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Washington State Hospitals:

Results of 2002 Workforce Survey

by

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WWAMI CENTER FOR HEALTH WORKFORCE STUDIES

UW University of Washington

School of Medicine

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About the Workforce Center

The WWAMI Center for Health Workforce Studies at the University of Washington Department of Family Medicine is one of five regional centers funded by the National Center for Health Workforce Information and Analysis (NCHWIA) of the federal Bureau of Health Professions (BHPr), Health Resources and Services Administration (**HRSA**). Major goals are to conduct high-quality health workforce research in collaboration with the BHPr and state agencies in Washington, Wyoming, Alaska, Montana, and Idaho (WWAMI); to provide methodological expertise to local, state, regional, and national policy makers; to build an accessible knowledge base on workforce methodology, issues, and findings; and to widely disseminate project results in easily understood and practical form to facilitate appropriate state and federal workforce policies.

The Center brings together researchers from medicine, nursing, dentistry, public health, the allied health professions, pharmacy, and social work to perform applied research on the distribution, supply, and requirements of health care providers, with emphasis on state workforce issues in underserved rural and urban areas of the WWAMI region. Workforce issues related to provider and patient diversity, provider clinical care and competence, and the cost and effectiveness of practice in the rapidly changing managed care environment are emphasized.

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This study was performed by the WWAMI Center for Health Workforce Studies (CHWS) and the Washington State Hospital Association (WSHA). The WWAMI CHWS is supported by the National Center for Health Workforce Analysis (NCHWA), Bureau of Health Professions (BHPr), Health Resources and Services Administration (HRSA). Data collection was supported by funds from the WSHA, and survey methods development and data analysis were supported by NCHWIA through a congressional appropriation for CHWS to collect and analyze health workforce data in Washington. Beionka Moore (WSHA), Seth Blades (CHWS), Shana Restall (CHWS), and Adam Garcia (CHWS) provided valuable data collection, coding, and entry assistance.

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Abstract

Background: The University of Washington Center for Health Workforce Studies and the Washington State Hospital Association collaborated in a staffing survey of Washington's non-federal acute care hospitals, which employ 37 percent of non-federal health services employees in the state. The staff data are useful for workforce planning by hospitals all well as by other health employers when direct data from their industries are not available.

Methods: The survey team sent 85 hospitals a five-page questionnaire asking about employment and contracting across 21 occupational categories, level of difficulty recruiting these staff, and level of difficulty credentialing physicians. The response rate was 84 percent. The team analyzed responses at three levels: state, hospital size, and workforce development area. It added values for non-respondents to develop state and regional estimates of vacancies and employment.

Major Findings:

- Statewide, nursing is the health occupation with the greatest number of vacancies—1,869. But the staff nurse vacancy rate dropped from 11.1 percent in 2001 to 7.4 percent in 2002.
- Occupations with the highest statewide vacancy rates are ultrasound technologist (14.3%), radiographer/radiology technologist (11.3%), nuclear medicine technologist (10.9%), and licensed practical nurse (9.2%).
- Hospitals reported that it is "very difficult" to recruit in the following fields: radiation therapy technologists, 91 percent of hospitals; nuclear medicine technologists, 91 percent; ultrasound technologists, 88 percent; specialized radiology technologists, 83 percent; licensed pharmacists, 71 percent; staff nurses, 67 percent; and radiographer/radiology technologists, 62 percent.
- While all regions of the state cited shortages and difficulty recruiting hospital staff, not all regions are having problems with the same occupations.
- Anesthesiologists and radiologists are the physician types most difficult to credential.

Policy Implications: Washington hospitals have unmet demand for many health care occupations. Recognizing that the state's educational output for such occupations has not increased in recent years despite a growth in the population needing health services, many policy makers and planners propose to address

the shortages by increasing education capacity. But to prevent future shortages or surpluses, policies should account for other factors affecting health workforce dynamics, including occupational migration, retirement and attrition rates, employee productivity, and demographic and economic trends.

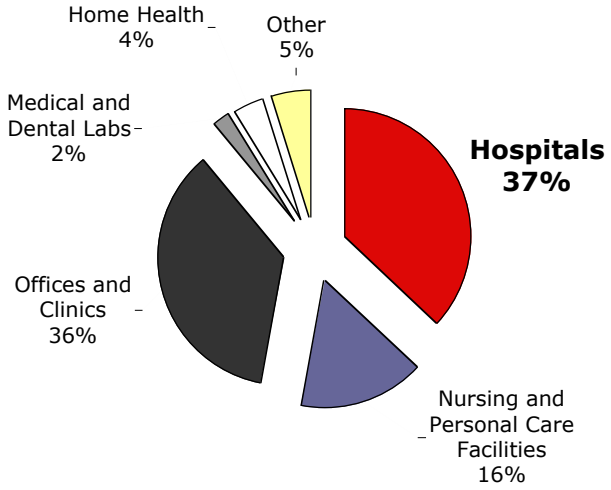
Background

Shortages of many types of health personnel are attracting attention across Washington and appear to be increasing in severity for some occupations (Health Care Personnel Shortage Task Force, 2002; Spokane Spokesman Review, 2003; Tacoma News Tribune, 2003; Walla Walla Union Bulletin, 2003; Wenatchee World, 2003). There are only limited data, however, to specify the extent of these shortages, and to track changes in the supply and demand of health personnel.

Thirty-eight percent of Washington State's health services employees work in the non-federal hospitals in the state (Bureau of Labor Statistics, 2001) (see Figure 1). Information on the staffing patterns and vacancy rates of these hospitals not only is useful for planning and policy for the state's hospitals, but is useful for gauging the condition of the health services workforce across all health employment sectors in the state, especially when direct information from those other sectors is not available. For these reasons, the Center for Health Workforce Studies (CHWS) and the Washington State Hospital Association (WSHA) collaborated on a survey of the non-federal acute care hospitals in Washington to obtain information about their staffing situations.

FIGURE 1

Employment Location of Non-Federal Health Services Employees in Washington State, 2000



Methods

This mailed survey of acute care hospitals in Washington State was conducted from October 2002 to March 2003. The WSHA mailed the survey questionnaire to the 85 non-federal acute care hospitals in the state. The resulting responses were coded, entered into computer files, and analyzed by CHWS. The survey design and analysis were supported with CHWS funding from HRSA's National Center for Health Workforce Information through a congressional appropriation to collect and analyze health workforce data in Washington State. The data collection was supported by the WSHA.

Questionnaire

A five-page questionnaire (see Appendix A) was developed and revised based on the previous year's questionnaire and input from the WSHA Personnel Shortage Task Force. The questionnaire asked for descriptive information about the acute care hospital, employment, and contracting statistics for 21 occupational categories, information about the hospital's level of difficulty recruiting these staff, and a set of questions about the hospital's level of difficulty credentialing physicians.

Data Collection

The questionnaires, with cover letters, were mailed to human resource executives at each hospital. Other hospital administrators were informed of the survey through WSHA newsletters, e-mails, and meetings. As necessary, in-person (through regular WHSA meetings) and telephone follow-up contacts were made with non-responding hospitals to encourage their response. The initial mailing of the questionnaire was followed by two additional mailings to non-respondents at approximately four-week intervals. Individual hospitals were sent additional copies of the questionnaire as needed during phone follow-up.

Workforce Development Areas

When possible, analysis of the data was conducted at the workforce development area (WDA) level. Washington State is divided into 12 WDAs that receive federal and state funding for workforce planning. Each WDA is composed of one or more counties (see Figure 2).

FIGURE 2

Workforce Development Areas in Washington State

Imputing Values for Non-Respondents

To estimate the total number of employed staff and full-time equivalents (FTEs), and the number of vacancies in the state and within WDAs, it was necessary to impute values for non-responding hospitals. All hospitals in the sample (respondents and non-respondents) were grouped into one of four hospital size categories based on the number of licensed acute care beds operated by the facility: smallest (fewer than 50 beds), small (50-99 beds), medium (100-250 beds) and large (more than 250 beds). Bed size for non-responding hospitals was obtained from WSHA records. The values for non-respondents were imputed by applying the mean value obtained from responding hospitals in each size category to each of the non-respondent hospitals. For occupations not employed by all hospitals (e.g., nuclear medicine technologist, physician assistant), the imputed values for employment and vacancies were downweighted by the ratio:

$$\frac{\text{(respondents who indicated they employed the occupation)}}{\text{(total number of question respondents)}}$$

Estimating Number of Employees Needed to Fill FTE Vacancies

The questionnaire asked for the number of vacant FTEs from each hospital. To estimate the number of persons needed to fill the vacant FTEs, a persons-per-FTE rate was calculated for each occupation. The number of persons employed was divided by the number of FTEs employed for each occupation, using data from hospitals that provided responses to both questions. This rate was then multiplied by the total estimated vacant FTEs for each occupation to estimate the number of employees needed to fill the FTE vacancies.

Calculating Vacancy Rates

Vacancy rates can be calculated in several different ways. This study used two methods: (1) overall FTE vacancies and (2) average hospital vacancies. The first method sums all vacant FTEs reported for an occupation for the region being examined and divides that number by the total budgeted FTEs reported. If budgeted FTEs were not reported for an individual hospital, that number was imputed by adding employed FTEs to vacant FTEs. Hospitals included in the vacancy rate calculation were limited to those providing both numerator (vacant FTEs) and denominator (budgeted FTEs or imputed budgeted FTEs) data. The second method, average hospital vacancy rate, is the mean of individual hospitals' vacancy rates. For this method, the vacant FTE value for each hospital is divided by the budgeted FTEs (reported or imputed), and these rates are added and divided by the number of hospitals for which the rates are obtained.

Results

Description of Respondents

The survey yielded a response from 71, or 83.5 percent, of the non-federal acute care hospitals in Washington. Respondents included 82.6 percent of the rural hospitals (38 of 46) and 84.6 percent of the urban hospitals (33 of 39). Table 1 shows characteristics of the responding hospitals by size.

TABLE 1

Characteristics of Washington Hospitals by Hospital Size

		Smallest (< 50 beds)	*Small (50-99 beds)*	*Medium (100-250 beds)*	*Large (> 250 beds)*
Surveyed hospitals		37	12	22	14
Responding hospitals		31 (83.8%)	9 (75.0%)	19 (86.4%)	12 (85.7%)
Average daily census		8.1	26.9	83.4	259.1
Average number of licensed long term care beds		11.6	0	9.5	7.4
Average number of persons on payroll*		177	427	1,285	3,452
Location:	Rural**	31 (84%)	9 (80%)	6 (27%)	0 (0%)
	Urban	6 (16%)	3 (20%)	16 (73%)	14 (100%)

* Facility-wide.
** Rural-urban areas were determined using Rural-Urban Commuting Area Classification (Morrill et al., 1999) based on ZIP codes.

WDA response rates were generally high, ranging from 60 percent (one region) to 100 percent (in six regions). Table 2 shows survey response rates by WDA.

TABLE 2

Survey Response by Workforce Development Area

	*Workforce Development Area**											
	1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**
Surveyed hospitals	4	9	4	5	14	4	2	13	7	13	4	6
Responding hospitals	4	6	4	3	11	4	2	11	6	10	4	6
Response rate	100%	67%	100%	60%	79%	100%	100%	85%	86%	77%	100%	100%

* 1. Olympic Peninsula (Clallam, Jefferson, Kitsap counties)
2. Pacific Mountain (Grays Harbor, Lewis, Mason, Pacific, Thurston counties)
3. Northwest (Island, San Juan, Skagit, Whatcom counties)
4. Snohomish county
5. Seattle/King county
6. Tacoma/Pierce county
7. Southwest (Clark, Cowlitz, Skamania, Wahkiakum counties)
8. N. Central (Adams, Chelan, Douglas, Grant, Okanogan counties)
9. Central (Kittitas, Klickitat, Yakima counties)
10. Eastern (Asotin, Columbia, Ferry, Garfield, Lincoln, Pend Oreille, Stevens, Walla Walla, Whitman counties)
11. Benton, Franklin counties
12. Spokane county

Employment and Vacancies

Respondents were asked to provide numbers of staff employed, full-time equivalents (FTEs) employed, FTEs budgeted, and FTEs vacant for 21 occupations in their acute care facilities. Total employees and vacancies were estimated using these reported numbers and imputed values for non-respondents. As shown in Table 3, by far the largest hospital employee category is staff nurses, with 14,991.7 FTEs being provided by 22,454 staff nurses. The next largest employed category is nursing assistants, with 4,030 employees filling 2,955.8 FTEs. Appendix B shows the number of employees and FTEs reported and the number imputed for each occupation, and employee and FTE estimates by each of the 12 WDAs in the state.

TABLE 3

Estimated Number of Persons Employed in Washington's Hospitals in 2002, by Occupation

Occupation	*Percentage of Hospitals Employing the Occupation*	*Persons Employed (est.*)*	*FTEs Employed (est.*)*
Staff nurses (RNs)	100%	22,454	14,991.7
Nursing assistants	94%	4,030	2,955.8
Licensed practical nurses (LPNs)	87%	1,694	1,119.5
Medical technicians/clinical lab scientists	82%	1,415	1,035.3
Respiratory therapists	79%	1,225	734.4
Surgical technologists	83%	982	709.6
Radiographers/radiology technologists	96%	968	710.1
Pharmacy technicians	73%	942	645.3
Licensed pharmacists	83%	931	638.4
Physical therapists	80%	922	551.1
Specialized radiology technologists (CT, MRI)	73%	688	571.7
Medical records technicians	78%	581	580.9
Advanced practice nurses	52%	482	517.0
Occupational therapists	72%	457	260.3
Medical/clinical lab technologists	78%	446	408.2
Coders	93%	437	415.5
Ultrasound technologists	72%	350	239.3

(table continued on next page)

Occupation	*Percentage of Hospitals Employing the Occupation*	*Persons Employed (est.*)*	*FTEs Employed (est.*)*
Dieticians	75%	317	184.4
Nuclear medicine technologists	56%	169	146.1
Physician assistants	58%	113	106.2
Radiation therapy technologists	20%	113	101.1

* Number reported plus number imputed for non-responding hospitals.

Table 4 shows estimated FTEs vacant, estimated number of persons required to fill the vacancies, and overall vacancy rates ([total vacant FTEs for all hospitals]/[total budgeted FTEs for all hospitals]) for each occupation. Staff nurse is the occupation with the largest number of vacant positions, although it does not have the highest vacancy rate among the hospital occupations surveyed. Washington's hospitals need 219 licensed practical nurses and 172 nursing assistants, which are the two occupations ranked next by number of employees needed. The medical imaging occupations have the highest overall vacancy rates, with radiographer/radiology technologist at 11.3 percent and ultrasound technologist at 14.3 percent. Appendix B shows estimated vacant FTEs by WDA for each of the 21 occupations.

TABLE 4

Estimated Number of FTEs Vacant, Persons Required to Fill Vacancies, and Vacancy Rates in Washington's Hospitals in 2002, by Occupation

Occupation	*FTEs Vacant (est.*)*	*Persons Needed (est.*)*	*Overall Vacancy Rate***
Staff nurses (RNs)	1,213.5	1,869	7.4%
Nursing assistants	160.1	219	5.5%
Licensed practical nurses (LPNs)	116.5	172	9.2%
Radiographers/radiology technologists	93.5	130	**11.3%**
Licensed pharmacists	79.3	111	8.4%
Physical therapists	51.9	84	8.0%
Respiratory therapists	41.7	68	5.4%
Medical technicians/clinical lab scientists	48.2	65	4.7%
Specialized radiology technologists (e.g., MRI, CT)	43.7	56	7.1%

(table continued on next page)

Occupation	*FTEs Vacant (est.*)*	*Persons Needed (est.*)*	*Overall Vacancy Rate***
Ultrasound technologists	35.5	52	**14.3%**
Surgical technologists	36.3	46	4.6%
Pharmacy technicians	24.2	33	2.6%
Occupational therapists	15.6	26	5.5%
Nuclear medicine technologists	19.7	24	**10.9%**
Advanced practice nurses	25.3	24	4.4%
Medical/clinical lab technologists	14.5	20	4.4%
Coders	14.2	16	3.3%
Medical records technicians	11.5	13	2.0%
Physician assistants	8.5	10	7.8%
Dieticians	5.5	9	2.4%
Radiation therapy technologists	5.1	6	4.7%

* Number reported plus number imputed for non-responding hospitals.
** Overall vacancy rate.

The overall occupation vacancy rate for the state or a region may mask the situation in individual hospitals if the rates are driven by the numbers from larger hospitals. The average of hospital vacancy rates provides a sense of the situation at the hospital level. Table 5 shows average hospital vacancy rates by occupation: statewide and by hospital size.

TABLE 5

Average Hospital Vacancy Rate for Washington's Hospitals in 2002 by Occupation: Statewide and by Hospital Size

	*Average Hospital Vacancy Rate**				
		By Hospital Size			
*Occupation** (number of hospitals providing responses for this question)*	*Statewide*	*Smallest (< 50 beds)*	*Small (50-99 beds)*	*Medium (100-250 beds)*	*Large (> 250 beds)*
Staff nurses (RNs) (64)	7.3%	6.6%	8.5%	7.8%	7.6%
Nursing assistants (56)	5.6%	3.2%	14.5%	6.0%	3.5%
Licensed practical nurses (LPNs) (51)	6.7%	4.1%	6.0%	10.2%	7.4%
Radiographers/radiology technologists (58)	12.2%	10.6%	20.7%	13.0%	7.7%
Licensed pharmacists (53)	11.5%	15.6%	17.7%	8.7%	3.6%

(table continued on next page)

*Occupation** (number of hospitals providing responses for this question)*	*Average Hospital Vacancy Rate**				
		By Hospital Size			
	Statewide	*Smallest (< 50 beds)*	*Small (50-99 beds)*	*Medium (100-250 beds)*	*Large (> 250 beds)*
Physical therapists (50)	9.8%	13.6%	7.0%	8.0%	5.8%
Respiratory therapists (51)	6.7%	10.0%	12.0%	2.9%	3.3%
Medical technicians/clinical lab scientists (50)	9.1%	15.9%	0.0%	6.6%	1.7%
Specialized radiology technologists (e.g., MRI, CT) (43)	5.5%	5.6%	2.7%	6.3%	6.0%
Ultrasound technologists (43)	15.6%	23.6%	10.7%	7.1%	22.4%
Surgical technologists (50)	6.1%	8.3%	5.4%	6.0%	3.3%
Pharmacy technicians (40)	1.8%	0.0%	5.9%	0.5%	2.9%
Occupational therapists (42)	7.8%	19.8%	0.0%	3.3%	2.8%
Nuclear medicine technologists (34)	7.2%	0.0%	0.0%	11.1%	8.9%
Advanced practice nurses (27)	8.7%	17.5%	5.1%	1.1%	4.8%
Medical/clinical lab technologists (38)	4.0%	7.8%	0.0%	3.7%	0.9%
Coders (51)	5.1%	10.0%	0.0%	1.0%	3.9%
Medical records technicians (43)	4.6%	5.4%	5.1%	4.8%	1.8%
Physician assistants (31)	6.5%	10.3%	12.1%	0.0%	0.0%
Dieticians (42)	3.6%	7.3%	0.0%	2.0%	4.2%
Radiation therapy technologists (12)	4.9%	NA	NA	10.0%	1.3%

* Average of hospital vacancy rates, for hospitals reporting data on both FTEs vacant and FTEs employed.
** Data are from hospitals employing the occupation.

While staff nurse vacancy rates are relatively consistent across all hospital sizes, smaller hospitals (99 beds or fewer) appear to have a more difficult time than large hospitals filling vacancies for licensed pharmacists, respiratory therapists, and physician assistants. The smallest hospitals (fewer than 50 beds) have much higher vacancy rates for medical records coders, advanced practice nurses, and medical technician/clinical lab scientists than larger hospitals.

Use of Contract Employees

In addition to the regular employees hired by hospitals, most also contract for some of their workforce. This can involve hiring staff through agencies, or through direct contracts with professionals. It is difficult to measure the extent of use of these staff because not all hospitals track dollars or dollars for these services at the individual occupation level, and often the total dollars spent

include expenses other than direct compensation, such as housing, supplies, etc. For this survey, hospitals were asked to indicate whether or not, for each of the 21 occupations, they had used contract employees in the past year. Table 6 displays the results of that question.

TABLE 6

Percentage of Washington's Hospitals Using Contract Employees in 2002 by Occupation: Statewide and by Hospital Size

Occupation (number of hospitals providing responses for this question)	*Percentage of Hospitals Using Contract Employees**				
		By Hospital Size			
	Statewide	**Smallest (< 50 beds)**	**Small (50-99 beds)**	**Medium (100-250 beds)**	**Large (> 250 beds)**
Staff nurses (RNs) (69)	80%	68%	89%	94%	83%
Nursing assistants (67)	33%	17%	22%	41%	67%
Licensed practical nurses (LPNs) (68)	27%	20%	22%	41%	25%
Medical technicians/clinical lab scientists (63)	14%	24%	0%	13%	0%
Respiratory therapists (65)	28%	20%	56%	31%	20%
Surgical technologists (66)	24%	16%	22%	31%	40%
Radiographers/radiology technologists (66)	50%	29%	44%	80%	73%
Pharmacy technicians (65)	6%	0%	0%	18%	9%
Licensed pharmacists (65)	24%	28%	0%	33%	18%
Physical therapists (64)	36%	23%	50%	50%	40%
Specialized radiology technologists (CT, MRI) (66)	36%	23%	44%	44%	54%
Medical records technicians (65)	6%	3%	0%	19%	0%
Advanced practice nurses (64)	3%	0%	0%	12%	0%
Occupational therapists (65)	15%	16%	11%	13%	20%
Medical/clinical lab technologists (63)	6%	10%	0%	7%	0%
Coders (65)	14%	10%	0%	31%	10%
Ultrasound technologists (66)	39%	19%	56%	53%	64%
Dieticians (66)	17%	29%	11%	6%	0%
Nuclear medicine technologists (65)	26%	7%	11%	40%	67%
Physician assistants (62)	6%	14%	0%	0%	0%
Radiation therapy technologists (66)	17%	0%	0%	29%	54%

* Of hospitals employing the occupation.

Most hospitals contract for staff nurses. Half of all hospitals contract radiographers and radiology, with more large hospitals contracting than smaller ones. Larger hospitals are also more likely to contract for specialized radiology technologists, as well as for nuclear medicine and radiation therapy technologists. Small hospitals are more likely to contract dieticians than are larger hospitals.

Recruitment Difficulty

When asked about the relative level of difficulty recruiting new employees among the list of occupations, more that half responded that it was "very difficult" to recruit for six of the occupations (see Table 7). More than 90 percent of hospitals (among those that indicated they had recently recruited for the occupation) said it was very difficult to recruit nuclear medicine technologists and radiation therapy technologists. Ultrasound technologists and specialized radiology technologists were cited as very difficult to recruit by 88 percent and 83 percent of hospitals, respectively. Licensed pharmacists were reported to be very difficult to recruit by 71 percent of hospitals, as were nurses by 67 percent of hospitals.

TABLE 7

Level of Difficulty Recruiting Employees in Washington Hospitals in 2002, by Occupation

	*How Difficult Is Current Recruitment?**		
Occupation (number of hospitals employing occupation type)	***Not Difficult***	***Somewhat Difficult***	***Very Difficult***
Staff nurses (RNs) (69)	3%	30%	67%
Nursing assistants (65)	62%	35%	3%
Licensed practical nurses (LPNs) (53)	23%	55%	23%
Radiographers/radiology technologists (64)	8%	30%	62%
Licensed pharmacists (55)	0%	29%	71%
Physical therapists (51)	18%	35%	47%
Respiratory therapists (50)	16%	46%	38%
Medical technicians/clinical lab scientists (48)	8%	50%	42%
Specialized radiology technologists (e.g., MRI, CT) (60)	0%	17%	83%
Ultrasound technologists (58)	0%	12%	88%

(table continued on next page)

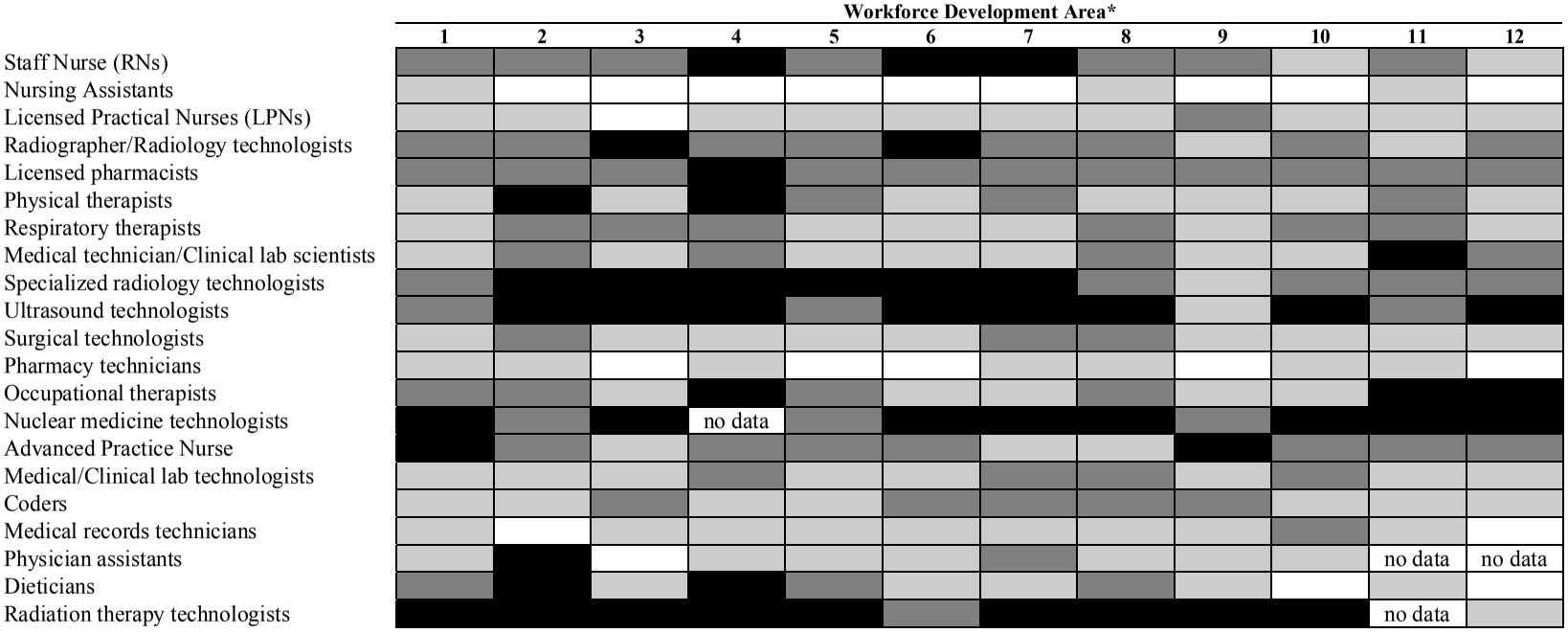
Occupation (number of hospitals employing occupation type)	*How Difficult Is Current Recruitment?**		
	Not Difficult	*Somewhat Difficult*	*Very Difficult*
Surgical technologists (55)	11%	58%	31%
Pharmacy technicians (49)	53%	37%	10%
Occupational therapists (43)	9%	44%	46%
Nuclear medicine technologist (33)	0%	9%	91%
Advanced practice nurses (38)	10%	40%	50%
Medical/clinical lab technologists (47)	8%	60%	32%
Coders (58)	10%	48%	41%
Medical records technicians (55)	38%	49%	13%
Physician assistants (32)	31%	53%	16%
Dieticians (41)	24%	44%	32%
Radiation therapy technologists (22)	0%	9%	91%

* For hospitals indicating they employ the occupation and have recently recruited.

Across the state, the level of recruitment difficulty for most hospital occupations varies by WDA. As shown in Figure 3, only licensed pharmacists and nuclear medicine technologists were cited by more than half of the hospitals in each WDA as being "very difficult" to recruit. Other occupations show major recruitment problems in most areas, but not all. Specialized radiology technologist and ultrasound technologist, radiation therapy technologist, radiographer/radiology technologist and staff nurse are clearly problems for hospitals in most of the state, but there are WDAs where a majority of hospitals employing these occupations cite recruitment as "not" or "somewhat difficult". The WDAs all show difficulty in recruiting hospital staff, but not for the same sets of occupations.

FIGURE 3

Difficulty of Recruiting Employees in Washington Hospitals in 2002, by Occupation and Workforce Development Area



Key:

- 100% of hospitals (that employ the occupation) reported recruitment as "very difficult"
- 50-99% of hospitals (that employ the occupation) reported recruitment as "very difficult"
- < 50% of hospitals (that employ the occupation) report recruitment as "very difficult", but <50% report "not difficult"
- > 50% of hospitals (that employ the occupation) reported recruitment as "not difficult"

* 1. Olympic Peninsula (Clallam, Jefferson, Kitsap counties)
2. Pacific Mountain (Grays Harbor, Lewis, Mason, Pacific, Thurston counties)
3. Northwest (Island, San Juan, Skagit, Whatcom counties)
4. Snohomish county
5. Seattle/King county
6. Tacoma/Pierce county
7. Southwest (Clark, Cowlitz, Skamania, Wahkiakum counties)
8. N. Central (Adams, Chelan, Douglas, Grant, Okanogan counties)
9. Central (Kittitas, Klickitat, Yakima counties)
10. Eastern (Asotin, Columbia, Ferry, Garfield, Lincoln, Pend Oreille, Stevens, Walla Walla, Whitman counties)
11. Benton, Franklin counties
12. Spokane county

Physician Credentialing

Hospitals reported that the level of difficulty to credential (and presumably to recruit) physicians varies by specialty. As shown in Table 8, anesthesiologists and radiologists were cited as being very difficult to recruit by more hospitals than other physician types (27% and 24%, respectively). However, for every physician type, more than half of the hospitals (among those that employed the physician type) indicated that credentialing was not difficult.

TABLE 8

Level of Difficulty Credentialing Physicians in Washington Hospitals in 2002, by Physician Type

Physician Type (number of hospitals credentialing physician type)	*How Difficult Is It to Credential*:*		
	Not Difficult	*Somewhat Difficult*	*Very Difficult*
Anesthesiology (49)	53%	20%	27%
Emergency medicine (56)	68%	27%	5%
Internal medicine (58)	67%	26%	7%
Cardiology (49)	57%	33%	10%
Surgery (general or specialty) (62)	57%	31%	13%
Obstetrics-gynecology (53)	66%	23%	11%
Pediatrics (46)	76%	22%	2%
Radiology (63)	54%	22%	24%
Family practice (64)	70%	25%	5%

* For hospitals that credential the physician type.

Within hospital size categories, results were similar with a few exceptions. More than half (60%) of the smallest hospitals (fewer than 50 beds) indicated it was somewhat or very difficult to credential anesthesiologists. Among the small hospitals (50-99 beds), more than half (75%) indicated it was somewhat or very difficult to credential surgeons. Among medium sized hospitals (100-250 beds), more than half indicated it was somewhat or very difficult to credential anesthesiologists (63%), radiologists (63%), and cardiologists (56%).

Discussion

This study found that Washington's acute care hospitals had demand for employees that was not met for many occupations in 2002. Radiographers/radiology technologists, ultrasound technologists, nuclear medicine technologists, staff nurses, licensed practical nurses (LPNs), and pharmacists were among the occupations with the largest vacancies, highest vacancy rates, and apparent shortfalls in supply. Most of the occupations in highest demand by hospitals require training at the associate degree level or higher. It is understandable that the majority of proposed solutions to this workforce demand problem are designed to increase the supply of employees by expanding educational capacity for high demand occupations. However, it does not appear that the state's training and education facilities at their present training capacities can solve the current shortages.

Imaging occupations (radiographer/radiology technologist, specialized radiology technologist, and ultrasound technologist) were short by 238 staff in the state's hospitals. Only 127 persons were reported to have completed training programs for these professions in the state in 2000 (Patterson and Skillman, 2002), far too few to fill the hospital vacancies.

It is equally unlikely that the state's pharmacy schools alone, at recent graduation rates, can fill the states needs for pharmacists. Most pharmacists do not work in hospitals. In 1998, 30 percent of the nation's pharmacists were employed by healthcare institutions, (including, but not limited to, hospitals), and the rest were employed in retail stores, administration and research (Bureau of Health Professions, 2000). In 2002 Washington's hospitals needed 111 pharmacists to fill their vacancies, which is 74 percent of the 150 graduates of the state's pharmacist education programs in 2000 (Patterson and Skillman, 2002).

The vacancy rate for LPNs was 9.2 percent among the state's hospitals, representing a need for 172 LPNs. The state graduated 636 LPNs in 2000 (Patterson and Skillman, 2002). The supply of new graduates compared with vacancies is greater than for other hospital occupations experiencing shortages. While LPNs are employed in many health care sectors besides hospitals, which reduces the supply for hospitals, it is not clear why the shortage of LPNs is at such a high level in the hospitals.

For staff nurses, the shortage has dropped from a 10.1 percent FTE vacancy rate in 2001 (Skillman et al., 2002) to 7.3 percent in 2002. In spite of this apparent

progress in staff nurse recruitment and retention, the statewide shortage of 1,869 remains difficult to overcome. In 2000, the state's nursing schools graduated 1,327 associate and baccalaureate degree registered nurses (RNs) (Patterson and Skillman, 2002). Most of the state's nursing schools have been operating at or near capacity for the past few years, and capacity has not increased greatly, so the number of new graduates in 2003 is not likely to be much greater than in 2000. Even if all of Washington's RN graduates were to seek jobs in Washington's hospitals, the number would not be enough to fill the vacancies. We know that these graduates will not all seek jobs in hospitals, nor will they all remain in Washington State. In 2000, 32 states were estimated to have RN shortages, with 46 projected to have shortages by 2020 (HRSA Bureau of Health Professions, 2002). Relying on the state's ability to attract RNs from other states is not a feasible short or long-term solution to the problem.

Clearly, the role of health workforce training and education institutions is very important in addressing health personnel shortages. The 2002 Washington Health Care Personnel Shortage Task Force addressed four priority strategies to solve workforce shortages in the state (Health Care Personnel Shortage Task Force, 2002). Three are directly related to increasing educational capacity. First, the Task Force recommends providing funds to health care education and training programs to expand capacity and allow for the high costs of providing health career-related programs. Second, they recommend providing compensation to health program faculty at a level that competes with clinical wages in order to help overcome the shortage of health career teaching faculty. Third, because clinical training sites are required for training of most health care occupations, but are often not available because of staff shortages and financial constraints at the facilities providing the sites, the Task Force recommends more resources to aid coordination among educational facilities and training sites. The fourth Task Force recommendation is for local communities to be empowered to address the shortage in their areas.

A caution is in order about using the results of this study alone when developing solutions to workforce shortages. Knowing how much and how long to expand educational capacity requires more information than a single point-in-time study, such as this one, of employer demand. Factors other than educational output that influence workforce supply include employee productivity, retirement and attrition trends, and migration patterns into and out of the state and its regions. Similarly, changes in employer demand for these occupations (determined by such factors as population growth, the aging of the general population, changes in health care delivery systems, and economic trends) also

affect whether there are shortages or surpluses in supply. More of the policy implications of this hospital study would be revealed if it were enhanced with research that forecast Washington's health workforce supply and demand over time. However, the reality is that data for forecasting are extremely limited, and accurate forecasts are not currently available for most (if not all) health care occupations. To the extent possible health policy makers and planners should consider all of the factors that affect health workforce supply and demand, in addition to the impact on supply of educational output, when making policy decisions in this arena. Nonetheless, where there is large unmet demand for employees, little change in production of the occupation type, and growth in the general population, it is clear that remedial action such as increasing educational capacity is necessary.

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APPENDIX A:

Questionnaire

Washington State Hospital Association

Hospital Workforce Survey

Instructions

Please answer the following questions to the best of your ability. It will help to first review the definitions and instructions at the start of each section.

A. Hospital Characteristics

The questions in this section will help us understand the size and complexity of your hospital facility.

(A1) How many licensed acute care beds does your hospital have? _____ acute care beds

(A2) What was your hospital's average daily midnight census (acute care) last year? _____ patients

(A3) In addition to your acute care beds, how many licensed long-term care beds does your hospital have? _____ long term care beds

(A4) On average, how many people does your hospital have on its payroll (all professions in all units, including non-acute care)? _____ employees overall

(A5) On average, how many contract (not outsourced) employees does your hospital employ (all professions in all units, including non-acute care)? _____ contract employees

(A6) What is your hospital's fiscal year?

☐ January-December ☐ July-June ☐ Other (specify: _____)

(A7) What is the ZIP code of your facility? _____

(A8) What is the name of your acute care facility? _____

B. Acute Care Hospital Staffing

This section's questions are about the staff who support your ***acute care hospital***. If your hospital also supports non-acute care functions (long-term care, outpatient, etc.), please answer the following questions ***only*** as they relate to support of ***your hospital's acute care functions***.

Job Titles: Not all job titles listed in this questionnaire will match with those used at your institution. Please use your best judgement in matching your job titles with the job descriptions.

(B1) **Recruitment:**

	How difficult is current recruitment?				
Acute Care Hospital Staff	**Not Difficult**	**Somewhat Difficult**	**Very Difficult**	**Not Applicable: we do not employ job category**	**Not Applicable: we have not recently recruited**
Nursing Staff:					
(a) Staff nurses (RNs)	☐	☐	☐	☐	☐
(b) Advanced practice nurses	☐	☐	☐	☐	☐
(c) LPNs	☐	☐	☐	☐	☐
(d) Nursing assistants	☐	☐	☐	☐	☐
Laboratory Staff:					
(e) MT/CLS	☐	☐	☐	☐	☐
(f) MLT/CLT	☐	☐	☐	☐	☐
Radiology Staff:					
(g) Radiographer/radiology technologist	☐	☐	☐	☐	☐
(h) Specialized radiology technologist (e.g., MRI, CT)	☐	☐	☐	☐	☐
(i) Ultrasound technologist	☐	☐	☐	☐	☐
(j) Nuclear medicine technologist	☐	☐	☐	☐	☐
(k) Radiation therapy technologist	☐	☐	☐	☐	☐
Medical Records:					
(l) Technicians	☐	☐	☐	☐	☐
(m)Coders	☐	☐	☐	☐	☐
Pharmacy:					
(n) Licensed pharmacists	☐	☐	☐	☐	☐
(o) Pharmacy technicians	☐	☐	☐	☐	☐
Other:					
(p) Physician assistants	☐	☐	☐	☐	☐
(q) Dieticians	☐	☐	☐	☐	☐
(r) Physical therapists	☐	☐	☐	☐	☐
(s) Occupational therapists	☐	☐	☐	☐	☐
(t) Respiratory therapists	☐	☐	☐	☐	☐
(u) Surgical technologists	☐	☐	☐	☐	☐

(B2) **Regular/On-Payroll Employee Statistics:**

Please answer the following questions ***only*** as they relate to support of ***your hospital's acute care*** functions.

Full Time Equivalent Position (FTE): Total number of hours per year considered an FTE varies by institution and contract – the range is usually between 1860 and 2080 hours per year (30-40 hours per week). One FTE is indicated 1.0 FTE. Indicate part-time positions as follows: a half-time position = 0.5 FTE; a quarter-time position = 0.25 FTE.

	Employee Statistics: for each job category, indicate the requested statistic for regular/on-payroll staff.						
Acute Care Hospital Staff	**Not Applicable: we do not employ job category**	**# Persons Currently Employed[1]**	**# FTEs Currently Employed**	**# FTEs Currently Budgeted**	**# FTEs Vacant for which You're Currently Recruiting**	**# Persons Leaving Positions in Past FY[2]**	**Average # Persons Employed During Past FY**
Nursing Staff:							
(a) Staff nurses (RNs)	☐						
(b) Advanced practice nurses	☐						
(c) LPNs	☐						
(d) Nursing assistants	☐						
Laboratory Staff:							
(e) MT/CLS	☐						
(f) MLT/CLT	☐						
Radiology Staff:							
(g) Radiographer/radiology technologist	☐						
(h) Specialized radiology tech. (e.g., MRI, CT)	☐						
(i) Ultrasound technologist	☐						
(j) Nuclear medicine technologist	☐						
(k) Radiation therapy technologist	☐						
Medical Records:							
(l) Technicians	☐						
(m)Coders	☐						
Pharmacy:							
(n) Licensed pharmacists	☐						
(o) Pharmacy technicians	☐						
Other:							
(p) Physician assistants	☐						
(q) Dieticians	☐						
(r) Physical therapists	☐						
(s) Occupational therapists	☐						
(t) Respiratory therapists	☐						
(u) Surgical technologists	☐						

[1] Include all positions for this job category that are on your payroll (including full-time and part-time positions, and may include per diem and on-call staff).
[2] FY = fiscal year.

(B3) Contract Employee Statistics:

Please answer the following questions ***only*** as they relate to support of ***your hospital's acute care*** functions.

Contract employees can include agency, traveler, and temporary employees but do not include outsourced services.

	For each job category:		
Acute Care Hospital Staff	**Used Contract Employees in Past FY[1]?**	**Total $ Spent on Contract Employees in Past FY**	**Total # of Contract Employee Hours in Past FY**
Nursing Staff:			
(a) Staff nurses (RNs)	☐ Y ☐ N	$	hrs
(b) Advanced practice nurses	☐ Y ☐ N	$	hrs
(c) LPNs	☐ Y ☐ N	$	hrs
(d) Nursing assistants	☐ Y ☐ N	$	hrs
Laboratory Staff:			
(e) MT/CLS	☐ Y ☐ N	$	hrs
(f) MLT/CLT	☐ Y ☐ N	$	hrs
Radiology Staff:			
(g) Radiographer/radiology technologist	☐ Y ☐ N	$	hrs
(h) Specialized radiology technologist (e.g., MRI, CT)	☐ Y ☐ N	$	hrs
(i) Ultrasound technologist	☐ Y ☐ N	$	hrs
(j) Nuclear medicine technologist	☐ Y ☐ N	$	hrs
(k) Radiation therapy technologist	☐ Y ☐ N	$	hrs
Medical Records:			
(l) Technicians	☐ Y ☐ N	$	hrs
(m)Coders	☐ Y ☐ N	$	hrs
Pharmacy:			
(n) Licensed pharmacists	☐ Y ☐ N	$	hrs
(o) Pharmacy technicians	☐ Y ☐ N	$	hrs
Other:			
(p) Physician assistants	☐ Y ☐ N	$	hrs
(q) Dieticians	☐ Y ☐ N	$	hrs
(r) Physical therapists	☐ Y ☐ N	$	hrs
(s) Occupational therapists	☐ Y ☐ N	$	hrs
(t) Respiratory therapists	☐ Y ☐ N	$	hrs
(u) Surgical technologists	☐ Y ☐ N	$	hrs

[1] FY = fiscal year.

(B4) **Physicians:**

Physician Type	Is it difficult for your hospital to credential any of the following types of physicians?			
	Not Difficult	Somewhat Difficult	Very Difficult	NA: we do not credential MD specialty
(a) Anesthesiology	☐	☐	☐	☐
(b) Emergency medicine	☐	☐	☐	☐
(c) Internal medicine	☐	☐	☐	☐
(d) Cardiology	☐	☐	☐	☐
(e) Surgery (general or specialty)	☐	☐	☐	☐
(f) Obstetrics-gynecology	☐	☐	☐	☐
(g) Pediatrics	☐	☐	☐	☐
(h) Radiology	☐	☐	☐	☐
(i) Other MD specialty (specify: _____)	☐	☐	☐	☐
(j) Family practice	☐	☐	☐	☐

(B5) Please provide any additional comments or observations you may have about recruitment and retention of the hospital workforce in Washington:

_____

_____

_____

C. Other Information

(C1) Please give the ***job title*** of the person(s) responsible for completing this survey:

Primary person completing survey: _____ (job title)

Others who contributed to survey: _____ (job title)

_____ (job title)

(C2) If we need clarification of any of the responses to this survey, may we contact you?

Name: _____

Phone number: _____

E-mail address: _____

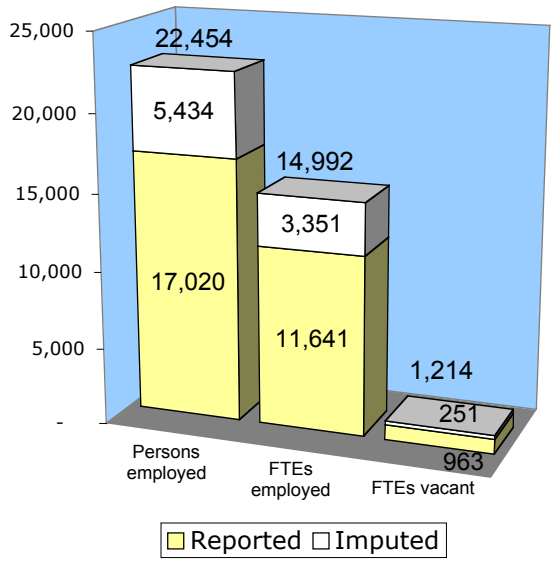
Thank you *for completing this questionnaire. Please fax your responses to Beionka Moore at 206-283-6122 or mail to Beionka Moore, Washington State Hospital Association, 300 Elliott Ave., Suite 300, Seattle, WA 98119-4118. If you have questions, please call Beionka at 206-216-2530.*

APPENDIX B:

Statewide and Regional Estimates of Total Persons Employed, FTEs Employed, FTEs Vacant, and Persons Needed to Fill Vacancies for 21 Hospital Occupations

Staff Nurses (RNs)

Statewide Estimates



- 7.4% vacancy rate*
- 22,454 persons employed
- 14,992 FTEs employed
- 1,214 FTEs vacant
- 1.54 persons employed per FTE employed

Hospitals need 1,869 staff nurses to fill vacancies statewide.

* (total vacant FTEs for all hospitals)/(total budgeted FTEs for all hospitals) for hospitals reporting both # of employed persons and # of employed FTEs.

Estimates by Region

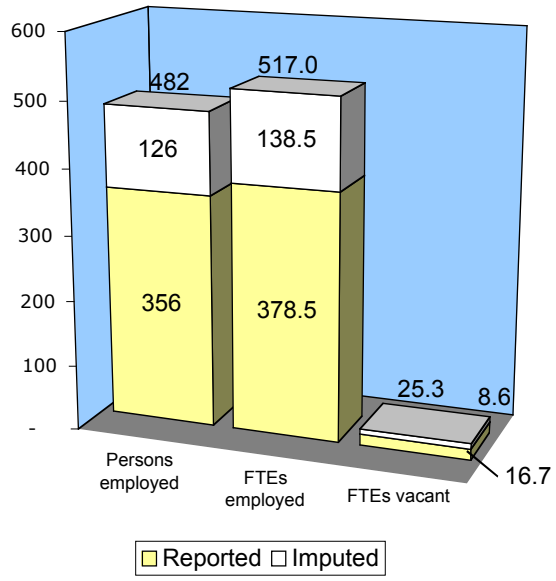
	Workforce Development Region											
	(1) Olympic	(2) Pacific	(3) North-west	(4) Snoho-mish	(5) King	(6) Pierce	(7) South-west	(8) North Central	(9) Tri-County	(10) E. Wash-ington	(11) Benton Franklin	(12) Spokane
Number of hospitals	4	9	4	5	14	4	2	13	7	13	4	6
Number of persons employed*	1183	1140	1454	1420	8604	1879	1241	777	863	838	635	2420
Number of FTEs employed*	777.7	813.6	862.1	909.8	6113.7	1112.0	807.4	491.9	625.8	499.3	464.8	1513.6
Number of FTEs vacant*	53.7	57.1	90.1	69.9	484.6	151.6	55.3	33.5	64.4	26.0	27.6	99.8
Number of RNs needed	83	88	139	108	746	233	85	52	99	40	43	154

* Green indicates more than half of the value is imputed.

1. Olympic Peninsula (Clallam, Jefferson, Kitsap counties)
2. Pacific Mtn. (Grays Harbor, Lewis, Mason, Pacific, Thurston counties)
3. Northwest (Island, San Juan, Skagit, Whatcom counties)
4. Snohomish county
5. Seattle/King county
6. Tacoma/Pierce county
7. Southwest (Clark, Cowlitz, Skamania, Wahkiakum counties)
8. N. Central (Adams, Chelan, Douglas, Grant, Okanogan counties)
9. Central (Kittitas, Klickitat, Yakima counties)
10. Eastern (Asotin, Columbia, Ferry, Garfield, Lincoln, Pend Oreille, Stevens, Walla Walla, Whitman counties)
11. Benton, Franklin counties
12. Spokane county

Advance Practice Nurses

Statewide Estimates



- 4.4% vacancy rate*
- 482 persons employed
- 517 FTEs employed
- 25.3 FTEs vacant
- 0.96 persons employed per FTE employed

Hospitals need 24 advanced practice nurses to fill vacancies statewide.

* (total vacant FTEs for all hospitals)/(total budgeted FTEs for all hospitals) for hospitals reporting both # of employed persons and # of employed FTEs.

Estimates by Region

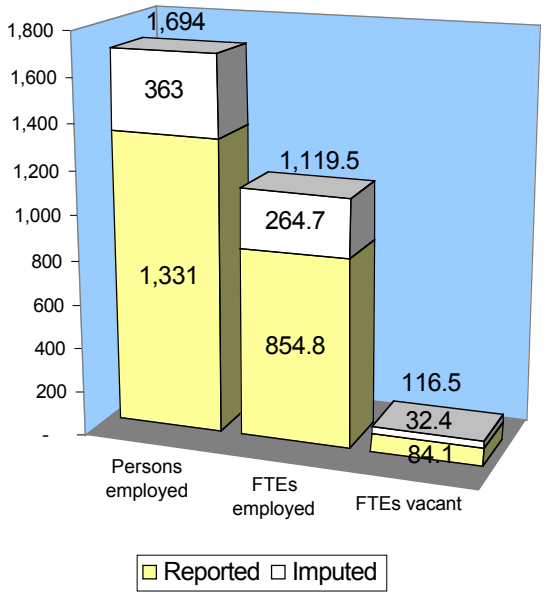
	Workforce Development Region											
	(1) Olympic	(2) Pacific	(3) North-west	(4) Snoho-mish	(5) King	(6) Pierce	(7) South-west	(8) North Central	(9) Tri-County	(10) E. Wash-ington	(11) Benton Franklin	(12) Spokane
Number of hospitals	4	9	4	5	14	4	2	13	7	13	4	6
Number of persons employed*	20	20	10	21	208	34	16	9	11	27	1	105
Number of FTEs employed*	23.6	13.4	9.0	23.4	188.7	127.3	6.8	6.3	31.7	13.8	1.0	72.1
Number of FTEs vacant*	0.7	0.4	0.0	2.8	7.2	2.7	3.7	1.1	1.4	2.5	1.0	1.7

* Green indicates more than half of the value is imputed.

1. Olympic Peninsula (Clallam, Jefferson, Kitsap counties)
2. Pacific Mtn. (Grays Harbor, Lewis, Mason, Pacific, Thurston counties)
3. Northwest (Island, San Juan, Skagit, Whatcom counties)
4. Snohomish county
5. Seattle/King county
6. Tacoma/Pierce county
7. Southwest (Clark, Cowlitz, Skamania, Wahkiakum counties)
8. N. Central (Adams, Chelan, Douglas, Grant, Okanogan counties)
9. Central (Kittitas, Klickitat, Yakima counties)
10. Eastern (Asotin, Columbia, Ferry, Garfield, Lincoln, Pend Oreille, Stevens, Walla Walla, Whitman counties)
11. Benton, Franklin counties
12. Spokane county

Licensed Practical Nurses

Statewide Estimates



- 9.2% vacancy rate*
- 1,679 persons employed
- 1,119.5 FTEs employed
- 116.5 FTEs vacant
- 1.48 persons employed per FTE employed

Hospitals need 171 LPNs to fill vacancies statewide.

* (total vacant FTEs for all hospitals)/(total budgeted FTEs for all hospitals) for hospitals reporting both # of employed persons and # of employed FTEs.

Estimates by Region

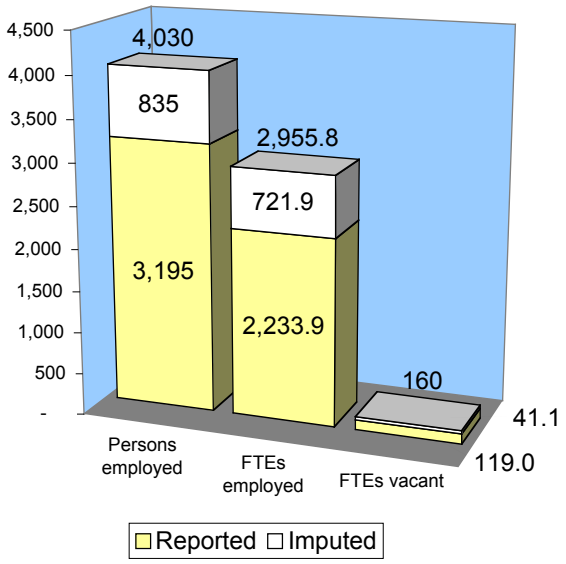
	Workforce Development Region											
	(1) Olympic	(2) Pacific	(3) North-west	(4) Snoho-mish	(5) King	(6) Pierce	(7) South-west	(8) North Central	(9) Tri-County	(10) E. Wash-ington	(11) Benton Franklin	(12) Spokane
Number of hospitals	4	9	4	5	14	4	2	13	7	13	4	6
Number of persons employed*	90	158	139	107	262	338	73	59	80	81	59	247
Number of FTEs employed*	60.1	108.6	91.7	72.5	173.8	238.0	51.7	29.7	51.2	48.6	40.3	153.0
Number of FTEs vacant*	4.4	14.8	9.5	7.4	20.0	35.2	4.4	6.3	6.1	0.8	5.0	2.7

* Green indicates more than half of the value is imputed.

1. Olympic Peninsula (Clallam, Jefferson, Kitsap counties)
2. Pacific Mtn. (Grays Harbor, Lewis, Mason, Pacific, Thurston counties)
3. Northwest (Island, San Juan, Skagit, Whatcom counties)
4. Snohomish county
5. Seattle/King county
6. Tacoma/Pierce county
7. Southwest (Clark, Cowlitz, Skamania, Wahkiakum counties)
8. N. Central (Adams, Chelan, Douglas, Grant, Okanogan counties)
9. Central (Kittitas, Klickitat, Yakima counties)
10. Eastern (Asotin, Columbia, Ferry, Garfield, Lincoln, Pend Oreille, Stevens, Walla Walla, Whitman counties)
11. Benton, Franklin counties
12. Spokane county

Nursing Assistants

Statewide Estimates



- 5.5% vacancy rate*
- 4,030 persons employed
- 2,955.8 FTEs employed
- 160 FTEs vacant
- 1.37 persons employed per FTE employed

Hospitals need 160 nursing assistants to fill vacancies statewide.

* (total vacant FTEs for all hospitals)/(total budgeted FTEs for all hospitals) for hospitals reporting both # of employed persons and # of employed FTEs.

Estimates by Region

	Workforce Development Region											
	(1) Olympic	(2) Pacific	(3) North-west	(4) Snoho-mish	(5) King	(6) Pierce	(7) South-west	(8) North Central	(9) Tri-County	(10) E. Wash-ington	(11) Benton Franklin	(12) Spokane
Number of hospitals	4	9	4	5	14	4	2	13	7	13	4	6
Number of persons employed*	224	262	323	227	1,232	318	332	232	146	207	90	437
Number of FTEs employed*	161.1	200.9	228.3	162.8	934.3	204.0	256.7	133.2	136.1	137.0	99.6	302.0
Number of FTEs vacant*	5.1	11.4	5.5	7.6	59.5	12.6	9.0	7.3	23.6	5.9	4.1	8.6

* Green indicates more than half of the value is imputed.

1. Olympic Peninsula (Clallam, Jefferson, Kitsap counties)
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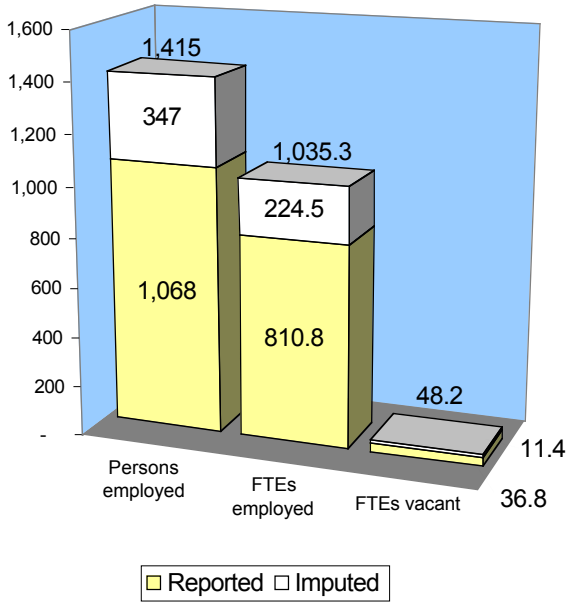
7. Southwest (Clark, Cowlitz, Skamania, Wahkiakum counties)
8. N. Central (Adams, Chelan, Douglas, Grant, Okanogan counties)
9. Central (Kittitas, Klickitat, Yakima counties)
10. Eastern (Asotin, Columbia, Ferry, Garfield, Lincoln, Pend Oreille, Stevens, Walla Walla, Whitman counties)
11. Benton, Franklin counties
12. Spokane county

MT/CLSs (Medical Technologists/Clinical Lab Scientists)

Statewide Estimates



- 4.7% vacancy rate*
- 1,415 persons employed
- 1,035.3 FTEs employed
- 48 FTEs vacant
- 1.34 persons employed per FTE employed

Hospitals need 65 MT/CLSs to fill vacancies statewide.

* (total vacant FTEs for all hospitals)/(total budgeted FTEs for all hospitals) for hospitals reporting both # of employed persons and # of employed FTEs.

Estimates by Region

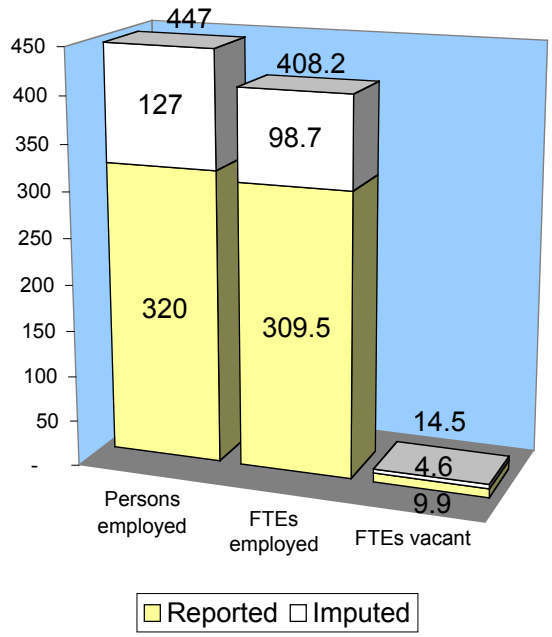
	Workforce Development Region											
	(1) Olympic	(2) Pacific	(3) North-west	(4) Snoho-mish	(5) King	(6) Pierce	(7) South-west	(8) North Central	(9) Tri-County	(10) E. Wash-ington	(11) Benton Franklin	(12) Spokane
Number of hospitals	4	9	4	5	14	4	2	13	7	13	4	6
Number of persons employed*	66	62	76	84	595	77	75	46	76	84	6	169
Number of FTEs employed*	46.9	49.3	51.8	53.4	463.4	58.1	50.8	32.8	76.4	51.6	3.6	97.2
Number of FTEs vacant*	0.6	2.7	2.8	1.9	21.7	1.5	0.5	3.4	4.0	4.0	2.0	3.0

* Green indicates more than half of the value is imputed.

1. Olympic Peninsula (Clallam, Jefferson, Kitsap counties)
2. Pacific Mtn. (Grays Harbor, Lewis, Mason, Pacific, Thurston counties)
3. Northwest (Island, San Juan, Skagit, Whatcom counties)
4. Snohomish county
5. Seattle/King county
6. Tacoma/Pierce county
7. Southwest (Clark, Cowlitz, Skamania, Wahkiakum counties)
8. N. Central (Adams, Chelan, Douglas, Grant, Okanogan counties)
9. Central (Kittitas, Klickitat, Yakima counties)
10. Eastern (Asotin, Columbia, Ferry, Garfield, Lincoln, Pend Oreille, Stevens, Walla Walla, Whitman counties)
11. Benton, Franklin counties
12. Spokane county

MLT/CLTs (Medical/Clinical Laboratory Technicians)

Statewide Estimates



- 4.4% vacancy rate*
- 447 persons employed
- 408.2 FTEs employed
- 14.5 FTEs vacant
- 1.38 persons employed per FTE employed

Hospitals need 20 MLT/CLTs to fill vacancies statewide.

* (total vacant FTEs for all hospitals)/(total budgeted FTEs for all hospitals) for hospitals reporting both # of employed persons and # of employed FTEs.

Estimates by Region

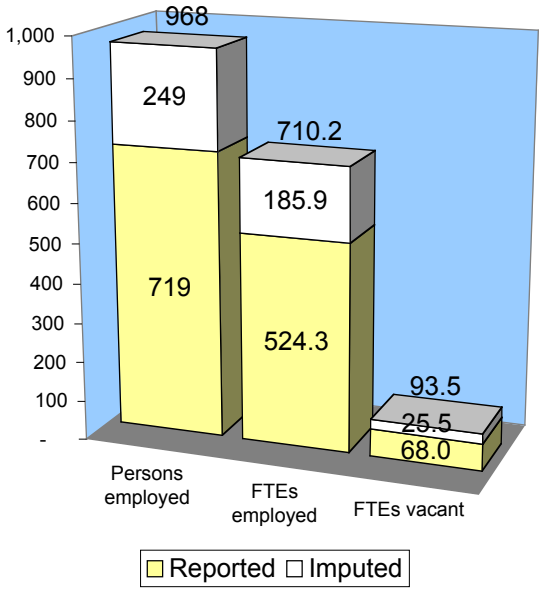
	Workforce Development Region											
	(1) Olympic	(2) Pacific	(3) North-west	(4) Snoho-mish	(5) King	(6) Pierce	(7) South-west	(8) North Central	(9) Tri-County	(10) E. Wash-ington	(11) Benton Franklin	(12) Spokane
Number of hospitals	4	9	4	5	14	4	2	13	7	13	4	6
Number of persons employed*	25	30	37	39	166	30	4	46	18	27	2	22
Number of FTEs employed*	25.0	22.1	22.5	31.3	198.1	24.3	2.0	31.8	16.7	15.3	1.9	17.4
Number of FTEs vacant*	0.3	0.4	0.3	0.4	6.7	1.0	0.0	2.6	0.9	0.9	0.2	1.0

* Green indicates more than half of the value is imputed.

1. Olympic Peninsula (Clallam, Jefferson, Kitsap counties)
2. Pacific Mtn. (Grays Harbor, Lewis, Mason, Pacific, Thurston counties)
3. Northwest (Island, San Juan, Skagit, Whatcom counties)
4. Snohomish county
5. Seattle/King county
6. Tacoma/Pierce county
7. Southwest (Clark, Cowlitz, Skamania, Wahkiakum counties)
8. N. Central (Adams, Chelan, Douglas, Grant, Okanogan counties)
9. Central (Kittitas, Klickitat, Yakima counties)
10. Eastern (Asotin, Columbia, Ferry, Garfield, Lincoln, Pend Oreille, Stevens, Walla Walla, Whitman counties)
11. Benton, Franklin counties
12. Spokane county

Radiographers/Radiology Technologists

Statewide Estimates



- 11.3% vacancy rate*
- 968 persons employed
- 710.2 FTEs employed
- 93.5 FTEs vacant
- 1.39 persons employed per FTE employed

Hospitals need 130 radiographers/ radiology technologists to fill vacancies statewide.

* (total vacant FTEs for all hospitals)/(total budgeted FTEs for all hospitals) for hospitals reporting both # of employed persons and # of employed FTEs.

Estimates by Region

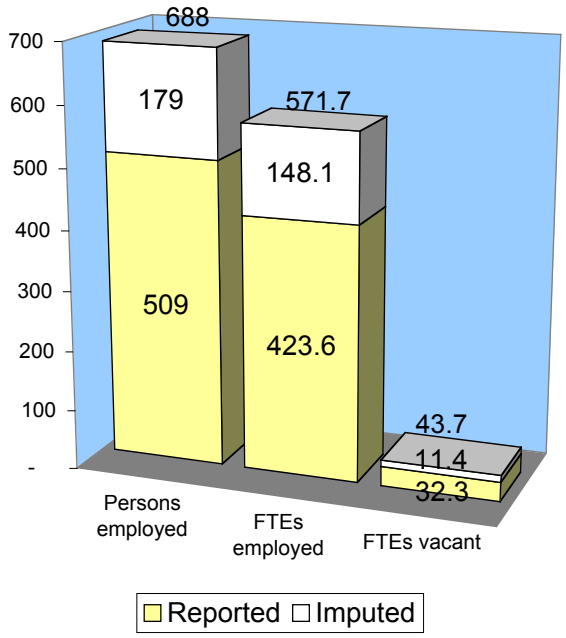
	Workforce Development Region											
	(1) Olympic	(2) Pacific	(3) North-west	(4) Snoho-mish	(5) King	(6) Pierce	(7) South-west	(8) North Central	(9) Tri-County	(10) E. Wash-ington	(11) Benton Franklin	(12) Spokane
Number of hospitals	4	9	4	5	14	4	2	13	7	13	4	6
Number of persons employed*	60	59	59	48	292	82	50	47	61	67	53	90
Number of FTEs employed*	42.9	42.9	40.6	32.9	214.3	57.9	33.2	35.3	48.8	52.6	42.0	66.4
Number of FTEs vacant*	3.8	3.6	5.8	4.3	39.7	11.2	1.2	6.0	5.6	5.4	4.0	3.0

* Green indicates more than half of the value is imputed.

1. Olympic Peninsula (Clallam, Jefferson, Kitsap counties)
2. Pacific Mtn. (Grays Harbor, Lewis, Mason, Pacific, Thurston counties)
3. Northwest (Island, San Juan, Skagit, Whatcom counties)
4. Snohomish county
5. Seattle/King county
6. Tacoma/Pierce county
7. Southwest (Clark, Cowlitz, Skamania, Wahkiakum counties)
8. N. Central (Adams, Chelan, Douglas, Grant, Okanogan counties)
9. Central (Kittitas, Klickitat, Yakima counties)
10. Eastern (Asotin, Columbia, Ferry, Garfield, Lincoln, Pend Oreille, Stevens, Walla Walla, Whitman counties)
11. Benton, Franklin counties
12. Spokane county

Specialized Radiology Technologists (e.g., MRI, CT)

Statewide Estimates



- 7.1% vacancy rate*
- 688 persons employed
- 571.7 FTEs employed
- 43.7 FTEs vacant
- 1.29 persons employed per FTE employed

Hospitals need 56 specialized radiology technologists to fill vacancies statewide.

* (total vacant FTEs for all hospitals)/(total budgeted FTEs for all hospitals) for hospitals reporting both # of employed persons and # of employed FTEs.

Estimates by Region

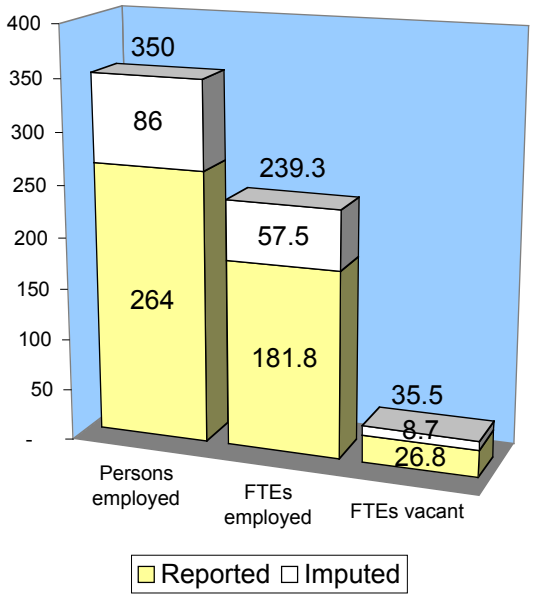
	Workforce Development Region											
	(1) Olympic	(2) Pacific	(3) North-west	(4) Snoho-mish	(5) King	(6) Pierce	(7) South-west	(8) North Central	(9) Tri-County	(10) E. Wash-ington	(11) Benton Franklin	(12) Spokane
Number of hospitals	4	9	4	5	14	4	2	13	7	13	4	6
Number of persons employed*	35	70	56	56	224	22	37	41	31	38	22	57
Number of FTEs employed*	25.1	57.2	32.9	51.4	200.0	10.8	30.1	30.8	31.1	30.7	20.0	51.8
Number of FTEs vacant*	1.6	2.4	3.7	3.6	23.2	1.0	1.0	2.8	2.0	1.0	0.0	1.8

* Green indicates more than half of the value is imputed.

1. Olympic Peninsula (Clallam, Jefferson, Kitsap counties)
2. Pacific Mtn. (Grays Harbor, Lewis, Mason, Pacific, Thurston counties)
3. Northwest (Island, San Juan, Skagit, Whatcom counties)
4. Snohomish county
5. Seattle/King county
6. Tacoma/Pierce county
7. Southwest (Clark, Cowlitz, Skamania, Wahkiakum counties)
8. N. Central (Adams, Chelan, Douglas, Grant, Okanogan counties)
9. Central (Kittitas, Klickitat, Yakima counties)
10. Eastern (Asotin, Columbia, Ferry, Garfield, Lincoln, Pend Oreille, Stevens, Walla Walla, Whitman counties)
11. Benton, Franklin counties
12. Spokane county

Ultrasound Technologists

Statewide Estimates



- 14.3% vacancy rate*
- 350 persons employed
- 239.3 FTEs employed
- 35.5 FTEs vacant
- 1.47 persons employed per FTE employed

Hospitals need 52 ultrasound technologists to fill vacancies statewide.

* (total vacant FTEs for all hospitals)/(total budgeted FTEs for all hospitals) for hospitals reporting both # of employed persons and # of employed FTEs.

Estimates by Region

	Workforce Development Region											
	(1) Olympic	(2) Pacific	(3) North-west	(4) Snoho-mish	(5) King	(6) Pierce	(7) South-west	(8) North Central	(9) Tri-County	(10) E. Wash-ington	(11) Benton Franklin	(12) Spokane
Number of hospitals	4	9	4	5	14	4	2	13	7	13	4	6
Number of persons employed*	22	27	18	37	121	21	18	21	15	18	13	19
Number of FTEs employed*	14.7	19.3	7.4	31.4	78.4	14.4	12.9	8.3	15.5	12.9	12.9	11.3
Number of FTEs vacant*	1.8	2.8	1.0	1.6	10.3	4.0	2.0	2.8	1.5	2.4	2.0	3.3

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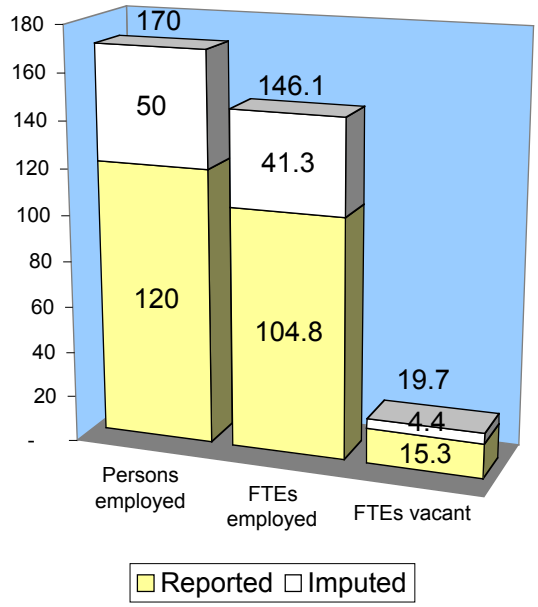
1. Olympic Peninsula (Clallam, Jefferson, Kitsap counties)
2. Pacific Mtn. (Grays Harbor, Lewis, Mason, Pacific, Thurston counties)
3. Northwest (Island, San Juan, Skagit, Whatcom counties)
4. Snohomish county
5. Seattle/King county
6. Tacoma/Pierce county
7. Southwest (Clark, Cowlitz, Skamania, Wahkiakum counties)
8. N. Central (Adams, Chelan, Douglas, Grant, Okanogan counties)
9. Central (Kittitas, Klickitat, Yakima counties)
10. Eastern (Asotin, Columbia, Ferry, Garfield, Lincoln, Pend Oreille, Stevens, Walla Walla, Whitman counties)
11. Benton, Franklin counties
12. Spokane county

Nuclear Medicine Technologists

Statewide Estimates



- 10.9% vacancy rate*
- 170 persons employed
- 146.1 FTEs employed
- 19.7 FTEs vacant
- 1.24 persons employed per FTE employed

Hospitals need 24 nuclear medicine technologists to fill vacancies statewide.

* (total vacant FTEs for all hospitals)/(total budgeted FTEs for all hospitals) for hospitals reporting both # of employed persons and # of employed FTEs.

Estimates by Region

	Workforce Development Region											
	(1) Olympic	(2) Pacific	(3) North-west	(4) Snoho-mish	(5) King	(6) Pierce	(7) South-west	(8) North Central	(9) Tri-County	(10) E. Wash-ington	(11) Benton Franklin	(12) Spokane
Number of hospitals	4	9	4	5	14	4	2	13	7	13	4	6
Number of persons employed*	9	12	9	10	64	14	6	3	9	6	8	18
Number of FTEs employed*	8.9	8.2	6.8	9.1	62.6	8.5	4.5	3.4	6.8	5.9	6.5	15.0
Number of FTEs vacant*	0.8	1.0	2.0	0.8	9.9	2.5	0.5	0.0	0.8	0.0	1.0	0.4

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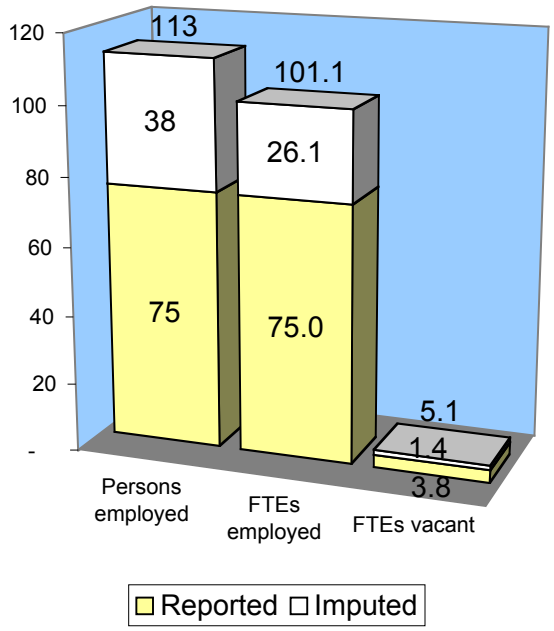
1. Olympic Peninsula (Clallam, Jefferson, Kitsap counties)
2. Pacific Mtn. (Grays Harbor, Lewis, Mason, Pacific, Thurston counties)
3. Northwest (Island, San Juan, Skagit, Whatcom counties)
4. Snohomish county
5. Seattle/King county
6. Tacoma/Pierce county
7. Southwest (Clark, Cowlitz, Skamania, Wahkiakum counties)
8. N. Central (Adams, Chelan, Douglas, Grant, Okanogan counties)
9. Central (Kittitas, Klickitat, Yakima counties)
10. Eastern (Asotin, Columbia, Ferry, Garfield, Lincoln, Pend Oreille, Stevens, Walla Walla, Whitman counties)
11. Benton, Franklin counties
12. Spokane county

Radiation Therapy Technologists

Statewide Estimates



- 4.7% vacancy rate*
- 113 persons employed
- 101.1 FTEs employed
- 5.1 FTEs vacant
- 1.19 persons employed per FTE employed

Hospitals need 6 radiation therapy technologists to fill vacancies statewide.

* (total vacant FTEs for all hospitals)/(total budgeted FTEs for all hospitals) for hospitals reporting both # of employed persons and # of employed FTEs.

Estimates by Region

	Workforce Development Region											
	(1) Olympic	(2) Pacific	(3) North-west	(4) Snoho-mish	(5) King	(6) Pierce	(7) South-west	(8) North Central	(9) Tri-County	(10) E. Wash-ington	(11) Benton Franklin	(12) Spokane
Number of hospitals	4	9	4	5	14	4	2	13	7	13	4	6
Number of persons employed*	10	6	7	6	49	6	7	0	6	5	0	11
Number of FTEs employed*	9.4	6.0	5.0	5.3	49.3	3.5	6.1	0.0	5.2	3.0	0.0	8.4
Number of FTEs vacant*	2.3	0.0	0.0	0.2	2.2	0.0	0.0	0.0	0.5	0.0	0.0	0.0

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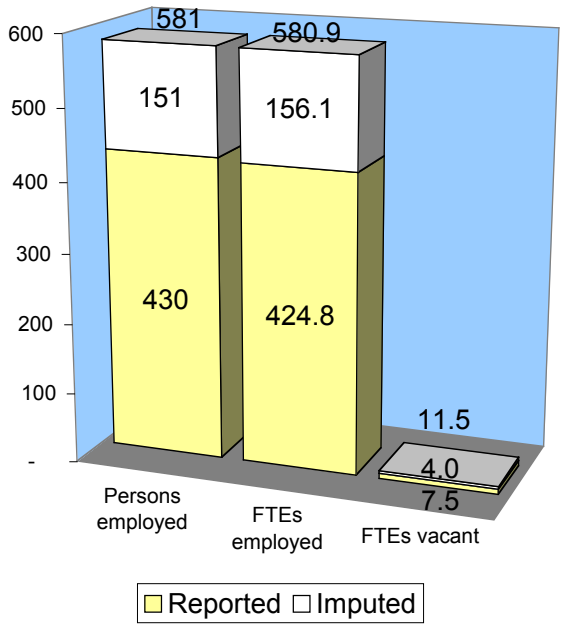
1. Olympic Peninsula (Clallam, Jefferson, Kitsap counties)
2. Pacific Mtn. (Grays Harbor, Lewis, Mason, Pacific, Thurston counties)
3. Northwest (Island, San Juan, Skagit, Whatcom counties)
4. Snohomish county
5. Seattle/King county
6. Tacoma/Pierce county
7. Southwest (Clark, Cowlitz, Skamania, Wahkiakum counties)
8. N. Central (Adams, Chelan, Douglas, Grant, Okanogan counties)
9. Central (Kittitas, Klickitat, Yakima counties)
10. Eastern (Asotin, Columbia, Ferry, Garfield, Lincoln, Pend Oreille, Stevens, Walla Walla, Whitman counties)
11. Benton, Franklin counties
12. Spokane county

Medical Records Technicians

Statewide Estimates



- 2.0% vacancy rate*
- 581 persons employed
- 580.9 FTEs employed
- 11.5 FTEs vacant
- 1.14 persons employed per FTE employed

Hospitals need 13 medical records technicians to fill vacancies statewide.

* (total vacant FTEs for all hospitals)/(total budgeted FTEs for all hospitals) for hospitals reporting both # of employed persons and # of employed FTEs.

Estimates by Region

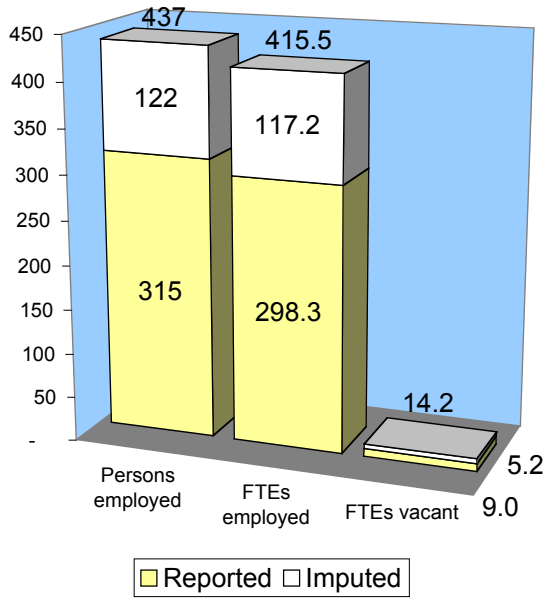
	Workforce Development Region											
	(1) Olympic	(2) Pacific	(3) North-west	(4) Snoho-mish	(5) King	(6) Pierce	(7) South-west	(8) North Central	(9) Tri-County	(10) E. Wash-ington	(11) Benton Franklin	(12) Spokane
Number of hospitals	4	9	4	5	14	4	2	13	7	13	4	6
Number of persons employed*	40	28	66	35	242	18	31	23	22	25	20	32
Number of FTEs employed*	40.1	23.7	53.2	35.0	268.5	14.5	25.9	23.3	33.8	22.9	14.5	25.7
Number of FTEs vacant*	0.3	0.9	0.3	0.4	4.0	0.0	0.0	1.5	1.6	1.4	0.0	1.2

* Green indicates more than half of the value is imputed.

1. Olympic Peninsula (Clallam, Jefferson, Kitsap counties)
2. Pacific Mtn. (Grays Harbor, Lewis, Mason, Pacific, Thurston counties)
3. Northwest (Island, San Juan, Skagit, Whatcom counties)
4. Snohomish county
5. Seattle/King county
6. Tacoma/Pierce county
7. Southwest (Clark, Cowlitz, Skamania, Wahkiakum counties)
8. N. Central (Adams, Chelan, Douglas, Grant, Okanogan counties)
9. Central (Kittitas, Klickitat, Yakima counties)
10. Eastern (Asotin, Columbia, Ferry, Garfield, Lincoln, Pend Oreille, Stevens, Walla Walla, Whitman counties)
11. Benton, Franklin counties
12. Spokane county

Medical Records Coders

Statewide Estimates



- 3.3% vacancy rate*
- 437 persons employed
- 415.5 FTEs employed
- 14.2 FTEs vacant
- 1.15 persons employed per FTE employed

Hospitals need 16 medical records coders to fill vacancies statewide.

* (total vacant FTEs for all hospitals)/(total budgeted FTEs for all hospitals) for hospitals reporting both # of employed persons and # of employed FTEs.

Estimates by Region

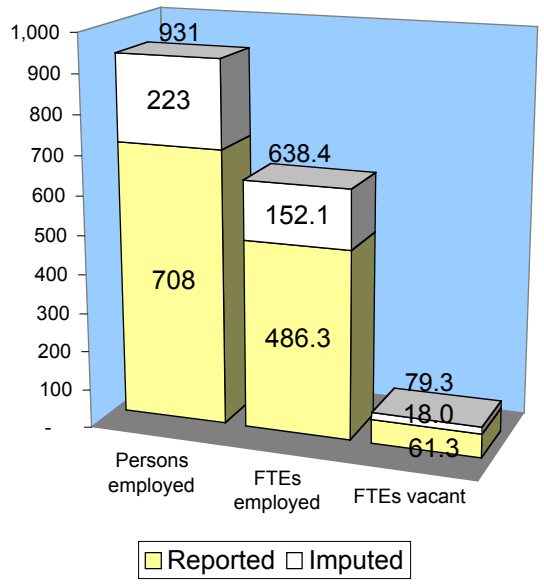
	Workforce Development Region											
	(1) Olympic	(2) Pacific	(3) North-west	(4) Snoho-mish	(5) King	(6) Pierce	(7) South-west	(8) North Central	(9) Tri-County	(10) E. Wash-ington	(11) Benton Franklin	(12) Spokane
Number of hospitals	4	9	4	5	14	4	2	13	7	13	4	6
Number of persons employed*	23	22	30	24	157	12	25	20	25	28	23	47
Number of FTEs employed*	23.2	19.8	24.6	25.2	164.3	11.1	21.8	18.1	23.5	22.8	20.6	40.6
Number of FTEs vacant*	0.5	0.6	0.5	0.6	6.4	0.0	0.0	2.6	0.9	1.6	0.0	0.6

* Green indicates more than half of the value is imputed.

1. Olympic Peninsula (Clallam, Jefferson, Kitsap counties)
2. Pacific Mtn. (Grays Harbor, Lewis, Mason, Pacific, Thurston counties)
3. Northwest (Island, San Juan, Skagit, Whatcom counties)
4. Snohomish county
5. Seattle/King county
6. Tacoma/Pierce county
7. Southwest (Clark, Cowlitz, Skamania, Wahkiakum counties)
8. N. Central (Adams, Chelan, Douglas, Grant, Okanogan counties)
9. Central (Kittitas, Klickitat, Yakima counties)
10. Eastern (Asotin, Columbia, Ferry, Garfield, Lincoln, Pend Oreille, Stevens, Walla Walla, Whitman counties)
11. Benton, Franklin counties
12. Spokane county

Licensed Pharmacists

Statewide Estimates



- 8.4% vacancy rate*
- 931 persons employed
- 638.4 FTEs employed
- 79.3 FTEs vacant
- 1.40 persons employed per FTE employed

Hospitals need 111 licensed pharmacists to fill vacancies statewide.

* (total vacant FTEs for all hospitals)/(total budgeted FTEs for all hospitals) for hospitals reporting both # of employed persons and # of employed FTEs.

Estimates by Region

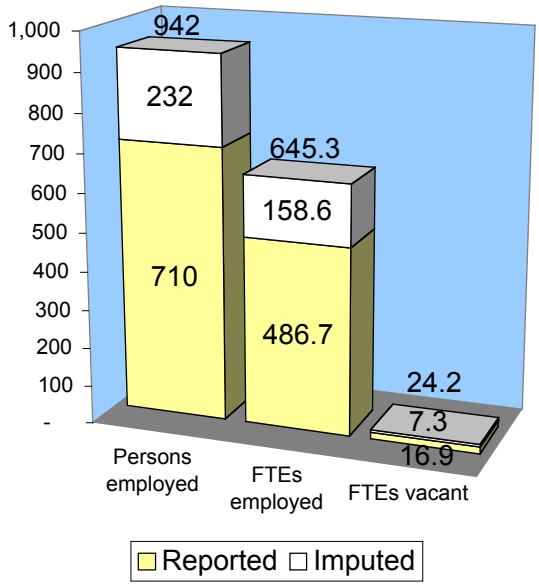
	Workforce Development Region											
	(1) Olympic	(2) Pacific	(3) North-west	(4) Snoho-mish	(5) King	(6) Pierce	(7) South-west	(8) North Central	(9) Tri-County	(10) E. Wash-ington	(11) Benton Franklin	(12) Spokane
Number of hospitals	4	9	4	5	14	4	2	13	7	13	4	6
Number of persons employed*	41	42	57	53	396	87	41	36	40	38	19	81
Number of FTEs employed*	35.5	31.8	38.4	42.5	261.4	56.2	31.0	23.9	21.8	15.7	16.2	64.0
Number of FTEs vacant*	3.3	1.4	0.8	2.4	49.6	2.1	1.3	2.4	6.7	3.4	3.0	2.8

* Green indicates more than half of the value is imputed.

1. Olympic Peninsula (Clallam, Jefferson, Kitsap counties)
2. Pacific Mtn. (Grays Harbor, Lewis, Mason, Pacific, Thurston counties)
3. Northwest (Island, San Juan, Skagit, Whatcom counties)
4. Snohomish county
5. Seattle/King county
6. Tacoma/Pierce county
7. Southwest (Clark, Cowlitz, Skamania, Wahkiakum counties)
8. N. Central (Adams, Chelan, Douglas, Grant, Okanogan counties)
9. Central (Kittitas, Klickitat, Yakima counties)
10. Eastern (Asotin, Columbia, Ferry, Garfield, Lincoln, Pend Oreille, Stevens, Walla Walla, Whitman counties)
11. Benton, Franklin counties
12. Spokane county

Pharmacy Technicians

Statewide Estimates



- 2.6% vacancy rate*
- 942 persons employed
- 645.3 FTEs employed
- 24.2 FTEs vacant
- 1.36 persons employed per FTE employed

Hospitals need 33 pharmacy technicians to fill vacancies statewide.

* (total vacant FTEs for all hospitals)/(total budgeted FTEs for all hospitals) for hospitals reporting both # of employed persons and # of employed FTEs.

Estimates by Region

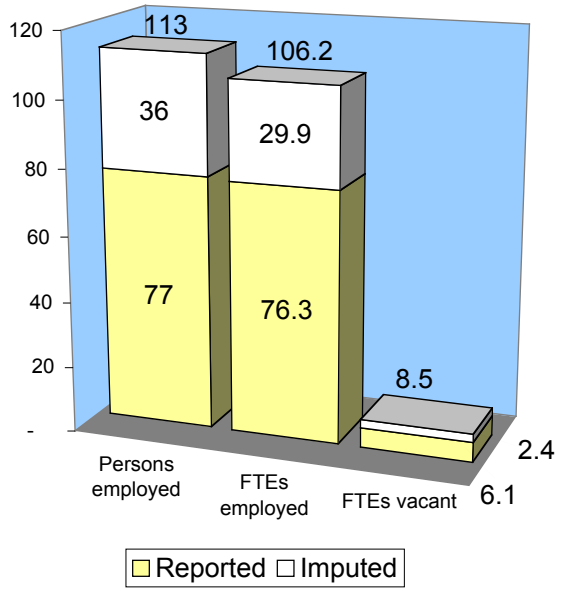
	Workforce Development Region											
	(1) Olympic	(2) Pacific	(3) North-west	(4) Snoho-mish	(5) King	(6) Pierce	(7) South-west	(8) North Central	(9) Tri-County	(10) E. Wash-ington	(11) Benton Franklin	(12) Spokane
Number of hospitals	4	9	4	5	14	4	2	13	7	13	4	6
Number of persons employed*	43	49	59	63	370	94	54	27	42	30	23	88
Number of FTEs employed*	36.2	29.7	41.7	43.4	240.5	64.5	37.0	24.6	21.8	16.7	18.0	71.3
Number of FTEs vacant*	0.9	0.3	2.9	1.0	11.6	2.0	2.0	0.5	1.3	1.2	0.0	0.5

* Green indicates more than half of the value is imputed.

1. Olympic Peninsula (Clallam, Jefferson, Kitsap counties)
2. Pacific Mtn. (Grays Harbor, Lewis, Mason, Pacific, Thurston counties)
3. Northwest (Island, San Juan, Skagit, Whatcom counties)
4. Snohomish county
5. Seattle/King county
6. Tacoma/Pierce county
7. Southwest (Clark, Cowlitz, Skamania, Wahkiakum counties)
8. N. Central (Adams, Chelan, Douglas, Grant, Okanogan counties)
9. Central (Kittitas, Klickitat, Yakima counties)
10. Eastern (Asotin, Columbia, Ferry, Garfield, Lincoln, Pend Oreille, Stevens, Walla Walla, Whitman counties)
11. Benton, Franklin counties
12. Spokane county

Physician Assistants

Statewide Estimates



- 7.8% vacancy rate*
- 113 persons employed
- 106.2 FTEs employed
- 8.5 FTEs vacant
- 1.13 persons employed per FTE employed

Hospitals need 10 physician assistants to fill vacancies statewide.

* (total vacant FTEs for all hospitals)/(total budgeted FTEs for all hospitals) for hospitals reporting both # of employed persons and # of employed FTEs.

Estimates by Region

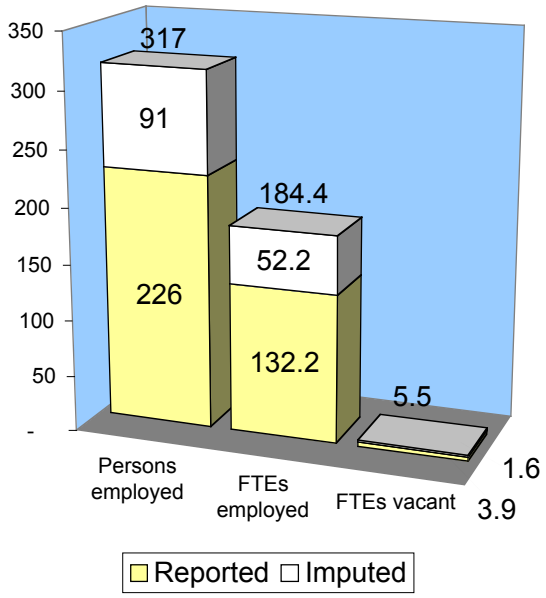
	Workforce Development Region											
	(1) Olympic	(2) Pacific	(3) North-west	(4) Snoho-mish	(5) King	(6) Pierce	(7) South-west	(8) North Central	(9) Tri-County	(10) E. Wash-ington	(11) Benton Franklin	(12) Spokane
Number of hospitals	4	9	4	5	14	4	2	13	7	13	4	6
Number of persons employed*	8	8	13	6	17	3	5	25	10	17	0	1
Number of FTEs employed*	7.9	7.5	11.1	5.6	18.9	2.6	4.8	20.5	10.7	15.4	0.0	1.0
Number of FTEs vacant*	0.0	0.5	0.0	1.2	0.0	0.0	0.0	1.6	1.6	3.6	0.0	0.0

* Green indicates more than half of the value is imputed.

1. Olympic Peninsula (Clallam, Jefferson, Kitsap counties)
2. Pacific Mtn. (Grays Harbor, Lewis, Mason, Pacific, Thurston counties)
3. Northwest (Island, San Juan, Skagit, Whatcom counties)
4. Snohomish county
5. Seattle/King county
6. Tacoma/Pierce county
7. Southwest (Clark, Cowlitz, Skamania, Wahkiakum counties)
8. N. Central (Adams, Chelan, Douglas, Grant, Okanogan counties)
9. Central (Kittitas, Klickitat, Yakima counties)
10. Eastern (Asotin, Columbia, Ferry, Garfield, Lincoln, Pend Oreille, Stevens, Walla Walla, Whitman counties)
11. Benton, Franklin counties
12. Spokane county

Dieticians

Statewide Estimates



- 2.4% vacancy rate*
- 317 persons employed
- 184.4 FTEs employed
- 5.5 FTEs vacant
- 1.70 persons employed per FTE employed

Hospitals need 9 dieticians to fill vacancies statewide.

* (total vacant FTEs for all hospitals)/(total budgeted FTEs for all hospitals) for hospitals reporting both # of employed persons and # of employed FTEs.

Estimates by Region

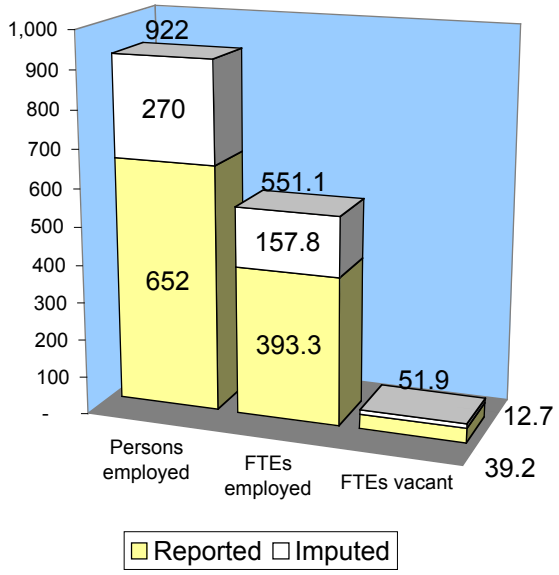
	Workforce Development Region											
	(1) Olympic	(2) Pacific	(3) North-west	(4) Snoho-mish	(5) King	(6) Pierce	(7) South-west	(8) North Central	(9) Tri-County	(10) E. Wash-ington	(11) Benton Franklin	(12) Spokane
Number of hospitals	4	9	4	5	14	4	2	13	7	13	4	6
Number of persons employed*	16	17	22	19	109	31	15	12	16	15	10	34
Number of FTEs employed*	10.5	10.4	12.9	11.6	62.1	18.0	8.5	5.9	9.7	6.4	7.1	21.2
Number of FTEs vacant*	0.2	0.0	1.0	0.2	2.0	0.0	0.0	0.6	0.2	0.1	0.0	1.1

* Green indicates more than half of the value is imputed.

1. Olympic Peninsula (Clallam, Jefferson, Kitsap counties)
2. Pacific Mtn. (Grays Harbor, Lewis, Mason, Pacific, Thurston counties)
3. Northwest (Island, San Juan, Skagit, Whatcom counties)
4. Snohomish county
5. Seattle/King county
6. Tacoma/Pierce county
7. Southwest (Clark, Cowlitz, Skamania, Wahkiakum counties)
8. N. Central (Adams, Chelan, Douglas, Grant, Okanogan counties)
9. Central (Kittitas, Klickitat, Yakima counties)
10. Eastern (Asotin, Columbia, Ferry, Garfield, Lincoln, Pend Oreille, Stevens, Walla Walla, Whitman counties)
11. Benton, Franklin counties
12. Spokane county

Physical Therapists

Statewide Estimates



- 8.0% vacancy rate*
- 922 persons employed
- 551.1 FTEs employed
- 51.9 FTEs vacant
- 1.61 persons employed per FTE employed

Hospitals need 84 physical therapists to fill vacancies statewide.

* (total vacant FTEs for all hospitals)/(total budgeted FTEs for all hospitals) for hospitals reporting both # of employed persons and # of employed FTEs.

Estimates by Region

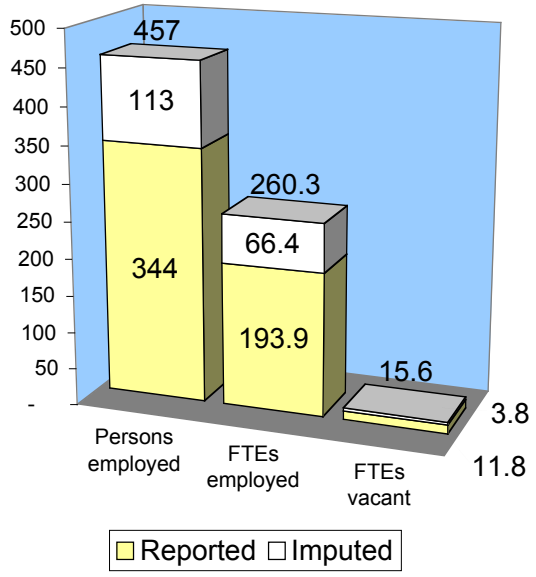
	Workforce Development Region											
	(1) Olympic	(2) Pacific	(3) North-west	(4) Snoho-mish	(5) King	(6) Pierce	(7) South-west	(8) North Central	(9) Tri-County	(10) E. Wash-ington	(11) Benton Franklin	(12) Spokane
Number of hospitals	4	9	4	5	14	4	2	13	7	13	4	6
Number of persons employed*	57	66	66	46	360	62	49	39	36	50	24	66
Number of FTEs employed*	37.1	42.6	38.7	29.3	182.9	34.4	35.9	23.0	26.6	39.0	19.7	40.1
Number of FTEs vacant*	3.7	6.6	1.0	2.7	18.4	4.8	1.9	1.7	3.0	2.4	4.0	1.7

* Green indicates more than half of the value is imputed.

1. Olympic Peninsula (Clallam, Jefferson, Kitsap counties)
2. Pacific Mtn. (Grays Harbor, Lewis, Mason, Pacific, Thurston counties)
3. Northwest (Island, San Juan, Skagit, Whatcom counties)
4. Snohomish county
5. Seattle/King county
6. Tacoma/Pierce county
7. Southwest (Clark, Cowlitz, Skamania, Wahkiakum counties)
8. N. Central (Adams, Chelan, Douglas, Grant, Okanogan counties)
9. Central (Kittitas, Klickitat, Yakima counties)
10. Eastern (Asotin, Columbia, Ferry, Garfield, Lincoln, Pend Oreille, Stevens, Walla Walla, Whitman counties)
11. Benton, Franklin counties
12. Spokane county

Occupational Therapists

Statewide Estimates



- 5.5% vacancy rate*
- 457 persons employed
- 260.3 FTEs employed
- 15.6 FTEs vacant
- 1.65 persons employed per FTE employed

Hospitals need 26 occupational therapists to fill vacancies statewide.

* (total vacant FTEs for all hospitals)/(total budgeted FTEs for all hospitals) for hospitals reporting both # of employed persons and # of employed FTEs.

Estimates by Region

	Workforce Development Region											
	(1) Olympic	(2) Pacific	(3) North-west	(4) Snoho-mish	(5) King	(6) Pierce	(7) South-west	(8) North Central	(9) Tri-County	(10) E. Wash-ington	(11) Benton Franklin	(12) Spokane
Number of hospitals	4	9	4	5	14	4	2	13	7	13	4	6
Number of persons employed*	26	23	39	24	219	33	19	13	17	17	14	12
Number of FTEs employed*	15.4	15.7	18.0	16.4	105.6	21.4	10.8	12.7	11.0	11.9	12.1	9.3
Number of FTEs vacant*	0.8	0.1	0.0	0.6	8.1	3.0	0.0	1.2	0.6	0.3	1.0	0.0

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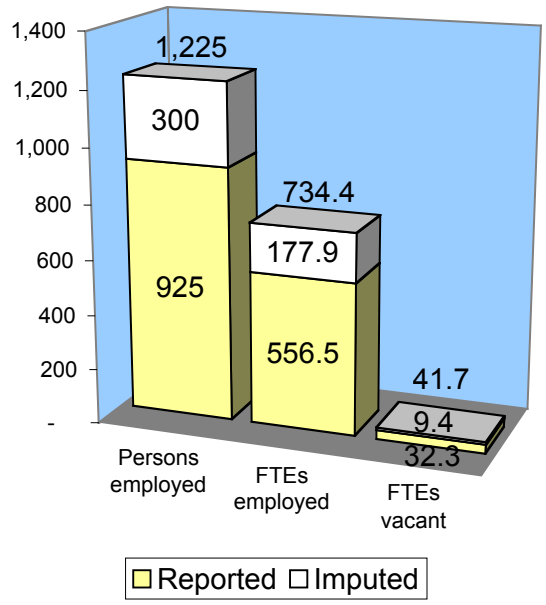
1. Olympic Peninsula (Clallam, Jefferson, Kitsap counties)
2. Pacific Mtn. (Grays Harbor, Lewis, Mason, Pacific, Thurston counties)
3. Northwest (Island, San Juan, Skagit, Whatcom counties)
4. Snohomish county
5. Seattle/King county
6. Tacoma/Pierce county
7. Southwest (Clark, Cowlitz, Skamania, Wahkiakum counties)
8. N. Central (Adams, Chelan, Douglas, Grant, Okanogan counties)
9. Central (Kittitas, Klickitat, Yakima counties)
10. Eastern (Asotin, Columbia, Ferry, Garfield, Lincoln, Pend Oreille, Stevens, Walla Walla, Whitman counties)
11. Benton, Franklin counties
12. Spokane county

Respiratory Therapists

Statewide Estimates



- 5.4% vacancy rate*
- 1,225 persons employed
- 734.4 FTEs employed
- 41.7 FTEs vacant
- 1.62 persons employed per FTE employed

Hospitals need 68 respiratory therapists to fill vacancies statewide.

* (total vacant FTEs for all hospitals)/(total budgeted FTEs for all hospitals) for hospitals reporting both # of employed persons and # of employed FTEs.

Estimates by Region

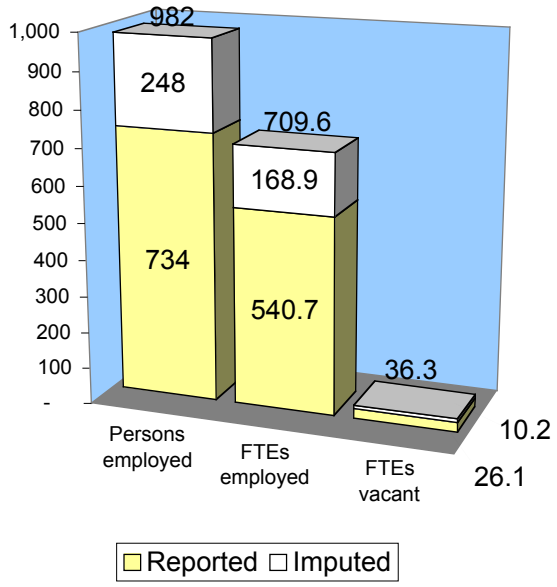
	Workforce Development Region											
	(1) Olympic	(2) Pacific	(3) North-west	(4) Snoho-mish	(5) King	(6) Pierce	(7) South-west	(8) North Central	(9) Tri-County	(10) E. Wash-ington	(11) Benton Franklin	(12) Spokane
Number of hospitals	4	9	4	5	14	4	2	13	7	13	4	6
Number of persons employed*	62	70	58	85	394	142	56	29	50	54	41	185
Number of FTEs employed*	37.6	44.8	30.8	52.6	213.4	86.2	36.6	20.0	30.4	35.6	25.7	120.7
Number of FTEs vacant*	1.3	1.6	5.1	1.8	12.4	5.5	0.9	2.4	1.7	6.1	1.0	1.9

* Green indicates more than half of the value is imputed.

1. Olympic Peninsula (Clallam, Jefferson, Kitsap counties)
2. Pacific Mtn. (Grays Harbor, Lewis, Mason, Pacific, Thurston counties)
3. Northwest (Island, San Juan, Skagit, Whatcom counties)
4. Snohomish county
5. Seattle/King county
6. Tacoma/Pierce county
7. Southwest (Clark, Cowlitz, Skamania, Wahkiakum counties)
8. N. Central (Adams, Chelan, Douglas, Grant, Okanogan counties)
9. Central (Kittitas, Klickitat, Yakima counties)
10. Eastern (Asotin, Columbia, Ferry, Garfield, Lincoln, Pend Oreille, Stevens, Walla Walla, Whitman counties)
11. Benton, Franklin counties
12. Spokane county

Surgical Technologists

Statewide Estimates



- 4.6% vacancy rate*
- 982 persons employed
- 709.6 FTEs employed
- 36.3 FTEs vacant
- 1.28 persons employed per FTE employed

Hospitals need 46 surgical technologists to fill vacancies statewide.

* (total vacant FTEs for all hospitals)/(total budgeted FTEs for all hospitals) for hospitals reporting both # of employed persons and # of employed FTEs.

Estimates by Region

	Workforce Development Region											
	(1) Olympic	(2) Pacific	(3) North-west	(4) Snoho-mish	(5) King	(6) Pierce	(7) South-west	(8) North Central	(9) Tri-County	(10) E. Wash-ington	(11) Benton Franklin	(12) Spokane
Number of hospitals	4	9	4	5	14	4	2	13	7	13	4	6
Number of persons employed*	53	49	65	65	346	89	19	48	32	40	20	156
Number of FTEs employed*	40.7	41.9	50.6	45.7	212.6	69.2	13.7	36.9	24.4	28.6	20.5	124.8
Number of FTEs vacant*	1.5	2.3	4.4	1.6	11.8	4.4	1.0	3.7	1.6	0.8	0.0	2.9

* Green indicates more than half of the value is imputed.

1. Olympic Peninsula (Clallam, Jefferson, Kitsap counties)
2. Pacific Mtn. (Grays Harbor, Lewis, Mason, Pacific, Thurston counties)
3. Northwest (Island, San Juan, Skagit, Whatcom counties)
4. Snohomish county
5. Seattle/King county
6. Tacoma/Pierce county
7. Southwest (Clark, Cowlitz, Skamania, Wahkiakum counties)
8. N. Central (Adams, Chelan, Douglas, Grant, Okanogan counties)
9. Central (Kittitas, Klickitat, Yakima counties)
10. Eastern (Asotin, Columbia, Ferry, Garfield, Lincoln, Pend Oreille, Stevens, Walla Walla, Whitman counties)
11. Benton, Franklin counties
12. Spokane county

Previous WWAMI Center for Health Workforce Studies and Rural Health Research Center Working Papers

The WWAMI Rural Health Research Center was established in 1988. The WWAMI Center for Health Workforce Studies was established in 1998.

1. Hart, L. Gary; Rosenblatt, Roger A.; and Amundson, Bruce A. Is There a Role for the Small Rural Hospital? January 1989.
2. Hart, L. Gary; Rosenblatt, Roger A.; and Amundson, Bruce A. Rural Hospital Utilization: Who Stays and Who Goes? March 1989.
3. Amundson, Bruce A. and Hughes, Robert D. Are Dollars Really the Issue for the Survival of Rural Health Services? June 1989.
4. Nesbitt, Thomas S.; Rosenblatt, Roger A.; Connell, Frederick A.; and Hart, L. Gary. Access to Obstetrical Care in Rural Areas: Effect on Birth Outcomes. July 1989.
5. Schleuning, Dianne; Rice, George; and Rosenblatt, Roger A. Addressing Barriers to Rural Perinatal Care: A Case Study of the Access to Maternity Care Committee in Washington State. October 1989.
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8. Rosenblatt, Roger A.; Whelan, Amanda; Hart, L. Gary, Long, Constance; Baldwin, Laura-Mae; and Bovbjerg, Randall R. Tort Reform and the Obstetric Access Crisis: The Case of the WAMI States. June 1990.
9. Hart, L. Gary; Pirani, Michael; and Rosenblatt, Roger A. Causes and Consequences of Rural Small Hospital Closures from the Perspectives of Mayors. September 1990.
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14. Larson, Eric H.; Hart, L. Gary; and Rosenblatt, Roger A. Is Rural Residence Associated with Poor Birth Outcome? June 1991.
15. Williamson, Harold A.; Rosenblatt, Roger A.; Hart, L. Gary. Physician Staffing of Small Rural Hospital Emergency Departments: Rapid Change and Escalating Cost. September 1991.
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21. Williamson, Harold A.; Hart, L. Gary; Pirani, Michael J.; Rosenblatt, Roger A. Market Shares for Rural Inpatient Surgical Services: Where Does the Buck Stop? April 1993.
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29. Neighbor, William E.; Baldwin, Laura-Mae; West, Peter A.; Bezy, Judith M.; Hart, L. Gary. Experience of Rural Hospitals with the National Practitioner Data Bank. October 1994.
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35. Melzer, Sanford M.; Grossman, David C.; Hart, L. Gary; Rosenblatt, Roger A. Hospital Services for Rural Children in Washington State: Where Do They Go for Care and Who Takes Care of Them? October 1995.
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51. Hart, L. Gary; Rosenblatt, Roger A.; Lishner, Denise M.; Friedman, Harvey; Baldwin, Laura-Mae. Where Do Elderly Rural Residents Obtain their Physician Care? A Study of Medicare Patients in Washington State. (forthcoming)

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57. Larson, Eric H.; Hart, L. Gary; Ballweg, Ruth. National Estimates of Physician Assistant Productivity. January 2000.

58. Hart, L. Gary; Norris, Thomas E.; Lishner, Denise M. Attitudes of Family Physicians in Washington State Toward Physician-Assisted Suicide. February 2002.

59. Rosenblatt, Roger A.; Baldwin, Laura-Mae; Chan, Leighton; Fordyce, Meredith A.; Hirsch, Irl B.; Palmer, Jerry P.; Wright, George E.; Hart, L. Gary. The Quality of Care Received by Diabetic Patients in Washington State: A Rural-Urban Comparison. March 2000.

60. Wright, George E.; Paschane, David M.; Baldwin, Laura-Mae; Domoto, Peter; Cantrell, Diana; Hart, L. Gary. Distribution of the Dental Workforce in Washington State: Patterns and Consequences. March 2001.

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66. Thompson, Matthew J.; Skillman, Susan M.; Johnson, Karin; Schneeweiss, Ronald; Ellsbury, Kathleen; Hart, L. Gary. Assessing Physicians' Continuing Medical Education Needs in the U.S.-Associated Pacific Jurisdictions. September 2001.

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