

Wyoming's Physician Workforce in 2016

KEY FINDINGS

- In 2016 there were 178 physicians per 100,000 population providing direct patient care in Wyoming, including 65 primary care physicians per 100,000 population, lower than national per capita rates.
- The mean age of Wyoming's practicing physicians was 52 years.
- Women comprised 25% of the state's overall physician workforce and 35% of primary care physicians.
- There were large differences in the number of physicians per capita across the state, with the greatest density in urban locations and in the recreation destination counties in northwest Wyoming.
- Counties in Wyoming with some of the lowest per capita supply of physicians had the highest percentages of physicians approaching retirement age.
- 28% of all Wyoming's primary care physicians and 42% of family medicine physicians completed a residency in-state.
- About 10% of Wyoming's physicians graduated from medical school at Creighton University and 7-8% from the University of Washington.
- Since 2014, Wyoming's physician workforce grew in size, the percent of female physicians increased, and average ages of physicians decreased slightly.

INTRODUCTION

The population of Wyoming grew by 4% between 2010 and 2015.¹ At the same time, the state's population is aging. In 2010, the population 65 years and older represented 12% of Wyoming's population, while in 2015 that figure grew to about 15%.² These demographic factors could have significant effects on the state's healthcare 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 the growing and changing demand. This Brief offers data on the size, distribution, and education history of Wyoming's physician workforce. It updates a similar report from 2014³ 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 residencies?*

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).

Wyoming's per capita supply of physicians providing direct patient care was smaller than the national supply in 2016.

NUMBER, DEMOGRAPHIC CHARACTERISTICS, AND DISTRIBUTION OF PHYSICIANS IN WYOMING

OVERALL SUPPLY AND DEMOGRAPHICS

Wyoming's per capita supply of physicians providing direct patient care was smaller than the national supply in 2016 (Figure 1). There were 1,044 physicians (178 per 100,000 population) providing direct patient care in the state, and 380 primary care physicians (65 per 100,000). Nationally, in 2016 there were 229 physicians per 100,000 providing direct patient care, and 75 primary care providers per 100,000 population.

Table 1 shows the number of physicians providing direct patient care in Wyoming in 2016, total and by specialty group, as well as the number per capita, percent female,

Figure 1. Wyoming compared with national estimates of physicians per 100,000 population in 2016

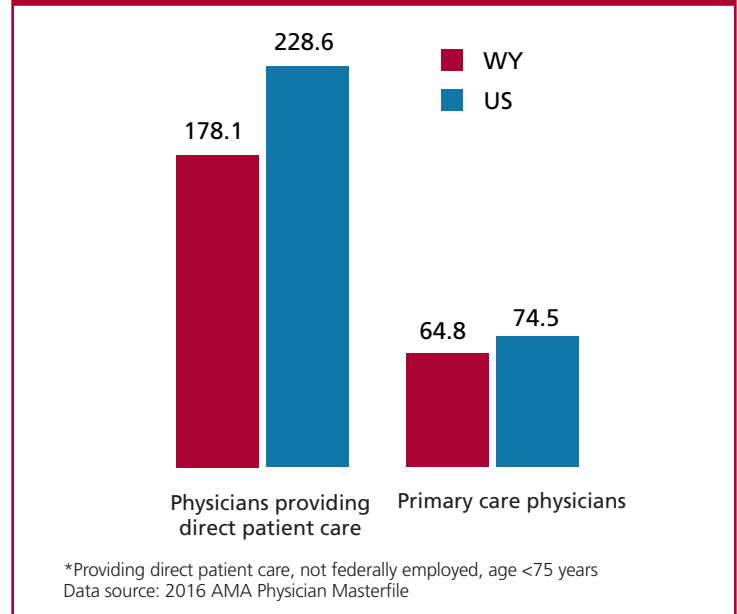


Table 1. Number, gender and age of Wyoming physicians in 2016

Physicians providing direct patient care*	2016					% Changes between 2014-2016				
	#	#/100,000 population	% female	Mean age (years)	% age 55 or older	#	#/100,000 population	% female	Mean age (years)	% age 55 or older
Total	1,044	178.1	25.2%	51.6	40.4%	7.2%	7.4%	3.7%	-0.7%	-1.9%
Primary care	380	64.8	35.3%	49.8	32.1%	9.2%	9.3%	6.9%	-0.2%	-3.6%
Family medicine	254	43.3	33.5%	48.8	26.4%	10.0%	10.3%	7.3%	-0.2%	-6.1%
General internal medicine	77	13.1	36.4%	50.8	42.9%	6.9%	6.8%	4.8%	-1.1%	-0.6%
General pediatrics	49	8.4	42.9%	53.7	44.9%	8.9%	8.6%	7.1%	2.9%	1.1%
Surgeons	146	24.9	24.7%	53.0	44.5%	2.8%	2.9%	-2.9%	-0.2%	5.2%
General surgery	47	8.0	10.6%	51.2	40.4%	9.3%	9.8%	-24.0%	-2.0%	-13.1%
Obstetrics-gynecology	67	11.4	41.8%	52.0	37.3%	0.0%	0.3%	0.0%	-0.4%	8.8%
Other surgery	32	5.5	9.4%	57.8	65.6%	0.0%	-0.7%	48.8%	3.6%	23.6%
Psychiatrists	41	7.0	39.0%	56.6	61.0%	2.5%	2.9%	-8.2%	3.0%	10.9%
Other Specialists	477	81.4	16.1%	52.0	44.0%	7.4%	7.7%	4.1%	-1.3%	-3.7%

*Not federally employed, age <75 years, with Wyoming address
Using 2016 statewide population numbers, from <http://eadv.state.wy.us/pop/CO-15est.htm>

mean age, and percent change between 2014 and 2016. Detailed findings from 2014 analyses are available in the report “Wyoming State’s Physician Workforce in 2014”.³ In general, between 2014 and 2016 the size of Wyoming’s physician workforce grew. The mean age overall and by specialty for most Wyoming physicians in 2016 varied only by a few years, from age 49 to 54 years, with the exception of psychiatrists and “other” surgeons who had average ages of 57 and 58 years, respectively. Overall, 40% of Wyoming’s physicians in 2016 were age 55 or older, with physicians in “other surgery” specialty having the highest percentage (66%) age 55 year or older. The average ages for the overall physicians slightly decreased from 2014 to 2016, with the exception of those in general pediatrics, other surgery, and psychiatry. In 2016, a quarter (25%) of Wyoming’s physicians overall were women, who comprised 35% of the primary care specialties, 42% of obstetrician-gynecologists and 39% of psychiatrists. From 2014 to 2016 the percent of female physicians increased overall, but decreased in general surgery and psychiatry.

DISTRIBUTION

While overall there were more physicians in rural Wyoming in 2016 than in urban areas of the state (627 total physicians in rural compared with 417 in urban), fewer physicians provided direct patient care per 100,000 population in rural compared with urban areas (Figure 2). Figure 3 shows where rural and urban areas are located in Wyoming.

Table 2 details the rural-urban distribution of Wyoming’s physicians, overall and by specialty, and shows their distribution among three sub-rural area types: large rural, small rural, and isolated small rural. On a per capita basis, there was greater rural-urban parity among practicing primary care physicians than for physicians overall (73.5 for urban vs. 60.9 for rural). More primary care physicians per capita were located in the small rural areas of the state than in any other rural area type or in urban areas of Wyoming. Between 2014³ and 2016, urban counties saw

Figure 2: Wyoming physicians* in urban and rural areas per 100,000 population in 2016

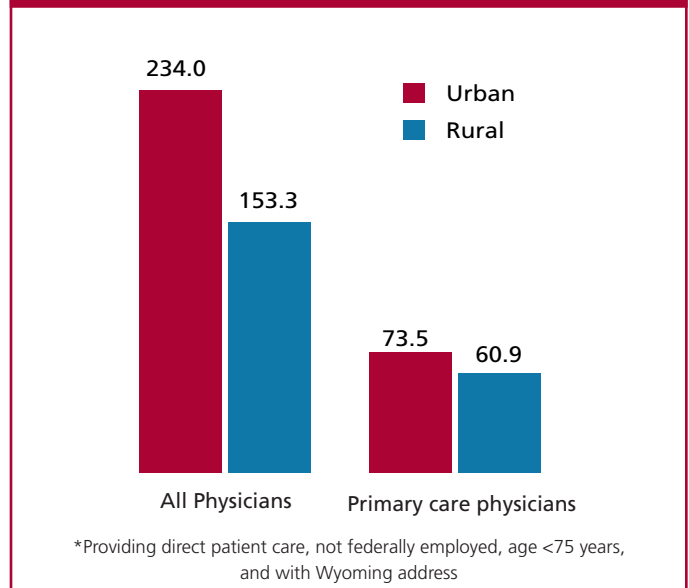
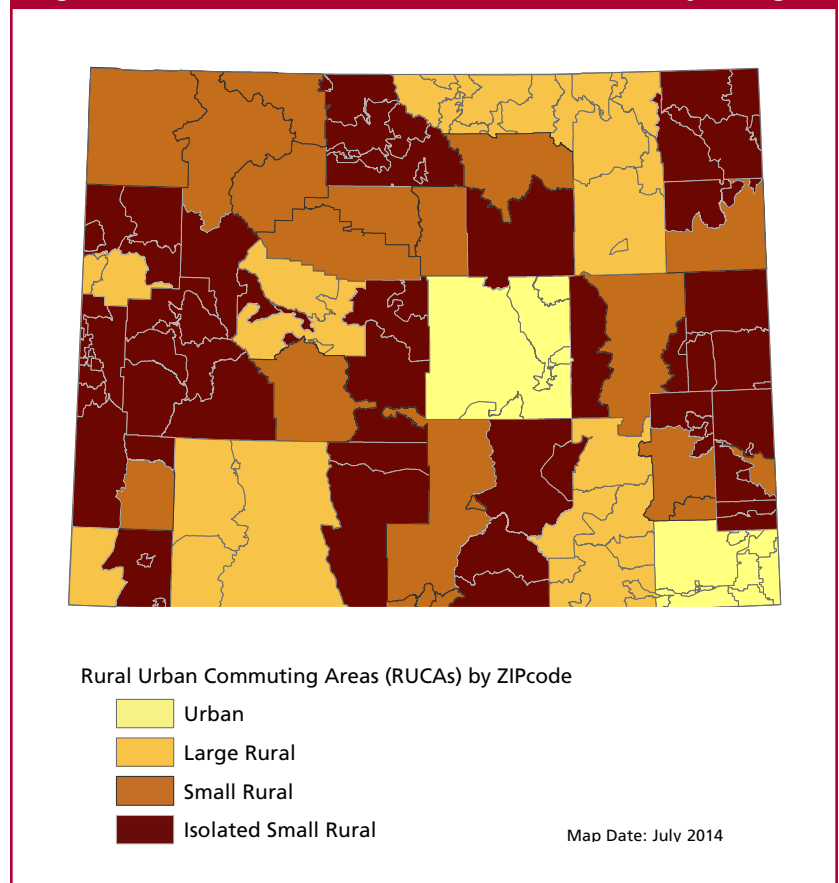


Figure 3. Location of urban and rural areas in Wyoming



higher per 100,000 population growth in the number of physicians compared to rural counties (11% vs. 5%). The number of primary care physicians per 100,000 population in urban counties also grew by a higher rate compared to rural counties (17% versus 7%).

Table 2. Wyoming physicians in urban, rural and sub-rural areas in 2016**

Physicians providing direct patient care*	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	417	234.0	627	153.3	378	171.1	214	192.2	35	45.6
Primary care	131	73.5	249	60.9	125	56.6	102	91.6	22	28.7
Family medicine	91	51.1	163	39.9	65	29.4	79	70.9	19	24.8
General internal medicine	22	12.3	55	13.4	39	17.7	15	13.5	1	1.3
General pediatrics	18	10.1	31	7.6	21	9.5	8	7.2	2	2.6
Surgeons	52	29.2	94	23.0	59	26.7	33	29.6	2	2.6
General surgery	14	7.9	33	8.1	19	8.6	12	10.8	2	2.6
Obstetrics-gynecology	18	10.1	49	12.0	33	14.9	16	14.4	0	0.0
Other surgery	20	11.2	12	2.9	7	3.2	5	4.5	0	0.0
Psychiatrists	22	12.3	19	4.6	12	5.4	7	6.3	0	0.0
Other Specialists	212	119.0	265	64.8	182	82.4	72	64.7	11	14.3

*Not federally employed, age <75 years, in Wyoming

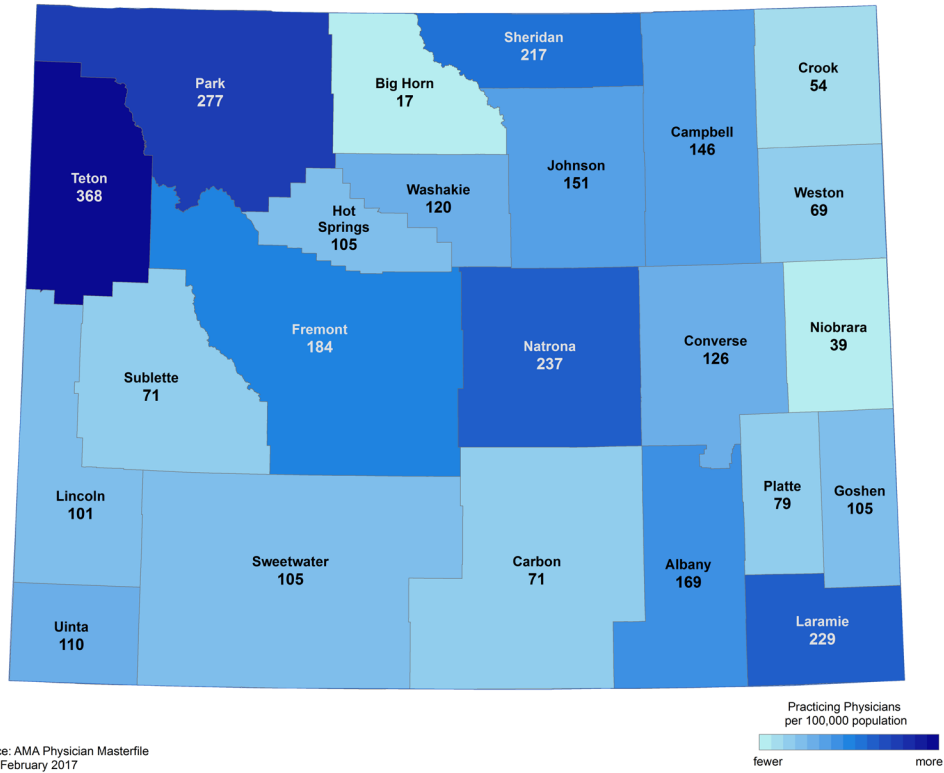
** Rural-urban determined using ZIP code RUCA taxonomy. Overall rural is a combination of the three rural subcategories.

There was large variation among Wyoming's counties in the numbers of overall physicians per capita as well as among the numbers of primary care per capita (Figure 4). 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 high densities of total physicians and primary care specialties compared with the rest of the state. The largely rural counties in the east and south of the state had many fewer physicians per capita. For example, in the eastern county of Niobrara the number of total physicians per 100,000 population was 41 (reflecting the 1 primary care physician identified in the dataset for that county) compared with 247 total and 103 primary care per 100,000 population in rural Park county. The southern county of Carbon had 65 total physicians per 100,000 population and 32 primary care per 100,000 population.

Figure 4: Wyoming physicians per 100,000 population in 2014, by county

All physicians providing direct patient care per 100,000 population



Primary care physicians providing direct patient care, per 100,000 population

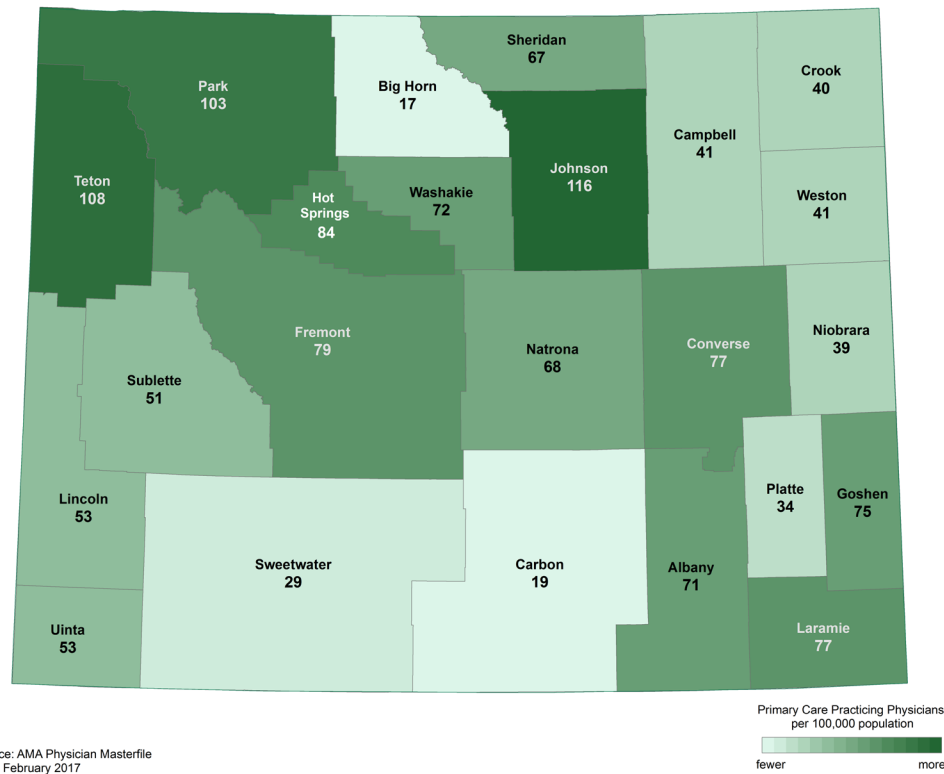
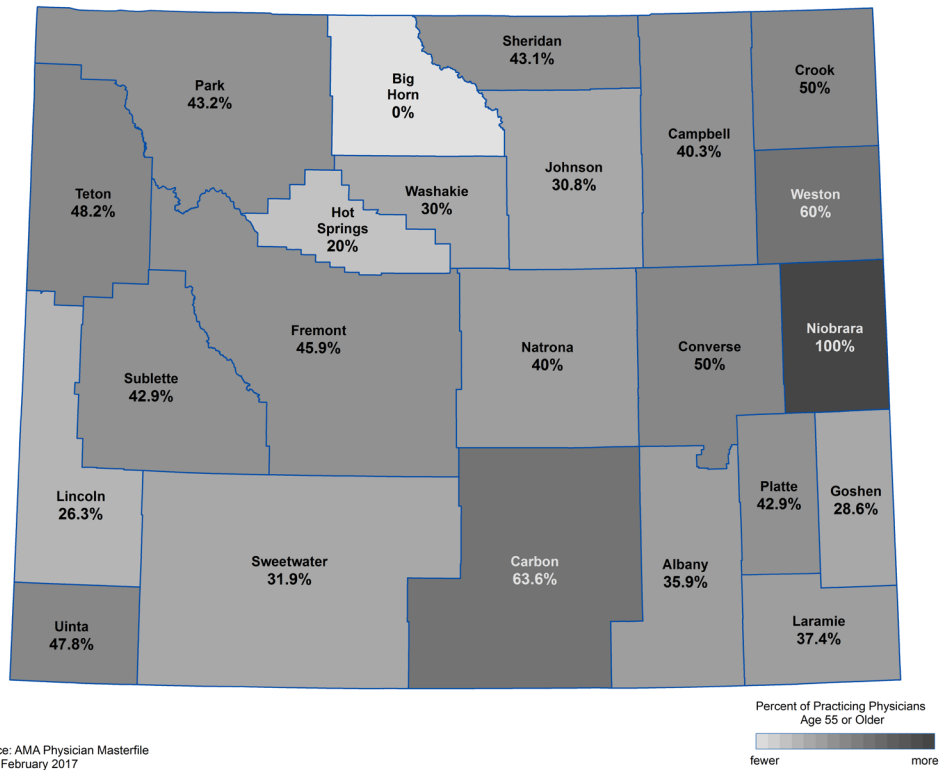


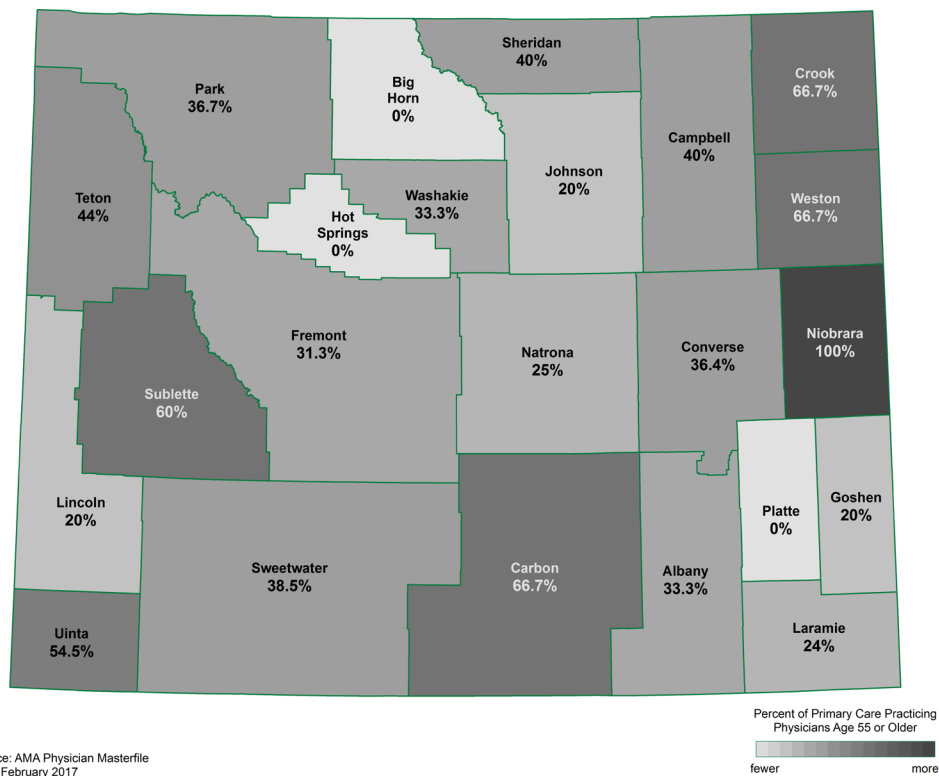
Figure 5: Wyoming physicians age 55 or older in 2014, by county

All physicians age 55 or older providing direct patient care



Data Source: AMA Physician Masterfile
Map Date: February 2017

Primary care physicians age 55 or older providing direct patient care



Data Source: AMA Physician Masterfile
Map Date: February 2017

As shown in Figure 5, three of the counties located in the eastern area of Wyoming (Niobrara, Weston and Carbon) had the highest percentages of overall physicians age 55 and older. More than two thirds of all physicians providing direct patient care in those three counties (all physicians in Niobrara) were age 55 or older in 2016. 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 Niobrara, Weston, Crook, Carbon and Sublette counties.

Eleven percent of Wyoming's physicians completed a residency in Wyoming...and 32% of Wyoming's primary care physicians completed a residency in a WWAMI state...

Table 3: Top 5 medical schools from which Wyoming physicians graduated in 2016*

	State	#	% of physicians who graduated from school
Creighton University School of Medicine	NE	101	9.7%
University of Washington School of Medicine	WA	70	6.7%
University of Utah School of Medicine	UT	59	5.7%
University of Colorado School of Medicine	CO	65	6.2%
A.T. Still University of Health Sciences	MO	25	2.4%

*Among Wyoming physicians in 2014 providing direct patient care, not federally employed, age <75 years

Table 4. Top 5 states where Wyoming physicians completed a residency in 2016*

State	#	% of physicians who completed a residency in the state
WY	112	11.1%
CO	66	6.6%
CA	59	5.9%
TX	68	6.8%
NY	57	5.7%

*Among Wyoming physicians in 2014 providing direct patient care, not federally employed, age <75 years

EDUCATION AND TRAINING

Creighton University School of Medicine, in Nebraska, led the list of medical schools from which Wyoming's physicians graduated, followed by the University of Washington, University of Colorado, and University of Utah Schools of Medicine (Table 3). Eleven percent of Wyoming's physicians completed a residency in Wyoming and smaller percentages completed residencies in Texas, Colorado, California, and New York (Table 4).

As shown in Table 5, about 7% of Wyoming's total practicing physician supply as identified in the AMA Physician Masterfile in 2016 graduated from the University of Washington School of Medicine and about 15% completed a residency in a WWAMI state, including Wyoming. While about 6% of Wyoming's primary care physicians graduated from the University of Washington School of Medicine, about 32% of Wyoming's primary care physicians and 47% of family medicine physicians completed a residency in a WWAMI state, including Wyoming.

Table 5. Wyoming physicians in 2016 who graduated from the University of Washington School of Medicine (UW SOM), and/or completed a residency in Wyoming or in any WWAMI* state

Wyoming physicians providing direct patient care**	Graduated from UW SOM		Completed a residency in WY***		Completed a residency in a WWAMI state	
	#	%	#	%	#	%
Total	70****	6.7%	112	11.1%	148	14.7%
Primary care	24	6.3%	104	28.0%	120	32.3%
Family medicine	14	5.5%	104	41.9%	117	47.2%
General internal medicine	9	11.7%	0	0.0%	3	4.0%
General pediatrics	1	2.0%	0	0.0%	0	0.0%
Surgeons	13	8.9%	1	0.7%	5	3.5%
General surgery	7	14.9%	0	0.0%	2	4.4%
Obstetrics-gynecology	5	7.5%	1	1.5%	1	1.5%
Other surgery	1	3.1%	0	0.0%	2	6.5%
Psychiatrists	2	4.9%	1	2.4%	1	2.4%
Other Specialists	31	6.5%	6	1.3%	22	4.9%

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

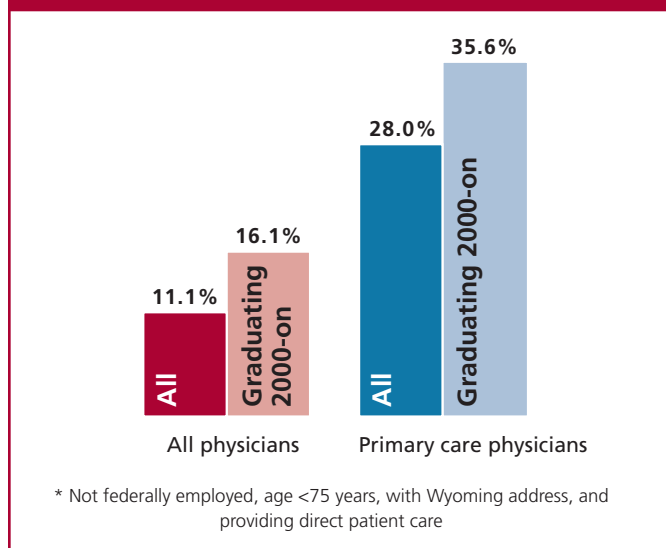
** Not federally employed, age <75 years, in Wyoming

*** Percentages are calculated based on physicians for whom residency state data were available. There were 38 records (3.8%) that were missing residency state and 0 were missing medical school.

**** The number of UW SOM graduates practicing in Wyoming identified from the AMA Physician Masterfile in 2016 is smaller than the number reported by the University of Wyoming (70 versus 83).⁴

Among Wyoming’s physicians who graduated from medical school since 2000, the percentage who completed a residency in Wyoming is higher than for the overall physician workforce (including physicians who completed medical school before 2000) (Figure 6). It is not clear if this indicates a trend toward higher rates of post-residency retention by the more recent physician cohorts compared with older cohorts, or if there is a pattern for some physicians to remain in the state for a few years after completing residencies before migrating to other locations.

Figure 6. Wyoming physicians* in 2016 who completed a residency in Wyoming



SUMMARY AND POLICY IMPLICATIONS

Wyoming is recognized to be a very rural state, and this was borne out by this examination of the distribution of its physician supply using data from the AMA Physician Masterfile. While the number of physicians per capita found in these analyses 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.

Wyoming's physician supply, on a per capita basis, was generally lower as identified through these analyses of the AMA Physician Masterfile than national averages, although there was wide variation among counties. Large differences were apparent between the destination recreation areas in northwest Wyoming compared with rural counties in the east and south. Teton and Park counties (the locations of Yellowstone and Grand Teton National Parks and the ski destinations near Jackson) had 368 and 277 physicians per 100,000 population, respectively, compared with 39 per 100,000 population in Niobrara county, and 71 per 100,000 in Carbon county. An issue for health workforce planning in Wyoming is the finding that counties with some of the lowest per capita supply of physicians, such as Niobrara, Weston and Carbon, were found to have the highest percentages of physicians approaching retirement age (55 years or older).

Some degree of caution should be used in interpreting these findings. Capturing a totally accurate point-in-time description of the workforce is not generally feasible. The physician workforce, like other occupations, is continually changing as providers enter the state (following training and through in-migration) and leave the workforce (through out-migration and retirement). In addition, locum tenens physicians, newly recruited physicians and physicians with addresses in other locations may not be captured in a given supply estimate. Depending on the source of physician supply data and when it was collected, variability in workforce estimates can occur. In a relatively small state like Wyoming, differences in the counts of a few physicians may represent significant percentages of the workforce. Nonetheless, descriptions of the workforce such as represented by this report provide a useful starting point for discussion of strategies to further define and address the state's physician workforce needs.

About 7-8% of Wyoming's total physician supply graduated from the UW SOM where Wyoming contributes to the WWAMI Medical School Program. Medical students from Wyoming have been supported by the state to attend the UW SOM WWAMI program since 1996 and Wyoming WWAMI graduates are committed to practice in the state for 3 years after completing a residency. By 2016, 283 students had entered the WWAMI program and 114 had graduated and completed residency.⁴ 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.

Residency is known to 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.⁵ In 2014, Wyoming ranked 49th among states for retaining physicians who complete a residency in-state, with a 29% retention rate.⁶ The cumulative effect of residency retention found by this study is that 28% of all Wyoming's primary care physicians and 42% of family medicine physicians in 2016 had completed a residency in-state. As was found in the 2014 study of Wyoming's physician workforce,³ this study again showed that a higher percentage of primary care physicians who were more recent medical school graduates (since 2000) completed a residency in-state (36% of the primary care). 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 November, 2016. Changes in physician supply and characteristics for 2014-2016 were compared using 2014 AMA data that was reported in a prior report.³ There were 1,506 total allopathic and osteopathic physicians with Wyoming license records in the dataset. Those selected for these analyses were the 1,044 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. State population data came from the Economic Analysis Division, Wyoming Department of Administration and Information.¹ Rural-urban status was determined using Rural Urban Commuting Area (RUCA) taxonomy,⁷ and the population data for the various rural-urban categories came from a custom-prepared file of selected 2014 population data with ZIP codes cross-referenced to counties.⁸

AUTHORS

Susan M. Skillman, MS, Deputy Director, UW WWAMI CHWS and Associate Director, WWAMI AHEC
Arati Dahal, PhD, Research Scientist, UW WWAMI CHWS

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University of Washington • School of Medicine • Box 354982 • Seattle WA 98195-4982
phone: (206) 685-0402 • fax: (206) 616-4768
<http://depts.washington.edu/ahec/> and <http://depts.washington.edu/uwchws/>