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Number 44

Measuring Primary Healthcare Spending

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Prepared by:
Pacific Northwest Evidence-based Practice Center
Portland, OR

Investigators:
Deborah J. Cohen, Ph.D.
Annette M. Totten, Ph.D., M.P.A.
Robert L. Phillips, Jr., M.D., M.S.P.H.
Yalda Jabbarpour, M.D.
Anuradha Jetty, M.P.H.
Jennifer DeVoe, M.D., D.Phil., M.C.R., FAAFG
Miranda Pappas, M.A.
Jordan Byers, M.P.H.
Erica Hart, M.S.T.

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None of the investigators have any affiliations or financial involvement that conflicts with the material presented in this report.

The information in this report is intended to help healthcare decision makers—patients and clinicians, health system leaders, and policymakers, among others—make well-informed decisions and thereby improve the quality of healthcare services. This report is not intended to be a substitute for the application of clinical judgment. Anyone who makes decisions concerning the provision of clinical care should consider this report in the same way as any medical reference and in conjunction with all other pertinent information, i.e., in the context of available resources and circumstances presented by individual patients.

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Preface

The Agency for Healthcare Research and Quality (AHRQ), through its Evidence-based Practice Centers (EPCs), sponsors the development of evidence reports and technology assessments to assist public- and private-sector organizations in their efforts to improve the quality of healthcare in the United States. The reports and assessments provide organizations with comprehensive, science-based information on common, costly medical conditions and new healthcare technologies and strategies. The EPCs systematically review the relevant scientific literature on topics assigned to them by AHRQ and conduct additional analyses when appropriate prior to developing their reports and assessments.

This EPC evidence report is a Technical Brief. A Technical Brief is a rapid report, typically on an emerging medical technology, strategy, or intervention. It provides an overview of key issues related to the intervention—for example, current indications, relevant patient populations and subgroups of interest, outcomes measured, and contextual factors that may affect decisions regarding the intervention. Although Technical Briefs generally focus on interventions for which there are limited published data and too few completed protocol-driven studies to support definitive conclusions, the decision to request a Technical Brief is not solely based on the availability of clinical studies. The goals of the Technical Brief are to provide an early objective description of the state of the science, a potential framework for assessing the applications and implications of the intervention, a summary of ongoing research, and information on future research needs. In particular, through the Technical Brief, AHRQ hopes to gain insight on the appropriate conceptual framework and critical issues that will inform future research.

AHRQ expects that the EPC evidence reports and technology assessments will inform individual health plans, providers, and purchasers as well as the healthcare system as a whole by providing important information to help improve healthcare quality.

If you have comments on this Technical Brief, they may be sent by mail to the Task Order Officer named below at: Agency for Healthcare Research and Quality, 5600 Fishers Lane, Rockville, MD 20857, or by email to epc@ahrq.hhs.gov.

Robert Otto Valdez, Ph.D., M.H.S.A.
Director
Agency for Healthcare Research and Quality

Therese Miller, Dr.P.H.
Director
Center for Evidence and Practice Improvement
Agency for Healthcare Research and Quality

Christine Chang, M.D., M.P.H.
Director
Evidence-based Practice Center Program
Center for Evidence and Practice Improvement
Agency for Healthcare Research and Quality

David W. Niebuhr, M.D., M.P.H., M.Sc.
Task Order Officer
Center for Evidence and Practice Improvement
Agency for Healthcare Research and Quality

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Key Informants

In designing the study questions, the EPC consulted a panel of Key Informants who represent subject experts and end-users of research. Key Informant input can inform key issues related to the topic of the Technical Brief. Key Informants are not involved in the analysis of the evidence or the writing of the report. Therefore, in the end, study questions, design, methodological approaches, and/or conclusions do not necessarily represent the views of individual Key Informants.

Key Informants must disclose any financial conflicts of interest greater than $5,000 and any other relevant business or professional conflicts of interest. Because of their role as end-users, individuals with potential conflicts may be retained. The TOO and the EPC work to balance, manage, or mitigate any conflicts of interest.

The list of Key Informants who provided input to this report follows:

Mark Friedberg, M.D., M.P.P.
Senior Vice President
Performance Measurement & Improvement
Blue Cross Blue Shield of Massachusetts
Boston, MA

Ann Greiner, M.C.P.*
President and Chief Executive Officer
Primary Care Collaborative
Washington, DC

Kevin Grumbach, M.D.*
Professor
Department of Family and Community Medicine
University of California, San Francisco
San Francisco, CA

James Harrison, M.H.A.
President and Chief Executive Officer
OnPoint Health Data
Portland, ME

Cory King, M.P.P.
Acting Health Insurance Commissioner
Department of Business Regulation, State of Rhode Island
Providence, RI

Christopher Koller, M.P.P.M.*
President
Milbank Memorial Fund
New York, NY

Katharine McGraves-Lloyd, M.S.
Senior Health Data Analyst
OnPoint Health Data
Portland, ME

David Morgan, B.Sc.
Head of Health Accounts
Organisation for Economic Co-operation and Development
Paris, France

Jacob Quinton, M.D., M.S., M.P.H.
Medical Officer
Center for Medicare and Medicaid Innovations
Baltimore, MD

Gina Turrini, Ph.D., M.P.P.*
Social Science Analyst
Department of Health and Human Services
Office of the Assistant Secretary for Planning and Evaluation
Durham, NC

Frederica Stahl, M.Phil.
Director
Healthcare Data and Markets
Peterson Center on Healthcare
New York, NY

*Provided input on Draft Report

Peer Reviewers

Prior to publication of the final evidence report, EPCs sought input from independent Peer Reviewers without financial conflicts of interest. However, the conclusions and synthesis of the scientific literature presented in this report do not necessarily represent the views of individual reviewers. AHRQ may also seek comments from other Federal agencies when appropriate.

Peer Reviewers must disclose any financial conflicts of interest greater than $5,000 and any other relevant business or professional conflicts of interest. Because of their unique clinical or content expertise, individuals with potential nonfinancial conflicts may be retained. The TOO and the EPC work to balance, manage, or mitigate any potential nonfinancial conflicts of interest identified.

The list of Peer Reviewers follows:

Kathryn E. Phillips, M.P.H.
Associate Director
Improving Access
California Health Care Foundation
Oakland, CA

Russell S. Phillips, M.D.
Appelbaum Professor of Medicine
Director, Center for Primary Care
Harvard Medical School
Boston, MA

Kurt C. Stange, M.D., Ph.D.
Director
Center for Community Health Integration
School of Medicine
Case Western Reserve University
Cleveland, OH

Measuring Primary Healthcare Spending

Structured Abstract

Background. Policy leaders and researchers have identified a range of primary care spending conceptualizations, developed frameworks and methods for measuring primary care spending, and documented the pros and cons of different approaches. However, these efforts have not been comprehensive, particularly as the number of estimates has grown. We continue this work by identifying the definitions, data sources, and approaches used to estimate primary care spending in the United States. Our objective was to identify where there is and is not consensus across methods, and how initial steps toward a standardized approach to estimating primary care spending might be achieved. We approached this comparison from a societal economic perspective.

Methods. Searches were conducted in Ovid MEDLINE® and Cochrane CENTRAL databases (inception to May 2, 2023), and were supplemented by manual reviews of reference lists, Scopus searches of key articles, gray literature searches of State and organization websites, and responses to a Federal Register Notice, as well as recommendations from Key Informants. Websites of States and organizations that produced reports were reviewed in November 2023 to identify updates. Publicly available estimates and reports of methods were supplemented by discussions with experts who have supported States' estimates.

Findings. We identified 67 primary care spending estimates for 2010 to 2021: 42 of these were produced by 11 State Governments for their State, 2 were published by the Veterans Health Administration, and 23 were published by researchers or other organizations, which include foundations and policy organizations. Forty-four estimates reported on primary care spending for a single State, one estimate reported spending for the New England States, and 22 reported national spending. To date, 13 State Governments have developed and/or are implementing measurements of primary care spending. When State Governments measure primary care spending, they produce regular, often yearly, estimates. States have produced one to eight estimates, demonstrating some States have more experience with this task than others.

Primary care spending estimates in our sample ranged from 3.1 to 10.3 percent. These estimates started with definitions of primary care, which are often labeled narrow or broad. Estimates may use these same labels to mean different things. Narrow definitions of primary care usually include fewer providers, locations, or service types, while broad definitions include more. State, regional, or national estimates are either reported as two estimates, one using a narrow and one using a broad definition of primary care, or as a single estimate labeled neither narrow nor broad. Variations in what providers, services, and locations are included in definitions of primary care are significant and likely contribute to variation in primary care spending estimates. However, it is difficult to distinguish differences in definitions and measurement from differences in actual primary care spending.

Conclusions. While there are some core similarities in how primary care spending is measured across State, regional, and national estimates, there are more differences. While there may be rationale behind some of these variations, this variation limits comparisons and what could be understood about the impact of policies. Furthermore, lack of clear, detailed reporting of

methods can obscure precisely how and why estimates differ. Research is needed that quantifies the impact different decisions and measurement methods have on spending estimates. To assure the validity and reliability of estimates of primary care spending, and facilitate comparisons and links to health outcomes, Federal, State, and policy leaders need to: (1) collaborate to create a primary care clinician database that can function as a public utility for States to allow for more precise identification of primary care clinics and clinicians, and reduce reliance on Current Procedural Terminology/Healthcare Common Procedure Coding System codes; (2) develop a template for transparent reporting of methods used to estimate primary care spending; (3) foster collaboration among Federal agencies and State leaders to develop a consensus definition of primary care and process for estimating primary care spending, with consideration of methods that are easy to understand and transparent; and (4) support the development and ongoing maintenance of State All-Payer Claims Databases, expand to include nonclaims payments, and supply Medicare and Medicaid estimates for every State.

Contents

Tables

Figures

Appendixes

Executive Summary

Main Points

- We identified 67 estimates of primary care spending for parts of the U.S. population. These included 42 State estimates produced by 11 U.S. State Governments.
- Ranges for recent estimates of overall primary care spending are:
  - Single estimates that do not specify using narrow or broad definitions of primary care ranged from 5.1 to 10.3 percent of total healthcare spending;
  - Estimates that specified using a narrow definition of primary care ranged from 3.1 to 6.1 percent of total healthcare spending;
  - Estimates that specified using a broad definition of primary care ranged from 5.6 to 10.2 percent of total healthcare spending.
- Measuring primary care spending starts by defining primary care. Primary care definitions are often labeled narrow and broad. While many estimates use this terminology (narrow and broad), these terms are defined differently across estimates. In general, narrow definitions of primary care include fewer, and broader definitions include more providers, locations, and service types.
- Estimates also vary in what types of payments, what types of payers/insurers, and which patients are included.
- Importantly, when primary care spending is reported as a percentage of total healthcare spending, a similar set of choices about what is and is not included in the denominator, which is total healthcare spending, impacts the estimate.
- Thus, key challenges to accurate and consistent measurement of primary care spending are:
  - Developing a consensus definition of primary care that specifies clinicians, locations, and services that can be reliably identified and used to estimate spending.
  - Establishing methods to measure, collect data, and attribute spending to primary care through nonclaims payments.
  - Appreciating the local and regional needs and politics that led to the differences in definitions and methods. Better understanding and documentation about how these contribute to differences in estimates and how creating a standard approach to estimation could complement, or at least coexist with local efforts, is needed.
- Developing standards for transparent reporting of methods and the many decisions that influence spending estimates, and supporting and implementing incentives or expectations for States and other entities to use this standard, could permit comparisons without limiting State choices.

Background and Purpose

Recent initiatives to reinvigorate implementation of high-quality primary care in the United States have included recommendations highlighting the importance of measuring and increasing the portion of healthcare spending committed to primary care. Similar recommendations have been made in the past. These have spurred several efforts to estimate primary care spending at State, regional, and national levels. The result has been a variety of primary care and primary care spending conceptualizations, frameworks, and methods for measuring primary care spending. Prior reports have documented some of these efforts and enumerated the pros and cons of different approaches to estimating primary care spending.

The purpose of this Technical Brief is to build on these prior efforts and expand the included information, particularly as the number of State Governments producing estimates of primary care spending has grown. The focus of this brief is on comparing and contrasting the definitions, data sources, and methods used across estimates of primary care spending. Our aim is to identify where there may be opportunities for consensus and where significant differences exist. Policymakers, healthcare leaders, advocates for primary care, patients, and researchers can use this information to evaluate the impact lack of standardization across the estimates has on their usefulness, to identify the potential benefits of a standardized approach to defining primary care and estimating primary care spending, and to better understand how consensus on a standard definition and method might be achieved.

Methods

This Technical Brief focuses on identifying estimates of primary care spending developed since 2008, and then documenting, comparing, and contrasting the methods used to calculate these estimates.

Searches for published studies were conducted in Ovid MEDLINE® and Cochrane CENTRAL databases from inception to May 2, 2023, and were supplemented by manual review of reference lists, Scopus searches based on key articles, gray literature searches of State Government and organization websites, and a Federal Register Notice requesting relevant data. This was augmented with input obtained from Key Informants through interviews, Web meetings, and emails. Website searches of States and organizations that had produced primary care spending estimates were updated in November 2023.

The primary care estimates and details about the methodologies used to produce the estimates were abstracted from these reports. Similarities and differences are summarized in the text, tables, and graphics in this brief.

Results

We identified 67 primary care spending estimates for the years 2010 to 2021. Forty-two of these estimates were produced by 11 State Governments for their State, 2 estimates were published by the Veterans Health Administration, and 23 estimates were published by researchers or other entitles, which included foundations and policy organizations. Estimates that used different narrow definitions of primary care ranged from 3.1 to 6.1 percent of total spending, estimates that used different broad definitions ranged from 5.6 to 10.2 percent of total spending, and estimates that made no distinction in definition used ranged from 5.1 to 10.3 percent of total spending.

With regard to estimates produced by State Governments, there are 13 State Governments that are developing and/or implementing measurements of primary care spending. This includes Rhode Island, whose government was revising its estimation method and data were not available when this brief was produced, and California whose government is developing an estimation method, and whose spending estimates for this report were produced by nongovernment entities. State Governments who were measuring primary care spending have produced one to eight estimates. This reflects the fact that some States are monitoring spending, and have more years of experience with this task than others. State estimates produced by other organizations have not been produced regularly.

Forty-eight estimates of primary care spending were based on claims data (data generated by a bill for a specific service); 32 estimates also included some type of nonclaims data. Nonclaims data are from other types of payments, such as capitated payments, payments for special programs, and infrastructure support. The Veterans Health Administration used a unique coding system they developed to track utilization as they do not bill for most services. Seventeen estimates, included in five reports, were based on data from the Medical Expenditure Panel Survey.

Regardless of how spending is reported, an essential starting point in producing an estimate is defining primary care. To some extent, estimates may vary because States and other organizations producing these estimates have started with different definitions of primary care. We highlight where there are similarities and differences in these definitional steps.

A key element is defining who are primary care clinicians. There is agreement that family medicine (general), general pediatrics, and general internal medicine physicians provide primary care. Whether obstetrician/gynecologists (OB/GYNs), homeopaths and naturopaths, and behavioral health clinicians are considered to be delivering primary care varies. Estimates are often produced by selecting all the payments to specific types of clinicians and they are selected by provider codes that indicate their specialties. Besides deciding what types of clinicians to include, these codes present challenges for several reasons: it can be difficult to exclude primary care physicians working as hospitalists or in emergency/urgent care settings; identifying which nurse practitioners (NPs) and physician assistants (PAs) work in primary care is a common problem; and individuals or their employers select the codes and they may use different ones for different reasons.

To address this difficulty of identifying primary care clinicians, organizations measuring primary care often need to also include lists of services and locations. This adds complexity to the task or operationalizing a spending estimate and creates more sources of variation across estimates. Service codes exist for billing purposes and are available in claims data, but the list of possible codes is long and some estimates include a relatively short list while others include hundreds. Hospitals and emergency departments are the most frequently excluded, but some estimates also exclude urgent care centers, and there is variation in whether settings such as hospice, nursing homes, and critical access hospitals are included.

Reports identified the primary care definitions used in spending estimates as one of three types: narrow, broad, or no distinction at all. Narrow definitions tend to identify a specific set of primary care clinicians, and services, delivered from a limited set of locations. Broad definitions, in general, include additional providers and services and may include more locations. Sometimes more than one primary care definition (e.g., narrow and broad) is used and more than one primary care spending estimate is reported. In some estimates, one definition of primary care spending is made, and the entity that developed the estimate did not indicate that their definition

was narrow or broad (i.e., no distinction). Importantly, there are few similarities in narrow or broad definitions of primary care across different estimates; narrow definitions of primary care are not necessarily alike.

Primary care spending is frequently reported as the percentage spent on primary care (numerator) out of total healthcare spending (denominator). These decisions about clinicians, services, and locations that count as primary care affect what is included in the numerator of spending estimates. What payers and types of payments are included or excluded varies across estimates and also impacts the numerator in spending estimates. Importantly, there is also variation on what is included and excluded in the denominator (total healthcare spending). For example, some estimates include pharmacy costs, where others exclude this. While we found no research examining the magnitude effect of these denominator differences, it seems this could have a significant impact on estimates.

Some estimates also reported spending in total dollars, per member per month (PMPM), or per member per year (PMPY). For those entities that reported overall PMPM or PMPY, the latter of which we converted to PMPM, estimates varied from $21.30 to $41.48. Ten entities reported PMPM or PMPY stratified by insurance type. The highest PMPM payments were observed for Medicare and the lowest for Medicaid, which may be explained by the fact that Medicare insures older people who require more primary care and may pay more for services than Medicaid.

To date, few sensitivity analyses have been conducted to assess the impact of different inclusions or exclusions on spending estimates. One exception was assessments that have quantified the impact of the inclusion of OB/GYN clinicians in primary care spending estimates, which research finds has a small impact on estimates.

Four reports showed evidence of a direct relationship between primary care spending and health outcomes (as spending increases, outcomes improve). We found little evidence that State Governments that produce primary care spending estimates have connected these estimates to health outcomes. We found no efforts, to date, that attempted to make comparisons about primary care spending estimates across States, using individual local estimation methods in the comparison. This is very likely due to the fact that these methods of estimation vary widely, as we show in this brief. Researchers who have made such comparisons have used their own data sources and estimation methods rather than the methods used by each particular State.

Limitations

- The majority of the sources used for this brief were reports that were not indexed (gray literature) and that were located through Web searches; there is risk that additional reports exist that we did not locate.
- Assuring that data are current is challenging; it is not always clear when estimates will be updated or released.
- Matching specific estimates to methods can be challenging, particularly for State estimates as State Governments may change their estimation methods and may not document the impact of this change, update prior estimates, or clarify when the changes were enacted.
- Most estimates do not include data for all patients and payers; all reports and studies indicate that some data are incomplete or missing, so comparison across estimates may not be possible and the separate impact of different methods and missing data may be hard to determine.

- How producers of estimates made decisions about which clinicians, locations, and services to include as primary care, what types of payments and payers to include or exclude, and a range of other granular decisions required to operationalize a measurement of primary care spending is not always clearly or consistently described. Moreover, what motivated these decisions is rarely described, and estimators did not describe the economic perspective that informed their measurement. This makes it difficult to evaluate how these decisions might impact the spending estimate, and how to assess the potential for consensus.
- It was outside of the scope of this Technical Brief to synthesize the State legislation that requires some State Governments to estimate primary care spending and analyze the policy issues. This is a step for future research.
- Our main objective was to identify and compare methods for measuring primary care spending. We approached this work from a societal economic perspective, one that recognizes that societies that have higher spending on primary care, as compared to those with lower investment, have healthier populations. Debate on what is optimal primary care spending is outside the scope of this brief.
- We benefitted from an Excel file that Freedman Consulting developed that compiled all of the provider, services, and location codes used in a sample of estimates they identified in their work. Their dataset bears a strong similarity to the group of estimates that we identified through our Web-based searches and allowed us to examine some of the similarities and differences among estimates that we would not have been able to do otherwise.

Implications and Conclusions

Primary care spending is measured through a series of granular decisions. While we found that there are some common clinicians, settings, and services that are included in most primary care spending estimates, there are many more differences. An increasing number of estimates are including payments made in ways other than through claims, and these payments can be challenging to document and attribute to primary care. Moreover, when primary care spending is measured over time, it is important to understand how these granular level decisions change to determine if an increase in spending represents the real, intended greater investment in primary care, or simply changes in what is counted.

Today, one can only speculate about the magnitude of impact that measurement differences have on primary care spending estimates because this has largely been unstudied. These differences seem to emerge from different views and definitions of primary care and from a fundamental inability to efficiently identify and enumerate the primary care clinician workforce.

The wide variation in the methods used to estimate primary care spending makes it difficult to determine if spending actually differs across situations and time or if the difference is in how primary care is measured. This weakens the impact of what could be a powerful tool to promote primary care. A standard definition of primary care spending and a transparent way of documenting how it is operationalized might foster more comparative research, as it would allow for more accurate comparisons and interpretation of primary care spending measurement in the United States, how this spending is affected by health policies, and ultimately how this spending is associated with health outcomes.

An increasing number of U.S. States are measuring and monitoring primary care spending as a component of policy efforts to strengthen primary care. There are four key things that could be

done by Federal agencies, the States, or a mixed consortium to improve capacity for assessing primary care spending and create a process for comparing States and related health outcomes. Federal health agencies should: (1) collaborate to create a primary care clinician database that can function as a public utility for States to allow for more precise identification of primary care clinics and clinicians, and reduce reliance on Current Procedural Terminology/Healthcare Common Procedure Coding System codes to identify them; (2) develop a template to foster transparent reporting of current efforts to estimate primary care spending; (3) foster collaboration among Federal agencies, and possibly with State leaders, to develop a consensus definition of primary care and process for estimating primary care spending, with consideration of methods that are easy to understand and transparent; and (4) support the development of All Claims Payer Databases in States, and supply Medicare and Medicaid estimates for every State.

1. Introduction

1.1 Background

The recent National Academies of Sciences, Engineering, and Medicine (NASEM) report on implementing high-quality primary care defined high-quality primary care as "the provision of whole-person, integrated, accessible, and equitable healthcare by interprofessional teams who are accountable for addressing the majority of an individual's health and wellness needs across settings and through sustained relationships with patients, families, and communities."[1] This report summarizes the abundant research evidence that healthcare systems that are based on, and therefore invest in, high-quality primary care produce better population health, better quality, and care equity at a lower cost.[1] There is a growing body of work that shows that when populations have access to a continuity relationship with a primary care clinician, the population experiences lower mortality and longer life expectancy, less hospital and emergency department utilization, and lower healthcare utilization and expenditures.[2-8] Similar patterns are observed in Rhode Island, which was one of the first States to monitor and study primary care spending.[9-13] Despite this evidence, primary care accounts for only small percentage of U.S. spending on healthcare and this percentage is declining rather than increasing.[1,14]

Designing, implementing, and monitoring systemic payment reform requires defining and having a standard way of measuring resources devoted to primary care. Therefore, the capacity to measure primary care spending is essential to Federal, State, and health systems efforts to assure that we realize primary care's potential to improve healthcare delivery and outcomes. The NASEM report also describes core functions and team capacities for primary care and the need for the capacity to flex to meet the specific needs of communities. Primary care spending needs to be sufficient in order to secure those functions and team members.

Despite agreement on the importance of primary care and the need to increase investment, there is confusion about the distinctions between primary healthcare and primary care, and there are no consensus definitions of primary care or primary care spending. While most policymakers approach assessing primary care spending with a definitional step that starts with defining primary care and involves deciding what clinicians, healthcare services, and locations count as primary care, this has led to divergence rather than consensus. For example, States (e.g., Rhode Island and Oregon)[15] have arrived at different definitions, as have international groups such as the Organisation for Economic Co-operation and Development (OECD), which uses different definitions of primary care and primary healthcare than those used in multiple U.S.-based studies.[16] Without an agreed upon definition of primary care, it is not possible to devise a standard approach to operationalizing claims, diagnosis codes, and accounting terms to arrive at consensus on measuring primary care spending.

Thought leaders and researchers in this field have started to identify the range of primary care and primary care spending conceptualizations,[15,17,18] and have begun the work of documenting the pros and cons of different approaches.[19,20] For example, the 2017 Milbank Memorial Fund report recommended using both a narrow and a broad definition of primary care in spending estimates,[17] the OECD recommends using System of Health Accounts categories in these estimates,[16] which do not work for estimating primary care spending for U.S. individual health plans. Rhode Island and Oregon, two States that have been at the forefront of measuring primary care spending,[21] have developed systems that differ from these, and Rhode Island is currently revising its methods for estimating primary care spending. The Primary Care Collaborative spending report prefers a definition of primary care that includes nurse

practitioners and physician assistants, nonclinical staff (e.g., community health workers), and infrastructure investments (e.g., electronic health records, data infrastructure/analytics).[22] In 2017, a convening to develop a framework for measuring primary care spending was held that brought together health economists, health services researchers, and policymakers from the United States and abroad. Consensus on definitions or methods was not reached, but a framework for understanding definitions and measurement was developed that can be a guide as it aims to increase definitional reliability using available data.[19]

1.2 Purpose and Scope

The purpose of this Technical Brief is to identify primary care spending estimates in the published and gray literature, then combine what is published about their methods with the expertise available from interviews with our Key Informants. This brief builds on prior efforts, expanding the included information, particularly as the number of U.S. State Governments producing estimates of primary care spending has grown. The focus of this brief is on comparing and contrasting the definitions, data sources, and methods used across estimates of primary care spending.

The scope of this brief is limited to estimates of primary care spending in the United States. This was set in the scope of work by the Agency for Healthcare Research and Quality. This scope acknowledges that the U.S. healthcare system, the role of State Governments in healthcare payment and delivery, and the regulation of health insurance in the United States is somewhat unique. The important role of States has contributed to the variation in approaches to estimating primary care. Billing and payment also differ significantly in other countries compared with the United States. While we can undoubtably learn much about promoting primary care from other countries, it is important to first understand and perhaps reconcile differences in measurement within the United States.

Our aim is to identify similarities and differences in methods and any trends that exist that might provide a path toward consensus and standardization. We approached this work from a societal economic perspective, one that recognizes that societies that have higher spending on primary care have healthier populations. The information in this brief may help policymakers, healthcare leaders, advocates for primary care and patients, and researchers evaluate the magnitude of differences in definitions across the estimates. This could also aid in consideration of the possible benefits and costs of a standard approach to measuring primary care spending, and identify where there may be opportunities for building consensus.

1.3 Guiding Questions

This Technical Brief addresses the following Guiding Questions:

1. What are the definitions, data sources, and methodologies used to estimate primary care spending in the United States, based on published reports?
    a. How do these various primary care spending estimation methods vary by:
        i. Relative pros and cons of each estimation method
        ii. Administrative burden
        iii. Range of spending estimates

iv. Sensitivity analyses

b. What is the evidence of the relationship between different primary care spending estimation methods and the absolute and relative levels of primary care spending and health outcomes including morbidity, mortality, quality of life, and health equity?

2. What are the research gaps in understanding primary care spending estimation methods based on the findings of the evidence map?
3. What are considerations for developing valid and standardized estimation of primary care spending?
4. What are approaches that health economists, health services researchers, payers, health systems, and policymakers can employ to develop and implement a standardized measure of primary care spending and to assess spending over time, across payers/populations, and across States?

1.4 Contextual Questions

a. Is there any emerging consensus among experts in the field toward a standard or preferred method for assessment of primary care spending?

b. How have policymakers and other decision makers used primary care spending measures?

2. Methods

There is no consensus on definitions or methods for measuring primary care spending. The published literature on the definitions, approaches to estimation, and usage of different estimates was limited, as expected. Given this context, this Technical Brief focuses on integrating information from reports from U.S. State Governments, policy reports, other gray literature, and insights from discussions with Key Informants (KIs), with the small number of identified journal articles. As our focus was on identifying and understanding the methods used to produce estimates of primary care spending, the documents reporting estimates and discussions with experts who have supported State Government efforts proved to be central. They provided the needed level of detail that was not always available in journal articles, which have space constraints and different objectives.

KI expertise on the topic, noted below, was used to refine our search strategy, supplement the information in documents, and inform our approach to organizing our findings to answer the Guiding Questions.

2.1 Engagement With Key Informants

In consultation with the Agency for Healthcare Research and Quality (AHRQ) we identified several experts to act as KIs with experience and expertise in developing frameworks for measuring primary care spending, developing guidelines or policies for measuring primary care spending, health economics, and health spending expertise, as well as users of these estimates. We were able to engage with 10 KIs and solicited their input on our search strategy and requested identification of key gray literature sources and how best to display the findings. We gave them a specific set of questions (Appendix A) that they provided either written comment to or participated in a conference call to address. Further along in the development of the brief, the KIs were engaged to confirm we had identified all available estimates and to develop our process for presenting the findings. We met individually with several KIs, while drafting the brief to ensure our interpretation was accurate and correctly reflected what was in the estimates. Additionally, several KIs reviewed and provided comments on our draft brief.

KIs agreed most work in this field has occurred in the past 10 years, but recommended searches start from 2008, just prior to the Affordable Care Act and the beginning of Oregon and Rhode Island's policy discussions. They also provided citations for seminal background articles and producers of reports. These were used to revise our search strategies and protocol.

The KIs reviewed the Guiding Questions and Contextual Questions, and confirmed their relevance. They offered insights and recommendations for source material, but did not suggest changes to the questions. They reviewed the different potential uses of an evidence map as part of the brief and concurred with the project team that it was unlikely that one could rigorously and consistently link primary care spending estimates to health outcomes, given the wide variations in methods for primary care spending estimation.

We held two additional KI calls at the end of June 2023 to present the primary care spending estimates we identified and ask for any missing estimates the KIs were aware of (e.g., States, consortia, health plans, etc.), including entities that may be planning to produce an estimate in the future. We reviewed the initial inventory of the methods used to produce these estimates and discussed various ways of describing the different types of payers and payments included or excluded in the estimates. KIs provided additional insights into the different data sources that could be used to produce estimates.

2.2 Published Literature Search

An experienced research librarian created search strategies based on medical subject headings (MeSH) and key words and performed searches in Ovid MEDLINE® and the Cochrane Central Register of Controlled Trials (from inception to May 2, 2023). The MEDLINE® search strategy is included in Appendix B. We focused our review of articles on the last 15 years based on feedback from the KIs and the assumption that estimating primary care spending is a relatively recent policy priority, and methods of estimating spending developed prior to this would be less likely to be relevant today. As the search terms were general, broader searches were not efficient and we are reasonably confident that important prior articles are cited in those we identified or were identified by the KIs.

We did not conduct a formal update of the published searches during the review period, as they were not a major source of information for this brief.

2.3 Gray Literature Search

Given that most primary care estimates in the United States are generated by State Governments, consortia, or consultants working for these groups, most of the information we reported and analyzed was from documents that were neither published in the traditional sense, nor indexed in citation databases, and usually not peer-reviewed. The generic term for this is gray literature. Our gray literature search was based on a combination of advice from a research librarian, KI suggestions, and team experience in the field. We focused on identifying reports generated by U.S. State Governments and Federal agencies, as well as health systems, and foundations that funded or conducted work related to primary care policy. Appendix C has details on search terms and the list of sites searched.

We monitored the gray literature up through November 2023 to identify if additional State Governments or other organizations produced new spending estimates or if updated estimates or methods were made public. We identified three new or revised reports and included these in the final brief.

2.4 Additional Searches and Identification of Documents Process

With input from the KIs, we identified seven relevant, landmark articles that we used for a citation search in Scopus (Appendix D). These were reviewed following the same approach as our published literature search review and included as appropriate.

We received one submission through the AHRQ Supplemental Evidence and Data for Systematic Reviews request (Appendix E).

We contacted several individuals, including several KIs, to gain further insight into specific estimates (e.g., gain access to specific codes used for definitions, determine current methodology, review crosswalk of data from States that have been gathered by specific organizations).

2.5 Inclusion of Documents

At the start of our work, we confirmed with AHRQ leadership that the focus of this Technical Brief would be on U.S.-based estimates of primary care spending. While it will be important for the United States to connect its conceptualization of primary care and spending

estimates with the international community, the first step would be to gain a detailed understanding of how primary care spending is operationalized in the United States, given the number of different estimates and the variation among those estimates. Additionally, the international community embraces a definition of primary care that includes behavioral and public health, referred to as primary healthcare. This definition is not yet embraced in the United States, where behavioral and public health are considered separate from primary care, further complicating comparisons. Moreover, the international communities use different data sources to establish their estimates, which are not available in the United States.

For the published literature, we reviewed titles and abstracts following the protocol we developed. We did not exclude any type of study or report as long as it addressed primary care spending estimates in the United States. Abstracts were reviewed by one team member, who determined if it was relevant; if so, the full text was obtained for review. Abstracts excluded by a team member were confirmed by a second reviewer. Full text documents were reviewed in the same way. Disagreements were resolved by consensus after review by a third reviewer or the whole project team.

This Technical Brief was not a typical review and synthesis of literature. Understanding how an estimate of primary care spending is produced requires understanding of how an organization makes a series of detailed and granular operational decisions. Several of the estimates reported the method they used in a document that was separate from the actual estimate of primary care spending (e.g., an implementation manual published prior to the primary care spending estimate report). We retained records of both documents and matched the methods to the actual estimate of primary care spending it generated, based on the year the method was published and the year the estimate was reported.

Three States have updated their estimation methods (Washington, Rhode Island, Delaware) and intend to apply these methods to future estimates. We located and included these methods documents, and we updated our gray literature search to determine if a new estimate was reported. We did find a new estimate for Massachusetts. Unless noted, we focused our description on the method used to produce the most recently released estimate of primary care spending.

As this is not a systematic review, we are not including a literature flow diagram or an excluded studies list; however we do include a list of citations for the identified and included documents (Appendix F).

2.6 Data Organization and Presentation

We used DistillerSR®, a software designed for systematic reviews, to assist in managing the selection process; EndNote, a reference management software; and Microsoft Excel to create lists that could be sorted, filtered, and compared.

2.7 Terminology Used in This Report

Some key data terms and sources frequently used in this report are defined and described below.

Claims are essentially bills sent to an insurer/payer for a specific service. Many States have established **all-payer claims databases (APCD**). APCDs are "large State databases that include medical claims, pharmacy claims, dental claims, and eligibility and provider files collected from private and public payers. APCD data are reported directly by insurers to States, usually as part

of a State mandate."[23] These databases make claims data more accessible and consistent. We use the terms **claims data** or use the phrase, **claims-based data** to refer to this type of data.

A growing portion of payments to individual or organizations that provide healthcare services are **nonclaims payments**. This is a general term that can be applied to any payment other than a fee for specific service. This type of payment can include capitated (i.e., set amounts for each person for a defined time) or prospective payments (i.e., payment of a predetermined, fixed amount for specific diagnosis or type of service), payments for infrastructure or incentives, or funds for a specific program. Some nonclaims payments are the revenue providers receive under programs called Alternative Payment Models (APMs). The Centers for Medicare & Medicaid Services (CMS) defines these as payments that "reward providers for delivering high-quality and coordinated care"[24] and this may include a wide range of different programs. Others use APM more generally to mean not fee-for-service. To avoid confusion, we refer to the information about any payments that is not fee-for-service that may be included in primary care spending estimates as **nonclaims-based data.**

Health Care Provider Taxonomy codes[25] are maintained by the National Uniform Claim Committee and are alphanumeric codes used to identify the type, specialty, and subspecialty of providers. They are separated into two distinct sets: Individual or Groups (of Individuals), which are the individual clinicians or organizations that bill for multiple clinicians under a single identifier (e.g., health maintenance organizations); and non-Individual, which are institutions such as Federally Qualified Health Centers (FQHCs). In this brief we refer to these codes as **provider codes** when referring to them together or in general; we refer to the Individuals or Group (of Individuals) codes as **individual/group codes** and non-Individual codes as **institution codes**.

Place of service codes[26] are maintained by CMS and are two-digit codes that indicate the location where medical care was received (e.g., office, home, prison, assisted living facility, urgent care facility, etc.). We refer to these codes by their name. CMS also maintains the list of Current Procedural Terminology (**CPT**)/Healthcare Common Procedure Coding System (**HCPCS**) codes,[27] which are used to report and bill for medical procedures and services performed by healthcare professionals. When we refer to these code lists, we generally refer to them together (**CPT/HCPCS**).

2.8 Assessment of Risk of Bias

The reports and articles included in this brief were not assessed for risk of bias as is routinely done in systematic reviews. Assessing the risk of bias of individual studies helps determine the level of confidence in the results and allows this to be compared across studies. These assessments are done using established tools and study-design specific criteria. This technical approach to bias does not correspond to the objectives of this brief, which were to identify and understand sources of variation in estimates of primary care spending. Assessing whether one method produces a better estimate than another is not within the scope of this brief.

This does not mean we did not consider other kinds of bias. For example, we did consider whether there may be publication bias. That is, States or others who produced reports that did not have the desired results could decide not to release or publish them. We made inquiries of several experts as well as our KIs, who are active in this field, and none were aware of any State Governments or other entities that estimate primary care spending and do not report it publicly.

By not assessing risk of bias, we are not implying that primary care spending estimates are neutral or that ideology and State priorities are not important. Policy and political agendas

influence which State Governments are investing in monitoring and reporting of primary care spending. States employ different definitions of primary care, leading to different ways of operationalizing primary care spending, such as choosing what types of clinicians are included in a primary care spending estimate. In this way, local context shapes spending estimates so they reflect intention and values. However, this is not an indication of less rigorous research design or execution.

2.9 Data Analysis and Presentation

The text, tables, and graphics were based on data we extracted from the included reports and articles, and an Excel file provided to us by Freedman Consulting (Appendix G). The file is an updated version of one that accompanied their report for California summarizing experiences estimating primary care spending in other States.[28] The file is a compilation of the provider, place of service, and CPT/HCPCS codes used by 12 State Governments and three organizations in their estimates of primary care spending. Eleven of the States in their file were also in our sample. However, there are differences in the source documents that they used (as compared with the source documents we found in our search). Six States had source documentation that matched ours, and five States did not. These differences are because the Freedman document includes some methods that have been updated but not yet applied. Thus, there are some relatively minor differences in this document (Appendix G) and our results.

In this Technical Brief, descriptive tables include the methods used to produce the most recent estimates. Matrix figures, including radar and Venn diagrams, used the Freedman Consulting file, as we wanted to present the similarities across the most current methods as a basis for discussion about the potential for consensus and a standardized approach. Details about the methods used to summarize the data and produce these tables and figures are provided in the results sections in the text or in table notes so that the assumptions and processes are clear and available to the reader near where the results are presented.

2.10 Peer Review and Public Commentary

Experts were invited to provide external peer review of this Technical Brief; AHRQ also provided comments. In addition, the draft brief was posted for public comment on the AHRQ website for 4 weeks. All comments were reviewed and used to inform revisions for the final brief. The disposition of comments document will be posted 3 months after the final brief is posted.

3. Results

3.1 Search Results

We identified 67 primary care spending estimates: 42 of these estimates were produced by 11 State Governments for their State, 2 estimates were published by the Veterans Health Administration (VHA), and 23 estimates were published by researchers or other entities, which included foundations and policy organizations. To date, there are 13 State Governments that are developing and/or implementing measurements of primary care spending. This includes Rhode Island, whose government was revising its estimation method at the time this brief was produced, making complete information unavailable, and California, whose government was developing an estimation method, and whose spending estimates for this report were produced by nongovernment entities. States ranged from producing one to eight estimates, which indicates that some States report annually and have more years of experience with this task than others.

Forty-eight estimates of primary care spending were based on claims data (data generated by a bill for a specific service); 32 estimates included some type of nonclaims data. Nonclaims data al other types of payments, such as capitated payments, payments for special programs, and infrastructure support. The VHA used a unique set of codes they developed for their system which does not bill for most services. Seventeen estimates, included in five reports, were based on data from the Medical Expenditure Panel Survey (MEPS). The details we abstracted from the included reports are in the evidence tables in Appendix H.

We have not included a spending estimate from Rhode Island. Although Rhode Island has been estimating primary care spending for several years, they were changing their estimation method at the time this brief was produced, making complete information unavailable. We reached out to one of our Key Informants (KIs) from Rhode Island, who confirmed this.[29]

3.2 Primary Care Definitions – Claims and Nonclaims Data

Estimates of primary care spending started with a definition of primary care that identifies specifics about who (which clinicians) provides primary care, what services and procedures are considered primary care, and where (the setting) primary care is delivered. The most frequently used data source in primary care estimates is claims data. Some estimates produced by State Governments are based only on claims. Other types of data used in estimates included nonclaims data and the MEPS data, which will be discussed in later sections of this report. Selecting the codes that correspond to a definition of primary care allows claims to be pulled with those codes and the dollar values to be summed, resulting in an estimate of the amount of money spent on primary care.

Some reports included more than one definition of primary care and more than one estimate of primary care spending. **Narrow definitions** of primary care tend to identify a small set of primary care clinicians and a specific set of primary care services. **Broad definitions** may add clinicians to those defined in the narrow definition as primary care clinicians and may include a longer list of services or all services provided by included clinicians. Below is an example of the narrow and broad definitions from the New England States Consortium Systems Organization (NESCSO) report:[30]

> Narrow definition (Definition 1): Using the provider codes and Current Procedural Terminology (CPT)/Healthcare Common Procedure Coding System (HCPCS) codes the

narrow definition included general practice, family medicine, pediatrics, internal medicine, nurse practitioner, and physician assistant. Primary care also included codes for Federally Qualified Health Centers (FQHCs), rural health centers, clinics, critical access hospitals, and rural hospitals (institution codes). For these codes, restrictions were always applied using revenue and CPT/HCPCS codes. Excludes were obstetrics/gynecology (OB/GYN) services, inpatient claims, and outpatient emergency department (ED) claims. Primary care services included office visits, preventive visits, visit codes used by public payers, consultation services, selected preventive services, telehealth services, immunization services, chronic care management services, advanced care planning, prolonged services, and home visits.

Broad definition (Definition 2): Using the provider codes, the broad definition included claims for the same clinicians as in the narrow definition: general practice, family medicine, pediatrics, internal medicine, nurse practitioner, and physician assistant; and FQHCs, rural health centers, clinics, critical access hospitals, and rural hospitals (institution codes, restricted using revenue and CPT/HCPCS codes). There was no restriction based on CPT/HCPCS codes, however OB/GYN services, inpatient claims, and outpatient ED claims were still excluded.

Importantly, there are few similarities across narrow definitions or across broad definitions of primary care; organizations use this terminology – narrow and broad – to mean different things operationally in their spending estimates.

3.2.1 Defining Primary Care Clinicians (Who)

It is important to know that States cannot easily produce a list of primary care clinicians or primary care practices from current licensing information or other existing data. To date the Federal Government also has not produced such a list from provider identifiers or other centralized sources. Without this information, States and other entities that use claims-based data to estimate primary care spending rely on a range of provider codes to identify individuals who are primary care clinicians.

For institution codes, there is a one-to-one relationship between the organization type (e.g., FQHC) and the numeric code used to identify it. This is not the case for the individual/group codes. There are a range of codes that could be used to identify a clinician (e.g., there are several different nurse practitioner [NP] codes). Moreover, it is the clinicians/provider organizations that choose the codes a provider has assigned to them, and they can choose more than one. Thus, there is likely variation in how similar types of clinicians and provider organizations make these choices. For example, a family physician might have a generalist code (207Q00000X) and if this physician also specializes in sports medicine, they might also have a family medicine, sports medicine code (207QS0010X).

Using the data from Freedman Consulting (Appendix G), approximately 50 to 79 percent of primary care estimates that use claims-based data include an expanded set of provider codes in their estimate. This expanded set includes OB/GYN, adolescent medicine, and primary care physicians who practice hospice and palliative care, community health and school NPs, clinical nurse specialists, and nurse nonpractitioners (e.g., Registered Nurse). In addition, some estimates also use an expanded list of institution codes that includes rural and critical access hospitals. A

smaller group (under ~50%) include at least one or more of the many types of individual/group codes for behavioral health clinicians in their estimates.

For entities that used broad and narrow definitions of primary care spending in their estimate, it was often the broad definition that included an expanded set of provider codes, though in some cases, as explained above, the clinicians are the same and it was differences in what CPT/HCPCS codes were included that made a definition broad or narrow. These strategies were generally used to help refine definitions of primary care clinician workforce.[31]

3.2.2 Defining Primary Care Services (What)

Full-scope, comprehensive primary care clinicians provide a wide range of services and procedures to their patients. Unlike proceduralists, primary care clinicians – as generalists – may use a wide range of CPT/HCPCS codes. And claims-based estimates use a constellation of different CPT/HCPCS codes in their estimates.

Table 1 (below) shows common services used across estimates of primary care spending which included: office visits, home visits, preventive visits, immunization administration, health risk assessment, screening and counseling, chronic care management services, advanced care planning, evaluation, and management services, domiciliary, rest home and multidisciplinary care planning, consultation, telephone and internet care, and prolonged services. There are numerous alpha-numeric codes that align with the name "office visit," for example. An entity including any subset of these office visit codes in their primary care spending definition was "counted" as including office visits. The exact codes an entity chose to use in its operationalization varied. Evidence Table G-1 shows the wide variation in service codes used in operationalizing primary care services. Some of the widest variations among entities is in the inclusion/exclusion of procedure and specific vaccination codes. How inclusion of services codes does and does not overlap in State estimates is presented visually below in Figure 4.

3.2.3 Defining Setting of Care (Where)

Most States took steps to exclude care delivered by clinicians in an ED or hospital, even if these clinicians are trained or identify as primary care clinicians. In some cases, these clinicians are hospitalists. There was variation in how hospitalists were identified, and this has implications for how primary care was operationalized in spending estimates. One method cited for doing this was developed by Welch et al., who identified inpatient primary care clinicians (i.e., any clinician receiving ≥90% of revenues in the inpatient setting).[17]

Three States reported using place of service codes to delineate primary care services (and thereby exclude ED- and hospital-based care). For example, Massachusetts identified primary care services using place of service codes for: school, office, home, walk-in retail health clinic, urgent care facility, FQHC, public health clinic, rural health clinic, homeless shelter, Indian health service sites, residential substance use treatment, and correctional facilities. We did not identify any *State-generated* estimate that clearly stated that they included the services delivered in hospital settings by primary care clinicians who see their patients in the hospital. Some States include codes for hospital-based obstetrics and newborn care in primary care.

3.3 Similarities and Differences in How Primary Care Is Defined

Table 1 shows the common codes used in claims-based primary care spending estimates. Appendix G provides a cross walk of the codes used in several estimates. The majority (~80%) of estimates identify family and general practice, internal medicine, and pediatric physicians, as well as some NPs and physician assistants (PAs) as primary care clinicians. In addition, most (~80%) of these estimates include institution codes for FQHCs, primary care clinics, and rural health clinics. Using general categories of providers may be increasingly inaccurate given current trends in the healthcare workforce. For example, more than half of new internal medicine physicians now subspecialize and one-third work as hospitalists.[32] Likewise, two recent reports from National Academies of Sciences, Engineering, and Medicine raise concerns that NPs and PAs are also increasingly working outside of primary care.[1,33]

3. Results

Table 1. Common provider codes and CPT/HCPCS codes used in claims-based primary care estimates by definition type[a]

Provider and CPT/HCPCS Codes	State / Regional Estimate	CO (ND)[34]	CT (ND)[35]	DE (ND)[36]	MA (ND)[37]	OR (ND)[38e]	VT (ND)[39]	CA (B)[40g]	CA (B)[41h]	ME (B)[42]	UT (B)[43]	VA (B)[44,45]	WA (B)[46]	MMF (B)[17,l,m]	NESCSO (B)[30,n]	PCC (B)[47]	MD (N)[48]	ME (N)[42]	UT (N)[43]	VA (N)[44,45]	WA (N)[46]	MMF (N)[17,l,m]	NESCSO (N)[30,n]	PCC (N)[47]
Provider Codes: *Common* Individual/ Group codes	Family / General Practice (207Q00000X; 207QA0505X; 208D00000X; 207QG0300X)	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
	Internal Medicine (207R00000X; 207RG0300X)	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
	Pediatrics (no subspecialty) (208000000X)	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
	Nurse Practitioner / Physician Assistant (363AM0700X; 363L00000X; 363LA2200X; 363LF0000X; 363LP0200X; 363LP2300X; 363A00000X; 363A00000X; 363LG0600X)	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	–	X	–	X	–
Provider Codes: *Common* Institution codes	Federally Qualified Health Center (261QF0400X)	X	X	–	X	X	X	X	X	X	X	X	X	–	X	–	X	X	X	–	X	–	X	–
	Primary Care Clinic (261QP2300X)	X	X	–	X	X	X	X	–	X	X	–	X	–	X	–	X	X	X	–	X	–	X	–
	Rural Health Clinic (261QR1300X)	X	X	–	X	X	X	X	–	X	X	X	X	–	X	–	X	X	X	–	X	–	X	–
Provider Codes: *Expanded* on Common	Obstetrics / Gynecology (363LW0102X; 363LX0001X; 207V00000X; 207VG0400X)	X	X	–	X	X	X	–	X	X[i]	X	X	X	X	–	/[q]	–	X	–	–	X	–	–	–
	Nurse Practitioner, Community Health (363LC1500X); School (363LC1500X)	X	X	–	X	–	–	X	X	–	–	X[j]	X	X	X	–	–	–	–	–	X	–	X	–
	Clinical Nurse Specialist (364S00000X)	X	–	–	X	X	–	–	X	X	X	X	X	X	–	–	X	X	X	–	–	–	–	–
	Nurse, Nonpractitioner (163W00000X)	X	–	–	X	X	–	–	X	X	X	X	X	X	–	–	X	X	X	–	–	–	–	–
	Adolescent Medicine (2080A0000X; 207RA0000X; 207QA0000X)	X	X	–	X	–	X	X	X	X	–	X	X	X	X	X	–	X		X	X	–	X	–
	Primary Care Physician FM, Hospice Palliative (207QH0002X)	–	X	–	–	–	X	X	X	–	–	X	X	X	X	–	–	–	–	X	–	–	X	–
	Primary Care, Hospital (282NR1301X; 282NC0060X; 261QC0050X)	–	X	–	X	–	X	X	X	–	–	–	–	X[o]	X	–	–	–	–	–	–	–	X	–

3. Results

Provider and CPT/HCPCS Codes	State / Regional Estimate	CO (ND)[34]	CT (ND)[35]	DE (ND)[36]	MA (ND)[37]	OR (ND)[38e]	VT (ND)[39]	CA (B)[40g]	CA (B)[41h]	ME (B)[42]	UT (B)[43]	VA (B)[44,45]	WA (B)[46]	MMF (B)[17,l,m]	NESCSO (B)[30,n]	PCC (B)[47]	MD (N)[48]	ME (N)[42]	UT (N)[43]	VA (N)[44,45]	WA (N)[46]	MMF (N)[17,l,m]	NESCSO (N)[30,n]	PCC (N)[47]
Provider Codes: In <50% of Claims-Based Estimates	Any Behavioral Health Clinicians	X	–	–	–	X	–	–	X	–	–	–	X	X	–	–	–	–	–	–	–	–	–	–
CPT/HCPCS codes:	ALL for Allowed Providers and Settings	–	–	–	–	–	–	X	X	X	X	–	–	X	X	–	–	–	–	–	–	–	–	–
CPT/HCPCS: Common codes	Office Visits (99202-99205;99211-99215; 99387)	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
	Home Visits (99341-99345; 99347-99350)	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
	Preventive Visits (99381-99386; 99391-99397)	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
	Immunization Administration (90460;90461;90471-90474)	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
	Health Risk Assessment, Screening, and Counseling (96160;96161; 99401-99404; 99406-99409; 99411-99412;99429)	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
	Chronic Care Management Services (99487; 99490)	X	X	X	X	–	–	X	X	X	X	X	X	X	X	–	–	X	X	X	X	–	X	–
	Transitional Care Management Services (99495-99496)	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
	Advanced Care Planning Evaluation & Management Services (99497-99498)	X	X	–	X	–	X	X	X	X	X	X	X	X	X	–	–	X	X	X	X	–	X	–
	Domiciliary, Rest Home and Multidisciplinary Care Planning (99339-99340)	X	X	X	X	X	–	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
	Consultation Services (99241-99244)	–	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
	Telephone and Internet Care Services (98966-98968;99441-99443) team conference (99367)	X	X	X	X	X	X	X	X	X	X	X	X	X	X	–	X	X	X	–	X	–	X	–
	Prolonged Services (99358-99359)	X	–	X	X	–	X	X	X	X	X	X	X	X	X	–	–	X	X	X	X	–	X	–
	Claims Payments[a]	X[b]	X	X	X[d]	X	X	X	X	X	X	X[k]	X	X	X	X	X	X	X	X[k]	X	X	X	X[s]

3. Results

Provider and CPT/HCPCS Codes	State / Regional Estimate	CO (ND)[34]	CT (ND)[35]	DE (ND)[36]	MA (ND)[37]	OR (ND)[38e]	VT (ND)[39]	CA (B)[40g]	CA (B)[41h]	ME (B)[42]	UT (B)[43]	VA (B)[44,45]	WA (B)[46]	MMF (B)[17,l,m]	NESCSO (B)[30,n]	PCC (B)[47]	MD (N)[48]	ME (N)[42]	UT (N)[43]	VA (N)[44,45]	WA (N)[46]	MMF (N)[17,l,m]	NESCSO (N)[30,n]	PCC (N)[47]
Included in Total Spending	Nonclaims Payments	X	X	X	X	X	X	X	–	X	–	–	–	X	X	–	–	–	–	–	–	X	X	–
	Prescriptions	–	X	–	X	–	X	X	–	–	–	–	X	X[p]	X	X	X[r]	–	–	–	X	X	–	X
	Dental	–	/[c]	–	–	–	/[f]	–	–	–	–	–	–	–	–	X	–	–	–	–	–	–	–	X

B = broad definition; CO = Colorado; CPT = Common Procedural Terminology; CT = Connecticut; DE = Delaware; FM = family medicine; FQHC = federally qualified health center; HCPCS = Healthcare Common Procedure Coding System; MA = Massachusetts; MD = Maryland; ME = Maine; MMF = Milbank Memorial Fund; ND = no distinction; N = narrow definition; NESCSO = New England States Consortium Systems Organization; OB/GYN = obstetrics and gynecology; OR = Oregon; PCC = Primary Care Collaborative; PCP = primary care provider; UT = Utah; VA = Virginia; VT = Vermont; WA = Washington

[a] Narrow and broad are terms defined and used by the State Governments or organizations that produce the estimates. They are provided to contrast two estimates produced by a single organization and they do NOT have the same meaning across States and organizations. X indicates the code was used in the estimate, / indicates the code was used but with caveats, and − indicates the code was not used in the estimate. Codes did not match the codes listed here exactly, when a code family was present in a method, we noted its presences in this table.

[b] Colorado includes both the plan and the medical portion of medical services payments

[c] Topical fluoride was included only.

[d] Massachusetts includes paid and denied claims.

[e] For Oregon, dollars paid to providers by patients in the forms for a copay, coinsurance or deductive were excluded.

[f] Only when provided at FQHCs

[g] This is the estimate of the State of California produced by Integrated Healthcare Association and Bailit Health for the California Health Care Foundation, they used the NESCSO broad definition, which restricted hospital codes to professional and service codes.

[h] This is the estimate of the State of California produced by Edrington Health Consulting, which reports using a broad definition, but not a specific method.

[i] For OB/GYN clinicians, only claims for the CPT/HCPCS codes defined in the narrow definition are included in the broad definition.

[j] In definitions provided by Virginia, “Nurse practitioner” is included as well as “Schools” however it is unclear if this includes this exact taxonomy for “Nurse Practitioner, Community health.”

[k] Virginia excludes costs for durable medical equipment.

[l] We are reporting the broadest provider definition (designated by health insurer as a primary care provider) with all services, unclear if provider organizations were included or not.

[m] We used their definition 1A as the narrow definition and definition 4C as the broad definition; they included geriatric providers (not listed) in their broad definition.

[n] The NESCSO estimate restricted hospital codes to professional and service codes. The broad definition used for NESCSO is definition 2; the narrow definition is definition 1. This aligns with their naming of their definitions.

[o] Excluded primarily inpatient providers (e.g., hospitalists).

[p] MMF used all medical plus prescription allowed amounts, including deductibles and co-payments.

[q] Indicates Gynecology only.

[r] Maryland excludes prescriptions for medical devices.

[s] PCC calculated the denominator in their study using an imputed allowed amount methodology, including creating a derived claim line for each patient.

3. Results

While the purpose of Table 1 was to highlight the similarities among estimation approaches, the purpose of Table 2 is to show some of the differences in how primary care was defined by providing examples of what States have included in addition to the common provider codes and CPT/HCPCS codes listed in Table 1. We also note if they excluded any of the common provider codes or CPT/HCPCS codes, and what method they report using to identify and count locations where primary care was delivered.

Table 2. Examples of differences in primary care definitions: Notable exclusions and inclusions

Estimate (Definition Type)[a]	Provider Codes	CPT/HCPCS Codes	Place of Services Codes (or Locations, If Codes Not Mentioned)
CA[40] (IHA/ Bailit, broad only)	**Not included:** Clinical nurse specialist, Nurse nonpractitioner **Additional includes:** Critical access hospitals, rural hospitals	All services for any included providers	**Excluded:** ED, inpatient visits
CA[41] (EHC, broad only)	**Additional included:** Other medical professionals, not specified	All services for any included providers	**Excluded:** long-term nursing homes and dually eligible enrollees, unclear if pharmacy and/or dental are included
CO[34] (no distinction)	**Included**: NPs and PAs only when billed by a primary care provider **Not included:** FM physician specializing in hospice palliative **Additional includes:** Obesity medicine, Sports medicine, Preventive medicine, Behavioral health clinicians practicing in an integrated care setting	**Not included:** Consultation services	**Included:** Services delivered in an outpatient setting **Excluded:** Facility claims and inpatient services
CT[35] (no distinction)	**Not included:** Clinical nurse specialist, Nurse nonpractitioner	**Not included:** Prolonged services **Additional includes:** Some dental care (e.g., topical fluoride), Contraception, Well and preventive gynecological care, Telehealth	**Included:** Primary care outpatient setting (e.g., office, clinic, or center) **Excluded:** Urgent care centers, retail pharmacy clinics, stand-alone third-party telehealth vendors
DE[36] (no distinction)	No major differences from the common providers codes	**Not included:** Advance care planning Evaluation and management services **Additional includes:** Many CPT/HCPCS codes (e.g., injections, mammography, EKG, developmental screening, spirometry, audiometry, education)	**Used place of service codes** **Included:** Office, home, walk-in retail health clinic, school, Urgent care, FQHC, Public Health Clinic, Rural Health Clinic, Telehealth in Patient's home

3. Results

Estimate (Definition Type)[a]	Provider Codes	CPT/HCPCS Codes	Place of Services Codes (or Locations, If Codes Not Mentioned)
MA[37] (no distinction)	**Not included:** FM physician specializing in hospice palliative care **Additional includes:** Podiatrists, Physical therapists, Occupational therapist, Speech therapists, Dentists and Chiropractors	**Additional includes:** Obstetric visits	**Used place of service codes** **Included:** Office visits, outpatient setting, telehealth, nursing homes and facilities, schools, public health clinics, Indian Health Services, correctional facilities. Used over 40 codes.
MD[48,b] (narrow only)	**Included**: Clinical nurse specialist and Nurse nonpractitioner **Not included:** OB/GYN; Geriatrics, and Psychiatry specialties **Additional includes:** Homeopathic specialties, Hospital outpatient	**Not included:** Chronic care management; advance care planning; evaluation and management services; and prolonged services **Additional includes:** Smoking cessation, health screening	**Excluded:** Claims incurred in ED and inpatient services **Used place of service codes** **Included:** Hospice, prison, group home, telehealth in patient home as well as standard locations
ME[42] (narrow and broad)	**Broad and narrow** **Not included:** Dental removed from FQHCs and RHCs For OB/GYN providers, only claims for primary care services included in the narrow definition **Not included:** Community health NPs; School NPs; FM physician specializing in hospice palliative; hospitalists; Behavioral health clinicians **Additional includes:** Naturopaths, Homeopaths, Preventive medicine	**Broad** All services for any included providers ***Narrow*** **Additional includes:** All specific immunizations; injections, add-on for psychiatric service, long-term care visits	**Included:** Primary care services provided in hospice, nursing facilities, and custodial care in addition to outpatient offices **Excluded:** Any healthcare services delivered in inpatient, ED, or urgent care facilities
OR[38,49] (no distinction)	**Included:** Behavioral health clinicians **Not included**: Community health nurse practitioner; FM and IM specializing in adolescent medicine; FM physician specializing in hospice palliative; hospitalists **Additional includes:** Child and adolescent psychiatry; Naturopathic providers, Homeopathic providers	**Not included:** Chronic care management services; advance care planning; evaluation and management services; and prolonged services **Additional includes:** Behavioral health and psychiatric services	Unclear how ED and inpatient services are handled

3. Results

Estimate (Definition Type)[a]	Provider Codes	CPT/HCPCS Codes	Place of Services Codes (or Locations, If Codes Not Mentioned)
UT[43] (narrow and broad)	**Broad and narrow** ***Broad included:*** Clinical nurse specialist, and Nurse nonpractitioner; also included OB/GYN providers for a limited list of services included in the narrow definition **Additional includes:** Naturopaths, Homeopaths; Preventive medicine ***Narrow included:*** Clinical nurse specialist, and Nurse nonpractitioner	**Broad** All services for any included providers ***Narrow*** **Additional includes:** All specific immunizations, injections, add-on for psychiatric service long-term care visits	**Included:** Primary care services provided in hospice, nursing facilities, and custodial care **Excluded:** Any services delivered in inpatient or ED
VA[44,45] (narrow and broad)	**Broad** **Not included:** Primary care clinic **Included:** Only those OB/GYNs with ≥10 wellness visits per year **Not included:** Hospitalists; unclear if community health nurse practitioner is included **Additional includes:** School health clinics, urgent care facilities (restricted to primary care services as defined by Maine) **Narrow** **Not included:** NPs/PAs **Included:** Adolescent medicine and FM physician specializing in hospice palliative care, Internal medicine physicians with ≥10 wellness visits per year	**Broad[c]** **Narrow** **Not included:** Telehealth **Additional includes for broad and narrow:** Physical exams, well baby visits	Although not stated, it appears that ED and inpatient claims are excluded as well as behavioral health claims
VT[39] (no distinction)	**Included:** OB/GYN, adolescent medicine, FM physician specializing in hospice palliative; hospitalists **Not included:** Community health NPs; Clinical nurse specialist; Nurse nonpractitioner **Additional includes:** Naturopaths, Homeopaths; Preventive medicine Family medicine, Obesity, Sports medicine, and Sleep	**Not included:** Chronic care management, home care and multi-disciplinary care **Additional includes:** OB: delivery and newborn care, visual screening, dental services but only provided at FQHCs **Excluded:** MH and SUD treatment considered specialty, not primary	**Excluded:** Inpatient

3. Results

Estimate (Definition Type)[a]	Provider Codes	CPT/HCPCS Codes	Place of Services Codes (or Locations, If Codes Not Mentioned)
WA[46] (narrow and broad)	**Broad** **Not included:** Primary care hospital **Additional includes:** Several additional FM subspecialties; Pediatrics subspecialties, Naturopaths, homeopaths; Neurology, many behavioral health clinicians **Narrow included:** OB/GYN, Community health NPs; School; Adolescent medicine, NPs and PAs included but only 41% and 34% of charges attributed to them are included **Additional includes:** Naturopaths and Preventive medicine	**Broad additional includes:** Same as narrow definition plus several additional CPT/HCPCS codes, OB deliveries, nursing facility services, psychiatric care management, hospice services **Narrow additional includes:** Minor procedure and test codes, newborn care services, osteopathic manipulation, implants and IUDs, vision and lead testing	**Excluded:** ED and inpatient
MMF[17,d] (narrow and broad)	**Broad and narrow** **Broad included:** Providers designated by insurer as PCP	**Broad** All services for any included providers **Narrow** **Not included:** Chronic care management, advanced care planning evaluation and management services, telehealth, and prolonged services	**Excluded:** Inpatient providers, and any provider receiving ≤90% of revenue in the inpatient setting
NESCSO[30] (narrow and broad)	**Broad and narrow** **Not included:** Clinical nurse specialist, Nurse nonpractitioner **Additional includes:** Critical access hospitals, rural hospitals	**Broad** All services for any included providers **Narrow** Did not include any additional codes Broke out separate analysis by selected OB/GYN services for OB/GYN clinicians or primary care clinicians	**Excluded:** ED, inpatient visits

3. Results

Estimate (Definition Type)[a]	Provider Codes	CPT/HCPCS Codes	Place of Services Codes (or Locations, If Codes Not Mentioned)
PCC[47] (narrow and broad)	**Broad** **Included:** Gynecology and Adolescent medicine **Additional includes:** Geriatric providers **Narrow** **Not included:** NPs/PAs	**Not included:** Chronic care management services, advanced care planning, telehealth, prolonged services (report lacks precise details)	Identified place or service associated with each claim using CPT/HCPCS codes Broad added settings, but did not report what settings

BH = behavioral health; CA = California; CO = Colorado; CPT = Common Procedural Terminology; CT = Connecticut; DE = Delaware; ED = emergency department; EHC = Edrington Health Consulting; EKG = electrocardiogram; FFS = fee-for-service; FM = family medicine; FQHC = federally qualified health center; HCPCS = Healthcare Common Procedure Coding System; IHA= Integrated Healthcare Association; IUD = intrauterine device; MA = Massachusetts; MD = Maryland; ME = Maine; MH = mental health; MMF= Millbank Memorial Foundation; NESCSO = New England States Consortium Systems Organization; NP = nurse practitioner; OB = obstetrics; OB/GYN = obstetrics and gynecology; OR = Oregon; PA = physician assistant; PCC = Primary Care Collaborative; PCP = primary care provider; RHC = rural health center; SUD = substance use disorder; UT = Utah; VT = Vermont; VA = Virginia; WA = Washington

[a] Narrow and broad are terms defined and used by the State Governments or organizations that produce the estimates. They are provided to contrast two estimates produced by a single entity and they do NOT have the same meaning across States and organizations.

[b] Used Milbank narrow PCP-B definition

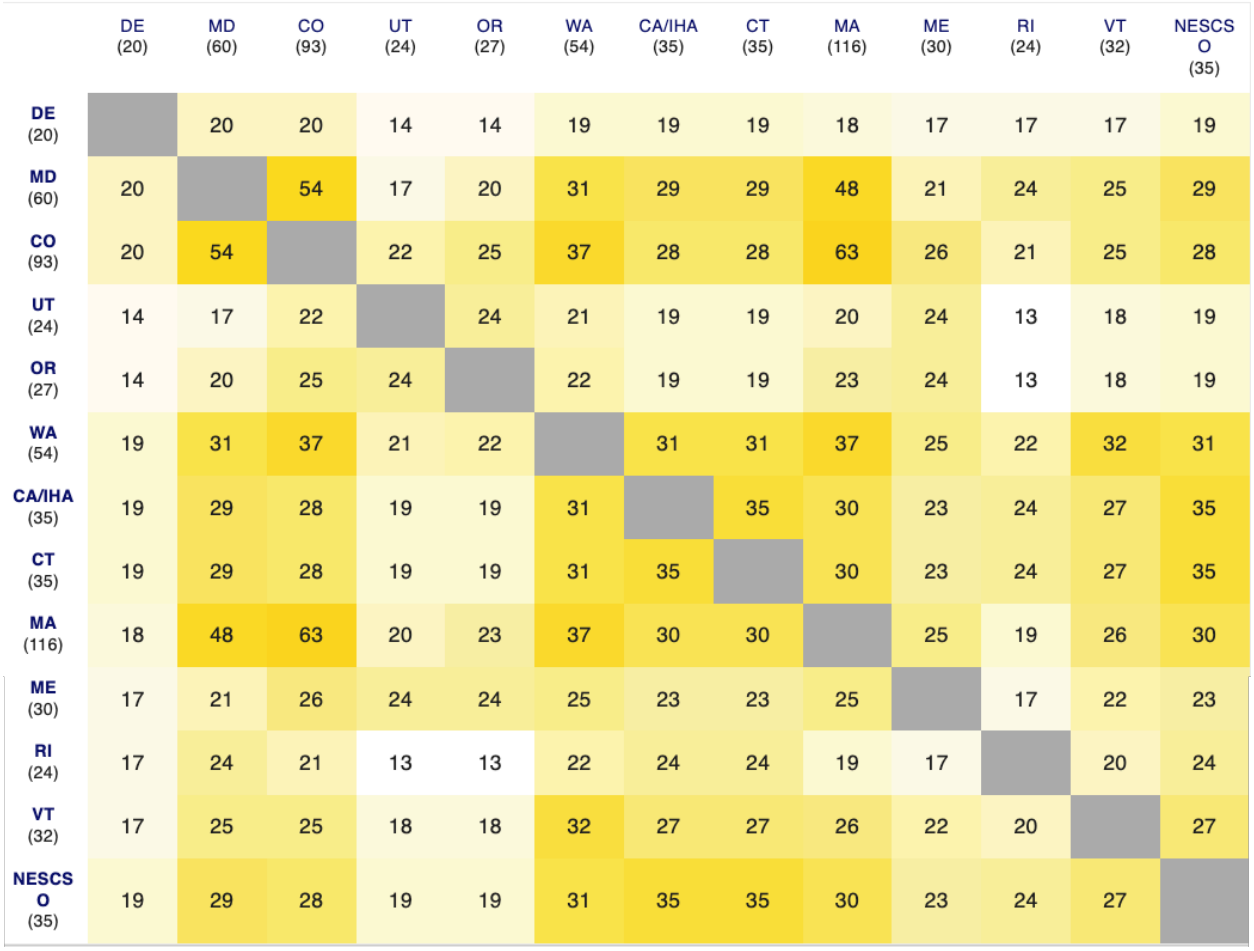
[c] Only added telehealth to narrow definition services

[d] MMF includes 4 levels of provider definitions and 2 levels of services which they have combined in various ways to report the estimates

In the following figures we document the extent of similarities and differences in the provider codes and represent these visually in two different ways. Figure 1 presents the numbers of provider codes included in several estimates in a matrix. The number of provider codes each State or organization included is in parentheses below its name. The number in the cells/box where a column and row cross are the number of codes those two have in common. For example, starting at the third row and going across to the second box shows that Colorado and Maryland have 54 codes in common. It is important to note that we used the Freedman Consulting data to generate these matrices, and they compiled these data for the broadest definitions of primary care that each State or organization used. This means this matrix includes the largest number of codes used by a State or organization; if they used different sets to generate different estimates, it is not reflected here. The number in the parentheses under the estimate indicates the number of codes included overall for that estimate. The gray cells/boxes represent where a column and row of one State overlaps with itself and is therefore blank. The other cells/boxes are varying shades of yellow grouped by number, with the same number shaded the same shade of yellow; the lighter the shade the lower the number, the darker the shade the higher the number. This is for visual illustration and does not convey any additional meaning.

3. Results

Figure 1. Matrix of provider codes included in primary care spending estimates



	DE (20)	MD (60)	CO (93)	UT (24)	OR (27)	WA (54)	CA/IHA (35)	CT (35)	MA (116)	ME (30)	RI (24)	VT (32)	NESCSO (35)
DE (20)		20	20	14	14	19	19	19	18	17	17	17	19
MD (60)	20		54	17	20	31	29	29	48	21	24	25	29
CO (93)	20	54		22	25	37	28	28	63	26	21	25	28
UT (24)	14	17	22		24	21	19	19	20	24	13	18	19
OR (27)	14	20	25	24		22	19	19	23	24	13	18	19
WA (54)	19	31	37	21	22		31	31	37	25	22	32	31
CA/IHA (35)	19	29	28	19	19	31		35	30	23	24	27	35
CT (35)	19	29	28	19	19	31	35		30	23	24	27	35
MA (116)	18	48	63	20	23	37	30	30		25	19	26	30
ME (30)	17	21	26	24	24	25	23	23	25		17	22	23
RI (24)	17	24	21	13	13	22	24	24	19	17		20	24
VT (32)	17	25	25	18	18	32	27	27	26	22	20		27
NESCSO (35)	19	29	28	19	19	31	35	35	30	23	24	27	

CA = California; CO = Colorado; CT = Connecticut; DE = Delaware; IHA = Integrated Healthcare Association; MA = Massachusetts; MD = Maryland; ME = Maine; NESCSO = New England States Consortium Systems Organization; OR = Oregon; UT = Utah; VA = Virginia; VT = Vermont; WA = Washington

Looking two by two is useful for comparing specific estimates, but it can be difficult to identify overall patterns or how many codes are common across multiple States or are unique to a single State. For this reason, we also arranged these data in Venn diagrams (Figure 2).

3. Results

Figure 2. Venn diagrams of provider codes included in primary care spending estimates

Figure 2a. New England States

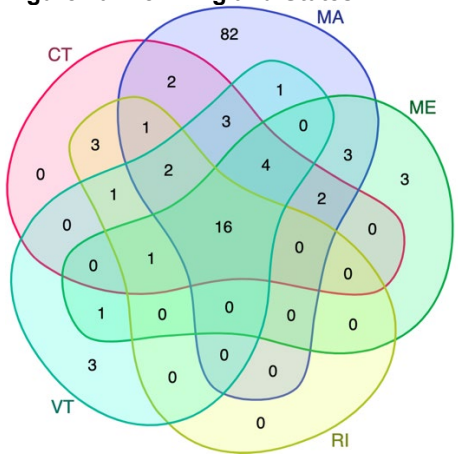


Figure 2b. Western States

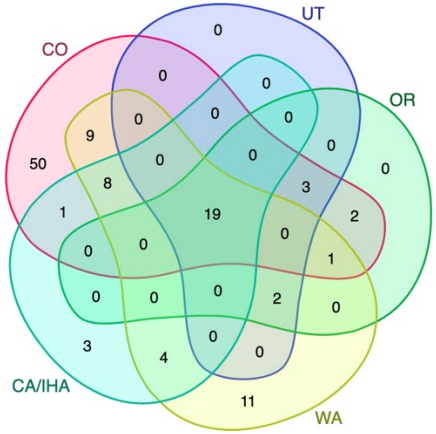
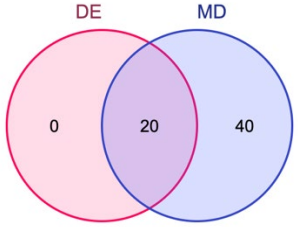


Figure 2c. Eastern States



CA = California; CO = Colorado; CT = Connecticut; DE = Delaware; IHA = Integrated Healthcare Association; MA = Massachusetts; MD = Maryland; ME = Maine; OR = Oregon; UT = Utah; VA = Virginia; VT = Vermont; WA = Washington

The Venn diagrams can provide information for groups of up to five estimates. In this figure they are grouped geographically with the New England States in the first panel (Figure 2a), Western States in the second (Figure 2b), and the two Eastern States in the third (Figure 2c). The NESCSO estimate was not included as it had the exact same provider codes as Connecticut. The space in the center, where the five shapes overlap, indicates how many codes are common to all five. The numbers on the edges, not in an overlapping area, represent the number of codes unique to that State. For the New England States in Figure 2a, there are 16 common codes and Massachusetts has 82 codes that are not used by the other four. In the Western States there were 19 common codes and Colorado used 50 codes not used by the others. All of Delaware's codes exactly overlapped with those of Maryland, which used an additional 40 codes.

Figures 3 and 4 use the same approach to present the information about service codes (CPT/HCPCS).

Figure 3. Matrix of CPT/HCPCS codes included in primary care spending estimates

	DE (308)	MD (190)	CO (398)	UT (239)	OR (81)	WA (182)	CA/IHA (150)	CT (139)	MA (319)	ME (294)	RI (119)	VT (136)	NESCSO (153)
DE (308)		108	217	107	76	142	118	121	158	131	110	107	119
MD (190)	108		166	78	75	110	114	105	128	89	91	84	114
CO (398)	217	166		88	75	139	119	111	153	101	95	101	122
UT (239)	107	78	88		66	101	83	82	202	236	75	89	85
OR (81)	76	75	75	66		76	76	71	77	68	68	65	76
WA (182)	142	110	139	101	76		128	119	155	120	109	121	128
CA/IHA (150)	118	114	119	83	76	128		131	146	102	115	110	150
CT (139)	121	105	111	82	71	119	131		131	103	119	93	133
MA (319)	158	128	153	202	77	155	146	131		229	114	132	146
ME (294)	131	89	101	236	68	120	102	103	229		96	104	102
RI (119)	110	91	95	75	68	109	115	119	114	96		90	116
VT (136)	107	84	101	89	65	121	110	93	132	104	90		112
NESCSO (153)	119	114	122	85	76	128	150	133	146	102	116	112	

CA = California; CO = Colorado; CPT = Current Procedural Terminology; CT = Connecticut; DE = Delaware; HCPCS = Healthcare Common Procedure Coding System; IHA = Integrated Healthcare Association; MA = Massachusetts; MD = Maryland; ME = Maine; NESCSO = New England States Consortium Systems Organization; OR = Oregon; UT = Utah; VA = Virginia; VT = Vermont; WA = Washington

Figure 3 is the same type of matrix as Figure 1. It presents the overlap in CPT/HCPCS codes for pairs of primary care definitions. Figure 4 includes the Venn diagrams for service codes. The potential number of CPT/HCPCS codes is greater than provider codes, and while there are some similarities in the patterns of codes that overlap and those that are distinct, there are no lists of included service codes that are exactly the same. This makes finding the overlap in services potentially more difficult. Like providers, some services are easily associated with primary care. The most common services are office visits and codes for prevention and coordination. Again, the Venn diagrams demonstrate a group of codes with overlap and several instances with outliers. The numbers with overlap are much bigger, and some outliers are the same, such as Colorado, which includes a larger number of providers and services and others like Delaware that include a small number of providers but many service codes.

3. Results

Figure 4. Venn diagrams of CPT/HCPCS codes included in primary care spending estimate

Figure 4a. New England States

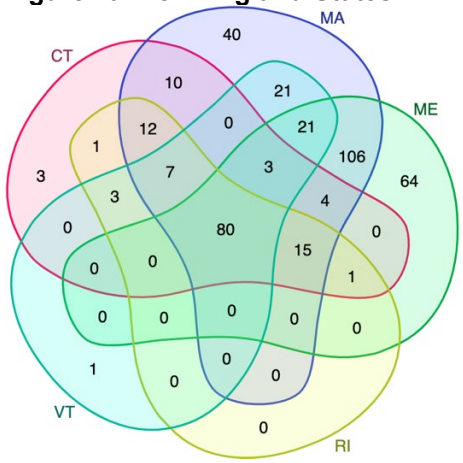


Figure 4b. Western States

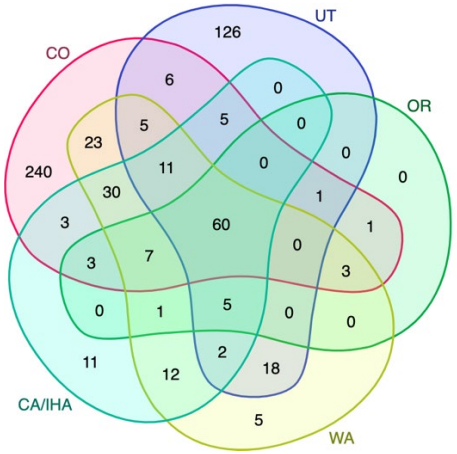
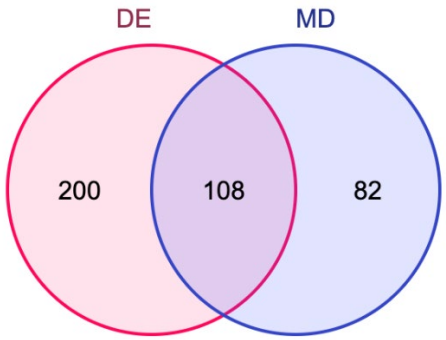


Figure 4c. Eastern States



CA = California; CO = Colorado; CT = Connecticut; DE = Delaware; IHA = Integrated Healthcare Association; MA = Massachusetts; MD = Maryland; ME = Maine; OR = Oregon; UT = Utah; VA = Virginia; VT = Vermont; WA = Washington

3.4 Nonclaims Data in State Estimates of Primary Care Spending

Table 3 presents key information about the use of nonclaims data in estimates of primary care spending across seven States. This information serves as the basis for the following description and observations on how States approach nonclaims data in their primary care spending estimates. The information included in the table is based on the most recent estimate identified for this Technical Brief as of November 2023. Some State's methods have evolved over time, and several have updates or revisions pending, therefore the information in this report may become outdated as States continue to refine their method.

The States included in this table have produced at least one estimate that included nonclaims data and have made information about their method publicly available. The approaches to estimating nonclaims-based primary care spending have several differences and a few similarities that reinforce primary care spending estimation as an area with limited standardization. An essential characteristic is that the States differ in how long they have been collecting and including nonclaims-based data on spending in their estimates. For example, Oregon's estimate released for 2021 was the eighth estimate the State produced that included nonclaims data, while Maine has issued four reports covering 6 years, they only added nonclaims data to the estimate for 2021.[42,50-52] While multiple estimates do not guarantee higher quality or more appropriate data use, it does mean that both the organizations submitting and the organizations managing and analyzing the data have more experience and may have more efficient and accurate systems and approaches.

Nonclaims payments are essentially defined by what they are not: they are not fee-for-service payments. Most States go further and list what is included; a scan down the column labeled "types of nonclaims data included" reveals that shared savings and losses, incentive programs, capitation payments, case management fees, performance-based payments, supports for infrastructure, and general (community teams) and specific (COVID-19 support) program payments are common types of nonclaims payments included in these data. The Alternative Payment Model (APM) Framework created by the Health Care Payment Learning and Action Network (HCPLAN) is used by some States to categorize their nonclaims payments.[53] Oregon and Colorado used this framework to both collect data and report nonclaims payments as part of their primary care estimate. Other States, such as Delaware, used this framework in their reports to help orient readers, but did not present payments broken out into these categories and did not appear to use the categories directly when collecting data from insurers.

The payers that were included and excluded depends in part on access to data and decisions about which payments should and should not be counted in a primary care estimate. All States included commercial insurance plans; most included Medicare Advantage plans, though Maine did not; and most included some Medicaid payments made through managed care plans, but some States excluded Medicaid payments by public payers (Massachusetts), Medicaid prospective payments (Vermont), or Medicaid fee-for-service (Oregon). Other exclusions included payments by Federal programs such as VHA and Indian Health Service, which are not fee-for-service and would be considered nonclaims data, or payments that are not for services but that are rare in primary care such as facility fees (Delaware).

Table 3. Nonclaims data included in estimates of primary care spending

State	Types of Nonclaims Data Included	Payer Types That Made Nonclaims-Based Payments	Exclusions From Nonclaims Estimates	Estimations Reported	Challenges Reported	% Primary Care Spending Attributed to Nonclaims	% in Total Medical Spending	Impact on Primary Care Spending Estimate
CO[34]	All payments to medical providers classified as primary care outside of claims transactions categorized by HCPLAN framework	Commercial, Medicaid, Medicare Advantage, APM submissions from 13 payers	• Self-insured • Federal Programs • Medicare FFS • Payers that do not provide any APM payments to providers	None identified, if providers are considered primary care, all nonclaims payments to them are included	• Report issued with 1 of 13 payers missing • HCPLAN was not used the 1st year and payers had difficulty adjusting • Required updated manual, and meetings with each payer	16.0% valued based APMs; 35.3% not linked to quality[d]	19.8% value-based APMs, 4.1% APMs not linked to quality	Estimate not reported without APM data
CT[35]	• Capitation or salaried expenditures • PCMH infrastructure • Performance-based payments • Risk-based reconciliation • Health information technology infrastructure • Workforce expenditures • COVID-19 support payments	• Commercial Insurers • Medicare Advantage insurers • Medicaid	• Other commercial carriers • Medicare FFS	• Reporting insurer assigns nonclaims payments to primary care providers or provider organizations and reports this amount and total • LTSS is excluded from Medicaid as it is not included in commercial and Medicare	None identified	Not reported	Not reported	Not reported

3. Results

State	Types of Nonclaims Data Included	Payer Types That Made Nonclaims-Based Payments	Exclusions From Nonclaims Estimates	Estimations Reported	Challenges Reported	% Primary Care Spending Attributed to Nonclaims	% in Total Medical Spending	Impact on Primary Care Spending Estimate
DE[36]	• Incentive Programs • Capitation • Case Management • Other, such as community health team, coordination of social service and health	Commercial, Medicaid, Medicare Advantage, Medicare FFS Commercial carriers began submitting data on individual and group plans in 2021 as part of their rate review submission	Facility fees, Risk settlements	Carriers are asked to project primary care expenditure overall and the number of primary care providers who will participate in care transformation efforts[a]	Members must be attributed to practices and practices identified as in care transformation or not, State Office requiring quarterly email updates and calls to track progress[a]	3 of 5 commercial payers included no flexible supplemental primary care payments and the average was $1.70 PMPM for the 2 that did	% of total cost in contracts with APMs: 40% Shared savings, 14% Pay for Performance, 4% downside risk, 42% FFS, No link to quality and value	Not Reported
MA[37]	• Incentive payments (reporting and performance) • Capitation • Risk settlement • Care management • Other	Commercial, Medicare Advantage, Medicaid from commercial carriers only	Public payers	• Payers required to report FFS equivalents for capitation arrangements • If payment could not be classified as primary care or behavioral health, classified as other	• 2 payers excluded due to data quality • Some payers unable to allocate to primary care due to limited information about how providers used funds	0.2% Commercial, 17.7% Medicaid, 4.9% Medicare Advantage[c]	2.8% Commercial, 2.0% Medicaid, 7.0% Medicare Advantage[c]	Medicaid MCO/ACO PCS increased 0.8% from 2019 to 2020 largely due to an increase in capitation payments

3. Results

State	Types of Nonclaims Data Included	Payer Types That Made Nonclaims-Based Payments	Exclusions From Nonclaims Estimates	Estimations Reported	Challenges Reported	% Primary Care Spending Attributed to Nonclaims	% in Total Medical Spending	Impact on Primary Care Spending Estimate
ME[42]	All nonclaims payments made to providers reported in total and by those specific to primary care and behavioral health[e]	Commercial, Medicaid	Medicare traditional is 60% and is not required to report	• Percent of Medicaid that was for LTSS was estimated and excluded • SUD payments estimated based on nonredacted claims for SUD in primary care	• PCS presented as ranges by payors separately due to date issues • PCS with claims only needed for comparisons to past years	8.1%[b]	1.9% [b]	Commercial: no substantial change, Medicaid: Lowers PCS from 12% to 10.3-11.5% when nonclaims added
OR[38, 49]	Reported by HCPLAN framework categories	Commercial, Medicare Advantage, Medicaid CCOs, Public Employee Systems	Medicare and Medicaid FFS, Federal programs	• Contract values prorated for the reporting year • The payment arrangement files submitted can contain claims and nonclaims • Some nonclaims payments may be based on claims from prior years	• CCOs are required to provide services that commercial carriers do not commonly provide • Primary care spending for hospital-affiliated PCPs may be excluded • Vendor change in 2020 for data management may result in in slight variations and make years less comparable.	62.1% Medicare Advantage, 61.4% Medicaid CCOs, 45.8% Commercial	Not reported	Kaiser Health Plan is the highest of all lines of business and outlier in commercial (83.6%) Range for others: 0.3% to 19% Not reported

3. Results

State	Types of Nonclaims Data Included	Payer Types That Made Nonclaims-Based Payments	Exclusions From Nonclaims Estimates	Estimations Reported	Challenges Reported	% Primary Care Spending Attributed to Nonclaims	% in Total Medical Spending	Impact on Primary Care Spending Estimate
VT[39]	• Savings and losses shared with providers • Program payments outside of claims	Commercial, Medicare Advantage, Medicaid	• Capacity payments to agencies designated by the State to receive theses • Medicare prospective payments • Medicaid prospective payments • Self-funded commercial plans	• Estimated nonclaims program funds that benefit primary care	• Not all funds supporting PC are quantifiable • Method needed to include prospective payments as 'shadow' claims	12.8%[b]	1.6%[b]	Increases PCS from 8.9% to 10.2% when nonclaims added

ACO = accountable care organization; APM = alternative payment model; CCO = coordinated care organization; CO = Colorado; COVID-19 = Coronavirus Disease 2019; CT = Connecticut; DE = Delaware; FFS = fee-for-service; HCPLAN = Health Care Payment Learning & Action Network; LTSS = long-term services and supports; MA = Massachusetts; MCO = managed care organization; ME = Maine; OR = Oregon; PC = primary care; PCMH = patient-centered medical home; PCP = primary care provider; PCS = primary care spending; PMPM = per member per month; SUD = substance use disorder; VT = Vermont

[a] From February 2023 Annual Review[54]

[b] Calculated by authors from dollar amount provided.

[c] From data book referenced in the Massachusetts's estimate report

[d] Excluding Kaiser and Denver Health

[e] SUD not included; Medicaid not reported as it was reported as a range based on estimates of LTSS removal

Deciding what nonclaims data to include is only part of the process because nonclaims data may require estimation and manipulation by the payer/submitter. For example, if a nonclaims payment is made to a large group practice with multiple clinicians (e.g., some included in their definition as primary care clinicians and some who are not) a decision must be made as to whether all, part, or none of this payment is designated as spending on primary care. The State reports and methods often did not include details about these decisions or all the steps likely involved in data preparation. However, most mentioned some considerations or transformations with examples listed in Table 3 in the column labelled "estimations reported." The most common being that the payer/submitter has estimated what portion of payments are for primary care. If the clinician or program is uniquely primary care, this is easier, but if the payment goes to larger organizations that provide a range of services it might be difficult or impossible to determine. Other estimates might require difficult manipulations such as: breaking up a multi-year contract and its payments across reporting years, transforming capitated payments into fee-for-service equivalents, sometimes to the extent that dummy claims are created to assign specific costs to primary care; or projecting future expenses. Maine, in its first year of adding nonclaims payments into their estimates, produced ranges and estimates by payer type rather than one overall value due to data challenges. Specifically, they needed to exclude long-term care service from Medicaid nonclaims payments and they also had to extrapolate substance use disorder payments from nonredacted claims to estimate the values for redacted claims. This was necessary as the legislature required these changes but data were not available in a format that would allow them to be made directly. The result is an estimate that more accurately reflects the uncertainty in the data, but is more difficult to interpret and use.

The challenges States reported facing in including nonclaims data in their estimates of primary care spending included issues of quality, accuracy, and resources. Examples are included in the table under "challenges reported." Two States reported either excluding payers (Massachusetts) or issued a report without a payer's data and later issued a revised version when data issues were resolved (Colorado). Payers were not always sure how clinicians used funds (Massachusetts), or they had trouble mapping their payments to the categories for reporting (Colorado). State agencies often had to provide high levels of support, including one-on-one meetings, group training, and extensive manuals (Colorado), or have the resources to follow up through quarterly calls and requiring email progress reports (Delaware). Despite these challenges, it is likely more States will include nonclaims data in the future, as nonclaims payments become an important portion of spending for primary care and often represent commitments to financially supporting and encouraging practice transformation.

We looked for reported information or data that would allow us to calculate the percentage of primary care spending and total medical spending from nonclaims payments, to determine the impact of nonclaims data on the primary care spending estimates. Again, there is more variation than similarity. For Oregon and Colorado, nonclaims payments are large portions of expenditures. Oregon's numbers include the Kaiser Health Plan, which accounts for a large portion of the nonclaims payments in primary care spending. Colorado reports its numbers both with and without Kaiser and the Denver Health plan; we include those without in Table 4 to show that the nonclaims payments are still an important portion in Colorado even when these payers are excluded. The other extreme is Delaware where three of five commercial payers reported not making any nonclaims-based primary care payments and Massachusetts where nonclaims payments were a smaller proportion of primary care spending. When States reported their primary care spending estimate with and without nonclaims payments, the impact was not

consistent. Including these payments increased the estimate of primary care spending in Vermont; explained the increase in primary care spending in Medicaid in Massachusetts; but lowered the estimate of primary care spending in Medicaid in Maine.

States also varied in the extent to which they described what they perceived was needed to improve the measurement of nonclaims payments and their future plans. Vermont was one of the earlier States to report, but did not mention next steps, limiting comments to underscoring the need for better methods. Maine traced its difficulties back to problems with their regulations and they have revisions in progress. Delaware used its earlier reports to set spending targets, including policies designed to increase nonclaims payments, and the most recent reports focused on projections and whether commercial carriers are likely to achieve targets. Colorado has continued to add to and refine reporting requirements; in 2021 adding a requirement for a qualitative description of every contract and an indicator for prospective payments. While States have different levels of experience and sophistication with nonclaims data, there does seem to be agreement that nonclaims data are important to measure and monitor primary care spending.

3.5 Operationalization of Total Healthcare Spending

In most estimates, primary care spending is reported as a percentage of total healthcare spending. How primary care is operationalized corresponds to the numerator and what is or is not included impacts the estimate. This has been the topic of much of this brief and include the Who, What, and Where aspects of primary care. Adding more, can increase the magnitude of the estimate.

However, the estimate also depends on the size of the denominator. Therefore, how total healthcare spending is defined is, important. The last rows of Table 1 include selected information showing that denominator definitions vary on what is included, specifically whether prescription, dental, and vision are included in the total healthcare spending. However, these are only a few of the many decisions that can impact the denominator. Table 4 documents several other nuances that vary across estimates in the numerator (primary care spending) in the top half of the table and in the denominator (total healthcare spending) in the bottom half of the table. While most reports provided details about what was included in primary care spending not all reports were clear about how total healthcare spending was defined and were not explicit about how they handled all of the possible variations.

3. Results

Table 4. Differentiating features of primary care spending estimates

Feature	Description
Features that vary (across estimates) in how the numerator (Primary Care Spending) is calculated	• How does operationalization (selection) or provider, service and setting codes vary? • What portion of the spending (plan portion, member portion) is included? Are out-of-pocket payments, denied claims, carved out services included or excluded? • Does the estimate include nonclaims data; if so, which nonclaims spending is included or excluded? Examples: Oregon states that it includes nonclaims-based payments to healthcare providers and provider organizations; Vermont says that shared savings and program specific payments are included. • How is the population of people included in estimate defined? Example: The Washington report states that it includes paid claims for members with a medical or a prescription claim paid during the timeframe. • What aggregate payments for services are included or excluded? Example: The Maine report says that it includes aggregate payments for substance use disorder care in primary care, if they meet a specified inclusion criterion. • What is the measurement period, and does a claim have to be incurred or paid during that period to be included? Example: The Utah report states that it includes payments to providers by insurers for claims incurred during the measurement year.
Features that vary (across estimates) in how the denominator (Total Healthcare Spending) is calculated	• Are dental and prescription drug costs included or excluded? How are prescription rebates handled? • Is claims- and nonclaims-based spending included or excluded? Patient cost sharing amounts included or excluded? How are capacity payments handled? • Is the cost of primary care healthcare insurance included or excluded? • Is vision included or excluded? For example: Connecticut reports that it excludes vision expenses except in instances where these services are a covered medical benefit. • Is long-term care included or excluded? • What carriers or insurers are included in the estimate? • How is charity care handled? • How are patient out-of-pocket costs handled? • How are medical expenses rendered by a provider outside the State handled? • How are denied medical claims handled? • How are Medicare prospective payments for aged and disabled, end-stage renal disease and Medicare prospective payments handled? Example: Vermont report says that they exclude these in their denominator. • If there are substance use disorder redacted amounts, how are these handled? Example: Maine reports that these are included in total healthcare spending. • How is the cost of durable medical equipment handled? Example: Virginia reports excluding this. • How are allowed amounts handled? Example: The Washington report says that the total allowed amount submitted on claims is included. For insurance companies that pay providers using capitated payment arrangements, the fee-for-serve equivalent amount is used in the denominator. • How are medical support services handled?

3.6 Visualizing Variations in Spending Estimates

To summarize and illustrate differences and similarities in the key inputs used to generate estimates of primary care spending described in the text and tables above, we created a series of radar plots for selected State estimates. Radar plots provide a way to visually present and compare groups of categorical or ordinal variables. Table 5 lists the six inputs for each estimate that are represented in each plot and specifies how they were scored. Figure 5 provides a Key, showing which input each of the six lines extending out from the center point represent and how each ring or hexagons is used to record the scores of 1 to 5. Going clockwise, and starting at the top (12 o'clock) the lines indicate the number or range of what was included for (1) provider codes, (2) service codes, (3) place of service codes, (4) payment types, (5) payers, and (6) total healthcare spending (denominator). Each input was assigned a value for each estimate by the project investigators. Then, after the points were placed at the appropriated place on each line, the points were joined. Examining and comparing the resulting shapes is an alternative way to explore and understand the differences that were presented across several tables and pages of text.

We coded the inputs so that if the value was larger, it had the potential to make the estimate higher. For example, if a State included only the smaller number of common provider codes it would be given a "1." But if a State also included OB/GYN and other provider codes on the expanded list, plus behavioral health provider codes it would be "5". To keep the impact in the same direction, total healthcare spending is reverse coded. This means it was assigned a higher value if certain types of expenses were excluded as this would make the denominator smaller, thereby increasing the estimate of primary care spending.

The volume of the shapes on the radar plots do not proportionally represent the size of estimates; rather the larger the shape the greater the likelihood the estimate will be larger given that more was included. What these plots do is permit the rapid identification of whether there is variation and what is and is not alike across estimates.

Table 5. Coding key for radar plots

Variable	Category	Value
Provider codes	Common set	1
	Some expanded codes include	2
	All expanded	+1
	Any behavioral health	+1
	All of the above and more	5
CPT/HCPCS codes	Limited to common or less	1
	More than common, under 100 codes used	2
	101 to 299 codes used	3
	Over 300 codes used	4
	All codes used or any services by included providers	5
Locations (or place of service codes)	PC offices only	1
	Telehealth or home visit	+1
	Other long-term care	+2
	Hospice and/or community locations	+1

3. Results

Variable	Category	Value
	Some critical access Hospital/inpatient	+2
Types of Payments	Claims	2
	Nonclaims, some	+1
	Nonclaims, multiple types	+ 2
	Other–budget	+ 1
Types of Insurers	Commercial	+ 1
	Medicare FFS	+ 1
	Medicare Advantage	+ 1
	Medicaid FFS	+ 1
	Medicaid managed care	+ 1
Denominator/ Total Spending	Medical services	1
	Prescription medications excluded	+ 2
	Patient payments excluded	+ 1
	One or more additional exclusion (e.g., dental, denied claims)	+1

CPT/HCPCS = Current Procedural Terminology/Healthcare Common Procedure Coding System; FFS = fee-for-service; PC = primary care

Figure 5. Key for radar plots

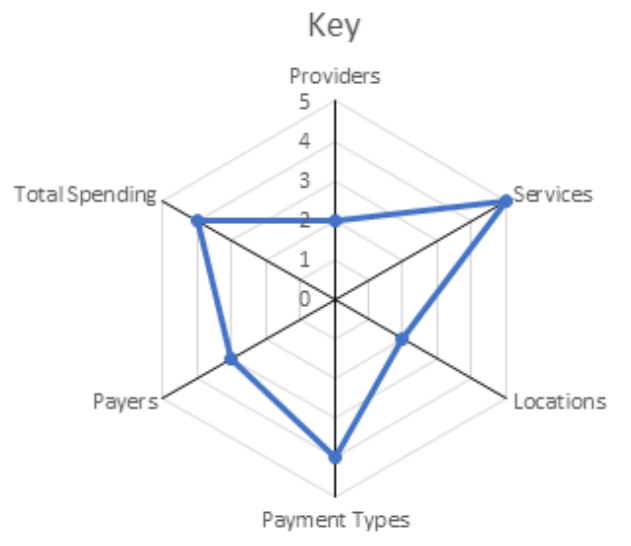


Figure 6 includes radar plots from two States, Maine and Virginia. Both of these States report two estimates that they label as narrow and broad. The four panels in this figure allow an assessment of similarities and differences between the broad and narrow estimate for these States by comparing the figures next to each other. For Maine, payers, total spending, providers, and locations were the same; what was different was the broad estimate included more services and more payment types. For Virginia the difference was that the estimate based on the broad definition included more types of providers and locations.

This figure also illustrates that broad and narrow definitions of primary care, as used by different States in constructing estimates of primary care spending, do not have the same meaning across States. Looking at the plots for Maine and Virginia's broad definitions, it is quickly apparent that Maine included more services, locations, and payment types. Similarly comparing the plots for the narrow definitions reveals that Virginia included fewer providers and locations.

Figure 6. Inputs for primary care spending estimates from Maine and Virginia

Figure 6a. Maine estimate: broad definition[a]

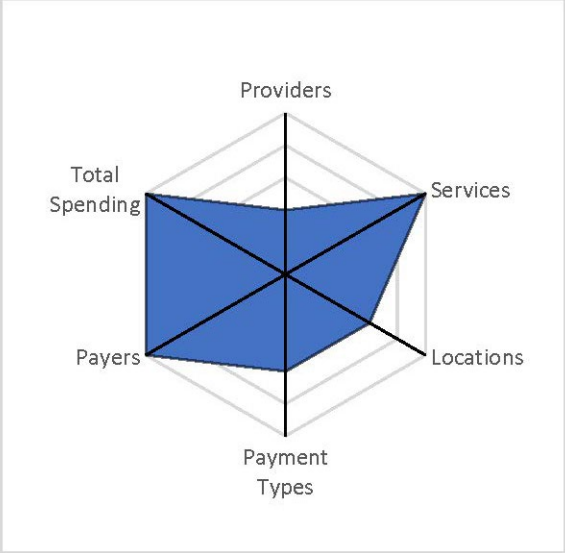


Figure 6b. Maine estimate: narrow definition[a]

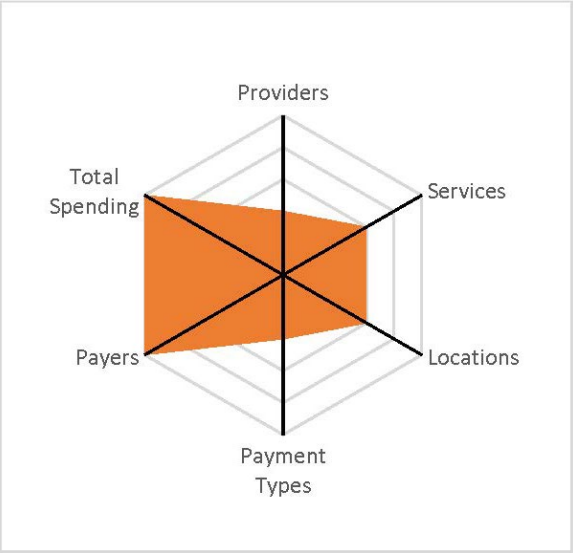


Figure 6c. Virginia estimate: broad definition[a]

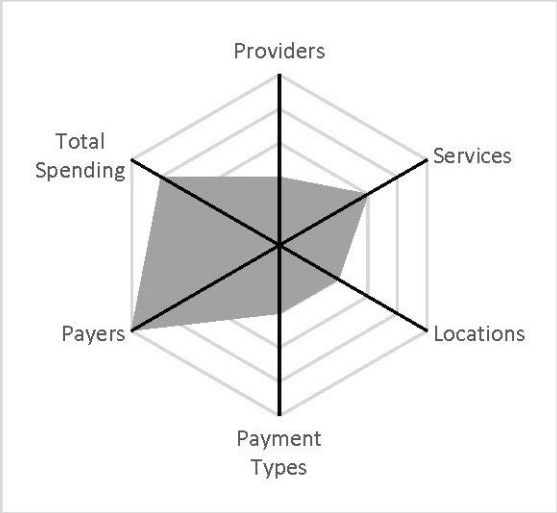
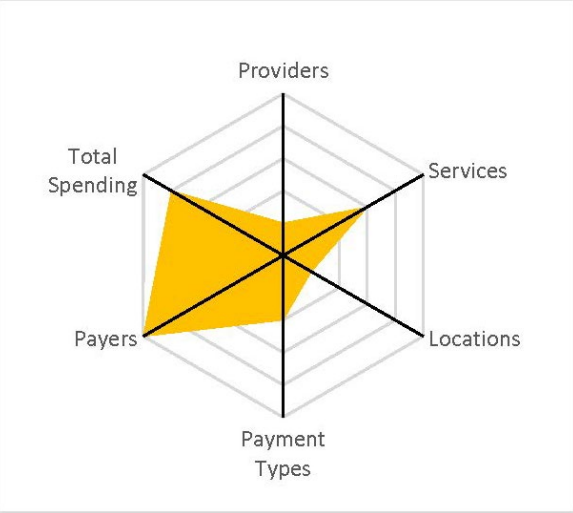


Figure 6d. Virginia estimate: narrow definition[a]



[a] Narrow and broad are terms defined and used by the State Governments or organizations that produce the estimates. They are provided to contrast two estimates produced by a single organization and they do NOT have the same meaning across States and organizations.

Figures 7 and 8 include additional examples of radar plots for representing inputs for estimates generated by other States. Like the Venn diagrams presented earlier in the report these are loosely grouped by the region of the country. Figure 7 includes four plots, representing four

Western States: Oregon, Colorado, California, and Washington. Across these four States not one of the six inputs is the same and the variation in the definitions is easy to see as it is represented by the different shapes for each State.

Figure 7. Inputs for primary care spending estimates from Western State examples

Figure 7a. Oregon estimate

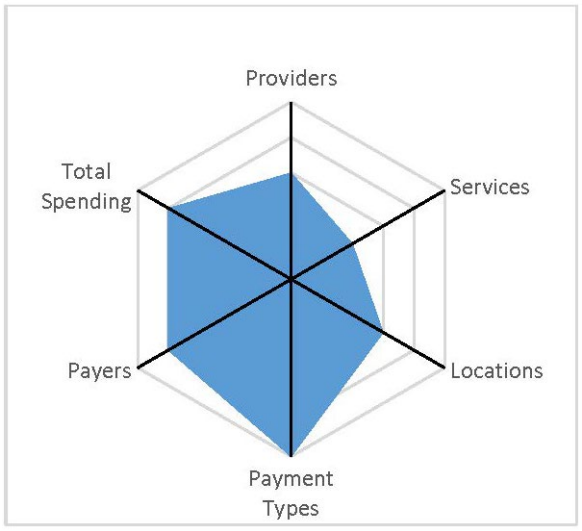


Figure 7b. Colorado estimate

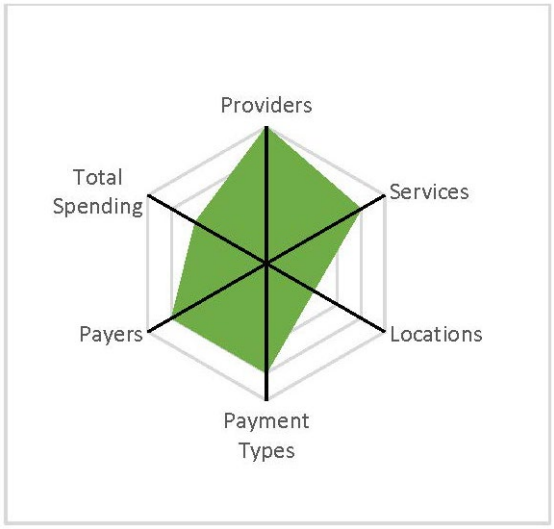


Figure 7c. California/IHA estimate

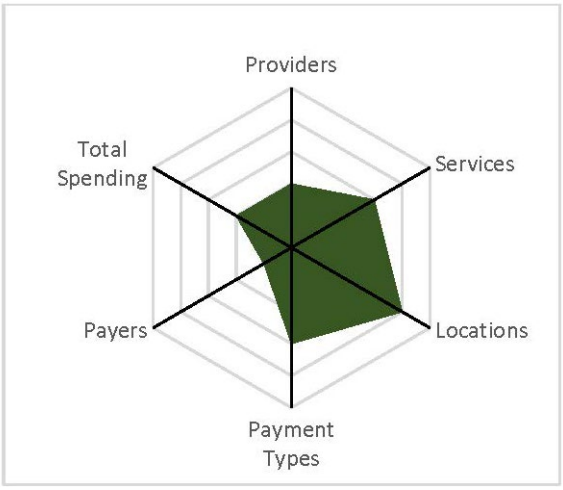
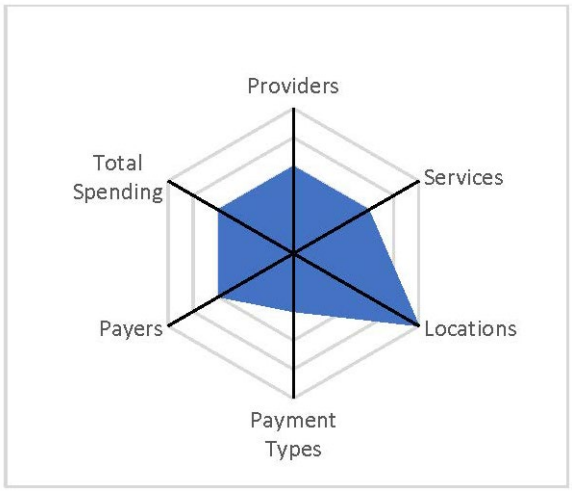


Figure 7d. Washington estimate



IHA = Integrated Healthcare Association

Figure 8 includes panels for the four New England States that, in addition to Maine, have produced estimates of primary care spending. These four estimates are also different across most of the inputs and the differences in the shapes convey this quickly.

Plots like these provide a way to quickly and visually convey to a reader or user how similar or different multiple "cases" are when several characteristics are considered togethers. The examples we provide here underscore the primary message of the earlier sections; current estimates of primary care may have some similarities, but important differences are presently the overriding characteristic.

3. Results

Figure 8. Inputs for primary care spending estimates from New England State examples

Figure 8a. Massachusetts estimate

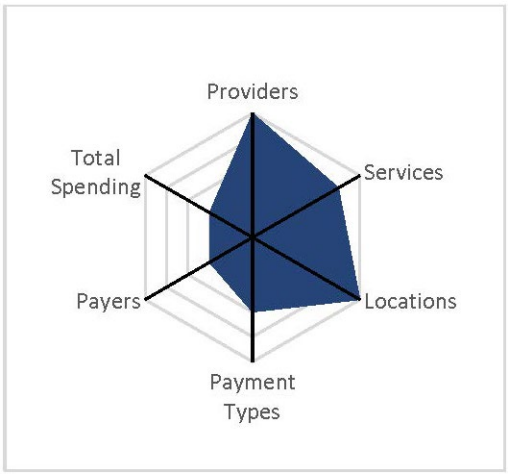


Figure 8b. Connecticut estimate

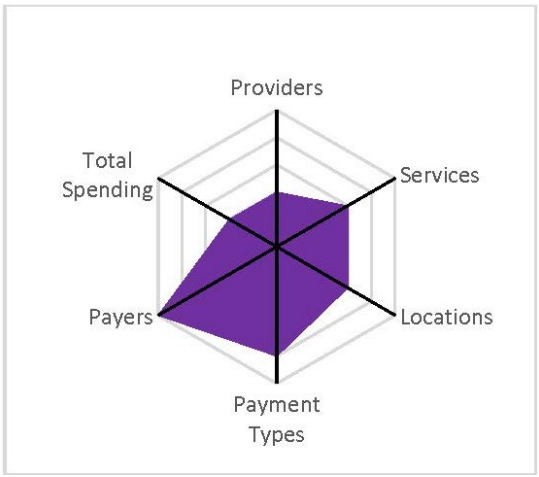


Figure 8c. Rhode Island estimate

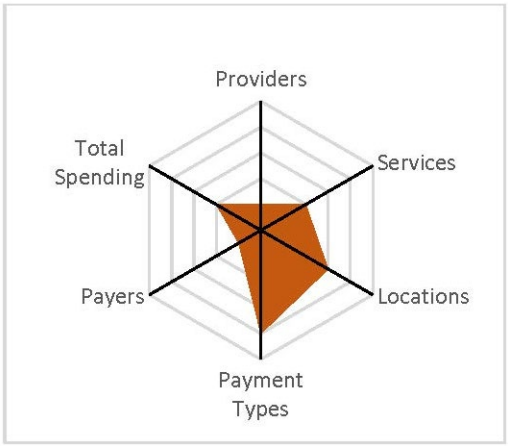
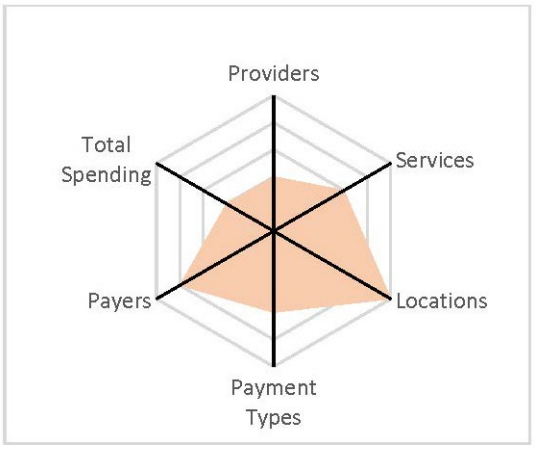


Figure 8d. Vermont estimate



Estimates of primary care spending developed using claims- and nonclaims-based data have a similar overall structure. They all include one or more definitions of primary care; they all operationalize primary care spending (the numerator) using a constellation of provider codes, CPT/HCPCS codes, and place of service codes; and they all operationalize total healthcare spending (the denominator) using selected codes. We show the similarities and the differences in how claims- and nonclaims-based data are used to operationalized and calculate primary care spending.

What these summary tables of estimates do not show, but is evident from conversations with Key Informant is:

1. State-based estimates of primary care spending require a complicated consensus-building process to define the who, where, and what described above;
2. Primary care spending estimates need to be implementable and are sometimes constrained by how data sets are structured as well as data availability;
3. These estimates are not static; States change their methods over time, are part of a learning process, and steps to articulate changes and update past estimates are inconsistent; and
4. States learn from each other and adapt methods to their local context.

3.7 Use of MEPS Data To Estimate Primary Care Spending

The MEPS data provide national estimates of health insurance coverage, healthcare services use, and costs (Evidence Table H-2).[55] MEPS is managed by the Agency for Healthcare Research and Quality (AHRQ), and collects data about the noninstitutionalized civilian U.S. population from individuals, their medical clinicians, and employers. MEPS data have been used by several organizations and research groups to estimate spending on primary care. The Patient-Centered Primary Care Collaborative (PCC) report (2019) used MEPS (2011-2016) pooled data to compare the State-level primary care spending estimates for 29 States. Martin et al., 2020[56] estimated national primary care spending using MEPS (2002-2016) data and examined national trends in primary care spending across 15 years. The Milbank National Primary Care report examined trends in State-level primary care spending estimates by three payer types over 11 years. Decker and Zuvekas, 2023[57] used MEPS (2019) to create national estimates of primary care spending by race-ethnicity. Park et al. used MEPS (2010-2017) to investigate the association between the implementation of the Affordable Care Act (ACA) Marketplace insurance and changes in primary care spending and service use.

Researchers who use MEPS data to measure primary care spending also begin by defining primary care. The two reports and two papers used either narrow[56] or broad[57] or both narrow and broad definitions[4,58] of primary care. Park et al., 2020[59] did not report on the specific definition of primary care used. The narrow definition of primary care included physicians practicing in family medicine, general practice, internal medicine, pediatrics, and geriatrics. The broader definition added obstetricians/gynecologists (OB/GYNs), behavioral health clinicians (psychiatrists, social workers, psychologists), nurse or NPs, and PAs. Park's et al. 2020[59] paper did not report which clinicians were included in their primary care definition. Primary care service use was measured using the visit level data in MEPS office-based and outpatient event files. For each event, MEPS collects detailed information about the care provided, the clinician providing care, and payments made.

The amount spent on primary care was calculated based on care delivered in office-based and outpatient settings. Park et al., 2020[59] did not specifically indicate the settings.

Primary care spending was defined as the proportion of total healthcare spending on primary care in four out of the five MEPS-based studies.[4,56-58] For each of the two (narrow and broad) definitions, the numerator for national or State total primary care spending was calculated by summing all the expenditures billed for primary care. denominator (i.e., total healthcare spending), was calculated by aggregating expenditures across nine categories (office-based, outpatient, inpatient, emergency department, home health, vision, dental, prescription medications, and other services). Park et al., 2020 calculated the mean primary care spending per capita (in dollars adjusted for inflation) instead of using primary care spending as a percentage of total healthcare spending. PCC and Milbank Memorial Fund reported overall primary care spending for each of the three payer types (e.g., commercial, Medicare, and Medicaid) separately. Decker and Zuvekas reported primary care spending stratified by race/ethnicity.[57]

3.8 Relative Pros and Cons of Each Estimation Method

Table 6 outlines the pros and cons across the three types of estimation methods we identified in our search.

3. Results

Table 6. Pros and cons of estimation approaches

Estimate Approach	Pros	Cons	Administrative Burden
Estimates using MEPS data One analytic team conducting the estimate	• Provides nationally representative estimates of insurance coverage, healthcare service use, and expenditures. • The office-based and outpatient event data are enriched with detailed information about the physician/clinician and services billed. • Strong validation methods used, followup verification from patient's physicians/clinicians on expenditures, services use, and diagnosis, after their initial self-reported data. • MEPS offers a way to compare States in a standardized way and to understand the variation produced by State definition and inclusion choices	• 21 States do not have enough data points to construct a State estimate using MEPS data. • Relies on self-report from one person per household and subject to recall bias. Most of the data for calculations come from the office-based component; recall bias risks not identifying a clinic. How big a risk is this and in which direction is unknown. • No assessment of nonclaims-based primary care investment. • Surveys civilian and noninstitutionalized populations, which carries a burden for respondents. • No States currently use this data source to produce an estimate, making MEPS potentially less appealing as a national standard. • Specialty of NPs and PAs, and osteopaths cannot be determined. • Payment may not be reported accurately.	Primarily data is collected through in-person interviews with a member of a household that is supplemented by data from their medical providers. Methodological validation is occasionally performed but not incorporated into the actual data that are released. Medical Provider Component data is used to impute when household member cannot provide accurate information, and subsequently supplement/replace household reported information. The MEPS-HC collects data from a nationally representative sample of households (over 27,000), where a new panel of sample households is selected each year. Each surveyed household is interviewed multiple times (typically 5) over a 2-year period. AHRQ administers MEPS.

3. Results

Estimate Approach	Pros	Cons	Administrative Burden

Estimates using claims and/or nonclaims data
 	
Each State generates own estimate of primary care spending
	• State policymakers can establish the value they place on primary care.
	• States can align their operationalization of primary care spend with their values, and the nuances of their unique service delivery environment.
	• States develop a primary care spending method through a process that can build consensus.
	• States have claims data and are developing methods to collect nonclaims data; thus, States can implement and manage this method of estimating primary care spending.
		• Basing primary care estimates on claims (applied billing codes) can be imprecise, and it does not necessarily account for effort and costs of nonvisit-based work.
		• The consensus building process States use to develop a primary care spending method can be politicized.
		• There are important differences in how primary care spending is operationalized, which make benchmarking and examining how variations in spending impact health outcomes, at a national level, impossible. These are not always well articulated in the methods.
		• Estimates lack precision:
		  ○ May include specialty care; this is a particular concern for NPs and PAs, as identifying primary care specialties is less precise
		  ○ Estimates may systematically exclude the continuity of care that community primary care clinicians deliver to their patients when they are hospitalized
		• Estimates that do not include nonclaims-based payments may be missing a large and growing share of total primary care spending.
		• The current retrospective, templated approach to collecting nonclaims data may produce reduced accuracy.
		• Currently, there is no way to account for how some nonclaims payments are spent by systems and other organizations, and they might not go to primary care.
			For claims data, no burden is placed on patients.
			
			Clinician and billing staff at clinics already bear the burden for coding visits; using these data does not add to that administrative burden.
			
			State needs to maintain the all-payer-all-claims data sets; States need to enforce submission requirements and monitor data integrity; this is not without a cost, but States use these datasets for other purposes.
			
			For nonclaims data, there is an administrative burden on payers to track and submit these payments. Developing a standardized way of collecting these data could help minimize this burden.

Estimates using claims and/or nonclaims data One centralized analytical team calculating the estimates	• Centrally developing a definition of primary care and operationalizing primary care spending would mitigate or minimize State-level variation. • Alignment in definition is achieved, in principle, with one team coordinating a primary care spend estimate. • A team focused on this effort could have the resources and expertise to develop the infrastructure and methods to address a number of spending measurement challenges.	• All the challenges noted above related to the use of claims- and nonclaims-based data. • If the approach is “distributed” and the centralized team give each State or payer analytical team instructions for producing the estimate, there can be variation in how analysts interpret and conduct this task. • Important local nuances of the State context in terms of how primary care is delivered and receive could be lost, this includes appreciating primary care innovation and payer contracting. • It is possible that moving to standardization prematurely could stymie measurement innovation.	For claims data, no burden is placed on patients. Clinician and billing staff at clinics already bear the burden for coding visits; using these data does not add to that administrative burden. Payers bear the administrative burden in these approaches, and this might be minimized for payers who work across States, if methods are standardized.

AHRQ = Agency for Healthcare Research and Quality; MEPS = Medical Expenditure Panel Survey; MEPS-HC = Medical Expenditure Panel Survey Household Component; NP = nurse practitioner; PA = physician assistant

We found several limitations common across primary care spending estimate methods. First, high-quality primary care is—in most cases—team-based, and other members of the team (e.g., community health workers) are responsible for important care functions (e.g., community outreach) that are not billable. While a number of primary care estimates are beginning to include nonclaims-based payments, the methods for collecting, validating, attributing, and accounting for where these dollars go (is it spent on primary care?) are still evolving, and do not account for interdisciplinary team based care.[60] Second, current methods for calculating primary care spending use practice billing codes (claims data) or self-report of services delivered and billed for a household (MEPS). These approaches to estimating primary care spending are a retrospective and transactional way of viewing primary care that prioritizes billable services and visit volume. That often does not align well with the flexibility and whole person care that people need.[60] Third, there remains no standard, agreed upon way to identify primary care clinicians. The submission of self-identified National Provider Identifier (NPI) provider codes and other clinician data to all-payer claims databases (APCDs) lack rigor. For example, as noted above, one cannot identify with accuracy primary care NPs and PAs.[30] Additionally, an AHRQ/Mathematica report shows that 41 percent among those in medical practice sites and 25 percent of all NPs are in primary care.[61] This suggests problems with the all-payer-all-claims data, and it is challenging to figure out which clinicians are actually in practice (not administrative role) and which are in primary care. Fourth, States do not have a database that identifies primary care clinicians, including NPI, provider codes, place of service codes, and proportion of time spent providing primary care to ensure the precision of primary care estimates.[30] Finally, because current estimation methods are unable to distinguish high-quality primary care, (i.e., care aligned with the 4Cs: first contact, comprehensive, coordinate, continuity) from primary care that is not high-quality,[31] it is difficult to connect current estimation methods to outcomes and to patient experience of care.[30]

The key strength of using MEPS data is that MEPS provides nationally representative estimates of healthcare costs, services, and health insurance coverage. However, using MEPS in estimating primary care spending has some drawbacks. Primarily, the data are self-reported by a member of a household for the members of their household with some validation, though this is limited. Despite several measures to reduce recall bias, such as asking the respondents to prepare for the in-person interview (keeping a journal of health-related events), expenditures are underreported. Some of this underreporting is corrected by follow up verification from patients' clinicians. However, MEPS documents that despite the high response rates, only half of the clinician offices contacted provide the information requested.[57] Imputation methods based on age, payer type, and region are also used to compensate for missing data.

3.9 Administrative Burden

Table 6 reports the administrative burden of different approaches for estimating primary care spending. MEPS survey data is unique in that it relies on self-report data from a single member of the household for all the members of the household (with verification from clinicians, if needed). This is the only data source that places the burden of reporting healthcare delivery on household members. Claims data uses billing data where clinicians and billing staff are already burdened with coding visits. Use of these data does not necessarily add to that administrative burden. Nonclaims data tends to be tracked and shared by payers, who bear the administrative burden for these payments. This effort could be minimized if standards are created for how nonclaims-based data are reported.

None of the methods currently employed for estimating primary care spending using nonclaims-based data hold the recipients of these funds accountable for how they spend this

money, and the proportion of these dollars that are invested in primary care is not typically reported. If such accounting and reporting were required, this could potentially increase the administrative burden for large health systems and Accountable Care Organizations. As this is not yet a contributor to administrative burden, we do not note this in Table 7.

3.10 Range of Spending Estimates

Most primary care estimates are not truly comprehensive in that they do not include all patients. What patients are included is determined predominately by what payers are included in the estimates. For overall primary care spending estimates, it is important to recognize that different payers are included. Some estimates are also reported separated by payer to both clarify what is included and call attention to differences in spending by payer type. Table 7 reports which payers were included in the overall estimates for which States or regions.

Table 7. Payer types included in primary care investment reports

State/Region	Medicare Fee-For Service	Medicare Advantage	Medicaid	Commercial	Other
California (EHC)[41]	No	No	Yes	No	No
California (IHA/Bailit Health)[40]	No	No	No	Yes	Yes
Colorado[34]	No	Yes	Yes	Yes	No
Connecticut[35]	Yes	Yes	Yes	Yes	Yes
Delaware[36]	Yes	Yes	Yes	Yes	No
Maine[42]	Yes	Yes	Yes	Yes	Yes
Maryland[48]	No	No	No	Yes	No
Massachusetts[37]	No	Yes	Yes	Yes	No
Oregon[38,49]	No	Yes	Yes	Yes	Yes
Utah[43]	No	Yes	Yes	Yes	No
Vermont[39]	Yes	Yes	Yes	Yes	No
Virginia[44,45]	Yes	Yes	Yes	Yes	No
Washington[46]	No	Yes	Yes	Yes	No
Regional (NESCSO)[30]	Yes	Yes	Yes	Yes	No
Regional (MMF)[17]	No	No	No	Yes	No
Nationwide (PCC)[47]	No	Yes	No	Yes	No

EHC = Edrington Health Consulting; IHA = Integrated Healthcare Association; MMF = Milbank Memorial Fund; NESCSO = New England States Consortium Systems Organization; PCC = Primary Care Collaborative

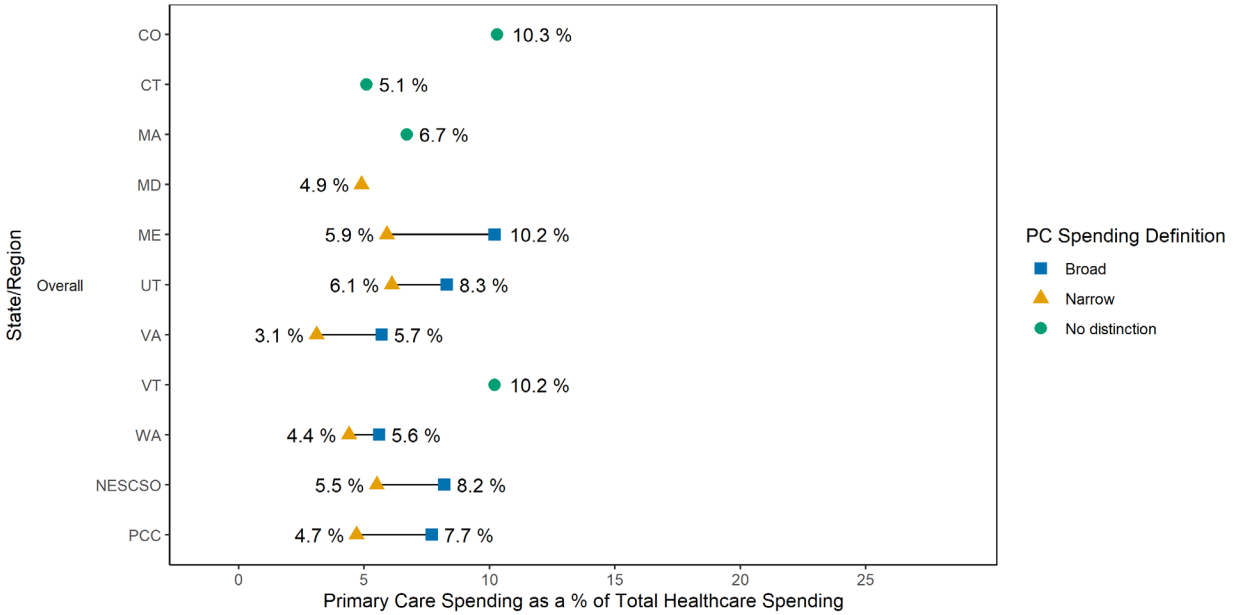
Below, we show a series of tables and figures that display spending estimates in the different ways their entities reported these numbers.

- Seven estimates (Maine, Utah, Virginia, Washington, NESCSO, Milbank Memorial Fund, and PCC) reported percent primary care spending using both a broad and narrow definition.
- One estimate (Maryland) reported percent of primary care spending using a narrow definition.
- Two estimates (both from California) reported percent of primary care spending using a broad definition only.
- Five estimates (Colorado, Connecticut, Massachusetts, Oregon, and Vermont) used a single definition of primary care spending, and these reports did not distinguish whether this was a narrow or broad definition. This is referred to in the tables as “no distinction.”

Overall primary care spending estimates are shown in Figure 9. Estimates that used narrow definitions of primary care ranged from 3.1 percent (Virginia) to 6.1 percent (Utah) of total spending. Estimates that used broad definitions ranged from 5.6 percent (Washington) to 10.2 percent (Maine). The ranges for those that did not make a distinction between broad and narrow primary care definitions ranged from 5.1 (Connecticut) to 10.3 (Colorado).

3. Results

Figure 9. Overall primary care spending estimates[a]



CO = Colorado; CT = Connecticut; MA = Massachusetts; MD = Maryland; ME = Maine; NESCSO = New England States Consortium Systems Organization; PC = primary care; PCC = Primary Care Collaborative; UT = Utah; VA = Virginia; VT = Vermont; WA = Washington

[a] Narrow and broad are terms defined and used by the State governments or organizations that produce the estimates. They are provided to contrast two estimates produced by a single organization and they do NOT have the same meaning across States and organizations

Table 8 and Figure 10 show primary care spending estimates stratified by payer type (Medicare fee-for-service, Medicare Advantage, Medicaid, and commercial).

- Maryland did not break down their primary care spending by payer type.
- The report for California by Integrated Healthcare Association and Bailit Health[40] and the Millbank Memorial Fund report (2017)[17] examined primary care spending among commercial payers only.
- The report for California by Edgington Health Consulting examined primary care spending among Medicaid payers only.[41]
- Those that did break down primary care spending by payer type used various approaches. For example, some reported a percent of spending for Medicare, and did not separate fee-for-service and Advantage plans, while others separated these out.

3. Results

Table 8. Primary care spending estimates (reported as a percent) stratified by payer type and primary care definition type[a]

Payer Type	Estimate	CA (EHC)[41,b] 2019	CA (IHA)[40,c] 2018	CO[34] 2021	CT[35] 2021	DE[36] 2019	MA[37] 2021	MD[48] 2019	ME[42] 2021	OR[38,49] 2021	UT[43] 2021	VA[44,45,j] 2021	VT[39] 2018	WA[6,3l] 2018	MMF[17,m] 2014	NESCSO[30] 2018[o]	PCC[47] 2019
Medicare - FFS % Spending Primary Care	Narrow	–	–	–	–	–	–	–	–[i]	–	–	2.2	–	–	–	3.4	–
	Broad	–	–	–	–	–	–	–	–[i]	–	–	4.2	–	–	–	5.4	–
	No distinction	–	–	–	–	5.3[e,f]	–	–	–	–	–	–	–[k]	–	–	–	–
Medicare - Advantage % Spending Primary Care	Narrow	–	–	–	–	–	–	–	–[i]	–	5.2	2.9	–	3.4	–	5.5	–
	Broad	–	–	–	–	–	–	–	–[i]	–	8.1	5.4	–	3.9	–	8.4	–
	No distinction	–	–	16.8	3.5	4.6[e]	4.2	–	–	9.7	–	–	–[k]	–	–	–	–
Medicaid % Spending Primary Care	Narrow	–	–	–	–	–	–	–	8.4	–	6.3	2.7	–	5.1	–	8.0	–
	Broad	11.3	–	–	–	–	–	–	12	–	8.4	5.3	–	6.8	–	10.4	–
	No distinction	–	–	7.0[d]	8.3	5.9	6.0	–	–	11.1	–	–	24.3	–	–	–	–
Commercial % Spending Primary Care	Narrow	–	–	–	–	–	–	–	5.8	–	6.2	4.4	–	4.5	5.8[n]	6.1	–
	Broad	–	7.5	–	–	–	–	–	11.9	–	8.2	8.3	–	5.7	7.1[n]	9.3	–
	No distinction	–	–	8.9	3.9	4.7[g]	6.9	–	–	12.5	–	–	9.2	–	–	–	–
Payers (Overall) Primary Care Spending % Spending Primary Care	Narrow	–	–	–	–	–	–	4.9	5.9	–	6.1	3.1	–	4.4	–	5.5	4.7
	Broad	–	–	–	–	–	–	–	10.2	–	8.3	5.7	–	5.6	–	8.2	7.7
	No distinction	–	–	10.3	5.1	–	6.7[h]	–	–	–	–	–	10.2	–	–	–	–

CA = California; CO = Colorado; CT = Connecticut; DE = Delaware; EHC = Edrington Health Consulting; FFS = Fee-for-Service; HMO = health maintenance organization; IHA = Integrated Healthcare Association; MA = Massachusetts; MD = Maryland; ME = Maine; MMF = Milbank Memorial Fund; NESCSO = New England States Consortium Systems Organization; OR = Oregon; PCC = Primary Care Collaborative; PPO = preferred provider organization; UT = Utah; VA = Virginia; VT = Vermont; WA = Washington

[a] Narrow and broad are terms defined and used by the State Governments or organizations that produce the estimates. They are provided to contrast two estimates produced by a single organization and they do NOT have the same meaning across States and organizations.

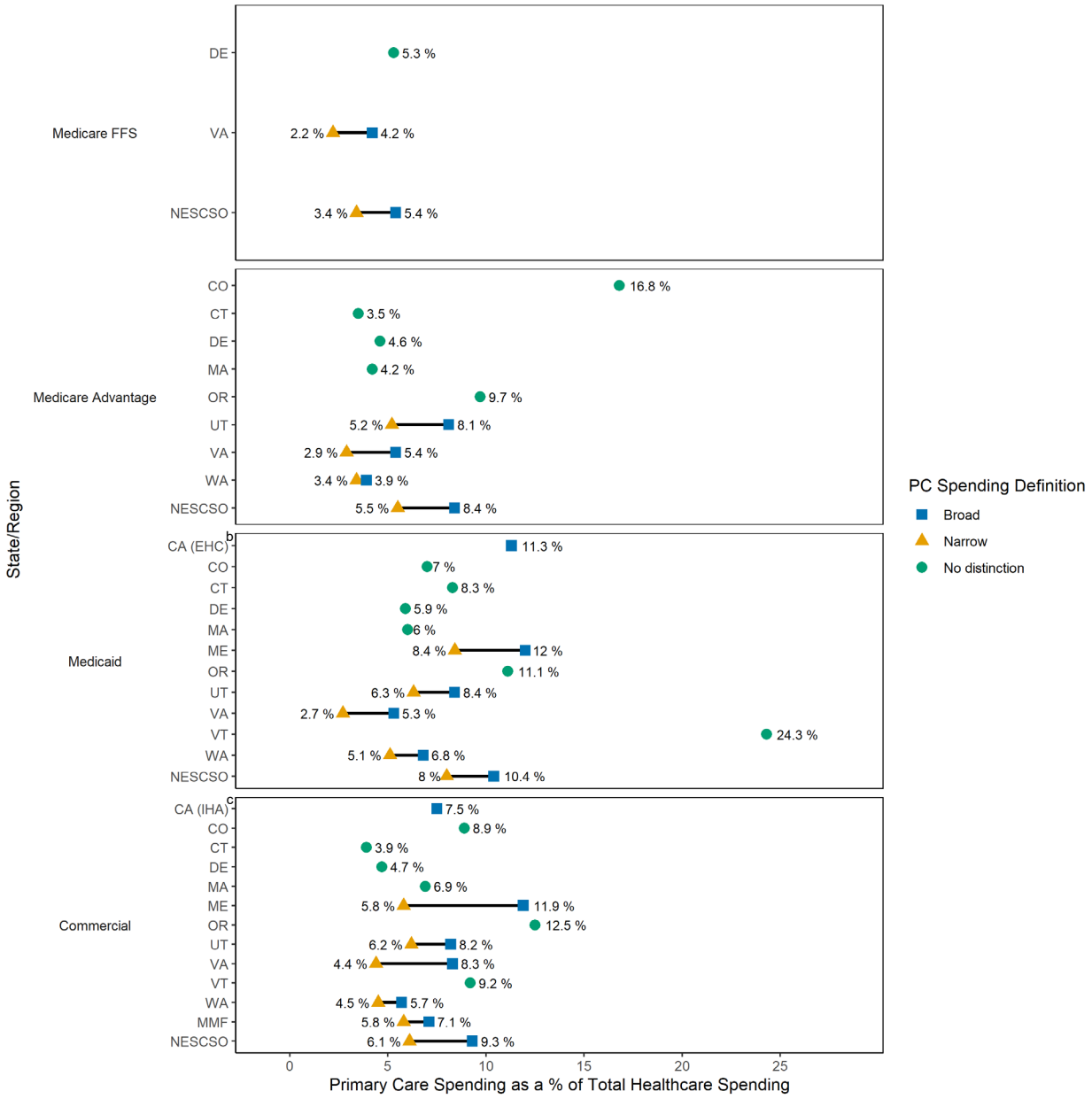
[b] This is the estimate of the State of California produced by Edrington Health Consulting, which reports using a broad definition, but not a specific method.

[c] This is the estimate of the State of California produced by Integrated Healthcare Association and Bailit Health for the California Health Care Foundation, they used the NESCSO broad definition, which restricted hospital codes to professional and service codes.

[d] Does not include CHP+, which is Colorado's Medicaid program for children
[e] The Delaware report says that this is Medicaid FFS and Medicaid Advantage. We believe this is a typo.
[f] Medicare FFS is from 2018 data.
[g] Delaware includes commercial spending from two different datasets. 4.7 is from the DHIN data set. The other was 4.5 from the OVBHC dataset.
[h] Adults only
[i] For the estimate from Maine, Medicare FFS and Medicare Advantage were combined and reported as 4.9% with the narrow definition and 8.1% with the broad definition
[j] For Virginia, all narrow estimates and broad estimates not provided in the text by payer type percent was estimated from the bar graph.
[k] For the estimate from Vermont, Medicare FFS and Medicare Advantage were combined and reported as 6.5%.
[l] We used Washington data from 2018, the report dated 2019 rather than the report released in 2020 (the most recent report) because the earlier had both narrow and broad estimates.
[m] For the MMF (2017) estimate we report two definitions: PCP-B for narrow (family medicine, general internal medicine, general pediatrics, general practice, NP, or physician assistant (PA) *and* designated by health insurer as a PCP) and PCP-C: family medicine, general internal medicine, general pediatrics, general practice, NP, PA, geriatrics, adolescent medicine, or gynecology *and* designated by health insurer as a PCP. We chose definitions because they are comparable to other broad and narrow definitions.
[n] MMF (2017) estimates commercial primary care spending only. They separate PPO and HMO spending. The numbers in the table are for PPO spending. 6.3% and 7.9% is the percent of spending the estimated for the narrow and broad definitions, respectively, for the HMO.
[o] For the NESCSO estimate, the data included for Massachusetts for commercial payers was from 2017 and for Medicaid was from 2016.

3. Results

Figure 10. Range of primary care spending estimates[a] by payer type



CA = California; CO = Colorado; CT = Connecticut; DE = Delaware; FFS = fee-for-service; MA = Maryland; ME = Maine; OR = Oregon; MMF = Milbank Memorial Fund; NESCSO = New England States Consortium Systems Organization; PC = primary care; UT = Utah; VA = Virginia; VT = Vermont; WA = Washington

[a] Narrow and broad are terms defined and used by the State Governments or organizations that produce the estimates. They are provided to contrast two estimates produced by a single organization and they do NOT have the same meaning across States and organizations

[b] This estimate is from the report of California from Edrington Health Consulting

[c] This estimate is from the report of California from Integrated Healthcare Association and Bailit Health

Overall, the percent of primary care spending tends to be lower among Medicare fee-for-service and Advantage plans, as compared with Medicaid. This is likely related to the ages of the beneficiaries, as older people with more chronic conditions are more likely to see specialists and

have hospitalizations. There is no easy way to tell if these differences are significant or important for policy and practice change.

Of note, Oregon, Colorado, Vermont, and Maine had a higher percentages of primary care spending across payer types. Three of these States (Oregon, Colorado, and Vermont) also did not distinguish between a broad and narrow definition of primary care in their estimates. Three other States (Colorado, Oregon, and Massachusetts) did not include prescriptions in their denominator, which may explain why their investment in primary care is higher than other States.

Another factor that influences results is the inclusion or exclusion of large integrated systems in a spending estimate (e.g., Kaiser, Denver Health). The Colorado spending report shows percent spending on primary care with and without data from these integrated systems. Oregon did not include this in their report, though the impact Kaiser had on spending is discoverable using the Oregon Health Authority dashboard.[62] We can only speculate that information is reported separately because different methods were needed to estimate primary care spending among integrated systems where payment for primary care was prospective. Reports contained few details about how such estimates were calculated, but their impact on primary care spending could be large, depending on the percentage of the State population they serve.

Among the reports using MEPS data, there was also wide variation in primary care spending due to the lack of a uniform definition of primary care employed in spending calculations (see Table 9). However, the MEPS-based national primary care spending estimates were in the same range as the claims-based ones (Table 9). The national rate of primary care visits declined over 15 years (6.5% in 2002 to 5.4% in 2016).[56] Similarly, national primary care spending reduced over time (5.8% in 2010 to 4.6% in 2020), as reported in the Milbank Primary Care scorecard report.[64]

The PCC report found primary care spending for States varied from 3.5 percent in Connecticut to 7.6 percent in Minnesota with the narrow definition, and from 8.2 percent in New Jersey to 14.0 percent in Minnesota with the broad definition. When stratified by payer type, declining trends were seen across all payer types. In Decker & Zuvekas's paper, primary care spending ranged from 5.1 percent to 11.4 percent when stratified by age and 6.0 percent to 7.7 percent when grouped by race/ethnicity. The mean annual primary care spending was $225 pre-ACA and $264 post-ACA in adults eligible for the ACA Marketplace insurance compared with $270 pre-ACA and $228 post-ACA in adults enrolled with an employee-sponsored insurance, with no statistically significant differences across groups.[65]

Table 9. Primary care spending estimates (reported as a percent) stratified by payer type and primary care definition type,[a] MEPS data

Payer Type	Estimate	Decker 2019[57]	Martin 2016[56]	MMF 2020[58]	PCC 2011-2016[4b]
Medicare % Spending Primary Care	Narrow	–	–	3.5	4.4
	Broad	–	–	7.4	6.9
	No distinction	5.3	–	–	–
Medicaid % Spending Primary Care	Narrow	–	–	4.2	6.0
	Broad	–	–	12.7	11.2
	No distinction	7.4	–	–	–
Commercial % Spending Primary Care	Narrow	–	–	5.6	6.0
	Broad	–	–	15.1	10.2
	No distinction	8.7	–	–	–
Payers (Overall) Primary Care Spending % Spending Primary Care	Narrow	–	–	–	5.6
	Broad	–	–	–	10.2
	No distinction	7.0	5.4	–	–

MEPS = Medical Expenditure Panel Survey; MMF = Milbank Memorial Fund; PCC = Primary Care Collaborative
[a] Narrow and broad are terms defined and used by the State Governments or organizations that produce the estimates. They are provided to contrast two estimates produced by a single organization and they do NOT have the same meaning across States and organizations
[b] This publication reports an average % spending on primary care for 2011-2016

In addition to reporting the percent spent on primary care of total healthcare spending, some entities also report total dollars spent on primary care or per member per month (PMPM) or per member per year (PMPY) spent on primary care. As Table 10 shows, what information a State or entity reports to characterize its primary care spending varies.

Table 10. Type of reporting of primary care spending by State or organization

State/Region	Percent of Total Spending	Total Spending	PMPM	PMPY
California (IHA/Bailit Health)[40]	Yes	No	No	No
California (EHC)[41]	Yes	No	Yes	No
Colorado[34]	Yes	Yes	Yes	No
Connecticut[35]	Yes	Yes	Yes	No
Delaware[36]	Yes	No	Yes	No
Maine[42]	Yes	Yes	No	No
Maryland[48]	Yes	No	No	Yes
Massachusetts[37]	Yes	Yes	Yes	No
Oregon[38,49]	Yes	Yes	No	No
Utah[43]	Yes	No	No	No
Vermont[39]	Yes	Yes	No	Yes
Virginia[44,45]	Yes	No	Yes	No
Washington[46,63,66]	Yes	Yes	Yes	No
Regional (NESCSO)[30]	Yes	Yes	Yes	No
Regional (MMF)[17]	Yes	No	No	No
Nationwide (PCC)[47]	Yes	No	No	No

EHC = Edrington Health Consulting; IHA = Integrated Healthcare Association; MMF = Milbank Memorial Fund; NESCSO = New England States Consortium Systems Organization; PCC = Primary Care Collaborative; PMPM = per member per month; PMPY = per member per year

For example, four estimates (California [Integrated Healthcare Association and Bailit Health], Utah, Milbank Memorial Fund, and PCC) reported the percent of total spending on primary care only. Two estimates (Maine and Oregon) reported percent of total spending on primary care and the total dollars spent on primary care. One entity (California [Edgington Health Consulting]) reported percent of total spending on primary care and PMPM. Seven entities reported percent of total spending on primary care, the total dollars spent on primary care and either PMPM or PMPY (Colorado, Connecticut, Maryland, Massachusetts, Vermont, Washington and NESCSO).

Table 11 shows total primary care spending in total dollars and PMPM. Table 12 shows estimates that report PMPM by payer type. In each of these tables, we converted PMPY to PMPM (we divided by 12 months) in order to foster comparison.

Table 11. Overall primary care spending in total dollars and PMPM

Estimate	Total PCS ($) Broad	Total PCS ($) Narrow	Total PCS ($) No Distinction	PMPM Broad	PMPM Narrow	PMPM No Distinction
California (EHC)[41]	–	–	–	$28.50	–	–
Colorado[34]	–	–	$1.7 b.	–	–	–
Connecticut[35]	–	–	$1 b.	–	–	$29
Maine[42]	$641 m.	$373 m.	–	–	–	–
Maryland[48]	–	–	–	–	$21.3[a]	–

Estimate	Total PCS ($) Broad	Total PCS ($) Narrow	Total PCS ($) No Distinction	PMPM Broad	PMPM Narrow	PMPM No Distinction
Massachusetts[37]	–	–	$928.1 m.	–	–	–
Vermont[39]	–	–	$271.6 m.	–	–	$43.10[a]
Washington[66]	$0.9 b.	–	–	–	$19.00	–
Decker (National)[57]	–	–	–	–	–	$36.58
Martin (National)[56]	–	–	$87.1 b.	–	–	–
NESCSO[30]	–	–	–	$41.48	$27.88	–

b. = billions; EHC = Edgington Health Consulting; m. = millions; NESCSO = New England States Consortium Systems Organization; PCS = primary care spending; PMPM = per member per month; PMPY = per member per year

[a] Changed PMPY into PMPM by dividing by 12.

Note: While the report prepared by IHA/Bailit Health includes estimates of PMPM in the appendix of its report, these data were collected via self-report and there was a minimal response rate. Moreover, respondents struggled to separate out primary care from the PMPM they received. For details on these data see page 24 of the IHA/Bailit Health California estimate report.[40]

Reporting both PMPM and total spending is helpful. Vermont reports one of the higher PMPM figures in our sample and one of the lower reports of overall dollars spent on primary care. Since Vermont does not report PMPM stratified by payer type, it is difficult to know if this pattern is explained by the small population of this State and the high level of investment in primary care or the age of the population, which – if older – might also explain the higher PMPM.

Table 12 shows that 10 entities report PMPM stratified by payer type. Here, we can observe that PMPM tends to be highest for Medicare; higher than for both commercial and Medicaid payers. While the percent of primary care spending tends to be lower among Medicare fee-for-service and Advantage plans, as compared with Medicaid, this pattern is different when we look at spending by member. Medicare insures older, sicker members who may need more expensive primary care compared with Medicaid beneficiaries.

Table 12. Primary care spending estimates (reported as per member per month) by payer type

Payer Type	Estimate	CA[41]	CO[34]	CT[35]	DE[36]	MA[37]	MD[48]	VA[44,45]	VT[39]	WA[66]	NESCSO[30]
Medicare – FFS	Narrow	–	–	–	–	–	–	–	–	–	$31
	Broad	–	–	–	–	–	–	–	–	–	$50
	No distinction	–	–	–	–	–	–	$21.28	–	–	–
Medicare – Advantage	Narrow	–	–	–	–	–	–	–	–	–	$35
	Broad	–	–	–	–	–	–	–	–	–	$54
	No distinction	–	$32.43	$39	–	$44	–	$41.99	–	–	–
Medicaid	Narrow	–	–	–	–	–	–	–	–	–	$25
	Broad	$28.50	–	–	–	–	–	–	–	–	$33
	No distinction	–	$3.40;[a] $9.80[b]	$27	–	$31	–	$17.02	–	–	–
Commercial	Narrow	–	–	–	–	–	–	–	–	–	$26
	Broad	–	–	–	–	–	–		–	–	$39
	No distinction	–	$13.71	$25	$22	$41	–	$23.44		–	–
Payers (Overall)	Narrow	–	–	–	–	–	$22.83[c]	–	–	$19	$27.88
	Broad	–	–	–	–	–	–	–	–	–	$41.48
	No distinction	–	$9.42	$29	–	–	–	–	$43.02[c]	–	–

CA = California; CO = Colorado; CT = Connecticut; DE = Delaware; FFS = Fee-for-Service; MA = Massachusetts; MD = Maryland; NESCSO = New England States Consortium Systems Organization; VA = Virginia; VT = Vermont; WA = Washington

[a] This dollar amount is for Medicaid, not including CHP+, Colorado's children's Medicaid program.

[b] This dollar amount is for CHP+ only, Colorado's children's Medicaid program

[c] Changed from PMPY to PMPM by dividing by 12.

One other interesting pattern to note is some States – Connecticut, Massachusetts, and the NESCSO regional estimate (which includes Connecticut and Massachusetts) – have more equality among PMPM by payer type. It is possible this reflects regional norms for prices and level of services.

With regard to MEPS data, Decker reported primary care spending in 2019, which totaled $439 per person. Spending was highest for the Medicare population ($736) and lowest for the uninsured population ($78); spending was $461 for those with group private insurance.[57]

3.11 Stratified Reporting

As shown above, a number of spending reports stratify by insurance type. And, to some extent insurance group (Medicare, Medicaid, commercial) can be aligned with population level attributes. Age, gender, and race are other attributes on which entities stratify and report the percent of primary care spending. Two entities stratify estimates by gender: NESCSO and VHA.[30,67] For the broad definition of primary care, NESCSO reports primary care investment was 8 percent and 8.3 percent for males and females, respectively.[30] For the narrow definition of primary care, NESCSO reports primary care spending was 5.4 percent and 5.6 percent for males and females, respectively. For VHA, which uses a narrow definition only, percent of primary care spending was 5.9 percent and 7.5 percent for males and females, respectively.[67] Decker and Zuvekas[57] and VHA[67] examined primary care stratified by race. They reported primary care spending as a percent of total spending as follows: White 6.1 percent, Black 5.3 percent, Asian 10 percent, American Indian or Alaska Native 6.1 percent, and Native Hawaiian 6.7 percent;[67] and White 7.0 percent, Black 6.0 percent, and Hispanic 7.5 percent.[57]

Age was the attribute on which most reports stratified primary care spending. Table 13 shows that spending reports included a wide range of different ways of stratifying age. Depicting this information in a table is helpful because it shows that the percent of primary care spending on younger people is higher than on older people. This is explained by the fact that overall medical expenditures are higher for older people, and therefore the proportion of primary care spending is smaller.

Table 13. Stratified primary care spending as percentage of total healthcare spending

Estimate (Definition Type)[a]	CO (ND)[34]	MA (ND)[37]	CA (B)[41]	UT (B)[43]	WA (B)[63]	NESCSO (B)[30]	MD (N)[48a]	UT (N)[43]	WA (N)[63]	NESCSO (N)[30]	PCC (N)[47d]
% PCS out of total spending	10.3	6.7[c]	11.3	8.3	5.6	8.2	4.9	6.1	4.4	5.5	4.7
0-5 years	–	–	–	–	–	–	–	–	–	–	16.0
0-17 years	–	14.4[c]	28.2	16.3	–	–	–	13.5	–	–	–
0-18 years	18.0[b]	–	–	–	11.2	–	13.2	–	10.4	–	–
<1 years	–	–	–	–	–	13.8	–	–	–	11.1	–
1-4 years	–	–	–	–	–	25.8	–	–	–	221	–
5-9 years	–	–	–	–	–	–	–	–	–	–	11.0
5-11 years	–	–	–	–	–	19.1	–	–	–	15.9	–
10-14 years	–	–	–	–	–	–	–	–	–	–	9.7
12-17 years	–	–	–	–	–	15.2	–	–	–	12.0	–
15-17 years	–	–	–	–	–	–	–	–	–	–	7.5
18-24 years	–	–	–	8.4	–	–	–	5.9	–	–	4.8
18-34 years	–	–	–	–	–	9.2	–	–	–	6.4	–
19-24 years	–	–	–	–	–	–	5.1	–	–	–	–
25-34 years	–	–	–	6.8	–	–	4.1	4.6	–	–	3.5
35-44 years	–	–	–	6.7	–	8.4	4.2	4.8	–	5.7	3.9

Estimate (Definition Type)[a]	CO (ND)[34]	MA (ND)[37]	CA (B)[41]	UT (B)[43]	WA (B)[63]	NESCSO (B)[30]	MD (N)[48a]	UT (N)[43]	WA (N)[63]	NESCSO (N)[30]	PCC (N)[47d]
<40 years	–	–	–	–	–	–	–	–	–	–	–
40-54 years	–	–	–	–	–	–	–	–	–	–	–
45-54 years	–	–	–	5.9	–	8.2	3.9	4.3	–	5.3	4.0
55-64 years	–	–	–	4.9	–	7.3	3.3	3.5	–	4.4	3.7
65-74 years	–	–	–	7.4	–	6.8	–	4.7	–	4.4	3.2
75-79 years	–	–	–	7.7	–	–	–	4.8	–	–	–
75-84 years	–	–	–	–	–	5.9	–	–	–	3.7	–
80-84 years	–	–	–	8.0	–	–	–	5.0	–	–	–
18-64 years	–	–	–	–	5.4	–	–	–	3.8	–	–
≥65 years	–	–	–	–	4.0	–	–	–	3.5	–	–
≥75 years	–	–	–	–	–	–	–	–	–	–	3.2
≥85 years	–	–	–	8.1	–	5.1	–	5.1	–	2.6	–

B = broad definition; CA = California; CO = Colorado; MA = Massachusetts; N = narrow definition; ND = no distinction in definition; NESCSO = New England States Consortium Systems Organization; PCS = primary care spending; UT = Utah; WA = Washington

[a] Narrow and broad are terms defined and used by the State Governments or organizations that produce the estimates. They are provided to contrast two estimates produced by a single organization and they do NOT have the same meaning across States and organizations

[b] Colorado Health Plan Plus (CHP+) only numbers, does not include those with private insurance 0-18 years

[c] For the MA estimate they reported data by pediatric providers and nonpediatric providers and the data for % PCS out of total spending is from nonpediatric providers, while the number under 0-17 years if for the pediatric providers.

[d] Only reported for narrow definition

3.12 Sensitivity Analyses

Few primary care spending estimates included sensitivity analyses designed to increase understanding of the impact of different definitions. Among the State reports, two (Maine and Virginia) examined the percentage of additional spending for primary care delivered via telehealth services, but these reports lack details needed for meaningful comparison. The most common sensitivity analysis among those using claims data was conducted to compare the percent of primary care spending when OB/GYN clinicians and services were included or excluded from estimates.

Three State Government estimates (Maine, Massachusetts, and Vermont) and the NESCSO estimate reports included sensitivity analyses related to the impact of including OB/GYN provider codes and CPT/HCPCS codes. Given the difference in how Massachusetts reported this information, it is difficult to compare this State's results with the others. Table 14 includes the reported estimates of spending on OB/GYN and estimates of primary care including OB/GYN. The last row shows the proportion of primary care spending attributable to OB/GYN. In general, adding these providers does not make large differences in the estimates; the proportion they contribute varies from 0.09 for NESCSO to less than 0.01 for the Medicaid estimate for Vermont. Overall, the relative proportion of primary care spending attributable to OB/GYN is relatively small.

Table 14. Impact of including OB/GYN clinicians and services (sensitivity analyses) in primary care spending estimates

Estimate[a]	MA[37] (Comm)	ME[42c] (Comm)	VT[39d] (Comm)	NESCSO[30e] (Comm)	MA[37] (Medicaid)	ME[42] (Medicaid)	VT[39d] (Medicaid)	NESCSO[30e] (Medicaid)
% Spending on OB/GYN	8.0	0.4	0.2	0.59	9.4	0.1	0.1	0.71
% Primary Care Spending (PCS) overall	–[b]	5.4	5.4	6.7	–	8.6	12.3	8.7

Estimate[a]	MA[37] (Comm)	ME[42c] (Comm)	VT[39d] (Comm)	NESCSO[30e] (Comm)	MA[37] (Medicaid)	ME[42] (Medicaid)	VT[39d] (Medicaid)	NESCSO[30e] (Medicaid)
Relative proportion of PCS attributable to OB/GYN	–	0.07	0.04	0.09	–	0.01	0.008	0.08

Comm = commercial; MA = Massachusetts; ME = Maine; NESCSO = New England States Consortium Systems Organization; OB/GYN = obstetrics and gynecology; PCS = primary care spending; VT = Vermont

[a] Data are shown for Medicaid and Commercial payers because OB/GYN services are very small for patients on Medicare. Data shown are for the narrow definition of primary care or for States that did not make a distinction between narrow or broad definitions. This is because broad definitions either included OB/GYN providers and/or services or their percentage was the same as the narrow definition. Narrow and broad are terms defined and used by the State governments or organizations that produce the estimates. They are provided to contrast two estimates produced by a single organization and they do NOT have the same meaning across States and organizations

[b] Massachusetts reports change in primary care spend from 2019-2020; they do not report percent primary care spend as a proportion of total healthcare spending, total healthcare spending for 2020 is not included in their report.

[c] Maine identified OB/GYN provides and then only includes selected services delivered by these providers.

[d] Vermont report uses claims data only to calculate this percentage.

[e] We report Definition 3 (defined OB/GYN, selected OB/GYN services); Definition 4 (defined primary care physicians, selected OB/GYN services) was 0.06% (commercial) and 0.10% Medicaid). To calculate % of primary care spending overall, we added the % spent on OB/GYN to the authors definition 1: they defined a group of primary care providers (that excluded OB/BYNs) and identified select services to include in the estimate. For details see NESCSO Report, 2020.[30]

For the estimates based on MEPS data, Park et al., 2020[59] conducted several sensitivity analyses to test the resiliency of the findings and produce unbiased estimates. We examined whether MEPS State estimates could be used in a way for cross-checking or loosely assessing the sensitivity of State-based estimates of primary care spending. As Table 15 shows, there were only a small number of States estimates where this was possible. MEPS reports and the State reports did not break out Medicare spending the same way and often did not use comparable definitions of primary care. MEPS uses broad and narrow definitions and several State reports produce an estimate without these definitions, rendering them noncomparable. The differences observed between State estimates and MEPS's estimates for the State suggests MEPS data is not currently usable as a sensitivity check for State estimates.

Table 15. Comparison of State estimates[a] with the estimate for that State using MEPS data[68b,c]

State	Payer Type[b]	State Est. Medicaid	MEPS Est. Medicaid	State Est. Commercial	MEPS Est. Commercial	State Est. Payers (Overall)	MEPS Est. Payers (Overall)
Colorado, 2020[34] % Spending Primary Care	Narrow	–	4.3	–	5.0	–	4.7
	Broad	–	9.8	–	10.1	–	9.3
	No distinction	7.1	–	9.2	–	9.4	–
Connecticut, 2020[35] % Spending Primary Care	Narrow	–	5.5	–	5.1	–	3.2
	Broad	–	8.9	–	9.3	–	8.0
	No distinction	–	–	–	–	5.1	–
Maryland, 2019[48] % Spending Primary Care	Narrow	–	5.9	–	6.3	4.6	5.7
	Broad	–	10.7	–	14.1	–	10.8
Massachusetts, 2020[37] % Spending Primary Care	Narrow	–	4.4	–	7.7	–	5.0
	Broad	–	13.3	–	15.8	–	10.2
	No distinction	6.5	–	7.3	–	–	–
Oregon, 2020[38,49]	Narrow	–	8.3	–	12.0	–	9.6
	Broad	–	23.7	–	28.6	–	20.7

State	Payer Type[b]	State Est. Medicaid	MEPS Est. Medicaid	State Est. Commercial	MEPS Est. Commercial	State Est. Payers (Overall)	MEPS Est. Payers (Overall)
% Spending Primary Care	No distinction	12.8	–	14.1	–	–	–
Virginia, 2020[44,45] % Spending Primary Care	Narrow	–	5.2	–	7.0	3.2	6.3
	Broad	–	9.7	–	13.7	5.4	11.0
Washington, 2018[63] % Spending Primary Care	Narrow	5.1	6.8	4.5	5.6	4.4	5.3
	Broad	6.8	11.4	5.7	18.3	5.6	13.0

Est. = estimate; FFS = fee for service; MEPS = Medical Expenditure Panel Survey

[a] We selected the most recent State estimate that also matched the most recent estimate year in MEPS.

[b] Narrow and broad are terms defined and used by the State Governments or organizations that produce the estimates. They are provided to contrast two estimates produced by a single organization and they do NOT have the same meaning across States and organizations

[c] Medicare Advantage and FFS were not reported separately in MEPS reports and therefore, could not be compared with States who report primary care spending for Medicare Advantage and FFS separately.

3.13 Relationship Between Primary Care Spending and Health Outcomes

We identified primary care spending estimates and reports that examined the relationship between primary care spending and health outcomes to address Guiding Question 1b: "What is the evidence of the relationship between different primary care spending estimation methods and the absolute and relative levels of primary care spending and health outcomes including morbidity, mortality, quality of life, and health equity?" Of the estimates meeting the inclusion criteria for this Technical Brief, we identified four that estimated primary care spending and also examined the relationship between spending and health outcomes.

The PCC report that used MEPS data (2011-2016) examined primary care spending patterns across different payers per State. They examine spending in 29 out of 50 States. This report found an association between increased primary care spending and reductions in ED visits, total hospitalizations, and hospitalizations for ambulatory care sensitive conditions. They did not find a significant relationship between spending and patient satisfaction.[4] This finding is echoed in the 2020 PCC spending report that uses claims data. That 2020 report is consistent with the other PCC report, and finds a negative association between primary care spending percentage and measures of utilization, including ED visit, hospitalizations, and hospitalization that are potentially avoidable with access to primary care.

The report that focuses on primary spending in California's Medicaid program (Medi-Cal) examined the relationship between primary care spending percentage and a number of performance measures related to clinical quality, overall plan performance, patient experience, hospital and ED utilization, and total cost of care. The authors found that plans that had a higher percentage of primary care spending achieved a better Aggregated Quality Factor Score and were more likely to get a higher rating from the National Committee for Quality Assurance. These two relationships were statistically significant. In addition, plans with high primary care spending had better patient satisfaction scores. The authors also found that a plan's percentage of spending on primary care had no impact on total cost of care or its members utilization of acute hospital services or the ED.

The report that focused on California's primary care spending across commercial health plans – health maintenance organization, preferred provider organization, and exclusive provider organization products offered by eight health plans – examined relationships between adjusted primary care spending and measures of clinical performance, utilization, and cost. Although results were mixed at the health plan product level, they found that "among the 14 health-plan-product combinations, higher primary care spending percentage was associated with better performance for clinical quality and marginally lower acute hospitalization utilization, but slightly higher ED utilization and cost of care."[40] The authors also found an association between higher primary care spending and lower total costs of care among 8.5 million adults enrolled in health maintenance organization (HMO) products. California is a fairly unique environment. Commercial HMOs used a capitated, delegated model of care, where Provider Organizations (POs) assume responsibility and financial risk for managing the care of their assigned patients. Their analysis included 180 POs across the State. The average spending on primary care was 7.6 percent (range 2.8% to 15.4%). The average total cost of care on a PMPM basis was $365 ($99 to $740). The authors compared PO performance based on quartiles of primary care spending percentage. They found that POs in the highest quartile of primary care spending percentage had better performance on clinical quality, patient experience, utilization, and total cost of care. The authors estimated that if the performance for the POs in the three lower quartiles of primary care spending percentage equaled the average performance of those in the highest quartile, "up to196,000 more members would receive recommended care, 147,000 more members would rate their overall care 9 or 10 out of 10, and there would be 25,000 fewer acute hospital stays along with 89,000 fewer ED visits. In total, healthcare expenditures would be $2.4 billion lower."[30]

3.14 Considerations for Developing Valid and Standardized Estimations of Primary Care Spending

We identified four factors worth considering for developing a valid and standardized estimate of primary care spending to address Guiding Question 3. What are considerations for developing valid and standardized estimation of primary care spending?

First, as shown in section 3.2 (Primary Care Definitions […]), there were some common elements across primary care spending estimates. Certainly, any process that works toward consensus should start with this common ground, and be informed by definitions of high-quality primary care. There is a large body of evidence that personalized primary care that is aligned with the 4Cs (first contact, comprehensiveness, coordination, and continuity) and delivered by generalists who are supported by an interdisciplinary team, achieves the quadruple aim. This is the type of "North Star" that should inform a definition of primary care and, subsequently, how primary care spending is operationalized. What is counted matters, and what is not counted may be undervalued, and eventually eliminated.

Second, as reported above, there was no standard way for identifying primary care clinicians, and the submission of provider code data to APCDs lacked rigor despite standardization and coordination across States.[30] Similarly, States did not have a database that identified primary care clinicians. The Washington State report cited this lack of a simple identifier of primary care clinicians as the reason they need to use CPT/HCPCS codes to estimate spending.[46] While there may be commercially available databases that claim to provide this information, these are not publicly available, and have a cost to access. Creating a publicly available, free (or low cost) primary care clinician database that includes provider codes, place of service codes, and proportion of time spent providing primary care could improve primary care estimates.[30] In

addition, this database could establish a primary care practice identifier that could connect clinicians to a primary care practice. This very basic information, if created and maintained, has the potential to simplify the methods for estimating primary care spending. For example, if you can identify a primary care practice, then it increases the likelihood of identifying other professionals who work in these practices and are also working in primary care. Accomplishing this is certainly more complicated than it sounds and would require investment, but it would address a number of the challenges noted above, and make measurement of spending on team-based care in these setting, which include team members who cannot bill for services, possible. This would change the purpose of CPT/HCPCS codes from defining the clinician as being primary care to being a check on the primary care clinicians' scope of practice; CPT/HCPCS codes could be used to identify those delivering comprehensive primary care.[69] This could improve the accuracy and utility of estimates. Another, perhaps complementary approach or a preliminary step, would be to improve the methods that are currently being used to measure nonclaims payments, and require the reporting of the proportion of nonclaims payments directed to primary care. This could also improve primary care spending estimates.

Third, in addition to making decisions to identify the clinicians, settings, and services that are considered primary care, which all concern the numerator in primary care spending estimates, there are a number of other crucial, granular decisions that go into these estimates. Thus, there is an opportunity to develop a primary care spending reporting template – similar to templates used for clinical trials reporting, that would foster clarity and transparency in the operationalization of primary care spending methods. The tables in this report, particularly Table 4, are a good start for such an effort. Such a template could inform decision making by highlighting the key decisions that those creating primary care spending estimates need to consider. Such a template could help with clarity and transparency by identifying the key choices that have been made regarding primary care definitions and denominators; it would be helpful for such a template to provide guidance for States on how to document, annotate, and share intended adaptations, and strongly suggest a consistent way of reporting spending (e.g., totals dollars spent on primary care, PMPM, and percentage of primary care spending out of total healthcare spending). Such a template could be very helpful to the 30-plus States that have not yet measured primary care spending do so; it would help States with an estimate compare their approach with other States, perhaps being judicious in exercising flexibility to tailor their measurement programs based on State-specific goals and requirements; and it could help foster comparison among State estimates, as the differences among estimate would be transparently and consistently noted.

Fourth, developing a standardized method for estimating primary care spending needs to be implementable and forward looking, which some suggest means preparing for a future move away from billing-based methods for calculating primary care spending, toward methods that might be better aligned with assessing capitated and global payments.[60]

If the United States were to develop a national standard for estimating primary care spending, it could address many of the issues noted above and standardize much of what is identified as sources of variation, including:

- Categories accounting for Medicaid[30] payments for nonmedical support services.
- Methods for tracking nonclaims payments,[30] particularly as value-based capitated payment models expand.
- An approach to tracking prescription payments that account[30] for the impact of rebates.

- A transparent way of tracking what portion of nonclaims payments are dedicated to and reach primary care. According to the authors of the NESCSO report, this is a particular challenge for risk-settlement payments paid to large health system.

Additionally, a national standard method for assessing primary care spending would allow for research that examines how State- and payer-level differences are driving the wide variation between narrow and broad primary care spend calculations. This research should include all 50 States; it should include claims and nonclaims payments to fully capture such investment; and it should allow for adjustments to account for clinical and sociodemographic variables; and consider a broad range of key patient outcomes as a way to understand the implications of varying levels of primary care spending.[4] This national standard should not be in place of current State estimates, but added to State efforts to estimate primary care spending in their region.

3.15 Expert Consensus Toward a Standard Measure of Primary Care Spending and Why It Is Important

There are a small number of health services researchers and policy analysts who are experts in the area of primary care spending measurement. These experts call for standardizing how we estimate primary care spending.[17,30,31,70,71] They recognize that a national standard would provide a common way of looking at primary care spending across all 50 States. This is needed because, as Koller points out, "measuring primary care spending rates has proven to be an effective means for focusing public attention on primary care" and "primary care spending rate is a reasonable measure of the relative priority that an entity places on primary care…" it can be easily understood and calculated.[70] Other experts agree with Koller, and note there is a growing concern about an increasingly specialist-oriented healthcare system. To strengthen the Nation's primary care foundation requires that we are able to "meaningfully quantify current and future health system investment in primary care" and a standardized way for measuring this investment is needed.[17]

This is how policymakers and decisions makers use these measures; they draw attention to current investment levels, to implement policies to increase that investment, and to establish and monitor accountability for reaching primary care spending targets, if such a target has been established through State legislation. A smaller number of policymakers are tracking how increases in investment are leading to lower overall costs of healthcare. Rhode Island is the only State that tracked this[72,73] and the foundation-generated report for California also looked at this for certain payers.[40] There is no evidence of benchmarking across States or connecting primary care spending to health equity or health outcomes.

Yet, there is little uniformity in defining primary care spending. "Assessing spending in a standardized way" would allow States "to meaningfully quantify current and future health system investment in primary care" and it would allow others to objectively compare primary care spending geographically and across payers and healthcare systems, and promote transparency of overall investment in primary care.[17]

In terms of consensus for a standard preferred method of estimating primary care spending, experts agree that an integrated framework for estimating primary care spending must encompass claims- and nonclaims-based components of primary care spending. Experts also acknowledge that States need a full method for measuring primary care spending provided to them, and they suggest that providing this method to States may expedite adoption, promote standardized measurement, and facilitate cross State comparisons.[31,71]

Experts note that accomplishing this is possible. It will require national level leadership and investment that starts with a definition of high-quality primary care,[70] a common definition of primary care spending,[31] and a method for collecting the data needed to construct that estimate that minimizes burden. While there may be some opportunities to use State APCD and those assembled by voluntary State-level collaboratives might work, these databases lack some of the data elements needed to identify primary care spending.[71]

A national standard for measuring primary care may need to be developed as an auxiliary measure. This is because States will continue to have some different measurement methods that are tailored to their local environment. An auxiliary measure would produce one estimate of primary care spending using the same methods for all 50 States. The 11 States that are already measuring primary care spending could continue to do so using their definitions of primary care spending, many of which are legislatively mandated. These States would have access to both estimates, and States that have not yet constructed a primary care estimate would have one (the national standard) that they could choose to adopt. Since States are using claims and nonclaims data to produce State estimates, using the same data sources in the national estimate would encourage alignment, understanding and adoption of measurement methods by other States.

4. Discussion

4.1 Discussion and Implications

We found wide variation in how primary care spending was operationalized across the States and other organizations that used claims- and nonclaims-based data to calculate their estimates. There were fewer estimates of primary care spending that used Medical Expenditure Panel Survey (MEPS) data, and these estimates had a narrower set of authors. Nevertheless, there is still some variation in how MEPS data were used to produce estimates. One source of variation is the definitions of primary care (broad, narrow, or no distinction) used in estimates. These definitions, we found, were connected to different ranges of primary care spending. Estimates of total primary care spending that used narrow definitions ranged from 3.1 percent (Virginia) to 6.1 percent (Utah) of total healthcare spending; estimates that used broad definitions range from 5.6 percent (Washington) to 10.2 percent (Maine); estimates that did not make a distinction between broad and narrow definitions ranged from 5.1 percent (Connecticut) to 10.3 (Colorado) percent of total healthcare spending. We found that the States with higher primary care spending estimates made no distinction in the primary care definition they used, included behavioral health in the primary care definition, and excluded prescription costs from the denominator. Estimates using MEPS data showed a similar pattern.

Estimates that reported total spending on primary care or per member per month provided additional information, but they can be hard to compare. Both are influenced by the size of the population and also by other factors such as regional prices and benefits that health plans offer to compete in their markets.

Key Informants pointed out that stratification of primary care spending estimates by age as well as other social and economic characteristics was important, as these factors could influence estimates. Many States did stratify primary care spending by age, yet each State stratified age differently, rendering these data incomparable. Nevertheless, a pattern of higher levels of medical spending for older adults and a relatively smaller proportion of this spending dedicated to primary care does emerge.

A central challenge is defining the who, what, and where of primary care and operationalizing these definitions. This starts with defining who is a primary care clinician. There are a common group of clinicians that most agree are primary care clinicians, such as family and general practice, internal medicine, pediatric physicians, nurse practitioners (NPs), and physician assistants (PAs). Clinician types where definitional and operational variation emerges include obstetrics/gynecology (OB/GYN) clinicians, homeopaths and naturopaths, and behavioral health clinicians. To date, the only sensitivity analyses that have been conducted assess the impact of including or excluding OB/GYN clinicians; the inclusion of OB/GYN in primary care spending estimates, particularly when Current Procedural Terminology (CPT)/Healthcare Common Procedure Coding System (HCPCS) codes are restricted, has a relatively small overall effect, and represents a small proportion of primary care spending.[4,17] Comparable sensitivity analyses have not been done to understand the impact of including or excluding other professionals but doing so might be helpful. This is particularly needed for behavioral health clinicians, as there is a wide range of provider codes that identify members of this professional group, and it is very difficult to identify behavioral health that is provided in primary care clinics and more precisely as part of integrated primary care. Two States with the highest percent of primary care spending included behavioral health in their estimates (Oregon and Colorado). Additionally, Maine has joined Massachusetts and a handful of other States that

are requiring a separate analysis and report on behavioral health spending from that on primary care spending.

Importantly, we found no studies that examined the magnitude that denominator differences have on spending estimates, although very rough estimates would suggest that the exclusion of pharmacy expenditures from denominators can result in sizable reductions to the denominator and thereby make the proportion of primary care spending (numerator) out of total healthcare spending larger. Research that examines the magnitude of impact that numerator and denominator differences have on overall primary care spending estimates is critically needed.

One way to start addressing the variation in primary care spending estimates and begin to move toward a standard operational definition is to develop the capacity to accurately define primary care clinicians, to connect clinicians to a primary care clinic that has a unique identifier, and to identify the professionals delivering primary care in those clinics. This may be one of the most important hurdles for standardization, and overcoming this could simplify the complex choices that estimators make among a constellation of provider codes, place of service codes, and CPT/HCPCS codes. It could also reduce several important estimation errors. This is a complicated, but perhaps not an impossible task that may benefit from Federal level leadership, as it will require revision to how all-payer claims databases (APCDs) are constructed in terms of identifying clinician organizations and their nested individual clinical sites. Once this data infrastructure is established, steps can be taken to identify physicians, NPs and PAs who practice in primary care, and steps could be taken to consider including the wider range of professionals (e.g., community health workers) who work on interdisciplinary primary care teams in spending estimates. While there are some commercial databases that may do this, these databases are proprietary, and not publicly available. This is a crucial limitation, as these data need to be widely accessible. Leaders could, however, learn from these organizations about the best ways to develop a comparable publicly available database. States need a low burden, high reliability resource that allows them to identify their primary care workforce and where they are practicing. This is a foundational need for measuring primary care spending; this should be a public utility, as it would address a range of State needs.

Studies of Graduate Medical Education[74,75] outcomes may be one resource for achieving primary care specificity for the physician workforce. These use combinations of American Medical Association Masterfile training data and claims data to identify primary care physicians who do not spend the majority of their time as hospitalists or emergency room physicians. Addressing this issue for NPs and PAs is more challenging. Survey data for NP[76] and PA[77] certification estimated that only about one-third of NPs and less than one-quarter of PAs currently practice in primary care settings.[1] Thus, the general inclusion of NPs and PAs in primary care spending calculations likely lead to overestimates. Studies using colocation of NPs and PAs with primary care physicians as a method for estimating these workforces is still likely to produce overestimates, but was endorsed by Health Resources and Services Administration, the Agency for Healthcare Research and Quality, and Assistant Secretary for Planning and Evaluation, and may offer a more balanced approach across States.[78,79]

Four reports include evidence of a relationship between absolute and relative levels of primary care spending and health outcomes.[40] State Governments are guided by legislation to create primary care spending reports. While examining this legislation was not part of the scope of our work, it seems that the intention is to monitor spending on primary care, and not to study the relationships among spending in health outcomes. While the association between primary care spending and health outcomes is well established scientifically, an important opportunity

may exist in examining how primary spending policies and definitions across States are associated with different health outcomes. To our knowledge, this has not been examined by health policy researchers. The many differences that we identified in how State estimates are operationalized may be a contributing factor to why such investigations have not been attempted. Steps toward transparent reporting and standardization would reduce this barrier.

4.2 Strengths and Limitations of the Evidence

Strengths of the evidence include:

- The number of estimates of primary care spending is increasing with more States beginning to develop their own estimates. A number of these efforts have been stimulated by legislation, which suggests there may be a growing awareness of the importance of primary care spending.
- States are learning and refining their methods, and they are sharing what they learn. This is apparent in the reports.
- The reports we reviewed suggested there are leaders and analysts developing the knowledge and skills to calculate primary care spending.
- Estimates of primary care spending were reported. These reports display an understanding of the choices that must be made to define primary care and operationalize primary care spending.

Limitations of the evidence include:

- The impact of the 2016 Supreme Court that ruled that States could not require health insurance plans under the Employee Retirement Income Security Act (ERISA) to submit their healthcare claims data for use in the State's APCDs. We interacted with Denise Love, B.S.N., M.B.A., and Josephine Porter, M.P.H. (by email),[80,81] and Norm Thurston, Ph.D., of National Association of Health Data Organizations (by telephone),[82] all of whom have expertise on this topic, to appreciate the impact of this decision on the completeness of APCDs. The ERISA self-funded commercial reporting exemption impact varies by State, according to its market mix and extent of voluntary commercial reporting.[80-82] For primary care spending, total dollars to primary care (and every other service) would be undercounted due to the lack of ERISA data. The distribution of primary care compared with other types of care likely mirror that of the self-funded and fully insured lives that are represented in the data.[80-82] As such, the lack of ERISA data in APCDs is likely a small limitation and there are steps that analysts can take to address data missingness.[80-82]
- Methods used in estimates lacked clarity and inclusions or exclusions were not reported consistently across reports. Moreover, State Governments are changing their methods from year to year. State Governments do not always clearly report these changes; they may only adjust prior estimates to reflect the refined methods. This means that making comparisons across years of data is not possible among estimates from different years that are reported by the same entity. For instance, Oregon has refined its method for estimating primary care spending over its 8 years of reporting. This evolution of methods to estimate primary care spending seems to be the rule rather than the exception.
- Most estimates reported some incomplete or missing data from one or more of their sources.

- Some estimates have narrow population inclusions (e.g., Medicare only, Veterans Health Administration, etc.).
- Most primary care spending estimates do not account for the cost of team-based primary care, which can include team members (e.g., community health workers) who are responsible for important care functions (e.g., community outreach), but whose work is not billable. Including nonclaims data in estimates may help, but these methods are not sophisticated, specific, or wide-spread enough to address this limitation. Additionally, there is currently no accountability for how nonclaims payments are used by provider organizations.
- Methods for collecting and calculating spending from nonclaims are newer and being developed by a smaller number of States. We identify several challenges and possible limitations of spending estimates based on this data that might be a limitation to the quality of the estimate.
- Entities that are estimating primary care do not state the economic perspective (e.g., societal, payer, patient) or working assumptions that inform their primary care spending estimates. It may be beneficial to clarify these assumptions and perspectives in future measurement efforts.
- We recognize that there is a debate about optimal levels of primary care spending. Characterizing this debate is outside the scope of this brief.

4.3 Future Research Needs

We have identified the following areas where future research is needed:

- Research is needed to further explain the variations in spending estimates that we observed and to identify the magnitude of the effect that different choices in how the numerator (primary care spending) and the denominator (total healthcare spending) are defined have on primary care spending estimates. For example, we do not fully understand the impact of including certain clinician types (NPs, PAs, homeopaths, naturopath, behavior health clinicians) on spending estimates, and we do not know what impact different denominator exclusions have on spending estimates.
- Research is needed to identify methods for identifying behavioral health that is delivered in integrated primary care settings. Writers of the Colorado report recognized the need for developing and testing better methods for identifying where behavioral health is integrated into primary care.[32]
- Moreover, there may be other sources of variation, such as regional variation in the cost of care, that estimates have not highlighted yet because we lack the ability to make robust regional comparisons of primary care spending. More research is needed to understand these sources of variation.
- More work is needed to develop and refine methods for collecting nonclaims data, and research is needed to identify valid, reliable, and low burden methods for collecting these data.[17,30,46]
- Research is needed to consider how to handle primary care delivered via telehealth modalities, and to understand the magnitude of impact that retail and direct-to-consumer primary care and concierge services have on spending.
- It would be beneficial if this work included understanding the impact that continuous and disparate sources of primary care (i.e., having a primary care clinician you see most of

the time vs. not having such a relationship) have on cost of primary care as well as utilization and total healthcare costs.
- If regions lack a strong primary care foundation, there will be less spending on primary care as there is less infrastructure and services to pay for. This raises the questions about how much variation in primary care spending estimates across systems and regions based could be due to the quality and strength of primary care infrastructure and the availability of services and providers.
- Research is needed to more closely examine how patient experience of care relates to differing levels of primary care spending. To accomplish this, evaluation of the State's capability to link member experience of care across data files and types is needed.
- More research is needed to understand how trends in enrollment, utilization, inflation, health risk, geography, race and ethnicity, and social and economic factors that affect health are connected to primary care spending
- As noted above, under the ERISA, some employers are not required to submit healthcare claims data to the State's APCD. Future research that identifies the extent to which States have been able to engage employers in voluntary submission, examines the differences between ERISA and non-ERISA data, and establishes methods for adjusting primary care spending estimates for missing data would be helpful.[83]

4.4 Implications for Health Policy

Health services researchers and policy analysts who are experts in this field call for standardizing how we estimate primary care spending.[17,30,31,70,71] A national standard would provide a common way of looking at primary care spending across all 50 States. It should include claims and nonclaims payments.[84] Accomplishing this is possible. It will require national level leadership and investment that starts with a consensus definition of high-quality primary care, and development of data infrastructure that can simplify estimation of primary care spending. Implications for health policy include:

- Federal health agencies should collaborate to create a primary care clinician database that can function as a public utility for States to allow for more precise identification of primary care clinics and clinicians, and reduce reliance on CPT/HCPCS codes to identify them.
- Federal health agencies should develop a template to foster transparent reporting of current efforts to estimate primary care spending, which could be an initial step toward standardization.
- Federal health agencies should collaborate with each other, and possibly with State leaders, to develop a consensus definition of primary care and process for estimating primary care spending. Creating a standardized measure of primary care spending would allow policymakers to monitor primary care spending for the Nation and use this dataset to examine relationships between spending on primary care and utilization, total costs, and health outcomes. Creating a standardized measure of primary care spending could also be an option for States to use in their own estimation efforts or intentionally build on.
- Policymakers should consider methods that are easy to understand and transparent when measuring and reporting primary care spending.

- Federal health agencies should support the development of State ACPDs, and supply Medicare and Medicaid estimates for every State.

4.5 Conclusions

We found that the number of States (and organizations) estimating primary care spending is growing. We also found that many States reporting primary care spending are doing so annually. There are common elements of primary care spending estimates; all offer a definition of primary care and operationally define the who, what, and where of the definition. While there are some commonalities across these definitions, there are enough substantive differences in how these definitions are operationalized that these reports do not allow for direct comparisons, limiting opportunities not only for benchmarking, but also for collaboration and learning from State-level experiences. To address this, health policy leaders should take steps toward developing a separate standardized national definition of primary care spending. This will require investment of time and infrastructure, but the ability to estimate and track primary care spending using the same standard across all 50 States is crucial for ensuring that we have a robust, high-quality primary care foundation in the United States.

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Abbreviations and Acronyms

ACA	Affordable Care Act
ACO	accountable care organization
AHRQ	Agency for Healthcare Research and Quality
APCD	All-payer claims databases
APM	alternative payment model
B	broad definition
BH	behavioral health
CA	California
CAH	critical access hospital
CCO	coordinated care organization
CHIA	Center for Health Information Analysis
CHIP	Children's Health Insurance Program
CI	confidence interval
CMS	Centers for Medicare & Medicaid Services
CO	Colorado
COVID-19	Coronavirus Disease 2019
CPT	Current Procedural Terminology
CT	Connecticut
DE	Delaware
DOC	department of correction
ED	emergency department
EKG	electrocardiogram
ERISA	Employee Retirement Income Security Act
FQHC	Federal Qualified Health Center
FFS	fee-for-service
HCS	healthcare spending
HCPCS	Healthcare Common Procedure Coding System
HCPLAN	Health Care Payment Learning & Action Network
ICD	International Classification of Diseases
IHA	Integrated Healthcare Association
KI	Key Informant
LTC	long-term care
LTSS	long-term services and supports
MA	Massachusetts
MC	managed care
MCO	managed care organization
MD	Maryland
ME	Maine
MEPS	Medical Expenditure Panel Survey
MH	mental health
MMF	Milbank Memorial Fund
N	narrow definition
NA	not applicable
NASEM	National Academies of Sciences, Engineering, and Medicine

ND	no distinction in definition
NESCSO	New England States Consortium Systems Organization
NP	nurse practitioner
NPI	National Provider Identifier
NPPES	National Plan and Provider Enumeration System
NR	not reported
NUCC	National Uniform Claim Committee
OB/GYN	obstetrics and gynecology
OEBB	Oregon educators benefit board
OECD	Organisation for Economic Co-operation and Development
OR	Oregon
PA	physician assistant
PACT	Patient-Aligned Care Team
PC	primary care
PCC	Primary Care Collaborative
PCMH	patient-centered medical home
PCP	primary care provider
PCS	primary care spending
PEBB	public employees' benefit board
PMPM	per member per month
PMPY	per member per year
POS	place of service
RHC	rural health center
SCHIP	State Children's Health Insurance Program
SUD	substance use disorder
UT	Utah
VA	Virginia
VHA	Veterans Health Administration
VT	Vermont
WA	Washington

Appendix A. Questions to Key Informants

Questions Related to the Protocol

The following questions ask for your expert opinion on aspects of the protocol we developed.

1. What time period would be most appropriate for this study's search? Why is this date appropriate?
    1a. Would articles published in last 10 years be sufficient?
2. Are there seminal articles you would recommend on this topic? We are looking for older articles (can be more than 10 years since publication) that we can use for a citation search and potentially for background.
3. Are there useful gray literature sources on this topic?
4. Are there additions or changes you would suggest to the Guiding Questions?
5. An evidence map uses graphics to represent the connections among selected characteristics of the evidence. An evidence map is mentioned in Question 2 above and in the statement of work "The Technical Brief will also include an evidence map of the association between different primary care spending definitions and health outcomes for use by end users of this review."
    a. What do you see as the challenges with creating an evidence map linking different primary care spending definitions and health outcomes?

    b. If the focus of the evidence map for this brief is flexible, what might be most helpful to display in an evidence map?

Questions About the Current State of the Field

Below, are some general questions about the current state of the field, with regard to primary care spending.

1. Is there a model for calculating primary care spending, either theoretical or in use, you think works well? If yes, what is the model and why do you think it works well?
2. What organizations or individuals should be involved in discussions aimed at developing a consensus on defining primary care and measuring primary care spending?
3. What are the implications of different definitions of primary care on estimates of primary care spending?
4. What else about this topic is important for our team to know?

Appendix B. Published Literature Search Strategy

1 ("primary care" adj5 spend*).ti,ab.
2 *Health Expenditures/
3 *Health Care Costs/
4 *"Costs and Cost Analysis"/
5 *Primary Health Care/ or exp General Practice/ or *Internal Medicine/ or *Pediatrics/ or *Geriatrics/ or *Physicians, Primary Care/ or *General Practitioners/
6 (2 or 3 or 4) and 5
7 exp United States/
8 ("united states" or "U.S.A" or "U.S.").ti,ab.
9 (Alabama or Alaska or Arizona or Arkansas or California or Colorado or Connecticut or Delaware or Florida or Georgia or Hawaii or Idaho or Illinois or Indiana or Iowa or Kansas or Kentucky or Louisiana or Maine or Maryland or Massachusetts or Michigan or Minnesota or Mississippi or Missouri or Montana or Nebraska or Nevada or "New Hampshire" or "New Jersey" or "New Mexico" or "New York" or "North Carolina" or "North Dakota" or Ohio or Oklahoma or Oregon or Pennsylvania or "Rhode Island" or "South Carolina" or "South Dakota" or Tennessee or Texas or Utah or Vermont or Virginia or Washington or "West Virginia" or Wisconsin or Wyoming).ti,ab.
10 7 or 8 or 9
11 (1 or 6) and 10

Appendix C. Gray Literature Search Strategy

Table C-1. State-level gray literature search strategy

Search Terms	Source	Resource Type	Link
Primary care spending	California Health Care Foundation Primary Care Matters Series	Report	https://www.chcf.org/wp-content/uploads/2022/03/InvestingPCLessonsStateBasedEfforts.pdf
Rhode Island primary care spending report	Primary Care Collaborative	Report	https://www.pcpcc.org/sites/default/files/resources/PCC_Primary_Care_Spending_2020.pdf
Came up through Maine search	Milbank Memorial Fund	Report	https://www.milbank.org/publication-topic/primary-care-spending-targets/
Came up through Maine search	The Graham Center	Report	https://www.graham-center.org/content/dam/rgc/documents/publications-reports/reports/milbank-baseline-scorecard.pdf
Came up through Maine search	Milbank Memorial Fund	Report	https://www.coloradoafp.org/wp-content/uploads/2017/10/MMF-Primary-Care-Spending-Report.pdf
Came up through Maine search	New England States Consortium Systems Organization	Report	https://nescso.org/wp-content/uploads/2021/02/NESCSO-New-England-States-All-Payer-Report-on-Primary-Care-Payments-2020-12-22.pdf
Came up through Maine search	Primary Care Collaborative	Report	https://www.pcpcc.org/primary-care-investment/legislation/map
Came up through Maine search	Center for Health Care Strategies, INC, supported by Commonwealth Fund	Report	https://www.chcs.org/media/PCI-Toolkit-Spend-Invest-Tool_111720.pdf
Idaho primary care spend	Milbank Memorial Fund	Scorecard	https://www.milbank.org/publications/health-of-us-primary-care-a-baseline-scorecard/i-financing-the-united-states-is-underinvesting-in-primary-care/
Oregon primary care spending report	Oregon	Report	https://www.oregon.gov/oha/HPA/ANALYTICS/Pages/Primary-Care-Spending.aspx https://www.oregon.gov/oha/HPA/ANALYTICS/PCSpendingDocs/2020-Oregon-Primary-Care-Spending-Methodology-and-Glossary.pdf
Rhode Island primary care spending report, Rhode Island Medicaid primary care spending	Rhode Island	Report	https://ohic.ri.gov/sites/g/files/xkgbur736/files/documents/Primary-Care-Spending-generalprimary-care-Jan-2014.pdf https://eohhs.ri.gov/sites/g/files/xkgbur226/files/2021-05/RIMedicaidExpenditureReport_SFY19.pdf
Maine primary care spending	Maine	Report	https://mhdo.maine.gov/_mqfdocs/MQF%20Primary%20Care%20Spending%20Report_Feb%202021.pdf
	Primary Care Collaborative	Dashboard	https://www.pcpcc.org/initiatives/maine

Search Terms	Source	Resource Type	Link
New Mexico primary care spending	New Mexico	Presentation	https://www.hsd.state.nm.us/wp-content/uploads/FINAL-PCC-PPT2022_05_20.pdf
	New Mexico	5-Year Strategic Plan	https://www.hsd.state.nm.us/wp-content/uploads/FINAL-2022-NM-PCC-Strategic-Plan.pdf
	Primary Care Collaborative	News	https://www.pcpcc.org/initiatives/new-mexico
Utah primary care spending	Utah	Report	https://www.pcpcc.org/sites/default/files/resources/Utah%20Primary%20Care%20Spend%20Report%20%282021%29.pdf
Colorado primary care spending	Colorado	Report	https://www.civhc.org/wp-content/uploads/2021/12/Primary-Care-Report-2021.pdf
	Colorado	Report	https://civhc.org/wp-content/uploads/2023/01/CIVHC-Report-of-Primary-Care-Spending-November-23-2022-Amendment.pdf
From Maine search	Connecticut	Report	https://portal.ct.gov/-/media/OHS/Cost-Growth-Benchmark/2020-2021-Benchmark-Report/Benchmark-Initiative---Final-Report.pdf
Connecticut primary care spending	Connecticut	Benchmark brief	https://portal.ct.gov/OHS/Content/Cost-Growth-Benchmark
	Connecticut	Factsheet	https://portal.ct.gov/-/media/OHS/Cost-Growth-Benchmark/Reports-and-Updates/CT-OHS---primary-care-spending-target-fact-sheet-2021.pdf
Delaware primary care spending	Delaware	Brief	https://www.pcpcc.org/2021/02/02/delaware-sets-primary-care-investment-target
	Delaware	Report	https://dhss.delaware.gov/dhcc/files/collabrptfinal2020_050820.pdf
	Delaware	State Report	https://insurance.delaware.gov/wp-content/uploads/sites/15/2020/12/Delaware-Health-Care-Affordability-Standards-Report-12182020.pdf
	Delaware	State report	https://dhss.delaware.gov/dhss/files/benchmarkmanual06212021.pdf
Maryland primary care spending	Maryland	Issue brief, 2020	https://mhcc.maryland.gov/mhcc/pages/plr/plr_healthmd/documents/cais_Primary_Care_Issue_Brief_08212020.pdf
Massachusetts primary care spending	Massachusetts	Report, data visualization on health care spending	https://www.chiamass.gov/primary-care-and-behavioral-health-care-pcbh-expenditures/

Search Terms	Source	Resource Type	Link
	Massachusetts	Report	https://www.chiamass.gov/assets/docs/r/pubs/2022/PCBH-Report.pdf
Found in Maine search	Vermont	Report	https://legislature.vermont.gov/assets/Legislative-Reports/Act-17-Primary-Care-Spend-Report-15-January-2020_Final.pdf
Washington primary care spending	Washington	Report	https://www.ofm.wa.gov/sites/default/files/public/publications/PrimaryCareExpendituresReport.pdf
	Washington	Report	https://app.leg.wa.gov/ReportsToTheLegislature/Home/GetPDF?fileName=Primary%20Care%20Expenditures%20Health%20Care%20Cost%20Transparency%20Board%20Preliminary%20Report_bf0a3578-3c73-4506-8c7c-87a429193d77.pdf
Nebraska primary care spending	Nebraska	Legislation	https://nebraskalegislature.gov/FloorDocs/107/PDF/Intro/LB737.pdf
New Jersey primary care spending, (then on state website) primary care spending	New Jersey	General provisions	https://www.nj.gov/treasury/omb/publications/22approp/E-GeneralProvisions.pdf
Pennsylvania primary care spending	Pennsylvania	Nothing relevant	Not applicable
Virginia primary care spending	Virginia	Presentation	http://jchc.virginia.gov/6.%20VTFPC%20Slides%20for%20JCHC%20Public%20Version.pdf
West Virginia primary care spending	West Virginia	Nothing relevant	
New York Primary care spend	New York	Legislation	https://www.nysenate.gov/legislation/bills/2021/s6534
California primary care spend	California	Issue Brief	https://iha.org/news-events/primary-care-california-spending-levels/ https://www.chcf.org/wp-content/uploads/2022/04/InvestingPrimaryCareWhyItMattersCommercialCoverage.pdf
	California	Report/news	https://www.globenewswire.com/news-release/2022/07/26/2486162/0/en/California-Providers-and-Health-Plans-Sign-Agreement-to-Expand-Investment-and-Increase-Access-to-Advanced-Primary-Care.html https://www.fiercehealthcare.com/payers/major-payers-including-aetna-uhc-sign-california-primary-care-initiative
North Carolina primary care spend	North Carolina	Journal	https://gh.bmj.com/content/4/4/e001601

Table C-2. Federal-level gray literature search strategy[a]

Source	Resource Type	Link
Centers for Medicare & Medicaid Services Website	Nothing relevant	-
Centers for Medicare & Medicaid Services Innovation Center website	Mathematica Third Annual Report/Evaluation	https://innovation.cms.gov/data-and-reports/2021/cpc-plus-third-anual-eval-report
Centers for Medicare & Medicaid Services Innovation Center website	Mathematica Evaluation report	https://innovation.cms.gov/data-and-reports/2021/md-tcoc-imp-eval-report
Google	Journal of the American Medical Association Research Letter: Health Care Policy and Law	https://jamanetwork.com/journals/jamainternalmedicine/fullarticle/2765245
Google	Patient-Centered Primary Care Collaborative and Robert Graham Center report	https://www.graham-center.org/content/dam/rgc/documents/publications-reports/reports/Investing-Primary-Care-State-Level-PCMH-Report.pdf
Google	Organisation for Economic Co-operation and Development Report	https://www.oecd.org/health/health-systems/Preliminary-Estimates-of-Primary-Care-Spending-under-SHA-2011-Framework.pdf
Google	Organisation for Economic Co-operation and Development report on primary care spending estimates among participating countries	https://www.oecd.org/health/health-systems/Spending-on-Primary-Care-Policy-Brief-December-2018.pdf
Google	Article from Health Care Innovation Group	https://www.hcinnovationgroup.com/population-health-management/primary-care/article/21268484/states-try-different-approaches-to-boost-primary-care-spending

[a]Search terms were either Federal primary care spend or primary care spend

Table C-3. Gray literature search strategy for selected organizations[a]

Source	Resource Type	Link
Health Affairs	Nothing relevant	Not applicable
Kaiser Family	Nothing relevant	Not applicable
Commonwealth Fund	Blog	https://www.commonwealthfund.org/blog/2023/how-congress-can-strengthen-primary-care-through-medicare-payment-reform
Commonwealth Fund	Blog	https://www.commonwealthfund.org/blog/2021/strengthening-primary-health-care-importance-payment-reform
Robert Wood Johnson Foundation	Nothing relevant	Not applicable
The California Health Care Foundation	Nothing new	Not applicable
Colorado Health Foundation	Nothing relevant	Not applicable
Iowa Health Foundation (now called UnityPoint Health)	No search results	Not applicable
United Hospital Fund (New York)	Nothing relevant	Not applicable
Milbank Memorial Trust	Report	https://www.milbank.org/publications/measuring-non-claims-based-primary-care-spending/
Rand	Nothing relevant	Not applicable
Brookings Institute	Nothing relevant	Not applicable

Source	Resource Type	Link
Cato Institute	Nothing relevant	Not applicable
Heritage Foundation	Nothing relevant	Not applicable
Urban Institute	Nothing relevant	Not applicable
Mathematica	Blog post	https://www.mathematica.org/blogs/three-things-primary-care-stakeholders-mostly-agree-on
Lewin group	Nothing relevant	Not applicable
Research Triangle Institute	Nothing relevant	Not applicable
Emergency Care Research Institute	Nothing relevant	Not applicable
American Institutes for Research	Nothing relevant	Not applicable
National Opinion Research Center	Nothing relevant	Not applicable
Primary Care Collaborative	Required State report	https://www.pcpcc.org/resource/maine-primary-care-spending-report-mqf
Primary Care Collaborative	Factsheet	https://www.pcpcc.org/resource/spending-primary-care-fact-sheet
Primary Care Collaborative	Brief data analysis	https://www.pcpcc.org/resource/pcmh-and-primary-care-spend-different-kind-investment
Milbank Memorial Fund	Report	https://www.milbank.org/publications/advancing-the-development-of-a-framework-to-capture-non-fee-for-service-health-care-spending-for-primary-care/?utm_medium=email&utm_campaign=Milbank%20Monthly%20August%202020&utm_content=Milbank%20Monthly%20August%202020+CID_c49c26e3334a748a2c42bbd9866bc83e&utm_source=Email%20Campaign%20Monitor&utm_term=new%20Milbank-supported%20report%20from%20RAND
Primary Care Centers Roundtable	Nothing relevant	Not applicable
Center for Primary Care Research and Innovation	Nothing relevant	Not applicable
The Eugene S. Farley Jr. Health Policy Center	Nothing relevant	Not applicable
The Center for Community Health Integration	Nothing relevant	Not applicable
The National Center for Primary Care	Nothing relevant	Not applicable
The Center for Professionalism and Value in Health Care	Nothing new found	Not applicable
Robert Graham Center	Nothing new found	Not applicable
Larry Green Center	Nothing relevant	Not applicable
The National Academy for State Health Policy	Nothing relevant	Not applicable
National Conference of State Legislators	Nothing relevant	Not applicable
National Governors Association	Nothing relevant	Not applicable
National Association of Medicaid Directors/Medicaid Medical Directors Network	Nothing relevant	Not applicable
Association Of State and Territorial Health Officials	Nothing relevant	Not applicable
AARP (American Association of Retired Persons) Policy Institute	Nothing relevant	Not applicable
Health Resources and Services Administration	Nothing relevant	Not applicable
Congressional Budget Office	Nothing relevant	Not applicable
Government Accountability Office	Nothing relevant	Not applicable

Source	Resource Type	Link
U.S. Department of Health and Human Services, Assistant Secretary for Planning and Evaluation	Nothing relevant	Not applicable
U.S. Department of Health and Human Services Office of the Secretary	Nothing relevant	Not applicable
Agency for Healthcare Research and Quality	Nothing relevant	Not applicable
Indian Health Service	Nothing relevant	Not applicable
National Library of Medicine	Nothing relevant	Not applicable

[a]Search terms were primary care spend

Appendix D. Scopus Search

We conducted citation searches in Scopus for relevant, landmark articles identified by our Key Informants and members of the team. Citations were imported into EndNote® and followed the same approach as our published literature search review. The articles we searched and the number of citations identified for each citation are shown in Table D-1.

Table D-1. Scopus search results

Citation	Number of Citations Identified
Basu S, Berkowitz SA, Phillips RL, et al. Association of Primary Care Physician Supply with Population Mortality in the United States, 2005-2015. JAMA Intern Med. 2019;179(4):506-14. doi: 10.1001/jamainternmed.2018.7624.	207
Friedberg MW, Hussey PS, Schneider EC. Primary care: a critical review of the evidence on quality and costs of health care. Health Aff (Millwood). 2010 May;29(5):766-72. doi: https://dx.doi.org/10.1377/hlthaff.2010.0025. PMID: 20439859.	199
Koller CF, Khullar D. Primary Care Spending Rate - A Lever for Encouraging Investment in Primary Care. N Engl J Med. 2017 Nov 02;377(18):1709-11. doi: https://dx.doi.org/10.1056/NEJMp1709538. PMID: 29091564.	37
Reid R, Damberg C, Friedberg MW. Primary care spending in the fee-for-service Medicare population. JAMA Intern Med. 2019 Jul 1;179(7):977-80. doi: 10.1001/jamainternmed.2018.8747. PMID: 30985864.	20
Bodenheimer T. Revitalizing Primary Care, Part 1: Root Causes of Primary Care's Problems. Ann Fam Med. 2022 Sep-Oct;20(5):464-8. doi: https://dx.doi.org/10.1370/afm.2858. PMID: 36228065.	2
Koller CF, Brennan TA, Bailit MH. Rhode Island's novel experiment to rebuild primary care from the insurance side. Health Aff (Millwood). 2010 May;29(5):941-7. doi: 10.1377/hlthaff.2010.0136. PMID: 20439884.	10
Starfield B, Shi L, Macinko J. Contribution of primary care to health systems and health. Milbank Q. 2005;83(3):457-502. doi: 10.1111/j.1468-0009.2005.00409.x. PMID: 16202000.	830

Appendix E. SEADS Results

AHRQ published an announcement in the Federal Register to notify stakeholders about the opportunity to submit information via the SEADS portal on the Effective Health Care website. We received one reply with the below citations identified.

1. Dolores Yanagihara, Integrated Healthcare Association, and Ann Hwang, Bailit Health. Investing in Primary Care: Why It Matters for Californians with Commercial Coverage, California Health Care Foundation, April 2022.
2. Kyle Edrington et al, Edrington Health Consulting. Investing in Primary Care: Why It Matters for Californians with Medi-Cal Coverage, California Health Care Foundation, July 2022.
3. Mary Jo Condon et al, Freedman HealthCare. Investing in Primary Care: Lessons from State-Based Efforts, California Health Care Foundation, April 2022.

Appendix F. List of Documents

1. Bailit MH, Friedberg MW, Houy ML. Standardizing the Measurement of Commercial Health Plan Primary Care Spending. New York, NY: Milbank Memorial Fund; Jul 2017. https://www.coloradoafp.org/wp-content/uploads/2017/10/MMF-Primary-Care-Spending-Report.pdf.

2. Basu S, Zhang T, Gilmore A, et al. Utilization and Cost of an Employer-Sponsored Comprehensive Primary Care Delivery Model. JAMA Netw Open. 2020 04 01;3(4):e203803. doi: https://dx.doi.org/10.1001/jamanetworkopen.2020.3803. PMID: 32352529.

3. Baum A, Song Z, Landon BE, et al. Health care spending slowed after Rhode Island applied affordability standards to commercial insurers. Health Aff (Millwood). 2019 Feb;38(2):237-45. doi: 10.1377/hlthaff.2018.05164. PMID: 30715981.

4. Carman KG, Reid RO, Damberg CL. Advancing the Development of a Framework to Capture Non–Fee-for-Service Health Care Spending for Primary Care. Santa Monica, CA: RAND Corporation; Jan 15, 2020. https://www.milbank.org/publications/advancing-the-development-of-a-framework-to-capture-non-fee-for-service-health-care-spending-for-primary-care/?utm_medium=email&utm_campaign=Milbank%20Monthly%20August%202020&utm_content=Milbank%20Monthly%20August%202020+CID_c49c26e3334a748a2c42bbd9866bc83e&utm_source=Email%20Campaign%20Monitor&utm_term=new%20Milbank-supported%20report%20from%20RAND.

5. Center for Health Care Strategies. Monitor Primary Care Spending and Investment: Advancing Primary Care Innovation in Medicaid Managed Care. Hamilton, NJ: Nov 2020. https://www.chcs.org/media/PCI-Toolkit-Spend-Invest-Tool_111720.pdf.

6. Center for Health Information Analysis. Primary Care and Behavioral Health Care (PCBH) Expenditures. Boston, MA. https://www.chiamass.gov/primary-care-and-behavioral-health-care-pcbh-expenditures/. Accessed June 26, 2023.

7. Center for Health Information Analysis. Massachusetts Primary Care and Behavioral Health Expenditures: Baseline Report. Boston, MA: Sep 2022. https://www.chiamass.gov/assets/docs/r/pubs/2022/PCBH-Report.pdf.

8. Center for Health Information Analysis. Data Specification Manual. 957 CMR 2.00: Payer Reporting of Primary Care and Behavioral Health Expenses. Boston, MA: Sep 8, 2022. https://www.chiamass.gov/assets/docs/p/pbhc/PCBH-2022-Data-Specification-Manual.pdf.

9. Center for Health Information and Analysis. Massachusetts Primary Care Expenditures: 2021. Boston, MA: Oct 2023. https://www.chiamass.gov/assets/docs/r/pubs/2023/Primary-Care-Expenditures-Report-2023.pdf.

10. Center for Improving Value in Health Care. Report of Colorado Primary Care Spending and Alternative Payment Model Use, 2017-2019. Denver, CO: Nov 2020. https://www.civhc.org/wp-content/uploads/2021/04/Report-of-Colorado-Primary-Care-Spending-and-Alternative-Payment-Model-Use-2017-2019.pdf.

11. Center for Improving Value in Health Care. Report of Colorado Primary Care Spending and Alternative Payment Model Use, 2018-2020. Denver, CO: Nov 2021. https://www.civhc.org/wp-content/uploads/2021/12/Primary-Care-Report-2021.pdf.

12. Center for Improving Value in Health Care. Primary Care Spending and Alternative Payment Model Use in Colorado, 2019-2021. Denver, CO: Nov 23, 2022. https://civhc.org/wp-content/uploads/2023/01/CIVHC-Report-of-Primary-Care-Spending-November-23-2022-Amendment.pdf.

13. Centers for Medicare & Medicaid Services. Prescription Drug Data Collection (RxDC) Reporting Instructions. Section 204 Data Submission Instructions for the 2022 Reference Year. Baltimore, MD: Mar 3, 2023. https://www.cms.gov/cciio/programs-and-initiatives/other-insurance-protections/prescription-drug-data-collection.

14. Commissioner SoRIOotHI. Rhode Island Health Care Cost Growth Target amd Primary Care Spend Obligation Implementation Manual. Cranston, RI: Aug 26, 2022. https://ohic.ri.gov/sites/g/files/xkgbur736/files/2022-08/RI%20Implementation%20Manual_CY%202020%20-%20CY2021_final%20v8.1.pdf.

15. Condon MJ, Koonce E, Sinha V, et al. Investing in Primary Care: Lessons from State-Based Efforts. Oakland, CA: California Health Care Foundation; Apr 2022. https://www.chcf.org/wp-content/uploads/2022/03/InvestingPCLessonsStateBasedEfforts.pdf.

16. Connecticut Office of Health Strategy. Primary Care Spending Target Factsheet. Hartford, CT: 2021. https://portal.ct.gov/-/media/OHS/Cost-Growth-Benchmark/Reports-and-Updates/CT-OHS---primary-care-spending-target-fact-sheet-2021.pdf.

17. Connecticut Office of Health Strategy. Connecticut Healthcare Benchmark Initiative Implementation Manual Version 2.2. Hartford, CT: Nov 18, 2022. https://portal.ct.gov/-/media/OHS/Cost-Growth-Benchmark/Guidance-for-Payer-and-Provider-Groups/Posted-11-21-22/CT-OHS-Implementation-Manual-v22-2022-11-18.pdf.

18. Connecticut Office of Health Strategy. Healthcare cost growth benchmark and primary care spending target initiatives - 2020 and 2021 performance. Hartford, CT: Mar 31, 2023. https://portal.ct.gov/-/media/OHS/Cost-Growth-Benchmark/2020-2021-Benchmark-Report/Benchmark-Initiative---Final-Report.pdf.

19. Connecticut Office of Health Strategy. Connecticut Healthcare Benchmark Initiative Implementation Manual Version 3.0. Hartford, CT: Jun 23, 2023. https://portal.ct.gov/-/media/OHS/Cost-Growth-Benchmark/Guidance-for-Payer-and-Provider-Groups/Posted-6-23-23/CT-OHS-Cost-Growth-and-Primary-Care-Implementation-Manual-v30-2023-6-23-23.pdf.

20. Connecticut Office of Health Strategy. Healthcare cost growth benchmark and primary care spending target recommendations to the General Assembly. Hartford, CT: Oct 2023. https://portal.ct.gov/-/media/OHS/Cost-Growth-Benchmark/Reports-and-Updates/OHS-Benchmark-Recommendations-to-the-Legislature-10-2023.pdf.

21. Connecticut State Office of Health Strategy. Cost Growth and Quality Benchmarks, and Primary Care Target. Hartford, CT. https://portal.ct.gov/OHS/Content/Cost-Growth-Benchmark. Accessed June 13, 2023.

22. Decker SL, Zuvekas SH. Primary Care Spending in the US Population. JAMA Intern Med. 2023 Jun 12 doi: 10.1001/jamainternmed.2023.1551. PMID: 37306993.

23. Delaware Health Care Commission. Delaware Health Care Spending and Quality Benchmarks: Implementation Manual Version 3.0. New Castle, DE: Delaware Health and Social Services; Jun 15, 2021. https://dhss.delaware.gov/dhss/files/benchmarkmanual06212021.pdf.

24. Delaware Health Care Commission. Delaware Health Care Spending and Quality Benchmarks: Implementation Manual Version 4.0: Insurers. New Castle, DE: Delaware Health and Social Services; Sep 13 2022. https://dhss.delaware.gov/dhss/files/benchmarkmanualv4_091322.pdf.

25. Delaware Health Care Commission. Delaware Health Care Spending and Quality Benchmarks: Implementation Manual Version 4.0: DMMA. New Castle, DE: Delaware Health and Social Services; Aug 12 2022. https://dhss.delaware.gov/dhss/files/benchmarkmanualdmmav4_081222.pdf.

26. Edrington K, Costa J, Williams C, Joe Sadow J, Edrington Health Consulting,. Investing in Primary Care: Why It Matters for Californians with Medi-Cal Coverage. Oakland, CA: California Health Care Foundation; Jul 2022. https://www.chcf.org/resource/primary-care-matters/medi-cal-study.

27. Green Mountain Care Board, Department of Vermont Health Access. Report to the Vermont Legislature: Defining Primary Care and Determining Primary Care's Proportion of Health Care Spending in Vermont. Montpelier, VT: Jan 15, 2020. https://legislature.vermont.gov/assets/Legislative-Reports/Act-17-Primary-Care-Spend-Report-15-January-2020_Final.pdf.

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Appendix G. Freedman Consulting Data

Source: Condon, Mary Jo (California Health Care Foundation, Freedman HealthCare LLC). Email to: Deb Cohen (Oregon Health and Science University). October 17, 2023.

See the Excel document at https://effectivehealthcare.ahrq.gov/products/primary-healthcare-spending/technical-brief-final for the codes.

Appendix H. Evidence Tables

See the Excel document at https://effectivehealthcare.ahrq.gov/products/primary-healthcare-spending/technical-brief-final for evidence tables.