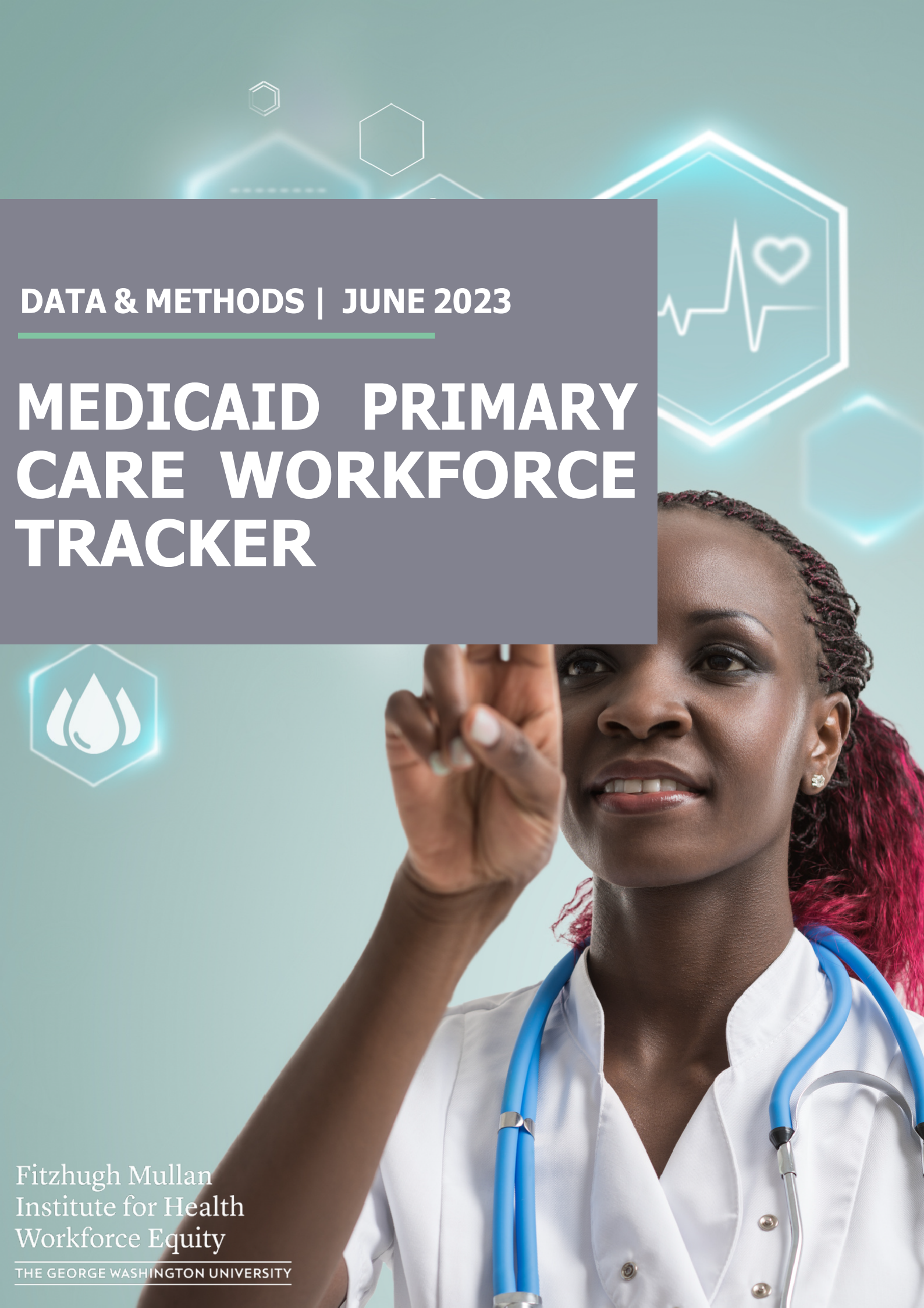
DATA & METHODS | JUNE 2023

MEDICAID PRIMARY CARE WORKFORCE TRACKER



Fitzhugh Mullan Institute for Health Workforce Equity
THE GEORGE WASHINGTON UNIVERSITY

Data Sources

Transformed Medicaid Statistical Information System (T-MSIS) Analytical Files. T-MSIS is a national dataset that collects Medicaid and Children's Health Insurance Program (CHIP) data from U.S. states, territories, and D.C. T-MSIS includes data on enrollment, demographics, service utilization, providers, fee-for-service payments, and managed care plans. We used 2016-2019 T-MSIS Other Service (OT) and Prescription (RX) files to identify primary care clinicians with Medicaid claims (i.e., provided service to Medicaid beneficiaries) each year. The OT file includes professional/physician services provided in inpatient and outpatient settings. The RX file contains prescribed drugs filled at a pharmacy. We also used Annual Provider Files to improve servicing provider data quality. In addition, we used Demographics and Eligibility (DE) Files to identify the Medicaid population at the state and county level.

National Plan & Provider Enumeration System (NPPES). NPPES is a national administrative dataset. The Health Insurance Portability and Accountability Act of 1996 (HIPAA) mandated the adoption of a standard unique identifier for health care providers and health plans for electronic transmission of health information. CMS developed the NPPES to assign these unique identifiers – National Provider Identifier (NPI). The NPPES provides mailing and practice address information, healthcare provider credentials, and provider type. We use NPPES to identify clinician primary care profession/specialty and non-Medicaid providers.

Provider Enrollment, Chain, and Ownership (PECOS). PECOS is the Medicare enrollment management system. Enrollment and updates/re-enrollment are required to submit claims for Medicare reimbursement. Providers are also required to renew and revalidate their information every five years.

Doctors and Clinicians. Doctors and Clinicians (formerly Physician Compare) is a national dataset CMS provides. Data comes primarily from PECOS and is checked against Medicare claims data. For clinicians to appear, they must have at least one Medicaid Fee-for-Service claim or be newly enrolled in PECOS within the last six months. We use PECOS, Doctors and Clinicians, and NPPES to identify "Likely Active" providers - those active in Medicare (Doctors and Clinicians) or with updated activity in NPPES or PECOS.

Medicare Part B Public Use Files. The dataset maintained by CMS provides information on services and procedures provided to Medicare beneficiaries organized by National Provider Identifier (NPI), Healthcare Common Procedure Coding System (HCPCS) code, and geography.

Analysis

Identifying Medicaid primary care providers. We used the 2016-2019 T-MSIS OT and RX files to identify unique servicing provider NPIs in the OT and RX files. We limited OT file services to professional and clinic services and excluded others to avoid double-counting Medicaid service provisions. We then matched NPIs to the NPPES to determine the provider specialty/profession. We limited our analysis to primary care providers, including family medicine, general internal

medicine, general pediatric, ob-gyn physicians, advanced practice nurses, and physician assistants. We excluded family medicine, internal medicine, and pediatric physicians whose percent E&M services in the emergency room or inpatient settings was >90% in the Medicare Part B PUF and T-MSIS OT files (i.e., primarily emergency or hospitalist physicians).

For professional services claims with missing servicing NPIs but with valid servicing state unique provider IDs, we used the Annual Provider File (APR) files to fill in the missing NPIs in the OT and RX files where the reported state unique provider ID can be linked to an NPI in the APR file. This allowed us to increase the number of states in our sample. States with ongoing data quality issues are indicated in gray in the Tracker and excluded from state and county rankings.

Identifying non-Medicaid providers. We identified non-Medicaid providers using the 2016-2019 NPPES. Provider NPI were further matched to 2014-2019 PECOS and Doctors and Clinicians datasets to determine whether providers are active. "Likely Active" providers are those present in the Doctors and Clinicians dataset or with updated activity in either NPPES or PECOs in the preceding two years. Providers identified in NPPES without Doctors and Clinicians, PECOS, or NPPES activity are designated as "Likely Inactive."

Determining provider Medicaid beneficiary volume. We analyzed Medicaid primary care providers by the number of unique Medicaid beneficiaries served in either the OT or RX files (zero, 1-10, 11-149, and 150+) each year. State and county Medicaid populations are from the T-MSIS Demographics & Eligibility (DE) files and include beneficiaries enrolled at any point in a year.

Determining Medicaid population. The Medicaid population at the state level is from the T-MSIS DE files. County-level Medicaid populations are estimated in the following method. We first enriched the county FIPS code information in DE files: 1) if a valid county FIPS code is reported, the county FIPS code was used for that beneficiary, or 2) if an invalid county FIPS code was reported, but a valid zip code was reported, we imputed county FIPS code based on the zip code. In states with less than 20% of beneficiaries with invalid or missing county FIPS codes (after imputation), we distributed the beneficiaries with the invalid county in that state proportionally to the county' Medicaid population reported in TMSIS; in states with 20-50% of beneficiaries with invalid or missing county FIPS codes, we distributed the beneficiaries with invalid county FIPS codes proportional to the average of beneficiaries reported in TMSIS and estimated from ACS (American Community Survey – 5-year estimates); in states with more than 50% of beneficiaries with invalid or missing county FIPS codes, we distributed the beneficiaries with invalid county FIPS codes proportional to the beneficiaries estimated from ACS.

Creating a Database of State Characteristics. To complement findings from the Medicaid tracker, we identified Medicaid and other policy environment at the state level. The data sources for these variables can be found in the table below.

Variable	Description	Source
Medicaid Expansion	Whether a state expanded Medicaid	KFF
Primary care fee ratio	Ratio of state's Medicaid Fee For Service (FFS) rate for primary care and the same under Medicare (Medicaid-to-Medicare Fee Index)	KFF
ACO	Whether a state had any Accountable Care Organizations (ACOs)	KFF
APRN SOP	An indicator of nurse practice laws and regulations in state.	American Association of Nurse Practitioners

Measures. We calculated two primary measures:

1. **Number of Medicaid primary care providers per 100,000 Medicaid population** – The Tracker allows users to select characteristics of providers to include or not in the measure numerator, including profession/specialty and provider Medicaid beneficiary volume. The measure can be calculated at the state or county level. County measures can be compared nationally or within a state ("County Rank"). The number of Medicaid beneficiaries served is based on the number of beneficiaries in the OT or RX files.
2. **Percent (%) of Medicaid primary care providers** – The Tracker allows users to select the providers' characteristics in the measure numerator and denominator, including profession/specialty and provider Medicaid beneficiary volume. For example, users can choose to examine the percent of Medicaid providers serving 150+ beneficiaries out of all those seeing any Medicaid beneficiaries (1-10, 11-49, and 150+). The default setting for the denominator is all primary care providers with any Medicaid beneficiary volume and "Likely Active" non-Medicaid providers (i.e., the % of "likely active" primary care providers who saw Medicaid beneficiaries in a year).

Limitations

T-MSIS Data. While T-MSIS is the most comprehensive national Medicaid database, it has known data quality issues tracked by CMS in the DQ Atlas. When tracking the Medicaid workforce, missing servicing and prescribing NPIs create a challenge for identifying the active workforce. When available, we use the Annual Provider (APR) File to link state unique provider IDs to NPIs to improve data quality. This allowed us to increase the number of states in our analysis. For example, in 2019, DQ Atlas identifies 36 states with low or medium concern servicing provider NPI data (≤20% missing data). We increased the number of states to 45 after matching to the APR and restricting the claims to Evaluation and Management services. States with data quality concerns are indicated in gray in the Tracker. While their data is provided, it is not included in state and county-level rankings.

NPPES Data. All physician databases have known challenges regarding the accuracy of provider specialty and contact information (e.g., address). In comparing three datasets, NPPES was

comparable to SK&A (now IQVIA OneKey), and both were more accurate than the AMA Masterfile. However, across all three datasets, only 65% of physicians' addresses in their sample could be confirmed by phone, with 21% no longer at the practice location.[1] NPPES likely overcounts the total number of providers used in the **% Participating measure**. However, we aim to improve the counts by identifying "Likely Active" providers based on Doctors and Clinicians and PECOS/NPPES update activity.

Advanced practice nurses and physician assistants present an additional challenge as they are less likely to self-identify a specialty area. Therefore, we likely overestimate the number of advanced practice clinicians in primary care.

Medicaid Population. As we use the Medicaid beneficiary population as the denominator in the **number of Medicaid providers per population measure**, this measure is sensitive to state policies (e.g., Medicaid eligibility and expansion status). States with more generous Medicaid eligibility will have a relatively larger denominator. In addition, this measure may be sensitive to year-to-year variation in Medicaid population estimates. Particularly for smaller counties, changes in the Medicaid population can result in large changes in the number of Medicaid primary care providers per 100,000 Medicaid population.

[1] DesRoches CM, Barret KA, Harvey BE, Kogan R, Reschovsky JD, Landon BE, Casalino LP, Shortell SM, Rich EC. The Results Are Only as Good as the Sample: Assessing Three Na□onal Physician Sampling Frames. J Gen Intern Med. 2015 Aug;30 Suppl 3(Suppl 3):S595-601.