



# Outpatient Provider Workforce Characterization

2018-2023

Georgia All-Payer Claims Database

Georgia Tech Research Institute  
Center for Health Analytics and Informatics

## Background

Access to healthcare is an important part of maintaining and improving population health. It enables individuals to receive timely and appropriate medical services, which facilitates the prevention, treatment, and management of disease. Key components of healthcare access include affordability, proximity to care, transportation, and provider availability.<sup>1,2</sup> Lack of provider availability has been identified as a significant barrier to healthcare access in Georgia, where the majority of counties are considered medically underserved.<sup>3</sup>

Provider availability is often estimated from licensing, survey, or geolocation data, which can provide a broad view of the number of providers operating in a specific region. Claims data allow for more granular perspectives of provider activity, such as the number of days a provider worked, the number of visits a provider had, or the distance their patients traveled.<sup>4,5</sup> In addition, license-related information like provider type (e.g., physician, nurse practitioner, etc.) or specialty (e.g., cardiology, pediatrics, etc.) can be used to investigate provider density or service shortages. In light of recent trends towards part-time work for physicians, claims data can also provide nuanced estimation of the 'active' healthcare workforce and identify where care is actually being delivered.<sup>6</sup>

This report uses data from the Georgia All-Payer Claims Database (GA APCD) to characterize outpatient provider availability and highlight trends, shortages, and various utilization metrics across the state. The focus of this report is on the physician workforce in 2023, but the data released does include information across multiple provider types and all complete years in the GA APCD (2018-2023) for primary care.

## Provider Availability Metrics

There are many ways to evaluate how much care a physician delivers beyond their registered location. Our objective was to construct metrics complementary to existing methods of estimating provider availability that characterize the number of active providers, the amount of care being delivered, where care was delivered, and if the care delivered met geographic demand.

### State of Georgia Physician Workforce Survey

Existing provider information was based on Georgia Board of Healthcare Workforce data of the actively practicing physician workforce.<sup>7</sup>

### National Plan and Provider Enumeration System (NPPES) Licensed Provider Count

Existing licensure information was based on NPPES National Provider Information (NPI) practice locations.<sup>8</sup>

### GA APCD Providers

Providers were identified in the GA APCD if they had at least one professional claim in a given year.

### Active GA APCD Providers

Not all providers that are present in the GA APCD regularly deliver care. To filter out providers who delivered services very infrequently, providers were considered active if they had at least ten visits (unique patient, claim start date, and claim end date) across all settings in a given year.

### Active Outpatient Providers

Outpatient providers were providers who had at least one claim limited to offices, rural health clinics, mental health clinics, and federally qualified health centers.

### Active Days

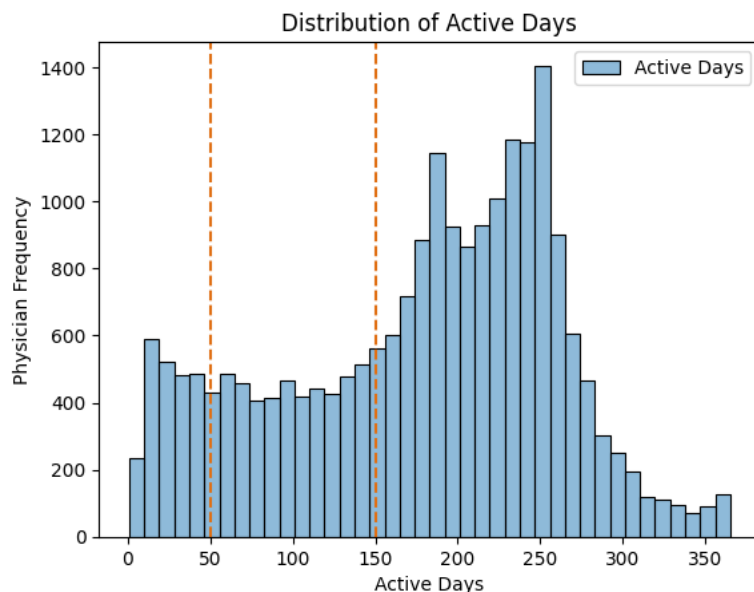
A provider was considered to have an 'Active Day' at a location if they saw at least one patient on a given day.

### Volume as Visits

Volume was measured by the count of unique visits for a given year.

### Full-Time Equivalents (FTEs)

An FTE is a unit of measurement that combines the hours worked by part-time providers to represent the workload of a full-time provider, allowing us to estimate true full-time availability from care delivered. FTEs were defined based on active days (**FTE by Days**) and specialty visit volume (**FTE by Volume**). FTE by Days measures provider equivalents based on time commitment to the location. FTE by Volume measures provider equivalents based on clinical output relative to specialty norms.



$$\text{FTE by Days} = \begin{cases} 1, & \text{if number of days worked} \geq 150 \text{ active days} \\ \frac{\text{number of days worked}}{150}, & \text{if number of days worked} < 150 \text{ active days} \end{cases}$$

$$\text{FTE by Volume} = \begin{cases} 1, & \text{if annual visit count} \geq \text{median visits for specialty} \\ \frac{\text{number of visits}}{\text{median visits for specialty}}, & \text{if annual visit count} < \text{median visits for specialty} \end{cases}$$

A provider was assigned 1 FTE by Days if they had at least 150 active days in a given year, otherwise, they were assigned a proportional FTE based on of the number of active days divided by 150. Volume was based on the median visit count for each provider-county combination, where a provider was assigned 1 FTE by Volume if they had at least the median visit count for a given specialty and reporting year, otherwise, they were assigned a proportional FTE based on the visit count divided by the median visit count for a given specialty and reporting year. That is, if the number of visits a provider delivered was 75% of the median visit count for that specialty and year, they would be assigned 0.75 FTE.

### ***Care Delivered vs Care Obtained, Percent Visit Difference***

While healthcare providers in a given county may see a substantial number of patients from within their own county, in many cases, patients may travel outside of their county for care. In an effort to measure the supply of a given service against the demand within a county, we calculated the percent visit difference between the number of specialty visits delivered by providers in a given county and the number of specialty visits obtained by patients from the same county. Visit percent differences greater than 0% indicate counties where providers saw more patient visits than the patients in the county sought care. That is, these counties delivered more care than their county alone had demand for. Conversely, visit percent differences less than 0% indicate counties where patients sought more care than care was provided within the county, suggesting patients were often seeking care outside of the county.

$$\text{Percent Visit Difference} = \frac{\text{number of specialty visits delivered by providers} - \text{number of specialty visits obtained by patients}}{\text{number of specialty visits obtained by patients}}$$

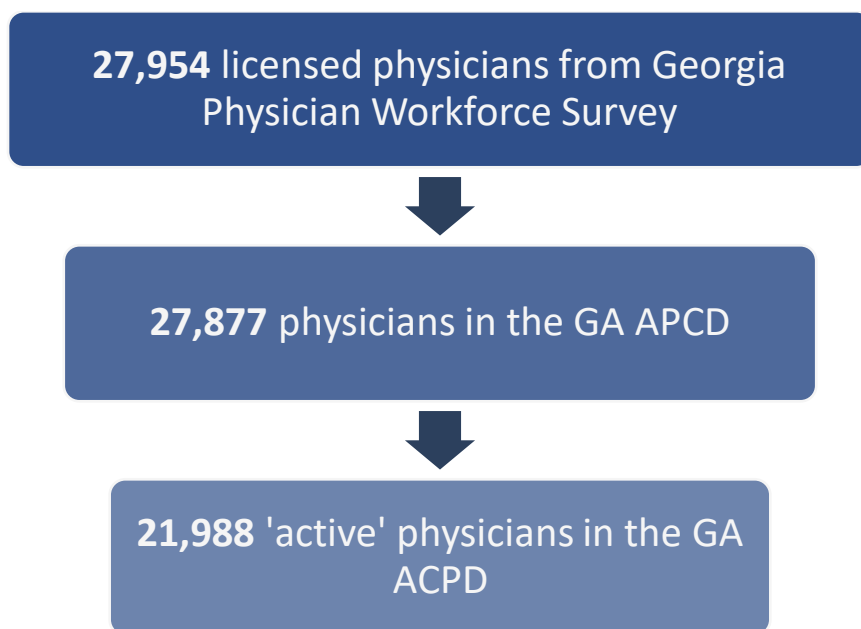
### ***Distance to Service***

Distance to service was calculated in miles for each claim using the distance from the provider's ZIP Code Tabulation Area (ZCTA) centroid to the patient's ZCTA centroid. If the ZCTAs were the same, I.E., care occurred in the patient's home ZCTA, then distance to service was imputed with half of the ZCTA's area to indicate that the patient traveled *some* distance. ZCTA distance-to-service values were crosswalked to counties and averaged.

## Data Highlights

### **Licensure and Claims**

According to the Georgia Physician Workforce Survey, 27,954 physicians had licensure information in Georgia.<sup>7</sup> In the GA APCD, 27,877 physicians had at least one professional claim in any setting and 21,988 of those were considered 'active' physicians who had at least 10 visits in 2023.



### **Physician Availability Metrics Across All Specialties**

Table 1 summarizes physician availability metrics across specialties. Active Physicians and FTEs were generally lower than physician counts from the Georgia Physician Workforce Survey and NPPES, suggesting current availability methods, especially from licensure, may overestimate the availability of care. The specialties with the biggest decline from active physicians to FTEs by days were preventative medicine, transplant hepatology (a small specialty), and plastic surgery, each with approximately a 30% decline. In contrast, the specialties with the smallest decline were heart failure, gastroenterology, and nephrology, each with around an 8% decline.

**Table 1. Physician Availability Metrics by Specialty (2023)**

**\*Approximate Taxonomy Mappings between Georgia Physician Workforce data and GA APCD**

Specialty	Georgia Physician Workforce Survey*	NPPES Physician Count	APCD Physician Count	Active Physician Count	Full-Time Equivalents by Days	Full-Time Equivalents by Volume
Adolescent Medicine	9	114	90	80	68.71	56.66
Allergy and Immunology	119	142	124	108	97.59	72.02

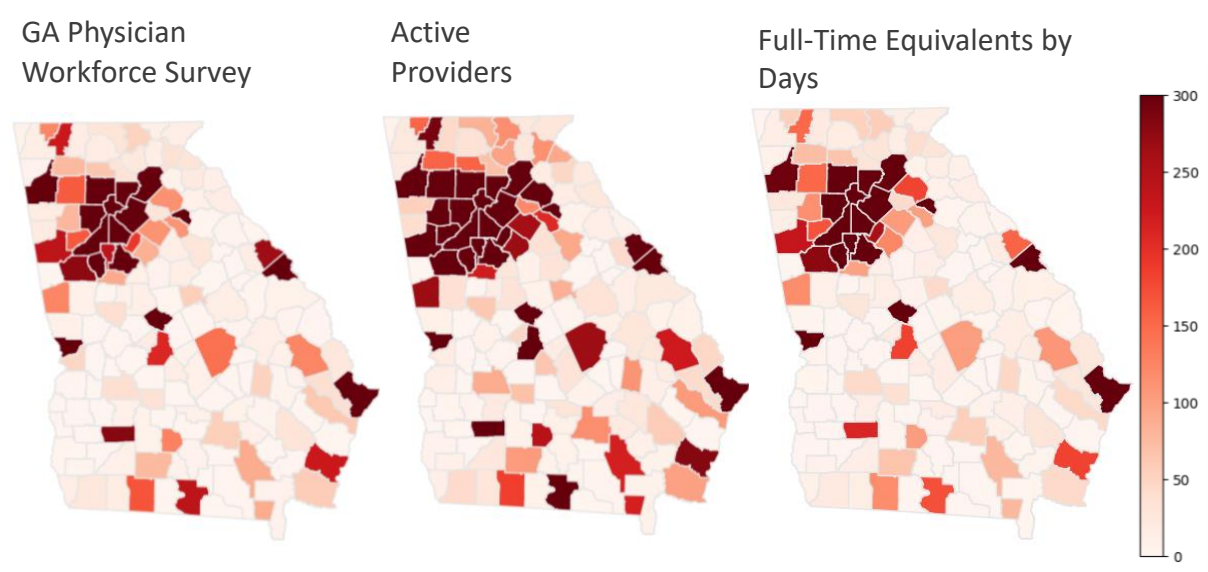
Anesthesiology	1255	1513	1399	1151	914.91	835.61
Cardiology	486	670	710	581	511.89	403.91
Colon and Rectal Surgery	58	47	43	40	34.95	31.1
Critical Care Medicine	0	199	228	196	153.05	133.15
Dermatology	349	364	338	275	239.77	202.46
Endocrinology	169	193	179	160	137.43	115.03
Family Medicine	3348	4037	3618	2674	2271.65	1869.58
Gastroenterology	440	420	389	339	312.5	248.8
Geriatric Medicine	42	96	94	73	63.25	52.61
Heart Failure	32	18	23	18	16.91	13.51
Hematology and Oncology	396	402	361	311	269.75	224.6
Infectious Disease	314	256	185	161	126.43	104.63
Internal Medicine	4619	4878	4872	3965	3325.59	2831.64
Interventional Cardiology	153	98	105	81	73.62	58.16
Nephrology	346	319	307	280	256.43	204.6
Neurological Surgery	168	183	168	150	125.97	112.26
Nuclear Medicine	28	44	56	33	29.53	23.56
Obstetrics and Gynecology	1369	1698	1426	1169	1021.37	844.2
Ophthalmology	499	557	521	447	394.71	320.63
Orthopedic Surgery	125	914	852	719	641.37	515.27
Other	1984	13	11	7	6.11	5.35

Otolaryngology	343	412	339	303	260.71	214.21
Palliative Medicine	82	63	54	45	33.51	34.37
Pathology	432	555	480	334	295.17	231.96
Pediatrics	2506	2728	2376	2076	1694.84	1458.31
Physical Medicine and Rehabilitation	449	456	395	343	275.55	234.84
Plastic Surgery	246	230	155	127	92.26	90.68
Preventive Medicine	157	238	62	44	29.17	29.61
Psychiatry and Neurology	1729	1862	1658	1216	903.2	793.96
Pulmonary Disease	335	242	228	194	167.52	139.65
Radiology	1167	1183	2163	1330	1098.15	816.21
Rheumatology	156	147	120	105	93.29	78.64
Sleep Medicine	47	50	54	44	36.58	30.64
Sports Medicine	36	192	158	123	105.24	85.43
Surgery	1874	1377	1142	977	800.88	693.67
Transplant Hepatology	1	3	2	2	1.35	1.32
Urology	315	376	328	269	241.4	197.59

County-Level Perspectives

Additionally, we can compare these same licensure counts, GA APCD counts, and FTEs on the county level. We see an increase in the availability of active physicians as compared to the Physician Workforce Survey on the county level, indicating that the claims data is able to capture part-time physician work more robustly, as many physicians work across multiple counties. However, county-level FTEs by days is much more aligned with the Physician Workforce data, although generally lower, suggesting the primary place-of-work is preserved in the Physician Workforce data.

Physician Counts and FTEs Across Georgia Counties (2023)



County Comparisons: Lee and Banks Counties

Divergence between Georgia Physician Workforce survey data and GA APCD availability metrics can offer insight into county-level differences in the volume of care delivered. For example, Banks County and Lee County are two similarly-sized nonmetropolitan counties each with two pediatricians according to state licensure. GA APCD metrics revealed that Banks County had four active pediatricians, while Lee County had five. Despite both having a similar number pediatricians, Banks County had a higher outpatient FTE by Volume at 2.09 compared to 0.72 FTE by Volume for Lee County, indicating differences in true availability of pediatric care.

Table 2. Pediatric Availability Metrics in Banks and Lee Counties (2023)

County	Georgia Physician Workforce Survey	APCD Provider Count	Active Outpatient Provider Count	Outpatient FTE by Days	Outpatient FTE by Volume
Banks County	2	10	4	2.15	2.09
Lee County	2	11	5	1.71	0.72



### ***Characterizing Provider Time Across Locations***

Other metrics of care can be used to demonstrate differences in volume across specialties and counties, such as median active days. Table 3 displays the county-level median of active days for outpatient psychiatrists and neurologists in 2023. Fulton County, for example, had over 200 active outpatient psychiatrists and neurologists who practiced in the county, but their median number of active days within the county was 45 days, whereas Lowndes County had 11 active outpatient psychiatrists and neurologists whose median number of active days was 228 days. This may indicate that outpatient psychiatrists and neurologists in Fulton County more often split their time across other counties, while psychiatrists and neurologists in Lowndes County spend most of their time working within the county.

**Table 3. Psychiatry and Neurology Services Provided per County (2023)**

County	Active Outpatient Provider Count	Outpatient FTE by Days	Outpatient FTE by Volume	Median Outpatient Active Days
Fulton	204	87.79	80.23	45
Glynn	14	8.57	8.33	109
Gordon	4	1.38	1.34	25.5
Gwinnett	100	63.05	59.5	135
Habersham	3	0.08	0.16	1
Hall	28	18.05	17.56	161
Haralson	1	0.61	0.47	92
Henry	23	9.67	9.27	41
Houston	10	6.39	5.78	127
Jackson	11	3.07	2.56	25
Johnson	1	0.01	0.03	1
Laurens	2	1.41	1.29	165
Liberty	1	1	1	209
Lowndes	11	10.88	11	228
Lumpkin	2	1.59	1.42	128.5
Murray	1	0.58	0.4	87
Muscogee	26	19.73	18.54	176.5
Oconee	5	3.52	3.25	161
Paulding	8	2.33	1.8	31
Pickens	1	1	1	187
Richmond	56	33.39	29.56	93.5
Rockdale	12	5.06	5.21	30
Spalding	3	1.12	1.14	12
Stephens	1	0.03	0.05	4
Sumter	6	2.25	1.64	66
Thomas	5	2.96	2.9	95
Tift	6	4.19	3.56	114.5
Toombs	1	0.61	1	91

### ***County-Level Care Delivered vs County-Level Care Obtained***

Beyond the number of providers and amount of care delivered, we can also assess how well the needs of a community are being met by measuring the supply of a given service against the demand within a geographic region. The Percent Visit Difference of Visits Provided vs Visits Obtained metric is computed as the percent difference between the number of specialty visits delivered by providers and the number of specialty visits obtained by patients from the same county, although the visits may not necessarily be within the county. In Table 4, we can see an example of endocrinology visits. Some counties saw much a higher volume of endocrinology visits than their county alone demanded. Providers in Bibb County delivered over 5,000 visits in 2023, while patients in the county only sought around 1,500 visits, a 228% difference. Providers in other counties saw lower volume like in Paulding County, where patients from Paulding sought 2,422 visits from endocrinologists while only 11 visits occurred within the county. One possible explanation is that patients in Paulding County may be traveling to nearby counties like Cobb, Fulton, Bartow, or Floyd, which all deliver more endocrinology visits than are demanded in-county.

**Table 4. Endocrinology Care Delivered vs Care Obtained (2023)**

County	Visits Provided	Visits Obtained	Percent Visit Difference: Visits Provided vs Visits Obtained
Bibb	5034	1536	227.73
Fulton	35915	16816	113.58
Clarke	2640	1258	109.86
Rockdale	4353	2090	108.28
Lowndes	5311	2619	102.79
Hall	14561	7668	89.89
Chatham	10704	5639	89.82
Bartow	4658	2760	68.77
Whitfield	5286	3137	68.5
Floyd	4144	2481	67.03
Columbia	2298	1522	50.99
Glynn	1163	780	49.1
Muscogee	10920	7813	39.77
Coweta	2871	2259	27.09
Fayette	3474	2825	22.97
Gwinnett	32346	26605	21.58
Richmond	2122	1757	20.77
Carroll	3130	2618	19.56
Clayton	3862	3341	15.59
Cobb	16572	15238	8.75
DeKalb	16475	16172	1.87
Forsyth	3132	4381	-28.51
Cherokee	5161	8006	-35.54
Dougherty	166	291	-42.96
Henry	2800	5000	-44
Gordon	74	1086	-93.19

### ***Barrow and Clarke Counties***

We can also compare counties directly across all specialties. Take, for example, two similarly-sized, adjacent counties like Clarke and Barrow with approximately 74,000 and 62,000 respective members. The median percent visit difference across all specialties was 142% for Clarke County and -72% for Barrow County. In Clarke County, obstetrics and gynecology (OB/GYN) physicians had over twice as many visits as patients obtained in the county, 116%, and OB/GYNs in Barrow had 96% fewer visits than patients obtained in the county.

**Table 5. Percent Visit Differences by Specialty (2023)**

<b>Clarke County</b>		<b>Barrow County</b>	
<b>Specialty</b>	<b>Percent Visit Difference</b>	<b>Specialty</b>	<b>Percent Visit Difference</b>
Preventive Medicine	5241.67	Geriatric Medicine	15.85
Hematology and Oncology	388.45	Hematology and Oncology	-18.96
Neurological Surgery	343.79	Family Medicine	-37.04
Orthopedic Surgery	284.63	Orthopedic Surgery	-39.77
Critical Care Medicine	275.03	Internal Medicine	-58.3
Cardiology	255.24	Interventional Cardiology	-62.81
Radiology	253.06	Ophthalmology	-65.49
Interventional Cardiology	247.14	Nephrology	-71.45
Colon and Rectal Surgery	206.43	Pediatrics	-71.55
Sleep Medicine	200.52	Neurological Surgery	-74.87
Gastroenterology	196.28	Endocrinology	-80.25
Pulmonary Disease	194.13	Otolaryngology	-86.89
Anesthesiology	180.75	Heart Failure	-88.58
Otolaryngology	170.59	Cardiology	-91.63
Ophthalmology	168.16	Radiology	-92.17
Psychiatry and Neurology	164.97	Allergy and Immunology	-94.65
Nephrology	161.44	Surgery	-95.58
Physical Med. and Rehab.	141.37	Obstetrics and Gynecology	-96.2
Allergy and Immunology	133.76	Urology	-96.6
Plastic Surgery	132.61	Psychiatry and Neurology	-96.67
Obstetrics and Gynecology	116.95	Sports Medicine	-96.91
Endocrinology	109.86	Physical Med. and Rehab.	-98.55
Internal Medicine	98.41	Anesthesiology	-98.77
Sports Medicine	95.98	Dermatology	-99.26

We can directly observe how far patients in each county are traveling for specialty care. For example, people in Barrow County travel further than people in Clarke County for many specialties like Cardiology, where patients traveled on average about 7 miles more than patients in Clarke County. This suggests that the people in Barrow County were most likely traveling for specialty care to nearby counties like Clarke or Gwinnet.

**Table 6. Average Patient Distance to Service by Specialty (2023)**

Clarke County			Barrow County		
Specialty	Percent Visit Difference	Average Patient Distance to Service (miles)	Specialty	Percent Visit Difference	Average Patient Distance to Service (miles)
Cardiology	255.24	10.91	Cardiology	-91.63	17.64
Dermatology	25.86	12.36	Dermatology	-99.26	20.48
Family Medicine	31.86	13.62	Family Medicine	-37.04	12.59
Internal Medicine	98.41	11.14	Internal Medicine	-58.3	16.62
Obstetrics and Gynecology	116.95	16.23	Obstetrics and Gynecology	-96.2	20.61
Pediatrics	41.14	11.28	Pediatrics	-71.55	15.75

However, not all counties with lower percent visit differences are in close proximity to high volume-per-demand counties. Washington County, a county with about 14,000 members in the GA ACPD, has a median percent visit of -52% and is surrounded by counties with similarly low demand metrics. Cardiology is a specialty that is particularly low. In Washington County alone, 1,649 outpatient visits were obtained by patients but only 57 visits were delivered by physicians in the county. Across Washington and all the surrounding counties (Baldwin, Glascock, Hancock, Jefferson, Johnson, Laurens, and Wilkinson) there are over 110,000 members. There were 17,289 cardiology visits obtained by patients from these counties with an average distance traveled of 44 miles, while only 3,694 visits were delivered by providers in these counties, indicating that there may be unmet demand for cardiology specialists in the area.

**Table 7. Cardiology Specialty Care in Washington and Surrounding Counties, 2023**

County	Outpatient Provider Visit Count	Outpatient Patient Visit Count	Percent Visit Difference: Care Delivered vs Care Obtained	Average Patient Distance to Service (miles)
Baldwin	1205	5548	-78.28	37.0
Glascock	0	206	-100	38.7
Hancock	0	1122	-100	51.5
Jefferson	0	837	-100	39.0
Johnson	0	932	-100	55.6
Laurens	2432	5783	-57.95	45.1
Washington	57	1649	-96.54	53.7
Wilkinson	0	1212	-100	27.9

## Summary

Claims data can be a powerful complementary source of information for evaluating healthcare provider availability, demonstrating that actual provider availability is often less than what licensure data alone might suggest. This disparity highlights the importance of using claims data to gain more accurate insights into the true active workforce. Furthermore, similarly-sized counties can experience varying levels of provider availability, underscoring the need for localized analyses. The metrics created here can be used to inform state-level initiatives to expand the provider workforce as well as investments by health systems.

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