2017-20 Physician Assistant Supply:

Estimates for Washington

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2017-20 Physician assistant supply: Estimates for Washington

Executive summary

This report contains estimates of Washington's PA supply in 2017-20. Physician assistants, or PAs, are an integral part of Washington's health delivery system. A PA is a licensed medical professional with an advanced degree who can provide direct, patient care. While a PA works with a supervising physician, the PA can provide medical care independently.[1] The PA profession began in the 1960s in response to the shortage and uneven distribution of physicians.[2] In Washington, PA licenses were first issued in the early 1970s.

Our data sources and method

We based this data analysis on reports (called Network Adequacy Reports) that health insurance carriers filed with the Washington State Office of the Insurance Commissioner. These reports contain information of individual providers affiliated to one or more provider networks providing direct care in Washington. We matched provider records in the NAR with records in the state's provider license database and the national provider identifiers in the National Plan & Provider Enumeration. In cases where a PA practices at multiple locations, we used a record weighting system that accounts for the different locations without overcounting the PAs.[3]

Here is what we found

- **Overall PA supply increased.** Washington had 3,351 PAs in 2020, an increase from 2,609 in 2017.[4] The current supply means there were 44 PAs per 100,000 population, up from 36 in 2017, with a faster growth pace than the general population.
- **Majority of PAs practice in specialist care.** Based on the designation of primary care PA/specialist care PA, approximately three-fourths of the state's PAs practice in specialist care. [5] The share of specialist PAs grew steadily from 72% (1,884) in 2017 to 76% (2,536) in 2020 while the share of primary care PAs was on the decline in the first three years from 28% (725) in 2017 to 21% (626) in 2019, but increased in 2020 to 24% (815). The specialist PA rate increased by about 2 PAs per 100,000 population each year since 2017, from 26 to 33. The rate of primary care PAs changed little from 10 in 2017 to 11 in 2020.
- **More than half of PAs are women.** More than half of the PAs in Washington are women, and the share of female PAs was on the rise (55% in 2017 and 58% in 2020). This is true also among primary care PAs and specialist PAs. In 2020, women accounted for 61% of primary care PAs and 57% of specialist PAs, with both shares higher than in 2017 (56% and 55%, respectively).
- **Median age of PAs dropped.** The median age dropped from 43 years in 2017 to 41 years in 2020. These numbers were also the same numbers for specialist PA median age change. Primary care PA median age was lower by about one year during this period.

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[1] https://college.mayo.edu/academics/explore-health-care-careers/careers-a-z/physician-assistant/
[2] https://www.ahrq.gov/research/findings/factsheets/primary/pcwork2/index.html
[3] For detailed information on the data sources and method, see the Data Sources and Method section.
[4] 2017 is the first year of the available data used in this report.
[5] See Data Sources and Method section for more details designation of PAs as primary care providers or specialist care providers.

- **Female PAs are younger than male PAs**. Female PAs were younger by about 4-5 years in median age than male PAs. This is true regardless of the PAs' primary/specialist care status. In addition, the gap of median age between specialist PAs and primary care PAs was larger among male PAs than among female PAs. In 2020, male PAs' median age was 44 years for all care, 42 for primary care and 45 for specialist care, compared to female PAs' median age of 40, 39 and 40 in respective categories.
- **Wide variations in PA supplies and characteristics among counties.** Approximately one-third of the state's PAs practice in King County, the state's most populous county. The shares of the state's PAs in the remaining counties are less than 12% each. King County's largest share of the state's total PAs did not translate into the highest PA rate. The highest PA rate was in Chelan County, with 120 PAs per 100,000 population in 2020. At the lower end of the rates, a few counties had rates below 20. Chelan's rate of primary care PAs and specialist PAs were also among highest (60 in both in 2020). The growth in PA rates (overall, primary care, and specialist) was uneven among the counties, with some having a steady increase and others with ups and downs or little change. Percentages of a county's female PAs varied a great deal across the counties, with a 4-year average ranging from 32% in Franklin County to 95% in San Juan County. The 4-year average of PA median age also varied a lot among the counties, which ranged from 39 years in Lewis County to 54 years in San Juan County.
- **PA supplies and characteristics varied among ACHs**. An Accountable Community of Health is a health service region made up of one or more counties. Currently, the state's 39 counties are grouped into nine ACHs. The HealthierHere ACH consisting of King County accounted for the largest share (one-third) of PAs among all ACHs. North Central ACH, which includes Chelan and three other counties, had the highest overall PA rate of all ACHs (except in 2017), at approximately 60 per 100,000 population. North Central ACH's primary care PA rate was also the highest in all four years, at 24 or higher, while the primary care PA rate in other ACHs was below 18. Better Health Together, the ACH located at the northeast corner of the state, had the highest specialist PA rate in 2017-19, at the about 38-40 PAs per 100,000 population. HealthierHere's specialist PA rate, after a steady increase, became the highest (43) in 2020. HealthierHere also had the highest 4-year average share of female PAs (64%), while shares in all three ACHs east of the Cascades were below 50%. The 4-year average of PA median age did not vary much with the lowest of 41 years in SWACH and the highest of 47 in the Olympic Community of Health.

State supply of physician assistants

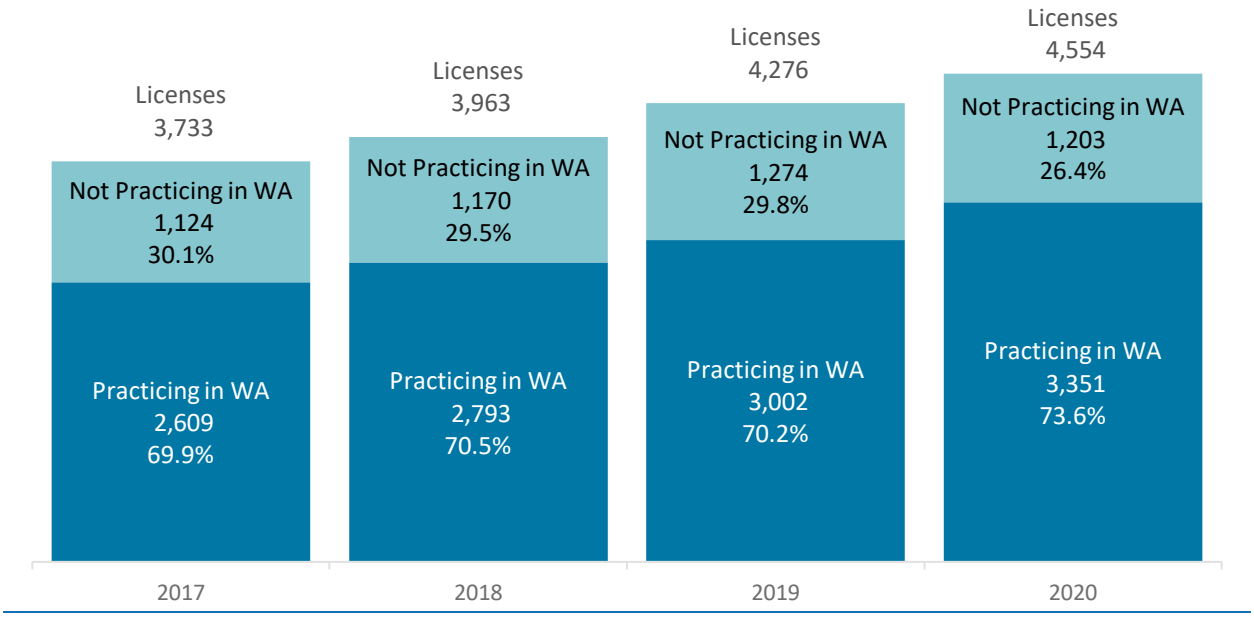
Overall supply

Active PA licenses in Washington increased from 3,733 in 2017 to 4,554 in 2020. However, not all PAs with Washington licenses provided direct care in the state. For those not practicing in the state, some might have stopped practicing since their last license renewal and others might be practicing in other states or taking a break from practicing but chose to keep their licenses active. Approximately 70% of those holding Washington licenses provided direct patient care in the state in 2017-19 and the share increased to 74% in 2020. The number of PAs providing direct patient care in Washington increased steadily from 2,609 in 2017 to 3,351 in 2020, with the largest yearly increase of 349 in 2020. (Figure 1)

Here are the most important takeaways from this graph:

- **We have more than 3,000 PAs practicing in Washington.**
- **The PA supply in Washington has been increasing.**

Figure 1. Physician assistants with Washington licenses, number and percent practicing in Washington: 2017-20

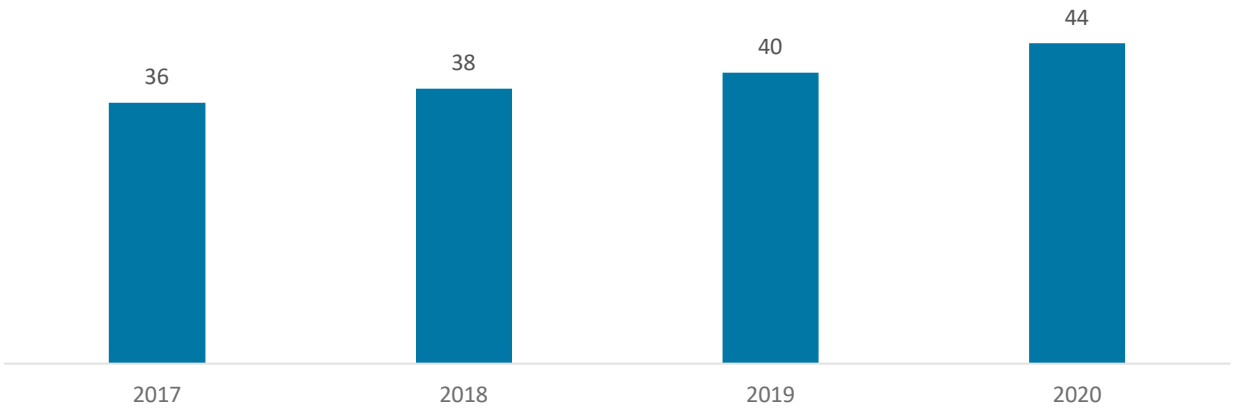


The growth of PA supply in 2017-20 has outpaced the general population growth, especially the growth in 2020. From 2017 to 2019, the number of PAs per 100,000 population increased by two each year from 36 to 40. But in 2020, it increased by four to 44. (Figure 2)

Here are the most important takeaways from this graph:

- **The increase in the number of PAs per 100,000 population means the PA supply in Washington was growing at a pace faster than its population.**

Figure 2. Total practicing physician assistants per 100,000 population: 2019 and 2020



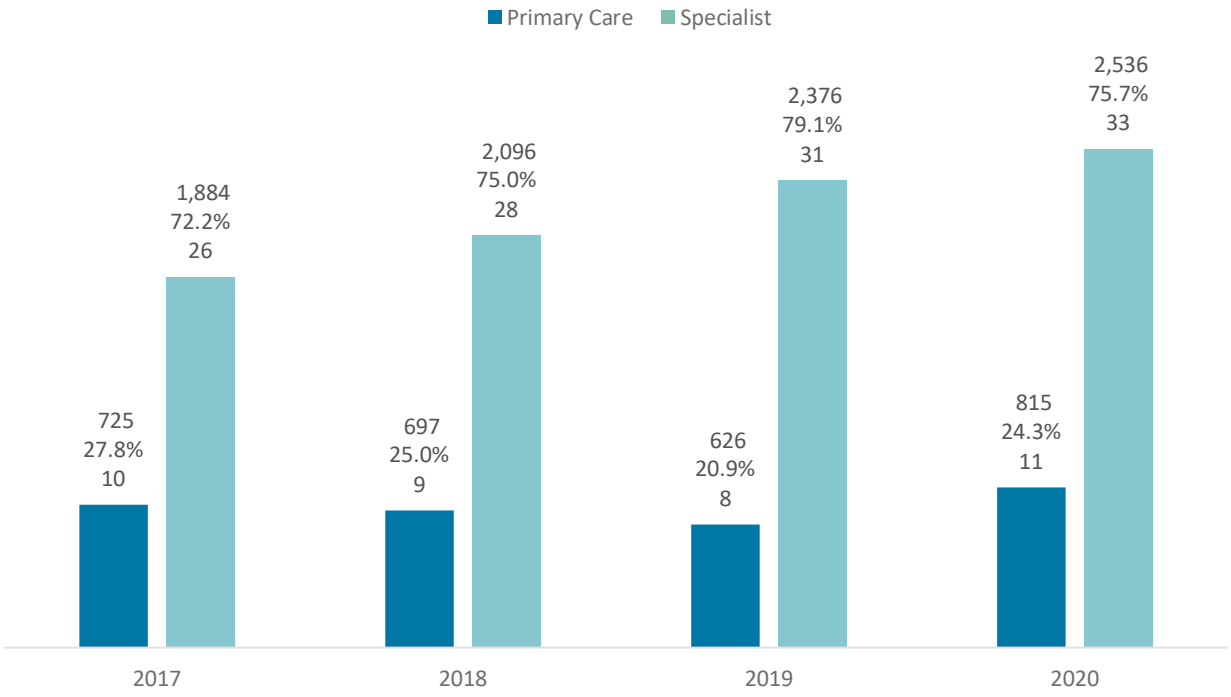
Supplies in primary care and specialist care

Health insurance companies that include PAs in their provider networks designate a PA as a primary care provider or a specialist. According to this designation, approximately 75% of PAs were specialists during the 2017-20 period. In 2019, nearly 80% of the PAs were specialists. The number of specialist PAs grew at a steady pace from 1,884 in 2017 to 2,536 in 2020. However, the number of primary care PAs had two consecutive small decreases from 725 in 2017, to 697 in 2018 and to 626 in 2019, but increased in 2020 to 815, with a net gain of 90 PAs during this 4-year period. The steady rate increase from 26 specialists per 100,000 population in 2017 to 33 in 2020 suggests that this group grew at a pace faster than that of the general population each year. For primary care PAs, the rate changed little (from 10 per 100,000 in 2017 to 11 in 2020), suggesting that its growth was roughly on par with population growth. (Figure 3)

Here is the most important takeaway from this graph:

- **Primary care PAs make up about ¼ of the state's total PA count.**

Figure 3. Number, percent and rate (per 100,000) of primary care and specialist physician assistants: Washington, 2017-20



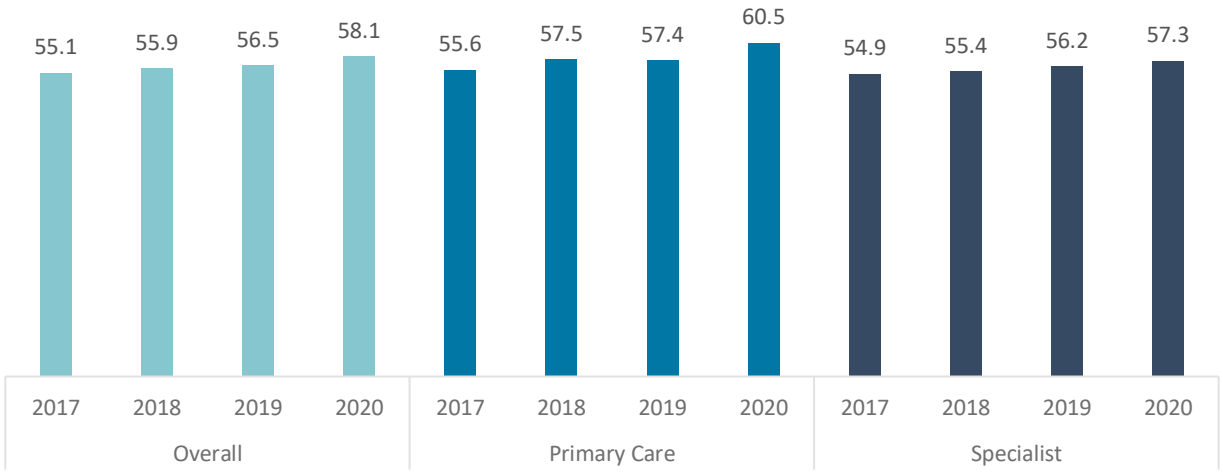
Gender

Overall, more than half of the PAs are women and the share of female PAs was on the rise from 2017 to 2020. In 2017, 55% of the PAs were women. By 2020, the percentage of female PAs increased to 58%. In primary care, the share of female PAs was slightly higher than the share in overall PA supply, while in specialist care, the share of female PAs was slightly lower. In both primary care and specialist care, women accounted for more than half of the PAs. Also, the shares of female PAs in primary care *and* specialist care increased from 2017 to 2020. (Figure 4)

Here is the most important takeaway from this graph:

- **Female PAs make up *more than half* of each group below.**

Figure 4. Percentage of females in overall, primary care and specialist physician assistant supplies: 2017-20



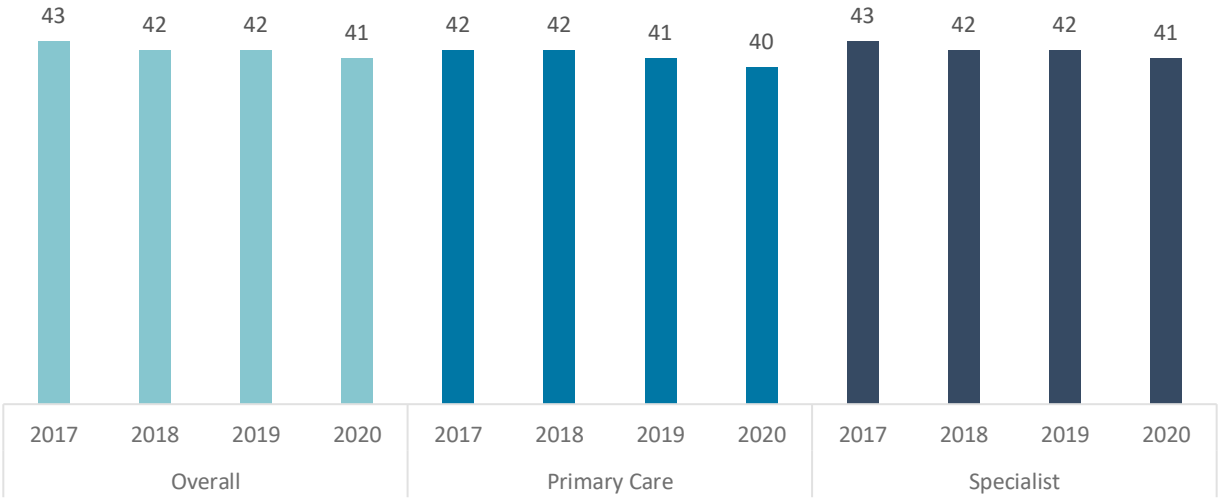
Median age

The median age of Washington's overall PAs was the highest in 2017 at 43 years. It decreased to 41 in 2020. The median age of specialist PAs and its change from 2017 to 2020 were the same as those for the overall PAs. The median age of primary care PAs was generally lower by one year, compared to the median age of the overall PAs, with the highest median age of 42 years in 2017 and the lowest of 40 in 2020. (Figure 5)

Here is the most important takeaway from this graph:

- **The median age of our PAs rests in the lower forties.**

Figure 5. Median age of total, primary care and specialist physician assistants: 2017-20



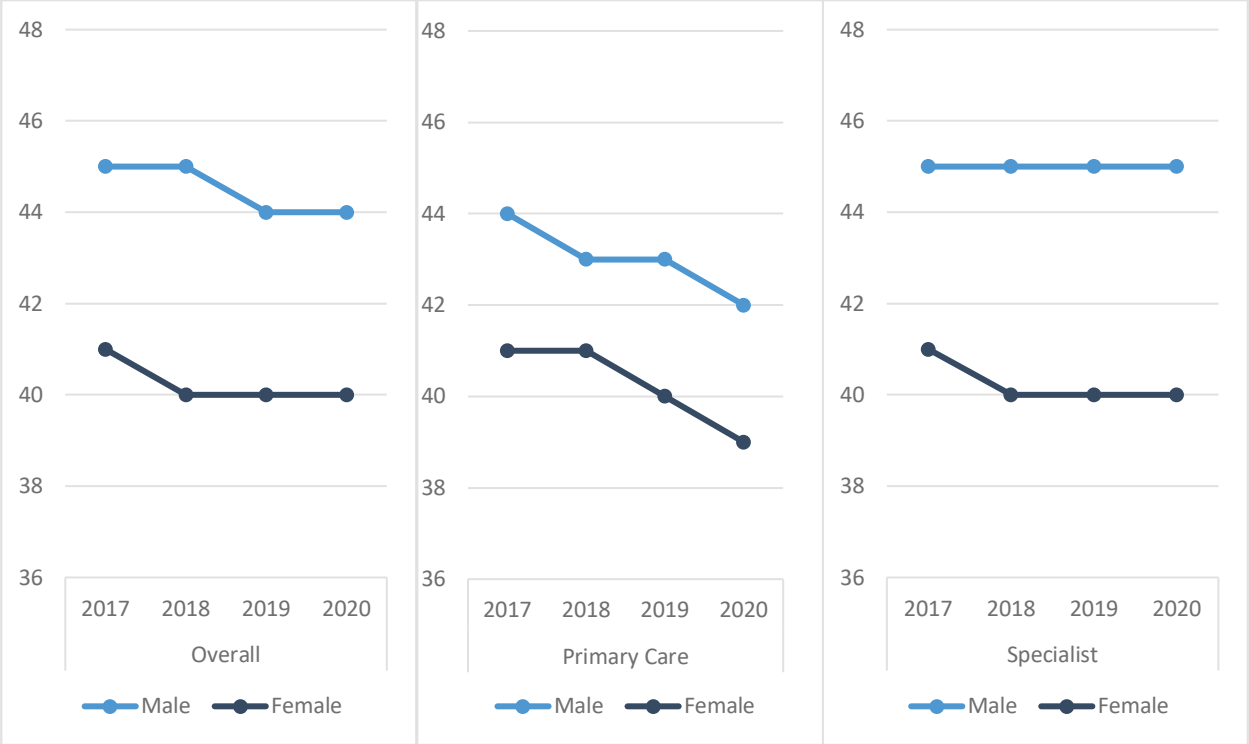
Median age of male and female PAs

Male PAs had a higher median age than female PAs by 4-5 years. This is true across years and among overall, primary care and specialist PAs. For male PAs, their median age overall was 45 in both 2017 and 2018 and decreased slightly to 44 in 2019 and 2020. Male primary care PAs' median age decreased from 44 in 2017 to 43 in 2018 and 2019, and then to 42 in 2020. The median age of male specialist PAs remained at 45 in all four years. For female PAs, their median age was lower in 2020 than in 2017 regardless of their primary care/specialist status. Among female overall and specialist PAs, the decline in median age from 41 to 40 occurred in 2018 and there was no change from 2018 to 2020. Whereas, among female primary care PAs, the decline in median age did not take place until 2019, from the previous median age of 41 to 40. It was followed by another decline in 2020 to 39. (Figure 6)

Here is the most important takeaway from this graph:

- **Female PAs have a lower median age than male PAs in the state.**

Figure 6. Median age of overall, primary care and specialist physician assistants by gender: Washington, 2017-20



County supplies of physician assistants

Overall supply

The share of Washington's PAs practicing in the most populous county (King) was the largest and it grew over time. It increased from 31.7% in 2017 to 34.8% in 2020. The distant second largest share in 2017 was 11.4% in Spokane County. Spokane's share underwent a consecutive decline, though, and dropped to 9.4% by 2020. Pierce County had the third largest share of 10% in 2017 which also dropped to about 9% in the next two years, but then increased by 2 percentage points to 11.3% in 2020 and became the second largest share in that year. Clark County and Snohomish County had the fourth and fifth largest shares of PAs in 2017 (7.7% and 7.3% respectively), but the shares in both counties were lower in 2020 (6.4% and 6.9%, respectively).

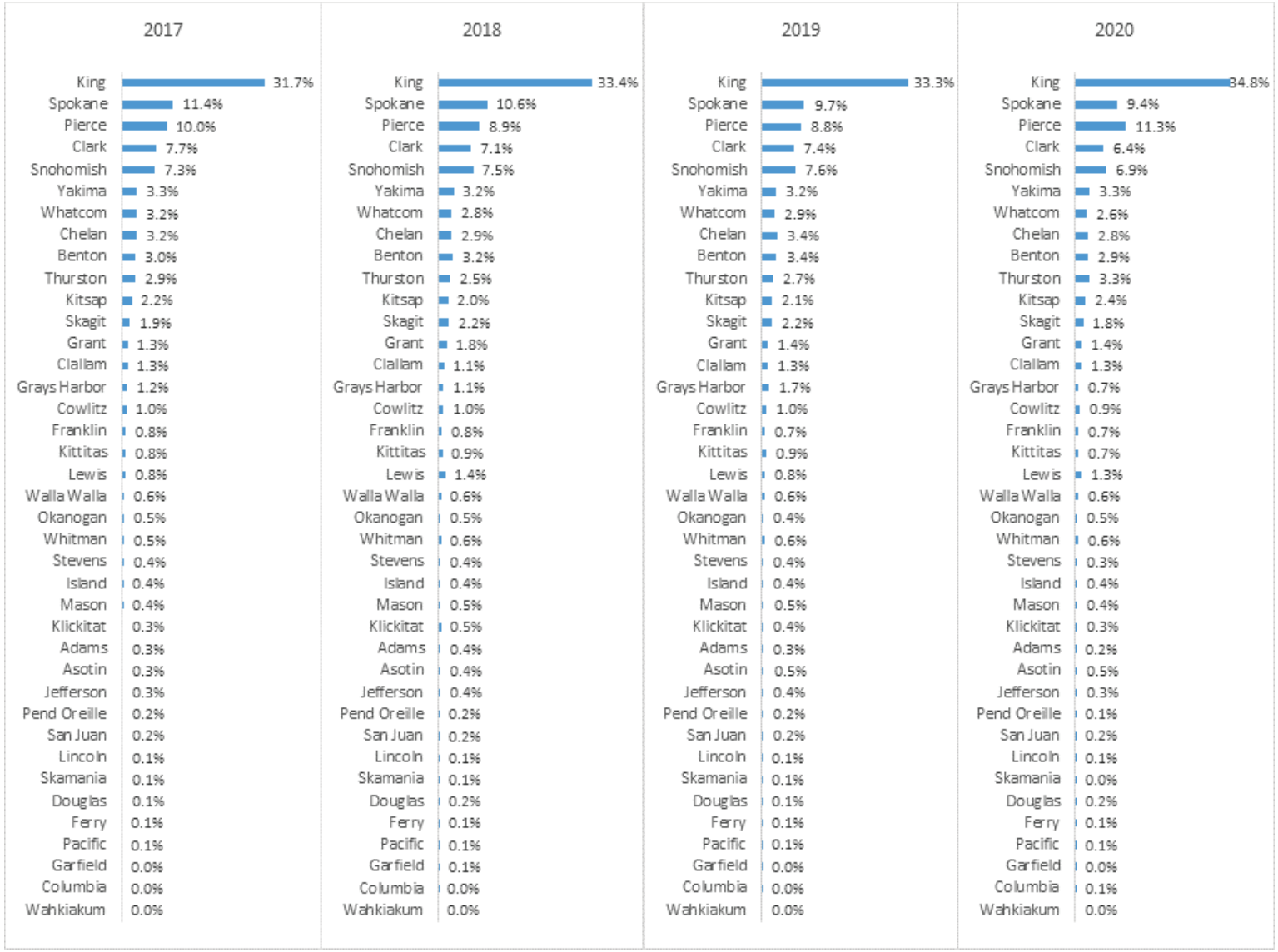
The five counties mentioned above had the state's largest county populations, totaling 65.5% of the state's population in 2020. The combined share of PAs in these five counties was slightly larger, at 68.1% in 2017 and 68.9% in 2020.

The next group of 11 counties each had a share between 1% and 3.3% in 2017 and the shares largely remained in that range in the next three years. In the remaining 23 counties, the share was less than 1% in 2017 and, with exception of Lewis County, it remained below 1% in 2020. (Figure 7)

Here is the most important takeaway from this graph:

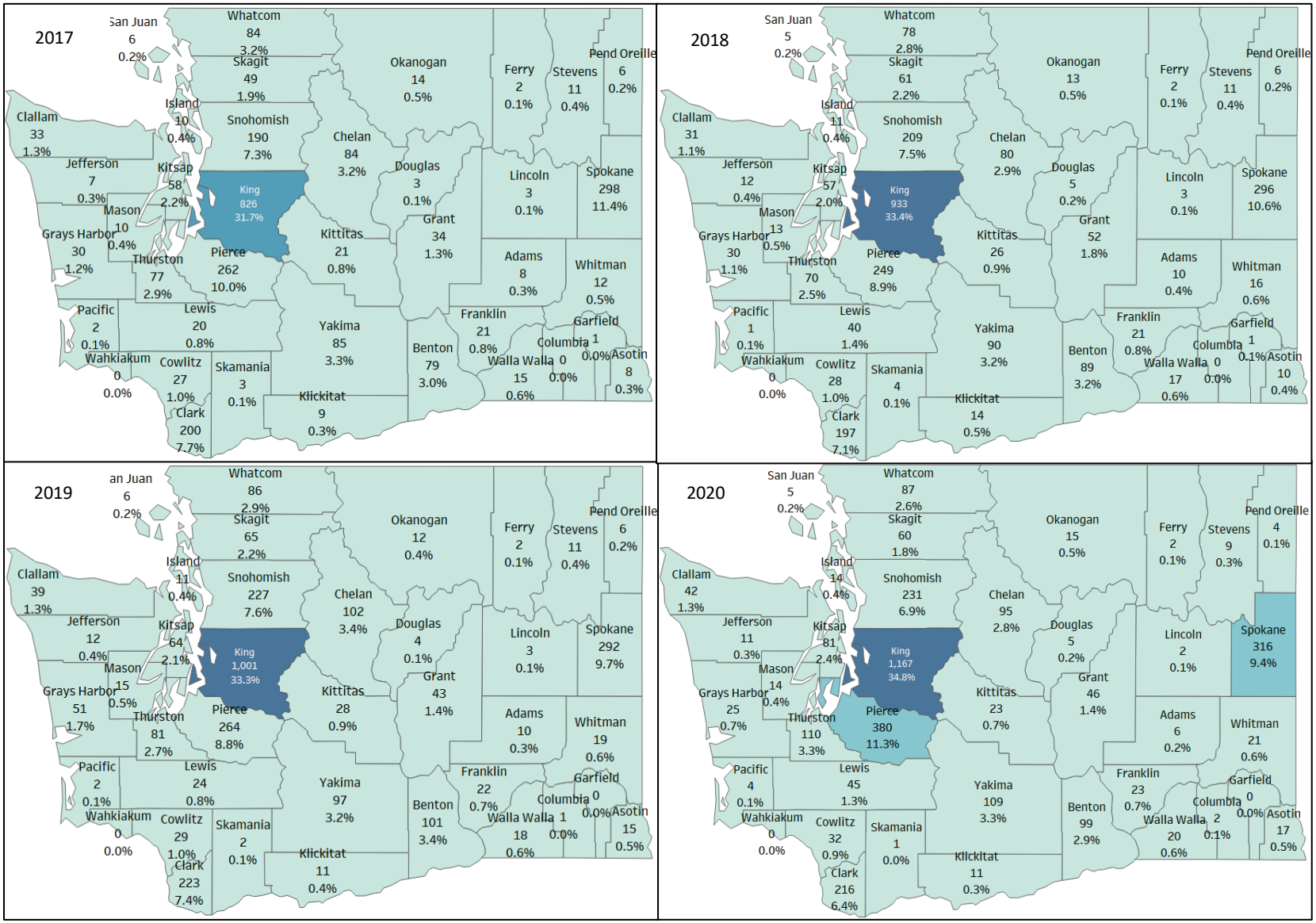
- **About 1/3 of the PAs who practice in Washington practice in King County.**

Figure 7. Percentage of state total PAs: Counties, 2017-20
(sorted by 2017 distribution)
See Table 2 in the appendix for an accessible version of this data.



Map 1. Number and percent of physician assistants: Counties, 2017-20

See Table 2 in the appendix for an accessible version of this data.



Number of PAs per 100,000 population

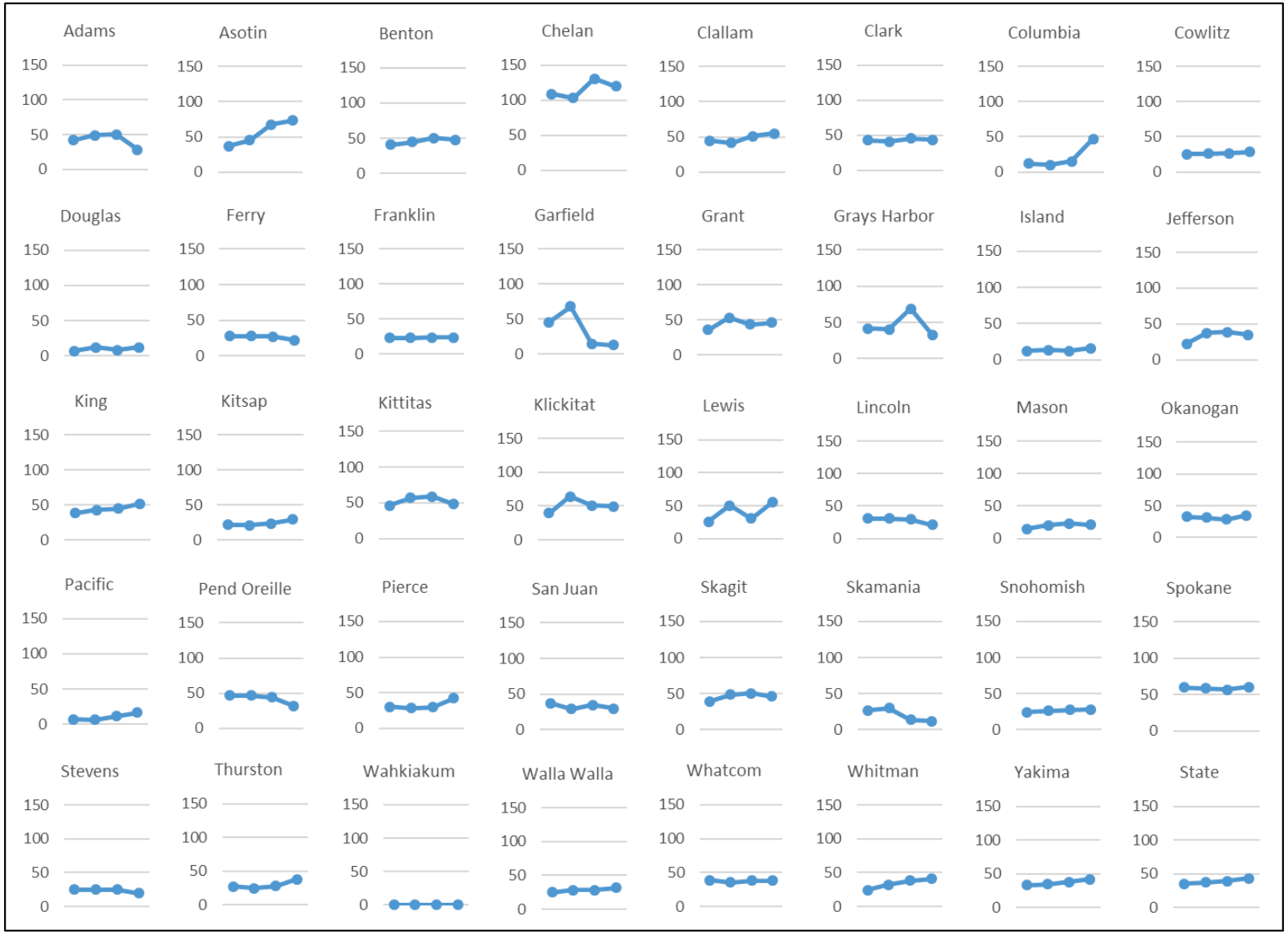
Although the populous counties had the largest shares of the state's PA supply, the PA rates of the counties were not necessarily proportionate to the county populations. Statewide, the PA rate increased each year during 2017-20, but it was below 50 PAs per 100,000 population. Among the five largest counties, only Spokane's PA rate was above 50 in all four years.

The highest rate in all four years was in Chelan County, whose rate was always above 100. At its highest, Chelan County's rate reached 130 in 2019, only to drop to 120 in 2020 which was still higher than the rate in any other county in any of the four years. A few counties underwent a steady, though gradual growth in their PA rates from 2017 to 2020. These include Asotin, King, Walla Walla, Whitman and Yakima. A few other counties had rates that were lower than 20 in all four years. These include Douglas, Island, Pacific and Wahkiakum. Wahkiakum was the only county with no PA in any of the four years. (Figure 8)

Here is the most important takeaway from this graph:

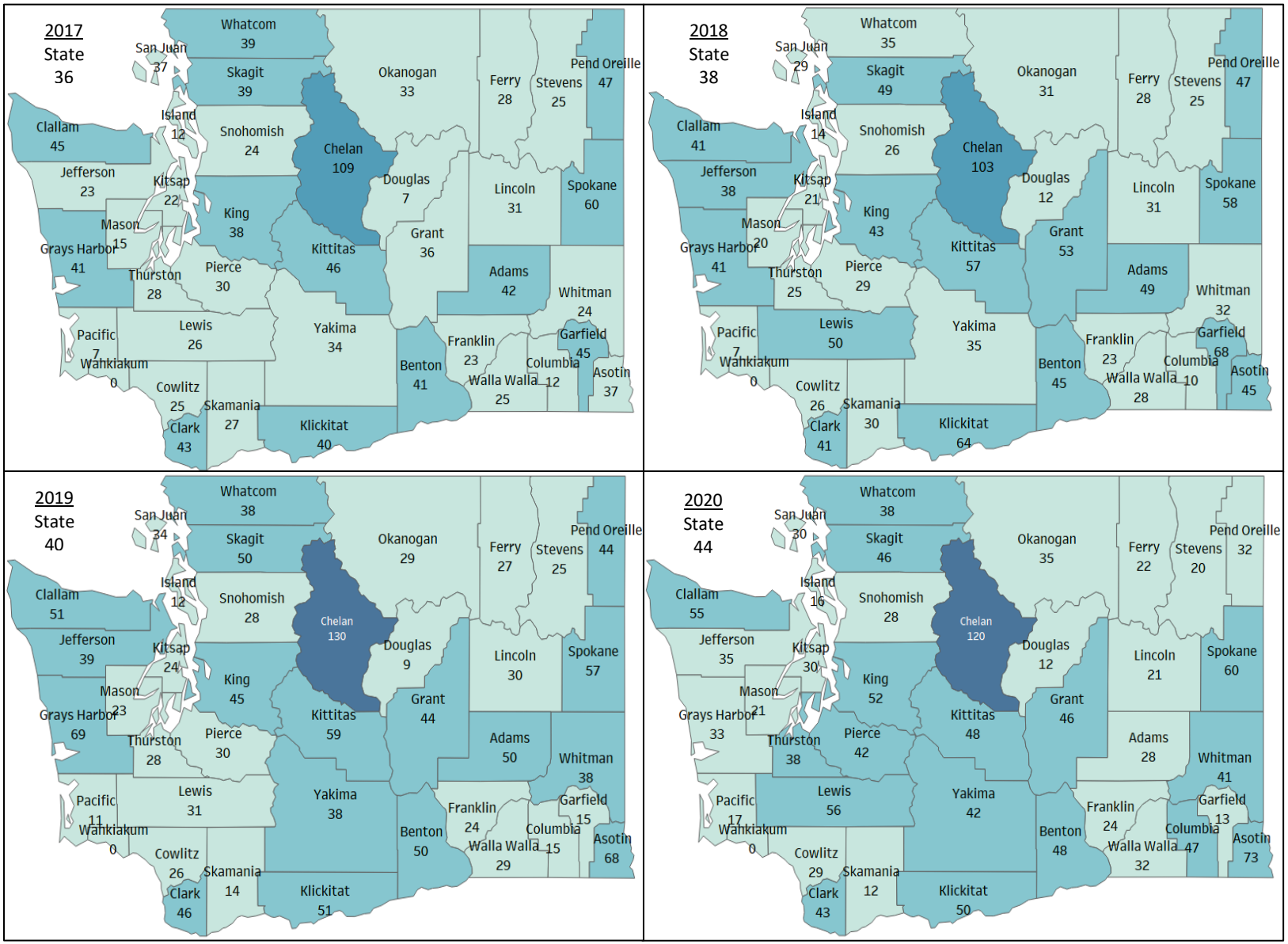
- **Chelan County has the highest overall PA rate in all four years.**

Figure 8. Number of physician assistants per 100,000 population: Counties, 2017-20
See Table 3 in the appendix for an accessible version of this data.



Map 2. Number of physician assistants per 100,000 population: Counties, 2017-20

See Table 3 in the appendix for an accessible version of this data.



Number of primary care PAs per 100,000 population

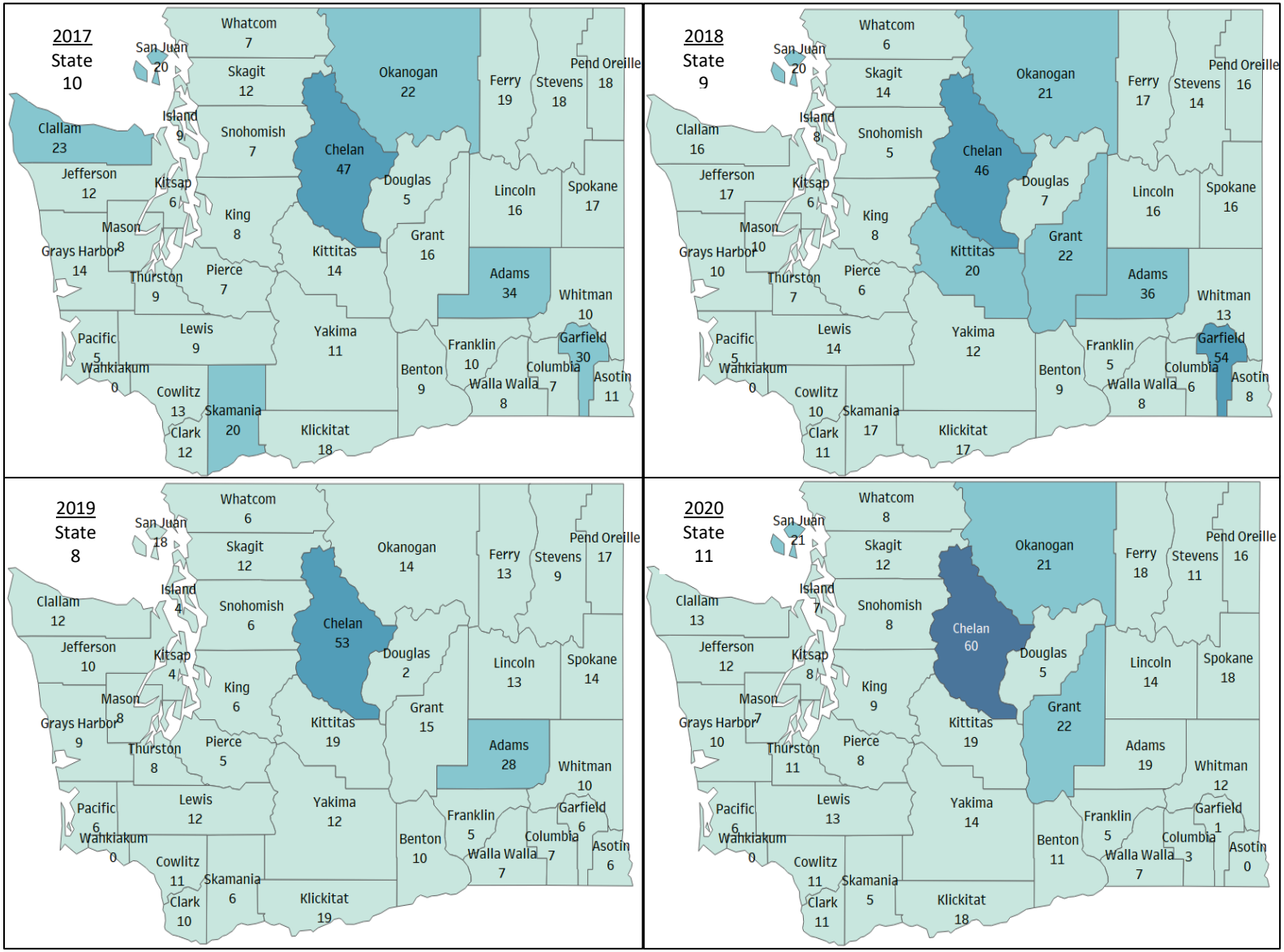
Statewide, the primary care PA rate changed little from 2017 to 2020. For most counties, that was the case as well. However, in three counties (Adams, Asotin and Skamania), the primary care PA rate declined in each consecutive year. In Garfield County, the primary care PA rate had an initial increase from 2017 to 2018, but it was followed by two consecutive declines. The decline in Garfield County's primary care PA rate from 54 PAs per 100,000 population in 2018 to 1 in 2020 was the largest decline of all counties. Chelan's rate around 50 PAs per 100,000 population was the highest of all counties in all four years except in 2018. (Figure 9)

Here is the most important takeaway from this graph:

- **Chelan County has the highest primary care PA rate for three out of the last four years.**

Figure 9. Number of primary care physician assistants per 100,000 population: 2017-20, Counties
See Table 3 in the appendix for an accessible version of this data.

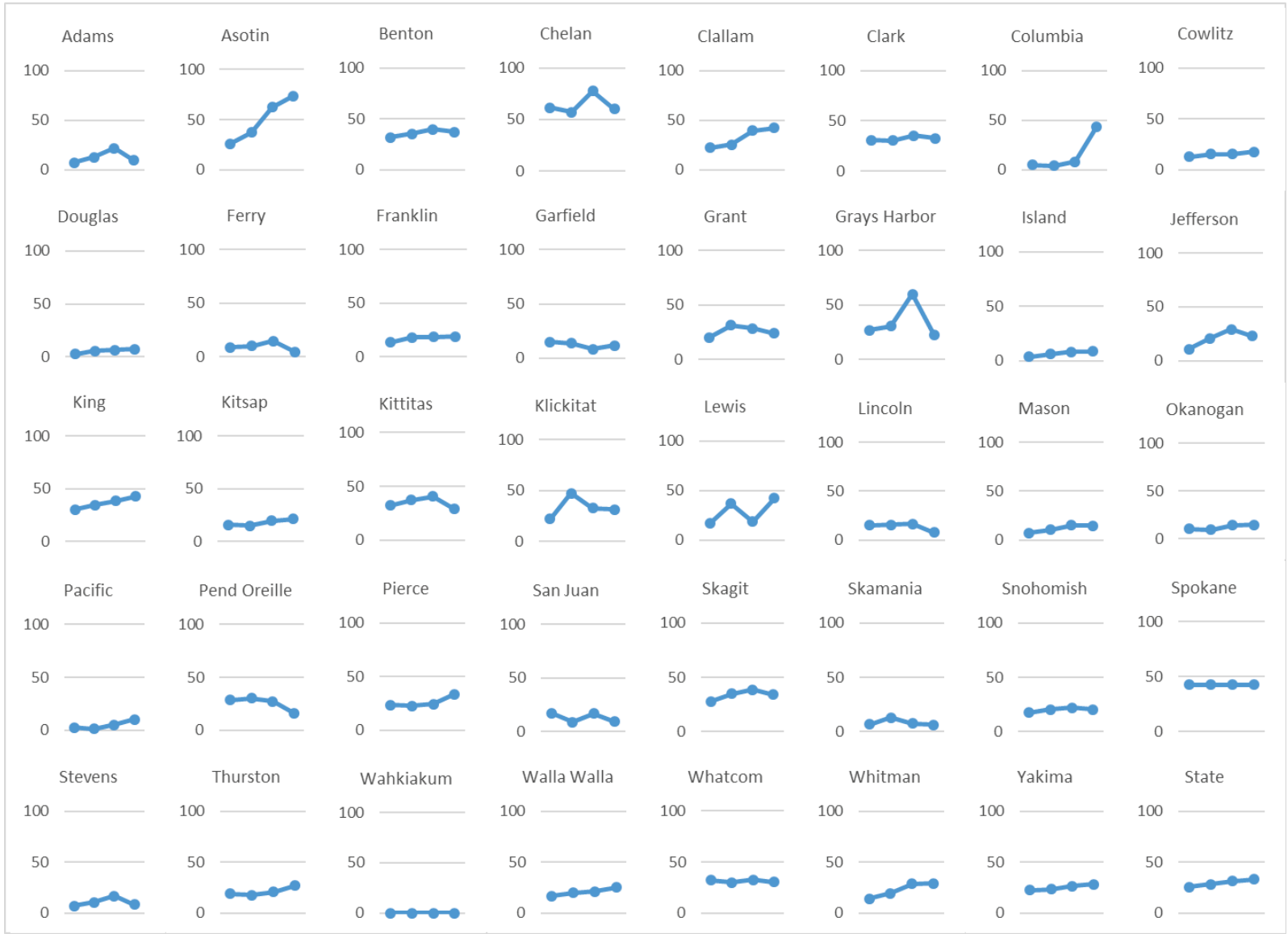
Map 3. Number of primary care physician assistants per 100,000 population: 2017, Counties
See Table 3 in the appendix for an accessible version of this data.



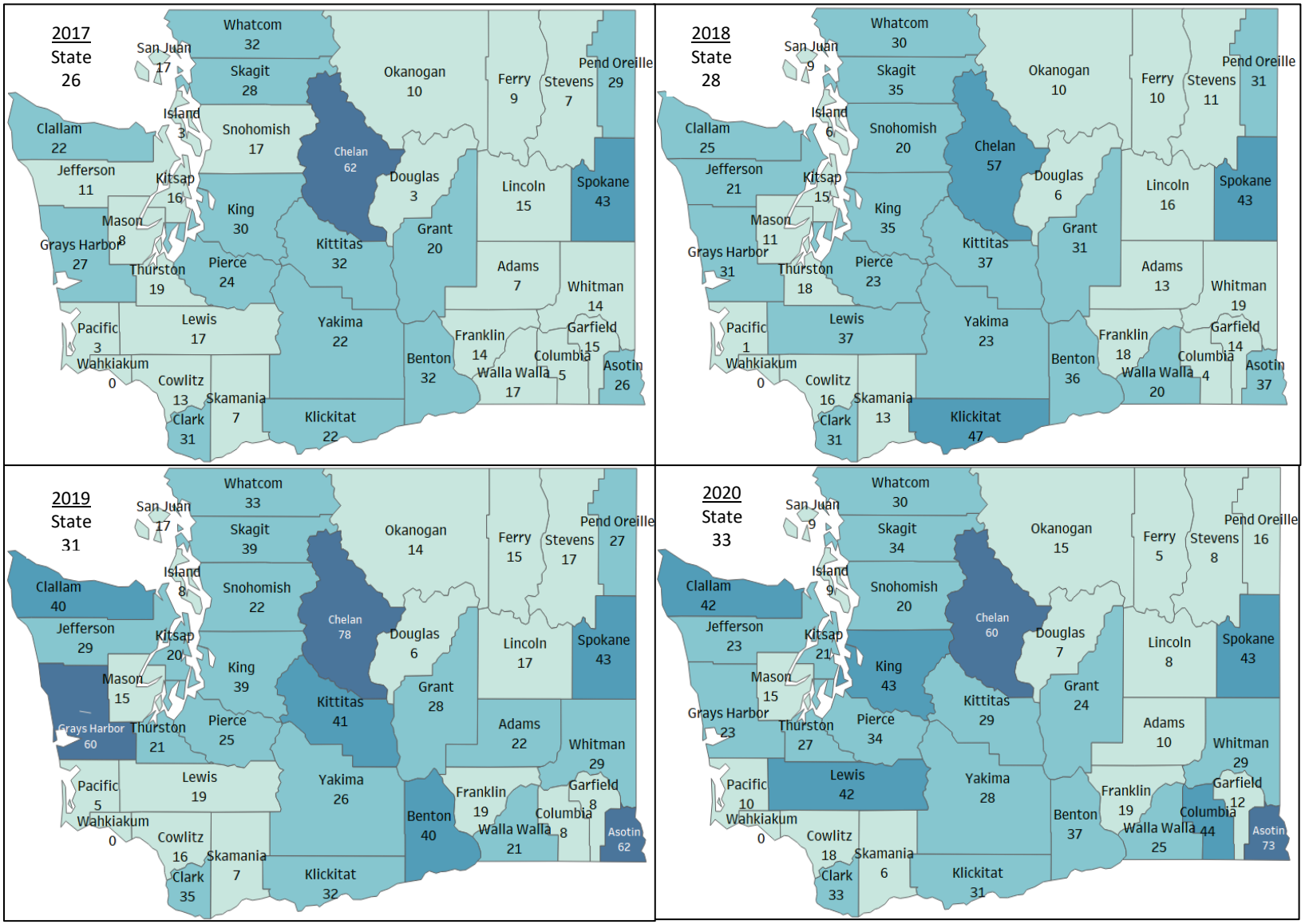
Number of specialist PAs per 100,000 population

The supply of specialist PAs per 100,000 population in the state grew from 2017 (26) to 2020 (33), at a pace higher than that of the general population. That was also the case for nine counties, which included King and Yakima. In addition, more than two-thirds of the counties (27 out of 39) had a PA rate in 2020 that was higher than their rates in 2017. The rate increase in Asotin County from 26 in 2017 to 73 in 2020, with a net gain of 47, was the largest of all counties. Asotin County's rate of 73 in 2020 was also the highest of all counties in all four years. The largest decrease occurred in Grays Harbor County. Its rate per 100,000 decreased by 37 dropping from 60 in 2019 to 23 in 2020. (Figure 10)

Figure 10. Number of specialist physician assistants per 100,000 population: 2017-20, Counties
See Table 3 in the appendix for an accessible version of this data.



Map 4. Number of specialist physician assistants per 100,000 population: 2017-20, Counties
See Table 3 in the appendix for an accessible version of this data.



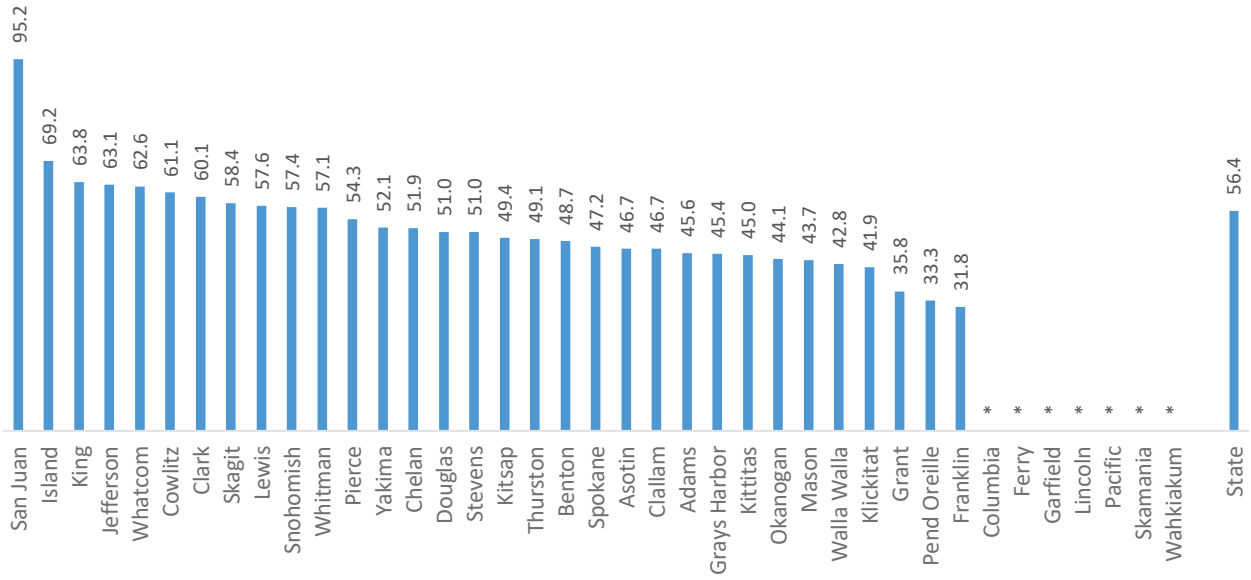
Percentage of female PAs

At the state level, women made up the majority of the PA workforce. At the county level, however, there was wide variation in PA gender makeup. The 4-year average percentage of female PAs in each county in 2017-20 showed that it ranged from 32% (Franklin County) to 95% (San Juan County), with only 11 out of the 32 counties with available estimates showing a share above the state average of 56.4%. (Figure 11)

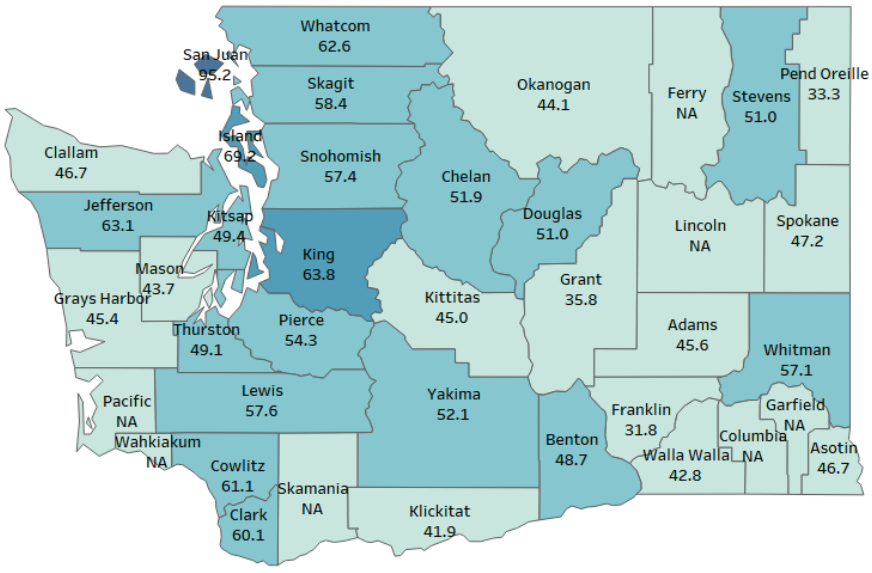
Here is the most important takeaway from this graph:

- **The average 4-year percentage of female PAs in each county varied widely from 32% to 95%.**

Figure 11. Average percentage of female physician assistants in 2017-20: Counties



Map 5. Average percentage of female physician assistants in 2017-20: Counties
See Table 4 in the appendix for an accessible version of this data.



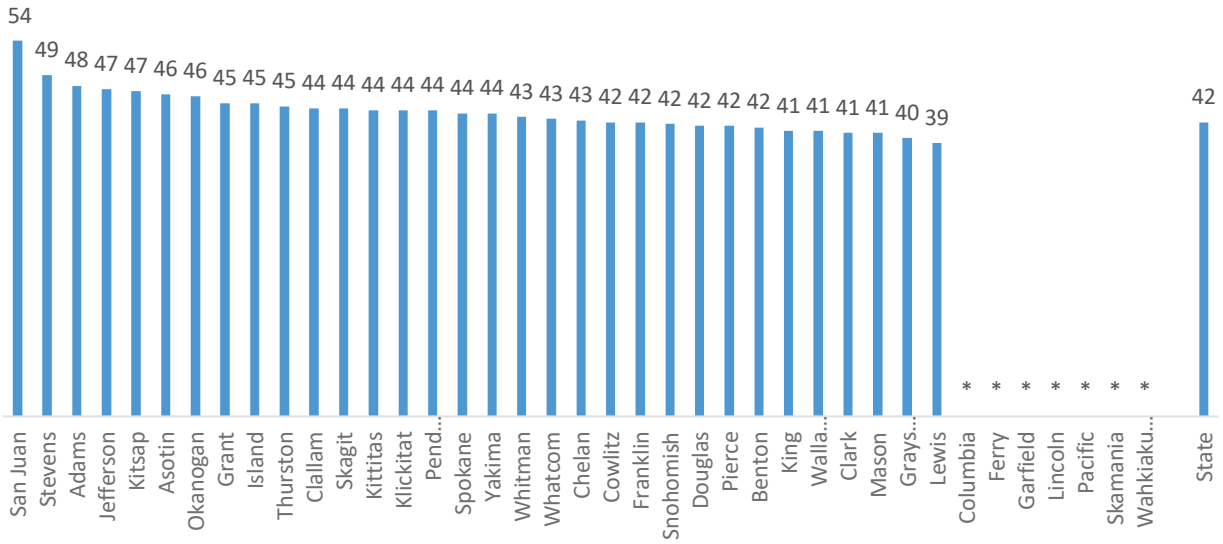
Median age

The average median age of PAs in 2017-20 ranged from 39 years (Lewis County) to 54 years (San Juan County) among the counties, with the statewide average at 42 years. In four of the five largest counties (Clark, King, Pierce and Snohomish), the average median age was 42 years or lower. (Figure 12)

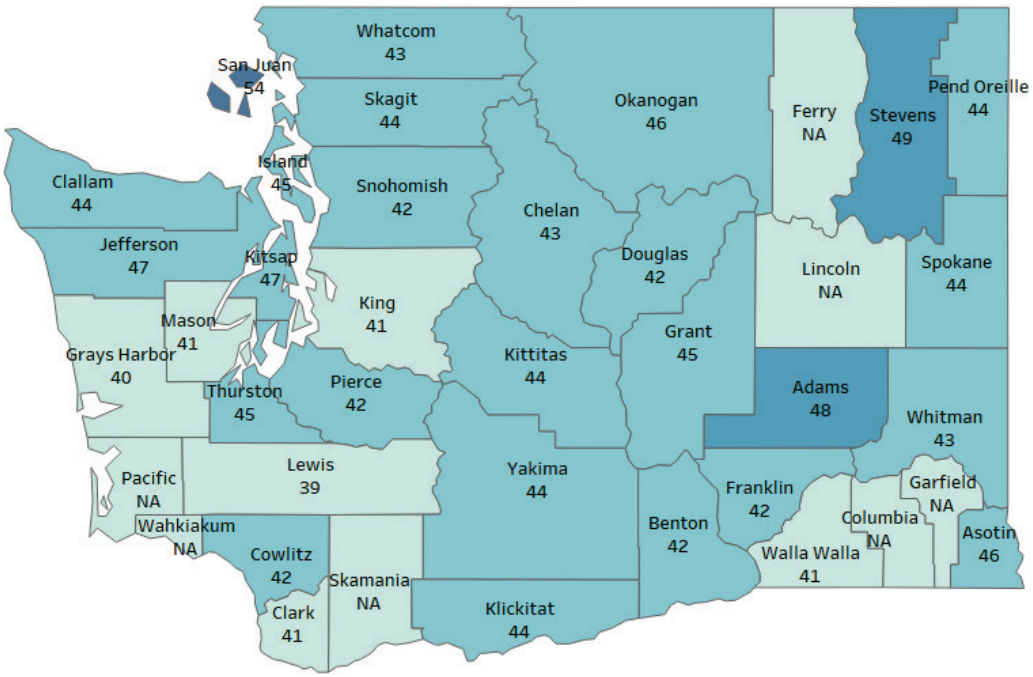
Here is the most important takeaway from this graph:

- **The average 4-year median age of PAs at the county level varied from 39 to 54 years.**

Figure 12. Average median age of physician assistants in 2017-20: Counties



Map 6. Average median age of physician assistants in 2017-20: Counties
See Table 4 in the appendix for an accessible version of this data.



ACH supplies of physician assistant

An Accountable Community of Health or ACH is a regional coalition consisting of representatives from a variety of sectors, working together to improve population health. Each ACH represents a county or a group of adjacent counties. The nine ACHs, with the counties in each, are:[6]

1. Better Health Together (Adams, Ferry, Lincoln, Pend Oreille, Spokane and Stevens)
2. Cascade Pacific Action Alliance (Cowlitz, Grays Harbor, Lewis, Mason, Pacific, Thurston and Wahkiakum)
3. Elevate Health (Pierce)
4. Greater Columbia ACH (Asotin, Benton, Columbia, Garfield, Franklin, Kittitas, Walla Walla, Whitman and Yakima)
5. HealthierHere (King)
6. North Central ACH (Chelan, Douglas, Grant and Okanogan)
7. North Sound ACH (Island, San Juan, Skagit, Snohomish and Whatcom)
8. Olympic ACH (Clallam, Jefferson and Kitsap)
9. SWACH (Southwest Washington ACH) (Clark, Klickitat and Skamania)

Overall supply

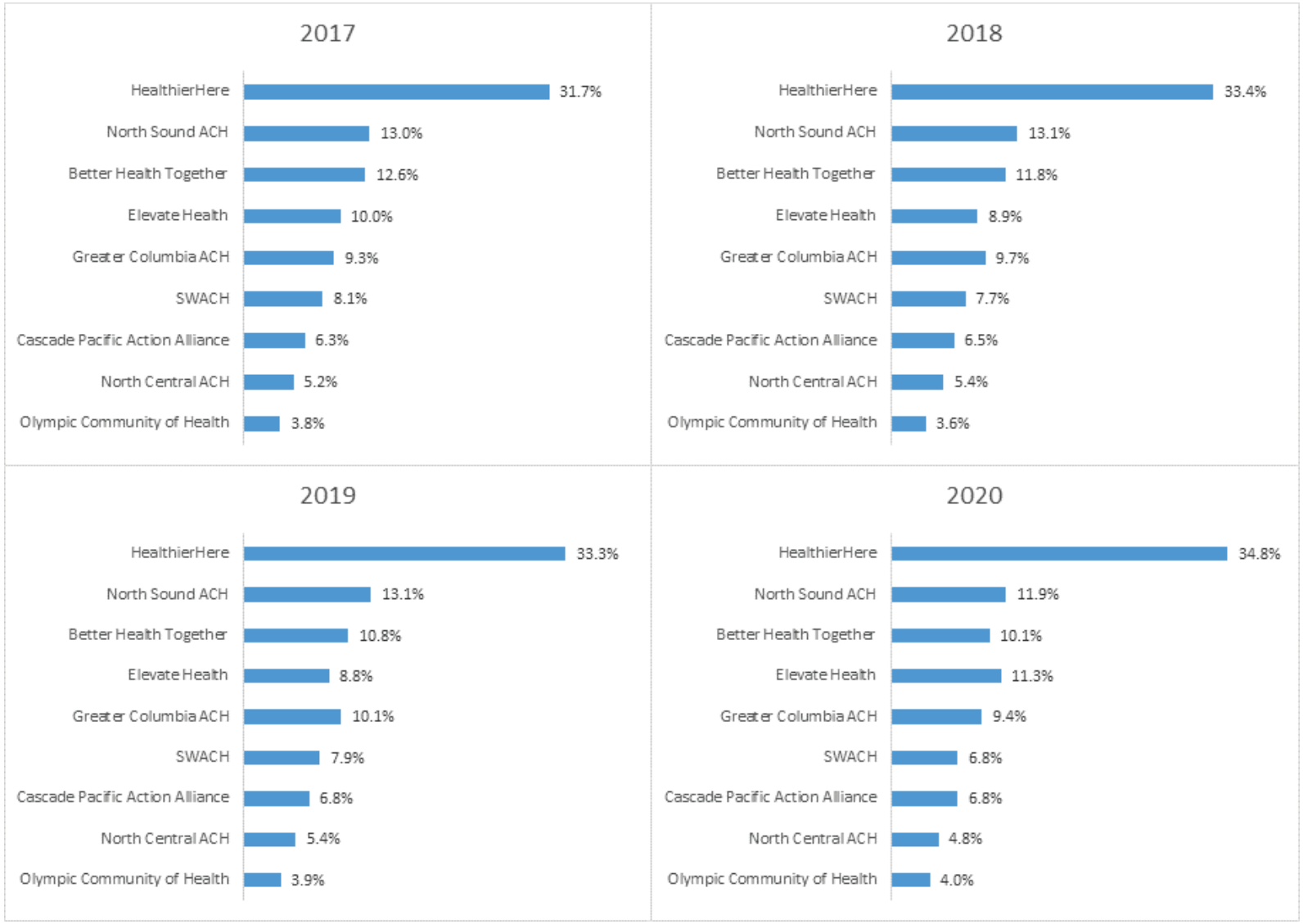
HealthierHere had the largest share of PAs of all ACHs during 2017-20. Its share of approximately one-third of the state's total was more than 2.5 times as large as the second and third largest shares in North Sound ACH and Better Health Together, respectively. The remaining six ACHs had a share of less than 10% each, with the lowest share of 3.8% in Olympic Community of Health. (Figure 13)

Here is the most important takeaway from this graph:

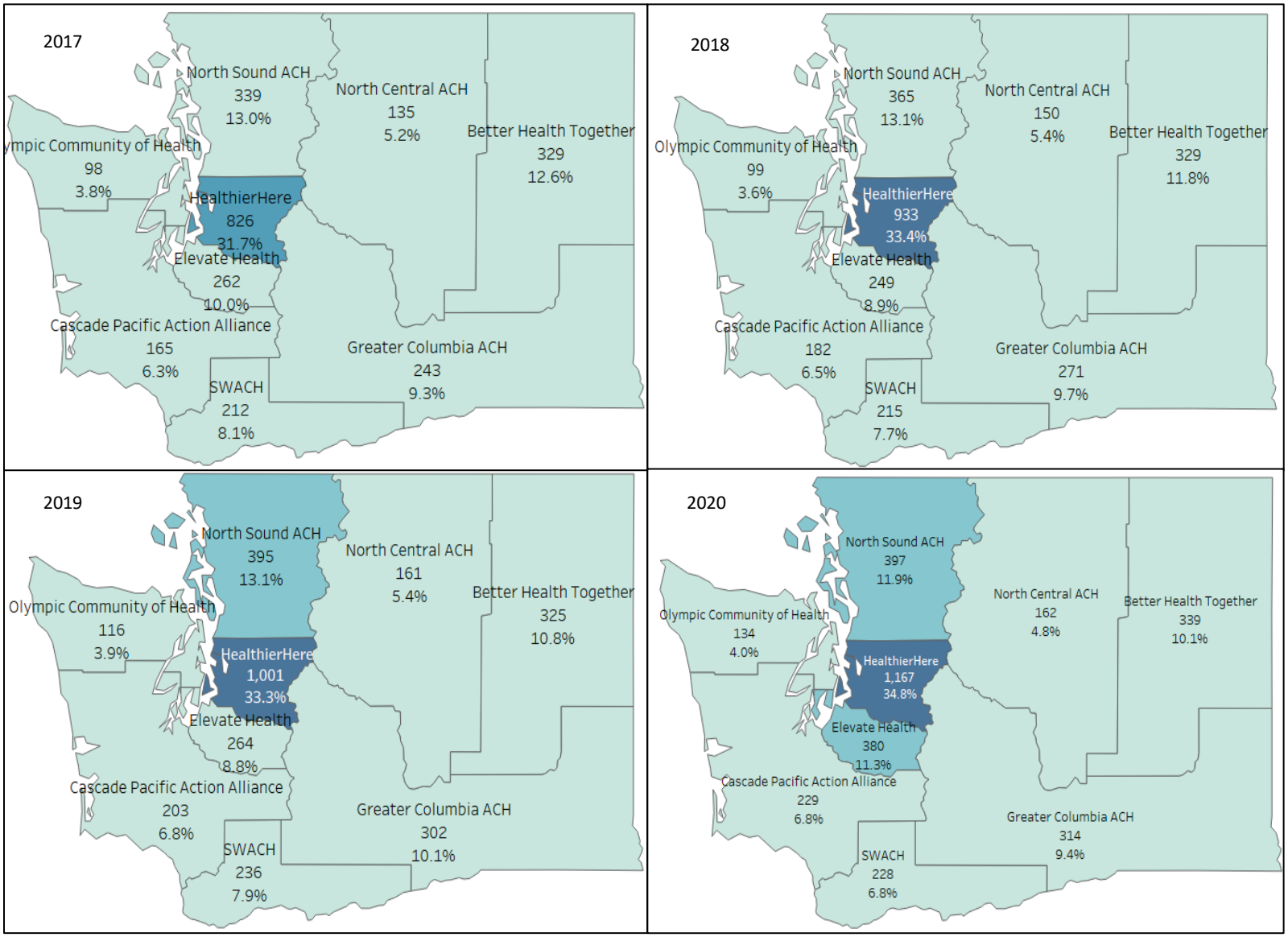
- **The HealthierHere's PAs account for 1/3 of the state's total PAs.**

[6] See https://www.hca.wa.gov/assets/program/achfactsheet.pdf.

Figure 13. Share of state total physician assistant supply in 2017-20: ACH
(sorted by 2017 distribution)
See Table 5 in the appendix for an accessible version of this data.



Map 7. Number and percent of physician assistants: ACH regions, 2017-20
See Table 5 in the appendix for an accessible version of this data.



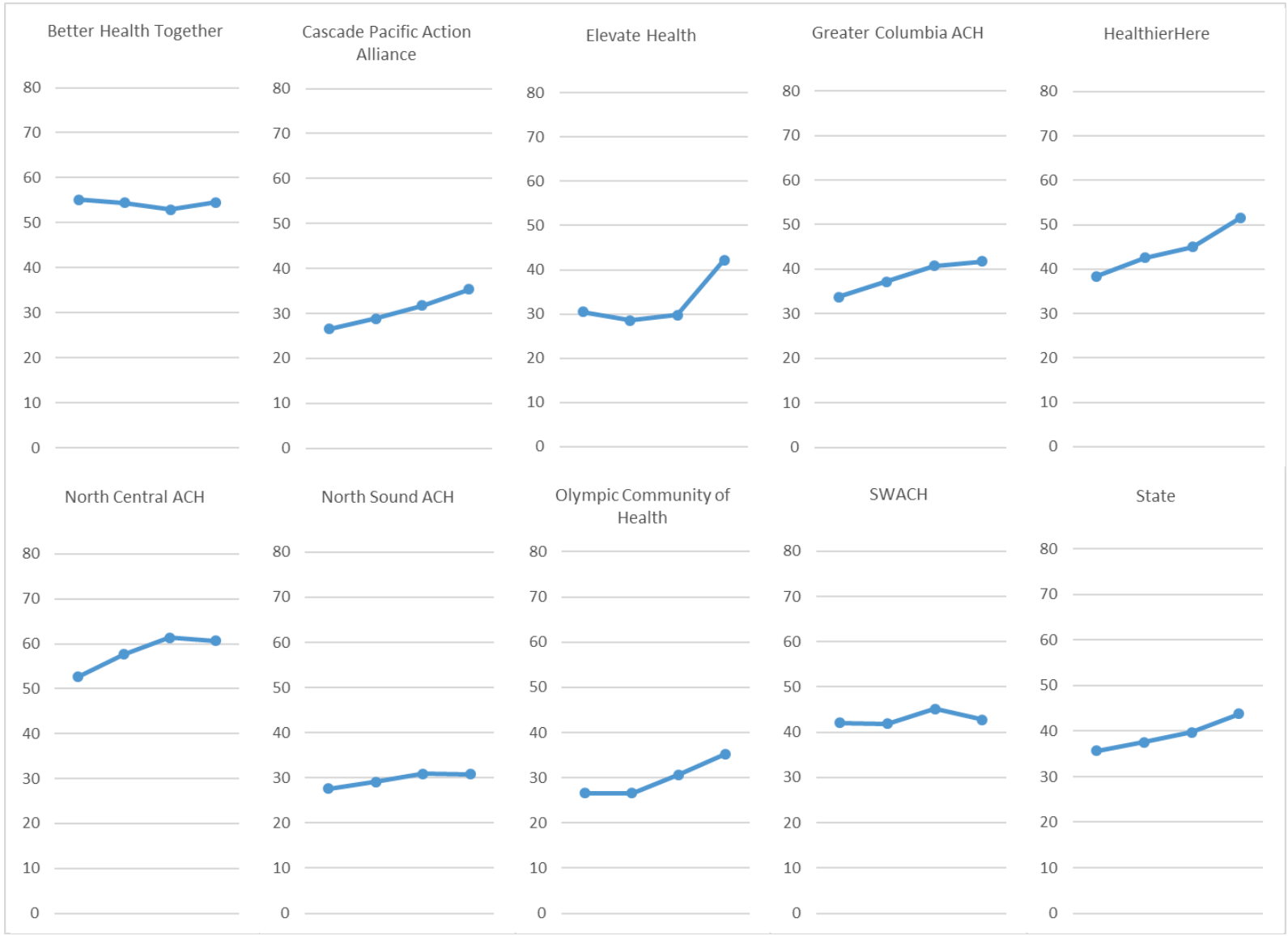
Number of PAs per 100,000 population

While HealthierHere had by far the largest share of the state's total PA supply each year, its rate of PAs per 100,000 population was not the largest among the ACHs. Two other ACHs, Better Health Together and North Central ACH, had higher rates each year. North Central ACH's rates were the highest in the last three of the four years, at about 60 PAs per 100,000. However, HealthierHere had consecutive annual increases in its PA rate from 2017 to 2020 and its net increase of 14 PAs per 100,000 population from 38 to 52 during this period was the largest of all ACHs. Another two ACHs also had consecutive increases in their PA rates. These were Cascade Pacific Action Alliance and Greater Columbia ACH. (Figure 14)

Here is the most important takeaway from this graph:

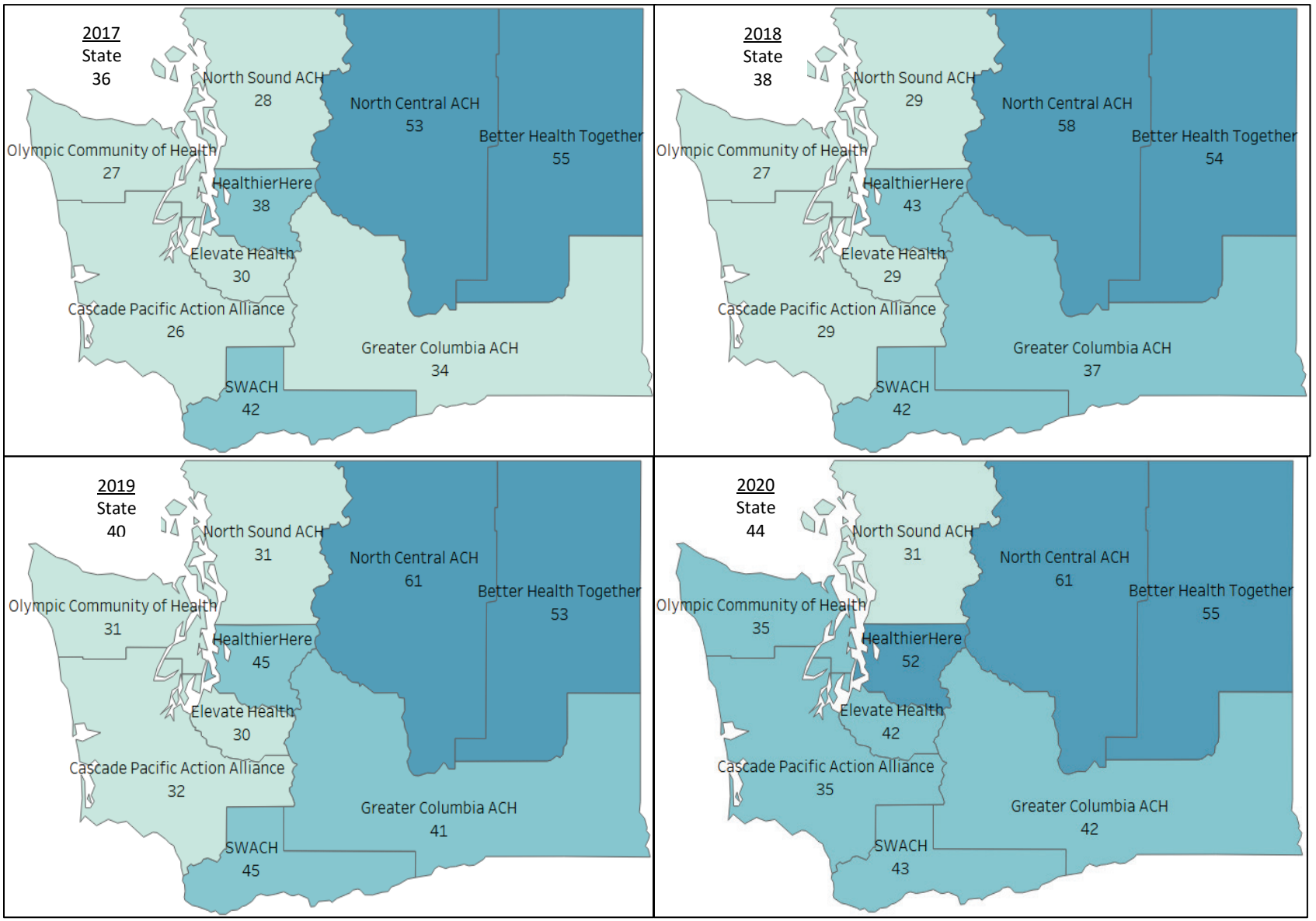
- **The Better Health Together and North Central ACH each have a higher PA rate than the other ACHs across the state in all four years.**

Figure 14. Number of physician assistants per 100,000 population by ACH: 2017-20
See Table 6 in the appendix for an accessible version of this data.



Map 8. Number of physician assistants per 100,000 population: ACH regions, 2017-20

See Table 6 in the appendix for an accessible version of this data



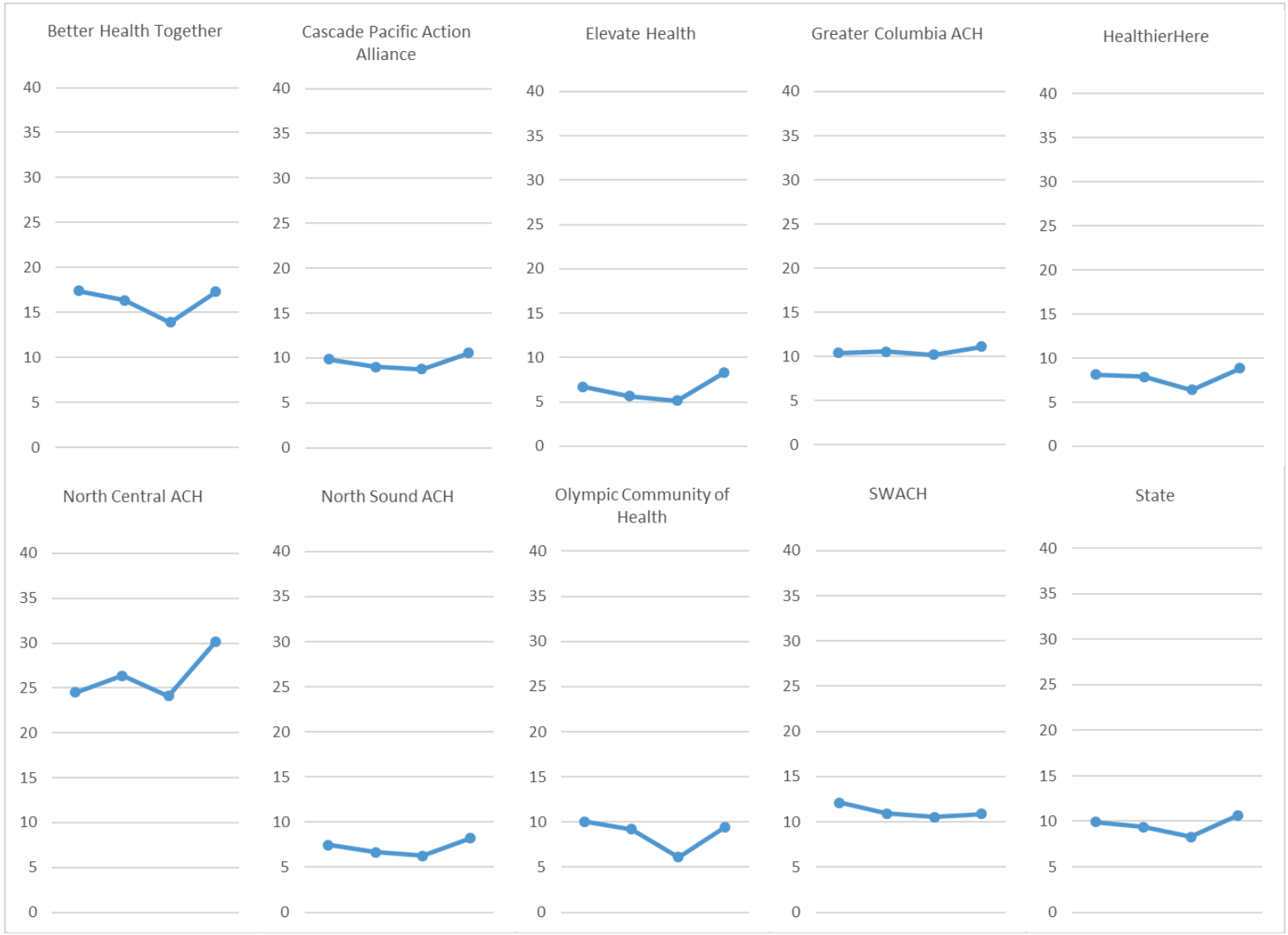
Number of primary care PAs per 100,000 population

The rate of primary care PAs per 100,000 population increased from 2017 to 2020 in six ACHs. In the other three ACHs (Better Health Together, Olympic Community of Health and SWACH), the rate in 2020 either remained the same or was slightly lower than the rate in 2017. Seven ACHs had an increase in 2020 that was preceded by a consecutive decline from 2017 to 2019. North Central ACH's rate increase of five primary care PAs per 100,000 population from 25 in 2017 to 30 in 2020 was the largest net increase. North Central ACH's rate was also the highest of ACHs in all four years. In contrast, Elevate Health had the lowest rates in all four years, with eight primary care PAs per 100,000 in 2020 as its highest rate. (Figure 15)

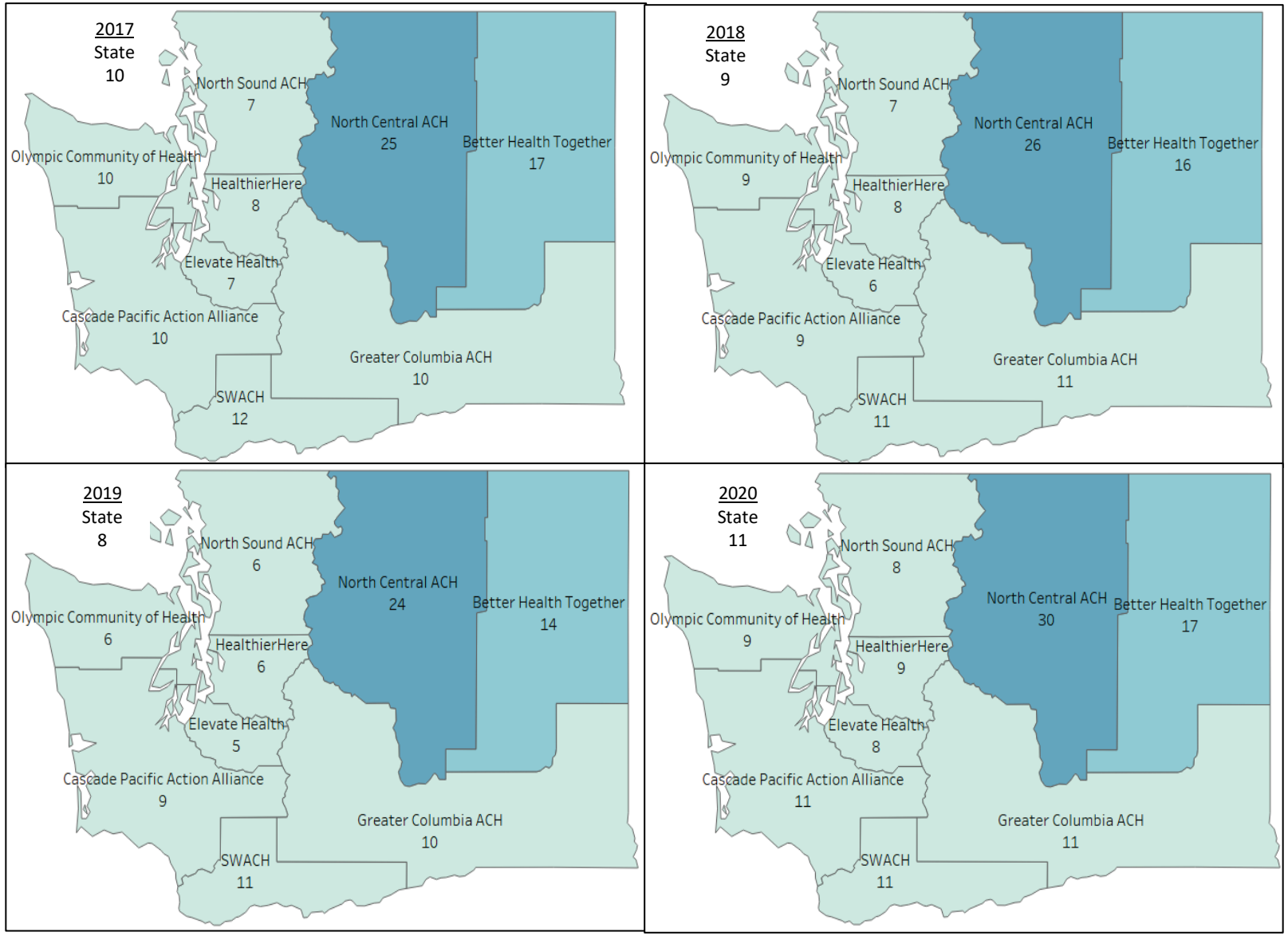
Here is the most important takeaway from this graph:

- **The primary care PA rate in the North Central ACH is higher than other ACHs in all four years.**

Figure 15. Number of primary care physician assistants per 100,000 population by ACH: 2017-20
See Table 6 in the appendix for an accessible version of this data



Map 9. Number of primary care physician assistants per 100,000 population: ACH regions, 2017-20
See Table 6 in the appendix for an accessible version of this data.



Number of specialist PAs per 100,000 population

In 2017, Better Health Together had the highest rate of 38 specialist PAs per 100,000 population. Its rate changed little from 2017 to 2020 with the rate in 2020 remaining at 38. However, all other ACHs had higher specialist PA rates in 2020 than in 2017.

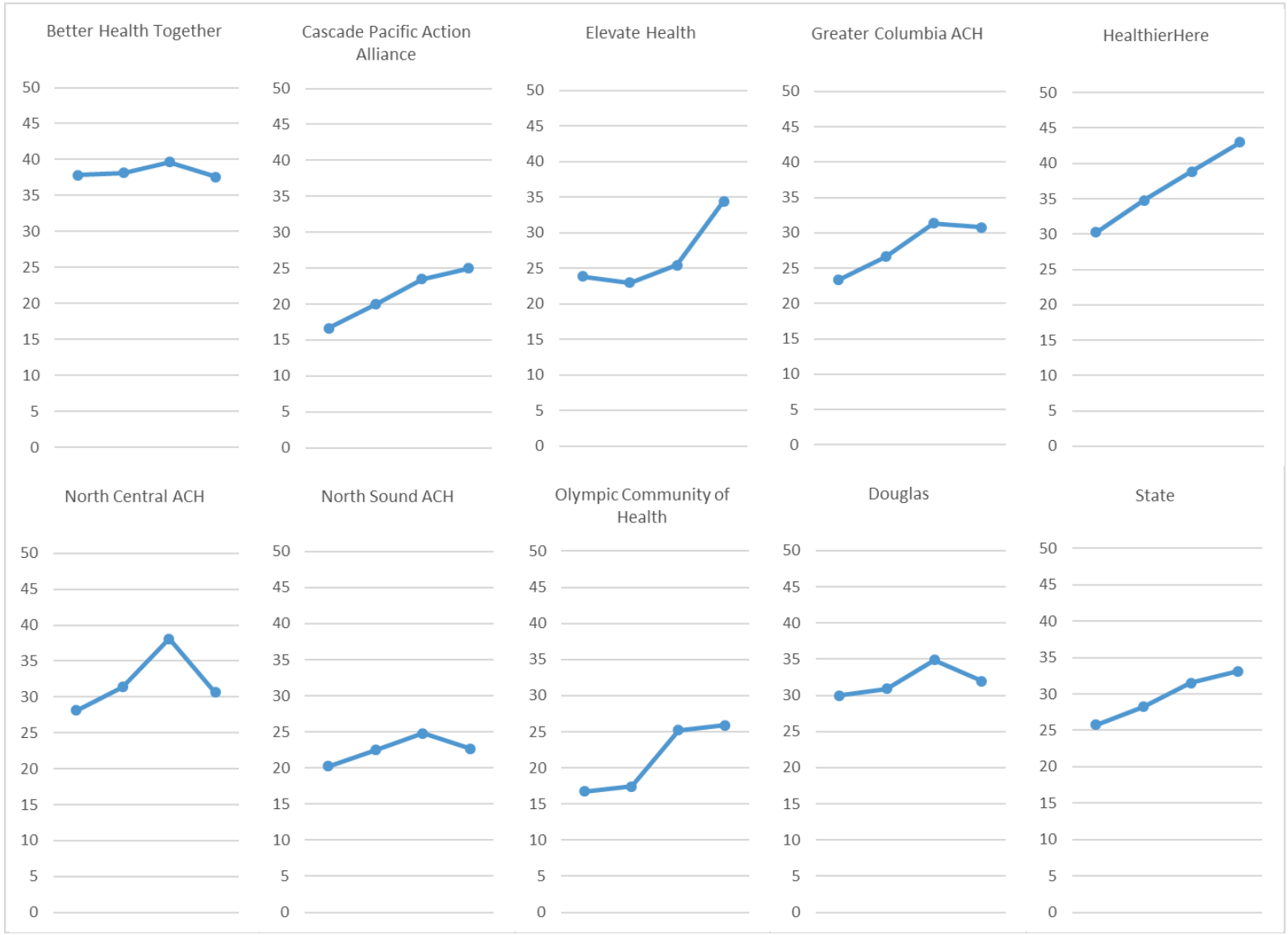
In Cascade Pacific Action Alliance and HealthierHere, the rate increased in each consecutive year. The rate increase in HealthierHere was the largest. It increased from a relatively high rate of 30 in 2017 to 43 in 2020, averaging an increase of 4.3 specialist PAs per 100,000 each year. Its rate of 43 in 2020 is the highest of all ACHs in all four years. North Sound ACH in 2020 had the lowest specialist PA rate of 23, although its rate in the previous three years was not the lowest. (Figure 16)

Here is the most important takeaway from this graph:

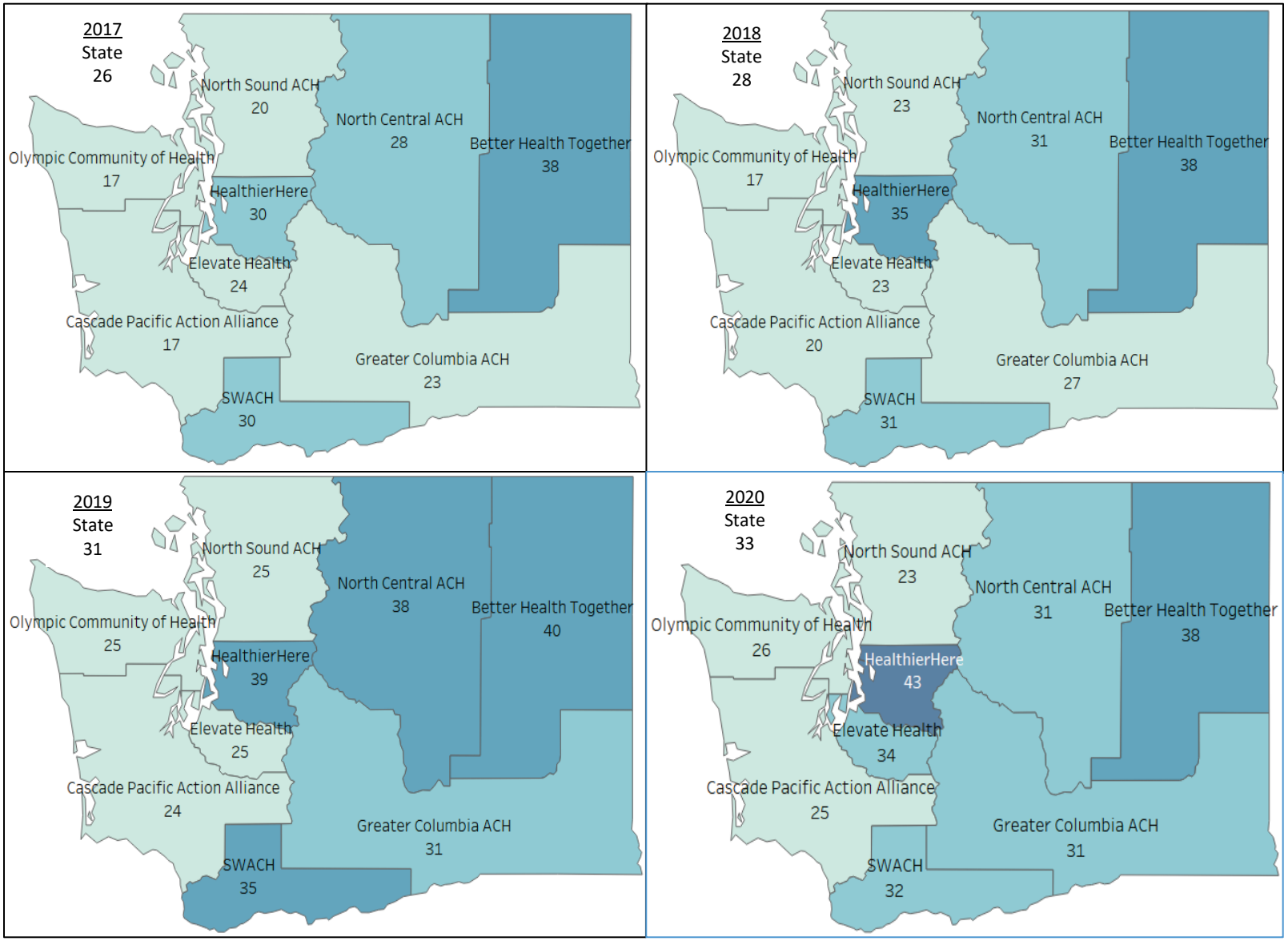
- **The specialist PA rate in the Healthcare Here ACH surpassed that in Better Health Together to become the highest rate in 2020.**

Figure 16. Number of specialist physician assistants per 100,000 population by ACH: 2017-20

See Table 6 in the appendix for an accessible version of this data.



Map 10. Number of specialist physician assistants per 100,000 population: ACH Regions, 2017-20
See Table 6 in the appendix for an accessible version of this data



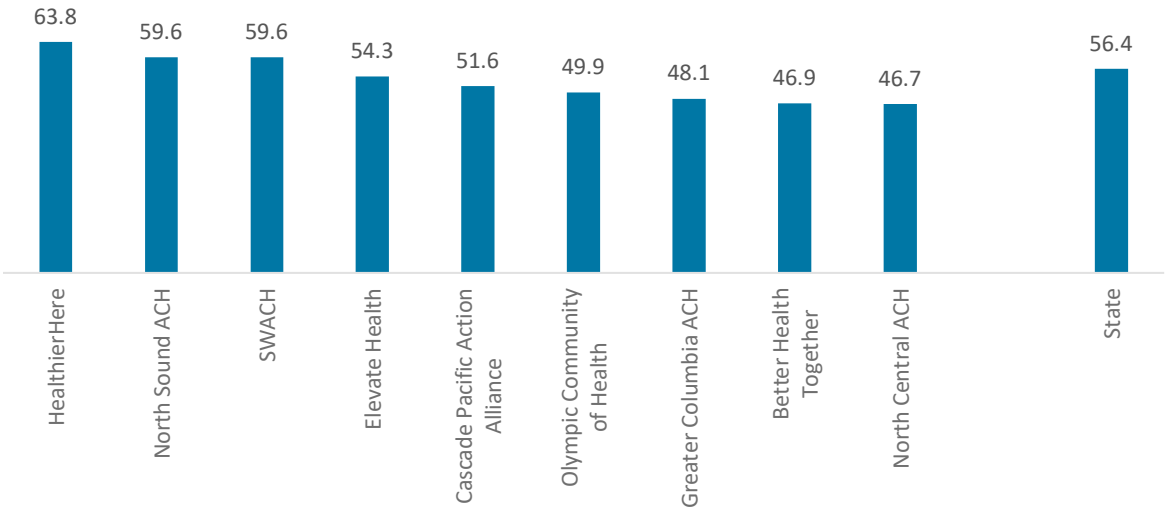
Percentage of female PAs

While the 4-year average share of female PAs statewide between 2017 and 2020 was 56.4%, most ACHs had a share that was below the state average. Only three ACHs – HealthierHere, North Sound ACH, and SWACH had a share that was above the state average. The highest share of 63.8% was in HealthierHere. All three ACHs east of the Cascades had the lowest shares that were below 50%. (Figure 17)

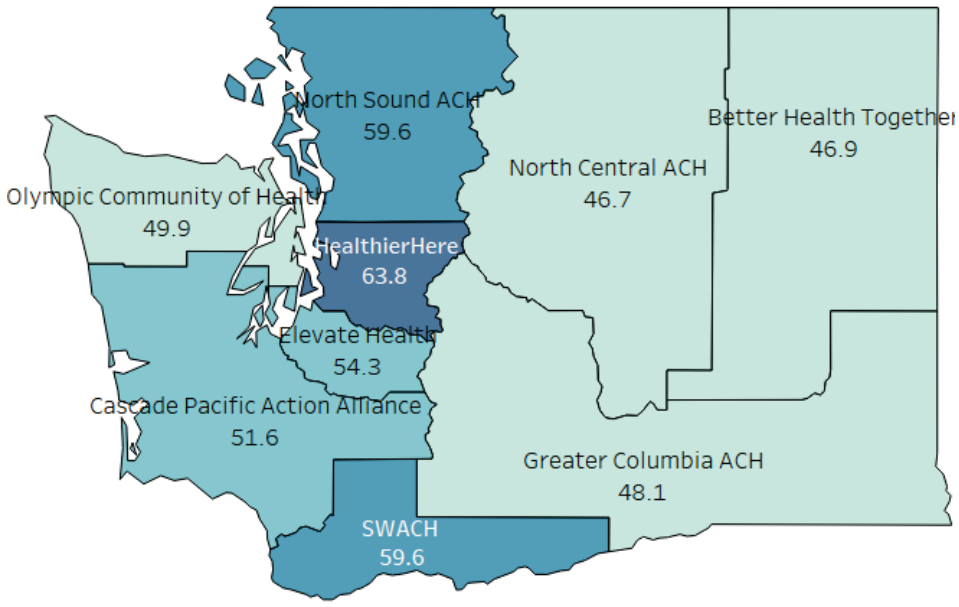
Here is the most important takeaway from this graph:

- **The share of females PAs among the ACHs varied from 47% to 64%.**

Figure 17. Average percentage of female physician assistants in 2017-20: ACH



Map 11. Average percentage of female physician assistants 2017-20: ACH
See Table 7 in the appendix for an accessible version of this data



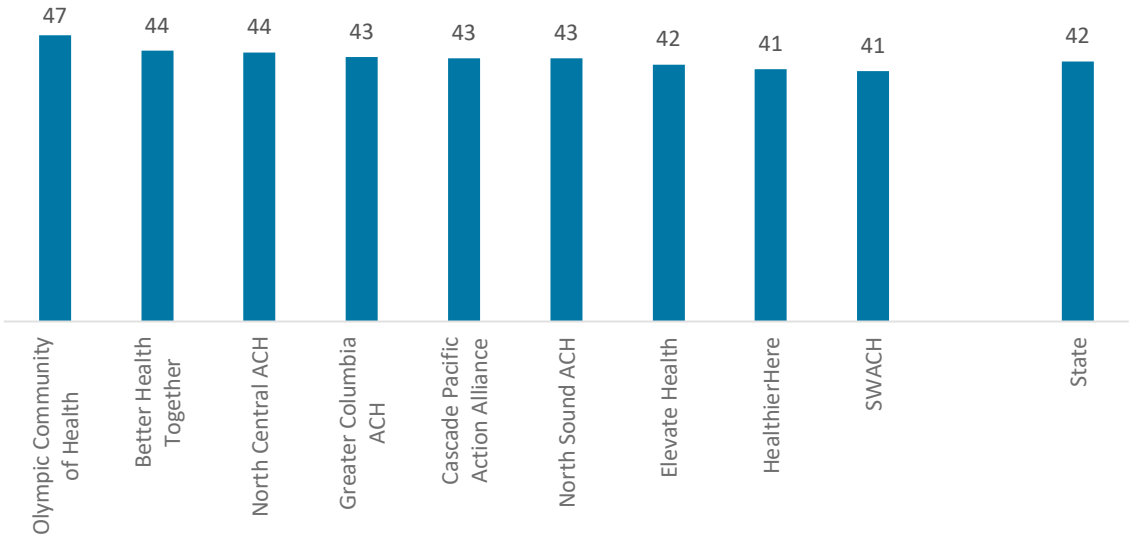
Median age

The 4-year average of PA median age did not differ greatly among the ACHs. With the exception of Olympic Community of Health, the median age among the ACHs ranged between 41 and 44 years, close to the statewide average of 42 years. Olympic Community of Health's PAs had an average median age of 47 years. (Figure 18)

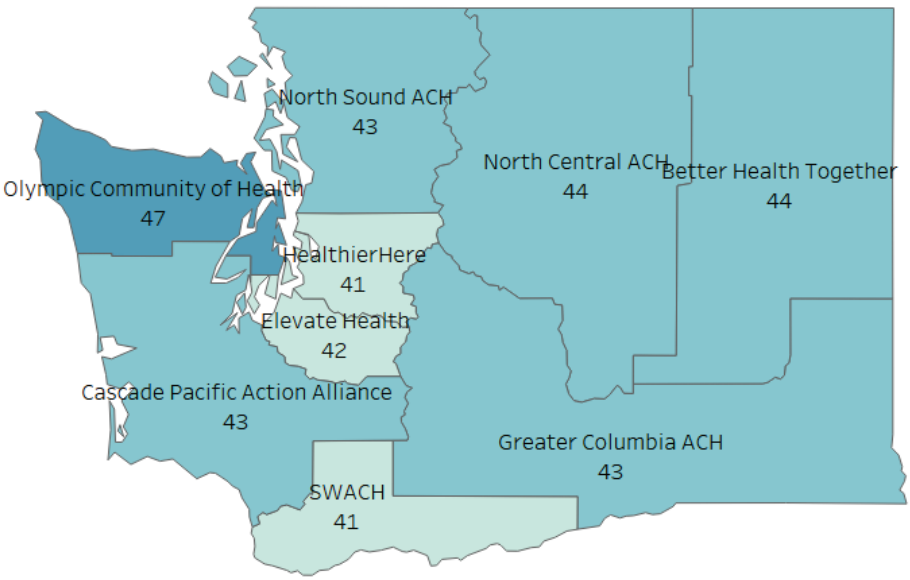
Here is the most important takeaway from this graph:

- **The average 4-year median age of PAs among the ACHs varied slightly from 41 to 47 years old.**

Figure 18. Average of physician assistant median age in 2017-20: ACH



Map 12. Average of physician assistant median age in 2017-20: ACH
See Table 7 in the appendix for an accessible version of this data



Data Sources and Method

Data Sources

Network Access Report. Health insurance companies conducting business in Washington are required by the state's Office of the Insurance Commissioner (OIC) to file a monthly Network Access Report (NAR). The purpose of these reports is for an insurer to demonstrate that it has an adequate supply of health care providers in its network(s) for the intended services. The report contains records of health care providers in contract with an insurance company's provider network. The information on individual providers includes name, credential, specialty, and practice location(s). Starting in 2017, Washington state's NARs discontinued the previous provider specialty categories and replaced them with Health Care Provider Taxonomy Codes Set issued by the National Uniform Claim Committee. The NARs are publicly available on OIC's website. This study used the public NARs.

National Provider Identifier Registry. The National Provider Identifier (NPI) registry is a database in the National Plan & Provider Enumeration System (NPPES) created by the federal Centers for Medicare and Medicaid Services (CMS). The NPI is a 10-digit unique number assigned to an individual or organizational provider in the U.S. Part of the NPI database is publicly available. The public information for individual NPIs includes a provider's name, NPI number, taxonomy and practice location. The public NPI data were used for this study.

Provider License Database. Health care providers are required to obtain a provider license with the Washington State Department of Health (DOH) in order to practice in the state. After initial licensing, providers must renew their licenses at certain intervals depending on the professions. For physician assistants (PAs), renewal is every two years. The provider license database includes information on the provider's name, age, sex, credential type, license start date, most recent renewal date and expiration date. A subset of the provider license information can be searched as public information on the department's website. However, for this study, we used an extract file from the license database.

Method

a. Processing the June Network Access Reports for 2017-20

The NARs for June 2017-20 were downloaded from OIC's website. Once all insurance companies' reports were collected, the reports were combined by year and each year's data were processed separately. The NARs are structured in such a way that there are five blocks of rows of data and, depending on the block, the column name and purpose may be different. For example, a column in the block for individual provider information may be the individual NPI number, but in the block for organization contract information it may be the organization NPI number. Therefore, the next step was to "rectangularize" the data records by transforming the blocks of data rows into blocks of data columns so that each row is a record for an individual provider. The final step was to remove non-PA records and retain only PA records.

b. Matching PA records from the Network Access Reports with records in the National Provider Identifier registry and the DOH provider license database

Processed PA records from the Network Access Reports were then matched with the National Provider Identifier registry on the NPI numbers. The NPI is a unique identifier issued to health care providers. It is required for Medicare services, but is also used by health insurance carriers. Only records that matched on NPI between the two files were retained.

Next, the matched NAR-NPI records were matched with the DOH license database on the PA's credential number. In this step, only matched records with non-expired licenses as of June of the selected year were retained.

c. Provider specialty (primary care/specialist)

Unlike the taxonomy used for physicians, the taxonomy for PA in the NARs did not identify the provider's specialty area. Instead, the taxonomy code for nearly all PAs was 363A00000X ("Physician Assistant"). Therefore, PA specialty is not included in this report. This report does, however, contain estimates for primary care PAs and specialist PAs. The primary care/specialist status was assigned by the health insurance carriers in their NARs. The designation of primary care/specialist PA in this report differs from the designation used our report for physician supply in which primary care and specialist statuses were determined using the physicians' taxonomy codes.

d. Final record selection

Because the NAR files contain PA records reported by all insurance carriers and each carrier's report may contain PA records for multiple plans, there are numerous duplicate records due to cross-carrier reporting and/or cross-plan reporting within a carrier's report. In the final record selection process, only one record was retained from the data field combination of NPI, practice geo-coordinates and practice name. In addition, a small number of records that had missing data on the state of the practice location, PA's last name or NPI were excluded from the final selection.

d. Constructing PA record weights

The processed NAR data included multiple records for some PAs who had multiple practice locations. PA supply analyses in this study required counting each PA as no more than one person. To meet this requirement while accounting for the fact that a PA may practice at multiple locations, we constructed data weights and applied the weights to the PA records. Below is a description of the weight construction.

Initial weight. Each PA was assigned the weight of 1 initially.

ZIP Code level weight. After the construction of initial weights, the next step was to redistribute initial weights to a PA's records for different ZIP Codes. To construct the ZIP Code level weight, we first counted the number of ZIP Codes associated with a PA. We then summed up the populations of the associated ZIP Codes.[7] Then each ZIP Code's fraction of the total population from all associated ZIP Codes was calculated. These fractions were used to distribute the initial weight into ZIP Codes associated with a PA.

For example, suppose a PA was associated with three ZIP Codes that accounted for 70%, 20% and 10% of the total population of the three ZIP Codes combined. The ZIP Code with 70% of the population would receive 0.7 of the initial weight, the 20% ZIP Code would receive a weight of 0.2 and the 10-percent ZIP would receive a weight of 0.1.

[7] Some ZIP Codes in the original Network Access Reports do not have associated population data. These are either institution ZIP Codes (e.g., campus ZIP Code for universities) or mailbox ZIP Codes. Online ZIP Code maps were used to choose a substitute ZIP Code. The substitute ZIP Code is one that either encircles or shares the longest borderline with the ZIP Code in question.

In some cases, a PA was associated with multiple locations within a ZIP Code area. In that case, each location would receive an even share of the ZIP Code-level weight assigned previously. Extending the PA example above, suppose the PA was associated with three locations in the 70% ZIP Code area. Then the final weight for each location record for this ZIP Code associated with this physician would be 0.2333 (0.7/3).

From this process, the sum of weights of all records associated with a PA should equal 1 and the sum of weights of all PAs should equal the unique count of PAs without the weights. The ZIP Code level weights can be used for analyses involving a single ZIP Code, clusters of ZIP Codes and the state.

County level weight. For county-level analyses, an additional step was necessary to further distribute the PA record weight at the ZIP Code-level for ZIP Codes that cross county boundaries. Similar to the approach used in constructing ZIP Code-level weight, a county's fraction of such a ZIP Code's weight was determined by the county's fraction of the population for that ZIP Code in relation to the total population of the ZIP Code. Using the same PA example from above, suppose the 20% ZIP Code is associated with two counties, and County A's population fraction of the ZIP Code's total population is 70% and County B's fraction is 30%. Then the ZIP Code-level PA record weight of 0.2 is redistributed into 0.14 (0.2*0.7) to County A and 0.06 (0.2*0.3) to County B. For ZIP Codes whose areas are within the boundary of a single county, the ZIP Code-level weights were then copied over to the county-level weight.

From this process, the sum of weights of all records associated with a PA should sum to 1 and the sum of weights of all PAs should equal the unique count of PAs without weights. The county-level weights can be used for analyses for counties, regions consisting of counties and the state.

e. Definition of terms

PA count: The weighting of PA records takes into consideration that a PA may practice at multiple locations. This weighting essentially assumes each PA identified in the NARs as working 100% full time equivalency (FTE). The PA's "FTE" is distributed into practice locations in different ZIP Code areas and into different counties when a ZIP Code area crosses county boundaries. Therefore, one PA FTE in a specific area can sometimes mean several PAs each contributing a fraction to the FTE. The PA count then is a sum of the total fractions.

PA rate: For this study, the PA rate is calculated as number of PAs per 100,000 population for the state, counties or Accountable Communities of Health (each consisting of one or more counties).

f. Limitations

The Network Access Report is the main data source for PA supply estimates in this study. As such, data accuracy in NARs would affect the quality of the estimates. There are two possible sources of errors that may affect data accuracy in NARs and consequently estimates in this study, although neither type of error is expected to be large. One source is the omission of providers who are not affiliated with any insurance networks. Often these providers include some solo practitioners, some in small practice groups and those who work for the federal or state institutions exclusively (e.g., VA hospitals, military hospitals and state hospitals). This error would result in undercounting the PA supply. The other source of error would do the opposite – overcounting the PA supply. This type of error occurs when insurance companies failed to promptly remove records from NARs for providers who no longer practice in

Washington (due to retirement or moving to another state, for example), although they maintain a Washington state license.

These two errors, because of their opposite effects, may have worked to reduce each other's impact, to a certain degree. Without a perfect census of the providers practicing in Washington, though, it is impossible to quantify these two errors precisely and their overall effect on PA supply estimates.

In addition to potential errors associated with the source data, another potential error may exist due to the weighting method used. Recall that when a PA has practice locations in more than one ZIP Code area, the initial weight of 1 is distributed based on each ZIP Code area's population fraction of the combined population of all ZIP Code areas in question; or, in constructing county-level weight involving a ZIP Code area that crosses county boundaries, the ZIP Code-level weight was redistributed based on each county's population fraction of the ZIP Code area's total population. These ZIP Code-level and county-level weighting techniques no doubt improve the estimation of the PA distribution when compared with the situation in which the analyst has to arbitrarily choose which ZIP Code area and county to assign the PA. However, the precision resulting from these weighting schemes remains unknown.

Yet another issue, though not necessarily a source of error, is that this study's method does not take into consideration PAs in bordering states providing services to Washington residents. For example, Clark County sits across the Columbia River from the greater Portland area in Oregon. Some Clark residents use PA services in the Portland area. Therefore, the actual PA supply would be larger than estimated in this report if PAs in neighboring states serving Washington residents had been included.

Appendixes – Data Tables

Table 1. Physician Assistant Supply and Characteristics: Washington, 2017-20

	2017	2018	2019	2020
Total Licenses	3,733	3,963	4,276	4,554
Number (and Percent) of PAs Providing Direct Care in Washington	2,609 (69.9%)	2,793 (70.5%)	3,002 (70.2%)	3,351 (73.6%)
Number of PAs per 100,000 Population	36	38	40	44
Primary Care PAs				
Number	725	697	626	815
Per 100,000 Population	10	9	8	11
Percent	27.8%	25.0%	20.9%	24.3%
Specialist PAs				
Number	1,884	2,096	2,376	2,536
Per 100,000 Population	26	28	31	33
Percent	72%	75%	79%	76%
Percent of Women in				
Total PAs	55.1%	55.9%	56.5%	58.1%
Primary Care PAs	55.6%	57.5%	57.4%	60.5%
Specialist Care PAs	54.9%	55.4%	56.2%	57.3%
Median Age				
Total PAs	43	42	42	41
Primary Care PAs	41	42	42	41
Specialist PAs	43	42	42	41
Median Age of Men				
Total PAs	45	45	44	44
Primary Care PAs	44	43	43	42
Specialist PAs	45	45	45	45
Median Age of Women				
Total PAs	41	40	40	40
Primary Care PAs	41	41	40	39
Specialist PAs	41	40	40	40

Table 2. Number and Percent of Physician Assistants: Counties, 2017-20

	Number of PAs				Percent of PAs			
County	2017	2018	2019	2020	2017	2018	2019	2020
Adams	8	10	10	6	0.3%	0.4%	0.3%	0.2%
Asotin	8	10	15	17	0.3%	0.4%	0.5%	0.5%
Benton	79	89	101	99	3.0%	3.2%	3.4%	2.9%
Chelan	84	80	102	95	3.2%	2.9%	3.4%	2.8%
Clallam	33	31	39	42	1.3%	1.1%	1.3%	1.3%
Clark	200	197	223	216	7.7%	7.1%	7.4%	6.4%
Columbia	0	0	1	2	0.0%	0.0%	0.0%	0.1%
Cowlitz	27	28	29	32	1.0%	1.0%	1.0%	0.9%
Douglas	3	5	4	5	0.1%	0.2%	0.1%	0.2%
Ferry	2	2	2	2	0.1%	0.1%	0.1%	0.1%
Franklin	21	21	22	23	0.8%	0.8%	0.7%	0.7%
Garfield	1	1	0	0	0.0%	0.1%	0.0%	0.0%
Grant	34	52	43	46	1.3%	1.8%	1.4%	1.4%
Grays Harbor	30	30	51	25	1.2%	1.1%	1.7%	0.7%
Island	10	11	11	14	0.4%	0.4%	0.4%	0.4%
Jefferson	7	12	12	11	0.3%	0.4%	0.4%	0.3%
King	826	933	1,001	1,167	31.7%	33.4%	33.3%	34.8%
Kitsap	58	57	64	81	2.2%	2.0%	2.1%	2.4%
Kittitas	21	26	28	23	0.8%	0.9%	0.9%	0.7%
Klickitat	9	14	11	11	0.3%	0.5%	0.4%	0.3%
Lewis	20	40	24	45	0.8%	1.4%	0.8%	1.3%
Lincoln	3	3	3	2	0.1%	0.1%	0.1%	0.1%
Mason	10	13	15	14	0.4%	0.5%	0.5%	0.4%
Okanogan	14	13	12	15	0.5%	0.5%	0.4%	0.5%
Pacific	2	1	2	4	0.1%	0.1%	0.1%	0.1%
Pend Oreille	6	6	6	4	0.2%	0.2%	0.2%	0.1%
Pierce	262	249	264	380	10.0%	8.9%	8.8%	11.3%
San Juan	6	5	6	5	0.2%	0.2%	0.2%	0.2%
Skagit	49	61	65	60	1.9%	2.2%	2.2%	1.8%
Skamania	3	4	2	1	0.1%	0.1%	0.1%	0.0%
Snohomish	190	209	227	231	7.3%	7.5%	7.6%	6.9%
Spokane	298	296	292	316	11.4%	10.6%	9.7%	9.4%
Stevens	11	11	11	9	0.4%	0.4%	0.4%	0.3%
Thurston	77	70	81	110	2.9%	2.5%	2.7%	3.3%
Wahkiakum	0	0	0	0	0.0%	0.0%	0.0%	0.0%
Walla Walla	15	17	18	20	0.6%	0.6%	0.6%	0.6%
Whatcom	84	78	86	87	3.2%	2.8%	2.9%	2.6%
Whitman	12	16	19	21	0.5%	0.6%	0.6%	0.6%
Yakima	85	90	97	109	3.3%	3.2%	3.2%	3.3%
Total	2,609	2,793	3,002	3,351	100%	100%	100%	100%

Table 3. Number of PAs per 100,000 Population - Total, Primary Care and Specialist Care: Counties, 2017-20

	Total Pas				Primary Care PAs				Specialist PAs			
County	2017	2018	2019	2020	2017	2018	2019	2020	2017	2018	2019	2020
Adams	42	49	50	28	34	36	28	19	7	13	22	10
Asotin	37	45	68	73	11	8	6	0	26	37	62	73
Benton	41	45	50	48	9	9	10	11	32	36	40	37
Chelan	109	103	130	120	47	46	53	60	62	57	78	60
Clallam	45	41	51	55	23	16	12	13	22	25	40	42
Clark	43	41	46	43	12	11	10	11	31	31	35	33
Columbia	12	10	15	47	7	6	7	3	5	4	8	44
Cowlitz	25	26	26	29	13	10	11	11	13	16	16	18
Douglas	7	12	9	12	5	7	2	5	3	6	6	7
Ferry	28	28	27	22	19	17	13	18	9	10	15	5
Franklin	23	23	24	24	10	5	5	5	14	18	19	19
Garfield	45	68	15	13	30	54	6	1	15	14	8	12
Grant	36	53	44	46	16	22	15	22	20	31	28	24
Grays Harbor	41	41	69	33	14	10	9	10	27	31	60	23
Island	12	14	12	16	9	8	4	7	3	6	8	9
Jefferson	23	38	39	35	12	17	10	12	11	21	29	23
King	38	43	45	52	8	8	6	9	30	35	39	43
Kitsap	22	21	24	30	6	6	4	8	16	15	20	21
Kittitas	46	57	59	48	14	20	19	19	32	37	41	29
Klickitat	40	64	51	50	18	17	19	18	22	47	32	31
Lewis	26	50	31	56	9	14	12	13	17	37	19	42
Lincoln	31	31	30	21	16	16	13	14	15	16	17	8
Mason	15	20	23	21	8	10	8	7	8	11	15	15
Okanogan	33	31	29	35	22	21	14	21	10	10	14	15
Pacific	7	7	11	17	5	5	6	6	3	1	5	10
Pend Oreille	47	47	44	32	18	16	17	16	29	31	27	16
Pierce	30	29	30	42	7	6	5	8	24	23	25	34
San Juan	37	29	34	30	20	20	18	21	17	9	17	9
Skagit	39	49	50	46	12	14	12	12	28	35	39	34
Skamania	27	30	14	12	20	17	6	5	7	13	7	6
Snohomish	24	26	28	28	7	5	6	8	17	20	22	20
Spokane	60	58	57	60	17	16	14	18	43	43	43	43
Stevens	25	25	25	20	18	14	9	11	7	11	17	8
Thurston	28	25	28	38	9	7	8	11	19	18	21	27
Wahkiakum	0	0	0	0	0	0	0	0	0	0	0	0
Walla Walla	25	28	29	32	8	8	7	7	17	20	21	25
Whatcom	39	35	38	38	7	6	6	8	32	30	33	30
Whitman	24	32	38	41	10	13	10	12	14	19	29	29
Yakima	34	35	38	42	11	12	12	14	22	23	26	28
State	36	38	40	44	10	9	8	11	26	28	31	33

Table 4. Percentage of Female PAs and PA Median Age: 2017-20 Counties

	Percentage of Female PAs					Median Age				
County	2017	2018	2019	2020	Avg	2017	2018	2019	2020	Avg
Adams	45.0	49.1	53.6	34.7	45.6	49	44	45	52	48
Asotin	50.1	49.3	47.1	40.3	46.7	45	47	46	47	46
Benton	49.9	49.1	46.4	49.3	48.7	41	42	41	42	42
Chelan	47.9	49.3	54.5	56.1	51.9	43	42	43	42	43
Clallam	44.9	45.4	48.9	47.3	46.7	46	44	45	42	44
Clark	57.9	59.7	60.8	61.8	60.1	41	41	41	40	41
Columbia	*	*	*	*	*	*	*	*	*	*
Cowlitz	54.9	62.1	70.2	57.2	61.1	43	41	42	43	42
Douglas	47.7	56.3	49.4	50.8	51.0	43	36	42	46	42
Ferry	*	*	*	*	*	*	*	*	*	*
Franklin	28.0	29.6	41.3	28.2	31.8	43	44	40	42	42
Garfield	*	*	*	*	*	*	*	*	*	*
Grant	33.4	38.5	32.3	38.9	35.8	45	45	46	44	45
Grays Harbor	42.8	45.3	53.3	40.4	45.4	40	41	34	45	40
Island	78.6	69.8	64.6	63.8	69.2	44	45	47	44	45
Jefferson	57.8	71.9	62.4	60.2	63.1	47	48	48	45	47
King	62.9	62.9	64.0	65.5	63.8	42	41	41	40	41
Kitsap	46.9	48.3	50.0	52.5	49.4	46	47	47	47	47
Kittitas	45.6	45.0	42.2	47.3	45.0	46	44	44	42	44
Klickitat	37.0	41.9	50.1	38.6	41.9	52	43	43	38	44
Lewis	57.2	60.1	52.8	60.5	57.6	42	36	43	36	39
Lincoln	31.3	31.1	31.9	*	*	45	46	47	*	*
Mason	49.6	46.0	39.5	39.8	43.7	42	43	38	40	41
Okanogan	49.3	42.6	39.0	45.4	44.1	44	45	47	48	46
Pacific	*	*	*	45.1	*	*	*	*	49	*
Pend Oreille	29.3	34.2	37.0	32.9	33.3	47	48	40	41	44
Pierce	51.4	53.3	54.8	57.5	54.3	43	43	41	40	42
San Juan	83.6	100.0	98.7	98.6	95.2	57	52	53	54	54
Skagit	57.0	58.9	60.6	56.9	58.4	47	45	42	43	44
Skamania	100.0	100.0	*	*	*	42	43	*	*	*
Snohomish	58.2	56.3	56.4	58.6	57.4	42	42	42	42	42
Spokane	47.8	47.3	44.8	48.9	47.2	43	43	44	44	44
Stevens	52.2	53.1	55.4	43.3	51.0	50	54	52	40	49
Thurston	51.3	48.1	46.4	50.7	49.1	46	45	44	43	45
Wahkiakum	*	*	*	*	*	*	*	*	*	*
Walla Walla	33.2	44.8	45.2	47.9	42.8	45	37	43	39	41
Whatcom	61.3	64.0	62.3	62.9	62.6	43	43	43	42	43
Whitman	55.0	59.1	55.0	59.5	57.1	41	42	44	45	43
Yakima	49.9	51.4	53.1	53.9	52.1	45	44	42	43	44
State	55.1	55.9	56.5	58.1	56.4	43	43	42	41	42

*The underlying number is too small for this calculation.

Table 5. Number and Percent of Physician Assistants: ACHs, 2017-20

	Number of PAs				Percent of PAs			
ACH	2017	2018	2019	2020	2017	2018	2019	2020
Better Health Together	329	329	325	339	12.6%	11.8%	10.8%	10.1%
Cascade Pacific Action Alliance	165	182	203	229	6.3%	6.5%	6.8%	6.8%
Elevate Health	262	249	264	380	10.0%	8.9%	8.8%	11.3%
Greater Columbia ACH	243	271	302	314	9.3%	9.7%	10.1%	9.4%
HealthierHere	826	933	1,001	1,167	31.7%	33.4%	33.3%	34.8%
North Central ACH	135	150	161	162	5.2%	5.4%	5.4%	4.8%
North Sound ACH	339	365	395	397	13.0%	13.1%	13.1%	11.9%
Olympic Community of Health	98	99	116	134	3.8%	3.6%	3.9%	4.0%
SWACH	212	215	236	228	8.1%	7.7%	7.9%	6.8%
Total	2,609	2,793	3,002	3,351	100%	100%	100%	100%

Table 6. Number of PAs per 100,000 Population – Total, Primary Care and Specialist Care: ACHs, 2017-20

	Total PAs				Primary Care PAs				Specialist PAs			
ACH	2017	2018	2019	2020	2017	2018	2019	2020	2017	2018	2019	2020
Better Health Together	55	54	53	55	17	16	14	17	38	38	40	38
Cascade Pacific Action Alliance	26	29	32	35	10	9	9	11	17	20	24	25
Elevate Health	30	29	30	42	7	6	5	8	24	23	25	34
Greater Columbia ACH	34	37	41	42	10	11	10	11	23	27	31	31
HealthierHere	38	43	45	52	8	8	6	9	30	35	39	43
North Central ACH	53	58	61	61	25	26	24	30	28	31	38	31
North Sound ACH	28	29	31	31	7	7	6	8	20	23	25	23
Olympic Community of Health	27	27	31	35	10	9	6	9	17	17	25	26
SWACH	42	42	45	43	12	11	11	11	30	31	35	32
State	36	38	40	44	10	9	8	11	26	28	31	33

Table 7. Percentage of Female PAs and PA Median Age: ACHs, 2017-20

	Percentage of Female PAs					Median Age				
ACH	2017	2018	2019	2020	Avg	2017	2018	2019	2020	Avg
Better Health Together	47.2	47.0	45.2	48.0	46.9	44	44	44	44	44
Cascade Pacific Action Alliance	50.7	52.1	51.9	51.6	51.6	44	42	42	43	43
Elevate Health	51.4	53.3	54.8	57.5	54.3	43	43	41	40	42
Greater Columbia ACH	46.8	48.1	48.4	49.4	48.1	44	43	42	43	43
HealthierHere	62.9	62.9	64.0	65.5	63.8	42	41	41	40	41
North Central ACH	44.3	45.2	47.3	50.0	46.7	44	43	45	43	44
North Sound ACH	59.8	59.4	59.2	60.0	59.6	43	43	43	42	43
Olympic Community of Health	47.0	50.2	51.0	51.5	49.9	46	47	47	46	47
SWACH	57.6	59.2	60.5	60.9	59.6	41	41	41	40	41
State	55.1	55.9	56.5	58.1	56.4	43	43	42	41	42

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