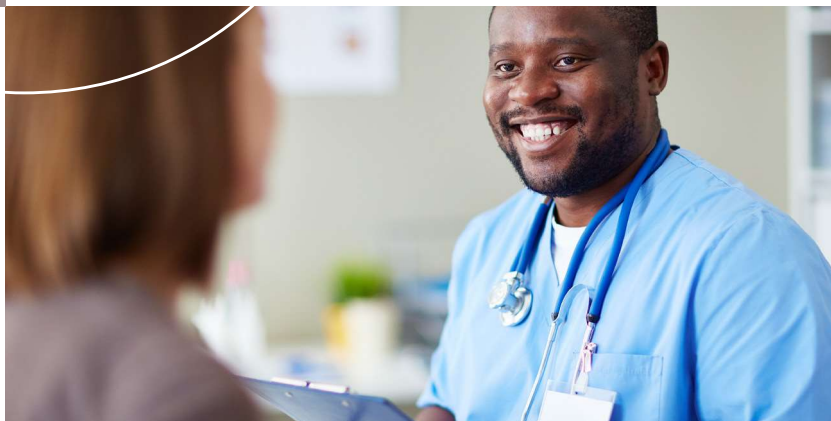




Investing in Primary Care: Why It Matters for Californians with Commercial Coverage

APRIL 2022



AUTHORS

Dolores Yanagihara, MPH, Integrated Healthcare Association and
Ann Hwang, MD, Bailit Health Purchasing, LLC

About the Foundation

The **California Health Care Foundation** is dedicated to advancing meaningful, measurable improvements in the way the health care delivery system provides care to the people of California, particularly those with low incomes and those whose needs are not well served by the status quo. We work to ensure that people have access to the care they need, when they need it, at a price they can afford.

CHCF informs policymakers and industry leaders, invests in ideas and innovations, and connects with changemakers to create a more responsive, patient-centered health care system.

About the Authors



Dolores Yanagihara, MPH, is vice president of strategic initiatives with **Integrated Healthcare Association**. IHA brings the health care community together to solve industry-wide challenges that stand in the way of high-value care.

Yanagihara acknowledges Christine Tu and Claudia Felix, MSHI/MHA, project managers at IHA, who provided overall coordination and analytic support.



Ann Hwang, MD, is a senior consultant with Bailit Health Purchasing, LLC. **Bailit Health** is a health policy consulting firm dedicated to assisting public agencies to achieve improved quality, equity, and affordability of health care programs.

Hwang acknowledges Michael Bailit, MBA, president of Bailit Health, who provided input on analysis design and interpretation and contributed to the development of the non-claims payment survey; and Deepti Kanneganti, MPP, senior consultant with Bailit Health, who helped construct, refine, and summarize findings from this survey.

Sponsors and Collaborators

Numerous people provided critical support regarding the design of the study, the interpretation of results, and the summary of findings. The California Health Care Foundation and the authors would like to thank the following organizations and people for their contributions:



Covered California was the initial project sponsor and funded much of the early analytic work. Lance Lang, MD, former chief medical officer, had the vision for this work and got it started; Margareta Brandt, MPH, quality improvement manager, kept the work going; and Alice Hm Chen, MD, MPH, chief medical officer, helped bring it to completion.



Rachel Block, program officer at **Milbank Memorial Fund**, helped sponsor and fund the non-claims payment survey.



An analytic team from **Onpoint Health Data**, including Katie McGraves-Lloyd, MS; Alex Ma, MS; Karl Finison, MA; and Adam Bakopolus, provided methodological guidance, measurement, and statistical analysis, while Sonita Hav, PMP, provided project coordination.

Rachel Reid, MD, MS, and Cheryl Damberg, PhD, researchers with the **RAND Corporation**, provided methodological input and insights.

Jennifer Jackman, senior vice president of strategy and business development with **America's Physician Groups**, guided non-claims payment survey modifications to fine-tune it to fit the delegated model in California.

Contents

4 Executive Summary

5 Introduction and Background

7 Methodology

7 Findings

Primary Care Spending Percentages Among HMOs, PPOs, and EPOs

Within HMO Analysis: Primary Care Spending Percentages in
Provider Organizations

Supplemental Analyses

14 Study Limitations and Areas for Future Research

15 Considerations for Policymakers

17 Appendices

A. Glossary

B. Study Methods

C. Supplemental Analyses

25 Endnotes

About the Primary Care Matters Resource Center

Primary care is the foundation of health and health equity. This report is part of a series on strengthening primary care in California.

To learn more, visit www.chcf.org/primary-care-matters.

Executive Summary

Primary care has been associated with important benefits, including better health in areas with more primary care physicians, better health among people who receive care from primary care physicians, better quality of care, and lower spending.¹ Given these benefits, this study sought to understand the level of primary care investment in California and how it varies across health plans and provider organizations. This study further analyzed how spending related to quality, patient experience, utilization, and cost performance, suggesting where there might be potential opportunity for improving outcomes and controlling health care spending.

Using health plan data from 2018 for 13.9 million commercially insured adults in California (about 80% of the commercially insured adult population), the first part of this analysis examined variation in the percentage of health care dollars spent on primary care for each type of product — that is, health maintenance organization (HMO), preferred provider organization (PPO), and exclusive provider organization (EPO) — offered by each of eight health plans. Among a total of 14 health plan–product combinations (health plan products), primary care spending as a percentage of total health care spending averaged 7.5% and ranged widely, from a low of 3.5% to a high of 12.7%. After adjustment for population age, gender, and clinical risk score, primary care spending percentages ranged from 4.9% to 11.4%. The average adjusted primary care spending percentage was 7.9% for HMO products, 6.0% for PPO products, and 5.8% for EPO products. While methodological details vary, these rates are in the same range as those found in other states and studies.²

Relationships between adjusted primary care spending percentages and measures of clinical performance, utilization, and cost were mixed at the health plan product level. Among the 14 health

plan–product combinations, higher primary care spending percentage was associated with better performance for clinical quality and marginally lower acute hospital utilization, but with slightly higher emergency department (ED) utilization and total cost of care.

The second part of the analysis focused on the 8.5 million adults in the data set who were enrolled in HMO products. Commercial HMOs in California are organized around a capitated, delegated model of care. In this payment model, provider organizations (POs) assume responsibility and financial risk for managing the care of their assigned patients. The analysis included 180 POs distributed across the state; among them, primary care spending percentage averaged 7.6%, with a range from 2.8% to 15.4%. The total cost of care on a per-member per-month basis averaged \$365, with a range of \$99 to \$740.

Performance of POs based on quartiles of primary care spending percentage was compared to better understand whether the relationship between primary care spending and performance varied by level of spending. POs in the highest quartile of primary care spending percentage had better performance on clinical quality, patient experience, utilization, and total cost of care. To demonstrate the potential scale of the observed associations between primary care spending percentage and performance, these findings were extrapolated across all of the POs. Specifically, if performance for POs in the three lower quartiles of primary care spending percentage equaled the average performance of those in the highest quartile, up to 196,000 more members would receive recommended care, 147,000 more members would rate their overall care ≥ 9 out of 10, and there would be 25,000 fewer acute hospital stays along with 89,000 fewer ED visits. In total, health care expenditures would be \$2.4 billion lower.

While primary care spending percentage at the health plan product level was not consistently associated with better outcomes, primary care spending percentage at the PO level was consistently and statistically significantly associated with better performance on measures of clinical quality, patient experience, utilization, and cost. This novel examination of primary care spending percentage among POs contributes new evidence supporting the important role of primary care and its relationship to positive quality and cost outcomes. The findings highlight an important opportunity for policymakers, purchasers, health plans, and providers to measure primary care spending percentage and enhance primary care investment, particularly within POs with the lowest primary care spending percentage.

Achieving critical mass for payment and delivery system reform requires multi-payer alignment around health system goals and strategies. In California, there is active interest in coordinating and aligning efforts to measure and report primary care spending percentage, and there is much to learn from work in other states.

Health care policymakers working to strengthen the health care infrastructure, improve patient outcomes, and contain cost growth should recognize that primary care is the foundation for achieving these objectives. As this and other research shows, investing a higher share of spending in primary care can catalyze major advantages to patients and our health care system.

Introduction and Background

Primary care is the provision of integrated, accessible health care services by clinicians who are accountable for addressing a large majority of personal health care needs, developing a sustained partnership with patients, and practicing in the context of family and community.³ Its value has been documented in a significant body of research: Studies have found that health is better in areas with more primary care physicians; that people who receive care from primary care physicians are healthier; and that the cardinal characteristics of primary care (first contact care, holistic person-focused care over time, comprehensive and coordinated care) are associated with better health.⁴ Research has also shown that higher primary care provider supply is associated with better quality of care, patient experience, and outcomes, including lower mortality.⁵

In terms of costs, observational studies have linked primary care to lower overall spending.⁶ In addition, models of care focused on strengthening primary care, such as patient-centered medical homes, have been found to reduce costly acute care, such as emergency department (ED) visits, inpatient hospitalizations, and hospital readmissions.⁷

Despite the evidence documenting the benefits of primary care, the proportion of total health care spending allocated to primary care in the United States is low when compared with other high-income countries. Primary care spending in Organisation for Economic Co-operation and Development (OECD) countries accounts for an average of 14% of all health care spending.⁸ In contrast, estimates of US primary care spending in populations that include the commercially insured range from approximately 5% to 8%, depending on the specific definitions and methodologies used,

with a high degree of variability in different states and populations.⁹ Furthermore, there is concern that this percentage may be declining.¹⁰

Primary Care Spending Defined

This analysis defines primary care spending as including payments for all services provided by pediatricians, internists, general practitioners, family practitioners, and nurse practitioners and physician assistants with a primary care focus (pediatric, adolescent, adult, geriatric, and family medicine). For practitioners with a hospice and palliative care, community health, or school health focus, only certain primary care-oriented services were included. This methodology aligned with previously used definitions, namely, the broad definition used in work spearheaded by the New England States Consortium Systems Organization.¹¹

Against this backdrop, policymakers and purchasers in California and other states are increasingly interested in measuring and ramping up primary care spending as a percentage of total health care spending, as a strategy for improving quality and outcomes and constraining growth in health care cost.¹² Some states, including Colorado, Connecticut, Delaware, Oregon, and Rhode Island, have established requirements designed to increase the proportion of health care spending that goes to primary care.¹³ State targets for primary care spending, while varying in their precise definitions, range from 9% to 12%.¹⁴

From a policy perspective, a key question is whether increasing primary care spending would generate savings over time sufficient to slow the growth of total health care spending. This study contributes to the evidence that health care systems that invest more in primary care as a proportion of their overall

budget perform better on measures of quality, utilization, and cost. Evidence is more limited for how performance changes or how fast it changes as primary care investment is increased.¹⁵

KEY TAKEAWAY. This study contributes to the evidence that health care systems that invest more in primary care as a proportion of their overall budget perform better on measures of quality, utilization, and cost.

This study examined the relationship between primary care spending and total cost of care and quality outcomes using a large database covering 80% of the commercially insured population in California. Using cross-sectional data from 2018, this study explored the variation in primary care spending percentage among health plan products, that is, different types of products — health maintenance organizations (HMOs), exclusive provider organizations (EPOs), and preferred provider organizations (PPOs) (see definitions in Appendix A) — offered by eight health plans. The HMO-enrolled population could be assigned to provider organizations (POs) that are delegated by HMOs to provide and manage care across the continuum for their patient populations.¹⁶ Further analyses examined variation in primary care spending percentage among POs for the HMO-enrolled population.

At both the health plan product and PO levels, this study explored whether a higher proportion of primary care spending was related to better performance as measured by selected clinical quality and patient experience measures, hospital inpatient and ED utilization, and total cost of care.

This research provides new information about the level of and variation in primary care spending among the large and diverse patient population in California. This study is also novel in its examination of variation in primary care spending among POs. Whereas previous studies have assessed primary care spending at a population or health plan level,¹⁷ this research also examined primary care spending percentage at the level of the PO, the entity charged with delivering and managing care. Moreover, this study adds to the existing literature on the relationship between primary care spending and quality and cost performance.

KEY TAKEAWAY. Whereas previous studies have assessed primary care spending at a population or health plan level, this research also examined primary care spending percentage at the level of the provider organization, the entity charged with delivering and managing care.

Methodology

The study used calendar year 2018 data from the Integrated Healthcare Association (IHA) multi-payer data set, which includes information for 13.9 million adults covered by eight health plans, including Kaiser Permanente, in California's commercial market.¹⁸ Data for children were not included in the analysis since their health care spending patterns differ from those of adults, children were not evenly distributed across entities, and few of the assessed performance measures were applicable to children. Primary care spending was calculated using a definition that included payments for all services provided by primary care providers. The percentage was calculated by dividing primary care spending for a defined population by the total medical and pharmacy costs for those members. Performance

measures included a clinical quality composite measure, patient experience, utilization, and cost. (Clinical measures are listed on page 20.)

The relationship of primary care spending to performance on these measures was evaluated using univariate linear regression models, with adjustments made to account for differences in patient characteristics related to age, gender, and clinical risk score. (Appendix B provides more information about the study population and data source, definition of primary care, calculation of primary care spending, measures used in the analysis, and statistical methods.)

Findings

Primary Care Spending Percentages Among HMOs, PPOs, and EPOs

Across the eight health plans in the IHA data set, there were 14 health plan–product combinations, including eight HMOs, four PPOs, and two EPOs. Because the primary care spending percentage varied considerably between products from the same health plan, the percentage was measured separately for each health plan product.

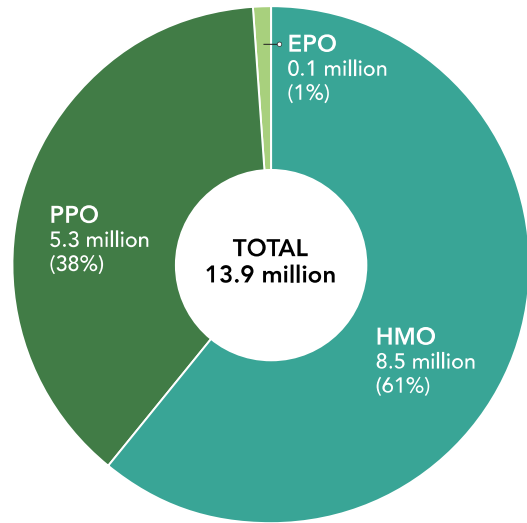
Of the study population of 13.9 million adults, 8.5 million (61%) were enrolled in an HMO product. HMOs require members to designate a primary care provider (PCP), and the PCPs may belong to one or more provider organizations (POs). In the capitated, delegated payment model in California, POs assume responsibility and financial risk for managing the care of patients assigned to them. In contrast, members in PPO plans are not required to select a PCP. Typically, PPOs directly contract with networks of individual providers and facilities, without the coordination function played by POs in the delegated model. In the study population, 5.3 million individuals (38%) were enrolled in PPOs. A

small proportion of the study population (0.1 million, or 1%) were enrolled in EPOs, which are similar to PPOs in provider structure, though with narrower provider networks (see Figure 1).

Characteristics of the 14 health plan–product combinations in the data set are shown in Table 1. The average clinical risk score was 1.15, which reflects the fact that the study population did not include children, making it somewhat higher-risk than the commercial population as a whole. Primary care spending percentage averaged 7.5%, with a range from 3.5% to 12.7%. These figures provide a baseline estimate of primary care spending for commercially insured adults in California. While methodological details vary, these rates are in the same range as those found in other states and studies.¹⁹

KEY TAKEAWAY. Among the 14 health plan products studied, primary care spending percentage averaged 7.5%, with a range from 3.5% to 12.7%.

Figure 1. Breakdown of Study Population Enrollment by Type of Product



Notes: EPO is exclusive provider organization. HMO is health maintenance organization. PPO is preferred provider organization.

Source: Authors' analysis of IHA primary care data set, 2021.

Table 1. Characteristics of Health Plan Products (N = 14)

	RESULT	RANGE (min to max)
Average member age (in years)	42.5	31.1 to 50.1
Percentage of members who are female	51.0%	45.9% to 53.3%
Average ACG risk score of members	1.15	0.76 to 1.43
Mean number of members	994,945	13,821 to 5,870,542
Primary care spending percentage (unadjusted)	7.5%	3.5% to 12.7%
Total cost of care, PMPM (unadjusted)	\$427	\$278 to \$551

Notes: ACG is Adjusted Clinical Group (see Appendix A). PMPM is per-member per-month.

Source: Authors' analysis of IHA primary care data set, 2021.

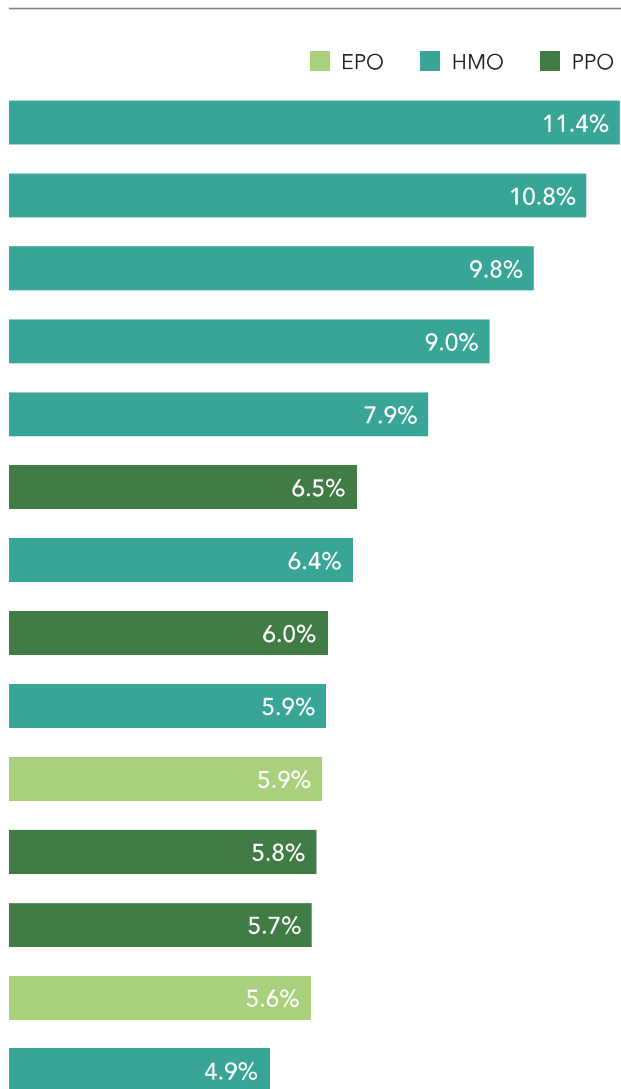
Figure 2 shows the variation in primary care spending percentage across the 14 health plan products, using primary care spending percentages adjusted for population age, gender, and clinical risk score. Adjusted primary care spending percentages varied widely, ranging from a low of 4.9% to a high of 11.4%. The average adjusted primary care percentage was 7.9% for HMO products, 6.0% for PPO products, and 5.8% for EPO products.

Health plan product-level analysis and interpretations were constrained by having only 14 data points. Across the 14 health plan products, associations between primary care spending percentage and performance were mixed — higher primary care spending percentage by a health plan product was associated with better performance for clinical quality and marginally lower acute hospital utilization, but slightly higher ED utilization and total cost of care. Assessing statistical significance of these associations was not assessed due to the limited number of data points.

Within HMO Analysis: Primary Care Spending Percentages in Provider Organizations

Further analysis was conducted within the HMO population. The PO structure of HMOs in California enabled the 8.5 million adults in the commercial HMO population to be assigned to 180 POs, which assume responsibility for managing the care of their patients. These 180 POs are distributed across the state and represent a mix of medical group, independent practice association (IPA), foundation model (i.e., a medical practice owned by a non-profit hospital), and mixed types of POs.

Figure 2. Adjusted Primary Care Spending Percentage, by Health Plan Product



Notes: EPO is exclusive provider organization. HMO is health maintenance organization. PPO is preferred provider organization.

Source: Authors' analysis of IHA primary care data set, 2021.

Table 2 summarizes characteristics of the 180 POs in the study. Across POs, primary care spending percentage averaged 7.6%, and ranged from 2.8% to 15.4%. The total cost of care on a per-member per-month basis averaged \$365, with a range of \$99 to \$740.

Table 2. Characteristics of Provider Organizations (N = 180)

	RESULT	RANGE (min to max)
Average member age (in years)	42.0	35.3 to 46.8
Percentage of members who are female	49.9%	32.5% to 60.1%
Average ACG risk score of members	1.11	0.37 to 1.82
Mean number of members	46,892	428 to 430,115
Primary care spending percentage (unadjusted)	7.6%	2.8% to 15.4%
Total cost of care, PMPM (unadjusted)	\$365	\$99 to \$740

Notes: ACG is Adjusted Clinical Group (see Appendix A). PMPM is per-member per-month.
Source: Authors' analysis of IHA primary care data set, 2021.

Linear regression was used to examine the relationship between primary care spending percentage adjusted for age, gender, and clinical risk score, and measures of clinical quality, patient experience, utilization, and total cost of care. There was a statistically significant positive association between adjusted primary care spending percentage and performance on each of the types of measures (see Study Findings on page 11).

KEY TAKEAWAY. Higher percentages of spending on primary care were associated with better clinical quality, better patient experience, lower utilization, and lower total cost of care.

To facilitate interpretation of the effects, the final column of the table extrapolates the change in performance associated with a one-percentage-point increase in primary care spending across the population of 8.5 million members. For example, a one-percentage-point increase in adjusted primary care spending percentage was associated with 0.76 fewer acute inpatient stays per 1,000 member-years. This translates into 6,400 fewer hospital discharges per year for the 8.5 million adult HMO members. For total cost of care, a one-percentage-point increase in adjusted primary care spending percentage was associated with \$9 lower spending per-member per-month. Across the HMO population of 8.5 million adult members, this represents \$923 million in lower spending per year, or approximately 2% of total spending.

STUDY FINDINGS

Association of Primary Care Spending Percentage with Key Performance Measures Among Provider Organizations (N = 180)

	CHANGE ASSOCIATED WITH A 1-PERCENTAGE-POINT INCREASE IN ADJUSTED PRIMARY CARE SPENDING	P VALUE	EXTRAPOLATION ACROSS THE ENTIRE ADULT HMO POPULATION (N = 8.5 million)
Clinical quality composite score	0.69-percentage-point higher performance	.01	Up to 58,000 more members receiving recommended care each year
Overall patient experience score	0.73-percentage-point higher performance	<.01	62,000 more members rating their doctor and all care ≥ 9 out of 10
Adjusted acute hospital utilization	0.76 fewer discharges per 1,000 member-years	<.01	6,400 fewer discharges each year
Adjusted ED utilization	4.04 fewer visits per 1,000 member-years	<.01	34,000 fewer ED visits each year
Adjusted total cost of care	\$9.09 lower spending PMPM	.04	\$923 million lower spending each year

Notes: ED is emergency department. HMO is health maintenance organization. PMPM is per-member per-month.

Source: Authors' analysis of IHA primary care data set, 2021.

KEY TAKEAWAY. A one-percentage-point increase in adjusted primary care spending percentage across the 8.5 million HMO population represents \$923 million in lower total spending per year.

To characterize the performance of POs with higher versus lower percentages of primary care spending, POs were categorized into four groups, based on the quartile of their adjusted primary care spending percentage. The average adjusted primary care spending percentage in the highest quartile was more than twice that in the lowest quartile (12.5% vs. 6.0%). POs in the lowest quartile of primary care spending percentage had fewer members (19,216) compared with POs in the highest quartile (78,284). Eighty-two percent (82%) of POs in the lowest

quartile of primary care spending percentage were IPAs; in comparison, the majority (61%) of POs in the highest quartile of primary care spending percentage were medical group or foundation model practices. There were no substantive differences in average age, percentage of members who were female, or clinical risk score of members, or PO geographic distribution, among POs in all quartiles.

The average performance on measures of clinical quality, patient experience, acute hospital utilization, ED utilization, and total cost of care was also computed for POs in each quartile. Across all measures, the best average performance was among POs in the highest quartile of primary care spending (see Study Findings on page 12). Acute hospital utilization for POs in the highest quartile of primary care spending was 23% lower than for POs in the lowest quartile, and ED utilization was 19% lower.

STUDY FINDINGS

Performance of Provider Organizations, by Quartile of Primary Care Spending Percentage

	PRIMARY CARE SPENDING PERCENTAGE (average adjusted)	CLINICAL QUALITY COMPOSITE SCORE (average)	RATING OF DOCTOR AND ALL CARE* (average)	ACUTE HOSPITAL UTILIZATION (discharges/1,000 member-years, average adjusted)	ED UTILIZATION (visits/1,000 member-years, average adjusted)	TOTAL COST OF CARE (PMPM, average adjusted)
1st Quartile (lowest)	6.0%	72.2%	68.0%	31	139	\$436
2nd and 3rd Quartiles	8.6%	73.9%	70.1%	29	130	\$440
4th Quartile (highest)	12.5%	77.9%	72.8%	24	113	\$400

* Percentage of patients who rated their doctor and all care ≥ 9 out of 10.

Notes: ED is emergency department. PMPM is per-member per-month.

Source: Authors' analysis of IHA primary care data set, 2021

KEY TAKEAWAY. Across all measures, the best average performance was among provider organizations in the highest quartile of primary care spending.

To demonstrate the scale of these observed associations between primary care spending percentage and performance, these findings were extrapolated across all of the POs. Specifically, the potential impact of higher primary care spending on performance was estimated assuming that performance for POs in the three lower quartiles of primary care spending percentage was equal to the average performance of POs in the highest quartile of primary care spending percentage. This extrapolation multiplied the observed difference by the size of the population, without making adjustments for differences between POs or other factors.

In this hypothetical scenario — where POs in the three lower quartiles of primary care spending percentage perform at the level of the POs at the highest quartile — the following differences would be observed over the course of the year across all of the POs:

- ▶ **\$393 million** more would be spent on primary care.
- ▶ **Up to 196,000** more members would receive recommended care.
- ▶ **147,000** more members would rate their doctor and overall care ≥ 9 out of 10.
- ▶ **25,000** acute hospital stays would be avoided.
- ▶ **89,000** ED visits would be avoided.
- ▶ **\$2.4 billion** in total health care expenditures, or approximately 6%, would be saved.

Supplemental Analyses

Pediatric populations. The PO analysis was repeated with the pediatric population included, and results were directionally aligned with results with children removed. These are summarized in Appendix C.

Standardized pricing. An additional analysis was conducted using costs calculated with standardized pricing. Results based on standardized pricing were directionally aligned with results using actual costs, indicating that pricing does not seem to be driving the variation in primary care spending percentage. These results are summarized in Appendix C.

Non-claims-based payments survey. Although the study did not measure non-claims-based payment to providers, other than capitation payments, a survey of non-claims spending was completed to better characterize the contribution of non-claims-based payments. Non-claims payments can make up a significant portion of practice revenue and may be particularly important in primary care. Oregon, for example, found that non-claims spending makes up almost half of primary care spending for the commercially insured population.²⁰ The survey results are summarized in the accompanying box and further described in Appendix C.

Capitation Represented the Vast Majority of Non-Claims Payments

California provider organizations (POs) were surveyed to better understand the amounts and source of non-claims payments they receive, as well as how they allocated funds to primary care. Of 184 capitated POs participating in IHA's Align. Measure. Perform. (AMP) program that were invited to complete the survey, responses were received from 47 — representing a total of 5.6 million members. The survey provides a snapshot of non-claims payments and their contribution to primary care spending among this limited sample. Key findings include the following:

- ▶ For non-claims payments received by POs from commercial HMO plans, capitation accounts for almost all (median of 98%) of these payments.
- ▶ Apart from capitation, POs reported receiving incentive payments, including shared savings payments and pay-for-performance payments. A few POs reported receiving care management fees, and one reported receiving electronic health record payments. In general, these payments were far less common and far smaller than capitation payments.
- ▶ POs received almost no non-claims payments from PPO plans, and the payments that were received were generally related to accountable care organization (ACO) arrangements.
- ▶ Most POs paid their primary care providers some capitation, ranging from 2% to 94% of total payments to primary care providers.

This limited analysis suggests that non-claims-based payments other than capitation comprise a small fraction of total payments for primary care in California.

Study Limitations and Areas for Future Research

The findings of this analysis of primary care spending in a large, commercially insured adult population in California may not be generalizable to other populations in the state, or to other parts of the country. The PO analysis was conducted in an HMO-only population, and thus may not reflect the experience of PPO members.

This analysis included only commercial payments from eight health plans, and did not include other payers, that is, other commercial health plans, Medicare, and Medicaid. Future analyses would ideally consider spending across all payers.

Because capitation pays a per-member per-month amount, no payment amounts were available for specific services rendered under capitation. A methodology was devised to assign an amount to each service provided under capitation. See Appendix B for a more detailed description of this methodology.

This analysis examined the performance associated with primary care spending percentages, which is distinct from the absolute level of primary care spending as measured by dollars per-member per-month. Accordingly, a high primary care spending percentage could result from either a high level of primary care spending or from a low total cost of care. Future analyses should examine absolute levels of primary care spending, in addition to primary care spending percentages, and their association with cost and quality performance. The absolute level of spending is also of policy interest, as the goal of raising the primary care spending percentage is to provide more resources for primary care services and supports.

The health plan product-level analysis, with only 14 data points, found that associations between primary care spending percentage and performance were mixed: Higher primary care spending percentage by a health plan product was associated with better performance for clinical quality and marginally lower acute hospital utilization, but with slightly higher ED utilization and total cost of care. The PO-level analysis, examining the performance of 180 POs under HMO products, found higher primary care spending percentage was statistically significantly associated with better performance for quality, patient experience, utilization, and total cost of care. Further analysis may be helpful for confirming these associations and better understanding the differences between the findings at the health plan product and PO levels.

KEY TAKEAWAY. Further research should explore the factors contributing to the variation in primary care spending percentage and its association with performance among provider organizations.

The associations found in this cross-sectional analysis do not imply causality but suggest avenues for additional research to better elucidate the relationship between primary care spending and cost and quality performance. In particular, further research should explore the factors contributing to the variation in primary care spending percentage and its association with performance among POs. This study found that POs in the lowest quartile of primary care spending percentage are smaller and more likely to be IPAs than POs in the highest quartile of primary care spending percentage. Future research should further explore these and other differences in structure (such as mix of primary care physicians versus specialists), payment (global

capitation, professional capitation, or fee-for-service), or programs (care management, team-based models, specific training initiatives, tools such as admission/discharge trackers, e-consultation services, and connected health devices), and whether there are explanatory features related to their patient population, specific market, or geographic location. This line of inquiry can help inform efforts to strengthen and transform care delivery.

Of note, this study did not account for underlying differences between patient populations related to socioeconomic status or social drivers of health that likely impact health care utilization and spending. Additionally, race and ethnicity data were not consistently available for use in this analysis.

The survey on non-claims payments provided preliminary information about the types and magnitude of non-claims payments received by POs, and should be confirmed in future work, ideally with a larger pool of respondents.

Finally, this study examined associations at a point in time; longitudinal studies would be beneficial for understanding the persistence or evolution of these associations over time, particularly given primary care's emphasis on primary and secondary prevention.

Considerations for Policymakers

This study provides a baseline assessment of the percentage of health care spending that goes to primary care in the commercially insured adult population in California, and demonstrates that there is wide variation in primary care spending percentage among health plan products, as well as among POs.

The PO-level analysis among adults enrolled in HMOs in California's commercial market provides novel information about how primary care spending varies among provider organizations. The PO-level analysis demonstrated that higher percentages of spending on primary care were associated with better clinical quality, better patient experience, lower utilization, and lower total cost of care. It comports with previous studies suggesting a beneficial relationship between primary care and clinical quality, patient experience, and cost outcomes.

While existing research (including this study) does not address the question of causality — that is, whether increasing primary care spending percentages would, on its own, lead to improved outcomes — it provides growing evidence of the benefits of high-quality primary care. Taken as a whole, this body of literature supports increased investment in primary care. A number of states, including Colorado, Connecticut, Delaware, Oregon, and Rhode Island, have established goals for primary care spending percentage at the state level and have launched data collection and reporting efforts. Some states have included primary care spending targets as part of their programs to measure overall health care cost growth, allowing for the use of unified data collection, analysis, and reporting processes.

In addition to enhancing the research base on the benefits of primary care broadly, this study adds new information specifically about the relationship of primary care spending and performance at the level of the PO. Not only do primary care spending percentages vary markedly between POs, but higher primary care spending percentages are associated with better clinical and cost outcomes. This suggests that there may be additional opportunities to focus on strengthening primary care at the PO level.

Investment at the PO level could be supported by strategies that first identify the factors that mediate the relationship between higher primary care spending and better cost and quality performance. These factors might include insights — into how providers are organized, are delivering care, or are paid — that could be spread and scaled. Education and outreach, coupled with incentives, could encourage investment by POs and payers in these strategies. In concert with these efforts, primary care spending percentage could be used for reporting and performance measurement, at the health plan level as a whole, at the health plan product level, and at the level of POs, as a way of understanding where additional investments should be considered and prioritized.

Achieving critical mass for payment and delivery system reform requires multi-payer alignment around goals and strategies. In California, there is substantial interest in coordinating and aligning efforts to measure and report primary care spending percentage. Legislation has been introduced to establish an Office of Health Care Affordability that would, among other things, measure and promote sustained systemwide investment in primary care and behavioral health.²¹

Some stakeholders, including CHCF's Primary Care Investment Coordinating Group (PICG), are actively working to promote action, alignment, and standardization in payment and accountability. To accomplish this, PICG brings together public and private health care purchasers, policymakers, analysis and improvement specialists, consumer advocacy organizations, and funders. **PICG has recommended the following actions:**

1. Measure and publicly report primary care spending, including non-claims spending, in a standardized way.
2. Set a floor and/or target for primary care spending to stimulate adequate investment.
3. Pay for advanced primary care with prospective, risk-adjusted, population-based and performance-based payments.
4. Evaluate benefit design and provider networks, and incorporate contractual requirements such as PCP selection and matching.
5. Track progress and report on impact.

KEY TAKEAWAY. Investing a higher share of spending in primary care can catalyze major advantages to patients and our health care system.

The stakes are high. For health care policymakers working to strengthen health care infrastructure, improve patient outcomes, and contain cost growth, primary care is the foundation for achieving these objectives. As this and other research shows, investing a higher share of spending on primary care can catalyze major advantages to patients and our health care system.

Appendix A. Glossary

Adjusted Clinical Group (ACG) risk score. A diagnosis-based methodology that describes a population's morbidity based on the recorded medical diagnoses, and based on this, predicts the expected consumption of health services over a year.²²

Claim. A request for payment that an insurance plan member or a health care provider submits to the member's insurer when the member receives items or services that they think are covered.

Exclusive provider organizations (EPOs). A type of health plan where services are covered only if members go to doctors, specialists, or hospitals in the health plan's network, except in an emergency. Members do not need a referral to see a specialist.

Fee-for-service. A system of payment in which doctors and other health care providers are paid for each service performed. Examples of services include tests and office visits.

Health maintenance organizations (HMOs). A type of health plan that usually limits coverage to care from doctors who work for or contract with the HMO. It generally won't cover out-of-network care except in an emergency. HMOs often provide integrated care and focus on prevention and wellness.

Health plan product. In this analysis, the term *health plan product* denotes a particular health insurance option (such as an HMO) offered by a particular health plan (such as Blue Shield).

Member-months. The number of individuals covered by a health plan for a month, summed across a year.

Member-years. The number of individuals covered by a health plan in a year, accounting for the portion of the year they were covered. It equals the member-months divided by 12.

Non-claims-based payments. "Non-claims-based" means payments that are for something other than a fee-for-service claim.

Preferred provider organizations (PPOs). A type of health plan that contracts with medical providers, such as hospitals and doctors, to create a network of participating providers. Members pay less if they use providers that belong to the health plan's network. Members can use doctors, hospitals, and providers outside of the network for an additional cost. Members do not need a referral to see a specialist.

Primary care. Health services that cover a range of prevention, wellness, and treatment for common illnesses. Primary care providers (PCPs) include doctors, nurse practitioners, and physician assistants. They often maintain long-term relationships with patients and advise and treat a range of health-related issues. They may also coordinate care with specialists.

Provider organizations (POs). Groups of health care providers organized to contract with health plans to provide care for patients. In California, provider organizations participating in a capitated, delegated model of care assume responsibility and financial risk for managing the care of their assigned patients.

Appendix B. Study Methods

Study Population and Data Source

The study population included 13.9 million commercially insured adults enrolled with one of eight health plans, including Kaiser Permanente, that participate in the Integrated Healthcare Association (IHA) data set. Medicare Advantage plans were not included. Children under the age of 18 were excluded because children have very different health care spending patterns than adults in terms of both primary care utilization and use of inpatient and specialty care, children were not evenly distributed across entities, and few of the assessed performance measures were applicable to children. The 13.9 million adult members were enrolled in health maintenance organization (HMO), preferred provider organization (PPO), or exclusive provider organization (EPO) products offered by the eight health plans. Altogether, there were 14 combinations of health plan products represented in this data set (see Table B1). In terms of the HMO products, enrollment varies from less than 100,000 to more than 5 million members across the eight plans for a total HMO enrollment of 8.5 million adults (61% out of the total 13.9 million adults in the data set).

For the provider organization (PO)-level analysis, the 8.5 million HMO members were assigned to 190 POs. Pediatric-only POs and POs with fewer than 2,400 member-months were removed because small sample sizes would not yield reliable measure results, leaving 180 POs for analysis. These 180 POs are distributed throughout the state. The POs represent a mix of medical group, independent physician association (IPA), foundation model (a medical practice owned by a non-profit hospital), and mixed types of POs.

Kaiser Permanente is a significant part of California's commercial market, covering nearly half of the commercial population. The health plan product analysis included one Kaiser Permanente HMO product (7%

Table B1. The Eight Health Plan Data Contributors

	TOTAL COMMERCIAL ENROLLMENT
Aetna	200,000 to 2 million
Anthem Blue Cross	>2 million
Blue Shield of California	>2 million
Health Net	200,000 to 2 million
Kaiser Permanente	>2 million
L.A. Care Health Plan	<200,000
Sharp Health Plan	<200,000
Western Health Advantage	<200,000

Source: Katherine Wilson, *California Health Insurers, Enrollment*, (Oakland, CA: California Health Care Foundation, July 2021).

of the 14 total health plan products and 12.5% of the HMO products). Kaiser Permanente POs comprised just over 15% (28 of 180) of the PO observations. Across the 28 Kaiser Permanente POs, there was significant variation in adjusted primary care spending percentage, with their POs distributed across all four quartiles of spending percentage. It is important to remember that non-claims payments other than capitation were not included in the calculations, and Kaiser Permanente invests a significant amount in other non-claims services. The inclusion of the Kaiser Permanente plan and POs creates a more complete picture of commercial primary care spending in California and does not overly influence the results since each observation has an equal weight — that is, results are not weighted by population size.

The IHA data set includes the following member-level data submitted by health plans: eligibility, medical claims and encounters, pharmacy claims,

lab results, and cost information. The data set does not include claims and encounters for behavioral health, vision, dental, chiropractic, or acupuncture services. The eligibility data include information on payer type, product type, and member age and gender. For HMO members, the eligibility data also include assignment to a PO for each month (which in capitated arrangements is the PO receiving capitation for that member for that month). The medical claims and encounter data include codes for procedures and services with corresponding diagnoses, where the services were rendered, and by which provider and provider specialty they were rendered. The claims data also include information on the amount paid by health plans and by members for the services rendered. The cost file includes information on capitation payment amounts for each member.

Calendar year 2018 data were used.

Definition of Primary Care Spending

This analysis defines primary care spending as including payments for all services provided by pediatricians, internists, general practitioners, family practitioners, and nurse practitioners and physician assistants with a primary care focus (pediatric, adolescent, adult, geriatric, and family medicine). For practitioners with a hospice and palliative care, community health, or school health focus, only certain primary care-oriented services were included. This methodology aligned with previously used definitions, namely, the broad definition used in work spearheaded by the New England States Consortium Systems Organization.²³

For services rendered by a provider where the provider taxonomy code (standard codes that identify the specialty of the clinician providing a service on a claim) was missing or insufficient to make a determination as to whether this was a primary care provider, the spending for that service was allocated based on the proportion paid to primary care

providers versus specialty providers for that service across all POs and health plans where provider taxonomy codes were available.

Calculation of Primary Care Spending Percentage

Primary care spending percentage was calculated for each health plan-product combination and for each PO. For each health plan product, primary care spending percentage was the amount spent on primary care divided by the total medical plus pharmacy spending for the enrolled population based on the total allowed amounts (the amounts paid by health plans plus any cost sharing paid by members) for care received by members enrolled with that health plan product.

Similarly, the primary care spending percentage for each PO was determined by dividing primary care spending for all members assigned to that PO by the total medical plus pharmacy spending for those assigned members based on the total allowed amounts (the amounts paid by health plans plus any cost sharing paid by members) for care received by members assigned to the PO. This included care provided by the PO as well as by other providers for hospital, ambulatory, prescription drug, and ancillary services.

For services rendered under capitation in an HMO product, a fee-for-service (FFS)-equivalent allowed amount was requested from health plans. When an FFS-equivalent amount was not provided, the health plan's median PPO allowed amount for that service was used as the FFS equivalent. If the health plan did not have a PPO product, then the median allowed amount for that service across all health plans was used. To ensure that the sum of all FFS equivalents across all capitated services equaled the actual total capitation paid, a scaling calculation was applied to the FFS-equivalent amounts.

Measures of Clinical Quality, Patient Experience, Utilization, and Cost

Clinical quality, patient experience, utilization, and cost measures were selected from IHA's performance measurement programs.²⁴ These measures reflect priority areas for assessing value as identified by IHA's stakeholders, which include health plans and providers representing 90% of the commercial market in California.

The measures included the clinical quality measures listed below, which were combined into a clinical composite score. Several of these measures, including the measures related to colorectal cancer screening and diabetes control, have been identified as important health equity measures by purchaser entities within California.²⁵

For health plan products, the clinical composite score did not include the asthma medication measure because results were not readily available for adults only. A composite score was calculated for health plan products and for POs that had a minimum denominator of 30 or more observations for at least four of the measures. Missing measure rates were imputed based on how the entity performed for the measures they had reliable results for compared with the average rates across all entities for those measures.

The performance measures were as follows:

Percentage of...

- ▶ Members age 19 to 64 with asthma and a ratio of controller medications to total asthma medications of at least 50% (for PO analysis only)
- ▶ Women age 50 to 74 with appropriate breast cancer screening
- ▶ Women age 21 to 64 with appropriate cervical cancer screening
- ▶ Members age 50 to 75 with appropriate colorectal cancer screening
- ▶ Members age 18 to 75 with diabetes with...
 - ▶ HbA1c levels <8%
 - ▶ Nephropathy monitoring
 - ▶ HbA1c levels >9%
- ▶ Members age 18 or over who received prescription opioids at a high dose for 15 or more days during the measurement year

Additionally, the following individual measures were used:

- ▶ Patient rating of doctor and all care (for PO analysis only)
- ▶ Acute hospital utilization, medical and surgical, per 1,000 member-years
- ▶ Emergency department (ED) utilization, per 1,000 member-years
- ▶ Total cost of care, in dollars per-member per-month

For PO-level calculations of total cost of care, only costs up to \$250,000 per member were included.

Statistical Methods

The relationship of primary care spending to measures of clinical quality, patient experience, utilization, and total cost of care was examined using univariate linear regression models. Primary care spending, acute hospital utilization, ED utilization, and total cost of care were adjusted for differences in the mix of patients — specifically, age, gender, and clinical risk score using the Adjusted Clinical Group (ACG) risk score, a diagnosis-based methodology that describes a population's morbidity based on the recorded medical diagnoses, and based on this, predicts the expected consumption of health services over a year.²⁶ Clinical and patient experience measures were calculated according to measure specifications and included adjustments as specified by the measure steward. Total cost of care was also adjusted for geographic pricing differences using the Centers for Medicare & Medicaid Services (CMS) hospital wage index geographic adjustment factor. Results were considered significant at a P value of $\leq .05$.

Each regression model was validated for model assumptions including linearity, homoscedasticity, independence, normality, and outlier status. Linearity was validated using Q-Q plots. To test for homoscedasticity, the residuals were plotted against the predicted values. Independence was evaluated by including the Durbin-Watson statistic with values between 1 and 4. The normality assumption was validated by the Shapiro-Wilk test on the residuals with $W > 0.05$. Cook's distance < 1 was used to identify potential outliers, and no impact of outliers was found; the models were run with and without those data points, and no sizable differences in model performance were found.

Appendix C. Supplemental Analyses

Inclusion of Pediatric Populations

As expected, if pediatric populations are included in the provider organization (PO) analysis, the average age decreases, the risk score decreases, and the primary care spending percentage increases (Table C1).

Table C1. Characteristics of POs (N = 180) for the Adult Population vs. the Total Population

	ADULTS ONLY	TOTAL POPULATION
Average member age (in years)	42.0	36.2
Average member ACG risk score	1.11	0.98
Primary care spending percentage (unadjusted)	7.6%	9.0%

Notes: ACG is Adjusted Clinical Group (see Appendix A). PO is provider organization.

Source: Authors' analysis of IHA primary care data set, 2021.

Regression results, shown in Table C2, are similar to those in the adults-only population. Specifically, primary care spending percentage is associated with statistically significant results for acute hospital utilization, emergency department (ED) utilization, and patient experience. Although directionally consistent, there was no statistically significant association for the clinical quality composite score or for total cost of care. This is not unexpected as most quality measures did not apply to a pediatric population and because of likely different patterns of primary care and overall care use among the pediatric population compared with the adult population.

Table C2. Association of Primary Care Spending Percentage with Key Performance Measures Among POs (N = 180) for a Combined Pediatric and Adult HMO Population

	CHANGE ASSOCIATED WITH A 1-PERCENTAGE-POINT INCREASE IN ADJUSTED PRIMARY CARE SPENDING	P VALUE
Clinical quality composite score	0.43-percentage-point higher performance	.10
Overall patient experience score	0.62-percentage-point higher performance	<.01
Adjusted acute hospital utilization	0.63 fewer discharges per 1,000 member-years	<.01
Adjusted ED utilization	4.36 fewer visits per 1,000 member-years	<.01
Adjusted total cost of care	\$1.69 lower spending PMPM	.25

Notes: ED is emergency department. HMO is health maintenance organization. PMPM is per-member per-month. PO is provider organization.

Source: Authors' analysis of IHA primary care data set, 2021.

Use of Standardized Pricing

The role of price variation was examined by applying standardized pricing using Total Care Relative Resource Values (TCRRV).²⁷ Using standardized pricing allows examination of the relationship between primary care spending percentage and various performance measures, holding prices constant. This analysis, which was done in the full population (children and adults), found a statistically significant association between higher primary care spending percentage and lower acute hospitalization utilization, lower ED utilization, and better patient experience (Table C3). Although directionally consistent, there was no statistically significant association between primary care spending percentage and total cost of care. These results are substantively similar to results using actual costs, indicating that pricing does not seem to be driving the variation in primary care spending percentage.

Table C3. Use of Standardized Pricing: Association of Primary Care Spending with Key Performance Measures Among POs (N = 180) for a Combined Pediatric and Adult HMO Population

	CHANGE ASSOCIATED WITH A 1-PERCENTAGE-POINT INCREASE IN ADJUSTED PRIMARY CARE SPENDING	P VALUE
Overall patient experience score	0.22-percentage-point higher performance	.04
Adjusted acute hospital utilization	0.47 fewer discharges per 1,000 member-years	.03
Adjusted ED utilization	2.64 fewer visits per 1,000 member-years	<.01
Adjusted total cost of care	\$1.28 lower spending PMPM	.18

Notes: ED is emergency department. HMO is health maintenance organization. PMPM is per-member per-month. PO is provider organization. Source: Authors' analysis of IHA primary care data set, 2021.

Examination of Non-Claims Spending

California POs were surveyed to better understand the amounts and source of non-claims payments they receive. A survey previously developed by the Millbank Memorial Fund, in partnership with Bailit Health Purchasing, LLC,²⁸ was modified with input from America's Physician Groups (APG) to ensure it was appropriate for use with POs in California. The survey requested information about the amounts of non-claims payments within six categories: prospective payments (including capitation and episode-based payments), performance incentive payments (including shared savings and pay-for-performance payments), provider salary payments, payments to support population health and practice infrastructure (such as care management fees and payments supporting electronic health records),

recoveries, and other payments. Modifications to the base survey included requesting information separately for non-claims payments received from health maintenance organization (HMO) versus preferred provider organization (PPO) plans, and adding questions exploring how POs allocated or paid for primary care within their organization for the commercial population.

The Integrated Healthcare Association (IHA) and APG invited 184 POs to complete the survey, and responses were received from 47 POs. IHA followed up with POs several times and held three lotteries to incentivize responses. Some POs expressed challenges with reporting how dollars are allocated or paid for primary care by the categories in the survey, and with securing resources to complete this

one-time survey. It is possible that if this survey were conducted more regularly, a better response rate could be achieved.

The survey provides a snapshot of non-claims payments and their contribution to primary care spending among this limited sample.

For non-claims payments received by POs from commercial HMO plans, capitation accounts for almost all of these payments. The median professional capitation payment received by responding POs was approximately \$130 per-member per-month (PMPM) and represented a median of 98% of all non-claims payments received by these POs. Other common non-claims payments POs received from HMO plans were incentive payments, including shared savings payments (ranging from \$0 to \$12 PMPM) and pay-for-performance payments (ranging from \$0 to \$5 PMPM). In addition, a few POs reported receiving care management fees (less than \$4 PMPM), and one reported receiving electronic health record payments (less than \$1 PMPM).

POs received almost no non-claims payments from PPO plans (total ranging from \$0 to \$14 PMPM), and the payments that were received were generally related to accountable care organization (ACO) arrangements.

The survey responses did not allow for calculation of the percentage of non-claims payments allocated to primary care, due to PO commingling of funds from multiple funding streams. The survey responses did, however, provide information about how POs allocated or paid for primary care within their organization. Most PO respondents paid their primary care providers (PCPs) some capitation, ranging from 2% to 94% of total payments to PCPs. Several POs also paid some type of incentive to PCPs. POs reported very few primary care-related payments to providers/practices for staffing and resources to support population health and

practice infrastructure, whether embedded within a practice or centralized at the PO level. This is not consistent with the findings of the APG Standards of Excellence survey, which indicates that nearly all POs have staffing and infrastructure to support population health management.²⁹ This inconsistency, along with feedback from some POs, suggests that POs are likely investing in these services, but that the survey structure was not conducive for reporting these investments and/or the POs' financial systems don't currently track costs in this way.

Although this survey had a limited response rate, it suggests that on average, non-claims-based payments other than capitation comprise a small fraction of total payments to primary care in California. This indicates that analyses of primary care spending percentage that focus on measuring claims-based and capitation payments should capture the vast majority of payments to primary care. Further work is needed to better understand and capture how much of POs' investment in population health management is related to primary care.

Endnotes

1. Barbara Starfield, Leiyu Shi, and James Macinko, "Contribution of Primary Care to Health Systems and Health," *Milbank Quarterly* 83, no. 3 (2005): 457–502; Sanjay Basu et al., "Association of Primary Care Physician Supply with Population Mortality in the United States, 2005–2015," *JAMA Internal Medicine* 179, no. 4 (2019): 506–514; and Mark W. Friedberg, Peter S. Hussey, and Eric C. Schneider, "Primary Care: A Critical Review of the Evidence on Quality and Costs of Health Care," *Health Affairs* 29, no. 5 (2010): 766–772.
2. Michael H. Bailit, Mark W. Friedberg, and Margaret L. Houy, *Standardizing the Measurement of Commercial Health Plan Primary Care Spending*, Milbank Memorial Fund, July 25, 2017.
3. Molla S. Donaldson et al., eds., *Primary Care: America's Health in a New Era* (Washington, DC: Institute of Medicine, National Academy Press, 1996).
4. Starfield, Shi, and Macinko, "Contribution of Primary Care to Health Systems and Health."
5. Basu et al., "Association of Primary Care Physician Supply with Population Mortality."
6. Friedberg, Hussey, and Schneider, "Primary Care: A Critical Review of the Evidence."
7. Marci Nielsen et al., *The Patient-Centered Medical Home's Impact on Cost and Quality: Annual Review of Evidence, 2014–2015* (Washington, DC: Patient-Centered Primary Care Collaborative, 2016).
8. "Primary Care," Organisation for Economic Co-operation and Development (OECD), accessed March 11, 2022.
9. Julie Reiff, Niall Brennan, and Jean Fuglesten Biniek, "Primary Care Spending in the Commercially Insured Population," *JAMA* 322, no. 22 (2019): 2244–2245; Ann Kempinski and Ann Greiner, *Primary Care Spending: High Stakes, Low Investment* (Washington, DC: Primary Care Collaborative, December 2020); Richard Slusky et al., *The New England States' All-Payer Report on Primary Care Payments* (Shrewsbury, MA: New England States Consortium Systems Organization [NESCSO], December 22, 2020); and Sara Martin et al., "Primary Care Spending in the United States, 2002–2016," *JAMA Internal Medicine* 180, no. 7 (2020): 1019–1020.
10. Kempinski and Greiner, *Primary Care Spending*.
11. Slusky et al., *The New England States' All-Payer Report*.
12. Christopher F. Koller and Dhruv Khullar, "Primary Care Spending Rate — A Lever for Encouraging Investment in Primary Care," *New England Journal of Medicine* 377, no. 18 (2017): 1709–1711.
13. "Primary Care Investment: State Policy and Spending Maps," Milbank Memorial Fund, accessed March 11, 2022; and "Primary Care Investment Efforts in States," Primary Care Collaborative, accessed March 11, 2022; Mary Jo Condon et al., *Investing in Primary Care: Lessons from State-Based Efforts*, California Health Care Foundation, March 23, 2022.
14. "Primary Care Investment," Primary Care Collaborative, accessed March 11, 2022.
15. Zirui Song and Suhas Gondi, "Will Increasing Primary Care Spending Alone Save Money?," *JAMA* 322, no. 14 (2019): 1349–1350.
16. Paul B. Ginsburg et al., *Shifting Ground: Erosion of the Delegated Model in California* (PDF) (Oakland, CA: California HealthCare Foundation, December 2009).
17. Reiff, Brennan, and Biniek, "Primary Care Spending in the Commercially Insured Population"; Kempinski and Greiner, *Primary Care Spending*; Slusky et al., *The New England States' All-Payer Report*; and Martin et al., "Primary Care Spending in the United States."
18. For context, the total size of the commercial market in California, including adults and children, and including both fully insured and self-insured, has been estimated at 20 million. See Katherine Wilson, *California Health Insurers, Enrollment*, (Oakland, CA: California Health Care Foundation, July 2021).
19. Bailit, Friedberg, and Houy, *Standardizing the Measurement of Commercial Health Plan Primary Care Spending*.
20. *Primary Care Spending in Oregon: A Report to the Oregon Legislature* (PDF) (Salem, OR: Oregon Health Authority and Oregon Department of Consumer and Business Services, February 2020).
21. "AB-1130 California Health Care Quality and Affordability Act (2021–2022)," California Legislative Information, February 14, 2022.
22. "Johns Hopkins ACG® System," Johns Hopkins ACG System, accessed March 14, 2022.
23. Slusky et al., *The New England States' All-Payer Report*.
24. *Align. Measure. Perform. (AMP) Programs: Measurement Year 2018 Program Guide* (Oakland, CA: Integrated Healthcare Association, 2017).
25. "DHCS Comprehensive Quality Strategy," California Department of Health Care Services, modified March 4, 2022; and *Attachment 1 to Covered California for Small Business 2023–2025 Qualified Health Plan Issuer Contract: Advancing Equity, Quality, and Value* (PDF), Covered California, January 2022.
26. "Johns Hopkins ACG® System," Johns Hopkins ACG System.
27. *Total Care Relative Resource Value (TCRRV™): A Measurement Approach to Achieve the Triple Aim* (PDF), HealthPartners, updated September 21, 2017.
28. Erin Taylor, Michael Bailit, and Deepti Kanneganti, *Measuring Non-Claims-Based Primary Care Spending* (PDF), Milbank Memorial Fund, April 2021.
29. *America's Physician Groups' Standards of Excellence Survey: Summary Document for Policymakers* (PDF), America's Physician Groups, 2018.