Washington State's 2019 Advanced Registered Nurse Practitioner Workforce

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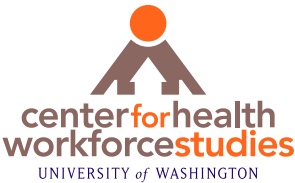Center for Health Workforce Studies, University of Washington

KEY FINDINGS

Information about the demographic, education, and practice characteristics of the advanced registered nurse practitioner (ARNP) workforce is needed to support health workforce planning in the state. ARNPs can be certified as nurse practitioners (NPs), certified registered nurse anesthetists (CRNAs), certified nurse midwives (CNMs) or clinical nurse specialists (CNSs). In 2018, Washington's Nursing Care Quality Assurance Commission required that all nurses licensed in the state provide workforce data at initial licensure and renewal through the Nursys e-Notify survey conducted by the National Council of State Boards of Nursing. This report, funded by the Washington Center for Nursing, presents findings from the University of Washington Center for Health Workforce Studies' analyses of data from ARNPs who had completed the survey as of May, 2019. These survey data add to existing nurse workforce supply information from the state's health professional licensing files and are collected more frequently than the occasional sample surveys that have focused on aspects the state's ARNP workforce. Findings from the Nursys e-Notify survey, when linked with state license records, provide more timely information about the characteristics, distribution, qualifications and practice settings of Washington's ARNP workforce. Highlights of findings include:

- There were approximately 8,650 ARNPs with an active Washington license on May 31, 2019: 6,985 NPs, 1,061 CRNA, 483 CNMs and 120 CNSs. Discounting ARNPs who practiced out of state, worked in a field other than nursing, were unemployed or only volunteered as a nurse, 4,807 NPs, 674 CRNAs, 342 CNMs and 75 CNSs practiced in Washington State.
- Among ARNPs employed as a nurse, 25.5% of NPs, 32.1% of CRNAs, 21.6% of CNMs and 28.4% of CNSs were licensed in Washington but practiced in another state.
- A relatively low percentage of ARNPs of each certification type reported being unemployed: 4.7% of NPs, 3.2% of CRNAs, 4.4% of CNMs and 11.7% of CNSs.
- ARNPs were not evenly distributed throughout the state when considering the number of providers in each region per 100,000 population. Higher concentrations of each certification type were found in the regions with the largest metropolitan areas.
- Only 8.6% of Washington's practicing ARNPs worked in a rural ZIP Code. CRNAs were more likely to practice in a rural ZIP Code than other certification types, likely due to the role CRNAs play in providing anesthesia in many rural areas that do not have a physician anesthesiologist.

CONTENTS:

KEY FINDINGS *continued*

- Approximately 30% or more of NPs, CNMs and CNSs reported being age 55 or older. However, there appear to be a large percentage of ARNPs in the younger age categories to compensate for possible upcoming retirements.
- CRNAs were more likely to be male than other certification types (approximately half of CRNAs were male compared with 1.5% of CNMs, 7.4% of CNSs and 11.9% of NPs).
- NPs were less likely to work full- time than other certification types (76.5% of NPs working full-time compared with 81% - 89% for other certification types). However, among ARNPs who worked full-time, NPs worked a similar number of hours per week as CRNAs and CNSs.
- Hispanics and non-Whites were underrepresented among ARNPs when compared to the overall Washington population. This was especially pronounced among CNMs, who were shown to have no non-White or Hispanic practitioners in rural areas of the state and also in a few healthcare planning regions.

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INTRODUCTION

Information about the demographic, education, and practice characteristics of the advanced registered nurse practitioner (ARNP) workforce is needed to assess questions such as how many licensed ARNPs actively work in their field, in which ARNP roles, where in the state they practice, the race and ethnicity of the workforce, and other information relevant to health workforce planning. In Washington, prior studies of the state's ARNP workforce using data from state license records include the "Data Snapshots" conducted since 2006 by the University of Washington Center for Health Workforce Studies (UW CHWS) and funded by the Washington Center for Nursing (WCN).[1-8] Using the basic license data fields of mailing address, birthdate and sex, these Snapshots have provided useful records of changes in the state and regional distribution and demographic characteristics of the ARNP workforce. More in-depth studies of Washington's ARNP workforce have been conducted by Washington State University, the Washington Center for Nursing and the American Association of Nurse Practitioners through surveys in 2015 and in 2018,[9,10] and by the UW CHWS and Washington's Office of Financial Management using primary care NP survey data in 2012,[11] and by the UW CHWS using ARNP survey data from 2008.[12] These surveys provide information that was not available through the analysis of licensing data but are more costly to conduct largely due to the need for multiple email, mail and telephone contacts with subjects to encourage participation.

In order to better monitor health workforce changes, some states have implemented processes by which health care professionals, including ARNPs, complete workforce surveys at licensing and/or with license renewal. When data from workforce surveys are linked to licensure data, and if surveys are conducted online, data collection costs can be greatly reduced and response rates are typically higher than for separate mailed or phone-based surveys. In 2018, Washington's Nursing Care Quality Assurance Commission (NCQAC) required that all nurses licensed in the state must provide workforce data at initial licensure and renewal through the Nursys e-Notify survey conducted by the National Council of State Boards of Nursing (NCSBN). With funding from the Washington Center for Nursing, the UW CHWS conducted analyses of these data following the first full year of mandated data collection for ARNPs, as well as for licensed practical nurses (LPNs) and registered nurses (RNs). This report describes the results of these analyses for Washington's ARNPs.

METHODS

Beginning in January, 2018, nurses (LPNs, RNs and ARNPs) in Washington State were required to complete an online survey with questions about their demographics, work characteristics, and education history when they renewed their nursing license or applied for a new license. Most of this information was collected through NCSBN's Nursys e-Notify survey.[13] For three years prior to mandatory data submission, nurses were invited to voluntarily submit data through the Nursys e-Notify online survey. Nurses, including those who submitted data prior to January, 2018, are asked to update responses, as needed, when they renew their license. The analyses in this report are based on these data submitted by ARNPs with licenses in Washington. We also obtained from Nursys e-Notify a complete roster of LPNs, RNs and ARNPs licensed in Washington State, which was regularly updated by the state licensing board (NCQAC).

Data Preparation

Nurses licensed as ARNPs had at least two records in the roster – their RN license and their ARNP license. We matched each record for an ARNP with an active license on May 31, 2019 with the corresponding RN record (active or inactive) by name (first and last), mailing address and birth year. We were able to successfully match all ARNP records using these matching criteria. This matching procedure also revealed that there were a small percentage of individuals with more than one ARNP license record, one record for each advanced practice certification status (nurse practitioner [NP], certified nurse midwife [CNM], certified registered nurse anesthetist [CRNA], and clinical nurse specialist [CNS]).

Designating ARNP Certification Type

The vast majority of the ARNP records in the licensing roster (99.4%) showed only one certification role (NP, CRNA, CNM or CNS). However, there was a small number of ARNPs that were certified as a NP + CNM or NP +CRNA (see **Table A1** of the appendix). Nurses with NP + CNM certifications were classified as a CNM, nurses with NP + CRNA certifications were classified as a CRNA and only one record was included in the analysis dataset.

Linking Licensing Roster and Demographic Survey Data

We then linked the nursing license roster data to survey responses by license number. We found that survey responses for ARNPs could be linked for analysis to more than one licensing record: the ARNP licensing record, the RN licensing record, more than one ARNP licensing record for nurses with more than one ARNP certification, or multiple records in any combination of these record types. If the survey data matched to more than one record for each individual nurse, the record with most recent survey completion date was retained in the analysis data file. If the survey data linked to only one licensing record for a given nurse, the data for the non-linking licensing records were disregarded for analysis purposes. If there were no survey data for the nurse, the RN record was not included in analyses.

The resulting analysis dataset consisted of one record for each nurse with an active ARNP license on May 31, 2019 and ensured that the survey data were correctly linked to a single ARNP record. Each ARNP in the analyses was classified into one of the four ARNP roles, as described above.

The following report summarizes the survey findings for Washington's ARNPs. RN survey findings are summarized in a separate companion report,[14] as are findings for licensed practical nurses (LPNs).[15]

Questionnaire

The questions in the Nursys questionnaire were derived from the National Forum of Nursing Workforce Center's Minimum Nurse Supply Dataset.[16] Question categories include demographics (ethnicity, race), education (initial and highest nursing and non-nursing education), employment information (current status, hours, setting, position, specialty), license status, and country initially licensed as a nurse. The online Nursys questionnaire included skip logic that specified that demographics and education questions were asked of all nurses and employment questions were asked only of those who indicated they were employed as a nurse.

Response Rates and Survey Weights

The state licensing board (NCQAC) sent multiple reminders to nurses who did not submit their required data at licensing or renewal. We found that 5,578 ARNPs (64.5% of ARNPs with active licenses in May, 2019) had completed the Nursys survey at least once since 2015. Response rates varied by certification type, from 57.3% for CNMs to 70.8% for CNSs (**Table A2** of the appendix).

We compared survey respondents to all ARNPs licensed in the state by certification type (see **Table A3** of the appendix). We found that, for each certification type, survey respondents were older than non-respondents but there were not statistically significant differences based on sex and mailing address location. Therefore, we created survey weights based on age categories to make

survey responses more representative of all licensed ARNPs in Washington. Survey weights were constructed separately for each certification type (NP, CRNA, CNM and CNS). See **Appendix A** for further details.

An online supplemental appendix[17] summarizes unweighted response frequencies for each survey question, including the number missing.

Study Group and Data Analysis

All analyses are for ARNPs with an active Washington State license on May 31, 2019. Some of the figures and tables that follow summarize results for ARNPs employed as a nurse and practicing in any state. The majority summarize results for ARNPs employed as a nurse and practicing in Washington State.

Descriptive statistics were carried out using R statistical software.[18] Weighted estimates and measures of uncertainty were calculated using the R "survey" package[19] (see **Appendix A** for details). Percentages were calculated by excluding missing cases for each variable (complete case analysis) and the percent missing was reported separately for each variable. The one exception was the ethnicity variable. Survey respondents were asked to check a box if they identified as Hispanic/Latino. There was not a corresponding box for "Not Hispanic/Latino" or for "Choose not to answer." Therefore it was not possible to assess the percentage missing for the ethnicity question.

Classifying Race and Ethnicity

For this survey, race and ethnicity were considered to be two distinct concepts and were reported separately. Respondents could self-identify as belonging to one or more racial category: American Indian and Alaska Native, Asian, Black or African American, Native Hawaiian and Other Pacific Islander, White, or some other race. Respondents could report multiple races. Ethnicity was broken into two categories separate from race: Hispanic or Latino and Not Hispanic or Latino. Hispanics/Latinos could report as any race.

Due to the small number of responses in several racial categories, we consolidated all races other than White into the category "non-White," which was used in some of the findings presented below. "Non-White" refers to the racial designation of the respondent and not the ethnicity. For example a respondent could be "non-White and Hispanic" or "non-White and not Hispanic" or any other combination of the race and ethnicity categories.

Geographic Assignment

Residence location was attributed to the county associated with the mailing ZIP Code for the nurse's Washington State nursing license. Work location was based on survey responses for actively employed ARNPs indicating the ZIP Code of their primary employer. Using a data crosswalk of Washington ZIP Codes to counties, we assigned ARNPs to one of the state's nine Accountable Communities of Health (ACH) healthcare planning regions.[20] Assignments were made for both the residence and practice location ZIP Codes.

We classified the ZIP Code in which ARNPs practiced as urban or rural using the Rural-Urban Commuting Areas (RUCA) geographic taxonomy codes[21] and also estimated the number of ARNPs working in each ZIP Code per 100,000 population based on 2018 estimates of the population in each ZIP Code.[22]

Human Subjects

The procedures and data protection protocols for this study were approved by the State of Washington Institutional Review Board.

WASHINGTON'S NURSE PRACTITIONERS

This section summarizes findings for ARNPs who were designated in Washington State licensing records as certified nurse practitioners (NPs).

On May 31, 2019, there were 6,985 NPs with an active Washington state license. Approximately 93.0% were employed in nursing, 4.7% were unemployed and the remaining 2.4% were retired, worked as a nurse only as a volunteer or worked in a field other than nursing (**Table NP.1**).

Among unemployed NPs, over 40% selected "Other" as the reason for being unemployed. There was not a write-in option for this question, so it was not possible to classify these responses further. Among responses that were not in the "Other" category, the top three reasons for being unemployed were "School" (25.7% of all unemployed NPs), "Difficulty finding a nursing position" (15.8%), and "Taking care of home and family" (15.7%) (**Table NP.2**).

Table NP.1: Employment status of Washington's NPs, May 2019

	Estimated Statewide NP Totals	
	Number (95% CI)	Column Percent (95% CI)
Total with active WA license	6,985	100%
Employed in nursing	6,494 (6,435 - 6,552)	93.0% (92.5% - 93.4%)
Unemployed	326 (300 - 352)	4.7% (4.3% - 5.0%)
Retired, volunteer or working in a field other than nursing	165 (148 - 183)	2.4% (2.1% - 2.6%)

Notes: 1) 95% CI = 95% Confidence Interval.
2) ARNPs could be employed in Washington or any other state. The number of active licenses is a complete count from state licensing records so confidence intervals do not apply. All other numbers in the table are weighted estimates based on Nursys survey responses. Percent calculations do not include missing data.
3) Missing data: No NPs with an active license were missing data on employment status.

Table NP.2: Reason cited by Washington's NPs for being unemployed, May 2019

Reason for being unemployed	Estimated Statewide NP Totals	
	Number (95% CI)	Column Percent (95% CI)
School	82 (69 - 96)	25.7% (22.1% - 29.3%)
Difficulty in finding a nursing position	51 (40 - 61)	15.8% (12.8% - 18.7%)
Taking care of home and family	50 (40 - 61)	15.7% (12.7% - 18.7%)
Disabled	6 (2 - 9)	1.8% (0.8% - 2.9%)
Inadequate Salary	2 (0 - 4)	0.5% (0.0% - 1.1%)
Other	130 (113 - 146)	40.5% (36.5% - 44.5%)

Notes: 1) Only one answer was allowed for each unemployed nurse.
2) 95% CI = 95% Confidence Interval. Percent calculations do not include missing data.
3) Missing data: 1.5% did not answer the reasons for unemployment question.

Among the estimated 6,494 NPs with a Washington license who were employed in nursing, 69.3% with a known practice address resided in Washington and worked in-state, 0.8% resided in Oregon and practiced in Washington, 0.6% resided in Idaho and practiced in Washington and 3.7% practiced in Washington but resided in a state other than Washington, Oregon or Idaho. (**Figure NP.1a** and **NP.1b**). These figures also show that an estimated 25.5% of NPs with a Washington license and employed in nursing did not practice in Washington. This means that in May 2019, there were an estimated 4,807 NPs with an active ARNP license practicing in Washington. From the data, it was not possible to identify NPs who were working as RNs.

Figure NP.1a: NPs with active Washington licenses, May 2019
Figure NP.1b: Residence and practice location among NPs employed in nursing, May 2019

a.

b.

6,985 (100.0%) — Number of NPs
6,494 (93.0%) — NPs employed in nursing
4,807 (74.5%) — NPs practicing in WA
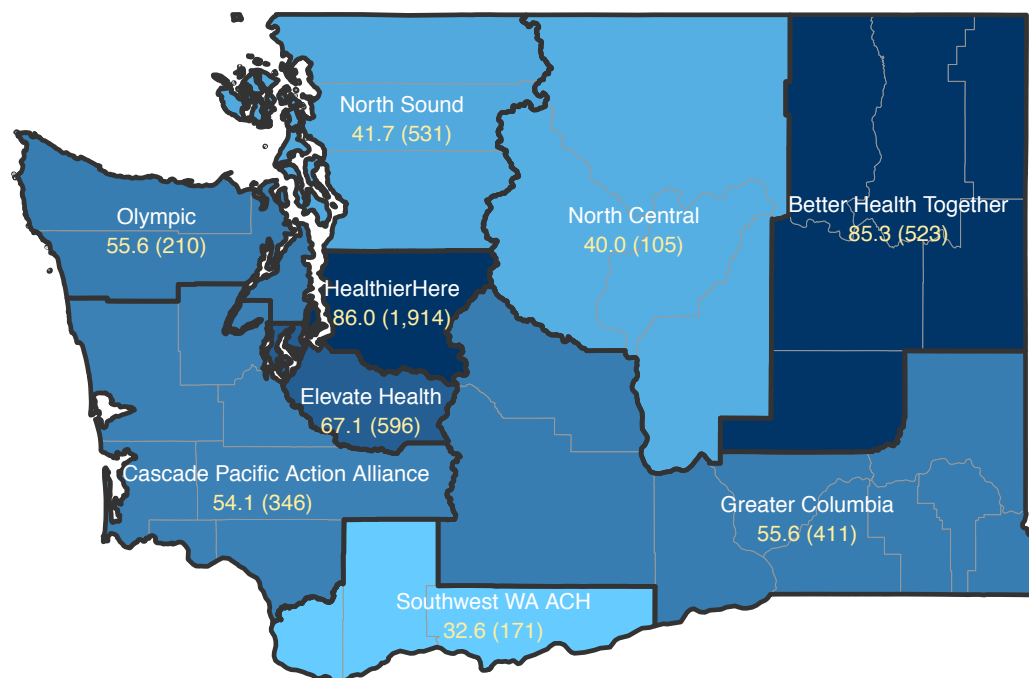
Residence and practice location

Residence and practice location among those employed in nursing

- Have a WA license, but don't practice in WA (25.5%)
- Residing and practicing in WA (69.3%)
- Residing in another state and practicing in WA (3.7%)
- Residing in ID and practicing in WA (0.6%)
- Residing in OR and practicing in WA (0.8%)

Notes: 1) Residence was attributed to the state associated with the mailing ZIP Code for the NP's Washington State license. Practice location was based on survey responses for actively employed nurses indicating the ZIP Code of their primary employer.
2) Percent calculations do not include missing data. For figure NP.1a, percentages are out of the total licensed in WA. For figure NP.1b, percentages are out of the number employed in nursing.
3) Missing data: Among NPs employed as a nurse, 0.7% did not fill out practice location and 0.07% were missing residence location.

The remainder of this section will focus on the approximately 4,807 nurses actively employed as NPs and practicing in Washington.

PRACTICE LOCATION

There was wide variation in the number of NPs practicing in each region of the state and these differences persisted when considering the number of practitioners per 100,000 population in each region. **Figure NP.2** shows the estimated count and number of NPs per 100,000 population practicing in each of the state's ACH health care planning regions. The highest number of NPs, in both count and per 100,000 population, were found in the HealthierHere ACH, comprised of King county where the state's largest city, Seattle, is located (1,194 NPs or 86.0 per 100,000 population). Better Health Together, in the eastern part of the state and including the second largest city, Spokane, closely followed with an estimated 85.3 NPs per 100,000 population. Southwest Washington ACH had the lowest number of NPs per capita (32.6).

Figure NP.2: Number per 100,000 population (estimated count) of NPs practicing in each Accountable Community of Health, May 2019

North Sound
41.7 (531)

Olympic
55.6 (210)

North Central
40.0 (105)

Better Health Together
85.3 (523)

HealthierHere
86.0 (1,914)

Elevate Health
67.1 (596)

Cascade Pacific Action Alliance
54.1 (346)

Greater Columbia
55.6 (411)

Southwest WA ACH
32.6 (171)

Notes: 1) Numbers indicate the number of NPs per 100,000 population with the estimated count practicing in each ACH in parentheses. Map color intensity is based on the number of NPs per 100,000 population.
2) Practice location was based on survey responses for actively employed NPs indicating the ZIP Code of their primary employer.
3) Missing data: 0.7% missing practice location.

DEMOGRAPHIC AND WORK CHARACTERISTICS

The mean age of NPs practicing in Washington in May 2019 was 47.8 years and an estimated 32.3% were age 55 or older (**Table NP.3**). The ACH with the lowest mean age was HealthierHere (45.8 years) and the ACH with the lowest percentage of NPs age 55 or older was North Central (24.0%). Olympic ACH had NPs with the highest mean age (52.3) and the highest percentage age 55 or older (44.9%).

An estimated 3.9% of NPs practicing in Washington were Hispanic or Latino ranging from 2.1% in Better Health Together ACH to 6.6% in Southwest Washington ACH and 14.8% were non-White, ranging from 4.5% in Olympic ACH to 19.8% in HealthierHere ACH. See **Table 3** in the **Comparing Advanced Practice Certification Types** section for a more detailed breakdown of NP race categories.

Nearly 12% of NPs were estimated to be male in 2019, and 76.5% worked full time (**Table NP.3**).

Table NP3: Demographic and Work Characteristics of NPs Practicing in Washington statewide and by Accountable Community of Health (ACH), May 2019

	Statewide	Accountable Community of Health (ACH) in which NPs practice*								
		1. BHT N ≈ 523	2. CPAA N ≈ 346	3. EH N ≈ 596	4. GC N ≈ 411	5. HH N ≈ 1,914	6. N Central N ≈ 105	7. N Sound N ≈ 531	8. Olympic N ≈ 210	9. SW N ≈ 171
Age										
Mean	47.8 (47.6 - 48.1)	49.0 (48.2 - 49.7)	50.8 (49.8 - 51.7)	48.4 (47.7 - 49.1)	48.5 (47.7 - 49.4)	45.8 (45.4 - 46.2)	47.6 (46.0 - 49.1)	49.0 (48.2 - 49.7)	52.3 (51.1 - 53.6)	49.1 (47.8 - 50.5)
% 55 or older	32.3% (31.3 - 33.2%)	34.9% (31.9 - 37.8%)	43.6% (39.8 - 47.4%)	35.4% (32.6 - 38.1%)	34.1% (30.7 - 37.4%)	26.5% (25.0 - 27.9%)	24.0% (18.2 - 29.9%)	34.0% (31.1 - 36.9%)	44.9% (40.0 - 49.8%)	35.5% (30.3 - 40.7%)
Sex										
Male	11.9% (11.2 - 12.6%)	13.1% (10.9 - 15.2%)	13.7% (11.0 - 16.3%)	11.2% (9.3 - 13.0%)	13.3% (10.9 - 15.8%)	10.3% (9.3 - 11.4%)	17.9% (12.4 - 23.3%)	10.1% (8.2 - 12.0%)	16.9% (13.1 - 20.7%)	16.3% (12.2 - 20.4%)
Ethnicity										
Hispanic or Latino	3.9% (3.5 - 4.3%)	2.1% (1.2 - 3.0%)	3.1% (1.8 - 4.5%)	4.5% (3.2 - 5.7%)	4.4% (2.9 - 5.9%)	4.2% (3.5 - 4.9%)	2.8% (0.5 - 5.1%)	3.9% (2.7 - 5.1%)	3.1% (1.3 - 4.9%)	6.6% (3.8 - 9.44%)
Race										
Non-White	14.8% (14.1 - 15.6%)	7.0% (5.4 - 8.7%)	12.3% (9.7 - 14.9%)	16.1% (13.9 - 18.3%)	11.6% (9.3 - 13.9%)	19.8% (18.5 - 21.2%)	9.0% (4.9% - 13.1%)	13.5% (11.4 - 15.7%)	4.5% (2.4 - 6.6%)	11.2% (7.6 - 14.7%)
Work Characteristics										
Percent working in a rural area	8.0% (7.4 - 8.6%)	6.0% (4.5 - 7.5%)	31.2% (27.6 - 34.8%)	NA	14.4% (11.9 - 16.8%)	NA	47.9% (40.8 - 55.0%)	8.7% (7.0 - 10.5%)	40.8% (35.9 - 45.7%)	2.4% (0.8 - 4.1%)
Percent Full-Time (≥ 32 hours per week)	76.5% (75.6 - 77.3%)	81.0% (78.5 - 83.4%)	81.6% (78.6 - 84.6%)	77.0% (74.6 - 79.5%)	81.5% (78.7 - 84.3%)	74.4% (72.9 - 75.9%)	84.0% (78.8 - 89.2%)	74.3% (71.6 - 77.1%)	69.0% (64.4 - 73.5%)	72.3% (67.3 - 77.2%)
Mean Hours Worked per Week (Full-Time)	42.3 (42.1 - 42.5)	42.8 (42.3 - 43.4)	42.3 (41.7 - 43.0)	43.7 (43.0 - 44.4)	42.8 (42.2 - 43.4)	41.8 (41.5 - 42.1)	41.6 (40.5 - 42.7)	41.8 (41.3 - 42.4)	42.5 (41.6 - 43.3)	41.9 (41.0 - 42.8)

Notes: 1) 95% CI = 95% confidence interval. NA = Not applicable (there were no ZIP Codes designated as rural in these ACHs).
2) Non-White defined as all races other than White alone (including two or more races) and does not include Hispanic ethnicity
3) Rural/Urban designation based on rural-urban commuting area codes (RUCA version 3.1) for the ZIP Code in which NPs were employed19
4) Full-time employment was defined as greater than or equal to 32 hours worked per week.
5) Percent calculations do not include missing data, other than for the Hispanic/Latino question. Survey respondents were asked to check a box if they identified as Hispanic/Latino. There was not a corresponding box for not Hispanic/Latino" or for "Choose not to answer." Therefore, it was not possible to assess the percentage of respondents who chose not to answer the ethnicity question.
6) Missing data: Practice location = 0.7% missing statewide; Race = 0.7% missing statewide, Race = 0.0% (N. Sound, SW) – 1.8% CPAA. All other categories: No missing data for NPs employed as a nurse and practicing in WA.
7) Counties comprising ACHs: 1) **Better Health Together (BHT)** includes Adams, Ferry, Lincoln, Pend Oreille, Spokane, and Stevens counties; 2) **Cascade Pacific Action Alliance (CPAA)** includes Cowlitz, Grays Harbor, Lewis, Mason, Pacific, Thurston, and Wahkiakum counties; 3) **Elevate Health (EH)** is Pierce County; 4) **Greater Columbia (GC)** includes Asotin, Benton, Columbia, Franklin, Garfield, Kittitas, Walla Walla, Whitman, and Yakima counties, 5) **HealthierHere (HH)** is King County, 6) **North Central (N. Central)** includes Chelan, Douglas, Grant, and Okanogan counties. 7) **North Sound (N. Sound)** includes Snohomish, Skagit, Island, San Juan, and Whatcom counties, 8) **Olympic Community (Olympic)** of Health includes Clallam, Jefferson and Kitsap counties, 9) **Southwest Washington (SW)** includes Clark, Klickitat, and Skamania counties.

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WORK SETTING

Among NPs practicing in Washington in May 2019, 29.1% indicated they worked in an ambulatory care setting, 20.6% worked in a hospital, 12.9% worked in community health and 4.3% worked in long term care (**Table NP.4**). The remainder worked in correctional facilities, insurance claims/benefits, policy/planning/ regulatory/licensing, school of nursing or selected "other" as their work setting. It is important to note that close to 30% of NPs selected "other" for their work setting. There was no write-in option for NPs who selected "other" so we are not able to place these responses in a more appropriate category. It is possible that the estimates presented below for work setting would change if the "other" responses could be reclassified.

Table NP.4: Work setting for Washington's NPs, May 2019

Work Setting	Estimated Statewide NP Totals	
	Number (95% CI)	Column Percent (95% CI)
Hospital	989 (945 - 1,032)	20.6% (19.7% - 21.4%)
Long Term Care	204 (184 - 225)	4.3% (3.8% - 4.7%)
Assisted Living Facility	18 (12 - 25)	0.4% (0.3% - 0.5%)
Home Health	45 (35 - 55)	0.9% (0.7% - 1.1%)
Hospice	12 (7 - 17)	0.3% (0.1% - 0.4%)
Nursing Home/Extended Care	114 (99 - 130)	2.4% (2.1% - 2.7%)
Other Long Term Care	15 (9 - 20)	0.3% (0.2% - 0.4%)
Ambulatory Care	1,392 (1,342 - 1,441)	29.0% (28.0% - 29.9%)
Community Health	622 (587 - 657)	12.9% (12.2% - 13.7%)
Community Health Setting	454 (424 - 485)	9.5% (8.8% - 10.1%)
Occupational Health	60 (49 - 71)	1.2% (1.0% - 1.5%)
Public Health	53 (42 - 63)	1.1% (0.9% - 1.3%)
School Health Service	55 (44 - 66)	1.1% (0.9% - 1.4%)
Settings Not Included Above	1,590 (1,538 - 1,642)	33.1% (32.1% - 34.1%)
Correctional Facility	60 (49 - 72)	1.3% (1.0% - 1.5%)
Insurance Claims/Benefits	< 10	NC
Policy/Planning/Regulatory/ Licensing Agency	< 10	NC
School of Nursing	139 (123 - 156)	2.9% (2.6% - 3.2%)
Other	1,375 (1,326 - 1,424)	28.6% (27.7% - 29.6%)

<u>Notes</u>: 1) 95% CI = 95% Confidence Interval. Percent calculations do not include missing data.
2) The table shows NPs working as a nurse and practicing in Washington.
3) NC = Not calculated. Estimates of less than 10 NPs were suppressed to protect the identity of nurses and to indicate that these estimates may be unreliable due to the small number of survey responses.
4) Missing data: 0.06% did not answer the work setting question.

SPECIALTY BY WORK SETTING

Table NP.5 shows the specialties/areas of practice listed by Washington's NPs practicing in each work setting. NPs selected from a list that included the categories listed in the table, including "other specialties". For example, "Other – Clinical Specialties" was a category selected by many NPs to indicate a clinical specialty that was not included on the selection list, which did not have a write-in option. It is also important to note that approximately 20% of NPs practicing in Washington did not answer the survey question about specialty/area of practice. The percentage and estimated number of NPs were calculated by excluding records with missing data for this question. Therefore, the actual percentage of NPs in each specialty and work setting may be different than we were able to estimate with such a high rate of missing data.

Table NP.5: Top specialties by work setting for Washington's NPs, May 2019

Work Setting	Specialty/Area of Practice	Estimated Statewide NP Number (95% CI)	Estimated Statewide Percent Within Work Setting (95% CI)
Hospital	Acute Care/Critical Care	195 (175 - 215)	21.0% (19.0% - 22.9%)
	Pediatrics	110 (95 - 126)	11.9% (10.3% - 13.4%)
	Cardiology	102 (87 - 116)	10.9% (9.4% - 12.4%)
	Emergency / Trauma	91 (77 - 105)	9.8% (8.4% - 11.3%)
	Neonatal	75 (63 - 88)	8.1% (6.8% - 9.4%)
	Other - Clinical Specialties	74 (62 - 87)	8.0% (6.7% - 9.3%)
	Psychiatric/Mental Health/Substance Abuse	63 (51 - 74)	6.8% (5.6% - 8.0%)
	Oncology	43 (33 - 53)	4.6% (3.6% - 5.7%)
	Medical Surgical	36 (28 - 45)	3.9% (3.0% - 4.9%)
	Palliative Care / Hospice	21 (14 - 28)	2.3% (1.6% - 3.0%)
	Adult Health	17 (11 - 23)	1.9% (1.2% - 2.5%)
	Other specialties with fewer than 15 NPs statewide	101 (87 - 115)	10.9% (9.4% - 12.3%)

Long-term Care or Hospice
  -Assisted Living Facility
  -Home Health
  -Hospice
  -Nursing Home/Extended Care
	Geriatric/Gerontology	131 (114 - 147)	67.3% (62.3% - 72.2%)

	Palliative Care / Hospice	15 (10 - 21)	7.9% (5.1% - 10.8%)
	Other specialties with fewer than 15 NPs statewide	48 (38 - 58)	24.8% (20.3% - 29.4%)

Ambulatory Care
  -Ambulatory Care Setting
  -Dialysis Center
	Family Health	348 (322 - 375)	29.1% (27.2% - 31.1%)

	Other - Clinical Specialties	167 (148 - 185)	13.9% (12.5% - 15.4%)
	Psychiatric/Mental Health/Substance Abuse	110 (95 - 125)	9.2% (8.0% - 10.4%)
	Pediatrics	106 (91 - 121)	8.9% (7.7% - 10.1%)
	Adult Health	97 (82 - 111)	8.1% (6.9% - 9.2%)
	Oncology	75 (62 - 87)	6.3% (5.2% - 7.3%)
	Women's Health	73 (61 - 86)	6.1% (5.1% - 7.1%)
	Acute Care/Critical Care	41 (32 - 51)	3.5% (2.7% - 4.2%)
	Cardiology	41 (32 - 50)	3.4% (2.7% - 4.2%)
	Emergency / Trauma	29 (21 - 37)	2.4% (1.8% - 3.1%)
	Other specialties with fewer than 15 NPs statewide	108 (93 - 123)	9.0% (7.8% - 10.2%)

Community Health
  -Community Health Setting
  -Occupational Health
  -Public Health
  -School Health Service
	Psychiatric/Mental Health/Substance Abuse	182 (163 - 202)	34.4% (31.4% - 37.4%)

	Family Health	126 (109 - 142)	23.7% (21.0% - 26.4%)
	Occupational Health	49 (39 - 59)	9.3% (7.5% - 11.1%)
	Pediatrics	37 (28 - 46)	7.0% (5.4% - 8.7%)
	Community	34 (25 - 42)	6.4% (4.8% - 7.9%)
	Women's Health	29 (21 - 37)	5.5% (4.1% - 7.0%)
	Adult Health	16 (10 - 21)	3.0% (1.9% - 4.0%)
	Other specialties with fewer than 15 NPs statewide	56 (46 - 67)	10.6% (8.7% - 12.6%)

Continued next page

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Work Setting	Specialty/Area of Practice	Estimated Statewide Number (95% CI)	Estimated Statewide Percent Within Work Setting (95% CI)

Settings not included above
   -Correctional Facility
   -Insurance Claims/Benefits
   -Policy/Planning/ Regulatory/ Licensing Agency
   -School of Nursing
   -Other
	Psychiatric/Mental Health/Substance Abuse	312 (288 - 337)	30.2% (28.2% - 32.3%)

	Family Health	139 (122 - 156)	13.4% (11.9% - 15.0%)
	Pediatrics	105 (90 - 120)	10.1% (8.8% - 11.5%)
	Other - Clinical Specialties	89 (76 - 103)	8.6% (7.4% - 9.9%)
	Women's Health	77 (64 - 89)	7.4% (6.3% - 8.6%)
	Cardiology	43 (34 - 53)	4.2% (3.3% - 5.1%)
	Oncology	38 (29 - 47)	3.6% (2.8% - 4.5%)
	Acute Care/Critical Care	28 (20 - 36)	2.7% (2.0% - 3.5%)
	Adult Health	28 (20 - 35)	2.7% (1.9% - 3.4%)
	Emergency / Trauma	27 (19 - 35)	2.6% (1.9% - 3.3%)
	Palliative Care / Hospice	24 (17 - 31)	2.3% (1.6% - 3.0%)
	Geriatric/Gerontology	22 (16 - 29)	2.2% (1.5% - 2.8%)
	Other specialties with fewer than 15 NPs statewide	102 (88 - 116)	9.9% (8.5% - 11.2%)

Notes: 1) 95% CI = 95% Confidence Interval. Percent calculations do not include missing data.
2) The table shows NPs working as a nurse and practicing in Washington.
3) Missing data: 0.06% did not answer the work setting question, 19.2% did not answer the specialty question.

JOB TITLES

Table NP.6 shows the survey responses for job titles selected by NPs actively practicing in Washington. Note that NPs selected a job title from a list provided on the survey questionnaire and were not given a write-in option. Therefore, the job titles listed in the table represent the categories that were included on the questionnaire and selected by each NP.

Table NP.6: Job titles of Washington's NPs, May 2019

Job title	Estimated Statewide NP Totals Column % (95% CI)]	
Advanced Practice Registered Nurse	88.5%	(87.8% - 89.1%)
Staff Nurse	6.1%	(5.6% - 6.6%)
Nurse Faculty/Educator	1.7%	(1.4% - 2.0%)
Other - Health Related	1.5%	(1.3% - 1.8%)
Nurse Executive	0.6%	(0.4% - 0.7%)
Nurse Manager	0.5%	(0.3% - 0.6%)
Consultant	0.5%	(0.3% - 0.6%)
Case Manager	0.4%	(0.3% - 0.6%)
Nurse Researcher	0.2%	(0.1% - 0.3%)
Other - not health related	0.1%	(0.0% - 0.1%)

Notes: 1) 95% CI = 95% Confidence Interval. Percent calculations do not include missing data.
2) The table shows NPs employed in nursing and practicing in Washington. While the license title in Washington is Advanced Registered Nurse Practitioner, Advanced Practice Registered Nurse is commonly used in other parts of the country and was the option provided on this survey question.
3) Missing data: 0.2% did not answer the job title question.

NPS WORKING IN RURAL ZIP CODES

Statewide, there were an estimated 65 NPs practicing in Washington per 100,000 population (**Table NP.7**). Not unexpectedly (largely because specialty health care facilities are less common in rural areas) there were fewer NPs per capita practicing in ZIP Codes classified as rural (43 per 100,000 population) compared with ZIP codes classified as urban (68 per 100,000 population). Rural eastern Washington had fewer working NPs per 100,000 population (35) than rural western Washington (51).

Rural areas in Washington had NPs with a higher mean age, a higher percentage age 55 or older, a higher percentage who were male, and a higher percentage of NPs working full-time compared with urban areas. Rural areas also had a lower percentage of non-White and of Hispanic NPs compared with urban areas.

Table NP:7: Demographic and Work Characteristics of NPs Practicing in Washington by Rural/Urban Designation of the ZIP Code in Which They Worked, 2019

Region	Rural/Urban Designation	NPs per 100,000 Population	Mean Age	Percent Age 55 or Older	Percent Male	Percent Non-White	Percent Hispanic/ Latino	Percent Full-Time	Mean Hours Worked per Week (Full-Time)
Washington State	Urban	68 (67 - 69)	47.4 (47.2 - 47.7)	31.1% (30.1% - 32.1%)	11.7% (11.0% - 12.4%)	15.3% (14.6% - 16.1%)	4.0% (3.6% - 4.5%)	76.2% (75.3% - 77.1%)	42.3 (42.1 - 42.5)
	Rural	43 (40 - 47)	52.5 (51.6 - 53.4)	45.6% (42.0% - 49.3%)	13.4% (10.9% - 15.9%)	8.6% (6.5% - 10.7%)	2.5% (1.3% - 3.7%)	79.5% (76.5% - 82.4%)	42.8 (42.1 - 43.6)
Eastern WA	Urban	78 (75 - 82)	48.2 (47.7 - 48.8)	32.3% (30.1% - 34.5%)	13.9% (12.2% - 15.6%)	9.2% (7.8% - 10.7%)	3.4% (2.5% - 4.3%)	81.3% (79.4% - 83.1%)	42.6 (42.2 - 43.0)
	Rural	35 (31 - 39)	51.3 (49.9 - 52.8)	40.8% (34.9% - 46.7%)	12.1% (8.1% - 16.1%)	7.7% (4.4% - 10.9%)	1.1% (-0.2% - 2.5%)	82.8% (78.2% - 87.4%)	43.2 (42.1 - 44.4)
Western WA	Urban	66 (65 - 67)	47.2 (46.9 - 47.5)	30.8% (29.7% - 31.9%)	11.2% (10.4% - 12.0%)	16.9% (16.0% - 17.8%)	4.2% (3.7% - 4.7%)	74.9% (73.8% - 76.0%)	42.2 (41.9 - 42.4)
	Rural	51 (46 - 55)	53.2 (52.0 - 54.3)	48.4% (43.8% - 53.0%)	14.2% (11.0% - 17.4%)	9.1% (6.4% - 11.8%)	3.3% (1.6% - 5.0%)	77.6% (73.7% - 81.4%)	42.6 (41.7 - 43.5)
Washington State	Rural and Urban Combined	65 (64 - 66)	47.8 (47.6 - 48.1)	32.3% (31.3% - 33.2%)	11.9% (11.2% - 12.6%)	14.8% (14.1% - 15.6%)	3.9% (3.5% - 4.3%)	76.5% (75.6% - 77.3%)	42.3 (42.1 - 42.5)

Notes: 1) Rural/urban designation based on rural-urban commuting area codes (RUCA version 3.1) for the ZIP Code in which NPs were employed[21]

2) Population estimates are for the ZIP Code in which an NP was employed, based on 2018 estimates[22]

3) Counties in Eastern WA: Okanogan, Chelan, Douglas, Grant, Kittitas, Yakima, Benton, Franklin, Walla Walla, Columbia, Garfield, Asotin, Whitman, Adams, Lincoln, Spokane, Stevens, Ferry, Pend Oreille. Counties in Western WA: Whatcom, Skagit, San Juan, Island, Snohomish, King, Pierce, Kitsap, Jefferson, Clallam, Grays Harbor, Mason, Thurston, Pacific, Lewis, Wahkiakum, Cowlitz, Skamania, Clark, Klickitat

4) Non-White defined as all races other than White alone (including two or more races) and does not include Hispanic ethnicity

5) Full-Time employment was defined as greater than or equal to 32 hours worked per week.

6) 95% CI = 95% confidence interval

7) Percent calculations do not include missing data, other than for the Hispanic/Latino question. Survey respondents were asked to check a box if they identified as Hispanic/Latino. There was not a corresponding box for "Not Hispanic/Latino" or for "Choose not to answer." Therefore, it was not possible to assess the percentage of respondents who chose not to answer the ethnicity question.
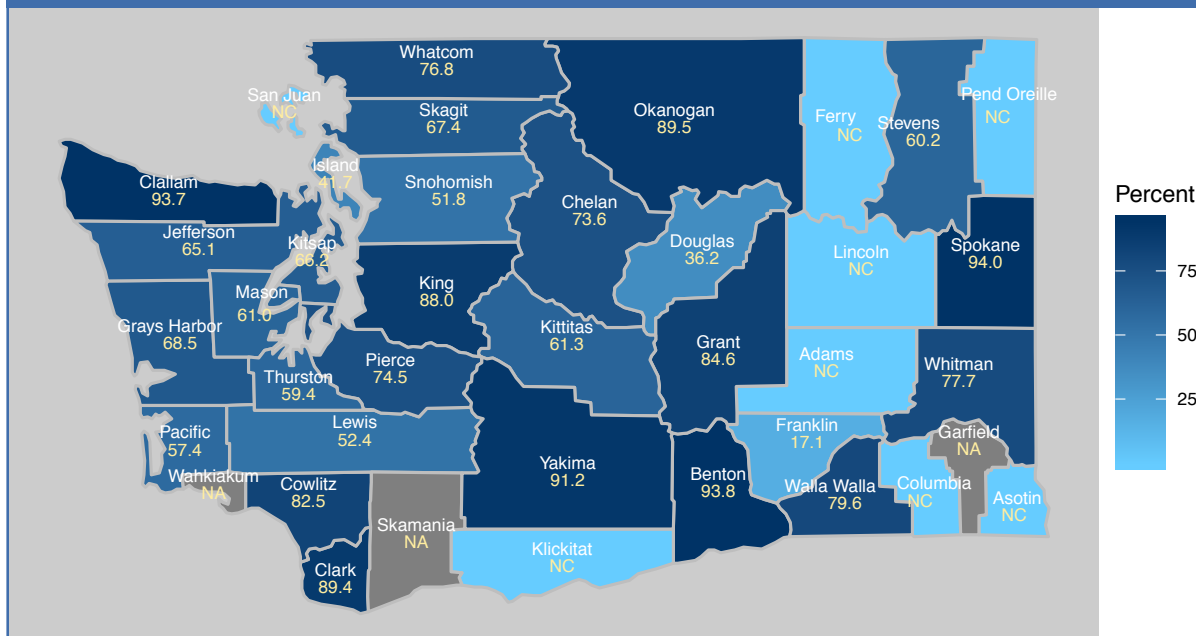
8) Missing data: Work location and rural/urban designation: 0.7% statewide; Race 0.7% statewide, range 0.6% (W. WA Urban) – 1.2 % (W. WA Rural). All other categories: No missing for CNPs employed as a nurse and practicing in WA.

COMMUTING PATTERNS FOR WASHINGTON'S NPS

We compared residence address (based on the mailing ZIP Code provided by each NP during licensing) to work address (based on the practice location ZIP Code provided by survey respondents who indicated they were employed as a nurse) to understand where NPs lived compared to where they worked. We made comparisons at the county level because there were enough NPs living in most counties to calculate reliable estimates and because examining commuting patterns at the ACH level may have hidden patterns that were more apparent when looking at the same information at the county level.

In some counties, less than 60% of the NPs who resided there also worked there in May 2019 (**Figure NP.3**). These counties were Franklin (17.1%), Douglas (36.2%), Island (41.7%), Snohomish (51.8%), Lewis (52.4%), Pacific (57.4%) and Thurston (59.4%). In these counties, a large percentage of NPs worked in a neighboring county (**Table NP.8**). For example, among all NPs actively practicing in Washington and with a residence mailing address in Franklin County, 64.4% worked in Benton County.

Figure NP.3: Percentage of NPs residing in each county who worked in the same county (May, 2019)

Whatcom 76.8
San Juan NC
Skagit 67.4
Okanogan 89.5
Ferry NC
Stevens 60.2
Pend Oreille NC
Island 41.7
Clallam 93.7
Snohomish 51.8
Chelan 73.6
Lincoln NC
Spokane 94.0
Jefferson 65.1
Kitsap 66.2
Douglas 36.2
King 88.0
Mason 61.0
Kittitas 61.3
Grant 84.6
Adams NC
Whitman 77.7
Grays Harbor 68.5
Thurston 59.4
Pierce 74.5
Franklin 17.1
Garfield NA
Pacific 57.4
Lewis 52.4
Yakima 91.2
Benton 93.8
Walla Walla 79.6
Columbia NC
Asotin NC
Wahkiakum NA
Cowlitz 82.5
Skamania NA
Klickitat NC
Clark 89.4

Percent
75
50
25

Notes: 1) NA = Not applicable. No NPs actively practicing in WA had a mailing ZIP Code in these counties.
2) NC = Not calculated. Fewer than 10 NPs actively practicing in WA had a mailing ZIP code in these counties. Due to the small number of survey responses indicating a practice location, reliable estimates could not be calculated for these counties

Table NP.8: **Washington counties with the highest percentage of NPs who work in another county, 2019**

County of Residence (a)		Work County (b)		For NPs Who Live in (a), Percent Working in (b)
Franklin		Benton		66.4%
Douglas		Chelan		63.8%
Snohomish		King		44.6%
Mason		Thurston		29.4%
Pacific		Clark		28.9%
Island		Snohomish		25.7%

Notes for figure NP.3 and Table NP.8: 1) Residence was attributed to the county associated with the mailing ZIP Code for the NP's Washington State license. Practice location was based on survey responses for actively employed nurses indicating the ZIP code of their primary employer. Residence or practice counties outside of Washington were not included.
2) Percent calculations do not include missing data.
3) Missing data: Among NPs practicing in WA, 0.1% were missing residence location.

WASHINGTON'S
CERTIFIED REGISTERED NURSE ANESTHETISTS

This section summarizes findings for ARNPs who were designated in Washington State licensing records as certified registered nurse anesthetists (CRNAs).

On May 31, 2019, there were 1,061 CRNAs with an active Washington state license. Approximately 94.3% were employed as a nurse, 3.2% were unemployed and the remaining 2.5% were retired, worked as a nurse only as a volunteer or worked in a field other than nursing (**Table NA.1**).

Among unemployed CRNAs, 29.2% selected "Other" as the reason for being unemployed. There was not a write-in option for this question, so it was not possible to classify these responses further. Among responses that were not in the "Other" category, the top reasons for being unemployed were "School" (39.2% of all unemployed CRNAs), "Taking care of home and family" (23.0%) and "Difficulty finding a nursing position" (8.7%) (**Table NA.2**).

Table NA.1: Employment status of Washington's CRNAs, May 2019

Reason for being unemployed	Estimated Statewide CRNAs Totals	
	Number (95% CI)	Column Percent (95% CI)
Total with active WA license	1,061	100%
Employed in nursing	1,001 (957 - 1,045)	94.3% (93.3% - 95.4%)
Unemployed	34 (25 - 43)	3.2% (2.4% - 4.0%)
Retired, volunteer or working in a field other than nursing	26 (19 - 34)	2.5% (1.8% - 3.2%)

Notes: 1) 95% CI = 95% Confidence Interval.
2) ARNPs could be employed in Washington or any other state. The number of active licenses is a complete count from state licensing records so confidence intervals do not apply. All other numbers in the table are weighted estimates based on Nursys survey responses. Percent calculations do not include missing data.
3) Missing data: No ARNPs with an active license were missing data on employment status.

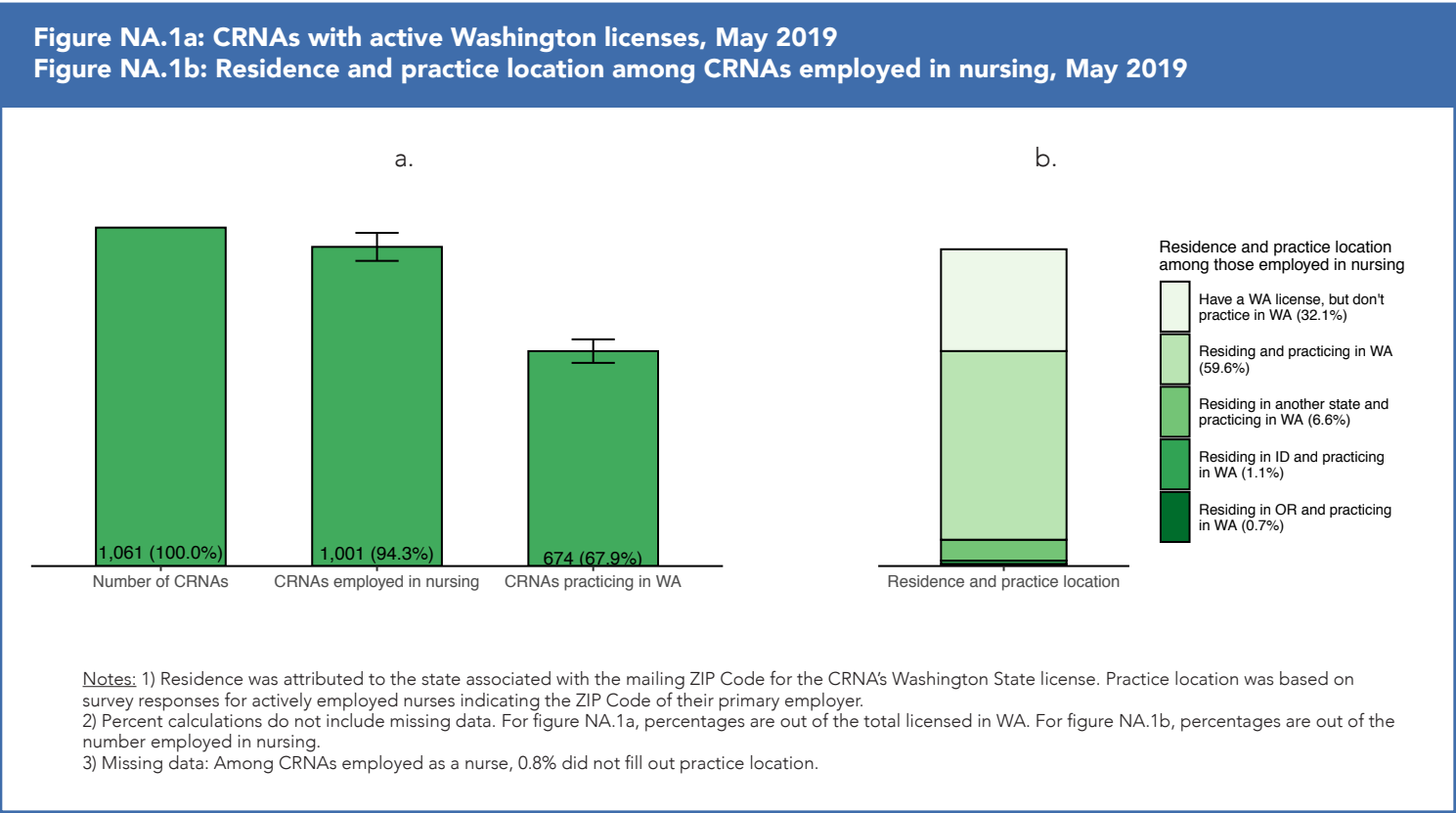## Table NA.2: Reasons cited by Washington's CRNAs for being unemployed, May 2019

Reason for being unemployed	Estimated Statewide CRNAs Totals	
	Number (95% CI)	Column Percent (95% CI)
School	13 (7 - 19)	39.2% (25.8% - 52.5%)
Taking care of home and family	8 (3 - 12)	23.0% (11.7% - 34.3%)
Difficulty in finding a nursing position	3 (0 - 6)	8.7% (1.3% - 16.0%)
Other	10 (5 - 15)	29.2% (16.8% - 41.6%)

Notes: 1) Only one answer was allowed for each unemployed nurse.
2) 95% CI = 95% Confidence Interval. Percent calculations do not include missing data.
3) Missing data: None – all unemployed CRNAs answered is question.

Among the estimated 1,001 CRNAs with a Washington license who were employed in nursing, 59.6% with a known practice address resided in Washington and worked in-state, 0.7% resided in Oregon and practiced in Washington, 1.1% resided in Idaho and practiced in Washington and 6.6% practiced in Washington but resided in a state other than Washington, Oregon or Idaho. (**Figure Number NA.1a** and **NA.1b**). These figures also show that an estimated 32.1%, or nearly one third, of CRNAs with a Washington license and employed as a nurse did not practice in Washington. This means that in May 2019, there were an estimated 674 CRNAs practicing in Washington.
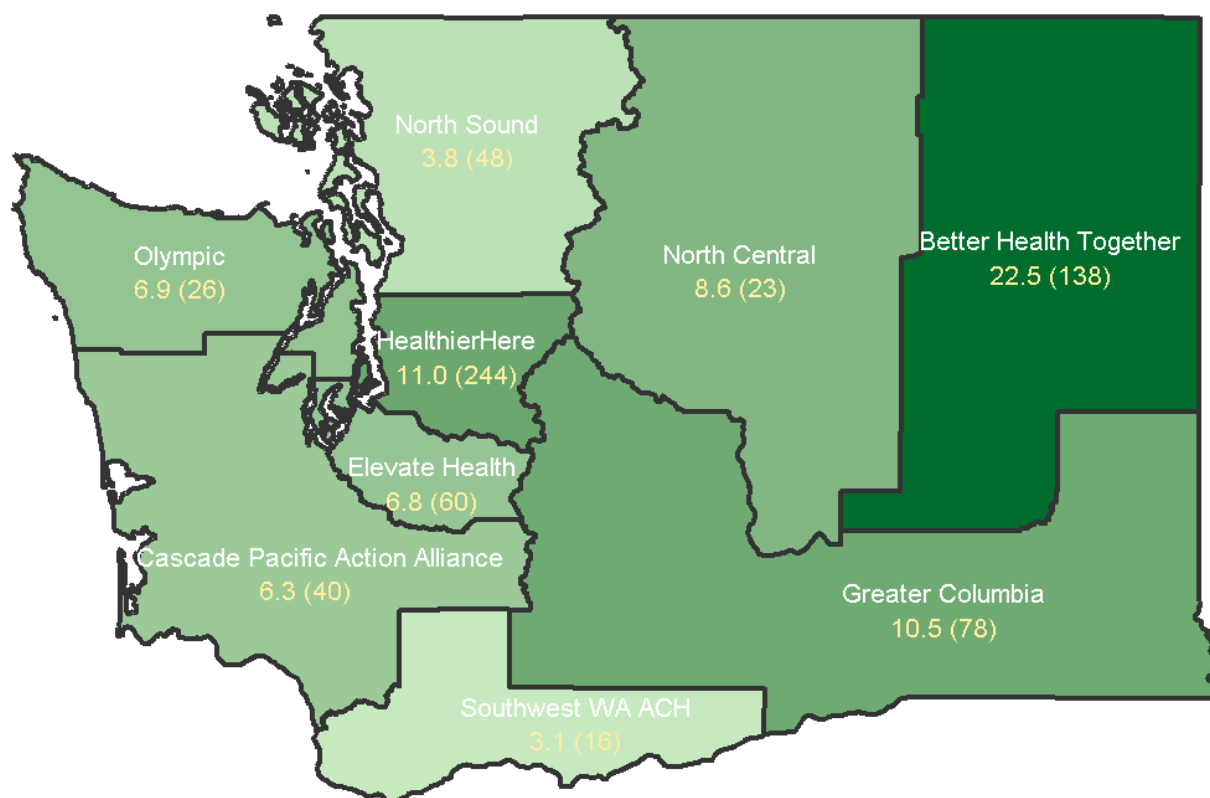
Figure NA.1a: CRNAs with active Washington licenses, May 2019
Figure NA.1b: Residence and practice location among CRNAs employed in nursing, May 2019

Notes: 1) Residence was attributed to the state associated with the mailing ZIP Code for the CRNA's Washington State license. Practice location was based on survey responses for actively employed nurses indicating the ZIP Code of their primary employer.
2) Percent calculations do not include missing data. For figure NA.1a, percentages are out of the total licensed in WA. For figure NA.1b, percentages are out of the number employed in nursing.
3) Missing data: Among CRNAs employed as a nurse, 0.8% did not fill out practice location.

The remainder of this section will focus on the approximately 674 nurses actively employed as CRNAs and practicing in Washington.

PRACTICE LOCATION

There was variation in the number of CRNAs practicing in each region of the state and these differences persisted when considering the number of practitioners per 100,000 population in each region. **Figure NA.2** shows the estimated count and number of CRNAs per 100,000 population practicing in each of the state's ACH health care planning regions. The highest number of CRNAs per 100,000 population was found in the Better Health Together ACH where Washington's second largest city, Spokane, is located (22.5 CRNAs per 100,000 population). HealthierHere, where Seattle, the state's largest city, is located, had the second highest number of CRNAs per 100,000 population (11.0) but it had the highest count of practicing CRNAs (214). Southwest Washington ACH had the lowest number of CRNAs per capita (3.1). CRNAs practice primarily in hospital, ambulatory care or dental surgery settings, so these findings summarizing the practice location of CRNAs are associated with the areas of the state where these settings are more concentrated.

Figure NA.2: Number per 100,000 population (estimated count) of CRNAs practicing in each Accountable Community of Health, May 2019

North Sound
3.8 (48)

Olympic
6.9 (26)

North Central
8.6 (23)

Better Health Together
22.5 (138)

HealthierHere
11.0 (244)

Elevate Health
6.8 (60)

Cascade Pacific Action Alliance
6.3 (40)

Greater Columbia
10.5 (78)

Southwest WA ACH
3.1 (16)

Notes:) Numbers indicate the estimated count of CRNAs practicing in each ACH with the number of CRNAs per 100,000 population in parentheses. Map color intensity is based on the count of providers.
2) Practice location was based on survey responses for actively employed CRNAs indicating the ZIP Code of their primary employer.
3) Missing data: 0.8% missing practice location

DEMOGRAPHIC AND WORK CHARACTERISTICS

The mean age of CRNAs practicing in Washington in May 2019 was 46.7 years and an estimated 24.8% were age 55 or older (**Table NA.3**). The ACH with the lowest mean age was HealthierHere (43.6 years). Olympic ACH had CRNAs with the highest mean age (52.5) and North Sound had the highest percentage age 55 or older (38.8%).

An estimated 48.6% of CRNAs practicing in Washington were male in May 2019, ranging from 31.7% in the HealthierHere ACH to 78.7% in North Central ACH.

Considering ethnicity and race, 2.4% of CRNAs practicing in Washington were Hispanic or Latino, ranging from 0 in multiple ACHs to 11.3% in Olympic ACH and 10.7% were non-White, ranging from 0 in North Central and Southwest Washington ACHs to 16.6% in Elevate Health ACH). See **Table 3** in the **Comparing Advanced Practice Certification Types** section for a more detailed breakdown of CRNA race categories.

Table NA.3: Demographic Characteristics of CRNAs Practicing in Washington statewide and by Accountable Communities of Health (ACH), May 2019

| | Statewide | | Accountable Community of Health (ACH) in which CRNAs practice | | | | | | | |
		1. BHT N≈138	2. CPAA N≈40	3. EH N≈60	4. GC N≈78	5. HH N≈244	6. N Central N≈23	7. N Sound N≈48	8. Olympic N≈26	9. SW N≈16
Age										
Mean	46.7 (46.1 - 47.3)	46.3 (44.9 - 47.7)	52.2 (49.4 - 55.0)	48.4 (46.7 - 50.1)	48.8 (47.0 - 50.7)	43.6 (42.7 - 44.5)	47.9 (44.8 - 51.1)	50.6 (48.4 - 52.9)	52.5 (49.8 - 55.2)	44.3 (41.3 - 47.3)
% 55 or older	24.8% (22.5 - 27.2%)	29.3% (23.7 - 34.9%)	35.4% (24.6 - 46.2%)	24.1% (16.2 - 32.0%)	35.1% (27.4 - 42.9%)	14.2% (11.1 - 17.4%)	25.5% (12.3 - 38.7%)	38.8% (28.7 - 48.9%)	38.4% (24.8 - 52.1%)	8.8% (-1.1 - 18.7%)
Sex										
Male	48.6% (45.8 - 51.5%)	56.1% (49.9 - 62.4%)	62.2% (51.1 - 73.3%)	49.5% (40.0 - 59.0%)	66.4% (58.6% - 74.2%)	31.7% (27.3 - 36.1%)	78.7% (65.9 - 91.5%)	45.1% (34.6 - 55.5%)	63.2% (49.4 - 77.1%)	61.2% (43.2 - 79.2%)
Ethnicity										
Hispanic or Latino	2.4% (1.5 - 3.2%)	0.0%	0.0%	2.5% (0.0 - 5.3%)	6.2% (2.1 - 10.2%)	2.1% (0.7 - 3.5%)	7.4% (0.0 - 15.8%)	0.0%	11.3% (2.4 - 20.1%)	0.0%
Race										
Non-White	10.7% (8.9 - 12.5%)	4.7% (2.0 - 7.4%)	7.6% (1.5 - 13.7%)	16.6% (9.4 - 23.8%)	6.0% (2.0 - 9.9%)	15.6% (12.1 - 19.1%)	0.0%	10.0% (3.6 - 16.5%)	18.2% (7.1 - 29.2%)	0.0%
Work Characteristics										
Percent working in a rural area	13.7% (11.8 - 15.6%)	5.5% (2.7 - 8.4%)	44.3% (32.9 - 55.7%)	NA	25.4% (18.2 - 32.5%)	NA	92.6% (84.2 - 100.9%)	15.7% (8.1 - 23.3%)	58.6% (44.5 - 72.6%)	19.8% (5.1 - 34.5%)
Percent Full-Time (> 32 hours per week)	86.6% (84.7 - 88.5%)	87.8% (83.7 - 91.8%)	77.9% (68.5 - 87.3%)	92.4% (87.4 - 97.3%)	88.5% (83.3 - 93.7%)	86.9% (83.7 - 90.1%)	92.6% (84.3 - 100.9%)	77.6% (68.9 - 86.4%)	88.2% (79.0 - 97.4%)	79.3% (64.1 - 94.5%)
Mean Hours Worked per Week (Full-Time)	43.0 (42.6 - 43.5)	41.4 (40.8 - 41.9)	45.1 (41.6 - 48.6)	43.8 (42.6 - 45.0)	45.0 (43.5 - 46.5)	41.8 (41.3 - 42.2)	43.6 (41.3 - 45.9)	46.5 (44.2 - 48.8)	48.1 (43.8 - 52.3)	41.6 (40.0 - 43.2)

Notes: 1) 95% CI = 95% confidence interval. NA = Not applicable (there were no ZIP Codes designated as rural in these ACHs).
2) Non-White defined as all races other than White alone (including two or more races) and does not include Hispanic ethnicity
3) Rural/urban designation based on rural-urban commuting area codes (RUCA version 3.1) for the ZIP Code in which CRNAs were employed[21]
4) Full-time employment was defined as greater than or equal to 32 hours worked per week.
5) Percent calculations do not include missing data, other than for the Hispanic/Latino question. Survey respondents were asked to check a box if they identified as Hispanic/Latino. There was not a corresponding box for not Hispanic/Latino" or for "Choose not to answer." Therefore, it was not possible to assess the percentage of respondents who chose not to answer the ethnicity question.
6) Missing data: Race = 0.5%; Practice location = 0.8%. All other categories: No missing data for CRNAs employed as a nurse and practicing in WA.
7) Counties comprising Accountable Communities of Health (ACHs): 1) **Better Health Together (BHT)** includes Adams, Ferry, Lincoln, Pend Oreille, Spokane, and Stevens counties, 2) **Cascade Pacific Action Alliance (CPAA)** includes Cowlitz, Grays Harbor, Lewis, Mason, Pacific, Thurston, and Wahkiakum counties, 3) **Elevate Health (EH)** is Pierce County, 4) **Greater Columbia (GC)** includes Asotin, Benton, Columbia, Franklin, Garfield, Kittitas, Walla Walla, Whitman, and Yakima counties, 5) **HealthierHere (HH)** is King County, 6) **North Central (N. Central)** includes Chelan, Douglas, Grant, and Okanogan counties. 7) **North Sound (N. Sound)** includes Snohomish, Skagit, Island, San Juan, and Whatcom counties, 8) **Olympic Community (Olympic)** of Health includes Clallam, Jefferson and Kitsap counties, 9) **Southwest Washington (SW)** includes Clark, Klickitat, and Skamania counties.

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WORK SETTING AND SPECIALTY

Among CRNAs practicing in Washington in May 2019, 71.6% indicated they worked in a hospital, 16.9% worked in an ambulatory care setting and 1.9% worked in a school of nursing (**Table NA.4**).

As would be expected, greater than 97% of CRNAs practicing in Washington selected anesthesia as their specialty or area of practice (table not shown).

Table NA.4: Work settings for Washington's CRNAs, May 2019

Work Setting	Estimated Statewide CRNA Totals	
	Number (95% CI)	Column Percent (95% CI)
Hospital	481 (449 - 513)	71.6% (69.0% - 74.1%)
Ambulatory Care	113 (98 - 129)	16.9% (14.7% - 19.0%)
Community Health	< 10	NC
School of Nursing	13 (7 - 18)	1.9% (1.1% - 2.7%)
Other	Suppressed	NC

Notes: 1) 95% CI = 95% Confidence Interval. Percent calculations do not include missing data.
2) The table shows CRNAs working as a nurse and practicing in Washington.
3) NC = Not calculated. Estimates of less than 10 CRNAs were suppressed to protect the identity of nurses and to indicate that these estimates may be unreliable due to the small number of survey responses. Some additional cells with 10 or more responses were also suppressed to prevent back-calculation.
4) Missing data: 0.2%% did not answer the work setting question.

CRNAS WORKING IN RURAL ZIP CODES

Statewide, there were approximately the same number of CRNAs per capita practicing in rural and urban ZIP Codes (9 per 100,000 in urban areas, 10 per 100,000 in rural areas – **Table NA.5**). This differs from the per capita estimates seen for other certification types, which show a higher number of providers per 100,000 population in urban areas compared with rural areas (**Tables NP.7** and **NM.7**). CRNAs in Washington are authorized to work independent of physician oversight, including prescriptive authority for certain drugs, although regulations at individual facilities or practices may vary.[24] Several studies have found that CRNAs often work independently in rural settings, providing much-needed anesthesia services in areas where there is not a physician anesthesiologist.[24, 25] This may explain why survey responses indicated a similar number of CRNAs per capita in urban and rural areas statewide, with no significant difference between the number of CRNAs per capita in rural and urban areas in western Washington, while in eastern Washington there were slightly fewer per capita in rural compared with urban areas.

CRNAs in rural areas had a higher mean age, a higher percentage of CRNAs age 55 or older, and a higher percentage who were male compared with urban areas. Rural areas also had a lower percentage of non-white and Hispanic CRNAs compared with urban areas.

Table NA.5: Demographic and Work Characteristics of CRNAs Practicing in Washington by Rural/Urban Designation of the ZIP Code in Which They Worked, 2019

Region	Rural/Urban Designation	CRNAs per 100,000 Population	Mean Age	Percent Age 55 or Older	Percent Male	Percent Non-White	Percent Hispanic/Latino	Percent Full-Time	Mean Hours Worked per Week (Full-Time)
Washington State	Urban	9 (8 - 10)	45.7 (45.1 - 46.4)	21.6% (19.2% - 24.1%)	45.1% (42.0% - 48.2%)	11.6% (9.6% - 13.6%)	2.5% (1.5% - 3.5%)	86.5% (84.4% - 88.6%)	42.2 (41.8 - 42.5)
	Rural	10 (9 - 12)	52.9 (51.1 - 54.6)	45.1% (37.6% - 52.6%)	70.6% (63.8% - 77.5%)	4.9% (1.7% - 8.1%)	1.6% (0.0% - 3.6%)	87.1% (82.1% - 92.1%)	48.5 (46.5 - 50.6)
Eastern WA	Urban	17 (15 - 18)	46.4 (45.2 - 47.5)	27.4% (22.7% - 32.0%)	58.3% (53.1% - 63.6%)	5.1% (2.7% - 7.5%)	3.4% (1.5% - 5.4%)	87.2% (83.6% - 90.7%)	42.0 (41.4 - 42.7)
	Rural	12 (9 - 14)	50.8 (48.3 - 53.4)	44.5% (34.1% - 54.9%)	74.6% (65.5% - 83.8%)	2.9% (0.0% - 6.3%)	0.0%	93.6% (88.5% - 98.8%)	45.4 (43.7 - 47.2)
Western WA	Urban	7 (7 - 8)	45.4 (44.7 - 46.2)	18.8% (16.0% - 21.7%)	38.7% (35.0% - 42.3%)	14.7% (12.0% - 17.4%)	2.0% (1.0% - 3.1%)	86.2% (83.6% - 88.8%)	42.2 (41.8 - 42.7)
	Rural	9 (7 - 11)	55.1 (52.8 - 57.4)	45.7% (34.9% - 56.5%)	66.3% (56.0% - 76.5%)	7.1% (1.4% - 12.7%)	3.4% (0.0% - 7.4%)	79.9% (71.3% - 88.6%)	52.5 (48.7 - 56.4)
Washington State	Rural and Urban Combined	9 (9 - 10)	46.7 (46.1 - 47.3)	24.8% (22.5% - 27.2%)	48.6% (45.8% - 51.5%)	10.7% (8.9% - 12.5%)	2.4% (1.5% - 3.2%)	86.6% (84.7% - 88.5%)	43.0 (42.6 - 43.5)

Notes: 1) Rural/urban designation based on rural-urban commuting area codes (RUCA version 3.1) for the ZIP Code in which a CRNA was employed.[21]
2) Population estimates are for the ZIP Code in which a CRNA was employed, based on 2018 estimates.[22]
3) Counties in Eastern WA: Okanogan, Chelan, Douglas, Grant, Kittitas, Yakima, Benton, Franklin, Walla Walla, Columbia, Garfield, Asotin, Whitman, Adams, Lincoln, Spokane, Stevens, Ferry, Pend Oreille. Counties in Western WA: Whatcom, Skagit, San Juan, Island, Snohomish, King, Pierce, Kitsap, Jefferson, Clallam, Grays Harbor, Mason, Thurston, Pacific, Lewis, Wahkiakum, Cowlitz, Skamania, Clark, Klickitat
4) Non-White defined as all races other than White alone (including two or more races) and does not include Hispanic ethnicity.
5) Full-Time employment was defined as greater than or equal to 32 hours worked per week.
6) 95% CI = 95% confidence interval.
7) Percent calculations do not include missing data, other than for the Hispanic/Latino question. Survey respondents were asked to check a box if they identified as Hispanic/Latino. There was not a corresponding box for "Not Hispanic/Latino" or for "Choose not to answer." Therefore, it was not possible to assess the percentage of respondents who chose not to answer the ethnicity question.
8) Missing data: Work location and rural/urban designation: 0.8% statewide, range 0.0% - 1.7% (E. WA Urban). All other categories: No missing for CRNAs employed as a nurse and practicing in WA.

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COMMUTING PATTERNS FOR WASHINGTON'S CRNAS

We compared residence address (based on the mailing ZIP Code provided by each CRNA during licensing) to work address (based on the practice location ZIP Code provide by survey respondents who indicated they were employed as a nurse) to understand where CRNAs lived compared to where they worked. We made comparisons at the ACH level because there were not enough CRNAs living in most counties to calculate reliable estimates. Most ACHs are large geographically compared to counties, so it is possible that some commuting patterns are hidden by examining trends at this level of detail.

Even at the relatively large ACH level, there were some regions of the state in which 30% – 35% of CRNAs traveled outside of their ACH of residence for work (for example North Sound, Olympic, Cascade Pacific Action Alliance, and Southwest Washington – **Figure NA.3**). In contrast, fewer than 10% of CRNAs residing in HealthierHere and Better Health Together ACHs, where the state's first and second largest cities are located, respectively, traveled outside of their residence ACH for work.

Figure NA.3: Percentage of CRNAs residing in each ACH who worked in the same ACH (May, 2019)
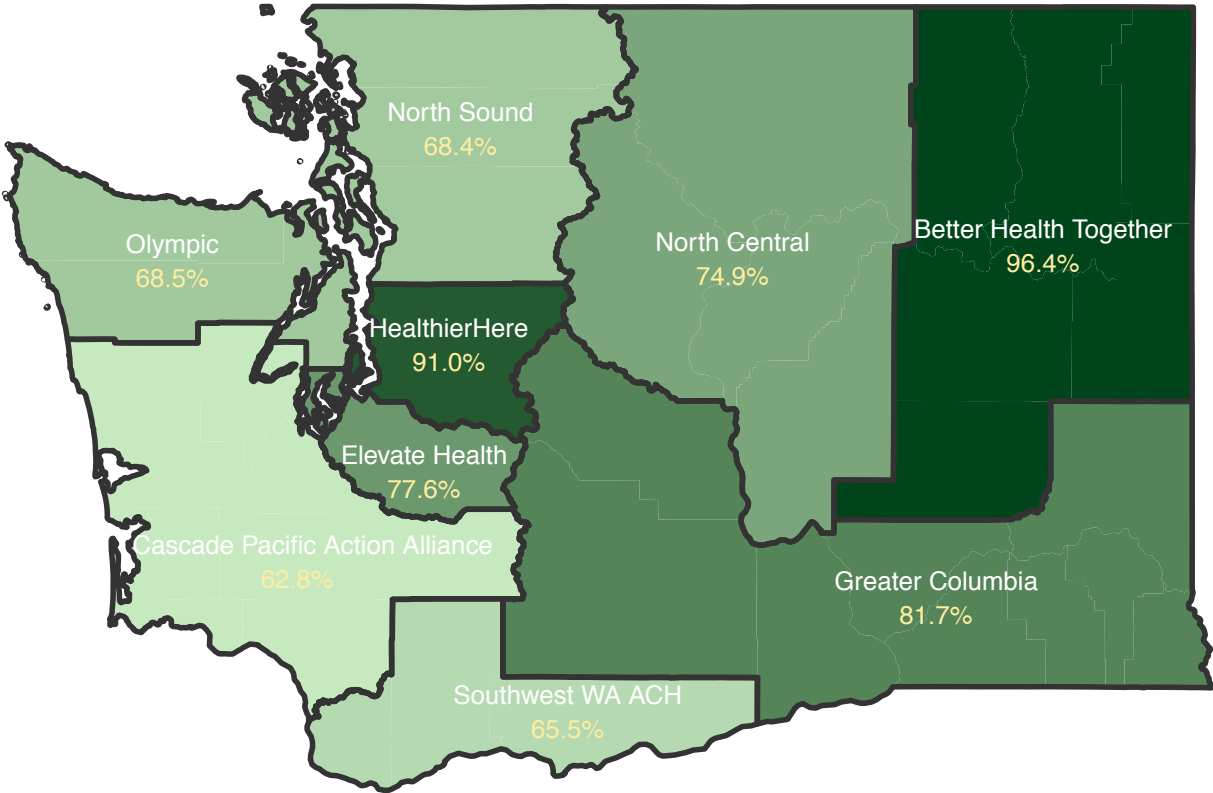
Notes: 1) Residence was attributed to the ACH associated with the mailing ZIP Code for the CRNA's Washington State license. Practice location was based on survey responses for actively employed nurses indicating the ZIP code of their primary employer. Residence or practice locations outside of Washington were not included.
2) Percent calculations do not include missing data.
3) Missing data: No CRNAs practicing in WA were missing data for employment status or residence location.

WASHINGTON'S CERTIFIED NURSE MIDWIVES

This section summarizes findings for ARNPs who were designated in Washington State licensing records as certified nurse midwives (CNMs).

On May 31, 2019, there were 483 CNMs with an active Washington state license. Approximately 91.8% were employed as a nurse, 4.4% were unemployed and the remaining 3.8% were retired, worked as a nurse only as a volunteer or worked in a field other than nursing (**Table NM.1**).

Among unemployed CNMs, 33.6% selected "Other" as the reason for being unemployed. There was not a write-in option for this question, so it was not possible to classify these responses further. Looking at response that were not in the "Other" category, the top reasons for being unemployed were "School" (49.9% of all unemployed CNMs) and "Difficulty finding a nursing position" (16.6%) (**Table NM.2**).

Table NM.1: Employment status of Washington's CNMs, May 2019

	Estimated Statewide CNM Totals	
	Number (95% CI)	Column Percent (95% CI)
Total with active WA license	483	100%
Employed in nursing	443 (411 - 475)	91.8% (89.9% - 93.7%)
Unemployed	21 (14 - 28),	4.4% (2.9% - 5.9%)
Retired, volunteer or working in a field other than nursing	18 (12 - 25)	3.8% (2.5% - 5.1%)

Notes: 1) 95% CI = 95% Confidence Interval.
2) ARNPs could be employed in Washington or any other state. The number of active licenses is a complete count from state licensing records so confidence intervals do not apply. All other numbers in the table are weighted estimates based on Nursys survey responses. Percent calculations do not include missing data.
3) Missing data: No ARNPs with an active license were missing data on employment status.

Table NM.2: Reasons cited by Washington's CNMs for being unemployed, May 2019

Reason for being unemployed	Estimated Statewide CNM Totals	
	Number (95% CI)	Column Percent (95% CI)
School	11 (5 - 16)	49.9% (30.9% - 68.8%)
Difficulty in finding a nursing position	4 (0 - 7)	16.6% (2.5% - 30.6%)
Other	7 (2 - 12)	33.6% (15.6% - 51.5%)

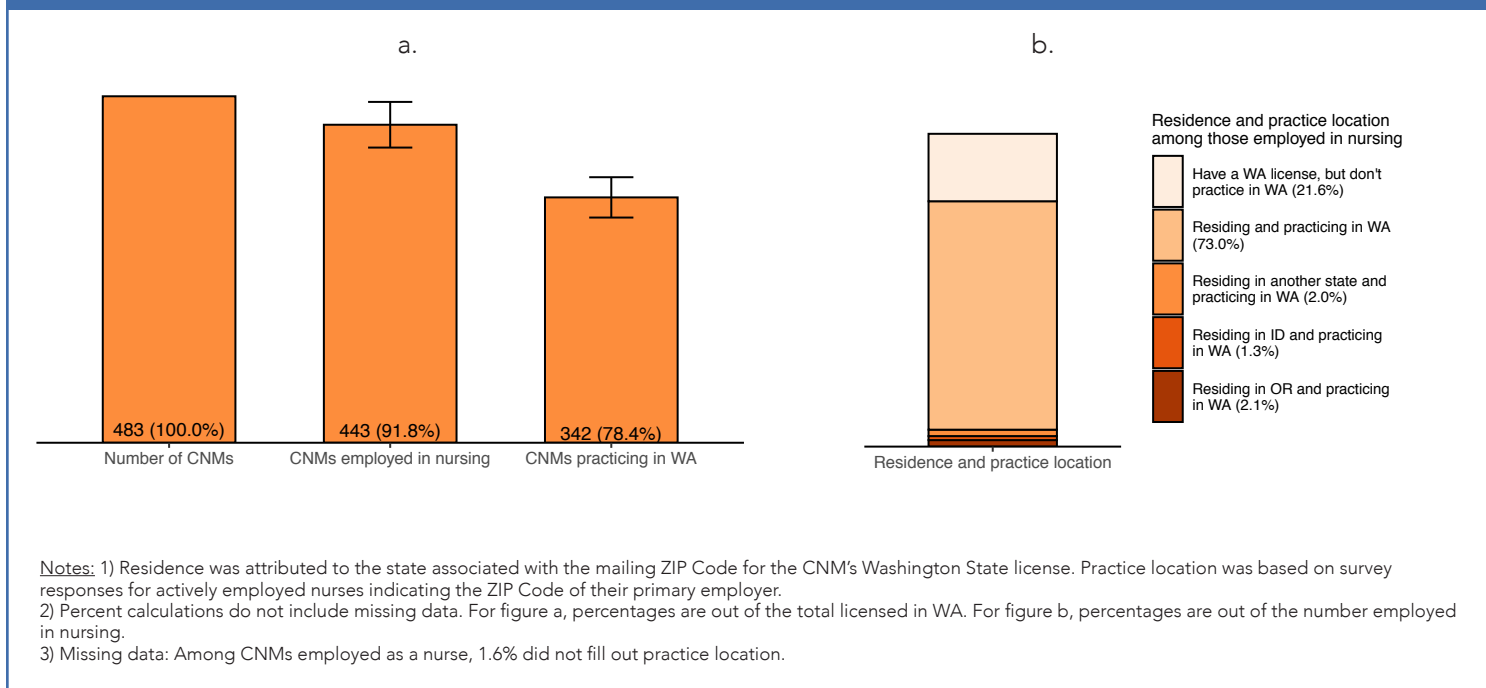Notes: 1) Only one answer was allowed for each unemployed nurse.
2) 95% CI = 95% Confidence Interval. Percent calculations do not include missing data.
3) Missing data: None – all unemployed CNMs answered this question.

Among the estimated 443 CNMs with a Washington license who were employed in nursing, 73.0% with a known practice address resided in Washington and worked in-state, 2.1% resided in Oregon and practiced in Washington, 1.3% resided in Idaho and practiced in Washington and 2.0% practiced in Washington but resided in a state other than Washington, Oregon or Idaho. (**Figure Number NM.1a** and **NM.1b**). These figures also show that an estimated 21.6%, or approximately 1 in 5, of CNMs with a Washington license and employed as a nurse did not practice in Washington. This means that in May 2019, there were an estimated 342 CNMs practicing in Washington.

Figure NM.1a: CNMs with active Washington licenses, May 2019
Figure NM.2b: Residence and practice location among CNMs employed in nursing, May 2019

a.

483 (100.0%) Number of CNMs
443 (91.8%) CNMs employed in nursing
342 (78.4%) CNMs practicing in WA

b.

Residence and practice location among those employed in nursing

Have a WA license, but don't practice in WA (21.6%)

Residing and practicing in WA (73.0%)

Residing in another state and practicing in WA (2.0%)

Residing in ID and practicing in WA (1.3%)

Residing in OR and practicing in WA (2.1%)

Residence and practice location

Notes: 1) Residence was attributed to the state associated with the mailing ZIP Code for the CNM's Washington State license. Practice location was based on survey responses for actively employed nurses indicating the ZIP Code of their primary employer.
2) Percent calculations do not include missing data. For figure a, percentages are out of the total licensed in WA. For figure b, percentages are out of the number employed in nursing.
3) Missing data: Among CNMs employed as a nurse, 1.6% did not fill out practice location.
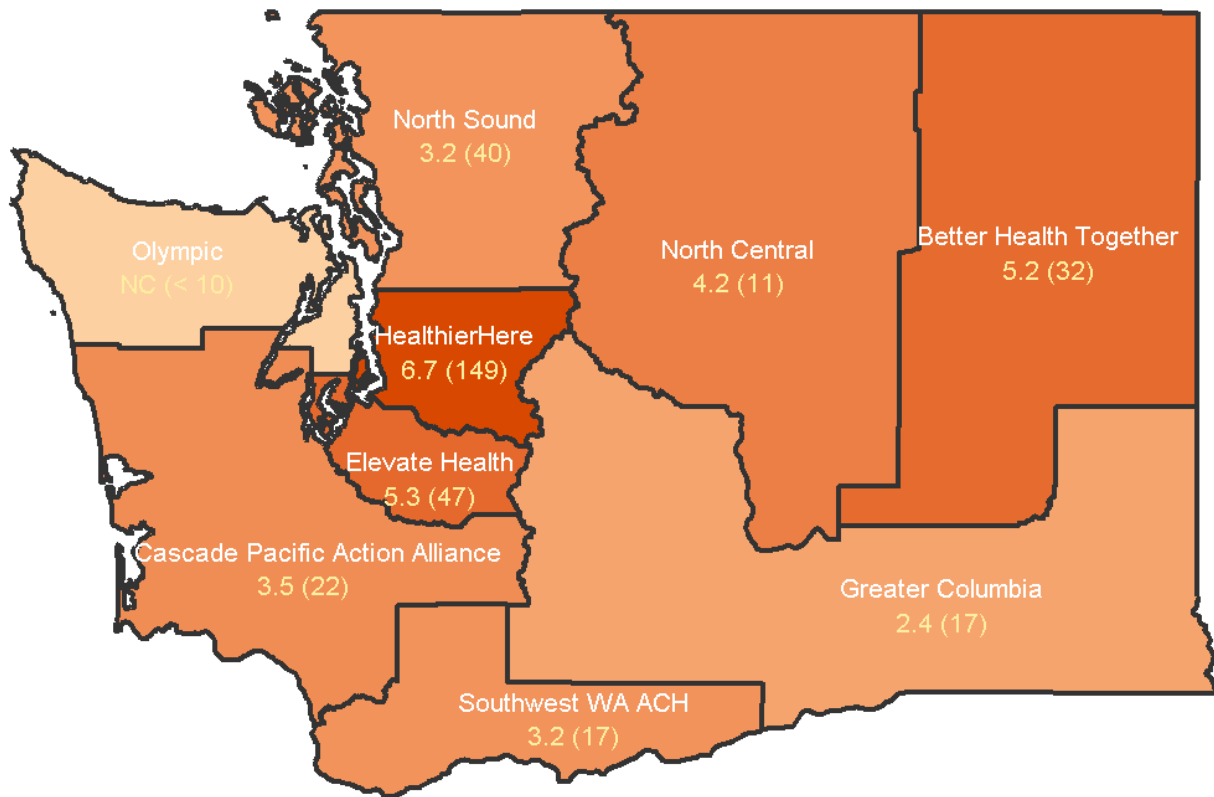

The remainder of this section will focus on the approximately 342 nurses actively employed as CNMs and practicing in Washington.

PRACTICE LOCATION

There was variation in the number of CNMs practicing in each region of the state and these differences persisted when considering the number of practitioners per 100,000 population in each region. **Figure NM.2** shows the estimated count and number of CNMs per 100,000 population practicing in each of the state's ACH health care planning regions. The highest number of CNMs, in both count and per 100,000 population, were found in the HealthierHere ACH, where Seattle, the state's largest city, is located (149 CNMs or 6.7 per 100,000 population). This was followed by Elevate Health (5.3 CNMs per 100,000 population and containing the state's third largest city, Tacoma) and Better Health Together ACH (5.2 per 100,000 and containing Spokane, the state's second largest city). Olympic ACH, in the northwest corner of the state, had the lowest number of CNMs by count and per capita.

Figure NM.2: Number per 100,000 population (estimated count) of CNMs practicing in each Accountable Community of Health, May 2019

North Sound
3.2 (40)

Olympic
NC (< 10)

HealthierHere
6.7 (149)

North Central
4.2 (11)

Better Health Together
5.2 (32)

Elevate Health
5.3 (47)

Cascade Pacific Action Alliance
3.5 (22)

Greater Columbia
2.4 (17)

Southwest WA ACH
3.2 (17)

Notes: 1) Numbers indicate the number of CNMs per 100,000 population with the estimated count practicing in each ACH in parentheses. Map color intensity is based on the number of CNMs per 100,000 population.
2) NC = Not calculated. Estimates of less than 10 CNMs were suppressed to protect the identity of nurses and to indicate that these estimates may be unreliable due to the small number of survey responses.
3) Practice location was based on survey responses for actively employed CNMs indicating the ZIP Code of their primary employer.
4) Missing data: 1.6% missing practice location.

DEMOGRAPHIC AND WORK CHARACTERISTICS

The mean age of CNMs practicing in Washington in May 2019 was 46.7 years and an estimated 29.3% were age 55 or older (**Table NM.3**). North Central ACH had CNMs with the lowest mean age (37.5 years) and also had no survey respondents who were age 55 or older. Approximately 50% of CNMs in Southwest Washington ACH were age 55 or older and the mean age of all CNMs in that region was 52.5 years.

An estimated 1.5% of CNMs practicing in Washington were male in May 2019, ranging from 0.0% in multiple ACHs to 5.5% in Better Health Together ACH.

Considering ethnicity and race, 2.1% of CNMs practicing in Washington were Hispanic or Latino, ranging from 0.0% in multiple ACHs to 5.8% in Better Health Together ACH and 6.7% were non-White ranging from 0.0% in multiple ACHs to 11.4% in Elevate Health ACH. See **Table 3** in the **Comparing Advanced Practice Certification Types** section for a more detailed breakdown of CNM race categories.

Table NM.3: Demographic Characteristics of CNMs Practicing in Washington statewide and by Accountable Communities of Health (ACH), May 2019

	Statewide	Accountable Community of Health (ACH) in which ARNPs practice*								
		1. BHT N≈31	2. CPAA N≈22	3. EH N≈47	4. GC N≈17	5. HH N≈149	6. N Central N≈11	7. N Sound N≈40	8. Olympic N<10	9. SW N≈17
Age										
Mean	46.7 (45.7 - 47.7)	47.4 (44.5 - 50.3)	48.4 (44.1 - 52.7)	48.5 (45.7 - 51.3)	49.0 (45.3 - 52.7)	45.4 (44.0 - 46.8)	37.5 (34.7 - 40.3)	44.3 (41.7 - 46.8)	NC	52.5 (46.9 - 58.0)
% 55 or older	29.3% (25.6 - 33.0%)	25.2% (13.6 - 36.9%)	42.6% (26.6 - 58.6%)	44.6% (33.4 - 55.8%)	27.4% (11.2 - 43.5%)	23.5% (18.3 - 28.8%)	0.0%	23.7% (13.6 - 33.8%)	NC	46.7% (28.2 - 65.2%)
Sex										
Male	1.5% (0.5 - 2.5%)	5.0% (0.0 - 10.8%)	0.0%	4.0% (0.0 - 8.5%)	0.0%	1.1% (0.0 - 2.4%)	0.0%	0.0%	NC	0.0%
Ethnicity										
Hispanic or Latino	2.1% (0.9 - 3.4%)	5.8% (0.0 - 12.5%)	0.0%	0.0%	0.0%	2.5% (0.4 - 4.5%)	0.0%	4.5% (0.0 - 9.7%)	NC	0.0%
Race										
Non-White	6.7% (4.6 - 8.8%)	0.0%	0.0%	11.4% (4.1 - 18.7%)	0.0%	9.4% (5.7 - 13.2%)	0.0%	8.7% (1.8 - 15.7%)	NC	0.0%
Work Characteristics										
Percent working in a rural area	8.0% (5.8 - 10.3%)	5.0% (0.0 - 10.8%)	15.2% (3.5 - 26.9%)	NA	21.0% (5.6 - 36.4%)	NA	83.3% (65.4 - 100.0%)	12.3% (4.4 - 20.1%)	NC	5.0% (0.0 - 10.8%)
Percent Full-Time (≥ 32 hours per week)	80.8% (77.5 - 84.1%)	82.5% (71.8 - 93.2%)	76.4% (62.3 - 90.4%)	92.6% (86.6 - 98.5%)	79.8% (64.8 - 94.8%)	77.7% (72.4 - 83.0%)	83.3% (65.3 - 100.0%)	87.9% (80.1 - 95.6%)	NC	82.5% (71.8 - 93.2%)
Mean Hours Worked per Week (Full-Time)	45.8 (44.8 - 46.7)	45.1 (43.0 - 47.3)	52.9 (48.3 - 57.5)	50.2 (47.1 - 53.4)	41.8 (40.3 - 43.2)	45.0 (43.7 - 46.4)	44.9 (41.7 - 48.1)	41.1 (38.4 - 43.8)	NC	45.1 (43.0 - 47.3)

Notes: 1) 95% CI = 95% confidence interval.
2) NC = Not calculated. The number of survey responses from Olympic ACH was too low to calculate reliable estimates. NA = Not applicable. There were no ZIP codes designated as rural in these ACHs.
3) Non-White defined as all races other than White alone (including two or more races) and does not include Hispanic ethnicity
4) Rural/urban designation based on rural-urban commuting area codes (RUCA version 3.1) for the ZIP Code in which CNMs were employed[21]
5) Full-time employment defined as greater than or equal to 32 hours worked per week.
6) Percent calculations do not include missing data, other than for the Hispanic/Latino question. Survey respondents were asked to check a box if they identified as Hispanic/Latino. There was not a corresponding box for not Hispanic/Latino" or for "Choose not to answer." Therefore, it was not possible to assess the percentage of respondents who chose not to answer the ethnicity question.
7) Missing data: Practice location = 1.6%. All other categories: No missing data for CNMs employed as a nurse and practicing in WA.
8) Counties comprising Accountable Communities of Health (ACHs): 1) **Better Health Together (BHT)** includes Adams, Ferry, Lincoln, Pend Oreille, Spokane, and Stevens counties, 2) **Cascade Pacific Action Alliance (CPAA)** includes Cowlitz, Grays Harbor, Lewis, Mason, Pacific, Thurston, and Wahkiakum counties, 3) **Elevate Health (EH)** is Pierce County, 4) **Greater Columbia (GC)** includes Asotin, Benton, Columbia, Franklin, Garfield, Kittitas, Walla Walla, Whitman, and Yakima counties, 5) **HealthierHere (HH)** is King County, 6) **North Central ACH (N. Central)** includes Chelan, Douglas, Grant, and Okanogan counties. 7) **North Sound ACH (N. Sound)** includes Snohomish, Skagit, Island, San Juan, and Whatcom counties, 8) **Olympic Community of Health (Olympic)** includes Clallam, Jefferson and Kitsap counties, 9) **Southwest Washington (SW)** includes Clark, Klickitat, and Skamania counties.

WORK SETTING

Among CNMs practicing in Washington in May 2019, 34.9% indicated they worked in a hospital, 23.8% worked in an ambulatory care setting, 11.7% worked in community health and 5.0% worked in a school of nursing (**Table NM.4**).

WORK SPECIALTY

Washington's practicing CNMs were approximately evenly split between those listing maternal – child health / obstetrics as their primary specialty (49.1%) and those listing women's health as their primary specialty (44.5%) – **Table NM.5**.

JOB TITLES

Table NM.6 shows the survey responses for job titles selected by CNMs actively practicing in Washington. Please note that CNMs selected a job title from a list provided on the survey questionnaire and were not given a write-in option. Therefore, the job titles listed in the table represent the categories that were included on the questionnaire and selected by each CNM.

CNMS WORKING IN RURAL ZIP CODES

Statewide, there were an estimated 5 CNMs practicing in Washington per 100,000 population (**Table NM.7**). The number per capita was slightly lower in rural areas (3 CNMs per 100,000 population) and the mean age of CNMs in rural areas was higher than the mean age of CNMs in urban areas.

Based on survey responses, there were no CNMs working in rural areas who were male, non-White or Hispanic/Latino.

Table NM.4: Work setting for Washington's CNMs, May 2019

Work Setting	Estimated Statewide CNM Totals	
	Number (95% CI)	Column Percent (95% CI)
Hospital	119 (102 - 136)	34.9% (30.9% - 38.9%)
Long Term Care or Hospice	< 10	NC
Ambulatory Care	81 (67 - 95)	23.8% (20.2% - 27.4%)
Community Health	40 (30 - 50)	11.7% (9.0% - 14.4%)
School of Nursing	17 (11 - 23)	5.0% (3.2% - 6.8%)
Other	Suppressed	NC

Notes: 1) 95% CI = 95% Confidence Interval.
2) The table shows CNMs working as a nurse and practicing in Washington.
3) NC = Not calculated. Estimates of less than 10 CNMs were suppressed to protect the identity of nurses and to indicate that these estimates may be unreliable due to the small number of survey responses. Some additional cells with 10 or more responses were also suppressed to prevent back-calculation.
4) Missing data: No CNMs practicing in Washington were missing data for work setting.

Table NM.5: Work specialty for Washington's CNMs, May 2019

Specialty / Area of Practice	Estimated Statewide CNM Totals	
	Number (95% CI)	Column Percent (95% CI)
Maternal - Child Health / Obstetrics	163 (143 - 182)	49.1% (44.8% - 53.3%)
Women's Health	148 (129 - 166)	44.5% (40.3% - 48.7%)
Other specialties with fewer than 10 ARNPs statewide	21 (14 - 29)	6.4% (4.3% - 8.6%)

Notes: 1) 95% CI = 95% Confidence Interval. Percent calculations do not include missing data.
2) The table shows CNMs working as a nurse and practicing in Washington.
3) Specialties with fewer than 10 CNMs: Acute Care/Critical Care, Community, Emergency/Trauma, Geriatric/Gerontology, Occupational Health, Oncology, Pediatrics, Public Health, Other Clinical Specialties.
4) Missing data: 3.0% did not answer the specialty question.

Table NM.6: Job titles for Washington's CNMs, May 2019

Job Title	Estimated Statewide Totals	
	Number (95% CI)	Column Percent (95% CI)
Advanced Practice Registered Nurse	285 (259 - 311)	83.8% (80.7% - 86.9%)
Staff Nurse	27 (18 - 35)	7.8% (5.5% - 10.1%)
Nurse Faculty/Educator	13 (8 - 19)	4.0% (2.3% - 5.6%)
Other specialties with fewer than 10 CNMs statewide	15 (9 - 21)	4.5% (2.8% - 6.2%)

Notes: 1) 95% CI = 95% Confidence Interval. Percent calculations do not include missing data.
2) The table shows CNMs working as a nurse and practicing in Washington.
3) Job titles with fewer than 10 CNMs: Clinical Nurse Leader, Consultant, Nurse Executive, Nurse Researcher, Other – Health Related.
4) Missing data: 0.6% did not answer the job title question

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Table NM.7: Demographic and Work Characteristics of CNMs Practicing in Washington by Rural/Urban Designation of the ZIP Code in Which They Worked, 2019

Region	Rural/Urban Designation	CNMs per 100,000 Population	Mean Age	Percent Age 55 or Older	Percent Male	Percent Non-White	Percent Hispanic/Latino	Percent Full-Time*	Mean Hours Worked per Week (Full-Time*)
Washington State	Urban	5 (4 - 5)	46.4 (45.4 - 47.4)	28.4% (24.6% - 32.3%)	1.6% (0.5% - 2.7%)	7.3% (5.0% - 9.6%)	2.3% (1.0% - 3.7%)	81.2% (77.8% - 84.7%)	45.6 (44.6 - 46.6)
Washington State	Rural	3 (2 - 4)	49.7 (45.5 - 53.9)	40.0% (25.8% - 54.2%)	0.0%	0.0%	0.0%	75.2% (62.5% - 87.9%)	47.9 (44.1 - 51.8)
Eastern WA	Urban	4 (3 - 5)	47.1 (44.7 - 49.6)	24.5% (14.8% - 34.1%)	3.5% (0.0% - 7.5%)	0.0%	4.0% (0.0% - 8.7%)	84.2% (75.7% - 92.7%)	43.6 (42.1 - 45.2)
Eastern WA	Rural	4 (2 - 5)	42.7 (38.9 - 46.4)	11.0% (-1.3% - 23.3%)	0.0%	0.0%	0.0%	74.4% (56.1% - 92.7%)	45.9 (43.0 - 48.7)
Western WA	Urban	5 (5 - 6)	46.3 (45.2 - 47.4)	29.1% (24.9% - 33.3%)	1.3% (0.2% - 2.4%)	8.5% (5.9% - 11.2%)	2.0% (0.7% - 3.4%)	80.7% (77.0% - 84.5%)	45.9 (44.8 - 47.1)
Western WA	Rural	3 (2 - 4)	57.5 (51.0 - 64.0)	72.1% (52.8% - 91.4%)	0.0%	0.0%	0.0%	76.1% (58.6% - 93.5%)	50.2 (43.0 - 57.3)
Washington State	Rural and Urban Combined	5 (4 - 5)	46.7 (45.7 - 47.7)	29.3% (25.6% - 33.1%)	1.5% (0.5% - 2.5%)	6.7% (4.6% - 8.8%)	2.1% (0.9% - 3.4%)	80.8% (77.5% - 84.1%)	45.8 (44.8 - 46.7)

Notes: 1) Rural/urban designation based on rural-urban commuting area codes (RUCA version 3.1) for the ZIP Code in which nurses are employed.[21]
2) Population estimates are for the ZIP Code in which a CNM was employed, based on 2018 estimates.[22]
3) Counties in Eastern WA: Okanogan, Chelan, Douglas, Grant, Kittitas, Yakima, Benton, Franklin, Walla Walla, Columbia, Garfield, Asotin, Whitman, Adams, Lincoln, Spokane, Stevens, Ferry, Pend Oreille. Counties in Western WA: Whatcom, Skagit, San Juan, Island, Snohomish, King, Pierce, Kitsap, Jefferson, Clallam, Grays Harbor, Mason, Thurston, Pacific, Lewis, Wahkiakum, Cowlitz, Skamania, Clark, Klickitat
4) Non-White defined as all races other than White alone (including two or more races) and does not include Hispanic ethnicity.
5) Full-Time employment was defined as greater than or equal to 32 hours worked per week.
6) 95% CI = 95% confidence interval.
7) Percent calculations do not include missing data, other than for the Hispanic/Latino question. Survey respondents were asked to check a box if they identified as Hispanic/Latino. There was not a corresponding box for "Not Hispanic/Latino" or for "Choose not to answer." Therefore, it was not possible to assess the percentage of respondents who chose not to answer the ethnicity question.
8) Missing data: Work location and rural/urban designation: 1.6% statewide. All other categories: No missing for CNMs employed as a nurse and practicing in WA.

Washington State's 2019 Advanced Registered Nurse Practitioner Workforce

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COMMUTING PATTERNS FOR WASHINGTON'S CNMS

We compared residence address (based on the mailing ZIP Code provided by each CNM during licensing) to work address (based on the practice location ZIP Code provide by survey respondents who indicated they were employed as a nurse) to understand where CNMs lived compared to where they worked. We made comparisons at the ACH level because there were not enough CNMs living in most counties to calculate reliable estimates. Most ACHs are large geographically compared to counties, so it is possible that some commuting patterns are hidden by examining trends at this level of detail.

Even at the relatively large ACH level, there were some regions of the state in which 30% – 45% of CNMs traveled outside of their ACH of residence for work (for example North Sound and Olympic ACHs – **Figure NM.3**). In contrast, 100% of CNMs residing in Greater Columbia and Better Health Together worked in the same ACH as their residence address.

Figure NM.3 Percentage of CNMs residing in each ACH who worked in the same ACH (May, 2019)
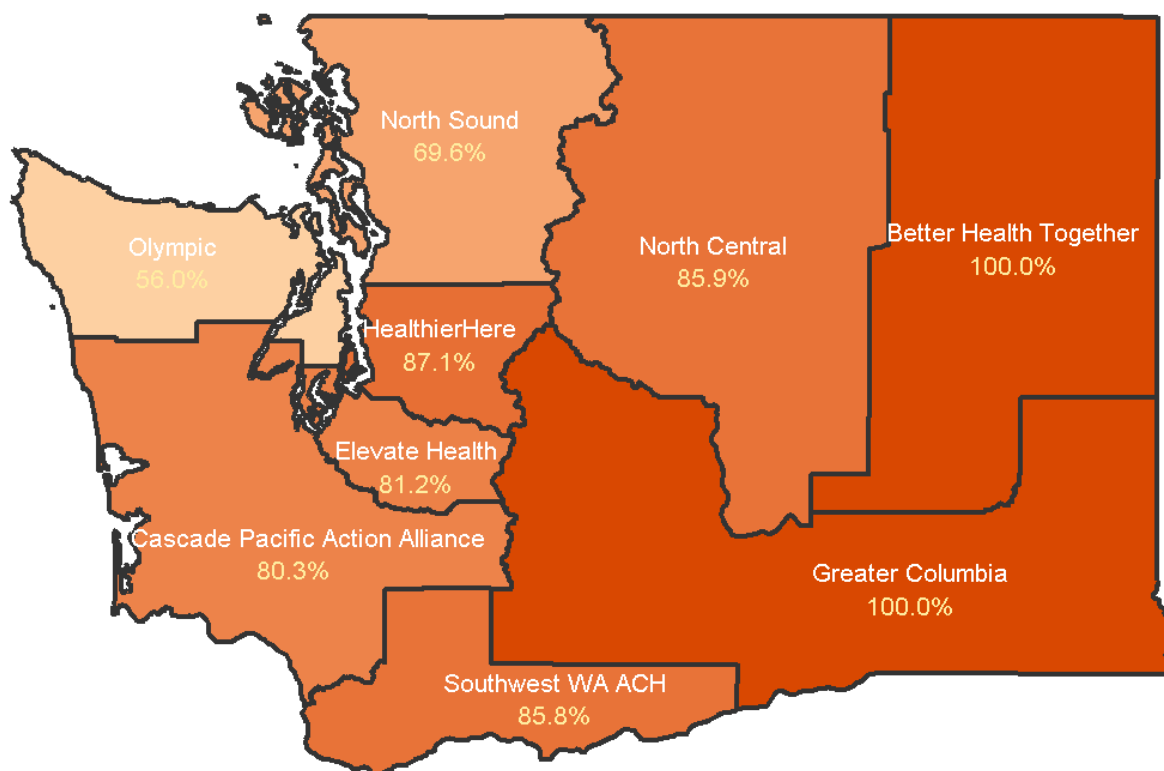
Notes: 1) Residence was attributed to the ACH associated with the mailing ZIP Code for the CNM's Washington State license. Practice location was based on survey responses for actively employed nurses indicating the ZIP Code of their primary employer. Residence or practice locations outside of Washington were not included.
2) Percent calculations do not include missing data.
3) Missing data: Among CNMs practicing in WA, 0.5% were missing residence location.

WASHINGTON'S CLINICAL NURSE SPECIALISTS

This section summarizes findings for ARNPs who were designated in Washington State licensing records as clinical nurse specialists (CNSs).

On May 31, 2019, there were 120 CNSs with an active Washington state license. Approximately 87.0% were employed as a nurse, 11.7% were unemployed and the remaining 1.3% were retired, worked as a nurse only as a volunteer or worked in a field other than nursing (**Table NS.1**).

Among unemployed CNSs, 38.1% selected "Other" as the reason for being unemployed. There was not a write-in option for this question, so it was not possible to classify these responses further. Among responses that were not in the "Other" category, the top reasons for being unemployed were "Taking care of home and family", "School", "Difficulty finding a nursing position" and "Inadequate salary" (**Table NS.2**).

Table NS.1: Employment status of Washington's CNSs, May 2019

	Estimated Statewide CNS Totals	
	Number (95% CI)	Column Percent (95% CI)
Total with active WA license	120	100%
Employed in nursing	104 (90 - 119)	87.0% (82.7% - 91.4%)
Unemployed	14 (9 - 19)	11.7% (7.5% - 15.8%)
Retired, volunteer or working in a field other than nursing	2 (0 - 3)	1.3% (0.0% - 2.8%)

Notes: 1) 95% CI = 95% Confidence Interval.
2) ARNPs could be employed in Washington or any other state. The number of active licenses is a complete count from state licensing records so confidence intervals do not apply. All other numbers in the table are weighted estimates based on Nursys survey responses.
3) Missing data: No CNSs practicing in WA were missing data on work setting.

Table NS.2: Reasons cited for being unemployed among Washington's CNSs, May 2019
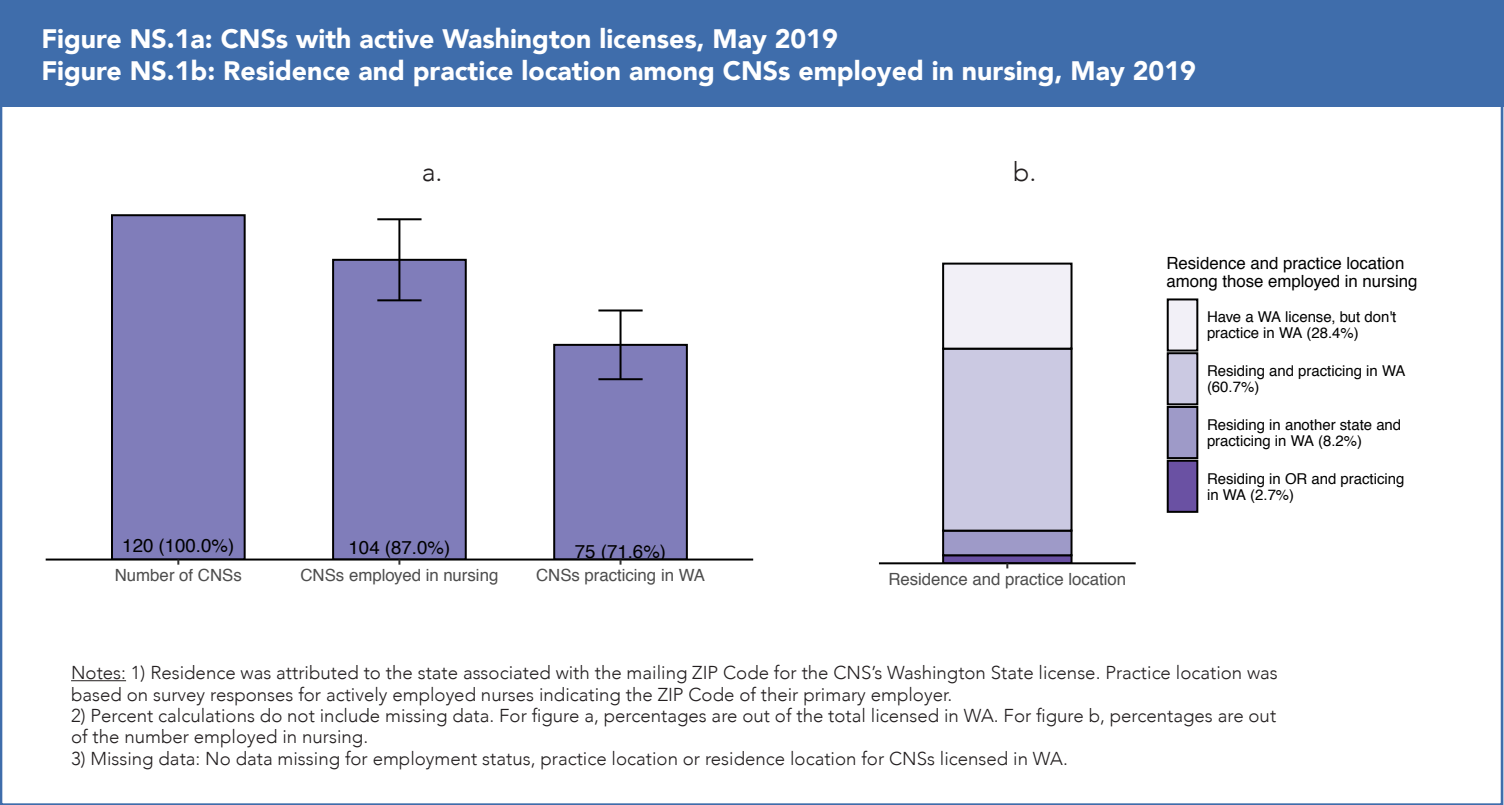
	Estimated Statewide CNS Totals	
Reason for being unemployed	Number (95% CI)	Column Percent (95% CI)
Taking care of home and family	3 (0 - 6)	21.2% (3.4% - 39.0%)
School	3 (0 - 6)	20.8% (3.2% - 38.4%)
Difficulty in finding a nursing position	2 (0 - 4)	10.7% (0.0% - 24.4%)
Inadequate Salary	1 (0 - 3)	9.1% (0.0% - 21.0%)
Other	5 (2 - 9)	38.1% (17.6% - 58.7%)

Notes: 1) Only one answer was allowed for each unemployed nurse.
2) 95% CI = 95% Confidence Interval. Percent calculations do not include missing data.
3) Missing data: None – all unemployed CNSs answered this question.

Among the estimated 104 CNSs with a Washington license who were employed in nursing, 60.7% with a known practice address resided in Washington and worked in-state, 2.7% resided in Oregon and practiced in Washington and 8.2% practiced in Washington but resided in a state other than Washington, Oregon or Idaho. (**Figure Number NS.1a** and **NS.1b**). These figures also show that an estimated 28.4% (more than 1 in 4) of CNSs with a Washington license and employed as a nurse did not practice in Washington. This means that in May 2019, there were an estimated 75 CNSs practicing in Washington.

Figure NS.1a: CNSs with active Washington licenses, May 2019
Figure NS.1b: Residence and practice location among CNSs employed in nursing, May 2019

a.

b.

120 (100.0%)
Number of CNSs

104 (87.0%)
CNSs employed in nursing

75 (71.6%)
CNSs practicing in WA

Residence and practice location

Residence and practice location among those employed in nursing

Have a WA license, but don't practice in WA (28.4%)

Residing and practicing in WA (60.7%)

Residing in another state and practicing in WA (8.2%)

Residing in OR and practicing in WA (2.7%)

Notes: 1) Residence was attributed to the state associated with the mailing ZIP Code for the CNS's Washington State license. Practice location was based on survey responses for actively employed nurses indicating the ZIP Code of their primary employer.
2) Percent calculations do not include missing data. For figure a, percentages are out of the total licensed in WA. For figure b, percentages are out of the number employed in nursing.
3) Missing data: No data missing for employment status, practice location or residence location for CNSs licensed in WA.

The remainder of this section will focus on the approximately 75 nurses actively employed as CNSs and practicing in Washington.

Washington's Accountable Communities of Health (ACHs) are healthcare planning regions designated by the state. Based on survey responses from CNSs indicating the ZIP code of their practice location, there were an estimated 47 CNSs practicing in the HealthierHere ACH, which translated to approximately 2.1 CNSs per 100,000 population in that area. There were fewer than 10 CNSs practicing in each of the remaining ACHs (**Figure NS.2**).

See the **Comparing Advanced Practice Certification Types** section for statewide estimates of age, sex, ethnicity, race, percent working in rural areas and percent working full-time for CNSs. There were not enough CNSs practicing in each ACH to present demographics and work characteristics by ACH, as was done for the other ARNP certification types.

Figure NS.2: Number per 100,000 population (estimated count) of CRNAs practicing in each Accountable Community of Health, May 2019

North Sound
NC (< 10)

Olympic
NC (< 10)

North Central
NC (< 10)

Better Health Together
NC (< 10)

HealthierHere
2.1 (47)

Elevate Health
NC (< 10)

Cascade Pacific Action Alliance
NC (< 10)

Greater Columbia
NC (< 10)

Southwest WA ACH
NC (< 10)
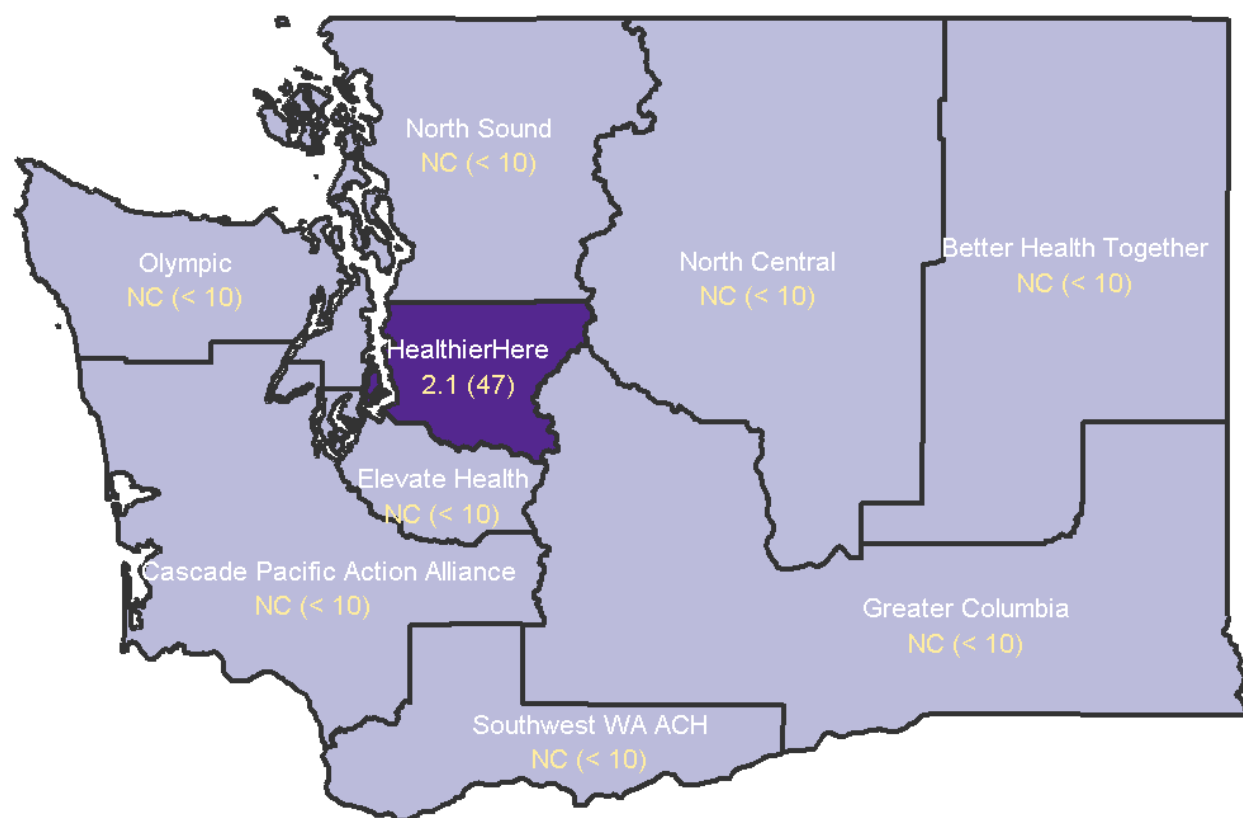
Notes: 1) Numbers indicate the number of CNSs per 100,000 population with the estimated count practicing in each ACH in parentheses. Map color intensity is based on the number of CNSs per 100,000 population.
2) NC = Not calculated. Estimates of less than 10 CNSs were suppressed to protect the identity of nurses and to indicate that these estimates may be unreliable due to the small number of survey responses.
3) Practice location was based on survey responses for actively employed CNSs indicating the ZIP Code of their primary employer.
4) Missing data: None – No CNSs were missing practice location.

Among CNSs practicing in Washington in May 2019, 45.5% indicated they worked in a hospital and 17.1% worked in an ambulatory care setting (**Table NS.3**). Fewer than 10 CNSs statewide worked in long term care / hospice or community health.

Approximately 17% of CNSs practicing in Washington selected psychiatric/ mental health / substance abuse as their work specialty, which was the specialty with the highest number of responses. The remaining categories had fewer than 10 responses statewide or were an "other" category that could not be further classified. Over 80% of CNSs chose "advanced practice registered nurse" as their job title. The number of responses in the remaining job title categories were too low to calculate reliable estimates (tables for work setting and job title not shown).

The number of survey responses from CNSs in rural areas was too low to calculate reliable estimates. See **Table 2** in the **Comparing Advanced Practice Certification Types** section for demographic and work characteristics of clinical nurse specialists practicing statewide. Notice that only 5.7% (out of approximately 75 CNSs in the entire state) are estimated to practice in a rural location.

Table NS.3: Work setting for Washington's CNSs, May 2019

Work Setting	Estimated Statewide CNS Totals	
	Number (95% CI)	Column Percent (95% CI)
Hospital	34 (26 - 42)	45.5% (37.3% - 53.7%)
Long Term Care or Hospice	< 10	NC
Ambulatory Care	13 (8 - 18)	17.1% (10.9% - 23.3%)
Community Health	< 10	NC
Settings not included above	17 (11 - 22)	22.1% (15.4% - 28.9%)

Notes: 1) 95% CI = 95% Confidence Interval.
2) The table shows CNSs working as a nurse and practicing in Washington.
3) NC = Not calculated. Estimates of less than 10 CNSs were suppressed to protect the identity of nurses and to indicate that these estimates may be unreliable due to the small number of survey responses.
4) Missing data: No CNSs practicing in Washington were missing data on work setting.

COMPARING ADVANCED PRACTICE CERTIFICATION TYPES

There were approximately 8,650 ARNPs with an active Washington license on May 31, 2019: 6,985 NPs, 1,061 CRNA, 483 CNMs and 120 CNSs. As **Table 1** shows, the percentage of ARNPs who were not employed as a nurse or practiced in a state other than Washington ranged from approximately 30% - 40%, depending on the certification type. As a result, the estimated number of ARNPs practicing in Washington, based on survey responses indicating practice ZIP Codes, was: 4,800 NPs, 675 CRNAs, 340 CNMs and 75 CNSs.

The difference between the number licensed and the number practicing was because a large percentage of ARNPs of each certification type was licensed in Washington but practiced in another state. Among ARNPs employed as a nurse, 25.5% of NPs, 32.1% of CRNAs, 21.6% of CNMs and 28.4% of CNSs were licensed in Washington but practiced in another state (see **Figures NP.1b, NA.1b, NM.1b** and **NS.1b** in the previous sections of this report).

The percentage of unemployed ARNPs was relatively low for NPs (4.7%), CRNAs (3.2%) and CNMs (4.4%); unemployment was not a significant contributor to the difference between the number licensed and the number practicing in Washington for these certification types. The unemployment rate was higher for CNSs (11.7% - **Tables NP.1, NA.1, NM.1** and **NS.1**).

A large percentage of unemployed ARNPs selected "other" as the reason for being unemployed ranging from 29.2% for CRNAs to 40.5% for NPs, making it difficult to assess the exact reasons for being unemployed. However, anywhere from one-fifth (CNSs) to one-half (CNMs) of unemployed ANRPs indicated they were attending school. Only 8.7% (CRNAs) to 16.6% (CNMs) of unemployed ARNPs indicated that had difficulty finding a nursing position (**Tables NP.2, NA.2, NM.2** and **NS.2**).

Table 1: ARNPs employed as a nurse and practicing in Washington, May 2019

	Estimated Statewide Totals [n (95% CI), column % (95% CI)]			
	NP	CRNA	CNM	CNS
Total with active WA license	6,985	1,061	483	120
Employed as a nurse	6,494 (6,435 - 6,552), 93.0% (92.5% - 93.4%)	1,001 (957 - 1,045), 94.3% (93.3% - 95.4%)	443 (411 - 475), 91.8% (89.9% - 93.7%)	104 (90 - 119), 87.0% (82.8% - 91.3%)
Employed as a nurse and practicing in Washington	4,807 (4,740 - 4,874), 74.5% (73.8% - 75.3%)	674 (637 - 711), 67.9% (65.7% - 70.0%)	342 (314 - 370), 78.4% (75.4% - 81.5%)	75 (63 - 87), 71.6% (65.5% - 77.8%)

Notes: 1) 95% CI = 95% Confidence Interval.
2) ARNPs could be employed in Washington or any other state. The number of active licenses is a complete count from state licensing records so confidence intervals do not apply. All other numbers in the table are weighted estimates based on Nursys survey responses. Percent calculations do not include missing data.
3) Practice location was based on survey responses for actively employed nurses indicating the ZIP code of their primary employer.
4) Missing data: No ARNPs with an active license were missing data on employment status.
Practice location: 0.7% missing across all certification levels for ARNPs employed as a nurse, range 0.0% (CNS) – 1.6% (CNM)

As might be expected, the highest number of ARNPs of each certification type was found in the areas of the state with the largest population centers. The state's largest cities are found in the HealthierHere ACH (Seattle), Better Health Together (Spokane) and Elevate Health ACH (Tacoma). For most certification types, these three ACHs had the highest number of practicing ARNPs (**Figures NP.2, NA.2, NM.2, NS.2**). Comparing the number of ARNPs per 100,000 population living in each region (also called the number per capita) is a common way to identify signals that might suggest variation in health care access. The number of ARNPs per capita varied by region for each certification type, indicating that ARNPs of each certification type are not evenly distributed throughout the state. For example, the number of NPs per capita ranged from 32.6 per 100,000 population in Southwest Washington ACH to 86.0 per 100,000 in HealthierHere ACH (**Figure NP.2**). It is worth further consideration and study to assess

the extent to which these differences are accounted for by having more ARNPs where there is a higher density of specialty centers and hospitals, such as in metropolitan areas, versus being a sign of inequitable access to care.

There are many factors other than healthcare facility location, such as population demographics and the need for different health care services that influence the geographic region in which ARNPs practice. Additionally, there is no agreement on the number of ARNPs per 100,000 population that is needed for appropriate patient care. However, examining the estimated number of ARNPs of one certification level in different regions of the state can give an indication of the relative distribution throughout the state.

Approximately 30% or more of NPs, CNMs and CNSs reported being age 55 or older, which could signal potential supply reduction due to retirements in the coming decade (**Table 2**). However, **Figure 1** shows that even though the mean age was similar among all four certification types, there appear to be a large percentage of each workforce in the younger age categories for NPs, CNRAs and CNMs to compensate for possible upcoming retirements.

The percentage of CRNAs who are male (48.6%) is much higher than the percentage of males in each of the other certification types, which range from 1.5% for CNMs to 11.9% for NPs (**Table 2**). This agrees with other studies that have found that, in Washington and across the United States, CRNAs are approximately 50% male.[24,25]

NPs were less likely to work full-time than other certification types (76.5% of NPs working full-time compared with 81% - 89% for other certification types). However, among ARNPs who worked full-time (defined as at least 32 hours per week), NPs worked a similar number of hours as CRNAs and CNSs (**Table 2**). CNMs reported working longer hours per week (45.8) than other certification types.

Table 2: Demographics and selected work characteristics by certification type for ARNPs practicing in Washington, May 2019

ARNP Certification Type	Mean Age (95% CI)	Percent Age 55 or Older (95% CI)	Percent Male (95% CI)	Percent working in a rural area (95% CI)	Percent Full-Time (95% CI)	Mean Hours Worked per Week (Full-Time) (95% CI)
NP	47.8 (47.6 - 48.1)	32.3% (31.3% - 33.2%)	11.9% (11.2% - 12.6%)	8.0% (7.4% - 8.6%)	76.5% (75.6% - 77.3%)	42.3 (42.1 - 42.5)
CRNA	46.7 (46.1 - 47.3)	24.8% (22.5% - 27.2%)	48.6% (45.8% - 51.5%)	13.7% (11.8% - 15.6%)	86.6% (84.7% - 88.5%)	43.0 (42.6 - 43.5)
CNM	46.7 (45.7 - 47.7)	29.3% (25.6% - 33.0%)	1.5% (0.5% - 2.5%)	8.0% (5.8% - 10.3%)	80.8% (77.5% - 84.1%)	45.8 (44.8 - 46.7)
CNS	46.3 (44.1 - 48.5)	34.9% (27.4% - 42.4%)	7.4% (3.2% - 11.6%)	5.7% (2.0% - 9.5%)	88.9% (83.9% - 93.9%)	42.5 (41.4 - 43.5)

Notes: 1) 95% CI = 95% confidence interval
2) Rural/urban designation based on rural-urban commuting area codes (RUCA version 3.1) for the ZIP Code in which nurses are employed[21]
4) Full-time employment defined as greater than or equal to 32 hours worked per week
5) Percent calculations do not include missing data.
6) Missing data: Race: 0.6% missing across all certification levels, range 0.0% (CNM, CNS) – 0.7% (CNP). Practice location: 0.7% missing across all certification levels for ARNPs employed as a nurse, range 0.0% (CNS) – 1.6% (CNM). All other categories: No missing data for ARNPs employed as a nurse and practicing in WA.

Figure 1: The percentage of ARNPs practicing in Washington in each age category by certification type, May 2019
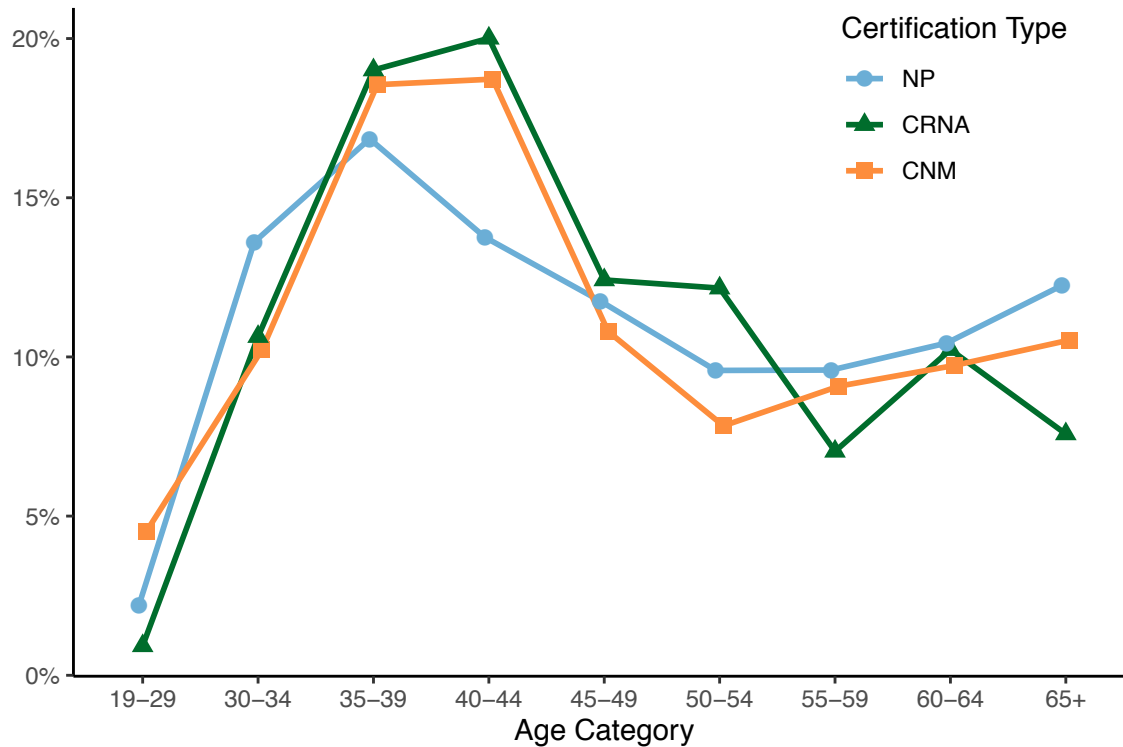
Notes: 1)) Clinical nurse specialists (CNSs) were not included in this graph because the number of survey responses in each age category was too small to calculate estimates that could reliably be compared to estimates for other certification types.
2) No ARNPs practicing in Washington were missing age

Approximately 8.6% of Washington's practicing ARNPs worked in a rural area, based on the ZIP Code of their work address. In comparison, approximately 16% of Washington residents lived in a rural area in 2018.[23] CRNAs were more likely to practice in a rural ZIP Code than other certification types. As discussed in the CRNA section above, this is likely due to the role CRNAs play in providing anesthesia in many rural areas that do not have a physician anesthesiologist.

The Washington State Office of Financial Management estimated that 13.0% of all Washington residents were Hispanic and 20.5% were non-White in April 2018.[22] The percentage of Hispanic and non-White ARNPs practicing in Washington was lower, indicating that Hispanics and non-Whites were underrepresented when compared to the overall Washington population. This was especially pronounced among CNMs, who were shown to have no non-White or Hispanic practitioners in rural areas and also in a few ACHs (**Table NM.3** and **Table NM.7**).

Table 3: Race and ethnicity of ARNPs practicing in Washington in compared with the Washington State population

	Percent of NPs in Each Category (95% CI) N ≈ 4,807	Percent of CRNAs in Each Category (95% CI) N ≈ 647	Percent of CNMs in Each Category (95% CI) N ≈ 342	Percent of CNSs in Each Category (95% CI) N ≈ 75	Percent of Washington Population in Each Category N ≈ 7,427,570
Ethnicity					
Hispanic or Latino	3.9% (3.5% - 4.3%)	2.4% (1.5% - 3.2%)	2.1% (0.9% - 3.4%)	3.8% (0.7% - 6.9%)	13.0%
Race					
AIAN or NH/OPI alone	0.7% (0.5% - 0.8%)	0.7% (0.2% - 1.2%)	None	None	2.6%
Asian alone	7.4% (6.9% - 8.0%)	5.2% (3.9% - 6.4%)	1.5% (0.5% - 2.5%)	9.9% (5.0% - 14.7%)	8.7%
Black/African American alone	2.0% (1.7% - 2.3%)	1.0% (0.4% - 1.5%)	1.6% (0.5% - 2.7%)	2.0% (0.0% - 4.3%)	4.1%
White alone	85.2% (84.4% - 85.9%)	89.3% (87.5% - 91.1%)	93.3% (91.2% - 95.4%)	88.1% (82.8% - 93.4%)	79.5%
Other race alone	1.8% (1.5% - 2.1%)	1.9% (1.1% - 2.6%)	1.5% (0.5% - 2.6%)	None	NA
Two or more races	2.9% (2.6% - 3.3%)	2.0% (1.2% - 2.8%)	2.1% (0.9% - 3.3%)	None	5.1%

Notes: 1) 95% CI = 95% Confidence Interval, AIAN or NH/OPI = American Indian or Alaska Native or Native Hawaiian or Other Pacific Islander.
2) "None" indicates that there were no survey responses in these categories. It is possible that there are ARNPs in these categories who practice in Washington, but they did not fill out this survey question.
3) "NA" – Not applicable. This category was not collected for Washington population estimates.
4) State population estimates are from the Washington State Office of Financial Management, 2018 estimates.[22]
5) Percent calculations for do not include missing data.
6) Missing data: Race: 0.6% missing across all certification levels, range 0.0% (CNM, CNS) – 0.7% (NP).
Survey respondents were asked to check a box if they identified as Hispanic/Latino. There was not a corresponding box for "Not Hispanic/Latino" or for "Choose not to answer." Therefore, it was not possible to assess the percentage of missing responses for the ethnicity question.

STUDY LIMITATIONS

The accuracy of survey findings depends on how well respondents represent the overall population under study. Approximately 64.5% of ARNPs with an active Washington license responded to the Nursys survey at least once between early 2015 and May 2019. Response rates for each certification type ranged from 57.3% for CNMs to 70.8% for CNSs. While this is a higher response rate than is achieved in many surveys, we determined that survey respondents were older compared with all licensed ARNPs at each certification level. As a result, we weighted the responses for each certification type to compensate for this potential bias.

We found that some of the responses for ARNPs were completed as far back as 2015. It is therefore possible that the survey responses saved in the Nursys data file may not reflect the current situation for an individual ARNP. However, 91.3% of ARNP responses were completed in 2018 or 2019 and 98.8% were completed in 2017 or more recently. The analyses presented in this report estimate the composition and characteristics of Washington's ARNP workforce on May 31, 2019, and while the information for some individual nurses may have changed between the time of survey completion and the date the data were downloaded, these differences are unlikely to be sufficiently large to change the overall findings presented here.

For survey questions or for certification types in which response frequencies are low, there is greater potential for error in our estimates. We calculated 95% confidence intervals for most estimates presented in this report to show the degree of uncertainty in each estimate. Additionally, we suppressed summaries for cell sizes less than 10 to show that these estimates may not be reliable and to protect disclosure (albeit highly unlikely) of the identity of ARNPs with those characteristics.

Some individual questions had high rates of missing data. For example, approximately 20% of NPs who answered the survey did not complete the specialty/area of practice question. We presented estimates for this question, but it is possible that our estimates would change if the response rate were higher. All other questions had missing data rates of less than 5%, so we can be relatively confident in our estimates for these questions.

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APPENDIX A: METHODS

Table A1: ARNP Certification Levels Based on Licensing Roster, May 2019

Advanced Practice Certification Type	Number Licensed in the State	Percent
NP	6,985	80.8%
CRNA	1,054	12.2%
CNM	438	5.1%
CNS	120	1.4%
NP + CNM	45	0.5%
NP + CRNA	7	0.1%

Table A2: Final ARNP Certification Classifications and Survey Response Rates for Each Certification Level

Final Advanced Practice Certification Classification	Number Licensed in the State	Number of Survey Responses	Survey Response Rate
NP	6,985	4,546	65.1%
CRNA	1,061	670	63.1%
CNM	483	277	57.3%
CNS	120	85	70.8%

Table A3: ARNPs who answered the survey questions compared to all ARNPs licensed in the state, by certification type

	Total NPs	NP Survey Responses	Total CRNAs	CRNA Survey Responses	Total CNMs	CNM Survey Responses	Total CNSs	CNS Survey Responses
Total Number	6,985	4,546	1,061	670	483	277	120	85
Age								
Mean (SD)*	48.1 (12.4)	48.8 (12.5)	47.2 (10.9)	47.8 (11.1)	47.1 (11.8)	47.6 (12.2)	46.7 (13.4)	48.3 (14.2)
Median	47.0	48.0	45.0	46.0	44.0	45.0	44.0	47.0
Age categories (column %)**								
19-29	175 (2.5%)	113 (2.5%)	12 (1.1%)	< 10	19 (3.9%)	13 (4.7%)	< 10	< 10
30-34	913 (13.1%)	552 (12.1%)	96 (9.0%)	66 (9.9%)	50 (10.4%)	28 (10.1%)	24 (20.0%)	14 (16.5%)
35-39	1,123 (16.1%)	705 (15.5%)	201 (18.9%)	120 (17.9%)	85 (17.6%)	45 (16.2%)	19 (15.8%)	11 (12.9%)
40-44	931 (13.3%)	564 (12.4%)	201 (18.9%)	113 (16.9%)	93 (19.3%)	48 (17.3%)	14 (11.7%)	< 10
45-49	839 (12.0%)	516 (11.4%)	139 (13.1%)	78 (11.6%)	52 (10.8%)	30 (10.8%)	10 (8.3%)	< 10
50-54	694 (9.9%)	469 (10.3%)	134 (12.6%)	88 (13.1%)	34 (7.0%)	20 (7.2%)	11 (9.2%)	< 10
55-59	682 (9.8%)	462 (10.2%)	89 (8.4%)	65 (9.7%)	45 (9.3%)	29 (10.5%)	12 (10.0%)	11 (12.9%)
60-64	768 (11.0%)	539 (11.9%)	96 (9.0%)	74 (11.0%)	52 (10.8%)	31 (11.2%)	11 (9.2%)	11 (12.9%)
65+	860 (12.3%)	626 (13.8%)	93 (8.8%)	60 (9.0%)	53 (11.0%)	33 (11.9%)	14 (11.7%)	11 (12.9%)
Sex								
Male (%)	884 (12.7%)	567 (12.5%)	531 (50.0%)	339 (50.6%)	< 10	< 10	15 (12.5%)	10 (11.8%)
Residence location								
Better Health Together	508 (7.3%)	346 (7.6%)	159 (15.0%)	86 (12.8%)	27 (5.6%)	20 (7.2%)	< 10	< 10
Cascade Pacific Action Alliance	371 (5.3%)	252 (5.6%)	47 (4.4%)	29 (4.3%)	26 (5.4%)	17 (6.2%)	< 10	< 10
Elevate Health	635 (9.1%)	407 (9.0%)	54 (5.1%)	33 (4.9%)	54 (11.2%)	26 (9.4%)	12 (10.0%)	< 10
Greater Columbia	468 (6.7%)	300 (6.6%)	84 (7.9%)	59 (8.8%)	15 (3.1%)	< 10	< 10	< 10
HealthierHere	1,966 (28.2%)	1,238 (27.3%)	227 (21.4%)	145 (21.6%)	156 (32.4%)	88 (31.9%)	46 (38.3%)	29 (34.1%)
North Central	120 (1.7%)	79 (1.7%)	23 (2.2%)	18 (2.7%)	13 (2.7%)	< 10	< 10	< 10
North Sound	714 (10.2%)	465 (10.2%)	63 (5.9%)	43 (6.4%)	53 (11.0%)	29 (10.5%)	< 10	< 10
Olympic	259 (3.7%)	177 (3.9%)	28 (2.6%)	17 (2.5%)	17 (3.5%)	< 10	< 10	< 10
Southwest WA ACH	239 (3.4%)	148 (3.3%)	39 (3.7%)	25 (3.7%)	17 (3.5%)	10 (3.6%)	< 10	< 10
State other than WA	1,696 (24.3%)	1,127 (24.8%)	337 (31.8%)	215 (32.1%)	104 (21.6%)	60 (21.7%)	34 (28.3%)	25 (29.4%)

Notes: 1) All data are taken from the roster of nurses licensed in Washington, which includes information about date of birth, sex, mailing address and certification level for all ARNPs. 2) Residence was attributed to the county associated with the mailing ZIP code for the nurse's Washington State license.
3) *A two-sided t-test for differences in means indicated that survey respondents were significantly older than all licensed ARNPs at the same certification level for CNPs, CRNAs and CNSs (p <0.05). There was not a statistically significant difference in mean age for CNMs (p=0.26).
** A chi-square test of independence showed a statistically significant relationship across age categories comparing respondents to all ARNPs certified as a CNP or a CRNA (p < 0.01). There was not a statistically significant difference across age categories for CNMs (p = 0.8) or CNSs (p = 0.08).
4) Counties comprising Accountable Communities of Health (ACHs): 1) **Better Health Together** (BHT) includes Adams, Ferry, Lincoln, Pend Oreille, Spokane, and Stevens counties, 2) **Cascade Pacific Action Alliance** (CPAA) includes Cowlitz, Grays Harbor, Lewis, Mason, Pacific, Thurston, and Wahkiakum counties, 3) **Elevate Health** (EH) is Pierce County, 4) **Greater Columbia** (GC) includes Asotin, Benton, Columbia, Franklin, Garfield, Kittitas, Walla Walla, Whitman, and Yakima counties, 5) **HealthierHere** (HH) is King County, 6) **North Central ACH** (N. Central) includes Chelan, Douglas, Grant, and Okanogan counties. 7) **North Sound ACH** (N. Sound) includes Snohomish, Skagit, Island, San Juan, and Whatcom counties, 8) **Olympic Community of Health** (Olympic) includes Clallam, Jefferson and Kitsap counties, 9) **Southwest Washington** (SW) includes Clark, Klickitat, and Skamania counties.
5) Missing data: No records were missing date of birth or sex.
Residence location: Total Licensed ARNPs 0.12%, range 0.13% (CNP) – 0.21% (CNM); Survey Respondents 0.14%, range 0.15% (CNP) – 0.36% (CNM)

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Details about the construction of survey weights

The roster of all nurses licensed in Washington included information about age, sex, mailing address (based on the mailing ZIP code submitted by the nurse on initial licensing or renewal) and ARNP certification type (NP, CRNA, CNM or CNS). We used the age, sex and mailing address variables to compare ARNPs of each certification type who completed the Nursys survey to all nurses licensed in Washington with the same certification type. We found that there was a statistically significant difference in mean age for NPs, CRNAs and CNSs and a statistically significant difference in age categories for NPs and CRNAs. In each instance, survey respondents were older than all ARNPs of the same certification type. There was not a statistically significant difference comparing survey respondents to all licensed ARNPs of each certification type based on sex and mailing address (see **Table A3**). A further analysis (not shown) found that age was also associated with many of the other variables collected in the survey.

If we analyzed the survey responses without accounting for these differences, the estimates we reported would not be representative of all ARNPS licensed in Washington for each certification type. Therefore, we constructed survey weights to make the survey responses more representative of all ARNPs licensed in Washington. We decided to calculate survey weights separately for all four certification types based on age categories even though there was not a significant difference across age categories for CNMs and CNSs. There was a significant difference in mean age for CNSs and CNMs appeared to follow the same pattern of survey respondents being older, even though the difference was not statistically significant.

We used the rake function of the survey package[19] of R[18] to create weights using iterative post-stratification. The sample frame was all ARNPs with an active license on May 31, 2019 based on the nursing roster maintained by NCQAC. The survey design was defined as a simple random sample without replacement and the variables included in construction of the weights were: certification level (NP/CRNA/CNM/CNS) and age category (19-29, 30-34, 35-39, 40-44, 45-49, 50-54, 55-59, 60-64, 65+). A finite population correction representing all ARNPs with an active license on May 31, 2019 was applied. As a result, the weights adjust survey responses to represent the ARNP population with active licenses of each certification type on the date the survey data were downloaded (May 31, 2019). The range of the calculated weights for each certification type were: 1.39 – 1.67 (NP); 1.42 – 1.71 (CRNA); 1.57 – 1.89 (CNM); 1.28 – 1.54 (CNS).

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SUGGESTED CITATION

Stubbs BA, Skillman SM. *Washington State's 2019 Advanced Registered Nurse Practitioner Workforce*. Center for Health Workforce Studies, University of Washington, Mar 2020.

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