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Montana's Physician Workforce in 2021

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KEY FINDINGS

- In 2021 the estimated number of physicians providing direct patient care in Montana was 2,569, 26% higher than the estimated number practicing in 2014.
- There were an estimated 238 physicians per 100,000 population providing direct patient care in Montana, including 83 primary care physicians per 100,000 population in 2021.
- The mean age of Montana's practicing physicians was 53 years. Women comprised 34% of the state's physician workforce and 46% of the primary care, including 68% of general pediatricians.
- Compared with urban areas, most rural areas of Montana had fewer physicians per 100,000 population and many rural counties had high percentages of physicians age 55 or older.
- 16% of Montana's family medicine physician workforce completed a residency in Montana and 38% completed a residency in one of the WWAMI states: Washington, Wyoming, Alaska, Montana or Idaho.
- 13% of Montana's physicians graduated from the University of Washington School of Medicine, a higher percentage than for any other school.

INTRODUCTION

The population of Montana grew by 12% between 2010 and 2021.¹ At the same time, the state has an increasingly older population. In 2010, the population 65 years and older represented about 15% of population, while in 2021 that figure grew to about 19%.¹ These demographic factors will likely have significant effects on the state's health

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care delivery and payment systems. Important questions for healthcare policy and planning include whether there will be enough physicians in the right places and with the needed specialties to meet growing and changing demand. This Brief offers data on the size, distribution, and education history of Montana's physician workforce. It updates similar reports from 2016² and 2014³ and addresses the following questions:

- How many physicians practice in Montana overall and by specialty group?
- How are physicians distributed by county, and by urban versus rural areas?
- How many physicians practice in the state relative to the size of the population?
- Where did Montana's physicians graduate from medical school and complete residency?

To estimate the physician workforce providing direct patient care in Montana, analyses used data from the American Medical Association (AMA) Physician Masterfile (see Methods, **Appendix A**).

NUMBER, DEMOGRAPHIC CHARACTERISTICS, AND DISTRIBUTION OF PHYSICIANS IN MONTANA

The estimated supply of physicians providing direct patient care in Montana grew 26% from 2,045 in 2014 to 2,569 in 2021.³ Montana's estimated per 100,000 population supply of physicians providing direct patient care is smaller than the national per 100,000 population supply (**Figure 1**). In 2021, there were 238 physicians per 100,000 population providing direct patient care in the state, and 83 primary care physicians per 100,000 population. Nationally, in 2021 there were 248 physicians per 100,000 providing direct patient care, and 94 primary care physicians per 100,000 population.⁴

Table 1 shows the number of physicians providing direct patient care in Montana in 2021, total and by specialty group, as well as the number per 100,000 population, percent female, and mean age. The mean age overall and by specialty for most Montana physicians was between 51 and 57 years and 46% of physicians overall were age 55 or older. Approximately 34% of Montana's overall physician workforce was female, and women comprised almost half of the primary care specialties, including 68% of general pediatricians and 62% of obstetrician-gynecologists.

From 2014 to 2016, the estimated size of the Montana's physician workforce grew from 201 to 205 physicians per 100,000 population (**Figure 2**). And from 2016 to 2021, the estimated number of physicians per 100,000 population providing direct patient care increased from 205 to 238. Primary care physicians per 100,000 population also rose between 2016 and 2021, from 72 to 83 per 100,000 population.

Figure 1. Montana Compared with National Estimates[†] of Physicians* per 100,000 Population in 2021

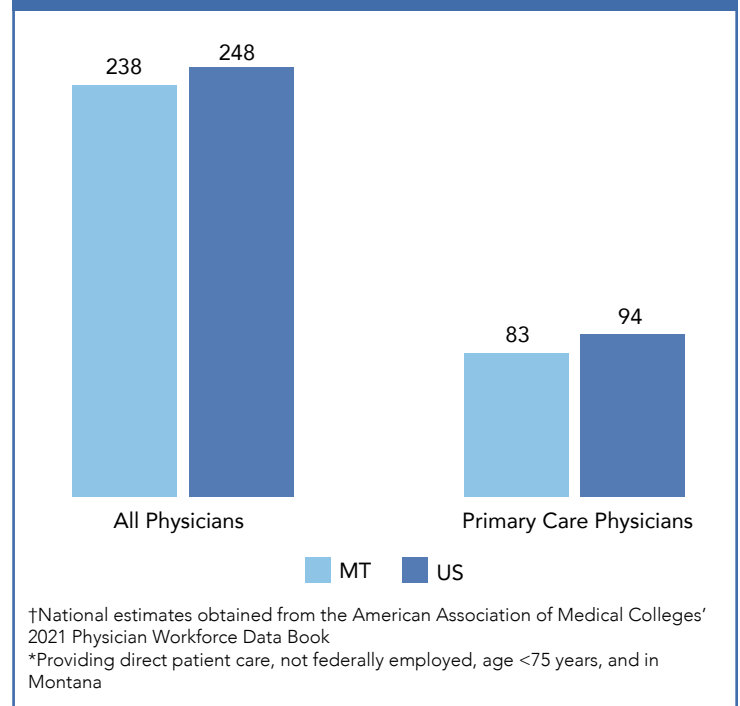


Table 1: Number, Gender and Age of Montana Physicians* in 2021

	#	#/100,000 Population	% Female	Mean Age (years)	% Age 55 or Older
Total	2,569	237.5	33.6	52.8	45.7
Primary care	896	82.8	46.3	51.4	41.2
Family medicine	539	49.8	44.9	51.2	38.6
General internal medicine	244	22.6	39.3	51.8	44.3
General pediatrics	113	10.4	68.1	51.1	46.9
Surgeons	295	27.3	36.9	54.7	51.9
General surgery	81	7.5	27.2	54.3	48.1
Obstetrics-gynecology	122	11.3	62.3	53.1	44.3
Other surgery	92	8.5	12.0	57.0	65.2
Psychiatrists	106	9.8	40.6	55.3	49.1
Other specialists	1,272	117.6	23.3	53.2	47.1

*Providing direct patient care, not federally employed, age <75 years, and in Montana

DISTRIBUTION

In 2021, fewer physicians provided direct patient care per 100,000 population in rural compared with urban areas of Montana. In comparison, there was more rural-urban parity among practicing primary care physicians (Figure 3). Between 2016 to 2021, the estimated number of overall physicians per 100,000 population increased comparably for both urban and rural areas. The supply of primary care physicians in 2021 remained comparable with 2016 and 2014 in rural areas, but increased for urban areas in 2021 compared to previous years.

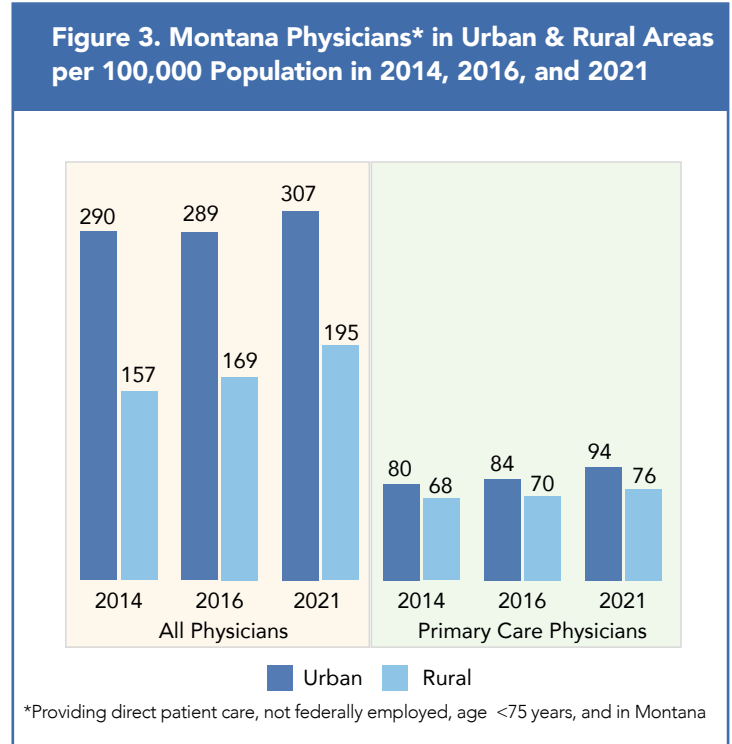
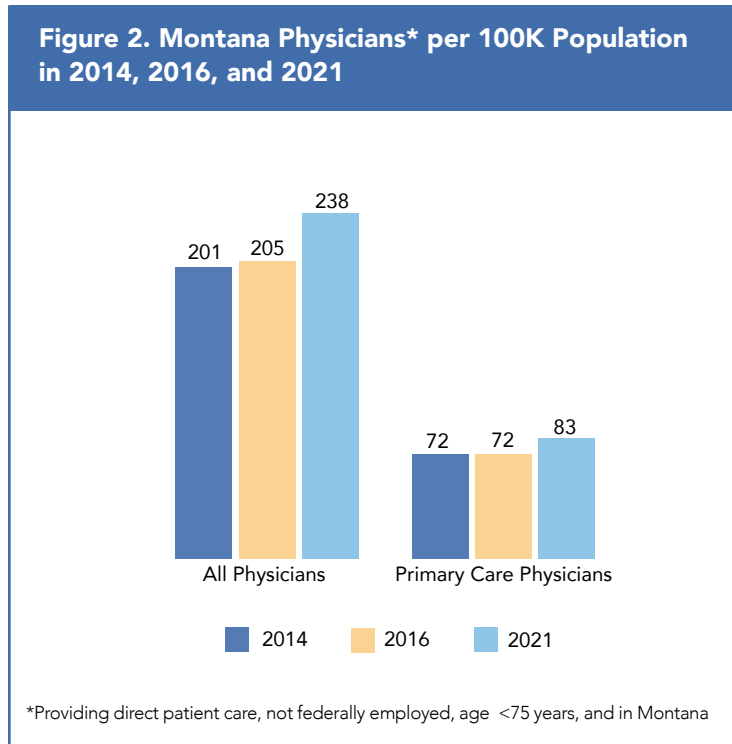


Table 2 details the rural-urban distribution of the state’s physicians, overall and by specialty, and in addition shows their distribution among three sub-rural area types: large rural, small rural and isolated small rural. On a per 100,000 population basis there were higher densities of primary care physicians, especially family physicians, in large and small rural areas of Montana than were found in urban areas. Isolated small rural areas, however, had smaller supplies of physicians than were found in other areas of the state.

The estimated number of all physicians and primary care physicians per 100,000 population in each Montana county is shown in **Figure 4**. In 2021, 13 counties had no practicing physicians. Six counties (Cascade, Deer Lodge, Flathead, Gallatin, Missoula, and Yellowstone) had higher numbers of physicians overall per 100,000 population than the national average of 248, and eight counties (Beaverhead, Deer Lodge, Fallon, Golden Valley, Meagher, Missoula, Park, and Yellowstone) had higher numbers of primary care physicians per 100,000 population than the national average of 94. Specialists congregated in urban areas where more specialty care services and larger hospitals are provided, and were (not unexpectedly) relatively absent from isolated small rural areas. Counties in western Montana tended to have higher physician density than counties in eastern Montana, which generally follows the distribution of the state’s population. It should be noted that because Montana is a very rural state with a relatively small population, at the county level most of the numbers of physicians per 100,000 population were larger than the actual number of physicians in the counties. Nonetheless, comparing physician supply on a per capita basis is a useful way to assess the relative supply of physicians across the state.

As shown in **Figure 5** many of Montana’s most rural counties had the highest percentages of physicians age 55 and older. More than 50% of all physicians providing direct patient care in 27 Montana counties were age 55 or older in 2021. In six counties (Blaine, Broadwater, Granite, Mineral, Phillips, and Sheridan), 100% of physicians were age 55 or older. The percentages of primary care physicians age 55 or older were generally lower than for overall physicians, but still were high among the more rural counties, and in nine counties (Blaine, Broadwater, Dawson, Granite, Jefferson, Mineral, Phillips, Richland, and Sheridan) all of the primary care physicians were age 55 or older.

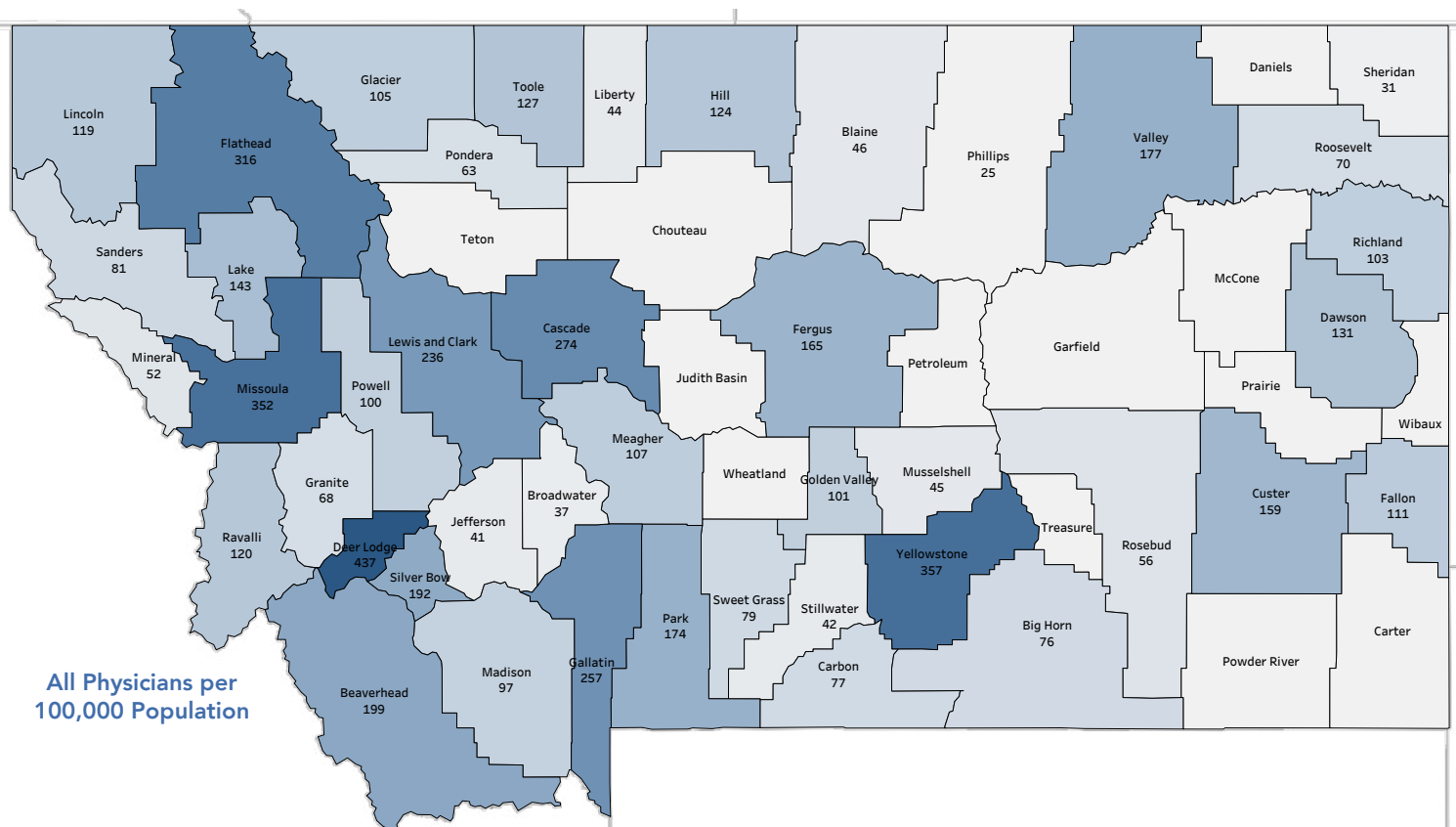
Table 2: Montana Physicians* in Urban, Rural and Sub-Rural Areas in 2021**

	Urban		Overall Rural		Large Rural		Small Rural		Isolated Small Rural	
	#	#/100,000 Population	#	#/100,000 Population	#	#/100,000 Population	#	#/100,000 Population	#	#/100,000 Population
Total	1,251	307.2	1,318	195.4	836	292.1	364	177.2	118	64.5
Primary care	382	93.8	514	76.2	258	90.1	181	88.1	75	41.0
Family medicine	198	48.6	341	50.5	135	47.2	139	67.7	67	36.6
General internal medicine	124	30.5	120	17.8	81	28.3	32	15.6	7	3.8
General pediatrics	60	14.7	53	7.9	42	14.7	10	4.9	1	0.5
Surgeons	134	32.9	161	23.9	97	33.9	54	26.3	10	5.5
General surgery	30	7.4	51	7.6	27	9.4	22	10.7	2	1.1
Obstetrics-gynecology	45	11.1	77	11.4	45	15.7	25	12.2	7	3.8
Other surgery	59	14.5	33	4.9	25	8.7	7	3.4	1	0.5
Psychiatrists	45	11.1	61	9.0	41	14.3	10	4.9	10	5.5
Other specialists	690	169.4	582	86.3	440	153.7	119	57.9	23	12.6

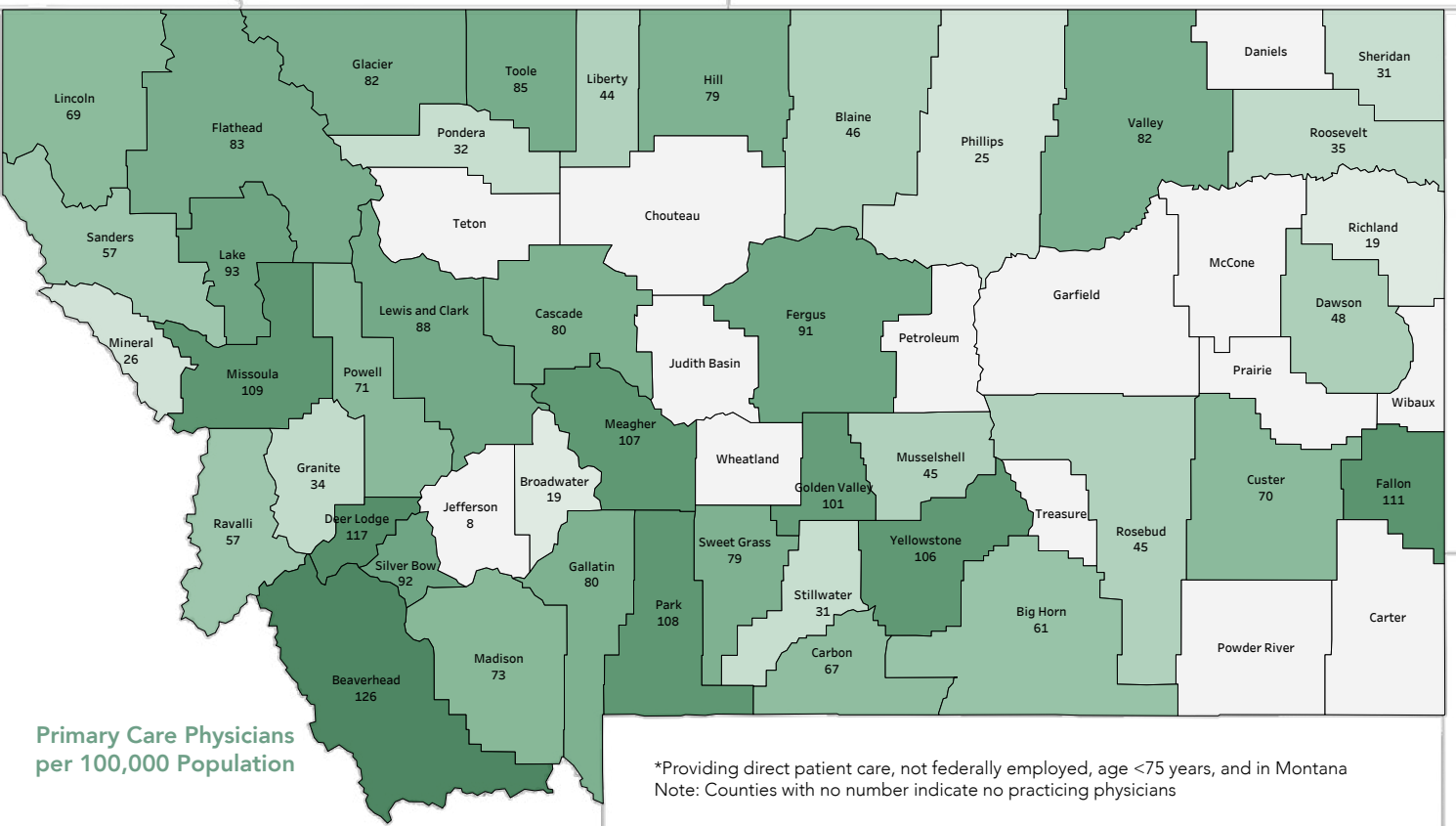
*Providing direct patient care, not federally employed, age <75 years, and in Montana

**Rural-urban determined using ZIP code RUCA taxonomy. Overall rural is a combination of the three rural subcategories

Figure 4. Montana Physicians* per 100,000 Population in 2021, by County



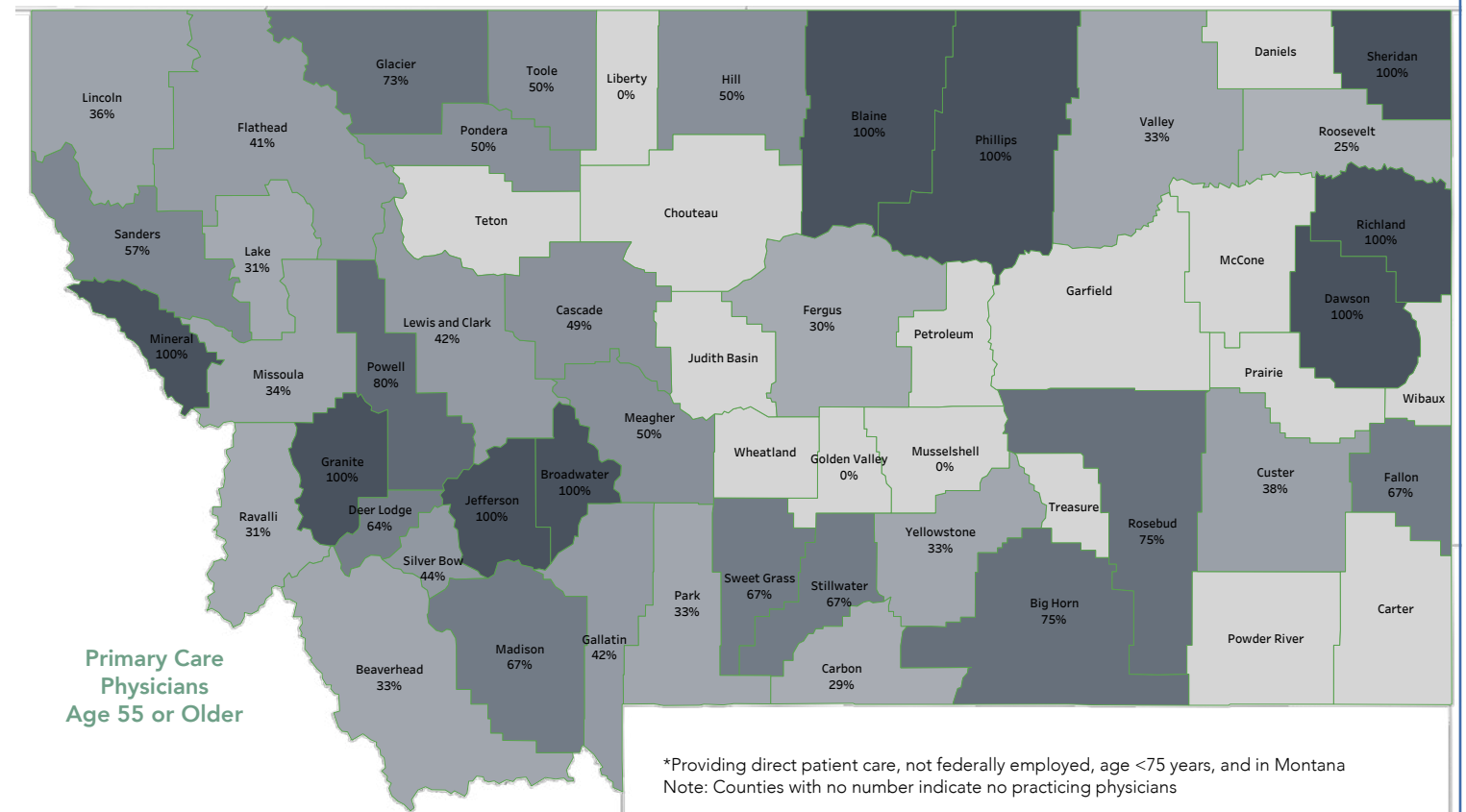
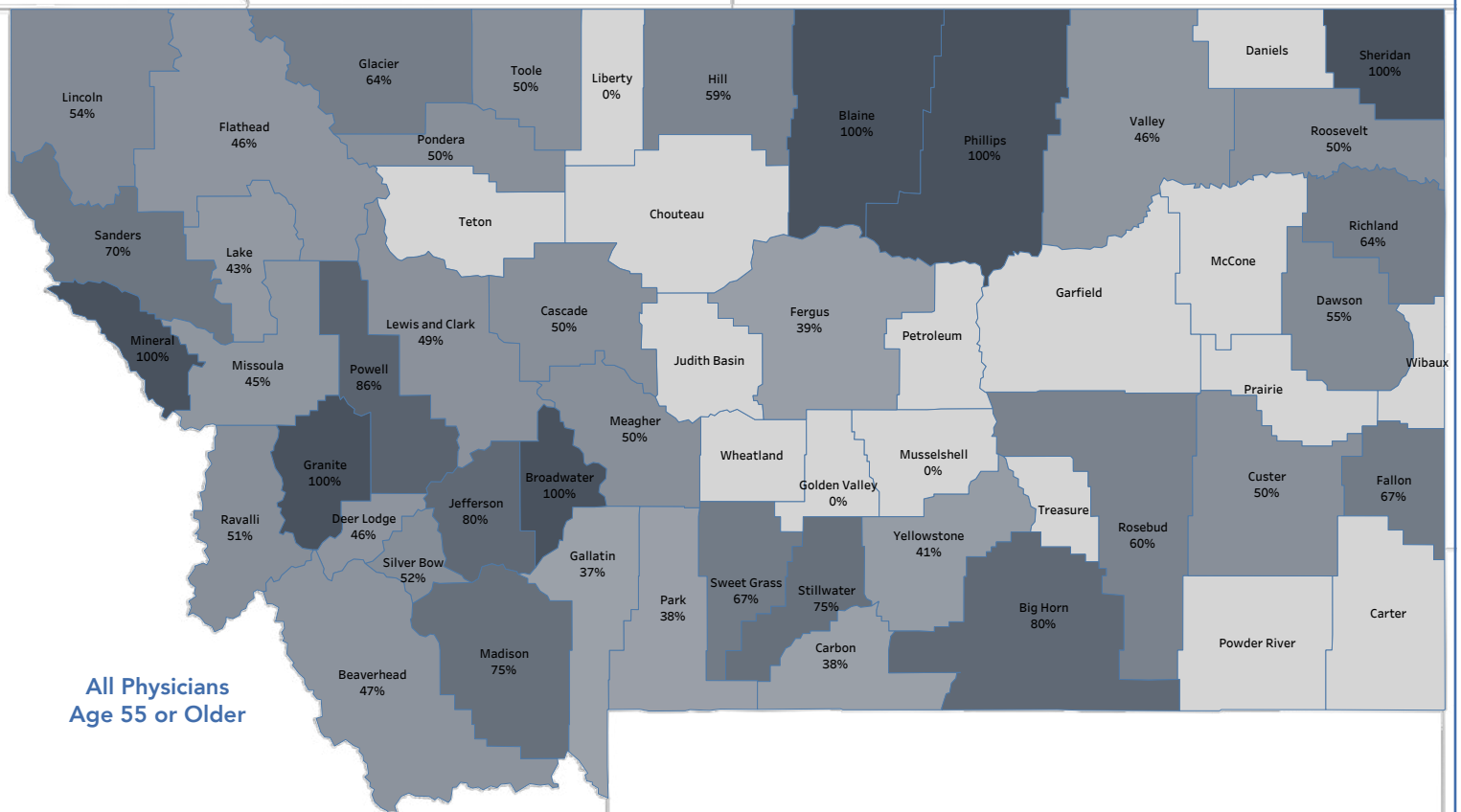
All Physicians per 100,000 Population



Primary Care Physicians per 100,000 Population

*Providing direct patient care, not federally employed, age <75 years, and in Montana
Note: Counties with no number indicate no practicing physicians

Figure 5. Proportion of Montana Physicians* age 55 or Older in 2021, by County



*Providing direct patient care, not federally employed, age <75 years, and in Montana
 Note: Counties with no number indicate no practicing physicians

Table 3: Top 5 Medical Schools from Which Montana Physicians* Graduated

Medical Schools	State	#	Percent
University of Washington School of Medicine	WA	337	13.1
University of Colorado School of Medicine	CO	71	2.8
University of North Dakota School of Medicine & Health Sciences	ND	64	2.5
Creighton University School of Medicine	NE	62	2.4
Oregon Health Science University School of Medicine	OR	57	2.2

*Providing direct patient care, not federally employed, age <75 years, and in Montana

Table 4: Top 5 States Where Montana Physicians* Completed a Residency

State	#	% of Montana Physicians who Completed a Residency in the State
WA	213	8.7
CA	179	7.3
CO	134	5.4
MT	132	5.4
UT	123	4.99

*Providing direct patient care, not federally employed, age <75 years, and in Montana

Table 5: Montana Physicians* in 2021 Who Graduated from a Medical School in Washington, and/or Completed a Residency in Montana or in Any WWAMI State**

	Graduated from a Medical School in Washington***		Completed a Residency in Montana****		Completed a Residency in a WWAMI State ****	
	#	%	#	%	#	%
Total	349	13.6%	132	5.4%	396	16.1%
Primary care	153	17.1%	131	15.3%	280	32.6%
Family medicine	85	15.8%	114	22.1%	223	43.3%
General internal medicine	49	20.1%	17	7.3%	56	23.9%
General pediatrics	19	16.8%	0	0.0%	1	0.9%
Surgeons	31	10.5%	0	0.0%	14	4.8%
General surgery	11	13.6%	0	0.0%	4	4.9%
Obstetrics-gynecology	15	12.3%	0	0.0%	5	4.2%
Other surgery	5	5.4%	0	0.0%	5	5.6%
Psychiatrists	14	13.2%	0	0.0%	14	13.5%
Other specialists	151	11.9%	1	0.1%	88	7.3%

*Providing direct patient care, not federally employed, age <75 years, and in Montana

**WWAMI = Washington, Wyoming, Alaska, Montana, and Idaho

***Includes 12 graduates from Pacific Northwest University of Health Sciences and 337 from the University of Washington School of Medicine

**** Percentages are calculated based on physicians for whom residency state data were available. There were 106 records (4.1%) that were missing residency state and 0 were missing medical school information

EDUCATION AND TRAINING

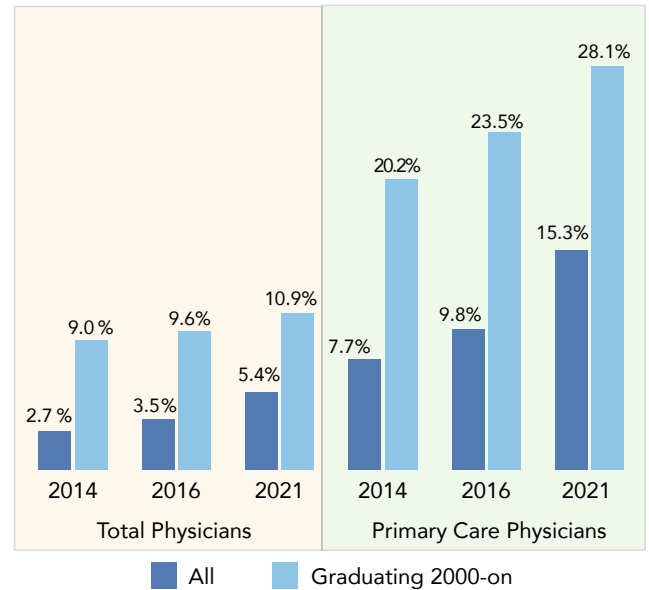
The University of Washington School of Medicine was the medical school from which the highest percentage (13%) of Montana’s physicians graduated (Table 3). About 9% of Montana’s physicians completed a residency in Washington and smaller percentages completed residencies in California, Colorado, Montana, and Utah (Table 4). As shown in Table 5, about 14% of Montana’s overall practicing physician supply in 2021 graduated from the two medical schools in Washington and 16% completed a residency in a WWAMI state, including Montana. Among primary care physicians, 17% graduated from a Washington medical school, 15% completed a residency in Montana and 33% completed a residency in any WWAMI state. Among physicians specializing in family medicine these percentages were higher: 43% of Montana’s family medicine physicians completed a residency in a WWAMI state, including Montana.

Among physicians who graduated from medical school since 2000, the percentage of Montana's physicians who completed a residency in Montana was higher than for the overall physician workforce (including those who graduated prior to 2000) and continued to increase in each of 2014, 2016, and 2021 (Figure 6).

COMPARISON OF WORKFORCE SUPPLY WITH POPULATION HEALTH MEASURES

The Robert Wood Johnson Foundation (RWJF) County Health Rankings use available data on population health factors and health outcomes to create county rankings within each state.⁵ These rankings are derived from data from a variety of national sources and include overall health outcomes which is comprised of length of life and quality of life measures. We compared Montana's physician workforce supply findings with the RWJF county health rankings for the combined overall health outcomes measure and listed the top ranked 15 Montana counties in three categories (Table 6).

Figure 6. Percentages of Montana Physicians* in 2014, 2016, and 2021 Who Completed a Residency in Montana



*Providing direct patient care, not federally employed, age <75 years, and in Montana

Table 6: Top 15 Counties in Montana Ranked by Health Outcomes and Supply of Physicians* per 100,000 Population

County Rank**	Overall Health Outcomes***	Number of Overall Physicians*	Number of Primary Care Physicians*
1	Gallatin	Deer Lodge	Beaverhead
2	Carbon	Yellowstone	Deer Lodge
3	Madison	Missoula	Fallon
4	Beaverhead	Flathead	Missoula
5	Jefferson	Cascade	Park
6	Missoula	Gallatin	Meagher
7	Flathead	Lewis and Clark	Yellowstone
8	Richland	Beaverhead	Golden Valley
9	Lewis and Clark	Silver Bow	Lake
10	Dawson	Valley	Silver Bow
11	Broadwater	Park	Fergus
12	Fergus	Fergus	Lewis and Clark
13	Sweet Grass	Custer	Toole
14	Ravalli	Lake	Flathead
15	Stillwater	Dawson	Glacier

*Number of physicians per 100,000 population, providing direct patient care, not federally employed, age <75 years, and in Montana

**Lower number reflects higher rank, i.e., better health measures, more physicians

***Overall health outcomes ranking obtained from the Robert Wood Johnson Foundation, which combines length and quality of life measures

There is not a clear overall relationship between the number of physicians per 100,000 population and the overall health outcomes based on county ranking. Only seven out of fifteen counties (Beaverhead, Dawson, Flathead, Fergus, Gallatin, Lewis and Clark, and Missoula) that have the higher number of physicians per 100,000 population and four out of fifteen counties (Beaverhead, Flathead, Lewis and Clark, and Missoula) with higher number of primary care physicians per 100,000 population also appeared in the 15 counties ranked the highest for health outcomes. Counties that had lower health outcomes ranks did not necessarily have lower number of physicians per 100,000 population.

The availability of physicians is one of multiple factors that contribute to population health. For example, having more providers, including non-physician medical providers such as physician assistants and nurse practitioners, may be associated with delivering more of the healthcare services needed by a population, and/or more providers may be attracted to counties with healthier populations, and providers may be less easily recruited to counties with less healthy populations. While the data for the RWJF county rankings is the most recent available to the developers, some of the data components contributing to the measures may be several years old and therefore these findings should be interpreted as suggestive and not conclusive. In addition, rankings are simply relational measures and a ranking of 1 doesn't necessarily indicate "great" status, nor does a high number indicate "bad" status. Nonetheless, while there is not necessarily a direct correlation between population health rankings and physician supply, these comparisons may suggest areas where further study and possible action is needed.

SUMMARY AND POLICY IMPLICATIONS

Montana's physician supply, on a per 100,000 population basis, is generally smaller than the national number. Differences in distribution are apparent between urban and rural areas of the state. While more physicians practice in urban areas, the numbers of primary care physicians per 100,000 population in Montana's large rural areas are similar to urban areas. Fewer physicians work in isolated small rural areas of Montana and the estimates are comparable with small rural areas.

The physician supply numbers in this report should be viewed with the understanding that the source data from the AMA Physician Masterfile has limitations. Locum tenens physicians, newly recruited physicians, and physicians with addresses in other locations may not be reflected in the supply of some counties, for example. This analysis also excluded physicians that are 75 years or older, which could imply undercounting of effective physician supply in some areas. In addition, recent expansions of the use of telehealth and virtual visits reduced the need for providers and patients to be in close proximity, improving satisfaction and reducing costs for some patients.⁶ While many providers adopted hybrid approaches to patient visits (with some in-person and some virtual) requiring that they remain near their practice sites, attention should be paid to how future telehealth use may be affecting the need for providers and patients to be located in the same geographic areas.

Additionally, early in the pandemic, COVID-19 was shown to adversely affect medical students' preparation effort and application to residency programs by causing significant disruptions in the education system.⁷ As a response, some organizations started making adjustments to the residency application process such as by relaxing the requirement of standardized letters of evaluation and limiting the maximum number of away rotations,⁸ which alleviated some of the challenges faced by medical graduates. Some medical schools also accelerated graduation of medical students and deployed them to care for patients to help ease the workforce shortage during the pandemic.⁹

About 13% of Montana's total physician supply graduated from the University of Washington (the highest percentage of any medical school), where Montana participates in the WWAMI medical education program. Medical students from Montana have been supported by the state to attend the WWAMI program since 1972, and by 2021, 796 graduates were in practice or had practiced and an additional 138 were in residency or fellowship.¹⁰

As shown in these findings as well as in the 2016 and 2014 analyses, residency can be highly associated with the location where a physician eventually chooses to practice and of the population he or she prefers to serve, and is therefore a useful recruitment tool.^{11,12} In 2020 Montana ranked third among states for retaining physicians who complete a residency in-state, with a 63% retention rate in 2020.⁴ This high rate of retention contributed to the 22% of all in 2021 in physicians in family medicine specialties who completed a residency in Montana. The state has few physician residencies, however, so even with a high residency retention rate, only about 6% of all practicing Montana physicians (across all specialties) completed an in-state residency. While not easy to accomplish, the extent to which more residencies can be formed in locations and for specialties that serve the populations where shortages are greatest could help reduce disparities in the distribution of Montana's physicians. This study also showed that high percentages of physicians who were more recent medical school graduates (since 2000) completed a residency in-state (11% of the total). Efforts specifically designed to retain these young physicians could be a useful health workforce development strategy for Montana.

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APPENDIX A: METHODS

The Montana state physician supply data for this study came from the American Medical Association (AMA) Physician Masterfile, accessed in February, 2022. Changes in physician supply and characteristics for 2014 and 2016 were assessed using prior studies that used data from 2014 and 2016 AMA Physician Masterfile.^{2,3} There were 3,813 total allopathic and osteopathic physicians with Montana license records in the dataset. Those selected for these analyses were the 2,569 with 1) an in-state practice address (or mail address, when practice was not available), 2) who were age 74 or younger, 3) provided direct patient care, and 4) were not a federal employee. Physicians were assigned specialties using the AMA dataset's "primary" and "secondary" specialty fields. The primary specialty was reassigned to the secondary specialty for about 7% of physicians when there was indication from the listed secondary specialty that the physician was likely to practice more specialized medicine than the primary specialty indicated. Physician specialties were grouped into "Primary care" (family medicine, general internal medicine and general pediatrics specialties), "Surgeons" (general surgery, obstetrics-gynecology, and other surgery), and "Other Specialists". Data for psychiatrists were analyzed and reported separately. Rural-urban status was determined using Rural Urban Commuting Area (RUCA) taxonomy¹³ and the population data came from a custom-prepared file of selected 2021 population data with ZIP codes cross-referenced to counties.¹⁴ All analyses were done using STATA version 16¹⁵ and maps were generated using Tableau data visualization tool.