

2007 Alaska Health Workforce Vacancy Study



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EXECUTIVE SUMMARY

Alaska is confronted by a “perfect storm” of health professional shortages. The state has long suffered from a deficient “supply side” characterized by insufficient numbers of key health workers whose recruitment, retention and training have been impeded by Alaska’s remoteness, harsh climate, rural isolation, low population density and scarce training resources. Now exacerbating this already difficult situation is a burgeoning “demand side” for increased health services for a steadily growing and aging population. The health services industry is the fastest growing sector of Alaska’s economy, employing over 7% of the state workforce.

These shortages can be addressed through expansion of existing training programs, initiation of new training programs and effective recruitment/retention campaigns. But the strategic planning and the execution of such programs require valid and precise data. To this end, the office of Karen Perdue, Associate VP for Health, University of Alaska, and the Alaska Mental Health Trust Authority funded the Alaska Center for Rural Health-Alaska’s AHEC (ACRH) to conduct a comprehensive health workforce study during winter and spring of 2007.

The key questions this study sought to answer were: What health occupations were at this time most critically affected by shortages? Exactly how many vacancies currently remained unfilled? Where were these vacancies regionally and in what types of organizations? What did employers perceive to be the major underlying causes of their vacancies? How many new trainees/graduates could the job market actually absorb annually and how many organizations could absorb them?

The study was designed in consultation with an Advisory Group of key health workforce stakeholders that included the Alaska Mental Health Trust Authority (AMHTA); the Alaska Native Tribal Health Consortium (ANTHC); the Alaska Primary Care Association (APCA); the Alaska State Hospital and Nursing Home Association (ASHNHA); and the University of Alaska Anchorage (UAA). The unit of analysis was the managing organization, specifically the human resources/personnel department of organizations providing health services, including behavioral health. Ten health service organization types were defined and a sampling frame was created consisting of every such organization in the State of Alaska. Sampling was conducted through a mix of census and purposive sampling. The data collection consisted of: 1) a hard copy of the survey instrument mailed to all sampled organizations, followed by 2) telephone calls from trained interviewers who provided clarification, guidance, and options for returning the completed survey. Data collection commenced on February 21, 2007 and concluded on May 11, 2007.

Quantitative survey data was entered into, cleaned, and analyzed with SPSS software. Qualitative survey data from the comments/suggestions section of the survey was also entered into SPSS. Content analysis of the qualitative data was done using conceptual/thematic descriptions of the data based on open coding/grounded theory.

The full sample of 476 responding organizations represented 35.3% of the entire statewide sampling frame of 1349 organizations. Because the full sample was over-weighted with some respondent types, a representative sub-sample was extracted (n=304) that mirrored the sampling frame and whose characteristics could be generalized to the entire state for generating statewide estimates of positions, vacancies, and the other variables studied.

The findings confirm and quantify the trends cited in recent studies and accumulating anecdotal evidence: despite the recent progress in training and deploying health personnel, such as Registered Nurses, critical shortages persist.

- The situation for key primary care occupations – Family Physician, General Internist, Nurse Practitioner, and Physician Assistant – was troubling, particularly in the rural areas, with numerous estimated vacancies and high estimated state vacancy rates between 15% and 20%.
- Though their vacancies were not numerous, Psychiatrists were particularly in demand (19.0% estimated vacancy rate) and difficult to recruit (mean vacancy length of 34.5 months).
- The national Pharmacist shortage apparently has hit Alaska hard, with high estimated vacancies (98) and an estimated vacancy rate of 23.7% affecting every region of state.
- Therapists of all kinds – Physical, Occupational, Speech, and Speech-Language Pathologists – were in short supply (estimated vacancy rates ranging from 15.6% to 29.3%). No part of the state escaped the shortages, which were most acute in rural areas in terms of vacancy rate, but numerically high in the Anchorage Mat-Su region.
- High numbers of vacancies and high vacancy rates were reported for key specialized nursing occupations, particularly for Nurse Case Manager, Nurse Practitioner, and Critical Care Nurse. These appeared to be the current areas of most critical shortage in nursing.
- The estimated Registered Nurse vacancy rate was moderate (8.0%), but this masked 10% rates in hospitals and tribal health organizations and an estimated rural rate of 16.1%.
- While the Dentist estimated vacancy rate was 10.3%, this masked a 15.3% estimated rural rate and the very high rate reported by tribal health organizations (42.0%), which had 39% of estimated Dentist vacancies.
- In the Behavioral Health occupational group, the most acute shortages – with both extremely high vacancy numbers and high vacancy rates - appeared to be among the occupations that fell under Human Services Worker. In addition, overall estimated Behavioral Health occupation vacancies were extremely numerous (1033), approximately 29% of all estimated vacancies – more than any other occupational group.
- In Allied Health occupations, high vacancy rates were affecting employers of Physical Therapy Assistants and Respiratory Therapists. Sonographer vacancies were difficult to fill and reported Surgical Technician vacancies, though not numerous, were averaging 3 to 4 years in length.
- One hundred (100) vacancies and a vacancy rate of 18.1% were reported for Community Health Aide/Practitioners (CHA/Ps).

- Among “front office” and “back office” occupations, Coding Specialist and Certified Coder had 11% estimated vacancy rates and very long mean vacancy lengths.
- The managerial occupations for which high vacancy rates were reported were specifically healthcare related: Behavioral Health Supervisor, Clinical Department Manager, Health Information Manager, Medical Director, Nurse Manager, and Practice Manager. Behavioral health organizations had the most estimated managerial vacancies.

Looking at respondent types, tribal health organizations reported the highest overall vacancy rate (16.5%). These organizations reported 87 CHA/P vacancies; approximately half of all estimated vacancies for Nurse Case Manager, Pharmacist, Chemical Dependency Counselor, Dentist, Medical Lab Tech, Medical Technologist, and Health Educator; and all the estimated vacancies for Coding Specialist. But every respondent type was a locus for acute shortages in key occupations, such as clinics/offices of physicians for PAs, hospitals/nursing homes for RNs, pharmacies for Pharmacists, behavioral health organizations for Human Services Workers, and school districts for Speech-Language Pathologists. Higher vacancy rates were generally found in the rural respondents, particularly in the North/West and Southwest regions, which reported double digit vacancy rates for nearly all occupational groups, and overall vacancy rates around 20%.

The “supply side” shortages apparently persist. “Inadequate Pool of Qualified Workers” was the top reason given for vacancies, cited by 54% of respondents, followed by “Transience/Moving Away” (28%), “Insufficient Compensation” (18%), and “Rural Isolation” (16%). There was also evidence in the data for a burgeoning “demand side”, shortages exacerbated by population growth and increased need and demand for health services, particularly in the high-growth Anchorage Mat-Su region.

The availability of military spouses has apparently alleviated some of the workforce pressure, but this has exacerbated the “transience” problem. Also affecting the shortages was the absence of local training resources, such as medical, dental, pharmacy, and therapy schools to provide a local workforce pipeline. In the qualitative data, common refrains heard were, “we need a pharmacy school,” “we need a dental school,” “we need a physical therapy school.”

The acuity of workforce shortages was also reflected by the high percentage of estimated vacancies the responding employers would consider filling with new grads. Respondents indicated that they had the capacity to hire sizeable graduating cohorts of Family Physicians, PAs, Occupational and Physical Therapists, Pharmacists, and Dentists, which may be considered among the occupations likely to yield optimal responses to substantial investments in preparation and training programs and/or targeted recruitment and retention campaigns.

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I. Problem and Rationale

A. Background

Alaska is confronted by a “perfect storm” of health professional shortages. The state has long had a deficient “supply side” characterized by insufficient numbers of key health workers whose recruitment, retention, and training have been impeded by Alaska’s remoteness, harsh climate, rural isolation, low population density, and scarce training resources. Alaska is the only state without a pharmacy school, and lacks its own medical, dental, and physical therapy schools.

Now exacerbating this already difficult situation is a burgeoning “demand side” for increased health services for a steadily growing and aging population. The health services industry is the fastest growing sector of Alaska’s economy, employing over 22,000 people, 7% of the state workforce.¹ From 1992 to 2002, health services employment grew 62%, far outpacing population growth and three times the all-industry growth rate of 18%.¹ As a sign of the times, in 2001 Providence Alaska Health Systems became the largest single private sector employer in Alaska.¹ Leading this demand for health services is a dramatically aging population: Alaska’s 65-plus population grew 60% in the decade ending 2000 and since then the trend has only intensified.¹ The population 65 and over is projected to grow 120% between 2000 and 2020.²

But despite this dramatic employment growth, supply has not kept up with need or demand. The entire State of Alaska has been designated either a Health Professional Shortage Area (HPSA) or Medically Underserved Area (MUA) (Figure 1).³

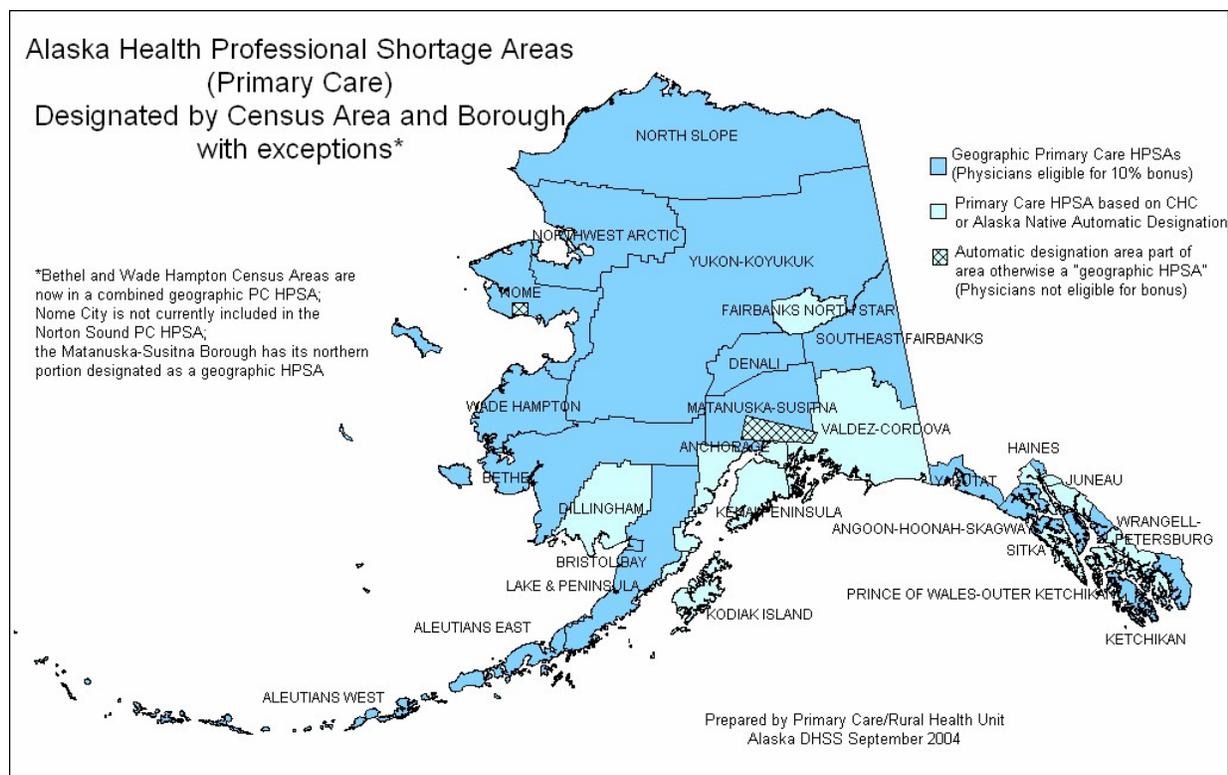


Figure 1. HPSAs in Alaska

These shortages can be addressed through expansion of existing training programs, initiation of new training programs, and effective recruitment/retention campaigns. But the strategic planning and the execution of such programs require valid and precise data. Though abundant anecdotal evidence testifies to the scope of these shortages, they have not always been broadly or systematically quantified.

B. Previous Studies

A 2000 study by the National Center for Health Workforce Analysis of the Health Resources and Services Administration (HRSA) provided estimates of the numbers of several key health professionals in Alaska – including physicians, RNs, dentists, pharmacists, and psychiatrists – and calculated health provider to population ratios.² Alaska ranked 40th nationally in the ratio of physicians to population, 50th for LPNs, 49th for pharmacists and 50th for pharmacy assistants. Another 2000 study by the Bureau of Health Professions of HRSA projected a RN shortage of 58% in Alaska by 2020.⁴ However, neither study quantified actual current shortages.

A precursor of and close model for our investigation was a 2001 study coordinated by the Alaska Center for Rural Health-Alaska's AHEC (ACRH) to determine the current and projected training needs of the state's allied health workforce.⁵ From a representative sample of 369 health organizations of all types and from all regions of the state, the study presented data showing the total numbers of persons currently employed, total vacancies, and estimated annual turnover for 74 allied health occupations. In addition, responding organizations were asked to indicate if they expected to increase hiring in the next 3-5 years, indicate the level of difficulty they experienced recruiting, and cite the prime reasons for the difficulty. The following recommendations were based on the findings: expansion of pharmacy technician training at UAF; development of a radiologic technician training program; further study of behavioral health professions; development of both training and recruitment programs for rehabilitation staff; increased use of distance education for the training of allied health professionals; and the creation of Allied Health Coordinator positions for each Major Academic Unit (MAU) of the state's public university system.

In 2004, the Western Interstate Commission for Higher Education (WICHE) Mental Health Program released its Status Report on Alaska's behavioral health workforce in which it summarized workforce data from many sources.⁶ It predicted that by 2010 there will be a 47% increase from 2000 levels in the need for behavioral health professions, including an 81% increase in the demand for social workers, a 79% increase for mental health counselors, and a 76% increase for behavioral disorder counselors.

In 2005 the Alaska Department of Labor and Workforce Development released its "Alaska Occupational Forecast to 2014".⁷ Based on surveys of 4,500 employers of all types, done longitudinally to project trends, the report quantified the number of persons employed in 2004 for selected occupations and projected net 10-year increases in employment for 2014, factoring in both growth and attrition. The report estimated 4,902 RNs employed statewide in 2004, growing to 6,432 by 2014 – an increase of 1,530 (31%). Other health occupations expected to increase substantially include EMTs (38%), home health aides (60%), dental assistants (35%), and medical assistants (36%). While the study is extremely useful for macro level planning and quantified the estimated 10-year increases, it did not quantify how much of the current need was

not being met, and did not estimate current numbers of vacancies, vacancy rates, or the annual capacity of the job market to absorb new graduates.

The Status of Recruitment Resources and Strategies (SORRAS) studies of 2003-2004 and 2005-2006, led by ACRH, quantified the monetary cost of recruiting health professionals for vacant positions in Alaska.^{8,9} The 80 representative health organizations of various types and geographic locations that were surveyed spent \$24 million annually to recruit for the twelve key health occupations targeted by the study. Fifty-four percent of that cost covered the hiring of locums to fill persistently vacant positions. The three main barriers to recruitment identified were: 1) locating qualified candidates (in short supply in Alaska); 2) Alaska's geographic isolation and harsh climate; and 3) the need to satisfy the lifestyle and employment needs of spouses and other family members. Although SORRAS dramatically highlighted the pervasiveness of vacancies and the high financial costs of filling them – or even just attempting to fill them – it was not designed to quantify the numbers and rates of those vacancies.

The 2005 Alaska Physician Task Force Report cited a survey done by the Alaska Family Medical Residency (AMFR) program that found a 16% vacancy rate for rural physician positions in Alaska and several specialties in “serious shortage.”¹⁰ The Task Force also used data from the Alaska Division of Occupational Licensing, the Alaska State Medical Association (ASMA), and the American Medical Association (AMA) to estimate a statewide shortage of 375 physicians based on physician-to-population ratio. The Task Force estimated that Alaska would need to add 59 new physicians per year (it now nets 38 new physicians per year).¹⁰ Its report quantified the maldistribution of Alaska's physicians, showing the shortage was concentrated in rural areas. While this study also shed light on many of the underlying causes of the shortage, it did not quantify actual current unmet need in terms of numbers of actual physician vacancies.

The Alaska Department of Labor “Quarterly Census of Employment & Wages” updates data quarterly of overall employment levels for classes of health-related employers (e.g., General Medical-Surgical Hospitals, Offices of Physicians).¹¹ This yields data useful for tracking industry-wide macro trends but not data for specific occupations.

The dramatic and rapid expansion of the RN program in the School of Nursing at the University of Alaska Anchorage (SON-UAA) is one of Alaska's health workforce development success stories. To guide this expansion, the University began doing a biannual cross-sectional study to gauge the annual unmet need for nurses (quantified by the number of vacant positions and vacancy rates) and the ability of the job market to absorb new graduates of the expanding nursing program. The 2002-2003 study surveyed 47 organizations, including hospitals, tribal health organizations, nursing homes, and large clinics who reported 3,522 nursing positions with 275 of them vacant, for an 8% vacancy rate. Forty of those organizations hired new grads and indicated that they could absorb 68 new nursing graduates while filling those 275 vacancies.¹²

This biannual study was expanded in scope in 2003-2004 and again in 2005-2006, targeting over 200 health and health-related occupations. The studies surveyed almost 300 health organizations of all types, including hospitals and nursing homes, Community Health Centers, dental clinics, physician practice clinics, and behavioral health organizations, representing a substantial proportion of total statewide health professional employment. Data collected included number of positions and number of vacancies (from which vacancy rates were calculated), percentage of responding organizations who hire new graduates, and the number of vacant positions that could

be filled by new graduates. The 2005-2006 study found that responding organizations had an overall physician vacancy rate of 11%, varying widely from 8% in Anchorage to 23% in the rural North/West region. Substantial vacancy rates were reported for physical therapy assistants (25%), psychologists (27%), psychiatrists (20%), EMTs (26%), and coding specialists (28%). Substantial numbers of vacancies were reported for Certified Medical Assistants (38), Personal Care Attendants (84), Physical Therapists (33), Certified Nursing Assistants (143), LPNs (53), Community Health Aide/Practitioners (57), and Registered Nurses (272).¹³

Though its sample was by convenience and not representative of the state, the 2005-2006 study turned out to be an excellent model, yielding data extremely useful for strategic health workforce planning. As a result, the office of Karen Perdue, Associate VP for Health of the University of Alaska, and the Alaska Mental Health Trust Authority decided to fund the Alaska Center for Rural Health-Alaska's AHEC (ACRH) to expand, refine, and execute a similar study.

The key questions this study sought to answer were: What health occupations were at this time most critically affected by shortages? Exactly how many vacancies currently remained unfilled? Where were these vacancies regionally, and in what types of organizations? What did employers perceive to be the major underlying causes of their vacancies? How many new trainees/graduates could the job market actually absorb annually, and how many organizations could absorb them?

II. Methodology

A. Background

1. Advisory Group

The study was designed in consultation with an Advisory Group representing key health workforce stakeholders that included the Alaska Mental Health Trust Authority (AMHTA), the Alaska Native Tribal Health Consortium (ANTHC), the Alaska Primary Care Association (APCA), the Alaska State Hospital and Nursing Home Association (ASHNHA), and the University of Alaska Anchorage (UAA). The Advisory Group provided input and guidance for all aspects of the study design and methodology, including 1) defining study questions and terms; 2) selecting targeted occupations; 3) designing, reviewing, and piloting the study instrument; 4) creating the sampling frame; 5) selecting the sample; and 6) creating the data collection methodology.

2. Unit of Analysis

The unit of analysis was not the health facility but rather the managing organization, specifically the human resources/personnel department of organizations providing health services, including behavioral health. In the case of larger organizations, such as tribal health organizations or organizations managing multiple clinics or hospitals, this was a department responsible for the human resources/personnel functions for multiple health service-providing facilities. In the case of small organizations, such as independent stand-alone medical or dental clinics, this was staff responsible for human resources/personnel functions for a single facility.

3. Study Questions

The study targeted 119 health occupations selected in consultation with the Advisory Group stakeholders.

For these 119 occupations, the study questions were:

- 1) ***How many budgeted positions, either full- or part-time, existed in organizations providing health services in Alaska?*** Only budgeted staff positions were counted, not relief/temporary/locums/travelers/contract positions, unless these latter positions were being used to temporarily fill budgeted but currently vacant staff positions. Individuals (“bodies”) were counted, rather than FTEs. In situations where an individual wore more than one job “hat” (e.g. Dental Assistant and Billing Clerk) the respondent organization was asked to count the individual under what they considered the individual’s “primary job.”
- 2) ***How many of these budgeted positions were currently vacant?*** This was a point-in-time cross-sectional study. Recently filled vacancies or imminent vacancies were not counted. Positions filled by relief/temp/locum/contract health workers were counted as vacancies only if these workers were temporarily filling a currently vacant budgeted position.

- 3) *What was the vacancy rate?* This was derived from the proportion of budgeted positions [denominator] that were currently vacant [numerator], expressed as a percentage.
- 4) *What percentage of health-care providing organizations that employ these occupations hired new graduates of training programs?*
- 5) *How many of the currently vacant budgeted positions (#2) could be filled by new graduates of training programs?*
- 6) *What was the mean length of time, expressed in months, that the vacancies have existed?*

A seventh question applied to each respondent organization, not to specific occupations:

- 7) *What were the principle underlying causes of vacancies?* Respondents were asked to cite what they believed to be the top two underlying causes for vacancies opening or remaining unfilled.

B. Methods

1. Sampling Frame

Ten health service organization types were defined and a sampling frame created consisting of every organization in the State of Alaska identified for each defined type (Table 1; Figure 4). The sampling frame was created using data from:

- a) The “Directory of Alaska Health Care Sites- Volume 4” compiled by the Health Planning and Systems Development Unit of the Alaska Department of Health & Social Services;
- b) The ACS Yellow Pages, both printed and on-line (<http://www.acsyellowpages.com/>);
- c) The Alaska Business License Search of the State of Alaska Division of Corporations, Business, and Professional Licensing (<http://www.commerce.state.ak.us/occ/search1.htm>);
- d) The Alaska Department of Health and Social Services (<http://www.hss.state.ak.us/>), including the Division of Behavioral Health (<http://www.hss.state.ak.us/dbh/>), Office of Children’s Services (OCS) (<http://www.hss.state.ak.us/ocs/>), and the Division of Senior and Disability Services (<http://www.hss.state.ak.us/dsds/>); and
- e) The Alaska Public Schools Database of the Alaska Department of Education and Early Development (SOA-DEED) (http://www.eed.state.ak.us/DOE_Rolodex/schools/Search.cfm).

All identified health service-providing organizations (public, tribal, private non-profit, and private for-profit) were included in the sampling frame. Satellite facilities managed by a parent organization, regardless of their type, were counted as part of the parent organization (e.g., behavioral health facilities and hospitals of tribal health organizations and satellite labs of hospitals).

Table 1 presents the complete state sampling frame, listing the health service organization types that were defined and the number of organizations identified for each type.

Table 1. Statewide Sampling Frame of Health Organizations

Organization Type	Number in Sampling Frame
Tribal Health Organizations ^a	31
Medical Clinics and Offices of Physicians ^{b, c, h}	552
Dental Clinics/Offices ^{d, h}	309
Behavioral Health Services ^{e, g, h}	196
Pharmacies ^{f, h}	42
Physical/Occupational/Speech Therapy Facilities ^{g, h}	113
Diagnostic Laboratories ^h	20
Diagnostic Imaging Centers ^h	13
School Districts	55
Hospitals/Nursing Homes ⁱ	18
Total	1349

- a) As defined by and under contract with the Indian Health Service
- b) Includes SOA Public Health Nursing, Alaska VA System, and Boroughs providing health services
- c) Includes single-provider shops with non-provider staff
- d) Both multi-provider clinics and single-provider shops with non-provider staff
- e) Includes organizations providing mental health services, substance abuse/chemical dependency counseling and treatment services, disability services, child-development services, at-risk youth services, and senior independent and assisted living services
- f) Multi-facility chains with a centralized human resources dept. were counted as one organization
- g) Excluding self-employed providers (i.e., single-provider shops without non-provider staff); includes chiropractic offices that employ Physical and Occupational Therapists
- h) Does not include satellites/departments of other organization types
- i) Includes only civilian employees of military hospitals; includes psychiatric hospitals and in-patient psychiatric facilities; includes only large (10+ bed) nursing homes; does not include hospitals managed by tribal health organizations

2. Sampling

Sampling was conducted through a mix of census and purposive sampling.

A full census was done for hospitals/nursing homes and tribal health organizations in order to 1) capture the entire statewide data set for these health service organizations for the benefit of study stakeholders and 2) efficiently capture, in these large organizations, a majority of the statewide employment for many of the key targeted occupations.

For the other organization types, purposive sampling was done by geography and, where feasible and appropriate, by organizational sub-type (see below) in order to derive a representative sample whose findings could be generalized to the entire state, using the following methodology:

- a) Eight geographic regions were defined, based on the Labor Market Areas defined by the State of Alaska Department of Labor and Workforce Development and modified by the

disaggregation of Anchorage, Fairbanks, and Juneau as distinct urban regions in order to maintain a representative urban/rural distribution in the sample and to facilitate an urban/rural data analysis (Table 2; Figure 2). Every organization was assigned to its appropriate geographic region. In addition, within each region, each organization was identified by city/town/village.

Table 2. Geographic regions defined with component boroughs and census areas

Region	Component Boroughs and Census Areas
Anchorage	Municipality of Anchorage
Fairbanks	Fairbanks North Star Borough
Juneau	Juneau Borough
Southeast	Haines Borough; Ketchikan Gateway Borough; Sitka Borough; Skagway-Hoonah-Angoon Census Area; Wrangell-Petersburg Census Area; Prince of Wales - Outer Ketchikan Census Area; Yakutat Borough
Southcentral	Valdez-Cordova Census Area; Matanuska-Susitna Borough; Kenai Peninsula Borough; Kodiak Island Borough
Southwest	Aleutians East Borough; Aleutians West Census Area; Bethel Census Area; Bristol Bay Borough; Dillingham Census Area; Lake and Peninsula Borough; Wade-Hampton Census Area
Interior	Denali Borough; Southeast Fairbanks Census Area; Yukon-Koyukuk Census Area
North/West	Nome Census Area; North Slope Borough; Northwest Arctic Borough

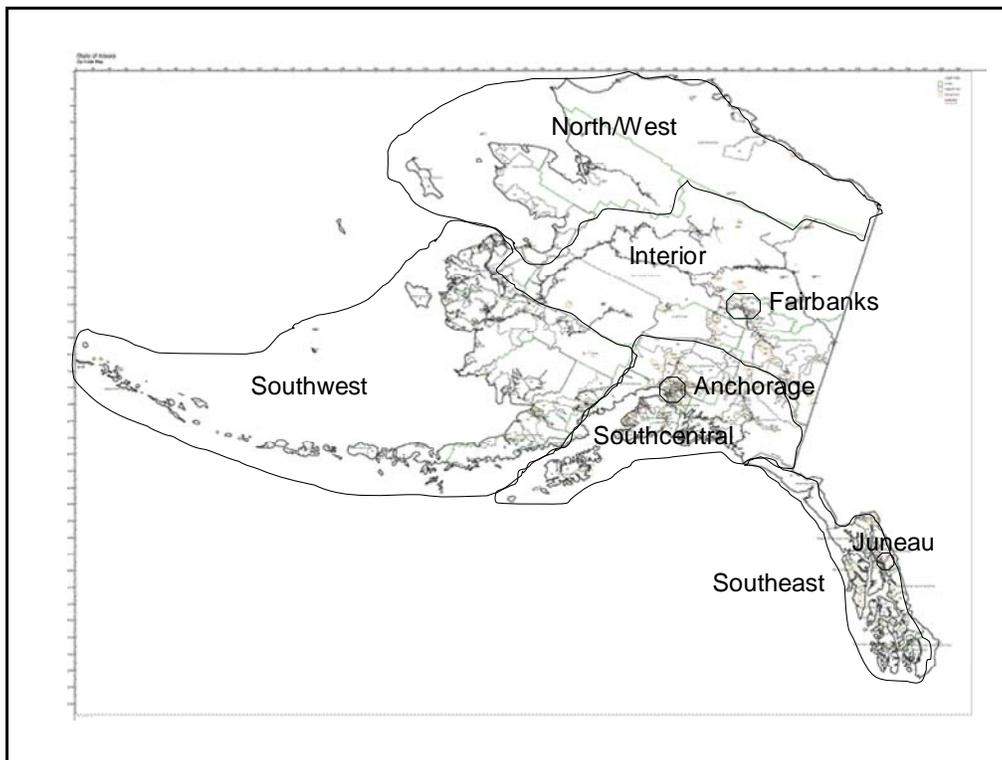


Figure 2. Sampling Frame Geographic Regions

- b) For medical clinics/offices of physicians and dental clinics, sub-types were defined by specialty (e.g., general practice/family medicine, pediatrics, internal medicine, general surgery, orthopedics, orthodontics). For behavioral health organizations, sub-types were defined by primary type of behavioral health service (e.g., general mental/behavioral health, substance abuse/chemical dependency counseling, disability services). For school districts, sub-types were defined by size of student enrollment (large, >5000 students; medium, >1000 <5000 students; and small, <1000 students). For therapies, sub-types were defined by therapy type: physical therapy, occupational therapy, and speech therapy/pathology. Pharmacy sub-types defined were multi-pharmacy chains and stand-alone pharmacies. No sub-types were defined for diagnostic laboratories or diagnostic imaging due to very low numbers.
- c) Sample selection was accomplished by purposively selecting organizations from the sampling frame in proportion to their representation in the sampling frame by city/town/village, by geographic region, and by subtype. Organization types without defined subtypes were selected using purely geographic distribution criteria.

3. The Study Instrument

The Study Instrument (Appendix A) was adapted from the instrument successfully used in the 2005 Workforce/Vacancy Study conducted by SON-UAA, modified in consultation with the Advisory Group. An introductory page explained the purpose of the study, listed options for conveying the completed survey, listed the study questions, and provided clarifications and definitions of key terms, such as “position” and “vacancy”. The body of the instrument was a simple matrix/grid, with five study questions as the horizontal axis and the targeted occupations as the vertical axis – the latter organized by occupational groups. Space at the end was provided for respondents to add occupations not listed in the instrument. The instrument concluded with the final question regarding principle underlying causes of vacancies, and a space to provide comments and suggestions.

For ease of use and to increase response rate, the instrument was tailored to each organization type by eliminating occupations it did not typically employ. Large organizations (e.g., hospitals) received instruments with the complete list of occupations.

The instruments were piloted with 17 organizations representing all ten organization types and all eight geographic regions. Participating organizations were debriefed via telephone using a standardized questionnaire, and recommended changes were incorporated following consultation with the Advisory Group.

C. Data Collection

The data collection plan consisted of 1) a mail-out of a hard copy of the survey instrument to all sampled organizations, followed by 2) telephone calls from trained interviewers who provided clarification, guidance, and options for returning the completed survey.

Organizations chosen for sampling were mailed a hard copy of their tailored survey instrument accompanied by a letter from either ACRH, ASHNHA, or AMHTA, as appropriate, explaining the purpose of the study, and a self-addressed stamped envelope for the return of the survey. To assure an adequate and representative sample for the two most numerous organizations (dental

clinics and medical clinics/offices of physicians), the survey instrument was mailed to all organizations in these sampling frames, not just to those chosen for the purposive sample. In this manner, organizations completing and returning the survey that were not in the purposive sample could be held in reserve and used to substitute for non-responding organizations or to augment the overall size of the study sample through additional purposive sampling of responding organizations using the same sampling methodology described above.

Interviewers received intensive training in the purpose and methodology of the study and were provided scripts to guide their communications. Their understanding and communication skills were developed and tested via role-playing; subsequent monitoring of their work provided ongoing quality assurance. Each interviewer was assigned specific organization types and proceeded to contact his/her assigned organizations in order to confirm receipt of the mail-out, provide clarification and guidance, and offer the options of receiving electronic copies of the survey via e-mail, conveying the data over the phone, or sending by FAX. Telephone and e-mail contacts were documented in contact logs that were periodically reviewed. Every sampled organization received at least one follow-up call from an interviewer (unless they promptly returned the survey via mail before receiving a call). Tribal health organizations were e-mailed a memo from the CEO of ANTHC encouraging their participation in the study. Two weeks into data collection, a list of frequently-asked questions (FAQs) and answers was e-mailed to the organizations yet to respond. Organizations were re-contacted at least weekly until they either completed the survey or formally declined participation.

Organizations that were no longer in business or that declined participation were substituted with another organization that matched their parameters. In the case of dental clinics and clinics/offices of physicians, this was usually an organization not in the original sample that returned a completed survey and that matched the parameters of the non-respondent.

All surveys received were reviewed for completeness and internal consistency. When necessary, incomplete or inconsistent surveys were returned to interviewers for resolution with the respondent organization.

Data collection commenced on February 21, 2007 and concluded on May 11, 2007.

D. Data Analysis

1. Quantitative Data

Quantitative survey data was entered directly into SPSS (Statistical Package for the Social Sciences version 14). After data cleaning, data was analyzed utilizing this software.

Occupations not listed in the survey instrument and written-in by respondents were enumerated, and three occupations with 20 or more reported positions were added to the list of occupations analyzed: Anesthesiologist, Cardiologist, and Miscellaneous Physician Specialist.

The principle analysis outcomes for each occupation studied were defined as: 1) total number of positions reported in the sample; 2) total number of vacancies reported in the sample; 3) vacancy rate of the sample computed, with #2 as numerator and #1 as denominator; 4) proportion of responding organizations in the sample who employ the occupation (denominator) and who

indicated that they hired new graduates (numerator), expressed as a percentage; 5) total number of vacancies in the sample for which new graduates would be considered; 6) mean length of vacancies in the sample, expressed in months; and, for all occupations, aggregated, 7) the frequency distribution of principle reasons cited for vacancies.

In addition, estimates were also generated for the entire State of Alaska for variables 1 through 6 listed above, with 95% confidence intervals at $\alpha=.05$. This was done using the following methodology:

- a) Because a census was attempted for hospitals/nursing homes and tribal health organizations, the full sample was over-weighted with these larger organizations. In addition, response rates varied between respondent types, over-weighting the full sample further in respondent type distribution (e.g., pharmacies, dental offices/clinics). This required the creation of a representative sub-sample that closely mirrored the sampling frame and whose characteristics could be generalized to the entire state.

The frequency distribution of organizations in the full sample by geography (by region and by city/town/village) and by organization type and subtype was compared with the complete statewide sampling frame. The adjusted sub-sample was then created by purposively eliminating over-weighted organizations from the full sample until the frequency distribution by organization type and geography of the remaining organizations in the sub-sample matched that of the statewide sampling frame. For example, pharmacies represented 3.1% of the sampling frame, but the 37 respondent pharmacies represented 7.8% of the full sample, a 152% over-weighting due to a very high response rate—a full 88% of the sampling frame. Therefore, 27 pharmacies were eliminated, leaving 10 pharmacies (representing 3.3% of the sub-sample) whose sub-type and geographic distribution (including urban/rural ratio) closely matched the distribution of the pharmacies in the sampling frame.

- b) To estimate the statewide number of positions, the number of vacancies, the number of vacancies for new grads, and the length of vacancies: the mean (along with the standard deviation and standard error) per respondent organization in the sub-sample was calculated with SPSS.

To establish 95% confidence intervals for these means at $\alpha=.05$, adjusting for the finite population, the margin of error for the mean was then calculated using the formula:

$$d = z [s/\sqrt{n}] [\sqrt{((N-n)/(N-1))}]$$

Where d=margin of error, z=reliability coefficient (1.96), s=standard deviation, N=total number of organizations in the state sampling frame (1349) and n=number of organizations in the sub-sample (304).

The mean per respondent organization in the sub-sample and the lower and upper confidence interval limits for the mean were then multiplied by the total number of organizations in the sampling frame (N=1349) to yield the statewide estimate and the upper and lower confidence interval limits for that estimate.

- c) To estimate the statewide proportion of organizations that employ new graduates, the proportion found in the sub-sample was used as the statewide estimate (expressed as a percentage). A 95% confidence interval at $\alpha=.05$ for this percentage was calculated utilizing the formula:

$$d=z [\sqrt{pq/\sqrt{n}}] [\sqrt{((N-n)/(N-1))}]$$

Where d =margin of error, z =reliability coefficient (1.96), p =proportion of respondents answering “yes” to hiring new graduates, $q=1-p$, N =total number of organizations in the state sampling frame (1349), and n =number of organizations in the sub-sample (304). Note that $1-p$ includes organizations who responded “not sure,” “don’t know,” or “no,” but does not include non-respondents.

Thus, two data sets were analyzed: 1) the full sample, and 2) the sub-sample for generating statewide estimates.

Estimates of all variables for aggregated occupational groups (e.g., Physicians, Professional Nurses, etc.) (Appendices B-F) were not the sum of component occupation estimates but rather included data for occupations for which individual estimates could not be derived due to low numbers in the sub-samples. The estimates for total state health occupation variables were derived from the sum of occupational group estimates.

For survey Question 7, the top two underlying causes of their vacancies, respondents were given the option of writing in causes not listed. Similar write-in causes were grouped into categories which were then added to the analysis (e.g., Transience/”Moving Away”). The frequency distribution of all cited causes was then calculated using SPSS.

After all variables were calculated for the entire state (Appendix B), the full sample was disaggregated by urban or rural location, by respondent type, and by geographic region. The sub-sample was also disaggregated by urban vs. rural location in order to obtain statewide urban/rural estimates (with 95% confidence intervals) for these two data sets (Appendices C and D). However, regions and respondent types were not disaggregated from the sub-sample because the disaggregated sample sizes became too small to derive usable estimates for most occupations. Therefore, regional and respondent type disaggregations were of the full sample only (Appendices E and F).

Respondents were classified “urban” if they were located in one of the following urban or suburban/”bedroom” communities: Anchorage, Eagle River/Chugiak, Wasilla, Palmer, Fairbanks, North Pole, or Juneau. Findings for Wasilla, Palmer, and North Pole were compared with the rural samples and urban samples less those three communities. Because their statistical profiles much more closely resembled the urban profiles, for purposes of this analysis, these suburban/ “bedroom communities” were classified “urban”. All others were classified as “rural”. If a respondent had facilities in both urban and rural areas it was classified in the category where a majority of its employees worked. If it could not be determined where the majority worked, the respondent was not classified urban or rural and left out of the urban/rural disaggregation.

Regional disaggregation was based on the Labor Market Areas, which are defined by the State of Alaska Department of Labor and Workforce Development (Table 3).

Table 3. Labor Market Areas and Component Boroughs/Census Areas

Region	Component Boroughs and Census Areas
Southeast	Juneau Borough; Haines Borough; Ketchikan Gateway Borough; Sitka Borough; Skagway-Hoonah-Angoon Census Area; Wrangell-Petersburg Census Area; Prince of Wales – Outer Ketchikan Census Area; Yakutat Borough
Anchorage/Mat-Su	Municipality of Anchorage; Matanuska-Susitna Borough
Gulf Coast	Valdez-Cordova Census Area; Kenai Peninsula Borough; Kodiak Island Borough
Southwest	Aleutians East Borough; Aleutians West Census Area; Bethel Census Area; Bristol Bay Borough; Dillingham Census Area; Lake and Peninsula Borough; Wade-Hampton Census Area
Interior	Fairbanks Northstar Borough; Denali Borough; Southeast Fairbanks Census Area; Yukon-Koyukuk Census Area
North/West	Nome Census Area; North Slope Borough; Northwest Arctic Borough

Six (6) organizations operating statewide or in multiple regions were given the regional classification “Statewide/multi-regional organizations.”

2. Qualitative Data

Qualitative survey data from the comments/suggestions section of the survey was entered into SPSS and then exported to an Excel file. Content analysis of the qualitative data was done using conceptual/thematic descriptions of the data based on open coding/grounded theory.

III. Limitations of Study

A study of this magnitude and complexity inevitably carries numerous limitations and the reader is cautioned to keep these limitations in mind.

There may be issues of informant reliability or consistency. For example, occupational titles are often respondent-specific, an artifact of organizational personnel systems, and two organizations may have different job titles for what is effectively the same job. In addition, when respondents were asked to count employees wearing multiple job “hats” under what they considered their “primary” occupation, the respondents may not have used consistent criteria for making this determination. Lastly, interviewers sometimes found that respondents did not count vacant positions as “positions”, which would inflate vacancy rates. While the large majority of respondents spoke to interviewers who always verified that “positions” included currently vacant positions, there was not enough time or resources to verify this with 90 organizations who responded only by mail and who were not contacted by telephone.

Non-responses for number of “new grad vacancies” were counted as “0.” This may have resulted in under-estimation of numbers of new grad vacancies. The response rate for length of vacancy was low and consequently there was insufficient data to estimate mean state vacancy length for many occupations. Also, the study was not designed to capture health workers who are independent contractors or who work in one-person shops, nor to capture the entire state universe of many occupations, including CNA, Home Health Aide, Personal Care Attendant, EMT/ETT, Massage Therapist, Optical/Eye Care Technician, Optician, Optometrist, Paramedic, Dietician, Nutritionist, and various non-healthcare-specific managerial occupations (e.g., Human Resources Manager, Business Manager).

Deriving statewide estimates for positions and vacancies was extremely challenging. Despite the great pains taken to extract a sub-sample that closely matched the statewide sampling frame and whose characteristics could be generalized to the entire state, the sub-sample was relatively small in statistical terms (n=304) and generally had very high variance. We felt, however, that the methodology used, though it would yield wide confidence intervals due to the small sample size and high variance, would nevertheless yield accurate estimates – i.e., low precision (wide confidence intervals) would be offset by high accuracy (estimates approximating the actuals). But all statewide estimates presented should be taken cautiously, and the confidence intervals presented for these estimates duly considered.

There was insufficient data in the sub-sample to generate usable statewide estimates for a great many thinly and/or unevenly distributed occupations, particularly when it was disaggregated into urban and rural sub-sets (urban, n=218; rural, n=85).

The regional and respondent type disaggregations are of the full sample only, which, as noted above in Methodology, is skewed (primarily to large organizations). This disaggregated full-sample regional and respondent-type data is presented for reader consideration without presumption that they are necessarily accurate representations of the entire state. For example, the regional disaggregations may replicate the skewness towards large organizations. However, given that caveat, 1) the full sample is not significantly skewed with respect to its regional distributions and 2) the respondent type data sets from the full sample are representative of their respective respondent type sampling frames.

IV. Findings

The data collection yielded the following sample of 476 respondents (Figure 3, Table 4):

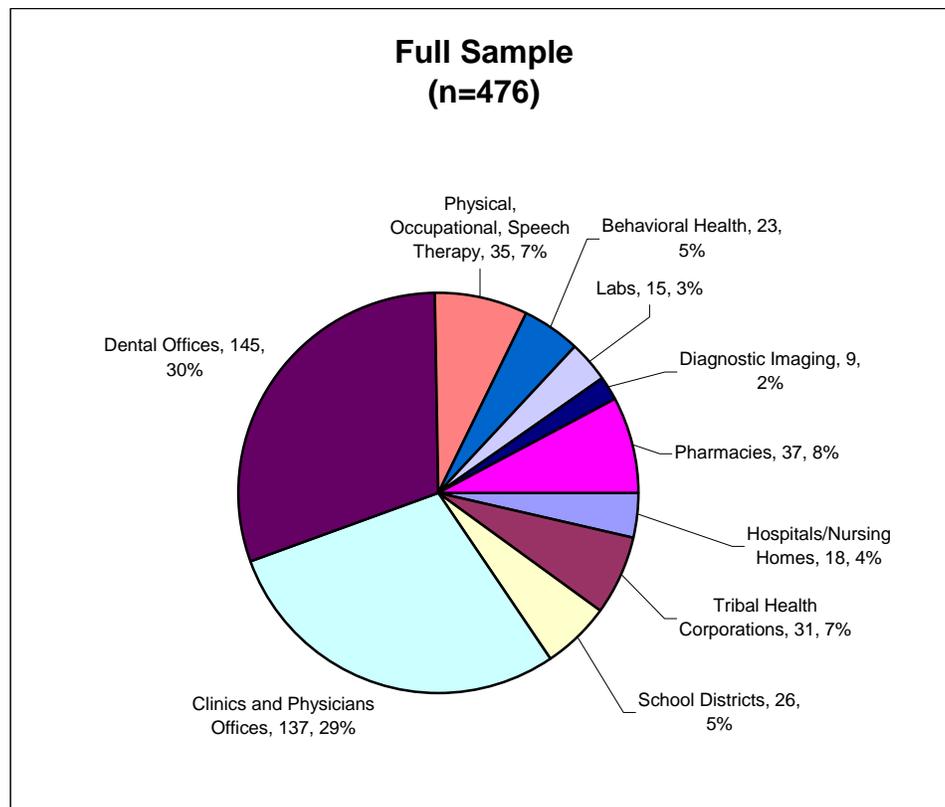


Figure 3. Full Sample

Table 4. Full sample and response rates

Organization Type	Number of surveys received	Response Rate
Behavioral Health Service Providers	23	77%
Dental Clinics & Offices	145	181%*
Diagnostic Imaging Centers	9	100%
Diagnostic Laboratories	15	100%
Hospital/Nursing Homes	18	100%
Clinics/Offices of Physicians	137	99%
Pharmacies	37	151%*
Physical/Occupational/Speech Therapy Facilities	35	100%
School Districts	26	100%
Tribal Health Organizations	31**	100%**
Total	476	99%

*Responses exceeded targeted number

** Data for one respondent incomplete

The full sample of 476 responding organizations represented 35.3% of the entire statewide sampling frame of 1349 organizations (Figure 4, Table 5) and included 18,158 reported positions. The sub-sample totaled 304 respondents, 22.5% of the sampling frame, and 63.9% of the full sample; it represented 7,787 reported positions (Figure 5, Table 5).

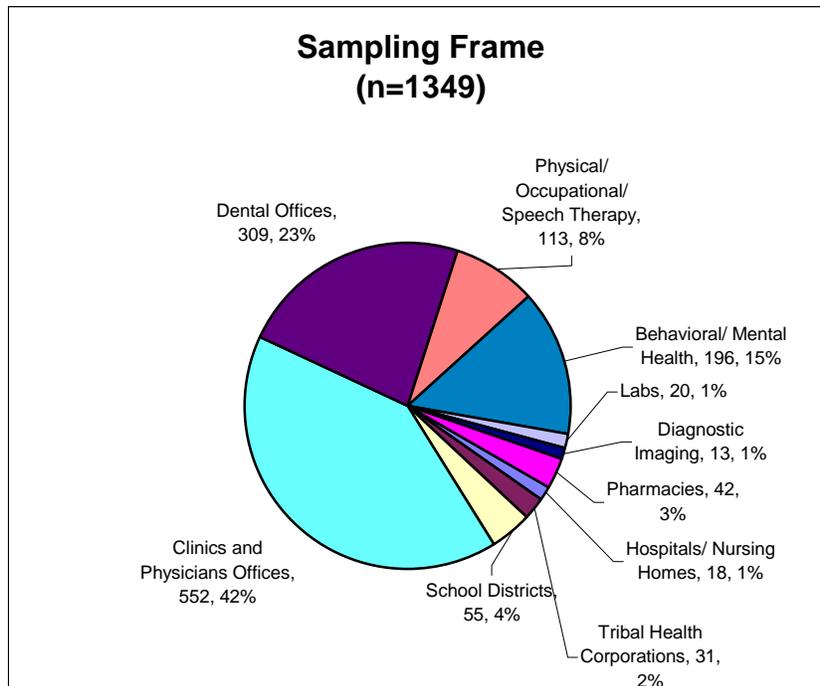


Figure 4. Sampling Frame

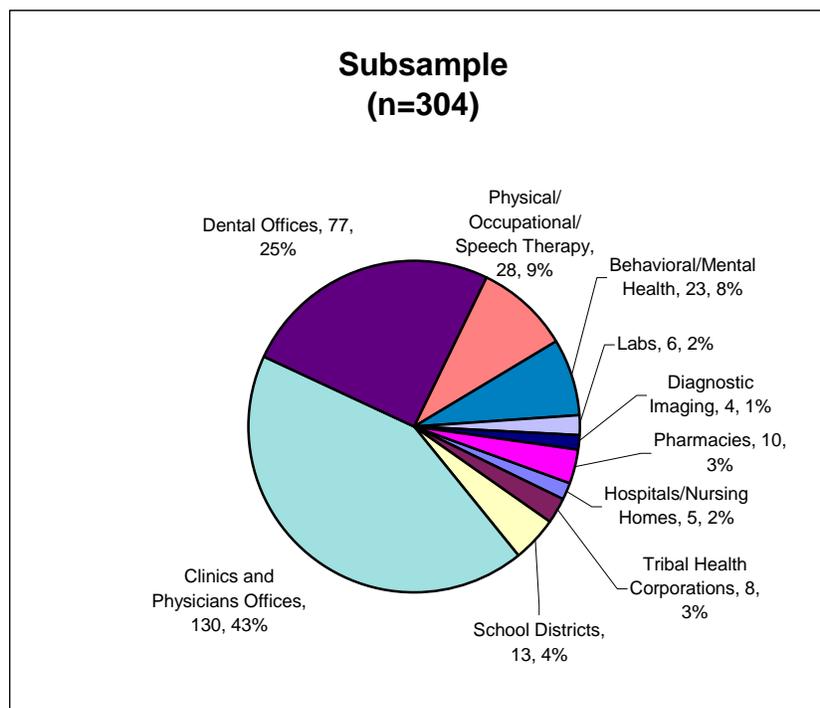


Figure 5. Sub-sample

Table 5. Sampling frame, full sample, and sub-sample

Category	Sampling Frame (n=1349)		Full Sample (n=476)		Sub-Sample (n=304)	
	No.	Pctg.	No.	Pctg.	No.	Pctg.
Hospitals/Nursing Homes	18	1.3%	18	3.8%	5	1.6%
Tribal Health Corporations	31	2.3%	31	6.5%	8	2.6%
School Districts	55	4.1%	26	5.5%	13	4.2%
Clinics/Offices of Physicians	552	40.9%	137	28.8%	130	42.8%
Dental Offices	309	22.9%	145	30.5%	77	25.3%
Physical/Occupational/Speech Therapy	113	8.4%	35	7.4%	28	9.2%
Behavioral/Mental Health	196	14.5%	23	4.8%	23	7.6%
Labs	20	1.5%	15	3.2%	6	2.0%
Diagnostic Imaging	13	1.0%	9	1.9%	4	1.3%
Pharmacies	42	3.1%	37	7.8%	10	3.3%
Region	No.	Pctg.	No.	Pctg.	No.	Pctg.
Anchorage	620	46.0%	200	42.0%	139	45.7%
Fairbanks	151	11.2%	62	13.0%	35	11.5%
Juneau	81	6.0%	31	6.5%	21	6.9%
Southeast	97	7.2%	39	8.2%	20	6.6%
Southcentral	316	23.4%	100	21.0%	67	22.0%
Southwest	37	2.7%	19	4.0%	9	3.0%
Interior	22	1.6%	10	2.1%	6	2.0%
North/West	17	1.3%	9	1.9%	6	2.0%
Statewide/Multi-region	8	0.6%	6	1.3%	1	0.3%
Total	1349	100%	476	100%	304	100%

The complete findings are presented in Appendices B-F. In the key findings presented below, “estimates” (both statewide and urban vs. rural) are derived from the sub-sample. *All other findings, unless otherwise noted, are derived from the full sample.*

Note: Position and vacancy estimates are shown rounded to zero decimal places. Consequently vacancy rate estimates, which are shown rounded to one decimal place, may not appear correct. For example, Anesthesiologist had 44.38 estimated positions, shown as 44; and 4.44 estimated vacancies, shown as 4; with a vacancy rate estimate of 10.0% (4.44/44.38, not 4/44).

A. Quantitative Data

1. General Distribution of Positions and Vacancies

The full sample included 18,158 positions; the statewide estimate was 34,738 (Table 6). The numbers are inflated by the very inclusive definition of “Behavioral Health” occupations (see Methodology section), which totaled 2938 in the full sample (16.2% of full sample), and for which the statewide estimate was 7450 (21.4% of total estimated positions). The other occupational cluster with a great number of positions in both the full sample and the statewide estimate was Professional Nursing, with 4202 and 7139, respectively.

Vacancies totaled 1866 in the full sample, with a 10.3% overall vacancy rate; the statewide estimate was 3529 vacancies, with an estimated 10.2% statewide vacancy rate. Estimated vacancies were most numerous in Behavioral Health (1033) and Professional Nursing (696), yielding estimated 13.9% and 9.8% statewide vacancy rates, respectively.

The highest vacancy rates were found in 1) Professions/Therapists (a group including Dentist, Pharmacist, and the Therapies), with a 17.5% rate in the full sample and a statewide estimate of 17.7%, and 2) in Other Primary Care (a group composed of CHA/Ps and PAs), with a 17.4% full sample rate and a statewide estimate of 18.5%. The lowest vacancy rates were found in 1) Managers (5.2% full sample, 5.4% statewide estimate) and 2) Health Information/Reimbursement (5.8%, 5.7%).

Table 6. All Occupational Groups

Occupational Group	Full Sample (n=476)			Statewide Estimates**					
	Positions	Vacancies	Vacancy Rate	Positions	95% Confidence Interval	Vacancies	95% Confidence Interval	Vacancy Rate	95% Confidence Interval
All Occupations	18158	1866	10.3%	34738	12614, 55862	3529	676, 6375	10.2%	9.6%, 10.7%
Physicians	730	109	14.9%	1931	658, 3205	226	23, 422	11.7%	9.1%, 14.3%
Professional Nurses	4202	462	11.0%	7139	2176, 12101	696	86, 1306	9.8%	8.5%, 11.0%
Other Nursing Staff (a)	1769	135	7.6%	1762	620, 2904	111	15, 207	6.3%	4.2%, 8.4%
Professions/Therapists (b)	1240	217	17.5%	2281	1300, 3262	404	128, 679	17.7%	14.8%, 20.6%
Behavioral Health	2938	327	11.1%	7450	-480, 14379	1033	127, 1938	13.9%	12.3%, 15.4%
Allied Health	3209	291	9.1%	5523	2624, 8423	434	89, 779	7.9%	6.5%, 9.2%
Public Health/Nutrition (c)	154	18	11.7%	189	75, 302	ND	ND	ND	ND
Other Primary Care (d)	759	132	17.4%	1067	896, 1237	198	153, 243	18.5%	14.5%, 22.5%
Managers	1337	69	5.2%	2947	1888, 4005	160	6, 314	5.4%	3.9%, 6.9%
Health Information/Reimbursement	1816	106	5.8%	4451	2858, 6044	253	42, 464	5.7%	4.4%, 6.9%

a - Includes LPN, CNA, PCA, Home Health Aide; b - Includes Dentist, Pharmacist, and the Therapies; c- Public Health Nurse included with Professional Nurses; d - Includes CHA/P and PA; ND- Insufficient data to generate estimates; ** Includes occupations for which accurate individual estimates could not be generated

The distribution of the estimated vacancies among respondent types varied highly among occupational groups (Figure 6). Overall, the largest percentage of vacancies was in the behavioral health organizations (35%), which reported an overall 10.7% vacancy rate in the full sample, followed by clinics/offices of physicians (23%, 8.6% vacancy rate), tribal health organizations (18%, 16.5% vacancy rate) and hospitals/nursing homes (13%, 8.2% vacancy rate).

Physician estimated vacancies were primarily in clinics/offices of physicians (67%), which reported a 10.3% vacancy rate, and tribal health organizations (19%), which reported a very high 27.1% vacancy rate.

Professional Nurse estimated vacancies were chiefly in hospitals/nursing homes (36%, 10.0% vacancy rate); clinics/offices of physicians (32%, 10.1% vacancy rate) and tribal health organizations (21%, 15.5% vacancy rate).

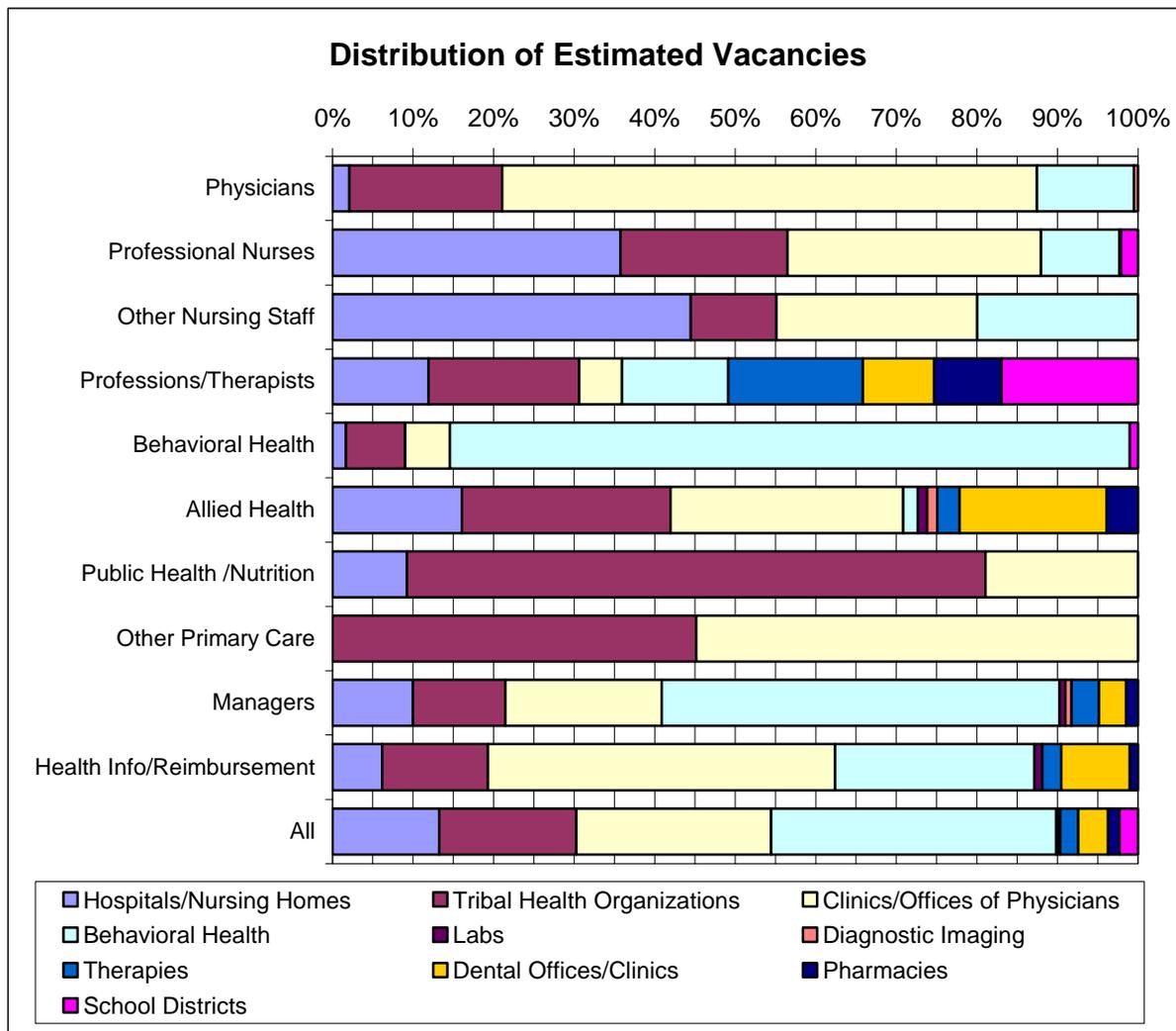


Figure 6. Distribution of estimated vacancies by respondent type

Other Nursing Staff (e.g., LPNs, CNAs, etc.) estimated vacancies were heavily in hospitals/nursing homes (44%, 6.8% rate). Large percentages were also in clinics/offices of physicians (25%, 8.4% rate), behavioral health organizations (20%, 9.3% rate), and tribal health organizations (11%, 14.3% rate).

Professions/Therapies (Dentist, Pharmacist, Therapies) estimated vacancies were broadly distributed, chiefly in tribal health organizations (19%, 42.9% rate), school districts (17%, 13.5% rate), therapy offices/clinics (17%, 17.2% rate), hospitals/nursing homes (12%, 16.3% rate),

behavioral health organizations (17%, 20.7% rate), and pharmacies (9%, 15.9% rate). Note the high rates across all respondent types.

Estimated vacancies for Behavioral Health, predictably, were overwhelmingly in behavioral health organizations (86%, 10.8% rate). Another 9% were in tribal health organizations, which reported a 14.5% vacancy rate, and 5% were in clinics/offices of physicians (20.2% rate).

Allied Health estimated vacancies were broadly distributed among many respondent types, most prominently clinics/offices of physicians (29%, 7.4% rate), tribal health organizations (26%, 17.1% rate), behavioral health organizations (18%, 12.5% rate), and hospitals/nursing homes (17%, 7.8% rate).

Although aggregate Public Health/Nutrition vacancy numbers could not be accurately estimated for the state, appropriately weighting the vacancy distribution of the full sample would project the large majority of them to have been in tribal health organizations (73%), which reported a 15.3% vacancy rate.

Estimated Other Primary Care vacancies (i.e., CHA/Ps and PAs) were in only two respondent types: clinics/offices of physicians (55%, 25.4% rate) and tribal health organizations (45%, 16.1% rate).

Manager estimated vacancies were largely in behavioral health organizations (48%, 7.3% rate). Substantial percentages were also found in clinics/offices of physicians (19%, 3.2% rate), tribal health organizations (12%, 7.6% rate), and hospitals/nursing homes (10%, 4.5% rate).

Lastly, Health Information/Reimbursement estimated vacancies were concentrated in clinics/offices of physicians (43%, 4.5% rate), behavioral health organizations (25%, 8.5% rate), and tribal health organizations (13%, 11.3% rate).

Tribal health organizations had by far the highest overall full-sample vacancy rate (16.5%). They were followed by therapy offices/clinics (13.6%) and behavioral health organizations (10.7%). The lowest rates were among diagnostic imaging centers (4.7%), dental offices/clinics (6.0%), and pharmacies (7.5%) (the pharmacies' vacancy rate for Pharmacist was 15.9%, but the rate for the more numerous Pharmacy Tech was only 3.8%, lowering the overall rate).

Looking at an urban/rural disaggregation of estimated vacancies derived from the sub-sample, smaller vacancy numbers but much higher vacancy rates were seen in the rural respondents (Table 7, next page). The overall urban estimated rate was 8.1% (8.6% in the full sample), and the overall estimated rural rate was 13.3% (14.0% in the full sample). In every occupational group, without exception, the estimated rural rate was higher than the urban rate.

In four occupational groups, the estimated rural vacancy rate was around twice the urban rate: Physicians (10.3% urban, 18.2% rural); Professional Nurses (8.4% urban, 17.8% rural); Allied Health (5.9% urban, 14.5% rural); and Managers (4.1% urban, 9.4% rural).

The one occupational group with a small urban/rural difference was Behavioral Health, with 379 estimated urban vacancies yielding a 10.5% estimated urban vacancy rate, and 323 estimated

rural vacancies yielding a 11.3% estimated rural vacancy rate. This tempered the overall urban/rural difference for the state.

Table 7. Urban vs. rural estimated vacancies and vacancy rates

Occupational Group	Urban**			Rural**		
	Estimated Vacancies	Estimated Vacancy Rate	95% Confidence Interval	Estimated Vacancies	Estimated Vacancy Rate	95% Confidence Interval
All Occupations	1998	8.1%	7.4%, 8.7%	1162	13.3%	12.0%, 14.6%
Physicians	158	10.3%	7.7%, 13.0%	60	18.2%	10.6%, 25.7%
Professional Nurses	526	8.4%	7.1%, 9.8%	149	17.8%	13.1%, 22.4%
Other Nursing Staff	81	6.1%	3.7%, 8.5%	30	7.2%	2.7%, 11.7%
Professions/ Therapists	275	16.3%	13.0%, 19.6%	128	21.6%	15.6%, 27.6%
Behavioral Health	379	10.5%	8.7%, 12.4%	323	11.3%	9.2%, 13.4%
Allied Health	253	5.9%	4.5%, 7.2%	180	14.5%	10.9%, 18.2%
Public Health/ Nutrition	ND	ND	ND	ND	ND	ND
Other Primary Care	63	16.1%	10.7%, 21.5%	134	19.8%	14.1%, 25.5%
Managers	90	4.1%	2.6%, 5.7%	68	9.4%	5.5%, 13.2%
Health Information/ Reimbursement	172	5.0%	3.6%, 6.3%	77	7.7%	4.7%, 10.7%

ND - Insufficient data to generate estimates; **Includes occupations for which individual estimates could not be generated; does not include statewide respondents not classified either urban or rural

Table 8 looks at vacancy rates in the full sample regionally. Though their vacancy numbers are much lower than those of more populous regions, the entirely rural North/West and Southwest regions had by far the highest overall vacancy rates of 20.1% and 20.3%, respectively, and reported double digit rates for nearly every occupational group.

Table 8. Vacancy rates by region (full sample, n=476)

Occupational Group	Regions						
	North/West (n=10)	Southwest (n=17)	Interior (n=72)	Anchorage Mat-Su (n=232)	Gulf Coast (n=69)	Southeast (n=70)	Statewide/Multiregional* (n=6)
Physicians	26.7%	21.2%	21.6%	12.6%	10.4%	6.8%	30.3%
Professional Nurses	26.0%	21.6%	5.9%	11.1%	8.0%	5.9%	12.1%
Other Nursing Staff	18.6%	18.8%	5.8%	6.2%	4.6%	2.3%	8.8%
Professions/ Therapists	32.4%	32.4%	20.7%	15.9%	16.5%	16.3%	12.4%
Behavioral Health	19.0%	22.7%	13.1%	8.3%	7.1%	11.1%	11.6%
Allied Health	17.0%	24.6%	7.3%	6.5%	8.4%	7.7%	8.6%
Public Health/ Nutrition	30.0%	6.3%	0.0%	4.0%	18.9%	0.0%	10.5%
Other Primary Care	19.7%	18.6%	24.5%	9.0%	9.1%	4.0%	0.0%
Managers	13.8%	2.4%	3.5%	3.2%	6.4%	11.7%	4.0%
Health Information/ Reimbursement	15.9%	16.9%	2.0%	5.3%	6.6%	2.8%	7.2%
All Occupations	20.1%	20.3%	9.0%	8.6%	8.1%	7.7%	10.2%

*Respondents with statewide or multiregional facilities

Outside those two regions Physician vacancy rates were high in the Interior (21.6%) and in the Statewide/Multiregional organizations (30.3%). Professions/Therapists rates were in double digits across the board – no regions escaped these shortages. Behavioral Health rates were high

in Interior (13.1%), Southeast (11.1%), and among Statewide/Multiregional respondents (11.6%). The rate for Other Primary Care (CHA/PS and PAs) was very high in the Interior (24.5%). Southeast reported a high Manager vacancy rate of 11.7%.

2. Occupational Highlights

a. Occupations with Most Estimated Positions

Table 9 presents the health occupations with at least 1000 estimated positions (including vacant positions). These 7 occupations represented 14,772 estimated positions – approximately 43% of the estimated state health workforce.

Table 9. Occupations with most estimated positions (at least 1000)

Occupation	Full Sample (n=476)	Statewide Estimate	95% Confidence Interval
Registered Nurse	3109	5489	1896, 9083
Human Services Worker - HS	1253	3602	-1591, 7795
Human Services Worker - AA	315	1198	94, 2302
Registration Clerk	461	1172	876, 1467
Case Manager/Care Coordinator	505	1163	461, 1865
Medical Assistant	367	1092	722, 1461
Dental Assistant	538	1056	752, 1360

Registered Nurse and Medical Assistant were the most numerous primary healthcare occupations, with 5489 and 1092 estimated positions, respectively. Three behavioral health-related occupations figured prominently: Human Services Worker-HS diploma (3602), Human Services Worker-AA degree (1198) and Case Manager/Care Coordinator (1163). For the purposes of this study, these were “umbrella” job titles defined with the input of advisory group stakeholders that captured a wide number of respondent-specific job titles with similar functions in behavioral/mental health and in services for the disabled, elderly, homeless, substance abusers, special needs children, at-risk youth, and other vulnerable populations:

- Case Manager/Care Coordinator (Bachelor’s or AA degree): Includes Clinical Associate, Community Support Services Coordinator, Family Support Specialist, Family Services Team Facilitator, Mental Health Associate, Service Planner/Coordinator, and Skills Development Specialist.
- Human Services Worker (HS diploma or AA degree): Includes Activity Therapist, Crisis Center Advocate, Direct Care Provider, Direct Support Personnel, Family Services Worker, Family Services Caseworker, Family Advocate, Individual Services Provider, Life Coach/Life Skills Specialist, Mental Health Associate, and Residential Aide.

Completing the list were Dental Assistant, and Registration Clerk, a key “front office” occupation. “Registration Clerk” was another “umbrella” job title capturing a variety of respondent-specific job titles with similar functions, including registering patients and coordinating appointments and paperwork.

Occupations with less than 1,000 but at least 500 estimated statewide positions are shown in Table 10.

Table 10. Occupations with at least 500 estimated positions

Occupation	Full Sample (n=476)	Statewide Estimate	95% Confidence Interval
Certified Nursing Assistant	1052	998	338, 1659
Dentist	319	692	515, 869
Family Physician	252	675	460, 889
Office Manager	249	657	571, 742
Critical Care Nurse	497	629	-141, 1399
Billing/Coding Clerk	218	599	473, 725
Billing Specialist	242	595	408, 781
Behavioral Health Clinician	297	555	216, 893
Medical Records File Clerk	192	555	279, 831
Community Health Aide/Practitioner (CHAP)	552	552*	NA
Dental Hygienist	264	546	415, 676
Physician Assistant	207	515	344, 685
Physical Therapist	271	510	332, 688

*Actual statewide number of positions. NA-Confidence interval not applicable.

These 8,078 estimated positions, combined with the occupations listed in Table 9 comprise 22,850 estimated positions, approximately 65% of the estimated state health workforce. Figuring prominently were key primary care occupations: Family Physician, Critical Care Nurse, Community Health Aide/Practitioner (CHA/P), and Physician Assistant. The remaining key dental occupations, Dentist and Dental Hygienist, were also present. The following “back office” occupations were also numerous: Office Manager, Billing/Coding Clerk, Billing Specialist, and Medical Records File Clerk.

Also figuring in Table 10 is Behavioral Health Clinician, another key behavioral health occupation. This is a Master’s level umbrella job title that included Behavioral Health Counselor, Counselor, Children’s Therapist, Clinical Therapist, Mental Health Therapist, and Mental Health Specialist.

Rounding out the list were Certified Nursing Assistant (CNA) and Physical Therapist.

b. Occupations with Most Estimated Vacancies

Table 11 (next page) presents the occupations with at least 100 estimated vacancies statewide. They represent the occupations with the largest unmet employer demand, with 1609 estimated vacancies (approximately 47% of total estimated health occupation vacancies). *The list is composed entirely of primary care and behavioral health occupations.* Registered Nurse, Family Physician, Medical Assistant, and Community Health Aide/Practitioner (CHA/P) were the primary care occupations with the most numerous estimated vacancies. Three Behavioral Health occupations discussed above (Human Services Worker-HS diploma, Human Services Worker-AA degree, and Case Manager/Care Coordinator) also had over 100 estimated vacancies.

Table 11. Occupations with most estimated statewide vacancies (at least 100)

Occupation	Full Sample (n=476)	Statewide Estimate	95% Confidence Interval
Human Services Worker - HS	119	488	110, 867
Registered Nurse	299	439	154, 725
Human Services Worker - AA	51	209	-50, 467
Case Manager/Care Coordinator	52	164	27, 301
Family Physician	46	107	54, 159
Medical Assistant	38	102	53, 151
Community Health Aide/Practitioner (CHAP)	100	100*	NA

*Actual vacancies; NA – confidence interval not applicable

Occupations with less than 100 but at least 50 estimated vacancies statewide are presented in Table 12. These 827 estimated vacancies, taken together with the occupations listed above in Table 11, constituted approximately 69% of total estimated statewide vacancies.

Table 12. Occupations with 50-99 estimated statewide vacancies

Occupation	Full Sample (n=476)	Statewide Estimate	95% Confidence Interval
Physician Assistant	32	98	53, 143
Pharmacist	73	98	36, 159
Dental Assistant	44	93	34, 152
Physical Therapist	29	84	42, 126
Occupational Therapist	27	75	29, 122
Dentist	47	71	16, 126
Behavioral Health Clinician	35	71	28, 114
Family Nurse Practitioner	36	71	37, 105
Critical Care Nurse	43	60	-117, 237
Registration Clerk	23	53	25, 82
Speech-Language Pathologist	36	53	8, 99

Note the presence of three therapy occupations: Physical Therapy, Occupational Therapy, and Speech-Language Pathologist. Along with Speech Therapist (22 estimated vacancies, 95% CI -3, 48) they totaled 234 estimated vacancies for the entire state, with 97 vacancies reported in the full sample alone.

Three key primary care occupations (two of them mid-levels) - Physician Assistant, Critical Care Nurse, and Family Nurse Practitioner - had high estimated vacancies. Two dental healthcare occupations – Dentist and Dental Assistant - also had over 50 estimated vacancies. There were almost 100 vacancies for Pharmacists estimated for the state, with 73 in the full sample alone. Completing the list is Behavioral Health Clinician with 71 estimated vacancies.

c. Occupations with Highest Estimated Vacancy Rates

Table 13 presents the occupations with estimated vacancy rates of 20% and higher. These represent the occupations with the highest percentages of unmet employer demand. Among those with at least 20 estimated vacancies were Pharmacist, General Internist, and two specialty nursing occupations, Psychiatric Nurse and Nurse Case Manager. Again present were Therapy

occupations: Occupational Therapist, Physical Therapy Assistant, and Speech Language Pathologist.

Table 13. Occupations with highest vacancy rates

Occupation (Estimated total vacancies)	Full Sample (n=476)	Statewide Estimate	95% Confidence Interval
Neurosurgeon (4)	33.3%	33.3%	-15.5%, 82.2%
Village Health Educator (3)	30.0%	30.0%*	NA
Occupational Therapist (75)	19.7%	29.3%	19.0%, 39.6%
Physical Therapy Assistant (18)	31.4%	28.6%	7.6%, 49.6%
Psychiatric Nurse (22)	34.8%	25.0%	8.2%, 41.8%
Pharmacist (98)	24.2%	23.7%	16.0%, 31.3%
Nurse Case Manager (49)	30.9%	23.4%	12.7%, 34.1%
General Internist (40)	21.1%	20.0%	9.7%, 30.3%
Speech-Language Pathologist (53)	23.5%	20.0%	11.1%, 28.9%
Nuclear Medicine Technician (4)	13.3%	20.0%	-11.6%, 51.6%
Compliance Auditor (4)	16.7%	20.0%	-11.6%, 51.6%

*Actual; NA- Confidence interval not applicable

Many numerically small specialty/“niche” occupations with less than 20 estimated vacancies had very high estimated vacancy rates of 20% or higher: Neurosurgeon, Village Health Educator, Physical Therapy Assistant, Nuclear Medicine Technician, and Compliance Auditor.

Eight additional occupations had at least 20 estimated vacancies and an estimated (or where indicated, actual) vacancy rate of at least 15%:

- Family Nurse Practitioner (71 estimated vacancies, estimated rate of 19.5% +/- 7.5%)
- Physician Assistant (98, 19.0% +/- 6.3%)
- Community Health Aide/Practitioner (CHA/P) (100-actual, 18.1%)
- Behavioral Health Aide (21-actual, 18.1%)
- Human Services Worker-AA degree (209, 17.4% +/- 4.0%)
- Physical Therapist (84, 16.5% +/-6.0%)
- Family Physician (107, 15.8% +/- 5.1%)
- Speech Therapist (22, 15.6% +/- 11.1%)

Note that these are all primary care, behavioral health, or therapy occupations.

High estimated vacancy rates with somewhat lower numbers of estimated vacancies characterized two behavioral health occupations: Psychiatrist (18, 19.0% +/-14.8%) and Psychologist/Psychological Associate (18, 17.4% +/-13.7%). Another occupation with a very high vacancy rate due to its being still in the development stage was the new Dental Health Aide occupation of the Tribal Health Organizations (34 vacancies, 72.3%- actual).

d. Occupations with Most Estimated Vacancies for New Graduates

Respondents were asked to indicate how many of their current vacancies they would consider filling with “new graduates” (e.g., recent nursing school grads, MDs completing residencies, or HS or AA grads for positions with on-the-job training). The intention was to gauge the ability of

the job market to absorb new grads/trainees in order to plan training expansions and/or recruitment campaigns.

Table 14 presents the occupations with the highest number of estimated new grad vacancies (at least 50), along with the percentage of total estimated vacancies for which new grads would have been considered.

Table 14. Occupations with highest numbers of vacancies for new grads

Occupation	Full Sample (n=476)		Statewide Estimate		
	New Grad Vacancies	Percentage of Total Vacancies	New Grad Vacancies	95% Confidence Interval	Percentage of Total Estimated Vacancies**
Human Services Worker - HS	68	57.1%	266	-47, 580	54.5%
Registered Nurse	93	31.1%	226	79, 373	51.5%
Human Services Worker - AA	47	92.2%	195	-63, 453	93.6%
Case Manager/Care Coordinator	37	71.2%	120	5, 234	73.0%
Family Physician	25	54.3%	89	40, 138	83.3%
Community Health Aide/Practitioner	88	88.0%	88*	NA	88.0%*
Pharmacist	46	63.0%	84	26, 143	86.4%
Medical Assistant	21	55.3%	84	40, 129	82.6%
Physician Assistant	23	71.9%	80	39, 121	81.8%
Occupational Therapist	21	77.8%	75	29, 122	100.0%
Dental Assistant	26	59.1%	75	20, 131	81.0%
Dentist	27	57.4%	67	12, 121	93.8%
Physical Therapist	23	79.3%	62	32, 92	73.7%
Speech-Language Pathologist	28	77.8%	53	8, 99	100.0%
Behavioral Health Clinician	19	54.3%	53	15, 92	75.0%

*Actual; ** No confidence interval calculated; NA—confidence interval not applicable

Occupations with high numbers of estimated new grad vacancies include: Registered Nurse (226), Family Physician (89), Pharmacist (84), Physician Assistant (80), Occupational Therapist (75), Dentist (67), and Physical Therapist (62). Several behavioral health occupations also had high numbers of estimated new grad vacancies: Human Services Worker (HS diploma and AA degree) (461 combined), Case Manager/Care Coordinator (120), and Behavioral Health Clinician (53).

High percentages of these vacancies in both full sample and statewide estimates could have been filled by new grads (31.1% to 92.2% in full sample, 51.5% to 100.0% for statewide estimates).

e. Occupations with Longest Mean Estimated Vacancy Lengths

Vacancy length provides an alternative metric to vacancy rate as an indicator of the severity of workforce shortages. Respondents were therefore asked to estimate, in months, the lengths of each reported vacancy. When there were multiple vacancies for an occupation they were asked to provide an estimate of the longest vacancy still open for that position. Unfortunately, this question had a high non-response rate and so it was not possible to arrive at statewide mean vacancy length estimates for many occupations.

Both full sample and sub-sample were characterized by strikingly long mean vacancy lengths. The weighted mean vacancy length for all occupations for the full sample was 13.4 months; the sub-sample yielded a statewide estimated weighted mean of 12.9 months (+/- 2.0). *In other words, the “typical” Alaskan healthcare vacancy had remained unfilled slightly more than one full year.*

Table 15 presents the occupations for which statewide estimates could be derived that were at least a mean of two years (24 months) in length.

Table 15. Occupations with longest mean reported vacancy lengths (months)

Occupation	Full Sample (n=476)		Statewide Estimate		
	Number of Vacancies	Mean Vacancy Length (months)	Number of Vacancies	Mean Vacancy Length (months)	95% Confidence Interval
Medical Records Technician	5	55.5	22	55.5	49.4, 61.6
Surgical Technician/Technologist	3	36.3	9	51.5	44.9, 58.1
Personal Care Attendant	26	33.5	27	49.6	42.7, 56.5
Certified Coder	6	29.0	22	38.3	33.1, 43.5
Human Services Worker - AA	51	28.8	209	37.0	32.2, 41.8
Pharmacy Technician	28	8.7	27	36.3	31.0, 41.7
Speech Therapist	5	36.0	22	36.0	32.6, 39.4
Psychiatrist	10	23.7	18	34.5	32.7, 36.3
Miscellaneous Specialists*	3	29.0	13	29.0	28.0, 30.0
Billing Specialist	12	14.0	27	25.8	21.0, 30.6
Human Services Worker - HS	119	21.1	488	24.3	20.3, 28.3

*Specialist MD positions other than Anesthesiologist, Cardiologist, Neurosurgeon, Ob-Gyn, Oncologist, Ophthalmologist, Orthopedist, Pediatrician, Psychiatrist, Radiation Oncologist, Radiologist, and Rheumatologist

Most are specialty/“niche” occupations for which there are limited pools of candidates, particularly in low-population states such as Alaska. Although they had relatively few estimated statewide vacancies, their very long vacancy lengths indicate that these vacancies were very difficult to fill (e.g., Psychiatrist and Surgical Technician/Technologist). Exceptions to this pattern are the two Human Services Worker occupations, which, in addition to the large numbers of vacancies we have already seen, had very long reported mean vacancy lengths, testifying to the acuity of their shortages.

Other occupations with mean estimated vacancy lengths longer than the estimated mean of 12.9 months include:

- Speech Language Pathologist (estimated mean vacancy length 19.8 months +/-1.3 months)
- Psychiatric Nurse (17.8 +/-2.8)
- Medical Records File Clerk (16.5 +/-3.4)
- Dentist (16.1 +/-2.8)
- Psychologist/Psychological Associate (15.5 +/-0.3)
- Occupational Therapist (14.8 +/-1.3)
- Registration Clerk (14.8 +/-3.3)
- Medical Technologist (14.5 +/- 1.3)

- Case Manager/Care Coordinator (13.8 +/-3.0)
- General Internist (13.3 +/-0.4)

The heterogeneity of these occupations indicates that long-vacant positions are widespread over many occupational groups.

3. Focus Areas

a. Focus Area: Physicians

Table 16 presents the full-sample data and statewide estimates for positions, vacancies, and vacancy rates for Physicians. “Physicians” includes Surgeons and DOs, but does not include Naturopaths, Chiropractors, or Podiatrists. “Miscellaneous Specialists” includes all specialist Physicians not otherwise listed individually (e.g., Dermatologist, Plastic Surgeon, Urologist, etc.).

Table 16. Physicians

Occupation	Full Sample (n=476)			Statewide Estimates					
	Positions	Vacancies	Vacancy Rate	Positions	95% Confidence Interval	Vacancies	95% Confidence Interval	Vacancy Rate	95% Confidence Interval
Anesthesiologist	37	3	8.1%	44	-32, 121	4	-3, 12	10.0%	-6.6%, 26.6%
Cardiologist	29	1	3.4%	32	-182, 246	1	-7, 9	3.1%	0.8%, 5.4%
Emergency Physician	35	3	8.6%	111	13, 209	4	-3, 12	3.6%	-2.8%, 10.8%
Family Physician	252	46	18.3%	675	460, 889	107	54, 159	15.8%	10.7%, 20.9%
General Internist	71	15	21.1%	200	94, 306	40	9, 71	20.0%	9.7%, 30.3%
General Surgeon	28	0	0.0%	102	38, 166	0	NA	0.0%	NA
Misc. Specialists	47	3	6.4%	186	102, 271	13	-4, 30	7.1%	0.3%, 14.0%
Neurosurgeon	3	1	33.3%	13	-4, 30	4	-3, 12	33.3%	-15.5%, 82.2%
Ob/Gyn	25	7	28.0%	44	16, 73	ND	ND	ND	ND
Oncologist	8	1	12.5%	36	5, 66	4	-3, 12	12.5%	-8.0%, 33.0%
Ophthalmologist	9	2	22.2%	31	2, 61	4	-3, 12	14.3%	-8.9%, 37.5%
Orthopedic Surgeon	45	6	13.3%	120	34, 206	13	-10, 36	11.1%	0.6%, 21.6%
Pediatrician	70	9	12.9%	138	62, 213	ND	ND	ND	ND
Psychiatrist	36	10	27.8%	93	39, 147	18	3, 33	19.0%	4.2%, 33.9%
Radiation Oncologist	2	0	0.0%	ND	ND	ND	ND	ND	ND
Radiologist	31	2	6.5%	98	14, 181	4	-3, 12	4.5%	-3.2%, 12.2%
Rheumatologist	2	0	0.0%	9	-2, 20	0	0	0.0%	NA

ND-Insufficient data; NA-confidence interval not applicable

High numbers of vacancies were reported in the full sample and estimated statewide for Family Physicians (46 full sample, 107 statewide estimate) and General Internists (15, 40), which also had high estimated vacancy rates of 15.8% and 20.0%, respectively. Lower numbers of vacancies (in both full sample and for statewide estimates) but high vacancy rates were estimated for several specialists: Neurosurgeon (4, 33.3%), Psychiatrist (18, 19.0%), Ophthalmologist (4, 14.3%), Oncologist (4, 12.5%), and Orthopedic Surgeon (13, 11.1%).

Moderately high vacancy rates but low vacancy numbers were estimated for Anesthesiologist (4, 10.0%) and Miscellaneous Specialists (13, 7.1%). Estimated numbers of vacancies and vacancy rates were low for Cardiologist (1, 3.1%), Emergency Physician (4, 4.0%), General Surgeon (0, 0%), and Rheumatologist (0, 0%). No statewide vacancy numbers or rate estimates could be calculated for Ob/Gyn, Pediatrician, or Radiation Oncologist due to insufficient sub-sample data. The full sample did show high vacancy rates for Ob/Gyn (28.0%) and Pediatrician (12.9%), but these would have to be researched further to determine if these rates can be generalized statewide.

Only five of these occupations had sufficient estimated vacancies to allow meaningful disaggregation by respondent type and region (Figure 7). The distribution of the estimated 107 Family Physician vacancies shows the bulk of these vacancies in clinics/offices of physicians (58%), with another 20% in tribal health organizations. However, the vacancy rate reported by tribal health organizations (28.4%) was far higher than that for the clinics/offices of physicians (11.2%); in the rural regions, the Family Physician vacancies appear to be concentrated in tribal health organizations, and in the urban regions, vacancies are concentrated in clinics/offices of physicians.

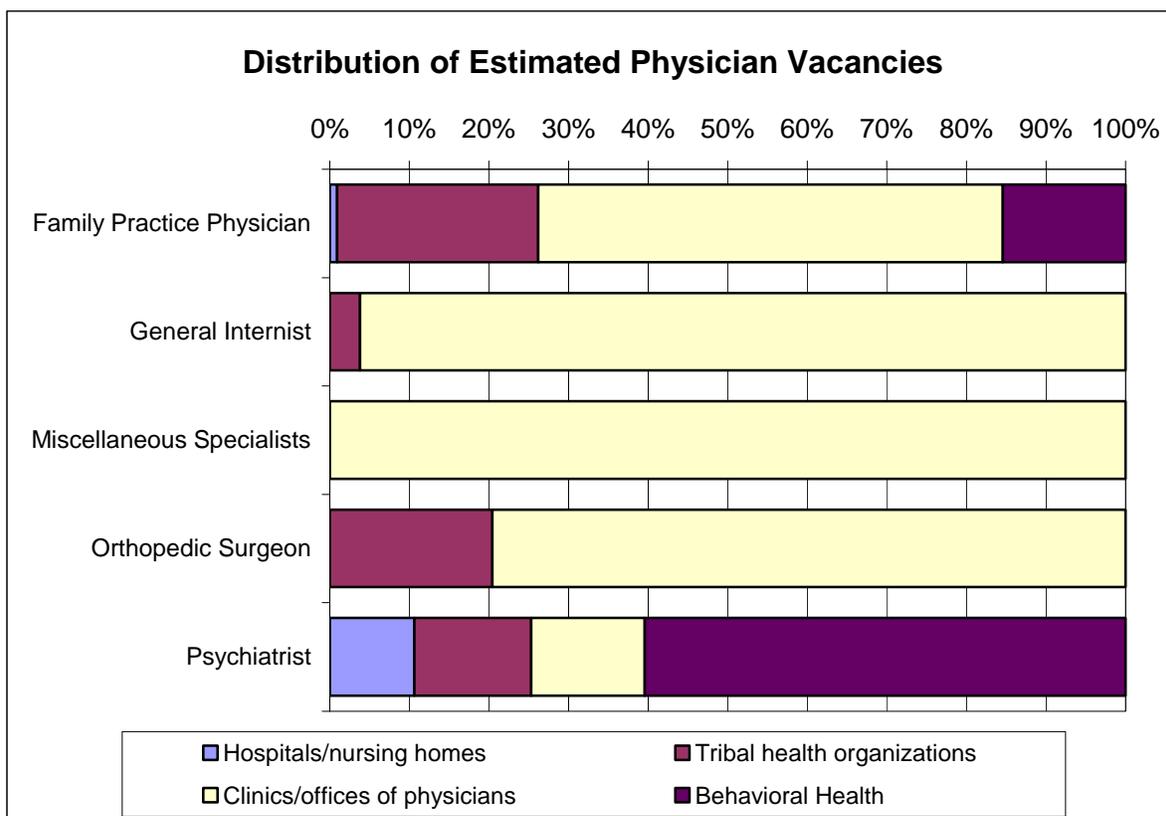


Figure 7. Distribution of estimated Physician vacancies

General Internist estimated vacancies were overwhelmingly concentrated in the clinics/offices of physicians (96%), which reported a 22.8% vacancy rate. The remainder was in tribal health organizations, which reported an 18.2% rate.

Estimated vacancies for Miscellaneous Specialists were entirely in clinics/offices of physicians (8.1% vacancy rate). Hospitals/nursing homes employed some, but reported no vacancies (0.0% rate).

Orthopedic Surgeon estimated vacancies were heavily concentrated in clinics/offices of physicians (79%, 8.3% vacancy rate). Another 21% were found in tribal health organizations, which reported a 42.9% vacancy rate.

Finally, the majority of estimated Psychiatrist vacancies were in behavioral health organizations (61%, 22.2% vacancy rate); the remainder were divided among tribal health organizations (14%, 40.0% vacancy rate), clinics/offices of physicians (14%, 16.7% vacancy rate), and hospitals/nursing homes (11%, 27.3% vacancy rate). Note the high vacancy rates across all respondent types.

The urban estimated aggregated Physician vacancy rate was 10.3% (+/-2.7%), and the rural was 18.2% (+/- 7.5%), Data was sufficient to permit meaningful urban/rural disaggregation only of the relatively numerous Family Physician and General Internist; most other Physician positions and vacancies were almost completely urban. The estimated urban vacancy rate for Family Physician was 14.9% (+/-6.1%), and the rural rate was 17.6% (+/-9.2%); the difference was apparently moderated by the high rate reported for the strongly urban Anchorage/Mat-Su region (see below). The General Internist estimated urban rate was 18.8% (+/-12.0%), and the rural rate was 23.1% (+/- 20.2%).

Looking at Physicians by region, we noted the following vacancy rates: North/West, 26.7%; Interior, 21.6%; Southwest, 21.2%; Anchorage Mat-Su, 12.6%; Gulf Coast, 10.4%; and Southeast, 6.8%. Statewide/Multiregional organizations reported a 30.3% vacancy rate.

Some regions reported high vacancy rates for specific Physician occupations:

- Family Physician – Interior, 27.3%; North/West, 26.9%; Anchorage/ Mat-Su, 19.6%; Southwest, 15.2%
- General Internist – Interior, 37.5%; Statewide organizations, 30.0%; Gulf Coast, 20.0%; Anchorage Mat-Su, 16.7%
- Miscellaneous Specialist – Interior, 14.3%
- Orthopedic Surgeon – Statewide organizations, 50.0%; Interior, 28.6%
- Psychiatrist – North/West, 50.0%; Southwest, 50.0%; Anchorage Mat-Su, 33.3%; Interior, 25.0%; Statewide organizations, 20.0%; Southeast, 14.3%

Note the high rates for Interior, the presence of Anchorage Mat-Su across three of these occupations, and the high Psychiatrist vacancy rate across most regions of the state.

b. Focus Area: Professional Nurses

Table 17 presents the full-sample data and statewide estimates for Professional Nursing occupations (excluding Licensed Practical Nurses). Both full sample and statewide estimates indicated high vacancy rates of least 14% for the following key nursing specialties: Nurse Case Manager, Family Nurse Practitioner, Nurse Midwife, Pediatric Nurse Practitioner, Psychiatric Nurse, and Public Health Nurse. Of these, Nurse Case Manager and Family Nurse Practitioner also showed high numbers of vacancies in both full sample and statewide estimate. Critical Care

Nurse also had a substantial number of estimated vacancies (60), though a lower estimated vacancy rate of 9.5% (8.7% in full sample).

Table 17. Professional Nursing

Occupation	Full Sample (n=476)			Statewide Estimates					
	Positions	Vacancies	Vacancy Rate	Positions	95% Confidence Interval	Vacancies	95% Confidence Interval	Vacancy Rate	95% Confidence Interval
Nurse Case Manager	136	42	30.9%	209	83, 334	49	11, 87	23.4%	12.7%, 34.1%
Critical Care Nurse	497	43	8.7%	629	-141, 1399	60	-117, 237	9.5%	2.0%, 17.1%
Family Nurse Practitioner	155	36	23.2%	364	250, 478	71	37, 105	19.5%	12.0%, 27.1%
Nurse Anesthetist	29	3	10.3%	ND	ND	ND	ND	ND	ND
Nurse Consultant	30	0	0.0%	ND	ND	ND	ND	ND	ND
Nurse Educator	41	6	14.6%	ND	ND	ND	ND	ND	ND
Nurse-Midwife	20	3	15.0%	27	-2, 55	4	-3, 12	16.7%	-10.1%, 43.4%
Pediatric NP	17	3	17.6%	27	8, 45	4	-3, 12	16.7%	-10.1%, 43.4%
Psychiatric Nurse	23	8	34.8%	89	5, 172	22	2, 42	25.0%	8.2%, 41.8%
Psychiatric NP	20	2	10.0%	44	-5, 94	ND	ND	ND	ND
Public Health Nurse	106	15	14.2%	106*	NA	15*	NA	14.2%*	NA
Registered Nurse	3109	299	9.6%	5489	1896, 9083	439	154, 725	8.0%	6.7%, 9.3%
Women's Health Care NP	19	2	10.5%	ND	ND	ND	ND	ND	ND

ND – Insufficient data *Actual NA-Confidence interval not applicable

The estimated Registered Nurse vacancy rate was 8.0%, representing an estimated 439 vacancies, with 299 vacancies reported in the full sample alone. Public Health Nurses had a 14.2% vacancy rate, with 15 actual vacancies distributed over the entire state. Due to insufficient data no usable statewide estimates could be calculated for Nurse Consultant, Nurse Anesthetist, Nurse Educator, Psychiatric Nurse Practitioner, or Women's Health Care Nurse Practitioner. However, the full sample showed high vacancy rates for the latter four (10.3%, 14.6%, 10.0% and 10.5%, respectively) and these rates may characterize the entire state, though this would have to be statistically confirmed.

In sum, nursing vacancies were most acute in the nursing specialty areas noted above, rather than in Registered Nurses (RNs), though hospitals/nursing homes and tribal health organizations reported high RN vacancy rates of around 10%.

Only Registered Nurses, Critical Care Nurses, Nurse Case Managers, and Family Nurse Practitioners yielded sufficient data to permit a meaningful disaggregation by respondent type (Figure 8, Table 18), urban/rural location (Table 19), or region.

Looking at the distribution by respondent type of the estimated vacancies for these four nursing occupations, we see distinct occupation-specific distributions (Figure 8). Over half (54%) of estimated RN vacancies were concentrated in hospitals and nursing homes, with another 21% in clinics and offices of physicians, and 16% in the tribal health organizations. While the RN

vacancy rate reported by behavioral health organizations was relatively high (11.1%), these represent only 4% of estimated vacancies.

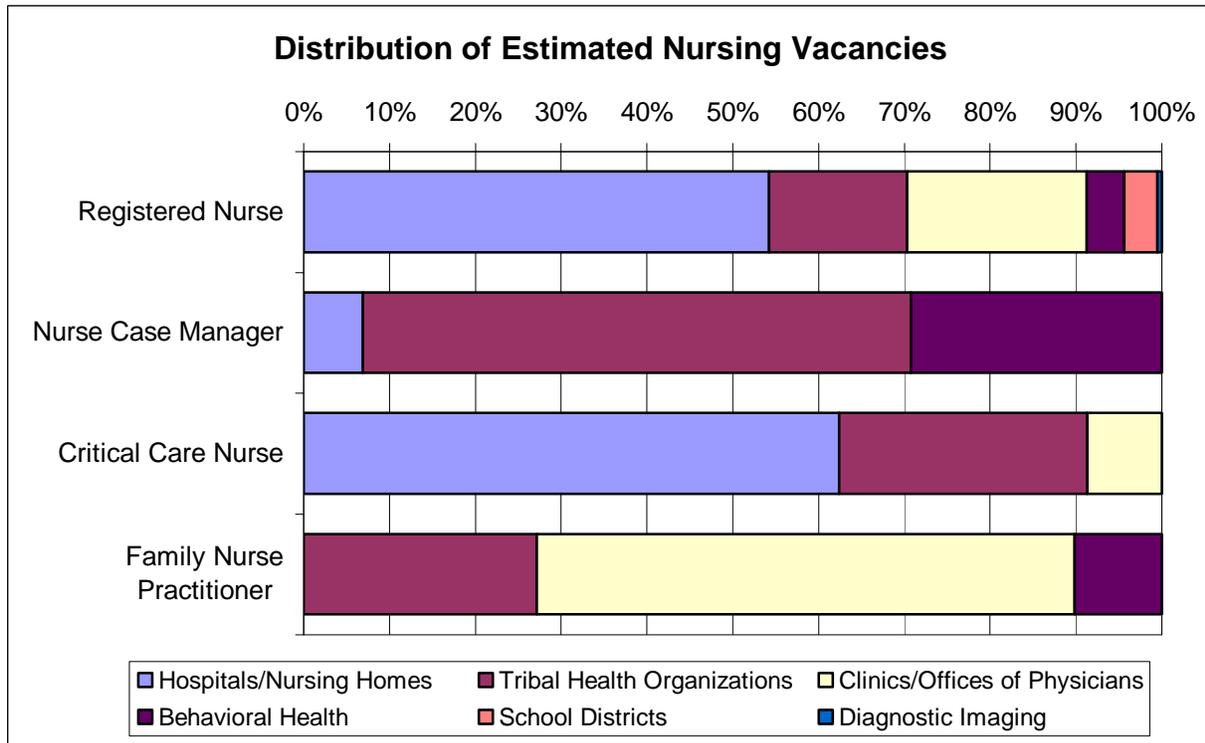


Figure 8. Distribution of key nursing occupation vacancies

Nurse Case Manager estimated vacancies appeared to be concentrated in tribal health organizations (67%) and behavioral health organizations (25%). Critical Care Nurse estimated vacancies were concentrated in hospitals/nursing homes (62%), with another 25% in tribal health organizations, and 7% in clinics/offices of physicians. Family Nurse Practitioner estimated vacancies appeared to be concentrated largely in clinics/offices of physicians (65%), with another 26% in hospitals/nursing homes.

Registered Nurses (RNs) showed a high vacancy rate in hospitals/nursing homes (10.5%) and tribal health organizations (9.3%) (Table 18). Rates for RNs in clinics/offices of physicians and school districts were distinctly lower (7.4% and 3.7% respectively), decreasing the overall rate.

Table 18. Nursing vacancy rates by respondent type (full sample, n=476)

Occupation	Hospitals & Nursing Homes	Clinics & Offices of Physicians	Tribal Health Organizations	Behavioral Health	School Districts
Nurse Case Manager	11.1%	0.0%	57.1%	11.3%	NP
Critical Care Nurse	7.4%	4.3%	16.3%	NP	NP
Family Nurse Practitioner	0.0%	15.9%	33.8%	25.0%	NP
Registered Nurse	10.5%	7.4%	9.3%	11.1%	3.7%
All Nursing Occupations	10.0%	10.1%	15.5%	14.0%	3.7%

NP- No positions reported

Very high vacancy rates were reported by the tribal health organizations, especially for Nurse Case Manager (57.1%) and Family Nurse Practitioner (33.8%). Hospitals/nursing homes also showed a high vacancy rate for Nurse Case Manager (11.1%). Clinics/offices of physicians, though with generally low nursing vacancy rates, did report a high vacancy rate for Family Nurse Practitioner (15.9%). The school district rate for RN was only 3.7%.

The estimated overall urban Professional Nurse vacancy rate was 8.4%, while the estimated rural rate was 17.8% (Table 19). This gap was largely due to the difference in estimated RN vacancy rates – 6.9% urban vs. 16.1% rural.

Table 19. Urban vs. rural key nursing occupation vacancies

Occupation	Urban			Rural		
	Estimated Vacancies	Estimated Vacancy Rate	95% Confidence Interval	Estimated Vacancies	Estimated Vacancy Rate	95% Confidence Interval
Registered Nurse	339	6.9%	5.6%, 8.2%	94	16.1%	10.7%, 21.4%
Nurse Case Manager	36	33.3%	16.6%, 50.1%	13	13.0%	0.9%, 25.1%
Critical Care Nurse	57	9.0%	1.5%, 16.5%	ND	ND	ND
Family Nurse Practitioner	36	13.3%	5.7%, 20.9%	34	36.4%	18.7%, 54.0%
All Nursing Occupations	526	8.4%	7.1%, 9.8%	149	17.8%	13.1%, 22.4%

ND- Insufficient data for meaningful estimate

However, as Table 19 illustrates, the relatively low estimated urban rate masks high estimated rates for key nursing specialties, Nurse Case Manager (33.3%), Critical Care Nurse (9.0%), and Family Nurse Practitioner (13.3%). The estimated rural rates were high across the board.

The regional breakdown of the full sample (n=476) for all Professional Nurse occupations combined revealed the following regional vacancy rates: North/West, 26.0%; Southwest, 21.6%; Statewide organizations, 12.1%; Anchorage/Mat-Su, 11.1%; Gulf Coast, 8.0%; Interior, 5.9%; and Southeast, 5.9% (Table 8, above).

However, the median Anchorage Mat-Su and Gulf Coast rates, and the low Interior and Southeast rates masked high rates reported for the following key nursing specialties:

- Family Nurse Practitioners – North/West, 33.3%; Southwest, 35.7%; Interior, 31.3%; Anchorage Mat-Su, 18.3%; Gulf Coast, 16.7%
- Nurse Case Managers – Anchorage Mat-Su, 47.5%; Southwest, 40.0%; Interior, 33.3%; Southeast, 33.3%; North/West, 25.0%; and Gulf Coast, 13.3%
- Critical Care Nurse – North/West, 100%; Anchorage Mat-Su, 18.6%; and Southwest, 18.2%

Thus, the high nursing specialty vacancy rates appear to be widespread across many regions, including heavily urban Anchorage Mat-Su. Regions with high Registered Nurse vacancy rates were Northwest, 26.5%; Southwest, 16.5%; and Statewide organizations, 16.1%. The Gulf Coast rate was only 6.9%, followed by Anchorage Mat-Su, 6.7%, Interior, 4.7%, and Southeast, 4.1%.

c. Focus Area: Pharmacists and Pharmacy Assistants

Table 20 reveals very high numbers of vacancies and high vacancy rates for Pharmacist in both the full sample and statewide estimate. Fortunately, estimated vacancy rates and vacancies for Pharmacy Technician appear to be low.

Table 20. Pharmacy Occupations

Occupation	Full Sample (n=476)			Statewide Estimates					
	Positions	Vacancies	Vacancy Rate	Positions	95% Confidence Interval	Vacancies	95% Confidence Interval	Vacancy Rate	95% Confidence Interval
Pharmacist	302	73	24.2%	413	232, 593	98	36, 159	23.7%	16.0%, 31.3%
Pharmacy Technician	514	28	5.4%	493	227, 759	27	-2, 55	5.4%	1.7%, 9.1%

Approximately 43% of the estimated 98 statewide Pharmacist vacancies appeared to be concentrated in the tribal health organizations, more than in the pharmacies themselves (Figure 9). Regionally, in the full sample, the highest Pharmacy vacancy rates were found in the North/West, 60.0%; Anchorage Mat-Su, 34.1%; Southwest, 25.0%; Southeast, 25.0%; and Interior, 21.2%. The estimated urban rate was 22.7% (+/- 8.9%), and the rural rate was 25.9% (+/- 14.5%) – the small difference apparently tempered by the high Anchorage Mat-Su rate, clearly indicating that the Pharmacist shortage is a statewide phenomenon.

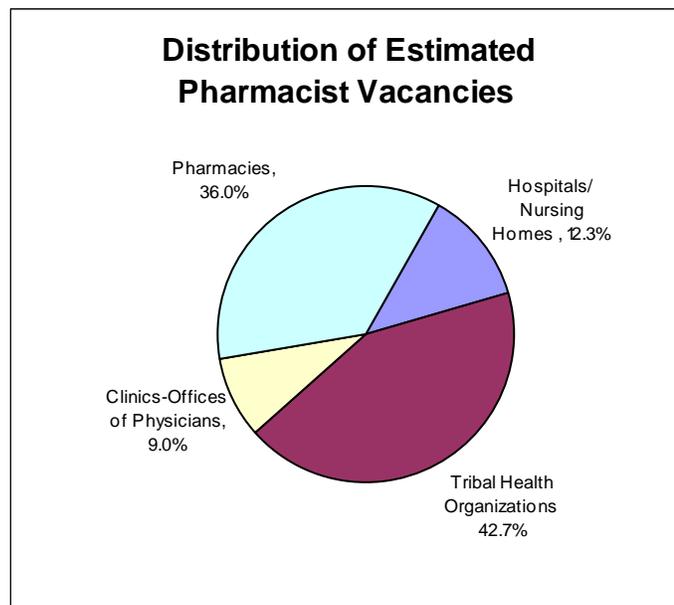


Figure 9. Distribution of Pharmacist Vacancies

Looking at respondent types (Table 21), we see that the Pharmacist shortage was most acute in the tribal health organizations, which reported a 51.4% vacancy rate. Pharmacies, in contrast, reported a 15.9% rate. The Pharmacy Tech rate was also high in the tribal health organizations – 13.8% vs. only 3.8% in the pharmacies.

Table 21. Pharmacy occupations vacancy rates by respondent type (full sample, n=476)

Occupation	Hospitals/ Nursing Homes	Tribal Health Organizations	Clinics/ Offices of Physicians	Pharmacies
Pharmacist	15.1%	51.4%	16.7%	15.9%
Pharmacy Tech	5.4%	13.8%	11.1%	3.8%

d. Focus Area: Behavioral Health

Behavioral Health occupations provide a very wide range of services to beneficiaries who include substance abusers, the disabled, at-risk youth, special needs children, the homeless, the elderly, and individuals and families with mental/behavioral health problems. Table 22 shows the large numbers of Behavioral Health positions needed to provide these comprehensive services. In fact, these occupations occupy approximately 21% of the estimated state healthcare workforce, and have approximately 29% of total estimated health occupation vacancies, exceeding even Professional Nurses.

Table 22. Behavioral health occupations

Occupation	Full Sample (n=476)			Statewide Estimates					
	Positions	Vacancies	Vacancy Rate	Positions	95% Confidence Interval	Vacancies	95% Confidence Interval	Vacancy Rate	95% Confidence Interval
Behavioral Health Aide	116	21	18.1%	116*	NA	21*	NA	18.1%*	NA
Behavioral Health Clinician	297	35	11.8%	555	216, 893	71	28, 114	12.8%	7.6%, 18.0%
Case Manager/ Care Coordinator	505	52	10.3%	1163	461, 1865	164	27, 301	14.1%	10.4%, 17.8%
Chemical Dependency Counselor	130	13	10.0%	222	92, 352	18	-1, 36	8.0%	1.4%, 14.6%
Clinical Psychologist	24	2	8.3%	44	12, 77	ND	ND	ND	ND
Human Services Worker - AA	315	51	16.2%	1198	94, 2302	209	-50, 467	17.4%	13.4%, 21.4%
Human Services Worker - HS	1253	119	9.5%	3602	-1591, 7795	488	110, 867	13.6%	11.3%, 15.8%
Licensed Marital/Family Therapist	10	1	10.0%	27	-8, 61	4	-3, 12	16.7%	-10.1%, 43.4%
Licensed Professional Counselor	49	0	0.0%	62	7, 117	0	NA	0.0%	NA
Psychiatric Aide/Technician	54	12	22.2%	ND	ND	ND	ND	ND	ND
Psychologist/ Psychological Associate	40	4	10.0%	102	40, 164	18	-6, 42	17.4%	3.7%, 31.1%
Social Worker - BSW	36	1	2.8%	44	7, 82	ND	ND	ND	ND
Social Worker - MSW	69	9	13.0%	155	63, 248	18	3, 33	11.4%	2.1%, 20.7%
Social Worker - LCSW	40	7	17.5%	120	40, 200	22	-1, 45	18.5%	5.6%, 31.5%

ND- Insufficient data *Actual NA- Confidence interval not applicable

Vacancy rates in these occupations were high across the board – only Chemical Dependency Counselor and Licensed Professional Counselor had estimated vacancy rates less than 10%. (No statewide estimates could be calculated for Clinical Psychologist, Psychiatric Aide/Technician, or Social Worker-BSW).

The greatest unmet demand was for Human Services Worker, both HS diploma and AA degree, who together totaled 697 estimated vacancies, with estimated vacancy rates of 13.6% and 17.4%, respectively. Case Manager/Care Manager was also highly in demand, with 164 estimated vacancies and an estimated 14.1% vacancy rate. Rounding out the occupations most in demand numerically was Behavioral Health Clinician, with 71 estimated vacancies and a 12.8% estimated vacancy rate.

Psychiatrist, Psychiatric Nurse Practitioner, and Psychiatric Nurse have already been discussed above – all featured very high vacancy rates, though relatively low vacancy numbers.

Behavioral Health occupations with relatively few estimated vacancies but very high estimated vacancy rates were Licensed Clinical Social Worker (22 estimated vacancies, 18.5% vacancy rate); Behavioral Health Aide, a position specific to Tribal Health Organizations (21-actual, 18.1%); Psychologist/Psychological Associate (18, 17.4%); and Licensed Marital Family Therapist (4, 16.7%).

A moderately high vacancy rate was estimated for Chemical Dependency Counselor (18, 8.0%). The very low estimated vacancy numbers for Licensed Marital Family Therapist (4) and Licensed Professional Counselor (0) could be in part attributable to a high proportion of these occupations being self-employed providers in one-person shops, which were not captured in the sampling frame or samples.

The 1033 estimated behavioral health occupation vacancies were overwhelmingly located in behavioral health organizations (76%), though tribal health organizations had 14% of all estimated vacancies (Figure 10). The overall behavioral health vacancy rate reported in the full sample was 20.2% for clinics and offices of physicians, 14.5% for tribal health organizations, 10.8% for behavioral health organizations, 7.2% for school districts and 5.8% for hospitals/ nursing homes.

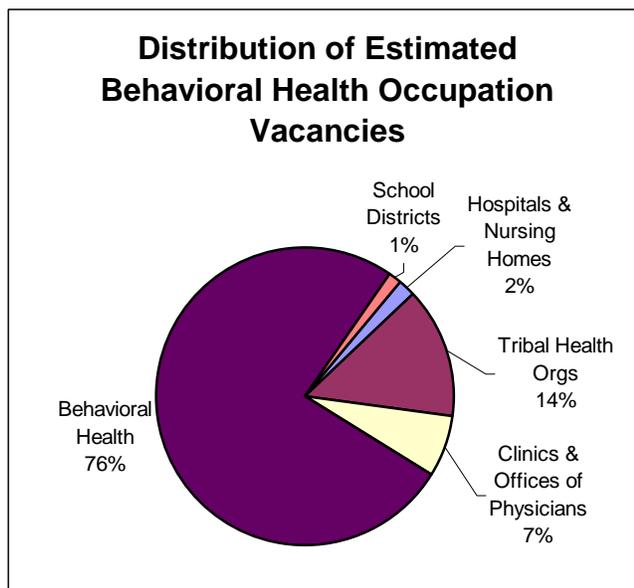


Figure 10. Distribution of behavioral health vacancies

This overall pattern masked occupation-specific estimated vacancy distributions (Figure 11).

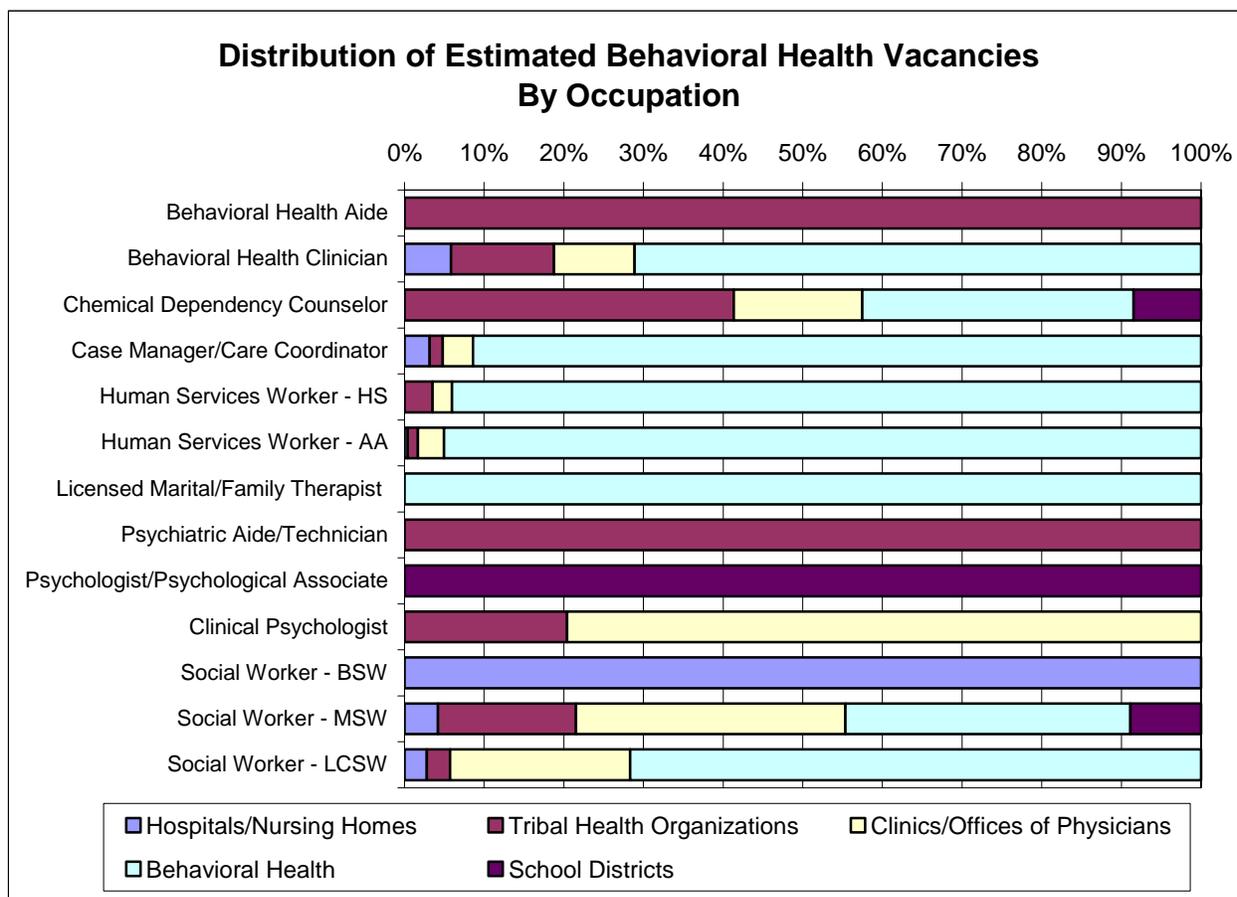


Figure 11. Occupation-specific distribution of estimated behavioral health vacancies

While the Behavioral Health Clinician, Case Manager/Care Coordinator, Human Services Worker (both HS diploma and AA degree), LMFT, and LCSW estimated vacancies were heavily concentrated in behavioral health organizations, estimated vacancies for others appeared to be concentrated in other respondent types: Chemical Dependency Counselor (42% tribal health organizations); Psychiatric Aide/Technician (100% tribal health organizations); Psychologist/Psychological Associate (100% school districts); Clinical Psychologist (78% clinics/offices of physicians, 22% tribal health organizations); BSW (100% hospitals/nursing homes); and MSW (33% clinics/offices of physicians). (Though the sub-sample lacked sufficient data to estimate accurate vacancy numbers, by weighting the full sample data we were able to estimate how vacancies would have been distributed among respondent types for Clinical Psychologist, Psychiatric Aide/Technician, and BSW).

Overall urban and rural estimated behavioral health vacancy numbers and vacancy rates were very similar: urban, 379 estimated vacancies, 10.5% rate (+/- 1.9%) and rural, 323 estimated vacancies, 11.3% rate (+/- 2.1% (Table 23).

Table 23. Urban vs. rural behavioral health occupation vacancies/vacancy rates

Occupation	Urban**			Rural**		
	Estimated Vacancies	Estimated Vacancy Rate	95% Confidence Interval	Estimated Vacancies	Estimated Vacancy Rate	95% Confidence Interval
Behavioral Health Aide	0*	0.0%*	NA	21*	20.2%*	NA
Behavioral Health Clinician	36	9.3%	3.9%, 14.7%	34	22.9%	10.6%, 35.1%
Case Manager/Care Coordinator	149	18.0%	13.1%, 23.0%	17	6.9%	1.2%, 12.6%
Chemical Dependency Counselor	18	10.5%	1.9%, 19.2%	ND	ND	ND
Clinical Psychologist	ND	ND	ND	0	0.0%	NA
Human Services Worker - AA	54	6.7%	3.4%, 9.9%	9	13.3%	-1.8%, 28.5%
Human Services Worker - HS	104	10.0%	6.6%, 13.5%	200	10.0%	7.6%, 12.4%
Licensed Marital/Family Therapist	5	16.7%	-10.1%, 43.5%	ND	ND	ND
Licensed Professional Counselor	0	0.0%	NA	0	0.0%	NA
Psychiatric Aide/Technician	ND	ND	ND	ND	ND	ND
Psychologist/Psychological Associate	5	10.0%	-6.6%, 26.6%	13	23.1%	2.9%, 43.3%
Social Worker - BSW	ND	ND	ND	0	0.0%	NA
Social Worker - MSW	5	6.7%	-4.6%, 17.9%	13	15.0%	1.2%, 28.8%
Social Worker – LCSW	5	5.3%	-3.6%, 14.2%	17	50.0%	19.2%, 80.8%
All Behavioral Health Occupations	379	10.5%	8.7%, 12.4%	323	11.3%	9.2%, 13.4%

ND- Insufficient data *Actual NA – Confidence interval not applicable

**Does not include respondents with statewide facilities not classified either urban or rural

These numbers, however, hid occupation-specific urban/rural differences. The tribal health organization-based Behavioral Health Aide vacancies were only rural, with a 20.2% actual rural vacancy rate. Distinctly higher rural vacancy rates were estimated for Behavioral Health Clinician (22.9% rural vs. 9.3% urban), Human Services Worker-AA degree (13.3% vs. 6.7%), Psychologist/Psychological Associate (23.1% vs. 10.0%), MSW (15.0% vs. 6.7%) and LCSW (50.0% vs. 5.3%).

Higher urban rates were estimated for Case Manager/Care Coordinator (6.9% rural vs. 18.0% urban). The estimated vacancy rate for Human Services Worker-HS diploma, which had by far the most numerous vacancies, was 10.0% for both urban and rural respondents, tending to equalize the overall urban/rural vacancy rate. However, these vacancies were numerically far more concentrated in the rural respondents (estimated 200 rural vacancies, 104 urban vacancies).

Overall Behavioral Health vacancy rates varied regionally: Southwest, 22.7%; North/West, 19.0%; Interior, 13.1%; Statewide organizations, 11.6%; Southeast, 11.1%; Anchorage Mat-Su, 8.3%; and Gulf Coast, 7.1%. Rates for many occupations were highest in specific regions:

- Behavioral Health Aide – Interior, 27.8%; Southwest, 25.0%; North/West, 16.7%
- Behavioral Health Clinician – Interior, 23.1%; Southwest, 17.1%; North/West, 16.0%; Southeast, 15.2%
- Chemical Dependency Counselor – Northwest, 18.2%, Interior, 14.3%
- Care Manager/Case Manager – Interior, 26.1%; Southeast, 18.1%

- Human Services Worker-HS Diploma – Southwest, 28.6%; North/West, 24.3%; Anchorage Mat-Su, 16.4%
- Human Services Worker-AA Degree – Southwest, 100.0%; Interior, 21.4%; and North/West, 18.8%
- Psychiatric Aide – Southwest, 26.7% (all reported vacancies)
- Psychologist/Psychological Associate – Southwest, 100.0%

e. Focus Area: Dental Occupations

“Dentist” includes Orthodontist and Dental/Oral Surgeon. Two other Dental occupations specific to tribal health occupations (Dental Health Aide and Dental Health Aide Therapist) will be discussed below in the context of tribal-specific occupations.

Vacancies for dentists were numerous (an estimated 71 statewide, 47 in full sample); the estimated vacancy rate was 10.3%, even higher in the full sample (14.7%) (Table 24).

Table 24. Dental occupations

Occupation	Full Sample (n=476)			Statewide Estimates					
	Positions	Vacancies	Vacancy Rate	Positions	95% Confidence Interval	Vacancies	95% Confidence Interval	Vacancy Rate	95% Confidence Interval
Dentist	319	47	14.7%	692	515, 869	71	16, 126	10.3%	6.1%, 14.4%
Dental Hygienist	264	21	8.0%	546	415, 676	31	11, 51	5.7%	2.1%, 9.3%
Dental Assistant	538	44	8.2%	1056	752, 1360	93	34, 152	8.8%	5.7%, 12.0%

These estimated dentist vacancies were primarily in dental offices and tribal health organizations (Figure 12). With a dentist vacancy rate of 42.0%, the tribal health organizations had a disproportionately large share of estimated statewide vacancies, 39%. The vacancy rate reported for dental clinics was much lower, only 6.8%. Behavioral health organizations and clinics/offices of physicians had 50.0% and 10.0% rates, respectively, though very small numbers of vacancies because they employ very few dentists.

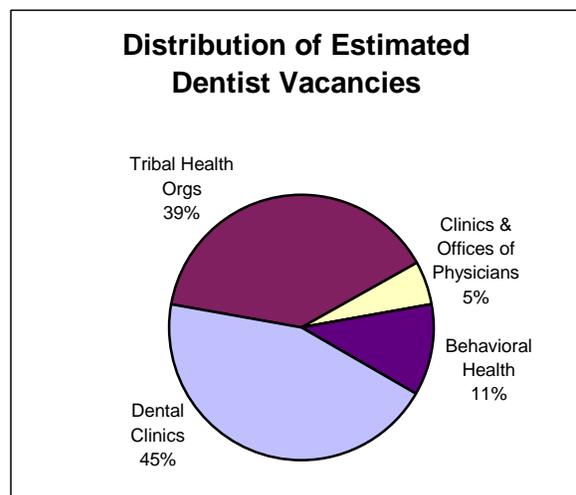


Figure 12. Distribution of dentist vacancies

The distribution of the estimated Dental Assistant and Hygienist positions were more strongly concentrated in the dental clinics (75% of estimated Hygienist vacancies and 69% of estimated Assistant vacancies), but the vacancy rates were low for dental clinics (6.9% for Hygienists and 6.1% for Assistants). The less numerous tribal health organizations reported much higher vacancy rates for these occupations (11.5% for Hygienists and 14.2% for Assistants); consequently, their share of these vacancies was substantial (7% of estimated Hygienist vacancies and 31% of estimated Assistant positions).

Table 25 shows that estimated vacancies for dental occupations were concentrated in the rural respondents; estimated rural vacancy rates were also substantially higher. This was in part due to the high estimated vacancy numbers and rates already noted above for the tribal health organizations, which are overwhelmingly rural. However, rates for Dentist and Assistant were considerably higher in rural non-tribal dental clinics than in their urban counterparts (Dentist, 3.8% urban, 16.4% rural; Assistant, 4.5% urban, 11.0% rural). Several urban dental clinics/offices reported providing regular monthly services to rural frontier communities.

Table 25. Urban vs. rural dental occupations vacancies/vacancy rates

Occupation	Urban**			Rural**		
	Estimated Vacancies	Estimated Vacancy Rate	95% Confidence Interval	Estimated Vacancies	Estimated Vacancy Rate	95% Confidence Interval
Dentist	32	7.2%	2.7%, 11.8%	38	15.3%	7.2%, 23.3%
Dental Hygienist	14	3.6%	0.1%, 7.2%	17	10.0%	1.8%, 18.2%
Dental Assistant	27	4.4%	1.4%, 7.4%	64	14.9%	8.8%, 20.9%

** Does not include respondents with statewide facilities and not classified urban or rural

Looking at the regional distribution of vacancies in the full sample, Dentist vacancy rates were highest in the North/West (28.6%), Southwest (28.6%), Southeast (18.5%) and Interior (17.0%), which is consistent with the strongly rural distribution of these vacancies. Hygienist rates were highest in the North/West (33.3%) and Interior (13.2%), and Assistant rates were highest in the North/West (22.6%) and Southwest (15.1%), also consistent with this pattern.

f. Focus Area: Therapists

This occupational group includes Physical Therapist, Occupational Therapist, Speech Therapist, Speech-Language Pathologist and the Allied Health occupation Physical Therapy Assistant. In addition to therapy clinics and offices, these occupations are employed by a broad range of respondent types, including hospitals/nursing homes, tribal health organizations, clinics/offices of physicians, and school districts (most of which, however, contract with private providers rather than hire therapists themselves).

Table 26 shows that vacancy rates, both full sample and statewide estimates, were high for all of these occupations.

Table 26. Therapy occupations

Occupation	Full Sample (n=476)			Statewide Estimates					
	Positions	Vacancies	Vacancy Rate	Positions	95% Confidence Interval	Vacancies	95% Confidence Interval	Vacancy Rate	95% Confidence Interval
Occupational Therapist	137	27	19.7%	257	154, 361	75	29, 122	29.3%	19.0%, 39.6%
Physical Therapist	271	29	10.7%	510	332, 688	84	42, 126	16.5%	10.5%, 22.5%
Speech Therapist	58	5	8.6%	142	19, 265	22	-3, 48	15.6%	4.5%, 26.7%
Speech-Language Pathologist	153	36	23.5%	266	47, 485	53	8, 99	20.0%	11.1%, 28.9%
Physical Therapy Assistant	35	11	31.4%	62	28, 96	18	3, 33	28.6%	7.6%, 49.6%

Estimated vacancy rates ranged from 15.6% for Speech Therapist to 29.3% for Occupational Therapists; full sample rates ranged from 8.6% for Speech Therapist to 31.4% for Physical Therapy Assistant. Speech-Language Pathologist rates were very high in both the full sample and the state estimate (23.5% and 20.0%, respectively). The same can be said for Occupational Therapist (19.7%, 29.3%) and Physical Therapy Assistant (31.4%, 28.6%).

Figure 13 (next page) graphs the distribution of estimated vacancies by respondent types. Physical Therapy estimated vacancies were concentrated primarily in therapy offices/clinics (42%), which reported a 10.3% vacancy rate, and in hospitals/nursing homes (22%, 9.6% vacancy rate). Occupational Therapy estimated vacancies were more widely distributed, principally among therapy offices/clinics (38%, 31.8% vacancy rate), school districts (26%, 13.2% vacancy rate), and hospitals/nursing homes (21%, 23.1% vacancy rate). Speech Therapist estimated vacancies were strongly concentrated in therapy offices/clinics (93%, 28.6% vacancy rate), while Speech-Language Pathologist estimated vacancies were concentrated in school districts (43%, 19.7% vacancy rate) and behavioral health organizations (37%, 27.3% vacancy rate). The few PT Assistant estimated vacancies were concentrated in therapy offices/clinics (47%, 30.0% vacancy rate), hospitals/nursing homes (28%, 40.0% vacancy rate), and clinics/offices of physicians (20%, 14.3% vacancy rate). Note that all respondent types reported double digit vacancy rates for all of these occupations.

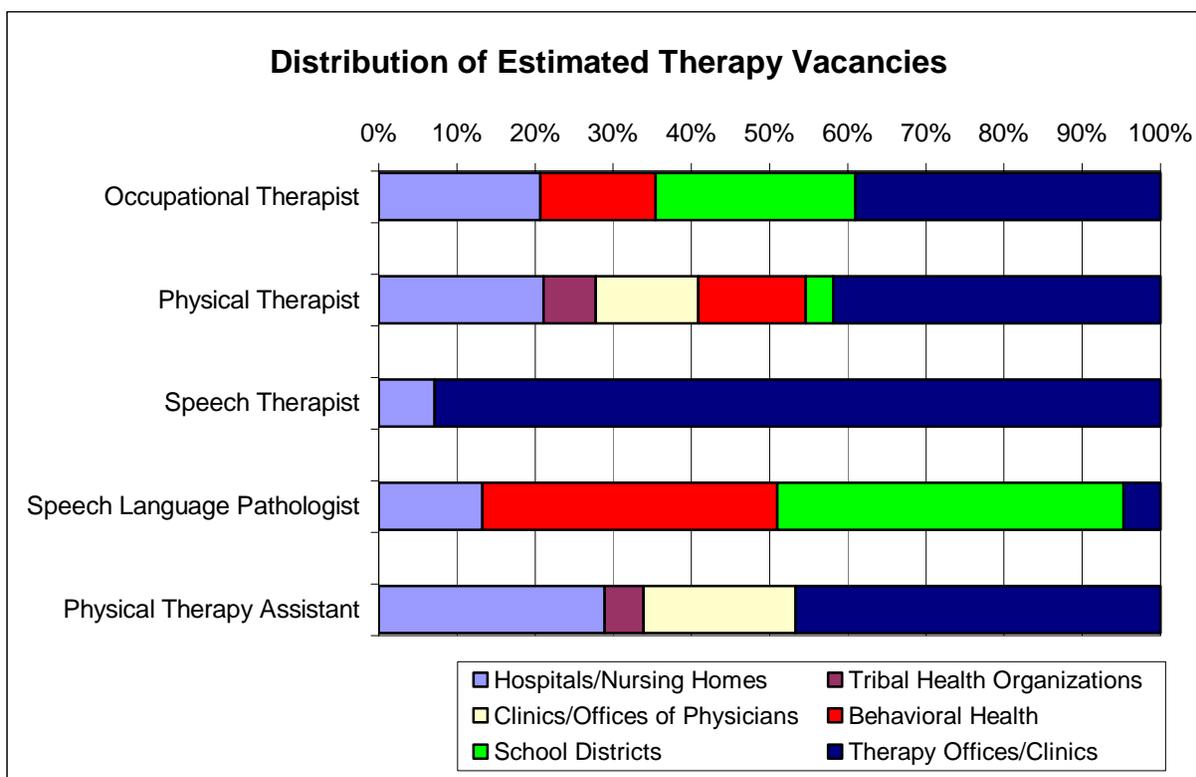


Figure 13. Distribution of Therapy vacancies

Looking at the urban/rural breakdown, Table 27 shows the rural respondents with considerably higher estimated vacancy rates for all Therapy occupations, with the exception of Occupational Therapist. Though the estimated vacancies were numerically high in urban locations, this distinction was blurred by many urban therapy clinics/offices reporting that they provided regular services to rural frontier communities.

Table 27. Urban vs. rural Therapy vacancies/vacancy rates.

Occupation	Urban**			Rural**		
	Estimated Vacancies	Estimated Vacancy Rate	95% Confidence Interval	Estimated Vacancies	Estimated Vacancy Rate	95% Confidence Interval
Occupational Therapist	68	32.6%	20.6%, 44.6%	9	16.7%	-2.0%, 35.3%
Physical Therapist	59	13.5%	7.5%, 19.6%	26	31.6%	13.2%, 50.0%
Speech Therapist	18	14.8%	2.9%, 26.7%	4	20.0%	-11.4%, 51.4%
Speech-Language Pathologist	32	16.3%	6.5%, 26.0%	21	29.4%	10.3%, 48.5%
Physical Therapy Assistant	9	22.2%	-2.0%, 46.5%	9	40.0%	1.5%, 78.5%

**Does not include respondents with statewide facilities not classified either urban or rural

Regional comparisons were difficult with this occupational group because some predominantly rural regions reported few, if any, positions for some or all of these occupations. But for those regions reporting at least 10 positions, the following regionally high rates of at least 10% were noted, particularly for the Interior region:

- Occupational Therapist: Interior, 47.4%; Statewide organizations, 23.1%; Southeast, 16.7%; Anchorage Mat-Su, 11.9%; Gulf Coast, 10.0%
- Physical Therapist: Gulf Coast, 22.2%; Southeast, 16.7%; Interior, 13.8%; Anchorage Mat-Su, 10.5%
- Speech Therapist: Interior, 25.0%
- Speech Language Pathologist: Statewide organizations, 66.7%; Anchorage Mat-Su, 22.4%; Interior, 14.3%

g. Focus Area: Physician Assistant (PA)

The Physician Assistant is a unique health occupation that does not fit neatly into traditional health occupation categories but which, like Nurse Practitioner, is a critical midlevel primary care provider. Alaska boasts the highest PA to population ratio of all the states.¹⁴ Table 28 appears to confirm this, with 515 estimated positions and 207 in the full sample alone.

Table 28. Physician Assistant

Occupation	Full Sample (n=476)			Statewide Estimates					
	Positions	Vacancies	Vacancy Rate	Positions	95% Confidence Interval	Vacancies	95% Confidence Interval	Vacancy Rate	95% Confidence Interval
Physician Assistant (PA)	207	32	15.5%	515	344, 685	98	53, 143	19.0%	12.7%, 25.3%

The vacancy rates (both full-sample and state estimate) were high, as were the number of vacancies. Figure 14 shows that the vacancies were concentrated in clinics/offices of physicians (83%) – the primary employer of PAs – and in tribal health organizations (17%). Vacancy rates in both respondent types were high, with clinics/offices of physicians reporting an 18.9% vacancy rate, and the tribal health organizations reporting a 13.5% rate. Hospitals/nursing homes and behavioral health organizations employ a few PAs but reported no vacancies (0% vacancy rates).

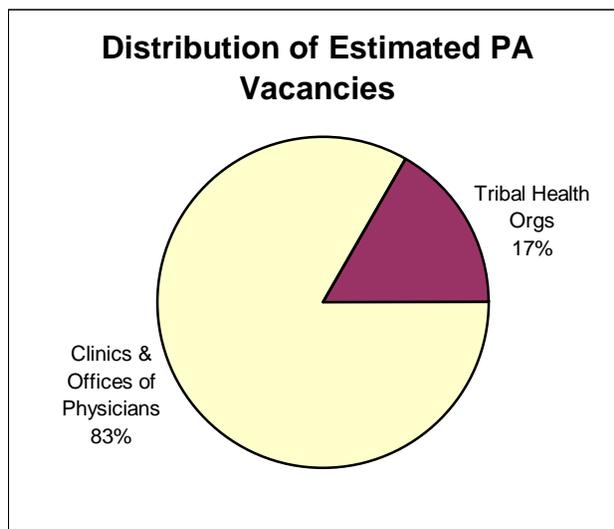


Figure 14. Distribution of PA vacancies

The estimated vacancies were disproportionately rural, with 47 estimated rural vacancies resulting in an estimated 26.8% rural vacancy rate. There were 50 estimated urban vacancies, with a 14.7% estimated urban vacancy rate (Table 29). Rural clinics/offices of physicians reported a much higher PA vacancy rate than their urban counterparts (30.4% rural, 15.7% urban).

Table 29. Urban vs. rural PA vacancies

Occupation	Urban**			Rural**		
	Estimated Vacancies	Estimated Vacancy Rate	95% Confidence Interval	Estimated Vacancies	Estimated Vacancy Rate	95% Confidence Interval
Physician Assistant	50	14.7%	7.6%, 21.7%	47	26.8%	18.6%, 35.1%

Regionally, PA vacancy rates varied widely: North/West, 38.9%; Interior, 24.0%; Southeast, 14.3%; Southwest, 12.2%; Gulf Coast, 8.3%; Anchorage Mat-Su, 7.9%; and Statewide organizations, 0.0%. This regional distribution conforms to the rural concentration of PA vacancies noted above.

h. Focus Area: Licensed Practical Nurse and Certified Nursing Assistant

These are health occupations that also don't fit neatly into traditional health occupation categories and which are critical to the healthcare workforce. Licensed Practical Nurse (LPN) is a key primary as well as secondary/tertiary care provider, and Certified Nursing Assistant (CNA) is a key secondary/tertiary care provider.

As already noted above (Table 9), these were among the most numerous healthcare occupations in terms of both positions and vacancies (Table 30). Unfortunately, no statewide estimates could be generated for CNA because the sampling frame and samples did not capture this occupation well. However, the full sample provided a census of their main employers (hospitals/nursing homes), and so the full-sample data could be used as a reasonable indicator of the statewide situation for this occupation.

Table 30. LPN and CNA vacancies/vacancy rates

Occupation	Full Sample (n=476)			Statewide Estimates					
	Positions	Vacancies	Vacancy Rate	Positions	95% Confidence Interval	Vacancies	95% Confidence Interval	Vacancy Rate	95% Confidence Interval
LPN	366	34	9.3%	435	300, 570	44	12, 77	10.2%	4.9%, 15.5%
CNA	1052	71	6.7%	ND	ND	ND	ND	ND	ND

ND – Insufficient data in adjusted sub-sample for accurate estimates

The vacancy rate for LPN was fairly high, with 9.3% in the full sample and 10.2% for the statewide estimate. The CNA full-sample vacancy rate was lower (6.7%), though the vacancies were more numerous (71). The distribution of the vacancies is graphed in Figure 15.

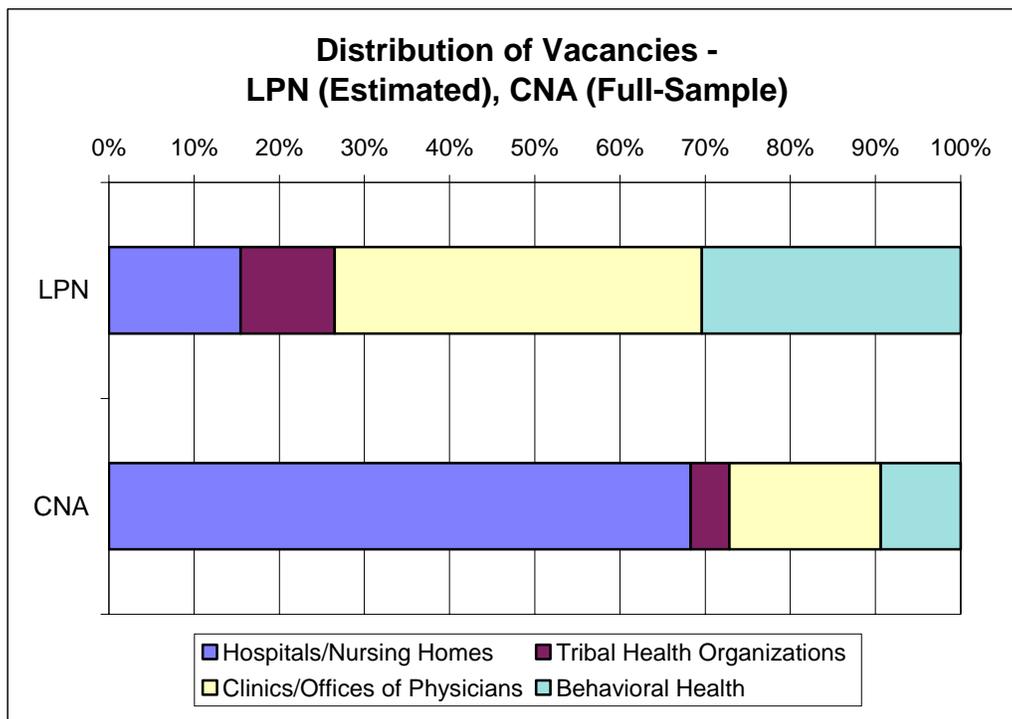


Figure 15. Distribution of LPN and CNA vacancies

The estimated LPN vacancies were concentrated in clinics/offices of physicians (42%), behavioral health organizations (25%), and hospitals/nursing homes (15%). CNA vacancies were concentrated in hospitals/nursing homes (68%), their primary employer.

Vacancy rates for LPN and CNA varied among respondent types in the full sample (Table 31), and were highest for LPNs among the behavioral health organizations (23.1%, though few in number – only 3 vacancies reported in the full sample) and tribal health organizations (16.4%). Clinics/offices of physicians, the primary LPN employer, reported a 9.5% rate. CNA rates were highest among the tribal health organizations (10.3%, though few in number – only 4 vacancies reported).

Table 31. LPN/CNA vacancy rates by respondent type – full sample (n=476)

Occupation	Hospitals & Nursing Homes	Tribal Health Organizations	Clinics & Offices of Physicians	Behavioral Health
Licensed Practical Nurse	6.4%	16.4%	9.5%	23.1%
Certified Nursing Assistant	6.6%	10.3%	7.1%	7.1%

Estimated LPN vacancies seemed to be more acute among the rural respondents than among the urban respondents (Table 32). Little urban/rural difference in vacancy rate was noted in the full sample for the CNAs, but vacancies were far more numerous in the urban respondents, primarily in urban hospitals/nursing homes.

Table 32. Urban vs. rural LPN/CNA vacancies/vacancy rates

Occupation	Urban**			Rural**		
	Estimated Vacancies	Estimated Vacancy Rate	95% Confidence Interval	Estimated Vacancies	Estimated Vacancy Rate	95% Confidence Interval
LPN	27	9.1%	3.0%, 15.2%	17	15.4%	3.2%, 27.6%
	Vacancies*	Rate*		Vacancies*	Rate*	
CNA	57	6.8%	NA	14	6.5%	NA

*Full sample data ** Does not include respondents with statewide facilities not classified urban or rural
NA – Confidence interval not applicable

Regionally, reported full-sample LPN and CNA vacancy rates were highly variable:

- LPN – North/West, 25.0%; Southwest, 20.0%; Gulf Coast, 12.5%; Statewide organizations, 11.2%; Anchorage Mat-Su, 9.3%; Interior, 1.6%; Southeast, 0.0%
- CNA – Southwest, 33.3%; North/West, 12.5%; Statewide organizations, 8.4%; Interior, 8.1%; Gulf Coast, 4.0%; Southeast, 3.0%; Anchorage Mat-Su, 2.8%

The highest regional rates for these two occupations in the full sample were reported by the North/West and Southwest respondents, all rural, consistent with the high rural LPN rate noted above.

i. Focus Area: Tribal Health Organization-Specific Occupations

Many occupations are specific to tribal health organizations (THOs), a product of the unique history, culture, and political status of Native Alaskan communities. Table 33 presents the vacancy data for these occupations. A full census was achieved for these occupations in the full sample, so statewide estimates are not applicable.

By far, the most numerous specifically tribal health-organization occupation was the CHA/P, with 552 positions and 100 vacancies reported, yielding an 18.1% vacancy rate. (Note: 27 of these positions and 13 vacancies were reported by a borough that employs CHAP/S in lieu of the local THO). High vacancy rates, though much smaller vacancy numbers, were reported for Community Health Representative (7 vacancies, 17.1% vacancy rate), Behavioral Health Aide (21, 18.9%), and Village Health Educator (3, 30%). Dental Health Aide and Dental Health Aide Therapist are newly created positions analogous to CHA/Ps, but specifically for dental health; several THOs are in the process of training new candidates for these positions.

Table 33. Tribal health organization-specific occupations

Occupation	Full Sample (n=476)		
	Positions	Vacancies	Vacancy Rate
Behavioral Health Aide	111*	21*	18.9%
Community Health Aide/Practitioner (CHA/P)	552**	100**	18.1%
Community Health Representative	41	7	17.1%
Dental Health Aide	47	34	72.3%
Dental Health Aide Therapist	18	5	27.8%
Village Health Educator	10	3	30.0%

*Hospitals/nursing homes and school districts reported 5 additional positions, 0 additional vacancies

** A borough reported 27 of these positions and 13 vacancies

Figure 16 graphs the regional distribution of these vacancies.

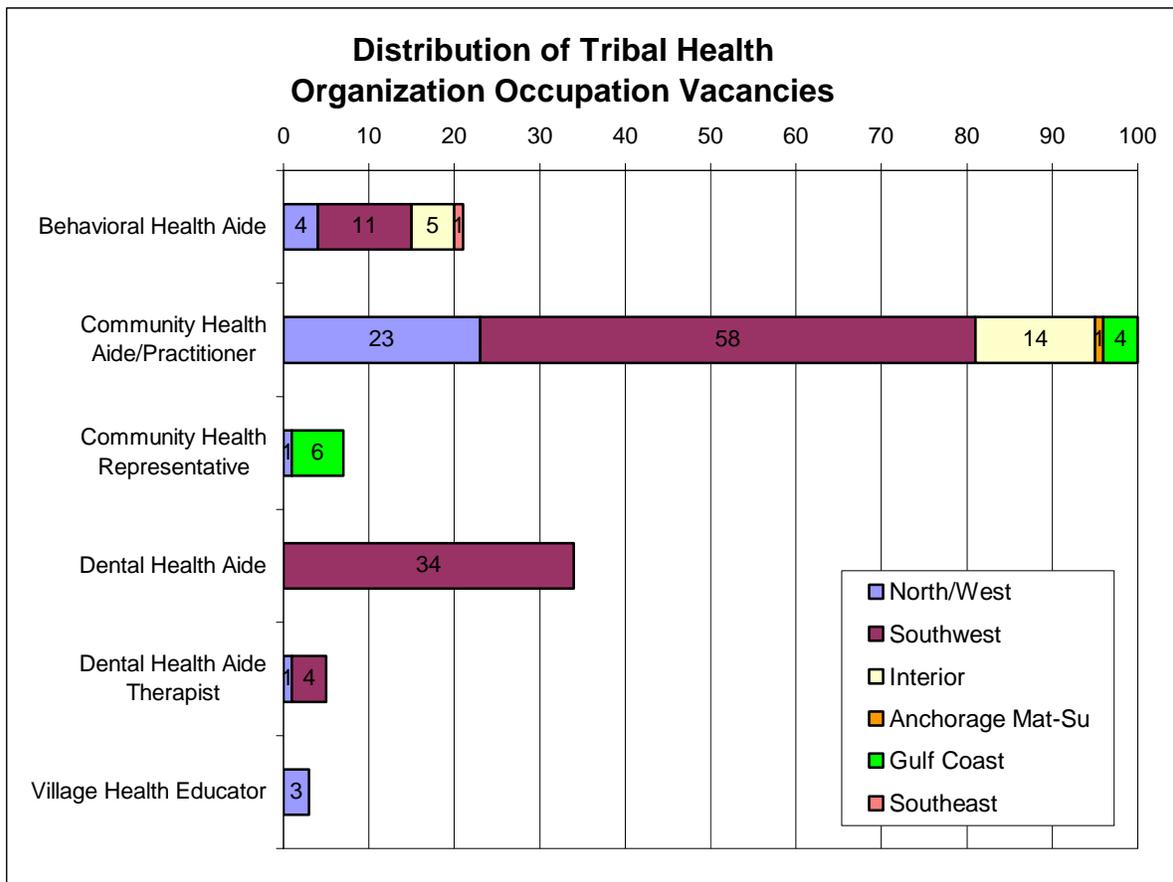


Figure 16. Regional distribution of tribal health organization-specific occupation vacancies

The majority of CHA/P vacancies (58) were reported by Southwest respondents. The remainder were reported primarily by North/West (23) and Interior (14). The majority of Behavioral Health Aide vacancies (11) were also reported by Southwest, and the remainder by Interior (5), North/West (4) and Southeast (1). Community Health Representative (CHR) vacancies were reported primarily by Gulf Coast THOs (6), who also reported the large majority of CHR

positions. The new Dental Health Aide vacancies (34) were reported exclusively by Southwest THOs. The Dental Health Aide Therapist vacancies were reported by Southeast (4) and North/West (1). Village Health Educator vacancies (3) were reported exclusively by North/West THOs.

Overall, the Southwest reported 107 vacancies for these positions – 62.9% of the total 170 vacancies. North/West followed with 32 vacancies (18.8%); Interior, 19 (11.2%); Gulf Coast, 10 (5.9%); Southeast, 1 (0.6%); and Anchorage Mat-Su, 1 (0.6%).

These vacancies were overwhelmingly rural in location, as the THOs are primarily rural (Table 34). As noted above, these rural vacancies were substantially concentrated in the Southwest THOs, and to a lesser extent in the North/West, Interior, and Gulf Coast THOs.

Table 34. Urban vs. rural tribal health organization occupation vacancies

Occupation	Urban		Rural	
	Vacancies	Vacancy Rate	Vacancies	Vacancy Rate
Behavioral Health Aide	0	0.0%	21	20.2%
Community Health Aide/Practitioner (CHAP)	13	25.5%	87	17.4%
Community Health Representative	NP	NP	7	17.1%
Dental Health Aide	NP	NP	34	72.3%
Dental Health Aide Therapist	0	0.0%	5	29.4%
Village Health Educator	NP	NP	3	30.0%

NP – No positions or vacancies

j. Focus Area: Allied Health

Allied Health occupations are too numerous to address in detail in the context of this report, which will focus on six key Allied Health occupations not already discussed: Medical Assistant, Medical Lab Assistant, Medical Technologist, Radiologic Technician, Respiratory Therapist, and Sonographer (Table 35, next page). The Allied Health occupations already discussed above are Dental Assistant, Dental Hygienist, Dental Health Aide/Therapist, Pharmacy Technician, and Physical Therapy Assistant.

Except for Sonographer, vacancy rates were low to moderately high for these occupations, between 4.2% and 12.6% in the full sample and between 6.0% and 9.3% for the statewide estimates. Outside of Medical Assistant, with 102 estimated statewide vacancies, estimated vacancies were relatively low in number. Though there was insufficient data for calculating usable statewide estimates for Respiratory Therapist, a near-census of respondents who employ this occupation was achieved for the full sample, and so this data should be representative of the state. The full sample Sonographer vacancy rate was high, 18.9%, with 10 reported vacancies. Though qualitative data presented below anecdotally confirms this high rate, statewide vacancies and rates for Sonographer would have to be estimated with further study.

Table 35. Allied Health vacancies and vacancy rates

Occupation	Full Sample (n=476)			Statewide Estimates					
	Positions	Vacancies	Vacancy Rate	Positions	95% Confidence Interval	Vacancies	95% Confidence Interval	Vacancy Rate	95% Confidence Interval
Medical Assistant	367	38	10.4%	1092	722, 1461	102	53, 151	9.3%	6.1%, 12.6%
Medical Lab Technician	93	8	8.6%	146	68, 225	9	-6, 24	6.1%	-1.1%, 13.3%
Medical Technologist	202	21	10.4%	288	110, 467	22	-5, 50	7.7%	2.0%, 13.4%
Radiologic Technician	236	10	4.2%	373	172, 573	22	-3, 48	6.0%	1.5%, 10.4%
Respiratory Therapist	111	14	12.6%	ND	ND	ND	ND	ND	ND
Sonographer	53	10	18.9%	ND	ND	ND	ND	ND	ND

ND – Insufficient data

The distribution of estimated vacancies among respondent types was highly occupation-specific (Figure 17).

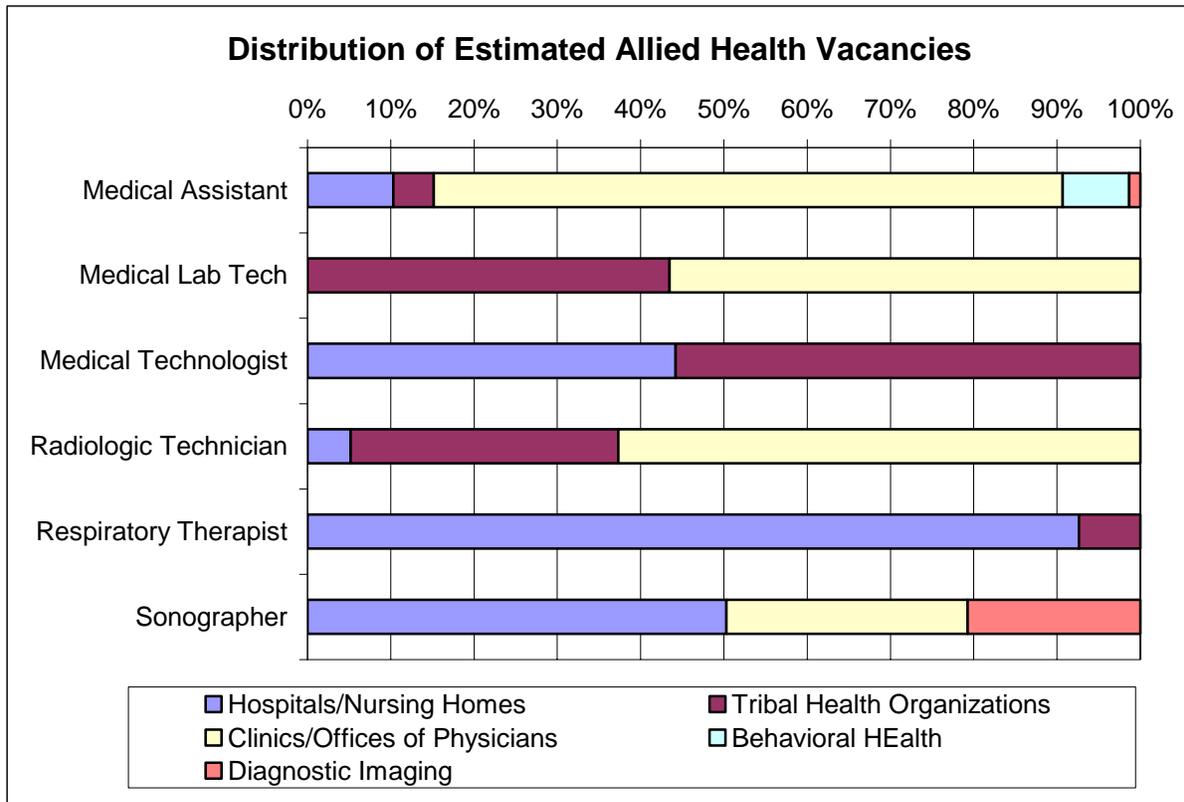


Figure 17. Distribution of Allied Health Vacancies

Medical Assistants were largely employed by clinics/offices of physicians, with 76% of the estimated vacancies (8.7% vacancy rate). Though far fewer Medical Assistant vacancies were found in hospitals/nursing homes (11%), these organizations reported a vacancy rate of 57.1%.

Estimated vacancies for Medical Lab Technicians were primarily in clinics/offices of physicians (56%) and tribal health organizations (44%). The former reported a 7.7% vacancy rate, and the latter a 30.0% rate. Hospitals/nursing homes reported many positions but no vacancies (0.0% rate).

Medical Technologist estimated vacancies were concentrated in the tribal health organizations (56%) who reported a 33.3% vacancy rate, and in the hospitals/nursing homes (44%) who reported a 6.4% vacancy rate.

The majority of estimated Radiologic Technician (Rad Techs) vacancies were found in clinics/offices of physicians (64%), which reported a 6.3% vacancy rate. Thirty-one percent (31%) were found in tribal health organizations, which reported a higher 13.0% vacancy rate. Although a very large number of Rad Tech positions were found in hospitals/nursing homes, their Rad Tech vacancy rate was very low (0.9%), and thus only 5% of estimated vacancies were found there.

Respiratory Therapists vacancies were primarily in hospitals/nursing homes; they reported a 12.9% vacancy rate, accounting for 93% of estimated vacancies. The remaining 7% were reported by tribal health organizations, with a 10.0% vacancy rate.

Finally, Sonographer vacancies were divided among hospitals/nursing homes (51% of vacancies, 25.9% vacancy rate); clinics/offices of physicians (27% of vacancies, 11.1% vacancy rate); and diagnostic imaging offices/centers (22% of vacancies, 20.0% vacancy rate).

Urban estimated vacancies were more numerous than rural due to Medical Assistant estimated vacancies being overwhelmingly urban (Table 36). Unfortunately, there was insufficient data to generate urban vs. rural comparisons for four of these occupations.

Table 36. Urban vs. rural Allied Health vacancies/vacancy rates

Occupation	Urban**			Rural**		
	Estimated Vacancies	Estimated Vacancy Rate	95% Confidence Interval	Estimated Vacancies	Estimated Vacancy Rate	95% Confidence Interval
Medical Assistant	95	9.7%	6.2%, 13.2%	9	6.7%	-1.2%, 14.5%
Medical Lab Technician	9	8.3%	-1.5%, 18.1%	ND	ND	ND
Medical Technologist	14	5.3%	0.1%, 10.4%	ND	ND	ND
Radiologic Technician	14	4.2%	0.1%, 8.4%	9	15.4%	-1.9%, 32.7%
Respiratory Therapist	ND	ND	ND	ND	ND	ND
Sonographer	ND	ND	ND	ND	ND	ND

ND - Insufficient data **Does not include respondents with statewide facilities not classified either urban or rural

Rad Tech vacancy rates were far higher in the rural respondents, consistent with the high vacancy rates reported for these occupations by the predominantly rural tribal health organizations and the far higher vacancy rate reported by rural clinics/offices of physicians (33.3%) compared to that reported by their urban counterparts (0.0%). Medical Assistant vacancy rates, however, were higher among urban respondents and estimated vacancies were overwhelmingly urban, concentrated in urban clinics/offices of physicians.

These occupations varied widely in their regional pattern of vacancy rates. Regions with rates of at least 10% for each occupation are listed below:

- Medical Assistant – Statewide organizations, 68.8%; Interior, 17.9%; Southwest, 16.7%
- Medical Lab Technician – North/West, 100.0%; Anchorage Mat-Su, 10.3%
- Medical Technologist – North/West, 25.0%; Southwest, 20.0%; Anchorage Mat-Su, 12.5%; Southeast, 11.1%
- Rad Tech – Southwest, 20.0%
- Respiratory Therapist – Interior, 18.8%; Statewide organizations, 15.5%; Anchorage Mat-Su, 10.0%; Gulf Coast, 10.0%
- Sonographer – Interior, 66.7%; Statewide organizations, 27.3%, Southeast, 25.0%

Note that high rates were reported for the predominantly urban Anchorage Mat-Su region for Medical Lab Technician, Medical Technologist, and Respiratory Therapist.

k. Focus Area: Health Educator

Health Educators are not numerous but play an important role in prevention efforts. They are thinly distributed across the state, primarily in tribal health organizations, hospitals/nursing homes, and clinics/offices of physicians. There were few vacancies (and positions) in both the full sample and the statewide estimate, but moderately high vacancy rates (11.5% full sample, 12.5% statewide estimate) (Table 37).

Table 37. Health Educator

Occupation	Full Sample (n=476)			Statewide Estimates					
	Positions	Vacancies	Vacancy Rate	Positions	95% Confidence Interval	Vacancies	95% Confidence Interval	Vacancy Rate	95% Confidence Interval
Health Educator	26	3	11.5%	36	11, 60	4	-3, 12	12.5%	-8.0%, 33.0%

The few estimated vacancies were primarily in tribal health organizations (Figure 18), which reported a 12.5% vacancy rate. The rest were in hospitals/nursing homes, which reported a higher 16.7% vacancy rate. Clinics/offices of physicians had a few health educator positions but reported no vacancies (0.0% vacancy rate).

Insufficient data did not permit urban/rural statewide estimates, but in the full sample, which appeared to incorporate around three-quarters of total estimated positions and vacancies, 2 of the 3 vacancies were urban, with an 18.2% urban rate and a 7.6% rural rate.

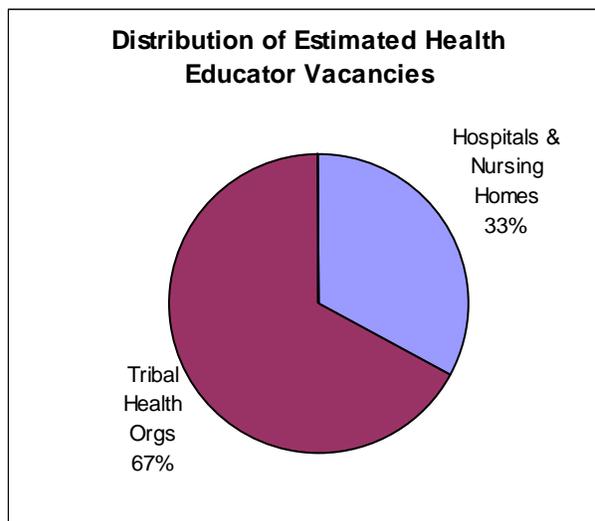


Figure 18. Distribution of Health Educator vacancies

Regional vacancy estimates are not statistically meaningful due to very low numbers. The 3 reported vacancies were in Gulf Coast (33.3% rate), Anchorage Mat-Su (20.0%), and in Statewide organizations (20.0%).

I. Focus Area: Managers

This report will focus on seven key managerial occupations that are specific to healthcare: Behavioral Health Supervisor, Clinical Department Manager, Health Information Administrator/Director/Manager, Medical Director, Nurse Executive/ Director of Nursing, Nurse Manager, and Practice Manager. Not discussed here are non-healthcare-specific (“generic”) managerial occupations (i.e., those not employed exclusively by healthcare-providing organizations, such as CEO, CFO, Office Manager, or Business Manager).

Though full sample and estimated vacancy numbers were generally low for these seven, vacancy rates were moderately high (Table 38). This was in marked contrast to the reported and estimated vacancy rates for most “generic” managerial occupations included in this study, such as Administrative Department Manager (2.1% full sample, 2.6% statewide estimate), Business Manager (2.2%, 2.4%), and CEO (3.3%, 4.7%). Exception: CIO (15.4% estimated rate).

The highest numbers of estimated vacancies were for Clinical Department Manager (40), Behavioral Health Supervisor (22), and Medical Director (18). The highest estimated vacancy rates were for Practice Manager (18.2%), Medical Director (14.8%), and Behavioral Health Supervisor (12.5%). Insufficient data did not permit statewide vacancy estimates for Nurse Executive/Nursing Director. However, the full sample included a full census of their primary employer, hospitals/nursing homes, and so may provide a good indication of the statewide situation (i.e., few vacancies and a low vacancy rate around 4%).

Table 38. Managerial occupations

Occupation	Full Sample (n=476)			Statewide Estimates					
	Positions	Vacancies	Vacancy Rate	Positions	95% Confidence Interval	Vacancies	95% Confidence Interval	Vacancy Rate	95% Confidence Interval
Behavioral Health Supervisor	82	13	15.9%	178	80, 275	22	5, 39	12.5%	3.5%, 21.5%
Clinical Department Manager	243	10	4.1%	422	217, 626	40	15, 65	9.5%	4.3%, 14.7%
Health Information Administrator/ Manager	40	5	12.5%	75	43, 108	9	-2, 20	11.8%	-1.8%, 25.3%
Medical Director	49	6	12.2%	120	82, 158	18	3, 33	14.8%	3.0%, 26.7%
Nurse Executive/ Director of Nursing	48	2	4.2%	62	34, 90	ND	ND	ND	ND
Nurse Manager	114	12	10.5%	173	51, 295	13	0, 27	7.7%	0.3%, 15.1%
Practice Manager	14	2	14.3%	49	24, 74	9	-2, 20	18.2%	-2.1%, 38.5%

The distribution of estimated vacancies among respondent types was highly variable (Figure 19). Behavioral Health Supervisor estimated vacancies were heavily concentrated, unsurprisingly, in behavioral health organizations (72%), who reported a 10.0% vacancy rate. Though tribal health organizations and hospitals/nursing homes had smaller shares of estimated vacancies (14% each), they reported much higher vacancy rates (17.9% and 25.0%, respectively).

Clinical Department Manager estimated vacancies were distributed among many respondent types, particularly behavioral health organizations (37%, 5.0% vacancy rate); clinics/offices of physicians (16%, 8.3% vacancy rate); therapy clinics/offices (14%, 25.0% vacancy rate); and tribal health organizations (14%, 5.2% vacancy rate).

Estimated vacancies for Health Information Manager were concentrated in behavioral health organizations (65%, 25.0% vacancy rate); tribal health organizations (24%, 21.4% vacancy rate); and pharmacies (11%, 100.0% vacancy rate). Hospitals/nursing homes and clinics/offices of physicians reported no vacancies (0.0% rate).

Medical Director estimated vacancies were distributed among three respondent types: behavioral health organizations (52%, 25.0% vacancy rate); tribal health organizations (25%, 20.0% vacancy rate); and clinics/offices of physicians (23%, 5.6% vacancy rate).

Nurse Executive/Director of Nursing vacancies were reported only by hospitals/nursing homes (7.7% vacancy rate). Tribal health organizations and clinics/offices of physicians reported positions but no vacancies (0.0% rate).

Estimated Nurse Manager vacancies were distributed primarily among clinics/offices of physicians (50%, 15.4% vacancy rate); behavioral health organizations (27%, 25.0% vacancy rate); and hospitals/nursing homes (18%, 10.3% vacancy rate).

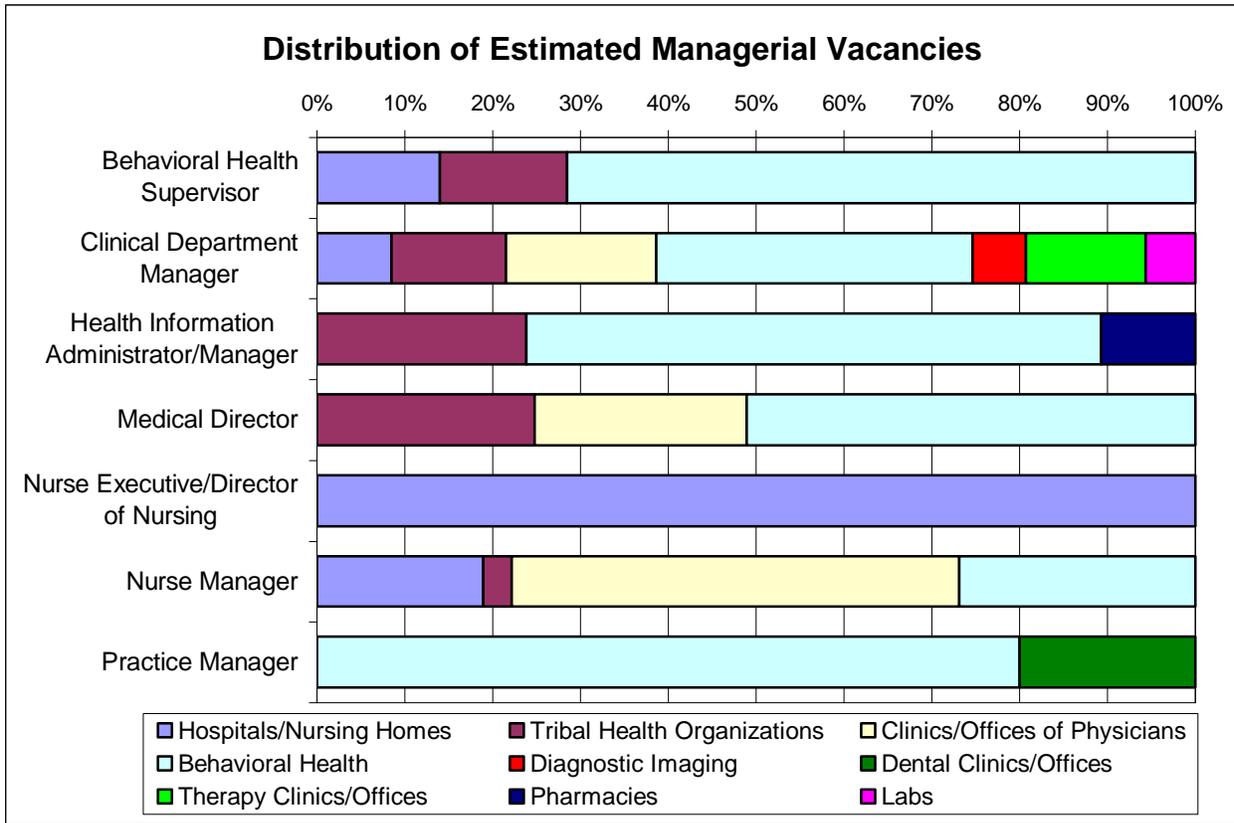


Figure 19. Distribution of managerial vacancies

Finally, the few estimated Practice Manager vacancies were concentrated among the behavioral health organizations (80%, 100% reported vacancy rate) and dental offices/clinics (20%, 50% vacancy rate). Clinics/office of physicians and hospitals/nursing homes reported 0.0% rates, and tribal health organizations reported no positions.

Overall, behavioral health organizations appeared to have the most acute overall unmet need for these occupations in terms of both numbers and vacancy rates.

These occupations varied in their urban/rural distribution of estimated vacancies (Table 39). With the exception of Nurse Manager, estimated vacancy numbers were higher among urban respondents. Estimated urban vacancy rates were higher than rural rates for Behavioral Health Supervisor, Health Information Manager, and Practice Manager. Estimated rural vacancy rates were higher for Clinical Department Manager, Medical Director, and Nurse Manager.

Table 39. Urban/rural distribution of managerial occupation vacancies/vacancy rates

Occupation	Urban**			Rural**		
	Estimated Vacancies	Estimated Vacancy Rate	95% Confidence Interval	Estimated Vacancies	Estimated Vacancy Rate	95% Confidence Interval
Behavioral Health Supervisor	18	14.3%	2.8%, 25.8%	4	10.0%	-6.5%, 26.5%
Clinical Department Manager	32	8.8%	3.3%, 14.2%	9	13.3%	-1.8%, 28.5%
Health Information Administrator/ Manager	5	12.5%	-8.0%, 33.0%	4	11.1%	-7.1%, 29.3%
Medical Director	9	12.5%	-1.9%, 26.9%	9	20.0%	-1.9%, 41.9%
Nurse Executive/ Director of Nursing	ND	ND	ND	ND	ND	ND
Nurse Manager	5	3.7%	-2.6%, 10.0%	9	18.2%	-2.0%, 38.3%
Practice Manager	9	20.0%	-2.1%, 42.1%	0	0.0%	NA

ND - Insufficient data for estimate NA – confidence interval not applicable

**Does not include respondents with statewide facilities not classified either urban or rural

Regionally high vacancy rates (though low vacancy numbers) were noted:

- Behavioral Health Supervisor – Southeast, 37.5%; North/West, 27.3%; Anchorage Mat-Su, 16.7%; Interior, 14.3%; Statewide organizations, 14.3%
- Clinical Department Manager – North/West, 25.0%; Southeast, 13.6%
- Health Information Manager – Southwest, 40.0%; Southeast, 33.3%
- Medical Director – Gulf Coast, 66.7%; North/West, 33.3%
- Nurse Executive/Director of Nursing – Southeast, 12.5%
- Nurse Manager – Southeast, 17.6%; Gulf Coast, 16.7%
- Practice Manager – Anchorage Mat-Su, 22.2% (all reported vacancies)

Though overall managerial vacancies were relatively small in number, a disproportionate share of them were concentrated in the North/West (13.8% rate) and Southeast (11.7%) regions. Anchorage Mat-Su was also a locus of high rates for Behavioral Health Supervisor, Practice Manager, Nurse Manager (10.3%) and Medical Director (10.0%).

m. Focus Area: Coding, Billing, and Health Information Occupations

These include a wide range of “front office” and “back office” occupations performing ancillary non-medical services necessary for healthcare organization functioning. The occupations of focus here are specifically involved in coding, billing, and health information processing. Some may have overlapping job functions and skills (e.g., Billing Clerk/Technician and Billing Specialist), while others combine dual sets of skills (e.g., Billing/Coding Clerk).

Vacancy numbers and rates were generally low for these occupations in both the full sample and the statewide estimates (Table 40). Vacancy rates were around 5.0% or less for both the full sample and the state estimate for Billing Specialist (5.0% full sample, 4.5% estimate), Billing Supervisor (2.4%, 3.8%), Billing/Coding Clerk (3.7%, 3.0%), and Transcriptionist (5.2%, 4.8%). Only two, Certified Coder and Coding Specialist, had estimated state vacancy rates over 10% (10.6% and 11.1%, respectively), and only Medical Records File Clerk had high estimated

numbers of vacancies (49), though moderate estimated vacancy rates (8.9% full sample, 8.8% state estimate). Only three others had more than 20 estimated vacancies: Billing Specialist (27), Certified Coder (22) and Medical Records Technician (22).

Table 40. Coding, billing, and health information occupations

Occupation	Full Sample (n=476)			Statewide Estimates					
	Positions	Vacancies	Vacancy Rate	Positions	95% Confidence Interval	Vacancies	95% Confidence Interval	Vacancy Rate	95% Confidence Interval
Billing Clerk/Technician	134	13	9.7%	359	235, 483	22	9, 35	6.2%	1.6%, 10.8%
Billing Specialist	242	12	5.0%	595	408, 781	27	0, 53	4.5%	1.4%, 7.6%
Billing Supervisor	42	1	2.4%	115	76, 154	4	-3, 12	3.8%	-2.7%, 10.4%
Billing/Coding Clerk	218	8	3.7%	599	473, 725	18	-1, 36	3.0%	0.4%, 5.5%
Certified Coder	85	6	7.1%	209	115, 302	22	2, 42	10.6%	2.9%, 18.4%
Coding Clerk/Technician	48	2	4.2%	67	30, 103	4	-3, 12	6.7%	-4.5%, 17.9%
Coding Specialist	15	1	6.7%	40	5, 75	4	-3, 12	11.1%	-7.2%, 29.4%
Health Information Worker	83	7	8.4%	142	76, 208	13	0, 27	9.4%	0.5%, 18.3%
Medical Records File Clerk	192	17	8.9%	555	279, 831	49	19, 78	8.8%	4.4%, 13.2%
Medical Records Technician	143	5	3.5%	275	141, 410	22	2, 42	8.1%	2.1%, 14.0%
Transcriptionist	96	5	5.2%	186	97, 276	9	-2, 20	4.8%	-0.9%, 10.4%

Distribution of estimated vacancies among respondent types was highly variable from occupation to occupation (Figure 20). Billing Clerk/Technician estimated vacancies were distributed primarily among clinics/offices of physicians (39%, 5.3% vacancy rate) and tribal health organizations (36%, 22.6% vacancy rate).

Billing Specialist estimated vacancies appeared to be heavily in the behavioral health organizations (55%, 16.7% vacancy rate), but also in tribal health organizations (20%, 10.9% vacancy rate) and clinics/offices of physicians (13%, 1.1% vacancy rate).

Billing Supervisor estimated vacancies were few in number and reported only by clinics/offices of physicians (9.1% vacancy rate).

Billing/Coding Clerks estimated vacancies were most present in dental offices (61%, 5.4% vacancy rate), where this occupation was often combined with Registration Clerk/Receptionist or Dental Assistant. Smaller percentages of estimated vacancies were in clinics/offices of physicians (23%, 1.4% vacancy rate) and pharmacies (16%, 22.2% vacancy rate).

Estimated vacancies for Certified Coder were concentrated in clinics/offices of physicians (79%, 6.7% vacancy rate), as well as in tribal health organizations (15%, 15.4% vacancy rate). Hospitals/nursing homes reported very few vacancies (6%, 3.8% vacancy rate).

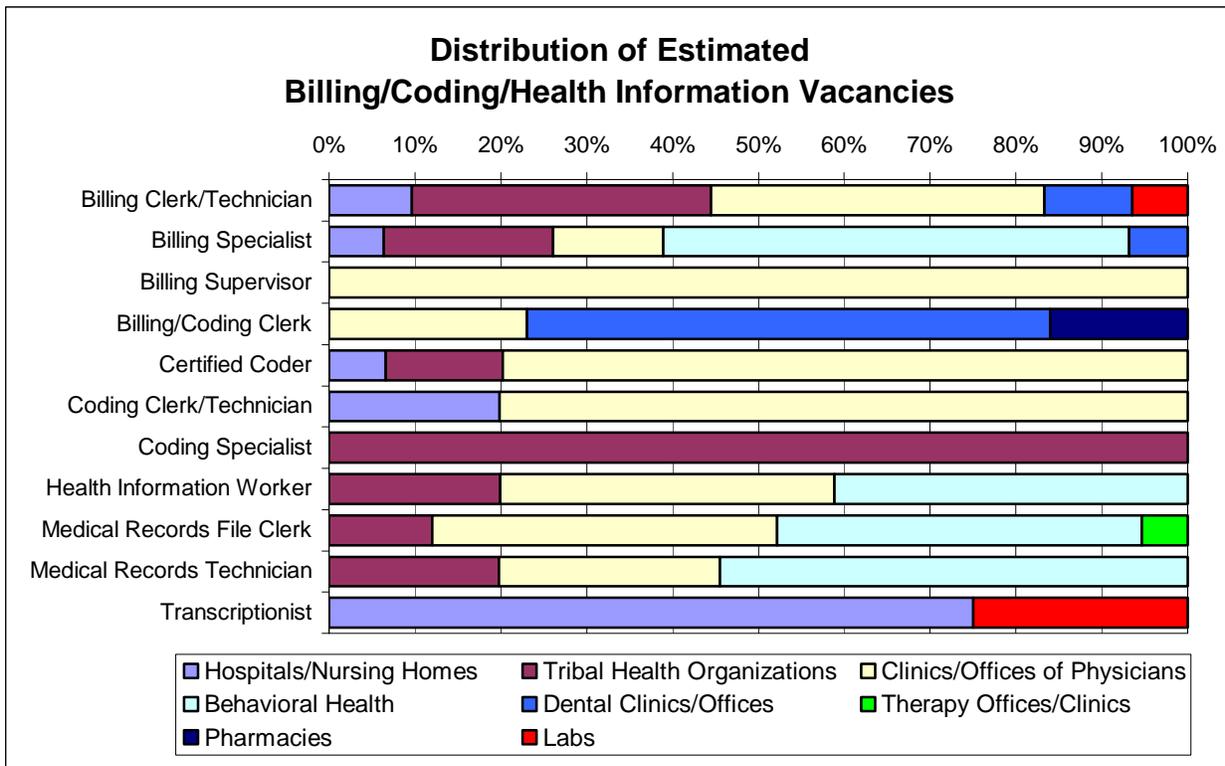


Figure 20. Distribution of estimated billing/coding/health information vacancies

Coding Specialist vacancies were reported only by tribal health organizations (16.7% vacancy rate). Clinics/offices of physicians and hospitals/nursing homes reported no vacancies (0.0%).

Estimated vacancies for Health Information Workers were distributed among behavioral health organizations (42%, 9.1% vacancy rate), clinics/offices of physicians (38%, 8.7% vacancy rate), and tribal health organizations (20%, 22.2% vacancy rate).

Medical Records File Clerk estimated vacancies were distributed principally among behavioral health organizations (43%, 30.0% vacancy rate), clinics/offices of physicians (40%, 8.1% vacancy rate), and tribal health organizations (12%, 9.7% vacancy rate).

Medical Records Technician estimated vacancies were located mostly in behavioral health organizations (54%, 12.5% vacancy rate). Another 27% were in clinics/offices of physicians (2.3% vacancy rate), and 19% were in tribal health organizations (12.5% vacancy rate).

Lastly, Transcriptionist was the only occupation in this group with estimated vacancies concentrated in hospitals/nursing homes (75%, 6.6% vacancy rate), with the remaining estimated vacancies in laboratories (25%, 25.0% vacancy rate). Clinics/offices of physicians reported no vacancies (0.0% rate).

Overall, hospitals/nursing homes reported a very small number of vacancies from this group, and had low vacancy rates (between 0.0% and 6.6%) and a low overall rate for the entire Health Information/Reimbursement group (only 3.7%). The vacancies tended to be concentrated in clinics/offices of physicians, tribal health organizations, and behavioral health organizations,

with the latter two reporting high overall vacancy rates for this occupational group (11.3% and 8.5%, respectively).

Looking at the urban/rural distribution of estimated vacancies, vacancy rates tended to be higher among rural respondents, though two – Billing Supervisor and Coding Specialist – had higher estimated urban rates (Table 41); Billing Specialist and Transcriptionist vacancies appeared to have been uniquely urban, though lacked sufficient rural data to confirm this. Numerically, the vacancies for this group were predominantly urban.

Table 41. Urban/rural distribution of coding/billing/health information vacancies

Occupation	Urban**			Rural**		
	Estimated Vacancies	Estimated Vacancy Rate	95% Confidence Interval	Estimated Vacancies	Estimated Vacancy Rate	95% Confidence Interval
Billing Clerk/ Technician	5	2.0%	-1.5%, 5.5%	9	6.3%	-1.1%, 13.6%
Billing Specialist	27	5.5%	1.7%, 9.3%	ND	ND	ND
Billing Supervisor	5	5.9%	-4.1%, 15.8%	0	0.0%	NA
Billing/Coding Clerk	9	2.2%	-0.5%, 4.9%	9	4.5%	-0.9%, 9.9%
Certified Coder	18	10.8%	2.0%, 19.7%	9	20.0%	-1.9%, 41.9%
Coding Clerk/ Technician	ND	ND	ND	4	33.3%	-15.3%, 81.9%
Coding Specialist	5	12.5%	-8.0%, 33.0%	0	0.0%	NA
Health Information Worker	5	3.8%	-2.7%, 10.4%	9	33.3%	-0.3%, 67.0%
Medical Records File Clerk	41	8.5%	3.8%, 13.2%	9	10.5%	-1.6%, 22.7%
Medical Records Technician	9	4.9%	-1.0%, 10.7%	13	14.3%	1.1%, 27.5%
Transcriptionist	9	6.5%	-1.2%, 14.1%	ND	ND	ND

ND- Insufficient data **Does not include respondents with statewide facilities not classified either urban or rural
 NA- Confidence interval not applicable

Concentrations of unfilled positions were found in the following specific regional “pockets”:

- Billing Clerk/Technician – Southwest, 33.3% vacancy rate; North/West, 28.6%
- Billing Specialist – Southwest, 23.1%
- Billing Supervisor – Anchorage Mat-Su, 6.7% (all reported vacancies)
- Billing/Coding Clerk – Statewide organizations, 20.0%
- Certified Coder – Southwest, 25.0%
- Coding Clerk/Technician – Gulf Coast, 100% (1 reported position and vacancy)
- Coding Specialist – Anchorage Mat-Su, 14.3% (all reported vacancies)
- Health Information Worker – North/West, 100% (1 reported position and vacancy); Southwest, 17.6%; Gulf Coast, 14.3%
- Medical Records File Clerk – Southwest, 33.3%; North/West, 23.5%; Gulf Coast, 16.7%
- Medical Records Technician – North/West, 14.3%
- Transcriptionist – Statewide organizations, 12.5%

Overall, small numbers of vacancies but very high rates were reported in the North/West and Southwest for this group. High numbers of vacancies and moderately high rates were found in Anchorage Mat-Su (where nearly half of the vacancies were found) and Gulf Coast. Interior and Southeast had very low rates (2.0% and 2.8%, respectively).

4. Reasons for Vacancies

By far the most frequently reported reason for vacancies – cited by 207 (54%) of the 384 organizations in the full sample that responded to this question – was Inadequate Pool of Qualified Workers, followed by Transience/Moving Away (28%), Insufficient Compensation (18%) and Rural Isolation (16%) (Figure 21). Of the 106 respondents citing Transience/Moving Away, 23 (6% of respondents) specifically cited “military” or “Coast Guard” transfers of workers and/or their spouses.

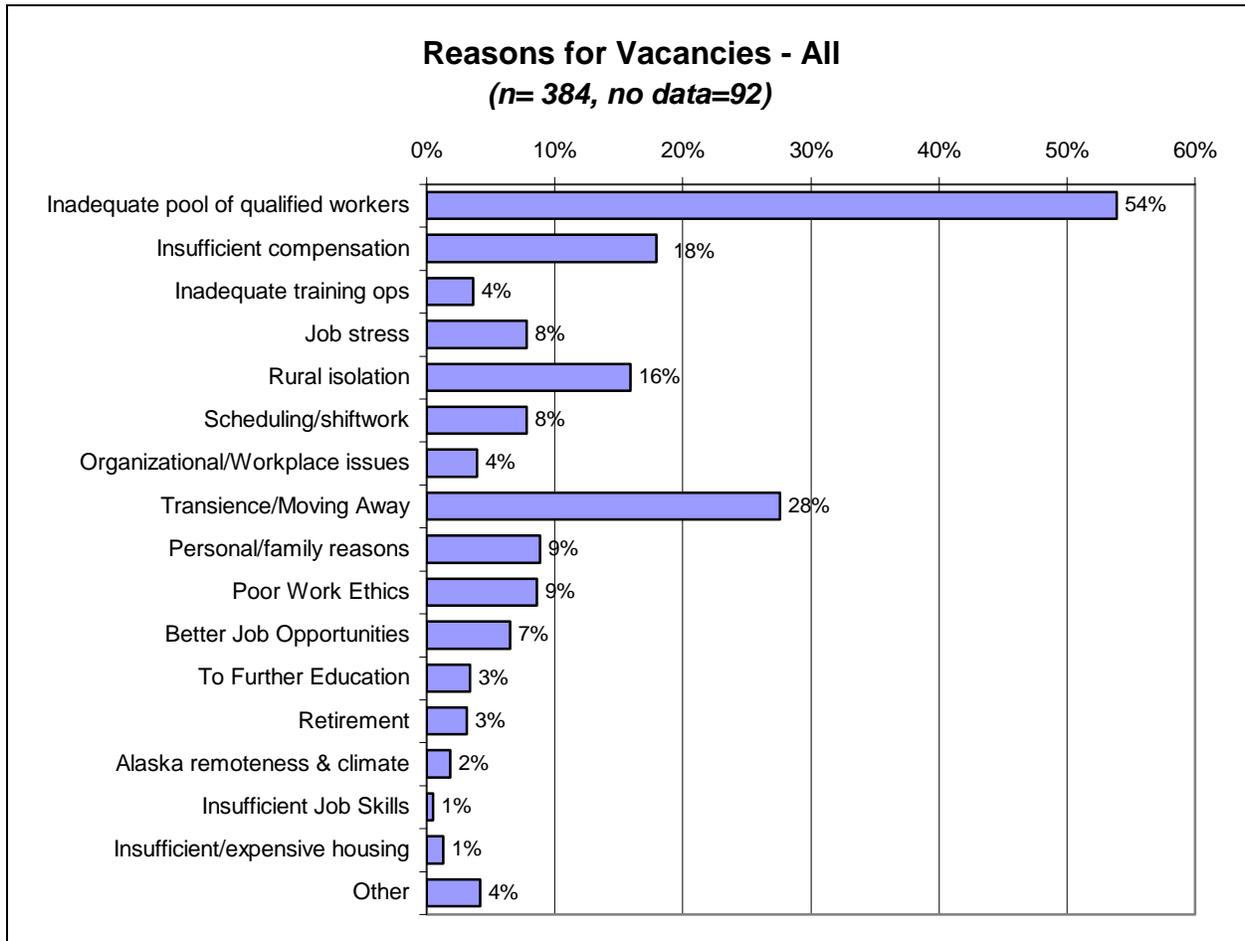


Figure 21. Reasons for vacancies

When the full sample was disaggregated into urban (n= 257, missing data=70) and rural (n=124, missing data=22) respondents, the general similarity in the frequency distributions of the reasons cited was striking (Figure 22). (Note: 3 organizations classified as “statewide” – having both urban and rural facilities – did not figure in this comparison). For both urban and rural respondents, the most commonly cited cause was Insufficient Pool of Qualified Applicants (54%, urban, 52% rural). For both urban and rural respondents, Transience/Moving Away (32% urban, 20% rural) and Insufficient Compensation (15% urban, 19% rural) were among the most frequently cited causes. Many of the less-frequently cited reasons were also similarly distributed.

However, some distinctions emerged, most notably Rural Isolation (urban 4%, rural 41%). Other differences were Transience/Moving Away (32% urban, 20% rural) and Insufficient/Expensive

Housing (0% urban, 4% rural). Smaller proportional differences were noted for Inadequate Training Opportunities (5% urban, 2% rural), Retirement (2% urban, 5% rural), Personal/Family Reasons (10% urban, 6% rural), and Better Job Opportunities (8% urban, 3% rural).

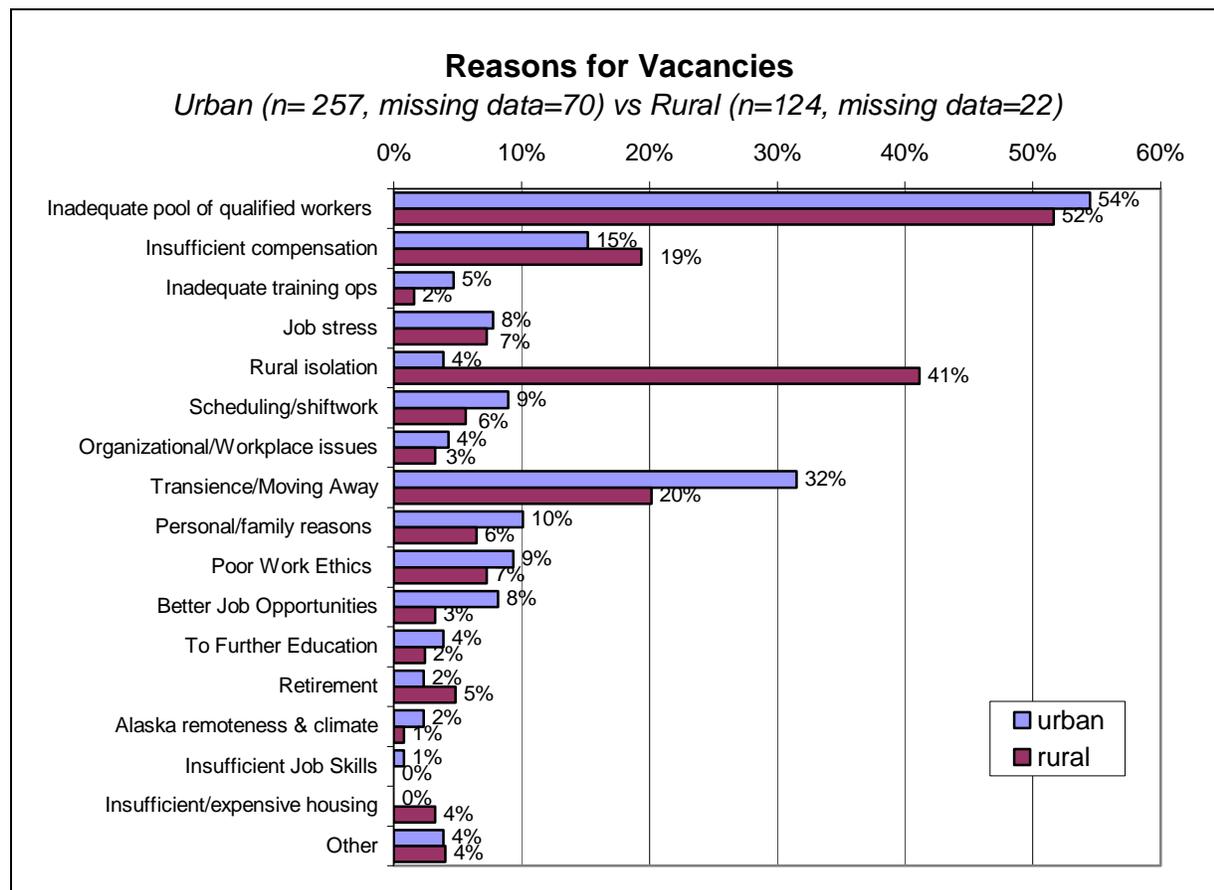


Figure 22. Top reasons for vacancies – urban vs. rural, full sample

Looking at reasons for vacancies by urban location, Figure 23 reveals some differences between the three urban areas - Anchorage, Fairbanks, and Juneau - and one suburban area, Wasilla/Palmer (North Pole was aggregated with Fairbanks). Juneau respondents felt most acutely the Inadequate Pool of Qualified Workers (cited by 68%) and most often cited Rural Isolation (13%), despite being “urban,” perhaps attributable to Juneau’s island-like location, accessible only by air and water. In contrast, Anchorage and Wasilla/Palmer respondents cited Rural Isolation only 1% and 5% of the time, respectively.

Transience/Moving Away was most often cited by Fairbanks respondents (48%). Insufficient Compensation (27%) and Better Job Opportunities (18%) were most often cited by Wasilla-Palmer respondents.

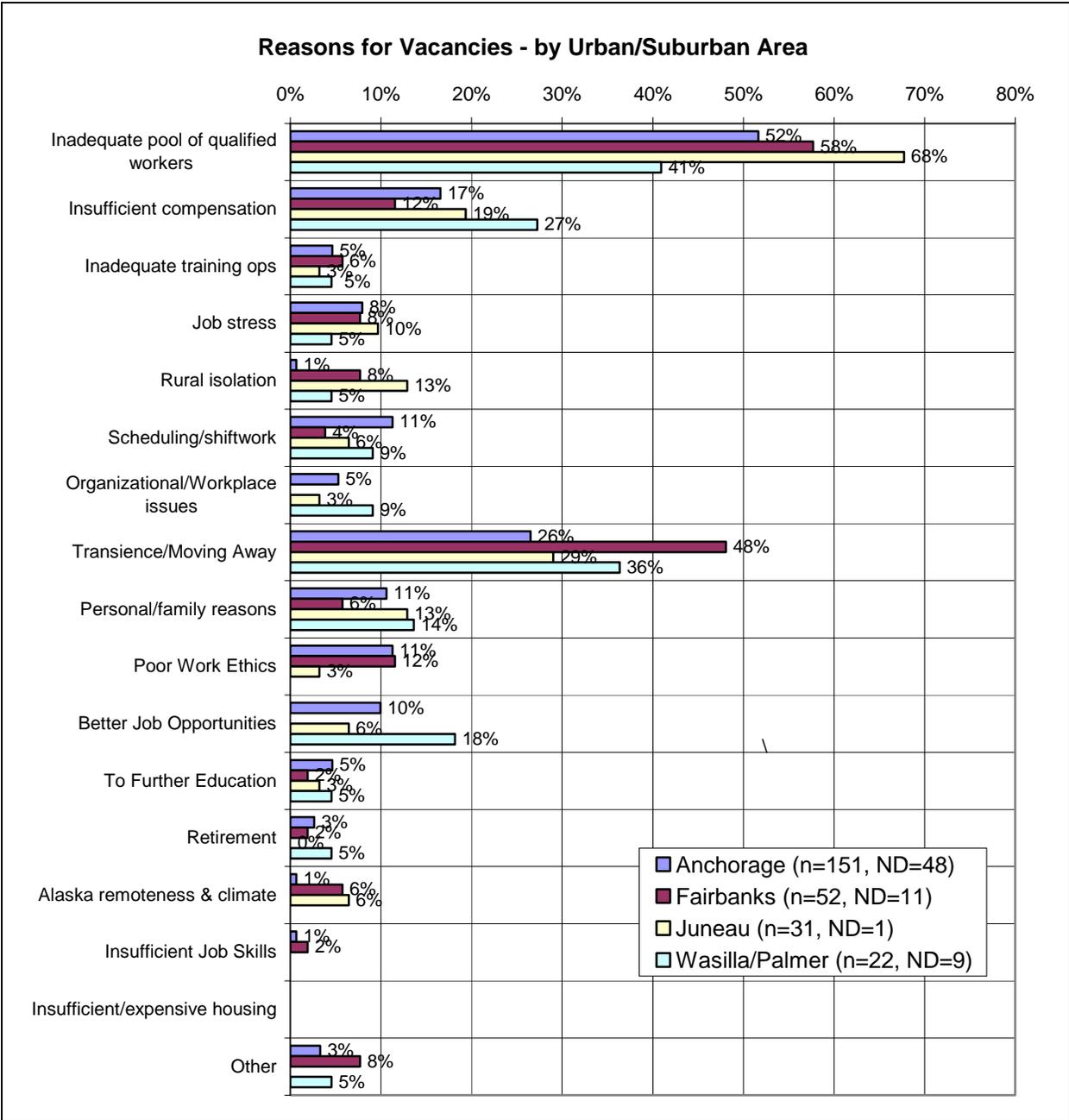


Figure 23. Top reasons for vacancies by urban/suburban area (no bar = 0%)

A regional break-down of most frequently cited reasons for vacancies is presented in Table 42.

Table 42. Most frequently cited vacancy causes, by region

Region	n	Top Reasons Cited	Frequency
North/West	10	Rural isolation	70%
		Inadequate pool of qualified workers	60%
Southwest	11 (ND=6)	Inadequate pool of qualified workers	73%
		Rural isolation	36%
		Transience/moving away	36%
Interior	60 (ND=12)	Inadequate pool of qualified workers	53%
		Transience/moving away	43%
Anchorage Mat-Su	174 (ND=58)	Inadequate pool of qualified workers	50%
		Transience/moving away	27%
		Insufficient compensation	18%
		Better job opportunities	11%
Gulf Coast	59 (ND=10)	Inadequate pool of qualified workers	49%
		Rural isolation	25%
		Insufficient compensation	25%
		Transience/moving away	19%
Southeast	64 (ND=6)	Inadequate pool of qualified workers	63%
		Rural isolation	38%
		Transience/moving away	25%
		Insufficient compensation	19%
Statewide/Multiregional	5 (ND=1)	Inadequate pool of qualified workers	100%
		Transience/moving away	40%
		Insufficient compensation	40%

ND – No data

The most frequently cited reasons already observed re-appear – Inadequate Pool of Qualified Workers, Rural Isolation, Transience/Moving Away, and Insufficient Compensation – but with notable regional differences. The regions most often citing Inadequate Pool of Qualified Workers were Statewide/Multiregional (100%) and Southwest (73%); the regions citing it least were Gulf Coast (49%) and Anchorage Mat-Su (50%).

Rural isolation was most often cited by North/West (70%), the only region for which it was the most-cited reason (in contrast, only 1% of Anchorage Mat-Su respondents cited this reason); 38% of Southeast and 36% of Southwest respondents cited it as well.

Transience/Moving Away was most often cited by Interior respondents (43%), a region statistically dominated by Fairbanks – 48% of whose respondents cited this reason, as already noted.

Insufficient Compensation was most often a top reason for respondents in Statewide/Multiregional (40%), Gulf Coast (25%), Southeast (19%) and Anchorage Mat-Su (18%). Better Job Opportunities was an often-cited reason only in Anchorage Mat-Su (11%).

Disaggregation by respondent type yields varying distributions of most frequently cited causes for vacancies (Table 43). Every respondent type cited Inadequate Pool of Qualified Applicants most frequently (range, 44%-71%). The respondent type citing it most frequently was pharmacies (71%), and the least, clinics/offices of physicians (44%).

Table 43. Most frequently cited vacancy causes by respondent type (total n=384, ND=92)

Respondent Type	n	Top Causes Cited	Frequency
Behavioral Health	23	Inadequate pool of qualified workers	66%
		Insufficient compensation	57%
		Job intrinsically stressful	22%
		Rural isolation	22%
Clinics/Offices of Physicians	104 (ND=33)	Inadequate pool of qualified workers	44%
		Transience/moving away	31%
		Insufficient compensation	17%
Dental Clinics/Offices	118 (ND=27)	Inadequate pool of qualified workers	50%
		Transience/moving away	37%
Diagnostic Imaging	6 (ND=3)	Inadequate pool of qualified workers	50%
		Transience/moving away	50%
Hospitals/Nursing Homes	18	Inadequate pool of qualified workers	61%
		Rural isolation	22%
		Transience/moving Away	22%
Laboratories	12 (ND=3)	Inadequate pool of qualified workers	67%
		Insufficient compensation	25%
		Job intrinsically stressful	25%
		Personal/family issues	25%
Pharmacies	34 (ND=3)	Inadequate pool of qualified workers	71%
		Insufficient compensation	27%
		Rural isolation	24%
		Transience/moving away	21%
Therapy Offices/Clinics	23 (ND=12)	Inadequate pool of qualified workers	57%
		Transience/moving away	39%
		Rural isolation	26%
School Districts	19 (ND=7)	Inadequate pool of qualified workers	63%
		Rural isolation	42%
		Insufficient compensation	21%
		Scheduling/shift work	21%
Tribal Health Organizations	27 (ND=4)	Inadequate pool of qualified workers	59%
		Rural isolation	41%
		Insufficient/expensive housing	19%
All Occupations	384 (ND=92)	Inadequate pool of qualified workers	54%
		Transience/moving away	28%
		Insufficient compensation	18%
		Rural isolation	16%

ND – No data

Transience/Moving Away (range, 4%-50%) was cited most often by diagnostic imaging (50%), followed by therapy offices/clinics (39%), dental clinics/offices (37%) and clinics/offices of physicians (31%). For the latter two respondents, many Allied Health and Health Information/Reimbursement positions are often filled by military spouses.

Insufficient Compensation (range, 7%-57%) was most cited by behavioral health organizations (57%).

Rural isolation (range, 0%-42%) was cited most often by school districts (42%) and tribal health organizations (41%), both being preponderantly rural respondent types.

Scheduling/Shift Work (range, 4%-21%) was cited most often as a top reason by school districts (21%). Job Intrinsically Stressful (range, 0%-25%) was cited most often by laboratories (25%) and behavioral health (22%), and Insufficient/Expensive Housing (range, 0%-19%) was cited only by tribal health organizations (19%).

B. Qualitative Data

A space was provided in the survey instrument for respondents to add narrative comments or suggestions. The purpose of this section was to gather information about organizational workforce issues not addressed elsewhere. Of the 476 respondents, 187 chose to include written comments and/or provide verbal commentary over the telephone to the interviewers, who transcribed verbatim or in paraphrase onto the survey forms.

Urban Dental Offices and Urban Small Clinics (<5 physicians) - Few Vacancies, Easy Recruitment: Twenty urban dental offices and small clinics/offices of physicians reported that their offices were very stable and experienced very little turnover; hiring health workers was not a big issue in their offices because they so rarely encounter vacancies. In contrast, only 3 rural respondents of these types noted a stable workforce.

Indicative comments by urban small clinics and dental offices included:

- *“In this office, we have all worked together for 20 years, with no vacancies.”* (Urban Dental Office)
- *“We are a very small office and have not needed to hire anyone for several years.”* (Urban Small Clinic)
- *“We have only ‘lost’ 5 employees since 1976.”* (Urban Small Clinic)

Several dental offices in both urban and rural settings stated that filling workforce vacancies was not difficult:

- *“We have never had problems filling positions or keeping employees.”* (Urban Dental Office)
- *“Vacant positions are easy to fill.”* (Urban Dental Office)
- *“We have no problem filling positions. Sometimes we have students work on a temporary basis.”* (Rural Dental Office)

Positions Reported as Difficult to Fill: Respondents noted a diverse set of positions that are particularly difficult to fill when vacancies occur:

- Physical Therapy: *“We have been hiring travelers for Physical Therapy positions at \$67/hr – we can’t find therapists to employ. We have been looking for 2 years.”* (Urban Medical Clinic). *“Without a state Physical Therapy program it is very difficult to get PT staff. Usually this area is staffed by PTs that leave competing PT clinics.”* (Urban Physical/Occupational Therapy Office)
- Dental Hygienist: *“There is an ongoing shortage of dental hygienists in Sitka.”* (Rural Dental Office)
- Pharmacist – *“We always have a position open for a pharmacist at least part-time.”* (Urban Pharmacy). *“We really need a pharmacy school in Alaska. It took two years to fill our last*

pharmacist position.” (Urban Pharmacy). *“Pharmacists are always the most difficult position to fill.”* (Rural Pharmacy).

- Dentist – *“We have a problem finding dentists, and then it takes 6-12 months for licensing to come through.”* (Rural Tribal Health Organization). *“We have a great need for pediatric dentists.”* (Urban Dental Office).
- Nursing (LPN, RN, A/FNP) – *“We have found the hardest positions to fill in our office are qualified LPNs or RNs with experience or a new grad that really wants to work & put in the hours needed for the job & care about their job. Recent past vacancies for ANP, RN & LPN were 6-8 months.”* (Urban Medical Clinic). *“The hard-to-recruit for professional categories include...CNAs and specialty (ICU, ER, Supervisors) RNs.”* (Rural Hospital/Nursing Home). *“Specialized RNs, specifically ER and OR, are our most critical vacancies on a repeating basis over time.”* (Urban Hospital/Nursing Home).
- Medical Lab Technicians – *“We don't have MT/MLT vacancies now, but we have to search for 6 months to a year to find Techs when there are openings.”* (Urban Laboratory). *“We need better training for medical lab techs. They are hard to replace.”* (Urban Laboratory).
- Sonographer – *“The other critical area is specialty imaging techs. Ultrasound is most urgent, with MRI next.”* (Urban Hospital)
- Therapists – *“The hard-to-recruit for professional categories include rehab therapy (PT, OT, SLP).”* (Rural Hospital/Nursing Home)
- Behavioral Health Supervisor – *“We badly need behavioral health personnel – we need a supervisor in order to expand our behavioral health programs into our villages.”* (Rural Tribal Health Organization)
- Psychiatrist – *“We've been trying to recruit a pediatric psychiatrist for over two years.”* (Urban Hospital/Nursing Home)

Other hard-to-fill occupations mentioned by only a single respondent included CMAs, Coding and Billing Specialists, Certified Radiologic Techs, and Pharmacy Techs.

Difficulty Recruiting to Rural/Isolated Communities: Respondents often discussed the difficulties of recruiting health professionals to rural/isolated locations. Respondents cited the following obstacles to recruiting: difficulty finding good-paying jobs for spouses of health providers within the community, housing issues, professional isolation, and the quality of life in very remote communities.

One frontier rural respondent who reported no current vacancies noted the cost of achieving this:

- *“I don't have any vacancies, but the price for that is unbelievable! Each PA makes more than \$100,000 for 6 months work and has a benefit package that staggers the imagination. The LPN makes \$92,000 per year plus benefits.”* (Rural Medical Clinic)

Even an urban respondent observed:

- *“Juneau may be a city but it’s like living on an island. There’s little available housing, and what housing there is we can’t pay enough for staff to afford, it’s often hard to get in and out, and we always have to send people out for training.”* (Urban Behavioral Health)

Transience, Worker Mobility and the Military: Many respondents cited transience – often expressed as “moving away” – as a major cause of turnover and vacancies. Respondents citing this reason often attributed this to the prominence of the military and Coast Guard in Alaska:

- *“...we have a dependency on the military dependants for our labor pool. If we ever lost our military bases we would lose military dependants that fill key skilled positions and many support positions. For example, an estimated 10% of our total RNs are military dependants or active duty military. This represents vacancies unfilled by Alaskans. The model works today but we should be aware of this dependency as we make long term plans.”* (Urban Hospital)

Concerns with Pay/Benefits: Several respondents in both urban and rural settings were concerned that their organization could not offer adequate pay and benefits to attract and retain qualified candidates. Many of those who shared this concern were non-profit health service organizations and organizations that had a large dependency on grant funding. Behavioral health providers and tribal health organizations were the organization types that most frequently commented on pay and benefits as a barrier to recruitment.

- *“Being a non-profit hinders the ability of our agency to compete with for-profit or larger organizations. Flat funding through grants is another barrier to offering competitive wages.”* (Urban Behavioral Health)
- *“We don’t have money to attract candidates – it’s a real problem; often no benefits can be provided.”* (Rural Tribal Health Organization)
- *“Compensation is high to attract staff - but not high enough.”* (Rural Tribal Health Organization)

Need for Multi-Tasking Employees: The quantitative portion of the survey asked respondents to classify employees into a job category based upon their primary job duties. Many respondents used the narrative section to note that their employees often performed several job functions and wore many “hats” to make their organizations work more efficiently.

The need for multi-tasking employees was articulated by both rural and urban respondents. Smaller facilities (dental offices, pharmacies, labs, therapy clinics/offices, and clinics/offices of physicians) were more likely to mention the importance of having employees who could perform several functions. Respondents often noted the need for various types of techs to be cross-trained for front office work. Many spoke of the need for clinicians to also act in managerial capacities. Others expressed the need for employees to be cross-trained for payroll, purchasing, file management, and even billing and coding.

- *“One of our physical therapists is also the clinic manager. Also, our accountant is in charge of most billing. The office manager is in charge of files.”* (Rural Physical/Occupational Therapy Office)

- “We are a small organization with 5 employees who wear ‘multiple hats.’” (Urban Laboratory)
- “There is a lot of cross training between dental assistants and the front office.” (Urban Dental Office)
- “Everyone behind the counter must be a tech. And they all get cross-trained for working the front.” (Urban Pharmacy)

Desire for More Local Training Opportunities: Both urban and rural respondents utilized the open narrative section to request more local training opportunities. They saw this as the best method to help them recruit and retain their workforce. The training most frequently requested was for Physical/Occupational Therapist and Pharmacist:

- “There are not PT, OT, or pharmacy schools in Alaska. We have had great success in hiring graduates from local/distance programs in AK – for example: rad techs and RNs.” (Rural Hospital/Nursing Home)
- “Without a state PT program it is very difficult to get PT staff.” (Urban PT/OT office)
- “Alaska needs UAF/UAA to build healthcare education infrastructure for RNs, PT/OT, LPNs, RT, X-ray/MRI/CT techs so that we can stop importing their skills. This would produce knowledge jobs & economy for Alaska.” (Rural Medical Clinic)

In addition, requests for more local training opportunities were made for Medical Laboratory Technicians (including cellular pathology terminology and histology), Dental Hygienist, various Behavioral Health occupations, Registered Nurse, Licensed Practical Nurse, Radiologic Technician, mid-level providers (FNP and PA) and Certified Medical Assistants.

Hiring of New Graduates: Several urban respondents took the opportunity to expound on why they preferred to hire people with experience rather than new graduates. In general, there were two major reasons cited: lack of job commitment and more required on-the-job training.

1) Lack of Commitment:

- “We want to encourage and help new grads by hiring them and giving them a chance and mentoring them but have found that they get in and shop around for better wages before they are fully experienced.” (Urban Dental Office)
- “New grad RNs and BSNs do not stay long so we resist hiring them.” (Urban Medical Clinic)

2) Required On-The-Job Training:

- “Newly trained personnel, right out of training, tend to need more on-the-job training than I am interested in. I would rather pay more for an experienced employee. So, would I hire a new grad? Probably not unless they had a great reference or I already know them.” (Urban Dental Office)

One respondent observed that the decision on whether to hire a new graduate was based on where the candidate graduated from:

- “We hire new graduates for CMAs if they are graduates of UAA. We do not hire new graduates if they are from Career Services.” (Urban Medical Clinic)

Many respondents when asked if they would hire new grads for specific positions made it clear that it would “*depend*” on the individual candidate’s attributes, skills, and recommendations.

Recommendations: Several respondents had specific recommendations for addressing the workforce challenges of Alaska:

- Establish a Pharmacy school (Urban Pharmacy)
- Establish a Physical Therapy school (Urban Physical Therapy Office)
- Make institutional and financial commitments to support clinical rotations and on-the-job-training opportunities (Urban Hospital)
- Expand loan forgiveness programs to lure and retain recent graduates: “... *highly skilled healthcare workers are the most mobile, highly sought after technicians in the nation and we should support our investments by using incentives or penalties (such as student loan forgiveness programs or payback clauses) to achieve our retention goals in the Alaska workforce.*” (Urban Hospital)
- Provide housing or wage subsidies for non-profits that cannot compete with better-paying industries (Urban Behavioral Health)

V. Discussion and Conclusion

The findings confirm and quantify trends noted in recent studies and accumulating anecdotal evidence: despite the recent progress in training and deploying health personnel, such as Registered Nurses, critical shortages persist.

- The situation for key primary care occupations (Family Physician, General Internist, Nurse Practitioner, and Physician Assistant) was troubling, particularly in the rural areas, with numerous estimated vacancies, high estimated state vacancy rates between 15% and 20%, and long mean vacancy lengths from 7 to 15 months. The Family Physician shortage (15.8% estimated vacancy rate) appeared to mirror national trends, but more severely. The mid-levels often employed in their stead were equally in demand: despite Alaska having the country's highest PA to population ratio,¹⁴ the estimated PA vacancy rate was 19.0% (26.8% in the rural areas). The estimated vacancy rate for Family Nurse Practitioner was 19.5% (36.4% in rural areas).
- Though their vacancies were not numerous, Psychiatrists were particularly in demand and hard to find, with a 19.0% estimated vacancy rate and an estimated mean vacancy length of 34.5 months, almost three years.
- High numbers of estimated vacancies and high estimated vacancy rates were noted for key specialty nursing occupations, particularly Nurse Case Manager, Nurse Practitioner, and Critical Care Nurse. These appeared to be the most critical areas of nursing shortages.
- Fortunately, the estimated Registered Nurse vacancy rate was moderate (8.0%), but this masked 10.5% and 9.3% rates in hospitals/nursing homes and tribal health organizations, respectively, and an estimated rural vacancy rate of 16.1%. In addition, the estimated vacancies were extremely numerous at 439.
- The national Pharmacist shortage apparently has hit Alaska hard, with high estimated vacancy numbers (98), a 23.7% estimated vacancy rate, and a long mean vacancy length of 12.3 months. Supporting this data is a 2006 study by the New York Center for Health Workforce Studies showing Alaska with by far the lowest number of Pharmacists per 100,000 population.¹⁴ In addition, Inadequate Pool of Qualified Applicants was cited as a top reason for vacancies by 71% of pharmacies, the highest percentage of any respondent type. Tribal health organizations had more estimated vacancies than pharmacies, with a 51.4% vacancy rate.
- Therapists of all kinds (Physical, Occupational, Speech, and Speech-Language Pathologists) were in short supply (estimated vacancy rates ranging from 15.6% to 29.3%). No part of the state escaped the shortages, which were most acute in rural areas in terms of vacancy rate, but numerically high in Anchorage Mat-Su (38 reported vacancies).
- While the Dentist estimated vacancy rate was 10.3%, this masked an estimated rural rate of 15.3% and a very high rate reported by tribal health organizations (42.0%). This was in marked contrast to dental offices/clinics, who reported only a 6.8% rate and stable staffing with low turnover.

- In the Behavioral Health occupational group the most severe shortages – with both extremely high vacancy numbers and high vacancy rates – were among the occupations that fall under the Human Services Worker umbrella (both HS diploma and AA degree). In addition, overall estimated Behavioral Health occupation vacancies were extremely numerous (1033) – approximately 29% of all estimated vacancies, more than any other occupational group. The 2004 WICHE study predictions of massive growth in this occupational area appear to be rapidly unfolding.
- In Allied Health occupations, high vacancy rates were affecting employers of Physical Therapy Assistants and Respiratory Therapists. Sonographer vacancies were difficult to fill and Surgical Technician vacancies, though not numerous, were averaging 3 to 4 years in length. The North/West and Southwest regions had very high overall Allied Health vacancy rates (17.0% and 24.6%, respectively).
- One hundred (100) vacancies and a high vacancy rate of 18.1% were reported for Community Health Aide/Practitioners (CHA/Ps).
- Among “front office” and “back office” occupations, Coding Specialist and Certified Coder had 11% estimated vacancy rates and very long mean vacancy lengths. Overall vacancies for this occupational group (Health Information/Reimbursement) were highest among tribal health organizations (11.3% rate) and behavioral health organizations (8.5% rate). North/West and Southwest regions had the highest overall rates (15.9% and 16.9%, respectively).
- The managerial occupations for which the highest estimated vacancy rates were calculated were specifically healthcare-related: Behavioral Health Supervisor (12.5%), Clinical Department Manager (9.5%), Health Information Manager (11.8%), Medical Director (14.8%), Nurse Manager (7.7%), and Practice Manager (18.2%). In contrast, “generic” managerial positions (e.g., CEO, CFO, and Business Manager) generally had low rates under 5%. Behavioral health organizations had the most estimated managerial vacancies.

Using mean vacancy length rather than vacancy rate as the metric of shortage acuity we noted a mean weighted vacancy length for all vacancies combined of around 13 months in both the full sample and the statewide estimate. *In other words, the “typical” Alaskan health occupation vacancy remained unfilled for over a year.* The study detected extremely long mean vacancy lengths of two years (24 months) or more for Medical Records Technician, Surgical Technician, Speech Therapist, Human Services Worker (both HS diploma and AA), Psychiatrist, Ophthalmologist, Miscellaneous Physician Specialist, Certified Coder, Pharmacy Technician, and Billing Specialist. The occupations that were flagged by both of these metrics, with a vacancy rate of at least 15% and a mean vacancy length of at least two years (24 months) were Speech Therapist, Human Services Worker (AA degree) and Psychiatrist.

The abundance of occupations with estimated vacancy rates over 15% skews the frame of reference. Many occupations not mentioned above (e.g., Behavioral Health Clinician and Case Manager/Care Coordinator) nevertheless had estimated vacancy rates between 10% and 15%. This, in other contexts, would be considered critical. The need to fill these vacancies is no less urgent.

The respondent type reporting the highest overall vacancy rate was the tribal health organization (16.5%). Besides 87 CHA/P vacancies, approximately half of all estimated vacancies for Nurse Case Manager, Pharmacist, Chemical Dependency Counselor, Dentist, Medical Lab Tech, Medical Technologist, and Health Educator – and all the estimated vacancies for Coding Specialist – were in the tribal health organizations. But every respondent type was a locus for vacancies in key occupations, such as clinics/offices of physicians for PAs, hospitals/nursing homes for RNs, pharmacies for Pharmacist, behavioral health organizations for Human Services Worker, and school districts for Speech-Language Pathologist.

Geographically, higher vacancy rates were generally found in the rural respondents, particularly in the North/West and Southwest regions, which reported double digit vacancy rates for nearly all occupational groups and overall vacancy rates around 20%. Vacancies for many key primary care occupations were most acute in rural areas (e.g., Registered Nurse, Dentist). But no region was immune to high vacancy rates for key occupations, not even Anchorage Mat-Su, which has the largest pool of potential workers. Pharmacist and Therapist vacancy rates, in particular, were high throughout the state.

The “supply side” shortages apparently persist. “Inadequate Pool of Qualified Workers” was universally the top reason for vacancy cited. Typically, when there are national provider shortages, as there currently are for Family Physician and Pharmacist, the shortages are most acutely felt on the margins – in inner cities with high endemic poverty and the rural/frontier regions. The entire state of Alaska, with its remoteness, falls in this margin, and its rural/frontier areas are the “margin of the margin.” This would be a primary root cause of the shortages in the largely rural/frontier tribal health organizations and in the rural/frontier clinics. But even Juneau, an ostensibly “urban” area, apparently feels this pinch: Juneau respondents felt acutely the Inadequate Pool of Qualified Workers (cited by 68%) and, despite being in a city, often cited Rural Isolation (13%), likely attributable to Juneau’s island-like location, accessible only by air and water.

There was also evidence in the data for a burgeoning “demand side” – shortages exacerbated by population growth and increased need and demand for health services. For example, Wasilla-Palmer respondents (located in the region of most dramatic population growth in Alaska) cited Insufficient Compensation (27%) and Better Job Opportunities (18%) far more than respondents in the other urban/suburban locations as primary reasons for vacancies, suggesting competition internally and/or with nearby Anchorage for scarce workers in a demand growth context.

This may explain in part the following high vacancy rates reported for the high-growth Anchorage Mat-Su region: Pharmacist, 34.1%; Psychiatrist, 33.3%; Speech-Language Pathologist, 22.4%; Practice Manager, 22.2%; Family Physician, 19.6%; Critical Care Nurse, 18.6%; Family Nurse Practitioner, 18.3%; General Internist, 16.7%; Behavioral Health Supervisor, 16.7%; Human Services Worker–HS, 16.4%; and Coding Specialist, 14.3%. One can argue, if you can’t fill these vacancies in Anchorage Mat-Su with its relatively large pool of workers, major airport, and urban amenities, you can’t fill them anywhere in Alaska.

But demand-side growth affects rural areas as well. Appalling rates of suicide, obesity, diabetes, substance abuse, domestic partner violence and clinical depression plague many of Alaska’s rural communities, creating a need-driven demand for prevention workers, primary care providers, behavioral health workers, and managers. Recall the tribal health organization stymied

in its ability to bring behavioral health programs into its villages by an inability to fill a critical Behavioral Health Supervisor vacancy. Add to this the rapidly aging population of Alaska – a rural as well as urban phenomenon.

Apparently alleviating some of the pressure has been the availability of military spouses. But while military (including Coast Guard) spouses provide a much needed pool of skilled and/or trainable labor, the pool itself is transient. Fairbanks respondents cited more often than all others Transience/Moving Away as a prime reason for vacancies (48%), attributable likely to a combination of extreme climate and frequent relocation of military spouse employees. Transience was also cited as a prime reason by 36% of Anchorage Mat-Su respondents, many of whom may depend on spouses of servicepersons based at Elmendorf AFB or Fort Richardson. But “transience” certainly has many other root causes, including the challenges of living in a remote place with a harsh climate and fewer amenities, often acutely felt by transplants recruited from the “lower 48”.

Exacerbating these shortages is the absence of local training resources, such as medical, dental, pharmacy, and therapy schools to provide a local workforce pipeline. In the qualitative data, often-heard refrains were “we need a pharmacy school,” “we need a dental school,” and “we need a physical therapy school.”

Final Comments

It is beyond the scope of this study to weigh the cost-benefit of new training programs or alternative recruitment techniques. Nevertheless, data clearly enumerate occupations and occupational groups in demand. In this light we can revisit Table 14 (page 26), which lists occupations with the highest number of estimated new grad vacancies. These may be considered the occupations most likely to yield optimal “bang for the buck” in their response to investments in preparation and training programs and/or targeted recruitment and retention campaigns, with relatively large numbers amenable to economies of scale. Note the presence in this table of occupations for which Alaska lacks professional schools: Pharmacist (84 estimated new grad vacancies), Family Physician (89), Physician Assistant (80), Occupational Therapist (75), Dentist (67), and Physical Therapist (62). The full sample alone contained enough new-grad vacancies to theoretically absorb graduating cohorts ranging from 23 Physical Therapists to 93 RNs. The acuity of workforce shortages in Alaska is also reflected by the high percentage of estimated vacancies employers would consider filling with new grads. Thus, there seems to be a clear path for addressing these particular shortages with substantial training and/or recruitment investment, though many challenges loom, such as the need to develop clinical rotation sites, preceptorships and residencies.

The situation in Professional Nursing also bears examining. The highest nursing vacancy rates were concentrated in high-skill specialty nursing occupations such as Critical Care Nurse, Nurse Case Manager, Family Nurse Practitioner and Psychiatric Nurse. This indicates a need to also focus further “downstream” the training pipeline, in this case facilitating the ability of RNs to upgrade their skills and credentials to assume higher levels of practice.

To conclude, the findings are daunting. The list of occupations with high numbers of vacancies and high vacancy rates is very long and there are no easy solutions.

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