.4% of the United States' gross domestic product by 2028.[1] Recognizing that a fee-for-service payment approach may drive a substantial amount of the country's health care spending, multiple national efforts have attempted to increase the value of care. Assuming that increased use of primary and preventive care may ultimately reduce the need for services in the inpatient hospital setting or the emergency department, the Center for Medicare and Medicaid Innovation has tested several iterations of multipayer medical home initiatives through the Comprehensive Primary Care (CPC) program.

The CPC Classic initiative launched in October 2012 as a four-year program that spanned seven US regions and included Medicare, several state Medicaid programs, and commercial/self-insured payers. Payer alignment within CPC Classic created the pathway for Arkansas payers to collaborate to meet the needs of participating practices. Examples of this collaboration include aligned reporting and program requirements for the practices. Using many aspects of the CPC Classic as a template, CMS launched a new five-year program in 2017 with a more advanced primary care initiative called Comprehensive Primary Care Plus (CPC+). CPC+ has been adopted in 18 regions, including the original seven from the CPC Classic program. Arkansas participated statewide in the CPC Classic program and the new CPC+ program. Within the state of Arkansas, participation expanded from 58 practices in CPC Classic to 181 practices in CPC+. Arkansas Blue Cross is one of three commercial payers in Arkansas that participated in the CPC Classic program and the CPC+ program.

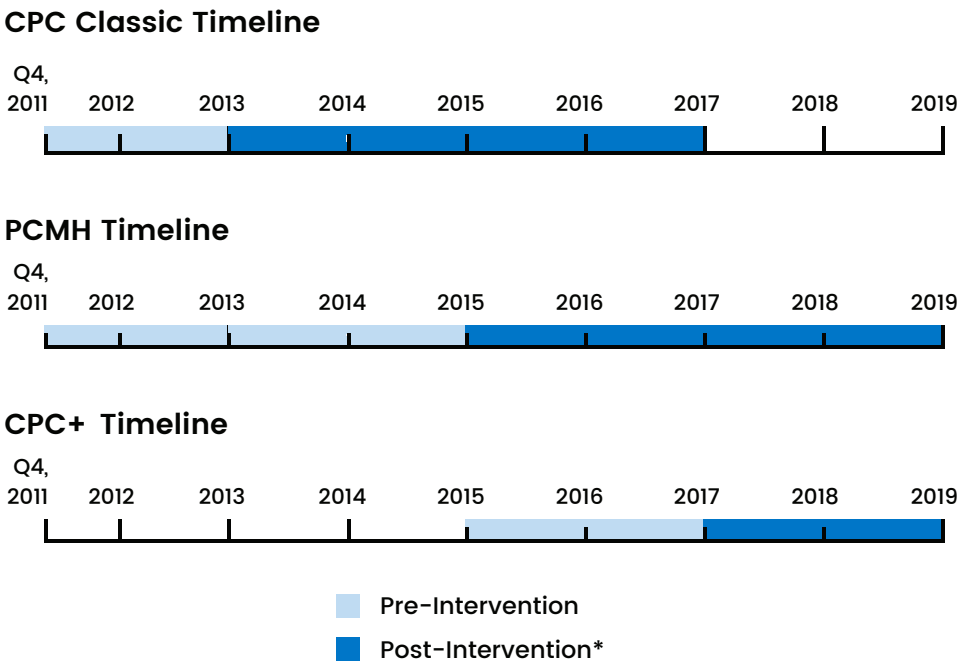
The medical home models adopted in the CPC Classic and CPC+ programs focus on providing comprehensive primary care to patients through a single practice, which coordinates care for their patients. In return, the practice or provider receives a monthly care management fee and has the opportunity to benefit from shared savings and/or performance-based incentive payments.

Previous analyses of the CPC programs among Medicare beneficiaries have largely evaluated outcomes among fee-for-service beneficiaries and have generally been unable to find reductions in spending that were large enough to compensate for care management fees paid to providers.[2,3] However, there has been some indication that for other patient populations, such as Medicare Advantage beneficiaries or commercially insured populations, greater improvements in the quality of care and larger reductions in spending may be observed.[4] Furthermore, evaluations of the CPC program among the Medicare fee-for-service population found small improvements in some outcomes in specific regions.[2] As such, continued evaluation of different patient populations and among different payers is needed to understand the potential for value-based primary care programs to effectively reduce costs and improve quality of care in certain contexts.

Some commercial payers have undertaken their own medical home initiatives, while also participating in the CPC programs. The Arkansas Blue Cross and Blue Shield Patient Centered Medical Home (PCMH) program, for example, includes many of the same components as the CPC Classic program, such as providing care management services for high-risk beneficiaries, expanding access to the care team outside of traditional office hours, and seeking feedback from beneficiaries regarding their experiences in the practice; however, practices are approved for participation in the program by each payer, rather than by CMS.

We evaluated practices that participated in either the CPC Classic program, the Arkansas Blue Cross patient-centered medical home (PCMH) program, or the CPC+ program by comparing spending and utilization using a "difference-in-difference" approach that accounts for changes in outcomes pre- and post-adoption of the value-based programs compared to outcomes in control practices (Exhibit 1). We additionally evaluated outcomes across the entire CPC Classic program and throughout the first two years of the CPC+ program for practices that participated in both programs (CPC Extended analysis). Finally, we estimated returns on investment (ROI) for each of the programs and in each of the program years. All analyses and values represent per member per quarter (PMPQ) values.

## Exhibit 1. Timeline for Value-Based Primary Care Programs in Arkansas Blue Cross and Blue Shield




*Given the implementation of the patient-centered medical home program (PCMH) in Arkansas, the beginning of the post-intervention period varied based on which year a practice joined the PCMH program. Additionally, Q4 of 2012 was removed for the CPC Classic evaluation and Q1 of 2015 was removed from the PCMH evaluation, due to volatility in participation at the start of the programs.

## KEY FINDINGS

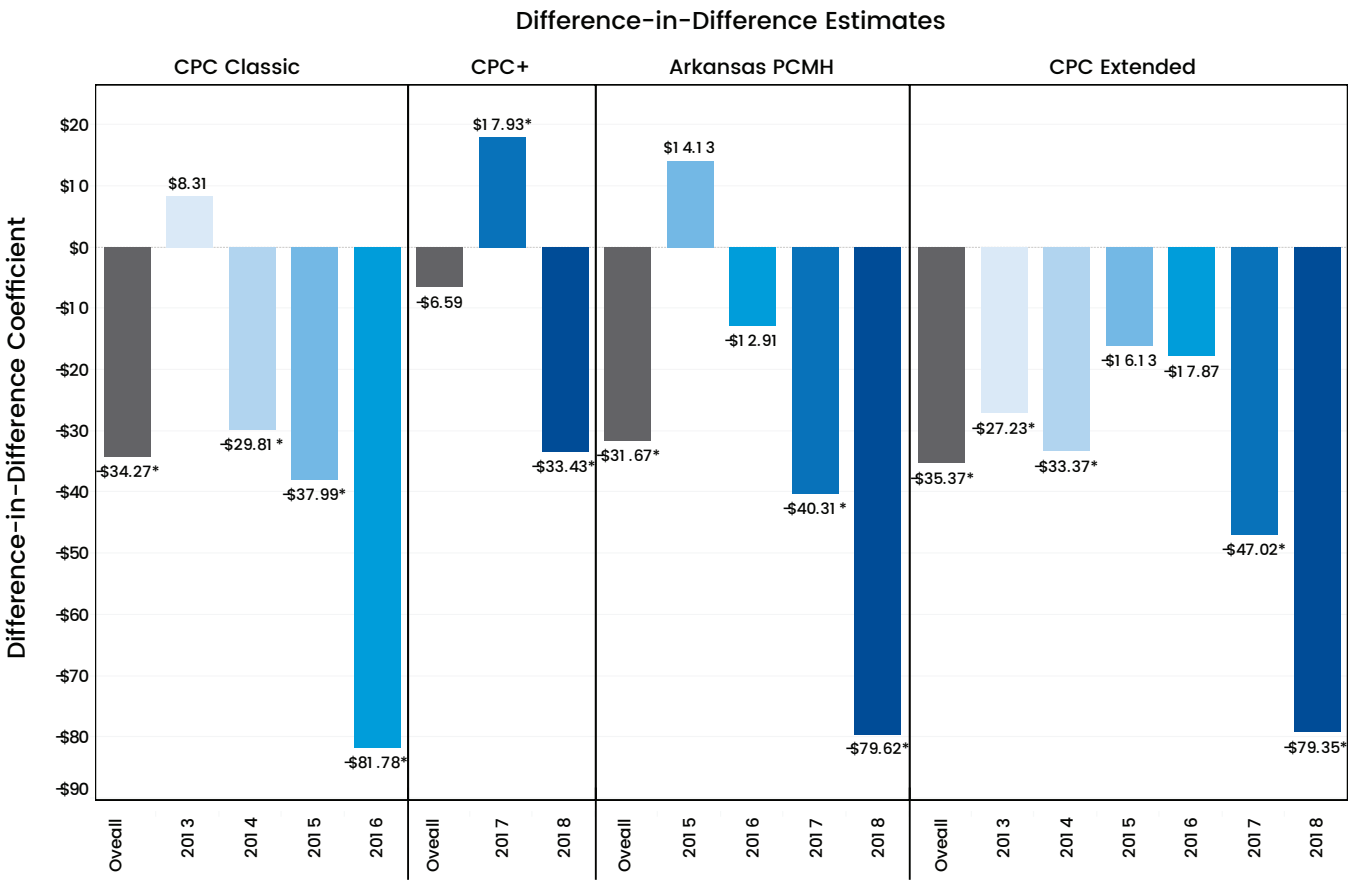
We found savings for practices that participated in the value-based programs compared to practices that did not participate in these programs (Exhibit 2). Practices that participated in the CPC Classic program had an average PMPQ savings of $34.27 compared to practices that did not participate, and practices that participated in the PCMH program had an average savings of $31.67 PMPQ. We did not find significant reductions associated with participation in the CPC+ program; however, we found reductions of $35.37 in the CPC Extended evaluation.

The magnitude of savings grew over time across all three value-based programs (Exhibit 2). For example, the PMPQ savings for the CPC Classic program increased from $29.81 savings in 2014 to $37.99 savings in 2015, representing a 27% increase in savings, which then doubled to $81.78 PMPQ savings in 2016.

The increase in savings over time can also been seen by the trends of total PMPQ spending for each program (Exhibit 3). The average PMPQ spending for the beneficiaries in nonparticipating practice surpasses the average PMPQ spending for beneficiaries in the participating practices, with greater savings seen in the later years of the programs.

Practices in the three value-based programs did see increased spending in the first year of a program. Practices participating in the CPC+ program, for example, saw an increase of $17.93 PMPQ relative to practices that did not participate. Practices in CPC Classic and PCMH saw increases of $8.31 and $14.13, respectively; however, these increases were not significantly different.

## Exhibit 2. Per Member Per Quarter Savings for All Programs, Overall and by Program Year



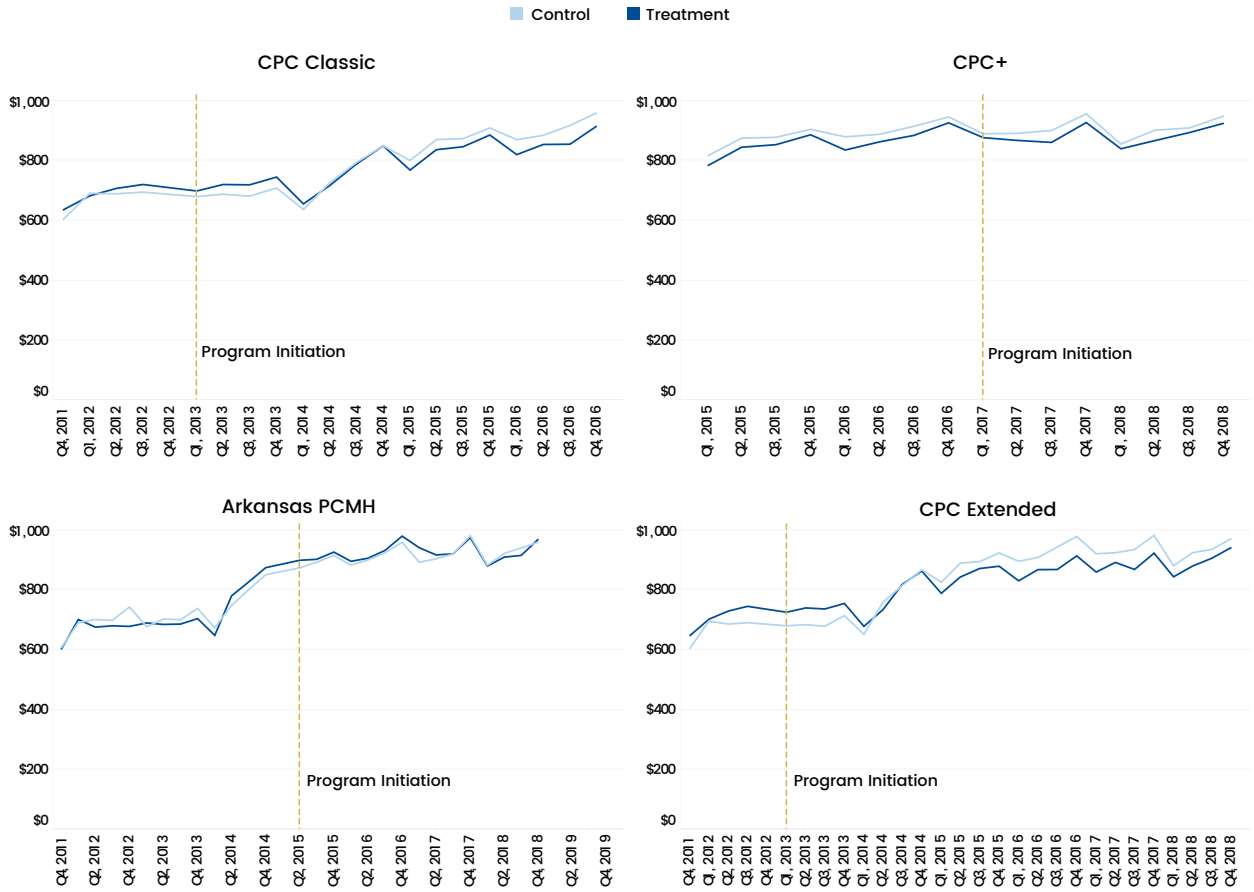

Notes: Values in the "Overall" bar represent the relative savings across all years for that program.

Values indicate the change in per member per quarter spending from the pre-intervention period to the post-intervention period for beneficiaries in the participating practices, compared to the change pre-to-post for beneficiaries from practices that did not participate. A negative value indicates a savings (i.e., a reduction in total spending in participating relative to nonparticipating practices). Values indicate coefficients from adjusted difference-in-difference analyses. An asterisk (*) next to a given value indicates a statistically significant coefficient at P<0.05.

ROI also increased over time, aligning with increases in PMPQ savings. Overall, we found an ROI of $2.53:$1.00 for the CPC Classic program, $2.22:$1.00 for the PCMH program, and $2.63:$1.00 for the CPC Extended evaluation. ROIs increased across years of each program.

These values can be interpreted as the amount of PMPQ savings for every $1.00 in care management fees. For example, the $2.53:$1.00 ROI for the CPC Classic program can be interpreted as $2.53 savings in PMPQ health care spending among beneficiaries in participating practices for every $1.00 in care management fees for participating beneficiaries. The final years of the CPC Classic and PCMH programs each had an ROI of $5.84:$1.00.

## Exhibit 3. Trends in Total Spending Over Time

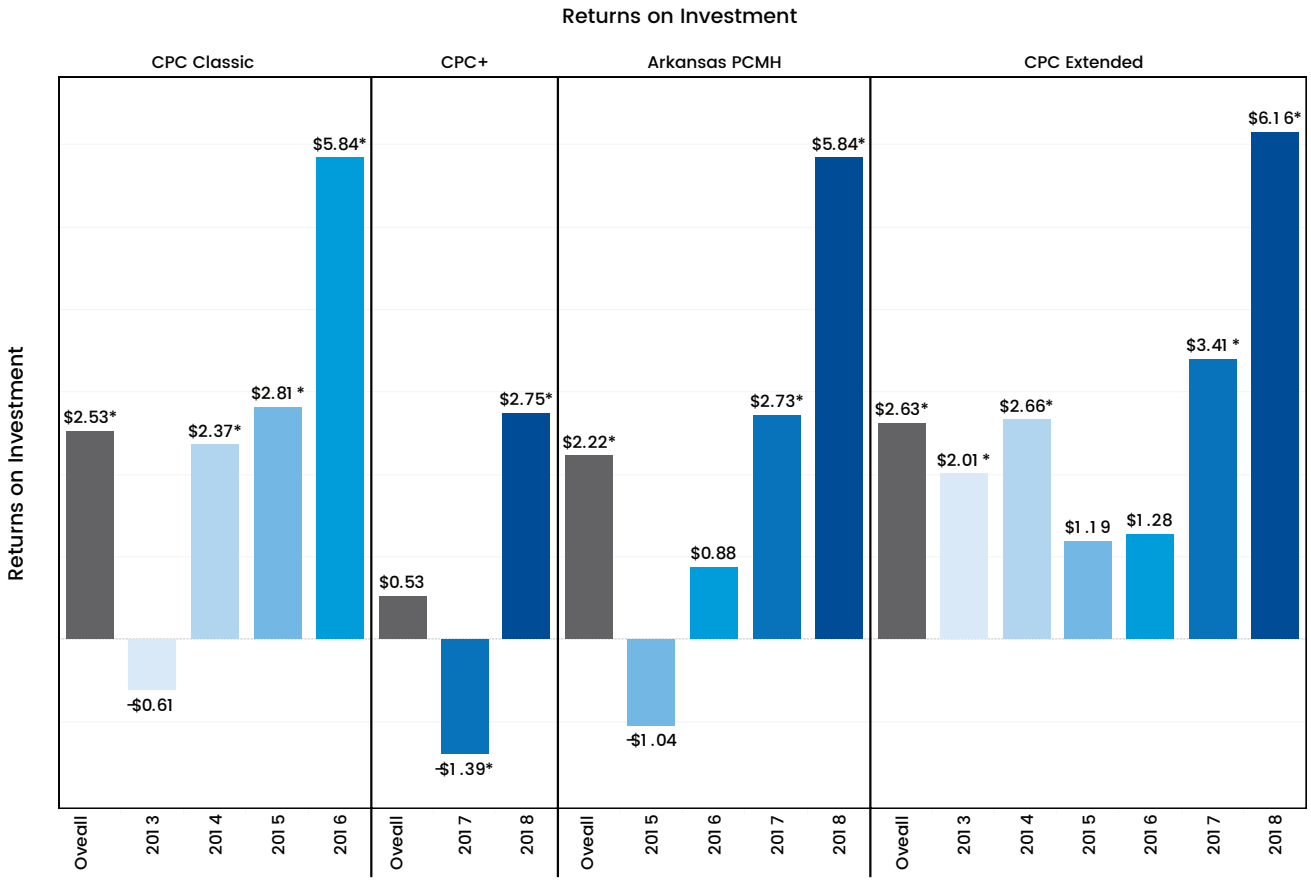



Note: Q4 of 2012 and Q1 of 2015 were removed for the CPC Classic and patient-centered medical home evaluations, respectively, due to volatility in participation at the start of the programs.

Our research suggests that reduced acute spending and emergency department (ED) spending may be primary drivers of reductions in PMPQ total spending for beneficiaries in participating practices. We found reductions in PMPQ acute care spending and ED spending for the CPC Classic program (-$13.14 and -$4.52), CPC+ program (-$7.54 and -$3.67), and in the CPC Extended analysis (-$16.11 and -$8.59).

While small in magnitude, we found reductions in the probability of an acute care visit for the CPC Classic program (-0.1 percentage points), CPC+ program (-0.1 percentage points), and in the CPC Extended evaluation (-0.2 percentage points). We also found reductions in the probability of an ED visit for the CPC Classic program (-0.9 percentage points) and the CPC Extended evaluation (-1.4 percentage points).

## Exhibit 4. Returns on Investment, Overall and by Year




Note: Returns on investment were calculated by dividing average PMPQ savings (i.e., difference-in-difference estimates from Exhibit 2) by average quarterly care management fees. Positive numbers indicate savings for each dollar invested in the program. An asterisk (*) next to a given value indicates a return on investment value calculated using a statistically significant difference-in-difference coefficient at P<0.05.

## Exhibit 5. Adjusted Difference-in-Difference Estimates for Spending and Utilization Outcomes

| | | CPC Classic | | CPC+ | | Arkansas PCMH | | CPC Extended | |
|---|---|---|---|---|---|---|---|---|---|
| | | Est. | *P* | Est. | *P* | Est. | *P* | Est. | *P* |
| **Total Spending** | $ | -34.37 | 0.001 | -6.59 | 0.494 | -31.67[a] | 0.025 | -35.37 | 0.002 |
| **Acute Spending** | $ | -13.14 | 0.002 | -7.54 | 0.006 | 3.71 | 0.369 | -16.11 | 0.002 |
| **Probability of Acute Visit** | pp | -0.14[a] | 0.003 | -0.06 | 0.050 | 0.00 | 0.986 | -0.18 | 0.001 |
| **Emergency Department Spending** | $ | -4.52 | 0.003 | -3.67[a] | <0.001 | 1.05 | 0.601 | -8.59 | <0.001 |
| **Probability of Emergency Department Visit** | pp | -0.90 | <0.001 | -0.27[a] | 0.070 | -0.24 | 0.353 | -1.42[a] | <0.001 |

pp=percentage point

Note: Estimates in this table indicate the change in that outcome from the pre-intervention period to the post-intervention period among beneficiaries in the participating practices, compared to the change pre-to-post for beneficiaries in practices that did not participate.

a *This is a coefficient associated with a difference-in-difference analysis that did not pass a fully adjusted parallel trends test. To make a conclusion that the change from pre- to post-intervention can be attributed to the intervention, a parallel trends test is used to test for similar trends among participating and nonparticipating practices before the start of the intervention.*

## LIMITATIONS AND GENERALIZABILITY

Arkansas participates in multipayer, value-based programs in a statewide market, which may have positively influenced the study findings. For example, two of the four commercial payers that currently participate in the value-based programs in Arkansas account for around 80% of the commercially insured population in the state. Such a large concentration of participation among the commercial population, in addition to Medicare (for CPC Classic and CPC+) and Arkansas Medicaid participation, provides increased potential for financial benefit at the practice level associated with improvements in the quality of primary care. Relatedly, the widespread participation in these programs ultimately compounds the available administrative and technical resources for practices and creates an environment across the state that is focused on value-based primary care. In fact, a study published earlier this year highlighted that commercially insured individuals in Arkansas may have experienced improved access to care as a result of the statewide Medicaid PCMH program.[5] Additionally, program participation increased over the study time for some populations within Arkansas Blue Cross (e.g., for administrative services only plans), with more customers participating in later years. As such, the findings for Arkansas Blue Cross value-based programs in this study may not be generalizable across other beneficiary populations and programs.

Second, there is the potential for selection bias given that providers were not randomly selected to participate in a given value-based program. This study used a number of variables to adjust for potential beneficiary, provider, and area-level factors that may differentially impact providers who participated and who did not participate in the programs.

Finally, this study used administrative data collected for billing purposes, rather than for research. The approach used in this study, the difference-in-difference design, is one of the most commonly utilized approaches to improve the causal argument using administrative data. However, coefficients that did not pass the parallel trends test (and noted in Exhibit 5) should be interpreted with caution.

## POLICY IMPLICATIONS

We evaluated changes in spending and utilization among beneficiaries in practices that participated in one of Arkansas Blue Cross's three value-based primary care programs and found savings from the CPC Classic and Arkansas PCMH programs, which may be attributable to reductions in acute care spending and ED spending.

This study found larger savings in participating practices in later years across all three value-based programs. This time-to-savings aligns with patterns indicated in the Mathematica evaluation of the CPC Classic program, which found savings for Medicare fee-for-services in Arkansas but only in the final two years of the CPC Classic program (2015 and 2016).[2] Moving forward, it will be critical to recognize that it takes time for the benefits of value-based programs to accrue. In fact, it has been estimated that it may take 18 months to three years for the benefits of medical home programs to be realized.[6]

This evaluation and others among the commercially insured and Medicare Advantage populations suggest some populations may be more likely to benefit from value-based primary care programs than the Medicare fee-for-service population.[4] Additionally, previous studies have found that value-based programs may have different effects on specific populations, such as patients with multiple or specific comorbidities, as well as vulnerable populations, such as individuals who live in rural areas or areas with low socioeconomic status. Future analyses should evaluate related characteristics among the commercially insured population in Arkansas to assess whether the patient mix and environment in Arkansas contributed to the positive findings from this study.

In addition, certain program features may have contributed to their success. For example, starting in 2015, Arkansas Blue Cross allowed beneficiaries to request a specific primary care practice as their medical home, and some self-funded employers or employers with insurance administered by Arkansas Blue Cross required the beneficiary to select a provider at the time of enrollment. Choosing a physician, or having the option to choose a physician, may ultimately improve beneficiary engagement as well as investments in their own health.

Arkansas Blue Cross provides personalized support to practices participating in the primary care value-based programs, including offering primary care

representatives and primary care analysts to each practice at no cost to the practice. The representatives offer tailored feedback for each practice's workflows, facilitate in-person and virtual learning opportunities, and help share best practices to close quality gaps and reduce utilization of ED and inpatient admissions. The primary care analysts additionally provide each practice with reports that have metrics specific to various patient populations that were included in quality, utilization, and cost-of-care calculations. The data allows practices to filter metrics by each participating provider, which provides practices the opportunity to identify additional areas for improvement at a more granular level. Further assessment of the individual components of the Arkansas Blue Cross value-based programs may be important for identifying potential drivers for the success.

## How We Conducted This Study

We analyzed insurance claims from beneficiaries insured by Arkansas Blue Cross between October 1, 2011, and December 31, 2018. To focus on the non-elderly adult population, we excluded all beneficiaries younger than age 18 or older than age 64. A separate analysis was conducted for each of three value-based primary care programs, including the CPC Classic program (claims from October 1, 2011, through December 31, 2016), the Arkansas PCMH Program (claims from October 1, 2011, through December 31, 2018), and the CPC+ program (claims from January 1, 2015, through December 31, 2018). Finally, a fourth analysis (CPC Extended) included an evaluation of CPC Classic programs that additionally participated in the CPC+ program (claims from October 1, 2011, through December 31, 2018). Note that Q4 of 2012 and Q1 of 2015 were removed for the CPC Classic (and CPC Extended) and PCMH evaluations, respectively, due to volatility in participation at the start of the programs.

Analyses included difference-in-difference (DID) models, using practice-level program participation as the treatment variable of interest. DID estimates can be interpreted as the change in a given outcome (e.g., total PMPQ spending) from the pre-intervention period to the post-intervention period for beneficiaries in participating practices, compared to the change pre-to-post for beneficiaries in practices that did not participate. Indication of whether or not a given DID estimate passed a fully adjusted quarterly test for trends can be found in Exhibit 5.

To be included in a given analysis, a practice must have had at least 30 beneficiaries for at least three of four quarters in at least one year before the program initiation and for at least three of four quarters in at least one-year after program initiation. For a beneficiary to be included in the model, the beneficiary must have been attributed to the same practice and program throughout a quarter and must have been attributed to a practice for at least three quarters in a given year. Practices in the PCMH analysis excluded practices that participated in either the CPC Classic or CPC+ programs. The final analyses included 47 CPC Classic practices (357 control practices; 574,749 beneficiaries), 109 CPC+ practices (384 control practices; 616,465 beneficiaries), 114 PCMH practices (238 control practices; 744,429 beneficiaries), and 39 practices in the CPC Extended analysis (254 control practices; 442,467 beneficiaries).

To improve interpretation, the estimates were based on multivariable linear regressions. Regression models included a linear quarterly trend and clustered standard errors at the practice level and were adjusted for beneficiary-level (e.g., age and comorbidities), area-level (e.g., median income and presence of a hospital in the county), and practice-level (e.g., total beneficiaries in the practice and total providers with attributed beneficiaries in a value-based program) factors. Findings from parallel trends tests, which must be met for causal interpretation in DID analyses, can be found in Exhibit 5.

## NOTES


1 Keehan SP, Cuckler GA, Poisal JA, et al. National health expenditure projections, 2019–28: Expected rebound in prices drives rising spending growth. *Health Affairs*. https://www.healthaffairs.org/doi/full/10.1377/hlthaff.2020.00094. Published online March 24, 2020. Accessed July 9, 2020.

2 Peikes D, Anglin G, Dale S, et al.; Mathematica Policy Research. *Evaluation of the Comprehensive Primary Care Initiative: Fourth Annual Report*. Baltimore: MD: U.S. Department of Health and Human Services. https://downloads.cms.gov/files/cmmi/CPC-initiative-fourth-annual-report.pdf. Published May 2018. Accessed July 9, 2020.

3 Peikes D, Dale S, Ghosh A, et al. The comprehensive primary care initiative: effects on spending, quality, patients, and physicians. *Health Aff*. 2018;37(6):890-899.

4 Shonk, RF, Sessums, LL. The comprehensive primary care initiative: another side of the story. Health Affairs Blog. https://www.healthaffairs.org/do/10.1377/hblog20181130.132681/full/. Published December 4, 2018. Accessed April 27, 2020.

5 Hinde JM, West N, Arbes SJ III, Kluckman M, West SL. Did Arkansas' Medicaid Patient-Centered Medical Home Program have spillover effects on commercially insured enrollees? *Inquiry*. 2020;57:0046958019900753.

6 Taylor EF, Dale S, Peikes D, et al.; Mathematica Policy Research. *Evaluation of the Comprehensive Primary Care Initiative: First Annual Report*. Baltimore: MD: U.S. Department of Health and Human Services. https://innovation.cms.gov/cpci-evalrpt1.pdf. Published January 2015. Accessed July 9, 2020.



Funding: This research was supported by Arkansas Blue Cross and Blue Shield.

## AUTHORS

**Clare C. Brown, PhD, MPH,** is an assistant professor in the health policy and management department at the Fay W. Boozman College of Public Health at the University of Arkansas for Medical Sciences (UAMS), where she serves as the co-director of Arkansas' first Master of Science in health care data analytics program. Dr. Brown is a health services researcher, with an emphasis on evaluating the impact of policy on health care delivery particularly among minority populations. Dr. Brown received her Master of Public Health in 2015 and her PhD in health systems and services research with a concentration in health economics in 2018, both from UAMS.

**J. Mick Tilford, PhD,** is a professor and chair of health policy and management at the Fay W. Boozman College of Public Health at the University of Arkansas for Medical Sciences. Dr. Tilford teaches courses in health economics to students in PhD and master's level programs. His research program focuses on methods for the economic evaluation of health services. Recent areas of interest include the effect of health policies on racial and ethnic disparities in care. He is the principal investigator on a T32 training grant from National Institute of Minority Health and Health Disparities, Office of Behavioral and Social Sciences Research to promote the application of advanced analytics in PhD programs. He received his PhD in health economics from Wayne State University (1993) with the assistance of a dissertation grant from the Agency for Health Care Policy and Research (now AHRQ).

## CONTRIBUTORS

**Alicia Berkemeyer,** senior vice president of provider network programs for Arkansas Blue Cross and Blue Shield, works closely with providers and stakeholders to support better health care in Arkansas. Alicia is responsible for all programs related to provider networks for Arkansas Blue Cross and Blue Shield and its affiliates. She has over 30 years of experience in the health care industry with a focus on primary care, pharmacy and payment innovation. She has led and managed the development of patient-centered medical homes, employer clinics and pharmacy programs. She earned her bachelor's degree in business management from John Brown University in Siloam Springs, Arkansas. She is a graduate of the advanced executive global program at Northwestern University, Kellogg School of Management.

**Victor Davis, FSA, MAAA,** is the chief actuary and vice president of actuarial and underwriting for Arkansas Blue Cross and Blue Shield. He has 18 years of experience in the health insurance field as an actuary, with focuses on reinsurance, healthcare economics, regulatory and policy advocacy, and risk adjustment methodologies. Davis received his Fellowship in the Society of Actuaries in 2008, and his MS in Economics from the University of Wisconsin-Madison in 1996.

**Adam Whitlock,** manager of primary care for Arkansas Blue Cross and Blue Shield, serves as the leader of a multi-organization and multipayer primary care stakeholder group supporting practices across the state of Arkansas. Mr. Whitlock is responsible for the day-to-day management of primary care programs. He has worked closely with practices and providers in the state on the Patient-Centered Medical Home and Comprehensive Primary Care Plus initiatives in addition to hospital systems partnered with Arkansas Blue Cross in accountable care organization models. He earned his bachelor's degree in biblical studies from Central Baptist College in Conway, Arkansas in 2008.

## About the Milbank Memorial Fund

The Milbank Memorial Fund is an endowed operating foundation that works to improve the health of populations by connecting leaders and decision makers with the best available evidence and experience. Founded in 1905, the Fund engages in nonpartisan analysis, collaboration, and communication on significant issues in health policy. It does this work by publishing high-quality, evidence-based reports, books, and *The Milbank Quarterly*, a peer-reviewed journal of population health and health policy; convening state health policy decision makers on issues they identify as important to population health; and building communities of health policymakers to enhance their effectiveness.



Milbank Memorial Fund
645 Madison Avenue
New York, NY 10022
www.milbank.org

Milbank Memorial Fund

*Using evidence to improve population health.*