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# Wyoming's Physician Workforce in 2021

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## KEY FINDINGS

- In 2021 the estimated number of physicians providing direct patient care in Wyoming was 1,043, 7% higher than the estimated number practicing in 2014.
- There were an estimated 180 physicians per 100,000 population providing direct patient care in Wyoming, including 65 primary care physicians per 100,000 population in 2021.
- The mean age of Wyoming's practicing physicians was 53 years. Women comprised 26% of the state's physician workforce and 38% of the primary care, including 49% of general pediatricians.
- Most rural areas of Wyoming had fewer physicians per 100,000 population and many rural counties had high percentages of physicians age 55 or older than in urban areas.
- 10% of Wyoming's family medicine physician workforce completed a residency in Wyoming and about 15% completed a residency in one of the WWAMI states: Washington, Wyoming, Alaska, Montana or Idaho.
- Around 9% of Wyoming's physicians graduated from a medical school in Washington.

## INTRODUCTION

The population of Wyoming grew by 3% between 2010 and 2021.<sup>1</sup> At the same time, the state has an increasingly older population. In 2010, the population 65 years and older represented about 12% of population, while in 2021 that figure grew to about 17%.<sup>1</sup> These demographic factors will likely have significant effects on the state's health 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

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growing and changing demand. This Brief offers data on the size, distribution, and education history of Wyoming's physician workforce. It updates similar reports from 2016<sup>2</sup> and 2014<sup>3</sup> and addresses the following questions:

- How many physicians practice in Wyoming 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 Wyoming's physicians graduate from medical school and complete residency?

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

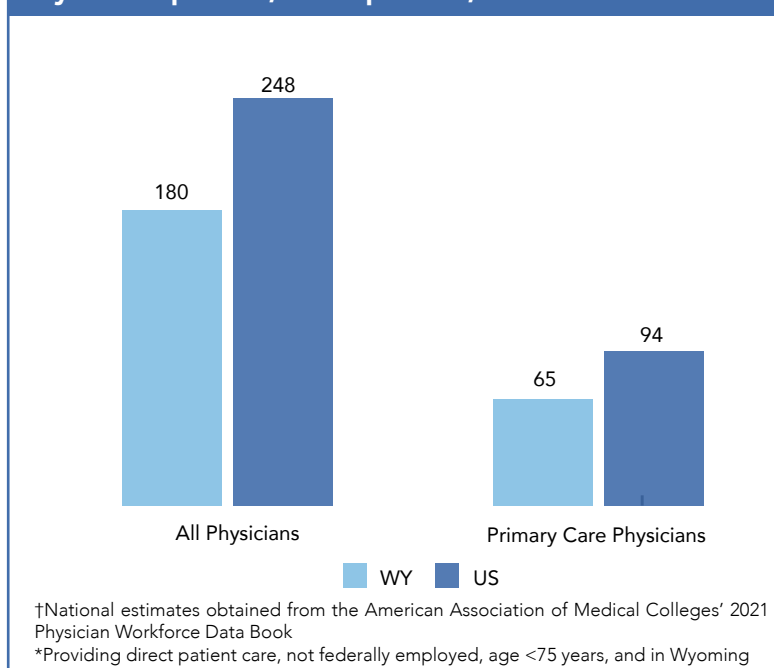
## NUMBER, DEMOGRAPHIC, AND DISTRIBUTION OF PHYSICIANS IN WYOMING OVERALL SUPPLY AND DEMOGRAPHICS

The estimated supply of physicians providing direct patient care in Wyoming grew 7% from 974 in 2014 to 1,043 in 2021.<sup>3</sup> Wyoming'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 180 physicians per 100,000 population providing direct patient care in the state, and 65 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.<sup>4</sup>

**Table 1** shows the number of physicians providing direct patient care in Wyoming 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 Wyoming physicians was between 50 and 60 years and 46% of physicians overall were age 55 or older. Approximately 26% of Wyoming's overall physician workforce was female, and women comprised more than half of the primary care specialties, including 53% of general pediatricians and 53% of obstetrician-gynecologists.

Between 2014 and 2016, the size of the Wyoming's physician workforce grew from 166 physicians to 178 physicians per 100,000 population (**Figure 2**). And between 2016 and 2021, physicians per 100,000 population providing direct patient care increased from 178 to 180. Primary care physicians also rose between 2014 and 2021, from 60 to 65 per 100,000 population.

**Figure 1. Wyoming Compared with National<sup>†</sup> Estimates of Physicians\* per 100,000 Population, 2021**



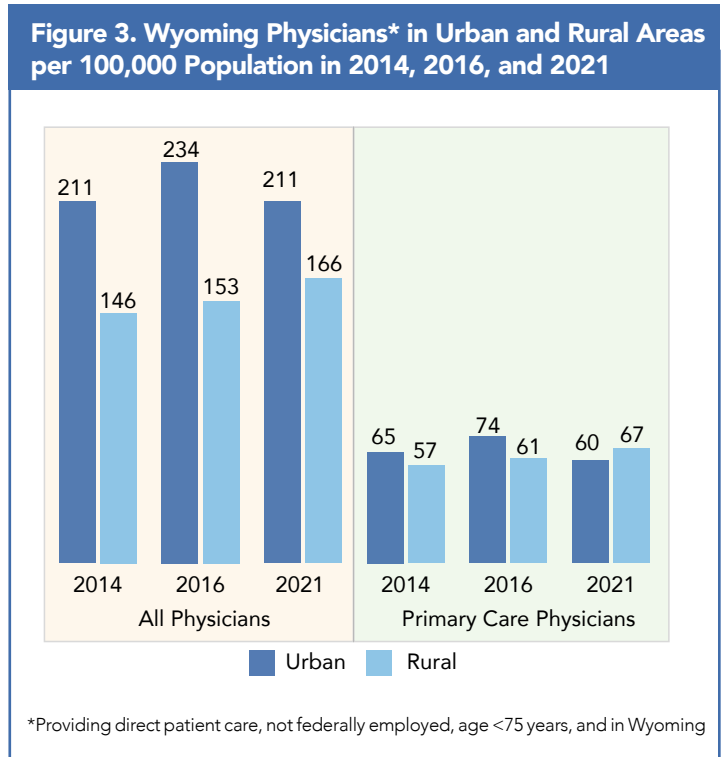
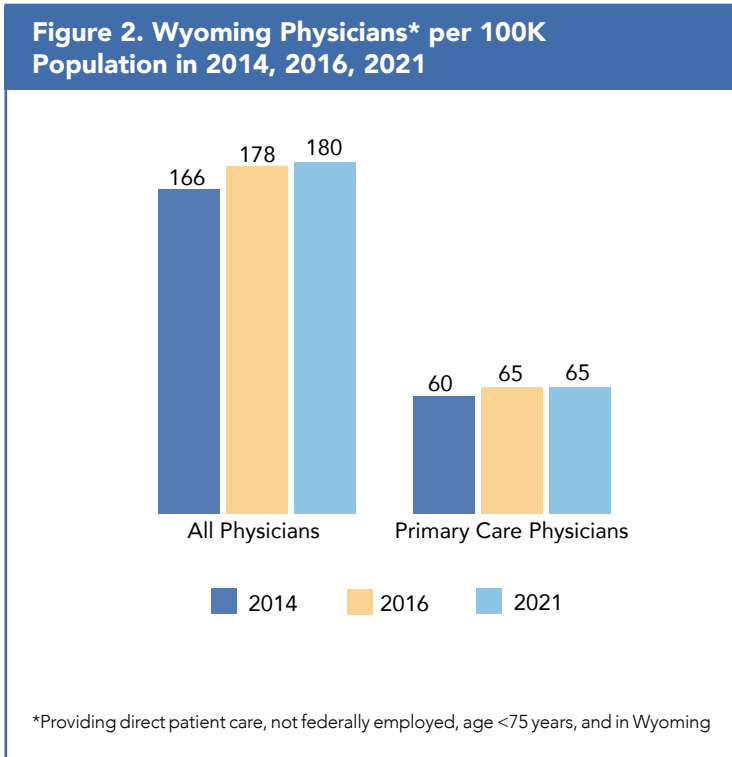
**Table 1: Number, Gender and Age of Wyoming Physicians\* in 2021**

Physicians Providing Direct Patient Care	#	#/100,000 Population	% Female	Mean Age (years)	Mean Age (years)
<b>Total</b>	1,043	180.3	26.2	53.0	46.0
<b>Primary care</b>	376	65.0	37.5	51.5	40.7
Family medicine	244	42.2	34.8	51.6	39.3
General internal medicine	83	14.4	38.6	50.3	42.2
General pediatrics	49	8.5	49.0	53.4	44.9
<b>Surgeons</b>	147	25.4	29.3	53.5	46.9
General surgery	51	8.8	11.8	53.1	45.1
Obstetrics-gynecology	66	11.4	48.5	53.2	45.5
Other surgery	30	5.2	16.7	55.0	53.3
<b>Psychiatrists</b>	31	5.4	45.2	59.5	71.0
<b>Other specialists</b>	489	84.5	15.3	53.5	48.3

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

**DISTRIBUTION**

In 2021, fewer physicians provided direct patient care per 100,000 population in rural compared with urban areas of Wyoming. In comparison, there was more rural-urban parity among practicing primary care physicians (Figure 3). Between 2014 to 2021, the estimated number of overall physicians per 100,000 population decreased in urban but increased in rural areas. The supply of primary care physicians per 100,000 population in 2021 also decreased in urban but increased in rural areas 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. Higher number of physicians provided direct patient care in rural areas compared with urban areas. On a per 100,000 population basis there were higher densities of primary care physicians, especially family physicians, in small rural areas of Wyoming 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 number of all physicians and primary care physicians per 100,000 population in each Wyoming county is shown in **Figure 4**. There was large variation among Wyoming’s counties in the numbers of overall physicians per 100,000 population as well as among the numbers of primary care per 100,000 population. It should be noted, however, that because of Wyoming’s relatively small population, at the county level the numbers of physicians per 100,000 population could be 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.

While still largely rural, the counties in northwest Wyoming (major recreation destination areas) had higher densities of total physicians and primary care specialties compared with the rest of the state. The largely rural counties in the east of the state had many fewer physicians per capita. For example, in the eastern county of Crook the number of total physicians and as well as the number of primary care physicians per 100,000 population was 26 compared with 287 total and 123 primary care physicians per 100,000 population in Park county located in the northwest Wyoming.

As shown in **Figure 5**, two of the counties located in the southeastern area of Wyoming (Carbon and Platte) had the highest percentages of overall physicians age 55 and older. More than two thirds of all physicians providing direct patient care in those two counties were age 55 or older in 2021. The percentages of primary care physicians age 55 or older were generally lower than for overall physicians, but still were high (60% or higher) for Albany, Lincoln, Platte and Weston counties.

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

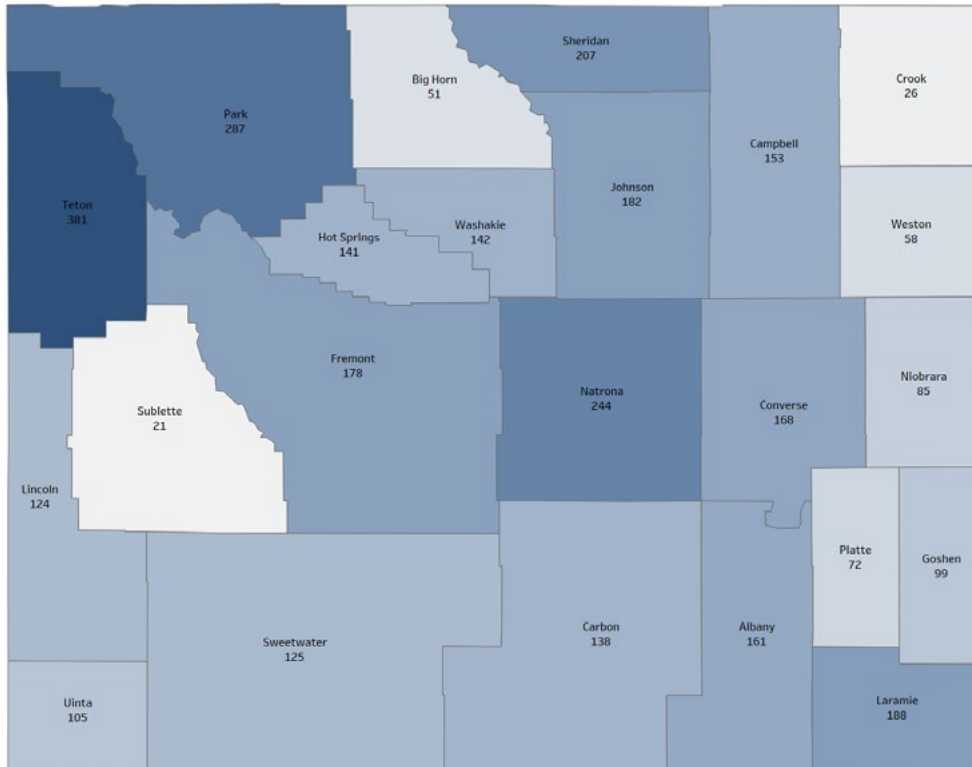
	Urban		Overall Rural		Large Rural		Small Rural		Isolated Small Rural	
	#	#/100,000 Population	#	#/100,000 Population	#	#/100,000 Population	#	#/100,000 Population	#	#/100,000 Population
<b>Total</b>	388	210.6	655	166.2	388	181.8	221	204.5	46	63.4
<b>Primary care</b>	111	60.2	265	67.2	130	60.9	109	100.9	26	35.8
Family medicine	71	38.5	173	43.9	64	30.0	84	77.7	25	34.4
General internal medicine	26	14.1	57	14.5	38	17.8	18	16.7	1	1.4
General pediatrics	14	7.6	35	8.9	28	13.1	7	6.5	0	0.0
<b>Surgeons</b>	57	30.9	90	22.8	55	25.8	32	29.6	3	4.1
General surgery	15	8.1	36	9.1	20	9.4	13	12.0	3	4.1
Obstetrics-gynecology	21	11.4	45	11.4	30	14.1	15	13.9	0	0.0
Other surgery	21	11.4	9	2.3	5	2.3	4	3.7	0	0.0
<b>Psychiatrists</b>	16	8.7	15	3.8	11	5.2	4	3.7	0	0.0
<b>Other specialists</b>	204	110.7	285	72.3	192	90.0	76	70.3	17	23.4

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

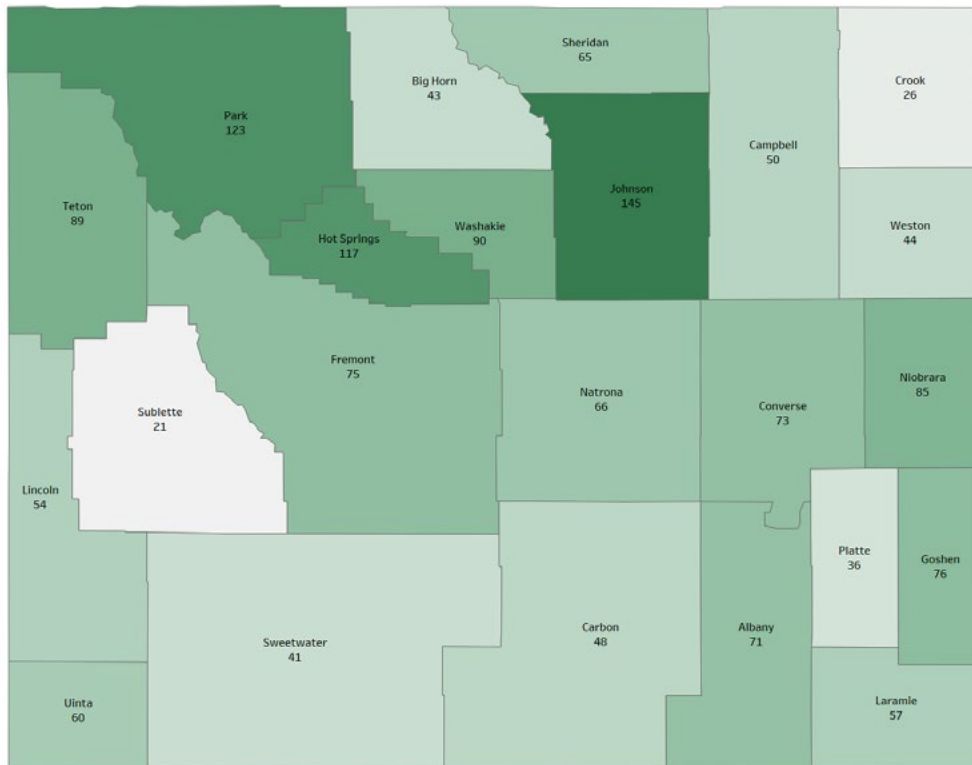
\*\*Rural-urban determined using ZIP code RUCA taxonomy. Overall rural is a combination of the three rural subcategories

Figure 4: Wyoming Physicians\* per 100,000 Population in 2021, by County

All Physicians per 100,000 Population



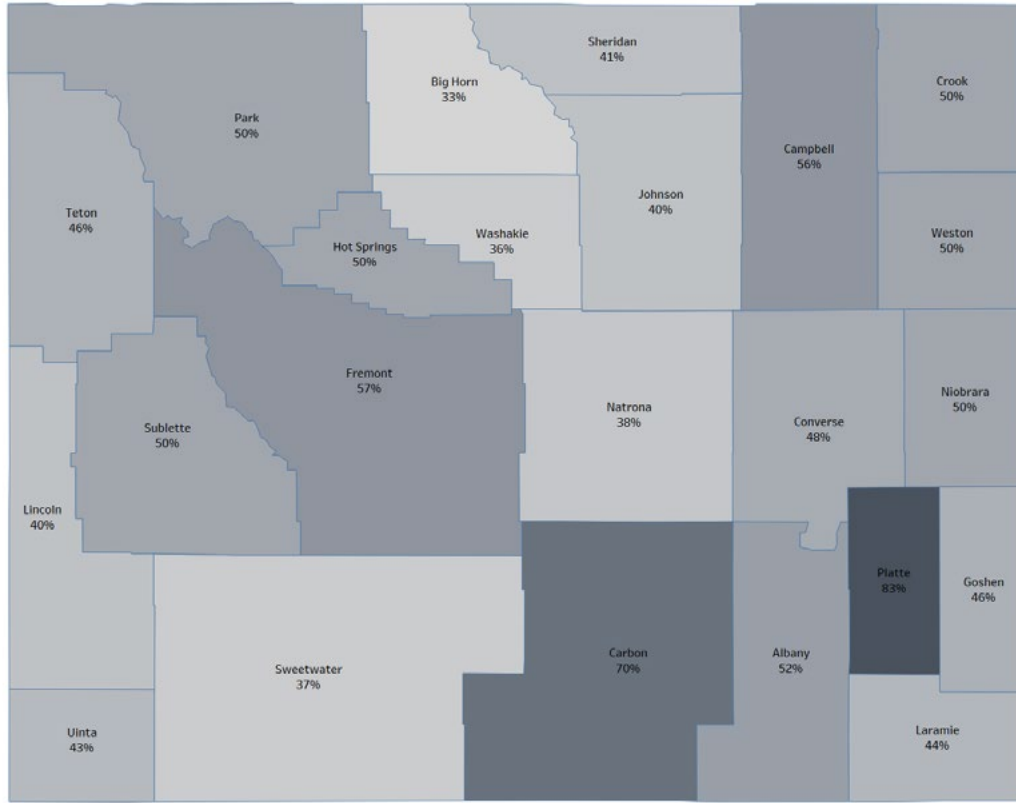
Primary Care Physicians per 100,000 Population



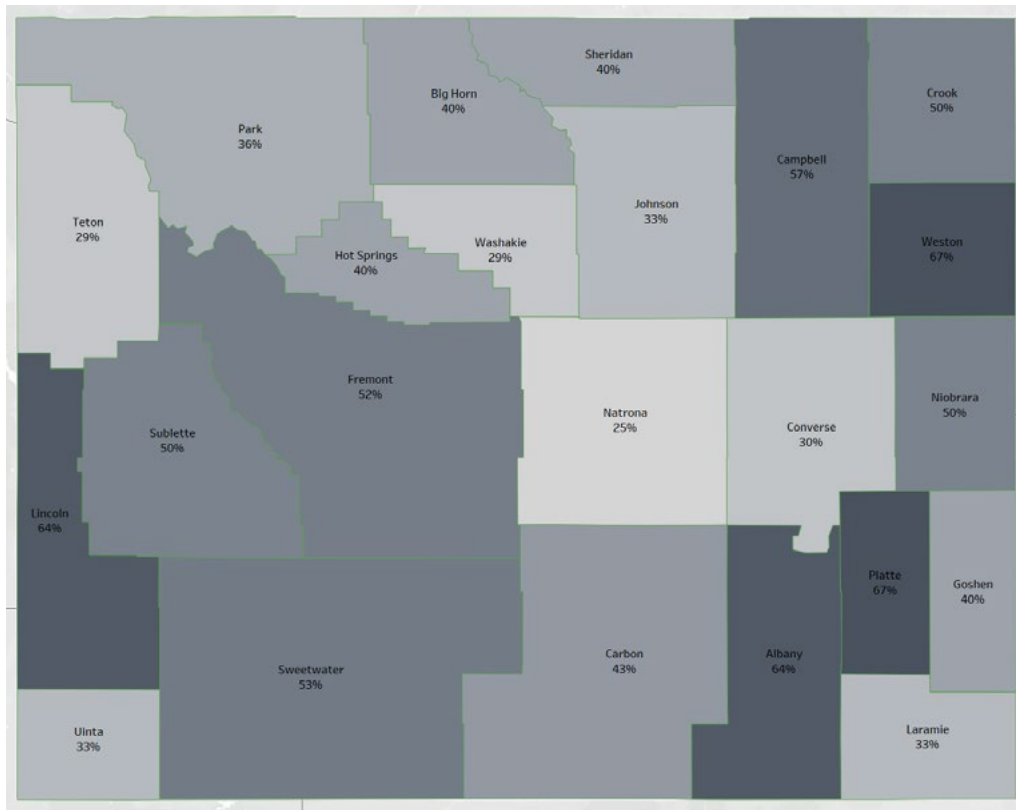
\*Providing direct patient care, not federally employed, age <75 years, and in Wyoming

Figure 5: Wyoming Physicians\* Age 55 or Older in 2021, by County

All Physicians  
Age 55 or  
Older



Primary Care  
Physicians  
Age 55 or  
Older



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

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

Medical Schools	State	#	Percent
Creighton University School of Medicine	NE	97	9.3
University of Washington School of Medicine	WA	97	9.3
University of Utah School of Medicine	UT	57	5.47
University of Colorado School of Medicine	CO	53	5.08
A. T. Still University of Health Sciences	MO	23	2.21

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

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

State	#	% of Wyoming Physicians who Completed a Residency in the State
WY	103	10.3
TX	74	7.4
CA	68	6.8
CO	67	6.7
NY	53	5.31

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

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

	Graduated from a Medical School in Washington***		Completed a Residency in Wyoming****		Completed a Residency in a WWAMI State****	
	#	%	#	%	#	%
<b>Total</b>	98	9.4%	103	10.3%	145	14.5%
<b>Primary care</b>	42	11.2%	97	26.7%	120	33.1%
Family medicine	23	9.4%	96	40.7%	113	47.9%
General internal medicine	16	19.3%	1	1.3%	7	9.0%
General pediatrics	3	6.1%	0	0.0%	0	0.0%
<b>Surgeons</b>	19	12.9%	1	0.7%	5	3.5%
General surgery	9	17.6%	0	0.0%	2	4.1%
Obstetrics-gynecology	8	12.1%	1	1.6%	1	1.6%
Other surgery	2	6.7%	0	0.0%	2	6.9%
<b>Psychiatrists</b>	3	9.7%	0	0.0%	1	3.2%
<b>Other specialists</b>	34	7.0%	5	1.1%	19	4.1%

\*Providing direct patient care, not federally employed, age <75 years, and in Wyoming.

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

\*\*\*Includes 1 graduate from Pacific Northwest University of Health Sciences and 97 from the University of Washington School of Medicine

\*\*\*\* Percentages are calculated based on physicians for whom residency state data were available. There were 44 records (4.2%) that were missing residency state and 0 were missing medical school information

## EDUCATION AND TRAINING

Around 9% of Wyoming's physicians graduated from the University of Washington School of Medicine (Table 3). The top five states from where Wyoming's physicians completed their residencies were: Wyoming, Texas, California, Colorado and New York (Table 4). As shown in Table 5, around 10% of Wyoming's overall practicing physician supply in 2021 completed a residency in Wyoming and 16% completed a residency in a WWAMI state. Among primary care physicians, 11% graduated from a medical school in Washington, 27% completed a residency in Wyoming and 33% completed a residency in any WWAMI state. Among physicians specializing in family medicine these percentages were higher: 48% of Wyoming's family medicine physicians completed a residency in a WWAMI state, including Wyoming.

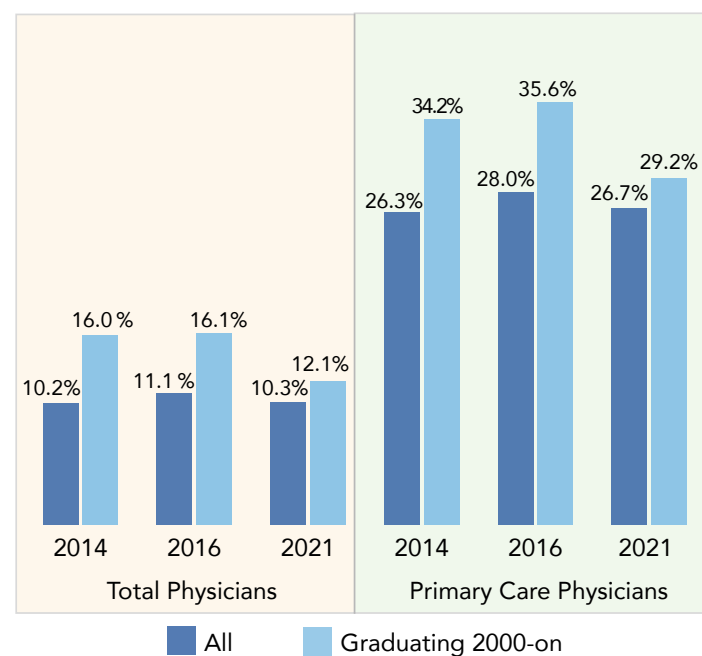
Among physicians who graduated from medical school since 2000, the percentage of Wyoming's physicians who completed a residency in Wyoming was higher than for the overall physician workforce (including those who graduated prior to 2000) and continued to increase in each of 2014, 2016, and 2021 (Figure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

## COMPARISON OF WORKFORCE SUPPLY WITH POPULATION HEALTH MEASURES

The Robert Wood Johnson Foundation<sup>5</sup> County Health Rankings use available data on population health factors and health outcomes to create county rankings within each state.<sup>5</sup> 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 Wyoming's physician workforce supply findings with the RWJF county health rankings for the combined overall health outcomes measure and listed the top ranked 15 Wyoming counties in three categories (**Table 6**).

There is not a clear overall relationship between the number of physicians per 100,000 population and the overall health outcomes based on county

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



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

**Table 6: Top 15 Counties in Wyoming 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	Teton	Teton	Johnson
2	Park	Park	Park
3	Sheridan	Natrona	Hot Springs
4	Weston	Sheridan	Washakie
5	Johnson	Laramie	Teton
6	Albany	Johnson	Niobrara
7	Washakie	Fremont	Goshen
8	Crook	Converse	Fremont
9	Sublette	Albany	Converse
10	Converse	Campbell	Albany
11	Lincoln	Washakie	Natrona
12	Goshen	Hot Springs	Sheridan
13	Laramie	Carbon	Uinta
14	Campbell	Sweetwater	Laramie
15	Big Horn	Lincoln	Lincoln

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

\*\*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



ranking. Nine counties that have higher number of any physicians or primary care physicians per 100,000 population also appeared in the list of top 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

Wyoming is recognized to be a very rural state. While the number of physicians per 100,000 population found in this analysis was higher in urban areas of Wyoming than in rural areas, because there are relatively few urban areas there were fewer total physicians in urban Wyoming than in the rural areas of the state. We also find that fewer physicians work in isolated small rural areas of Wyoming. 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 patients.<sup>6</sup> 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.<sup>7</sup> 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,<sup>8</sup> 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.<sup>9</sup>

Wyoming's physician supply, on a per 100,000 population basis, was generally smaller than the national number, although there was a wide variation among counties. Large differences were apparent between the destination recreation areas in northwest Wyoming compared with rural counties in the east. Teton and Park counties (the locations of Yellowstone and Grand Teton National Parks and the ski destinations near Jackson) had 381 and 287 physicians per 100,000 population, respectively, compared with 26 physicians per 100,000 population in Crook county and 58 per 100,000 population in Weston county. An issue for health workforce planning in Wyoming is the finding that these counties with some of the lowest per capita supply of physicians were found to have higher percentages of physicians that are 55 years or older.

Around 9% of Wyoming's total physician supply graduated from a medical school in Washington, where Wyoming participates in the WWAMI medical education program. Medical students from Wyoming have been supported by the state to attend the WWAMI program since 1996. In 2021, the retention rate for Wyoming graduates practicing in the WWAMI region was 56%.<sup>10</sup> Wyoming WWAMI graduates are committed to practice in the state for 3 years after completing a residency. In prior years (from the mid 1970s until the start of the WWAMI Program) Wyoming had a similar relationship with Creighton University School of Medicine in Nebraska, which likely contributed to the large number of Creighton graduates practicing in the state.

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.<sup>11,12</sup> In 2020 Wyoming ranked 48th among states for retaining physicians who complete a residency in-state, with a 29% retention rate in 2020.<sup>4</sup> The cumulative effect of residency retention found by this study, however, is that 27% of all Wyoming's primary care physicians and 41% of family medicine physicians in 2021 had completed a residency in-state. An encouraging finding from this study was that a high percentage of primary care physicians who were more recent medical school graduates (since 2000) completed a residency in-state (29% of primary care physicians). Efforts specifically designed to retain these young physicians could be a useful health workforce development strategy for Wyoming.

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## APPENDIX A: METHODS

The Wyoming 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.<sup>3,4</sup> There were 1,561 total allopathic and osteopathic physicians with Wyoming license records in the dataset. Those selected for these analyses were the 1,043 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 9% 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) taxonomy<sup>13</sup> and the population data came from a custom-prepared file of selected 2021 population data with ZIP codes cross-referenced to counties.<sup>14</sup> All analyses were done using STATA version 16<sup>15</sup> and maps were generated using Tableau data visualization tool.