

The Health Care Industry

In Hawaii





This report was produced by the Research and Economic Analysis Division (READ) of the Department of Business, Economic Development & Tourism (DBEDT). It was prepared by Rene Kamita, Ph.D., with the assistance of Naomi Akamine, under the direction of Economic Research Administrator Eugene Tian, Ph.D. Valuable comments and recommendations were provided by READ colleagues.

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Executive Summary

The health care and social assistance industry is the largest private sector employer in the state and contributes approximately eight percent of the State's Gross Domestic Product (GDP). Industry employment is expected to grow by 15.3% through 2030, with the largest increases in jobs among healthcare support occupations, such as home health and personal care aides, and registered nurses. At the same time, however, several industry studies as well as data on job openings and hires indicate current health care worker shortages, particularly among health care practitioners and technical occupations, such as physicians and registered nurses.

Multiple factors suggest that Hawaii's demand for health care services, and thus for healthcare workers, will increase over time. Although the state's residential population has declined in recent years, its visitor population, which has been a significant and growing share of Hawaii's de facto population, partially rebounded in 2021, and is expected to increase in the future. In addition, Hawaii, like the rest of the nation, is expected to see a significant increase in the proportion of persons aged 65 years and older over the next several years. A review of several health indicators further underscores the importance of ensuring the availability of adequate health care services and understanding the characteristics and conditions facing Hawaii's health care workers.

While many health care workers are licensed to provide care in Hawaii, significant proportions of these licensed providers reside out-of-state. This is particularly true for physicians and surgeons (over 52% residing out-of-state as of February 2022) and registered nurses (over 41% residing out-of-state). Of those residing in Hawaii, approximately three-quarters of physicians and surgeons and registered nurses live on Oahu. The number of health care workers, including physicians and surgeons and registered nurses, per capita is generally higher on Oahu compared to Hawaii island, Kauai, and Maui County, consistent with provider shortages being more pronounced on the neighbor islands.

The average age of Hawaii health care workers is in the early 40s, except for physicians and home health and personal care aides, who tend to be older. Twenty-five percent of physicians in Hawaii are over 62 years of age. Healthcare workers in Hawaii tend to be overwhelmingly female (over 80% female in the occupations examined) except for physicians, where the percentage of females is 41%. The majority of healthcare workers in Hawaii were not born in Hawaii; this holds across all of the occupation groups examined. Most health care workers in Hawaii are Asian. In comparison, health care workers born in Hawaii and living on the mainland tend to be younger, are generally more likely to be female, and are more likely to be white. Among health care workers born in Hawaii and living on the most popular state of residence appears to be California, followed by Washington.

Educational attainment for Hawaii health care workers is consistent with the educational requirements of their respective occupations. Physicians have a graduate or professional degree, most registered nurses hold a bachelor's degree, and most home health and personal

care aides and nursing assistants, orderlies, and psychiatric aides have an associate's degree or some college education, or a high school degree. Most Hawaii health care workers are wage and salary employees, with the highest proportion of self-employed workers in the home health and personal aide and physician occupations. Approximately 69% of those in the healthcare practitioners and technical occupations group work full-time; about 63% of those in healthcare support occupations work full time.

Hawaii's health care workers appear to generally earn close to or more than those in similar occupations who live on the U.S. mainland. However, when Hawaii's high cost of living is considered, this difference is reduced. Under certain assumptions, Hawaii's higher cost of living renders Hawaii's cost-of-living adjusted incomes lower than national average incomes across all of the occupation groups examined. Patterns of home ownership among Hawaii health care workers are consistent with income levels. Over 80% of Hawaii physicians and over 70% of Hawaii registered nurses own their homes, while 50% and 54% of home health and personal care aides and nursing assistants, orderlies, and psychiatric aides own their homes, respectively. Hawaii health care workers appear more likely to own their homes compared to those born in Hawaii and living on the mainland. Taken together, this suggests that health care workers who are born in Hawaii and move to the mainland may do so due to the lower cost of living, but not necessarily for home ownership per se. Further research on the large share of providers licensed to provide care in Hawaii but residing out of state could offer greater insight into the most effective means to further attract and retain health care workers in Hawaii.

I. Introduction

Access to and the provision of health care is critical in helping to prevent the spread of diseases and improve the quality of life for Hawaii's residents and visitors. The health care and social assistance industry is the largest source of private sector employment in Hawaii and is forecasted to grow. On a national level, the healthcare and social assistance industry is projected to add the largest number of jobs of any sector due to the aging of the baby boomer population and a higher prevalence of chronic conditions. However, several reports and studies have highlighted healthcare worker shortages, both in Hawaii and nationwide, that have been exacerbated by the COVID-19 pandemic. In Hawaii, various efforts are underway to encourage the recruitment and retention of health care workers including but not limited to providing mentoring, support, and training for health profession students, new physicians, and physician practices; expanding entry-level health certification programs and providing "glidepaths" for further education and career advancement; and assessing and implementing practices to reduce and simplify physician administrative workloads.

The State of Hawaii Department of Business, Economic Development & Tourism (DBEDT) examined data from several sources including the U.S. Census Bureau, U.S. Bureau Labor of Statistics (BLS), U.S. Bureau of Economic Analysis (BEA), State of Hawaii Department of Health (DOH), State of Hawaii Division of Professional Vocational Licensing (PVL), State of Hawaii Department of Labor and Industrial Relations (DLIR), U.S. Census American Community Survey (ACS), and Lightcast^{TM1} to compile updated information on the health care industry in Hawaii and to develop a better understanding of the characteristics of Hawaii health care workers. DBEDT also sought to compare the characteristics of Hawaii and living on the U.S. mainland to gain insight into the reasons why health care workers might leave the state.

Section II discusses the Hawaii health care industry, including its contributions to state employment, gross domestic product (GDP), long-term employment projections, and current indicators of employment shortages. Section III discusses factors affecting the demand for healthcare, and thus healthcare workers, in Hawaii. Section IV describes the characteristics of Hawaii's healthcare workers, including age, gender, race, place of birth, educational attainment, income, and housing tenure, with comparisons made to healthcare workers born in Hawaii and living on the U.S. mainland. Section V concludes.

¹ <u>LightcastTM</u> (Lightcast) collects, compiles, and analyzes labor market data from several sources including official government sources such as the U.S. Census Bureau, BEA, and BLS.

II. The Health Care Industry in Hawaii

A. Contributions of the Health Care Industry to the State's Economy: Employment and Gross Domestic Product

The health care and social assistance industry sector currently employs the largest number of workers in the state of Hawaii. In 2022, workers in the health care and social assistance sector comprised almost 12% (71,850) of all non-agricultural wage and salary jobs.² Figure 1 illustrates the percentage of employment in Hawaii by major North American Industry Classification System (NAICS) sector based on 2022 jobs.³ As shown, the next largest industries by employment are the professional and business services industry (11.4% or 69,750 jobs), the state government (11.1% or 67,450 jobs), food services and drinking places (10.6% or 64,750 jobs) and retail trade (10.6% or 64,400 jobs).

Health care & social	State government,		Natural resources, mining & construction, 6.0%	Federal government, 5.8%	Trans warel & uti 5.	port nous lities, 2%
assistance, 11.8%	11.1%	Retail trade, 10.6%	Financial	Local	Edu	
			activities, 4.2%	3.0%	serv 2.3%	Ma 2.0%
Professional & business services, 11.4%	Food services & drinking places, 10.6%	Accommodation, 6.2%	Other services, 4.2%	Wholes trade, 2.6%	Arts, ente	Inf 1.4%

Figure 1.	Employment i	n Hawaii by	/ Industry	Sector.	2022
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Percentages are based on non-agricultural wage and salary jobs. Source: Data from the U.S. Bureau of Labor Statistics, calculations by DBEDT.

The health care and social assistance industry's share of total employment in the state was higher in 2020 and 2021, following the onset of the COVID-19 pandemic, however, the number of jobs in the industry was lower, and remains below, the industry's pre-pandemic (2019) level. Table 1 presents the number and percentage of employment in Hawaii by major NAICS sector between 2019 and 2022. Sectors are ranked from highest to lowest based on 2022 jobs.

² The employment count for the health care and social assistance industry does not include health care and social assistance workers that work for the government (e.g., at the Department of Health) as those workers would be counted as workers in the government sectors.

³ For presentation purposes, certain sectors are aggregated (e.g., "Natural resources, mining & construction" includes sectors 21 and 23) and sector 92 (Public Administration) is disaggregated to reflect Federal, State and Local government. A list of two-digit NAICS codes and sectors is provided in the Appendix as Table A1.

	Hawaii							
		Iol	ns	non-	Percent	of total	iobs	
Industry Sector	2019	2020	2021	2022	2019	2020	2021	2022
Total non-agriculture								
wage & salary	658,600	559,900	583,500	609,900	100%	100%	100%	100%
Health care & social								
assistance	73,600	71,200	71,600	71,850	11.2%	12.7%	12.3%	11.8%
Professional &								
business services	73,200	65,300	67,700	69,750	11.1%	11.7%	11.6%	11.4%
State government	72 900	67 300	66 900	67 450	11 1%	12 0%	11 5%	11 1%
Food services &	72,500	07,500	00,500	07,450	11.170	12.070	11.570	11.170
drinking places	70.400	47.800	56.200	64.750	10.7%	8.5%	9.6%	10.6%
		,	00)200	0.,,,,,,,,		0.070	0.070	_0.0,0
Retail trade	71,500	61,400	63,200	64,400	10.9%	11.0%	10.8%	10.6%
Accommodation	42,800	21,800	28,600	37,550	6.5%	3.9%	4.9%	6.2%
Natural resources.								
mining & construction	37,600	36,700	36,800	36,550	5.7%	6.6%	6.3%	6.0%
			,					
Federal government	34,300	35,100	34,700	35,150	5.2%	6.3%	5.9%	5.8%
Transportation,								
warehousing &								
utilities	35,600	27,500	29,500	31,500	5.4%	4.9%	5.1%	5.2%
Financial activities	30,000	27,300	27,100	25,850	4.6%	4.9%	4.6%	4.2%
Otherservices	20,000	22 700	24 200		4 20/	4 20/	4 20/	4 20/
Other services	28,600	23,700	24,300	25,550	4.3%	4.2%	4.2%	4.2%
Local government	10 000	18 700	18 600	18 500	2 0%	2 2%	2.7%	2.0%
Local government	19,000	10,700	18,000	18,500	2.970	3.370	J.Z/0	3.070
Wholesale trade	18,300	16,500	16.300	16,000	2.8%	2.9%	2.8%	2.6%
	10,000	20,000	20,000	10,000	21070	21370	21070	2.070
Educational services	14,200	12,100	12,800	13,850	2.2%	2.2%	2.2%	2.3%
				,				
Manufacturing	14,100	12,000	12,100	12,400	2.1%	2.1%	2.1%	2.0%
Arts, entertainment &								
recreation	13,800	8,200	9,200	10,200	2.1%	1.5%	1.6%	1.7%
Information	8,800	7,300	7,900	8,600	1.3%	1.3%	1.4%	1.4%

 Table 1. Number and Percent of Employment in Hawaii by Industry Sector, 2019-2022

Source: Data from the U.S. Bureau of Labor Statistics, calculations by DBEDT.

Table 2 compares the distribution of jobs by industry sector in Hawaii to the U.S. As shown, Hawaii employs a lower proportion of workers in the health care and social assistance industry when compared to the nation as a whole (11.8% vs. 13.0%, respectively).

	Haw	aii	US	
Industry Sector	Jobs	Percent	Jobs	Percent
Total non-agriculture wage & salary	609,900	100.0%	146,814,000	100.0%
Natural resources, mining & construction	36,550	6.0%	10,265,000	7.0%
Manufacturing	12,400	2.0%	14,786,000	10.1%
Wholesale trade	16,000	2.6%	3,070,000	2.1%
Retail trade	64,400	10.6%	15,568,000	10.6%
Transportation, warehousing & utilities	31,500	5.2%	8,031,000	5.5%
Information	8,600	1.4%	2,536,000	1.7%
Financial activities	25 <i>,</i> 850	4.2%	10,052,000	6.8%
Professional & business services	69,750	11.4%	18,214,000	12.4%
Educational services	13 <i>,</i> 850	2.3%	5,029,000	3.4%
Health care & social assistance	71,850	11.8%	19,142,000	13.0%
Arts, entertainment & recreation	10,200	1.7%	2,555,000	1.7%
Accommodation and Food Services	102,300	16.8%	10,045,000	6.8%
Other services	25,550	4.2%	6,371,000	4.3%
Government	121,100	19.9%	21,150,000	14.4%

Table 2. Comparison of Hawaii and U.S. Employment by Industry Sector, 2022
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Source: Data from the U.S. Bureau of Labor Statistics, calculations by DBEDT.

The health care and social assistance industry contributed approximately eight percent of the State's Gross Domestic Product (GDP) in 2022. This percentage has been relatively stable since 2019. Table 3 compares the amount GDP generated by industry sector for each year between 2019 and 2022, in millions of 2012 dollars. As shown below, the private industry sectors that have generated the largest shares of GDP have been financial activities, which includes the real estate and rental and leasing sector, professional and business services, and, with the exception of 2020, accommodation and food services. Contributions to GDP from the federal government sector ranged from approximately 11% in 2019 to approximately 12% in 2020 through 2022. Contributions to GDP from the state and local government sector, with the exception of 2020, have been about nine percent.

Hawaii									
	Real	GDP (mill	ions 2012	2 \$)	Percent of Total Real GDP				
Industry sector	2019	2020	2021	2022	2019	2020	2021	2022	
All Industries	79,213	70,109	74,547	75,418	100.0%	100.0%	100.0%	100.0%	
Agriculture, forestry, fishing & hunting	508	463	336	n/a	0.6%	0.7%	0.5%	n/a	
Natural resources, mining & construction	4,048	3,876	3,800	3,118	5.1%	5.5%	5.1%	4.1%	
Manufacturing	1,565	1,434	1,551	n/a	2.0%	2.0%	2.1%	n/a	
Wholesale trade	2,593	2,423	2,548	2,322	3.3%	3.5%	3.4%	3.1%	
Retail trade	5,953	4,990	4,908	4,767	7.5%	7.1%	6.6%	6.3%	
Transportation, warehousing & utilities	6,094	4,156	4,493	5,084	7.7%	5.9%	6.0%	6.7%	
Information	2,240	2,056	2,530	2,873	2.8%	2.9%	3.4%	3.8%	
Financial activities Professional &	16,034	15,400	16,042	16,349	20.2%	22.0%	21.5%	21.7%	
business services	7,193	6,609	7,163	7,606	9.1%	9.4%	9.6%	10.1%	
Educational services	859	753	813	832	1.1%	1.1%	1.1%	1.1%	
assistance	5,963	5,951	6,099	6,160	7.5%	8.5%	8.2%	8.2%	
Arts, entertainment & recreation	1,018	571	795	933	1.3%	0.8%	1.1%	1.2%	
Accommodation and food services	7,736	4,544	6,358	6,906	9.8%	6.5%	8.5%	9.2%	
Other services	1,777	1,494	1,593	1,672	2.2%	2.1%	2.1%	2.2%	
Federal government	8,523	8,684	9,071	8,968	10.8%	12.4%	12.2%	11.9%	
government	7,082	6,796	6,623	6,563	8.9%	9.7%	8.9%	8.7%	

Table 3. Hawaii Real GDP by Industry Sector, 2019 – 2022

"n/a" indicates that the data was not available at the time of publication.

Source: Data from the U.S. Bureau of Economic Analysis, calculations by DBEDT.

B. Long-Term Employment Projections

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Based on State of Hawaii Department of Labor and Industrial Relations long-term projections, employment in Hawaii's health care and social assistance industry is forecasted to grow by approximately 15% between 2020 and 2030.⁴ This rate is similar to the growth projected for employment across all industries within the state. Over half of the job growth in the health care and social assistance industry is expected to be in ambulatory health care services such as doctor offices, dentist offices, outpatient care, home health care, and laboratories. A large proportion of employment growth is also expected in the social assistance sector, which includes individual and family services (NAICS 6241); community food and housing, and emergency and other relief services (NAICS 6242); vocational rehabilitation services (NAICS 6243); and child day care services (NAICS 6244). Employment in hospitals and nursing and residential care facilities is expected to grow by about seven percent. DLIR notes that the projections should be viewed as indicators of "relative magnitude and direction" and not as forecasts of "absolute occupational demand."⁵

Table 4.	Long-term	Employment	Projections	for Hawaii:	Health	Care and	Social	Assistance	e
Industry									
			Em	nlovmont	Change	(2020 20)	A		

	Emplo	yment	Change (2	Annual	
Industry Title	2020	2030	Number	Percent	Growth
Total, All Industries	606,320	698,960	92,630	15.3%	1.4%
Health care and social assistance	73,920	85,260	11,330	15.3%	1.4%
Ambulatory health care services	29,590	35,530	5,950	20.1%	1.8%
Hospitals	20,050	21,450	1,400	7.0%	0.7%
Nursing and residential care facilities	8,520	9,090	560	6.6%	0.6%
Social assistance	15,770	19,190	3,420	21.7%	2.0%

Source: DLIR, State of Hawaii Employment Projections for Industries and Occupations 2030, Industry Data.

The long-term annual employment growth projection of 1.4% for the health care and social assistance industry in Hawaii is similar to the U.S. Bureau of Labor Statistic's projection of annual employment growth for the industry of 1.2% per year between 2021 and 2031.⁶

⁴ DLIR, <u>State of Hawaii Employment Projections for Industries and Occupations 2030</u>, July 2022 (DLIR Employment Projections Report), at 4.

⁵ DLIR Employment Projections Report, at 3. Projection models may include independent variables such as labor force, nonfarm jobs, consumer price index (CPI), resident population, gross state product, personal income, average visitor census, hotel occupancy rates, and building permits. DLIR Employment Projections Report, at 2. According to DLIR, employment projections include part-time and full-time wage and salary and self-employed workers.

⁶ Based on BLS projections of employment change by industry sector for 2021-2031. <u>Employment Projections -</u> <u>2021-2031 (bls.gov)</u>, accessed March 23, 2023. The BLS forecasts slower growth for non-agricultural wage and salary employment as a whole, with an annual growth rate of 0.5%.

The two largest occupational codes in the health care and social assistance industry by employment are 1) healthcare practitioners and technical occupations and 2) healthcare support occupations. Table 5 provides long-term (2030) employment projections for these categories in addition to projections for select detailed occupation groups. As shown below, employment in healthcare support occupations is expected to grow by 23.5% between 2020 and 2030, while employment for healthcare practitioners and technical occupations is expected to grow by 10.4%.⁷ Over one third of the employment growth in healthcare practitioners and technical occupations is expected to be in nursing, with lower growth projected for physicians and surgeons. Over one half of the growth in healthcare support occupations is expected to occupations is expected to cocupations to 2030 by six-digit Standard Occupational Classification (SOC) code for healthcare practitioners and technical occupations.

	Employment		Change (Annual	
Occupation	2020	2030	Number	Percent	Growth
Total, All Occupations	606,320	698,960	92,630	15.3%	1.4%
Healthcare practitioners and technical					
occupations	33,190	36,650	3,460	10.4%	1.0%
Registered nurses	11,770	12,800	1,030	8.8%	0.8%
Nurse practitioners	400	610	210	53.3%	4.4%
Physicians and surgeons	3,940	4,140	200	5.1%	0.5%
Healthcare support occupations	23,410	28,900	5,490	23.5%	2.1%
Home health and personal care aides	9,290	12,270	2,980	32.1%	2.8%

	Table 5. Long-Term Em	ployment Proj	jections for Hawaii:	Select Occu	pational Groups
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The SOC codes for the categories above are: healthcare practitioners and technical occupations (29-0000); registered nurses (29-1141); nurse practitioners (29-1171); physicians and surgeons (aggregated to include 29-1215 (Family Medicine Physicians), 29-1216 (General Internal Medicine Physicians), 29-1218 (Obstetricians and Gynecologists), 29-1221 (Pediatricians, General), 29-1223 (Psychiatrists), 29-1228 (Physicians, All Other; and Ophthalmologists, Except Pediatric), and 29-1248 (Surgeons, Except Ophthalmologists); healthcare support occupations (31-0000); and home health and personal care aides (31-1120).

Source: DLIR, <u>Employment Projections for Industries and Occupations 2030</u>, <u>Occupation Data</u>. Aggregation and calculations for "physicians and surgeons" by DBEDT.

Several trends in Hawaii employment projections for healthcare jobs are similar to national employment projections. Like Hawaii, national estimates of healthcare support occupations, especially home health and personal care aides, are expected to grow significantly. Home health and personal care aides are expected to experience the largest increase in new jobs nationwide between 2021 and 2031, which will make it the largest occupation in the nation's economy in 2031. Demand for caregiving services is attributed to the anticipated increase in the older adult population.⁸ Nurse practitioners, while relatively small in absolute employment, are

⁷ DLIR Employment Projections 2030 Report, at 8.

⁸ Employment Projections - 2021-2031 (bls.gov), accessed March 23, 2023, at 6.

also expected to grow rapidly as team-based health care models increasingly utilize providers such as nurse practitioners to dispense care that would otherwise be provided by a physician.⁹ Finally, the national growth in physicians and surgeons over the next ten years is expected to be relatively low. National estimates place the growth in physicians and surgeons between 2021 and 2031 at three percent, lower than the Hawaii long-term employment projection of five percent.¹⁰

C. Current Worker Shortages

While long-term industry and employment projections highlight the growing demand for health care and support providers, a number of survey-based studies indicate that the industry is currently experiencing significant shortages of healthcare professionals. Concerns over health care worker burnout and shortages have also been raised on a national level.¹¹ Among the results of the Hawaii-based studies are:

- DBEDT's 2022 study of Hawaii residents who were not actively working as payroll employees found that 15% of the study's respondents indicated that they had exited from the Healthcare and Social Assistance industry.¹²
- A survey of the COVID-19 pandemic on Hawaii's nursing workforce conducted in late 2020 found that 23% of respondents considered leaving the workforce, with "unsafe work environment" and "family/caregiving strain" being leading concerns.¹³

¹⁰ <u>Physicians and Surgeons: Occupational Outlook Handbook: U.S. Bureau of Labor Statistics (bls.gov)</u>. The complete table of BLS's 2031 employment projections is available at <u>Employment by detailed occupation: U.S.</u> <u>Bureau of Labor Statistics (bls.gov)</u>.

¹¹ See, for example, <u>New Surgeon General Advisory Sounds Alarm on Health Worker Burnout and Resignation</u> <u>HHS.gov</u>, May 23, 2022, accessed March 31, 2023.

¹² Workforce Exit Study prepared for DBEDT by Anthology Research and DBEDT's Research and Economic Analysis Division (READ), September 2022, at 3. The survey population for the Workforce Exit Study was defined as residents of Hawaii not actively working as Hawaii payroll employees. The survey period spanned June 29, 2022, through July 27, 2022. Workforce Exit Study, at 5.

¹³ Fontenot, Holly B., et al. Impact of the COVID-19 Pandemic on the Hawai`i Nursing Workforce: A Cross-sectional Study, *Hawai`i Journal of Health and Social Welfare*, May 2022, volume 81, no. 5 (Nursing Workforce Study).

⁹ <u>Employment Projections - 2021-2031 (bls.gov)</u>, accessed March 23, 2023, at 8. In Hawaii, Act 293 was signed into law last year, to increase the scope of practice for physician assistants to help ease the impacts of the Hawaii's shortage of licensed physicians.

https://www.capitol.hawaii.gov/session/archives/measure_indiv_Archives.aspx?billtype=HB&billnumber=1575&year=2022

- The Hawaii State Center for Nursing's 2021 Hawaii Nursing Workforce Supply Report indicated that unofficial estimates suggest that the state had a current shortage of 300 to 400 nurses, with 12% of licensed practical nurses, 14% of registered nurses, and 16% of advanced practice registered nurses indicating that they were likely or very likely to leave their current position within the next year.¹⁴
- The University of Hawaii's Annual Report on the Findings from the Hawaii Physician Workforce Assessment Project found a statewide shortage of 589 Full Time Equivalent (FTE) of physician services, or 776 FTEs when the geographic constraints of specialty coverage on different islands are considered. The greatest statewide shortage was found in primary care (162 FTEs).¹⁵
- The Healthcare Association of Hawaii (HAH) reported that 17% of non-physician healthcare positions remain open in 2022, compared to 10% in 2019, with almost half of the open positions in hospitals. The HAH report found that Oahu had the highest number of openings (2,952 or 15% of all positions on island), followed by Maui (599 openings, or 36% of positions), Hawaii Island (487 openings, or 17% of positions), Kauai (160 openings, or 13% of positions), Molokai (19 openings, or 22% of positions), and Lanai (16 openings or 48% of positions). ¹⁶

To further assess indicators of labor shortages in Hawaii health care occupations, DBEDT examined data on job openings and the number of job candidates and hires for select occupation groups. Data from the DLIR HirenetHawaii Hawaii Workforce Infonet website provides current information on the number of job openings advertised online as well as the number of job candidates available based on active resumes in the workforce system.¹⁷

¹⁴ Hawai'i State Center for Nursing (2021). <u>2021 Hawai'i Nursing Workforce Supply: Statewide Report</u> (Nursing Workforce Supply Report), at 7, 21, 32, and 43. An April 2022 article by Hawaii News Now indicated that 5,000 nurses, or 15% of the workforce had left nursing over the past two years, with 22% of registered nurses planning to leave their jobs within three years. <u>To tackle shortage, Hawaii considers making it easier to hire foreign-trained nurses (hawaiinewsnow.com)</u>, accessed March 31, 2023.

¹⁵ University of Hawaii System Annual Report, Report to the 2023 Legislature, <u>Annual Report on Findings from the</u> <u>Hawaii Physician Workforce Assessment Project</u>, December 2022 (Hawaii Physician Workforce Report). The supply of physicians was assessed via a survey, outreach to local community contacts, internet searches, and calls to physician offices. The demand for physicians was estimated using a model from IHS Global and county level population data and medical risk factor information for each county in Hawaii.

¹⁶ Healthcare Association of Hawaii, <u>Hawaii Healthcare Workforce Initiative 2022 Report</u> (HAH Workforce Report), pages 25 and 35. The results are based on a survey conducted between February 2022 and June 2022 of 89 non-physician, patient facing healthcare jobs.

¹⁷ Job openings are based on online advertised jobs, filtered to exclude duplicate postings. Job candidates are based on individuals with active resumes in the HireNet Hawaii workforce system. Job openings and candidates are based on searches using the Hawaii Department of Labor and Industrial Relations <u>Hawaii Workforce Infonet</u>, Labor Market Analysis, Labor Market Profiles, Occupation Profile page, last accessed March 10, 2023.

Lightcast[™] provides similar information on job postings but also compiles information on job hires and provides monthly averages for both postings and hires over a two-year period (2021-2022).¹⁸ Summary ratios were calculated to reflect the number of job candidates per job opening (Hawaii Workforce Infonet) and the average number of hires divided by the average number of job postings (Lightcast[™]). A low candidate (hire) to job opening (posting) ratio, suggests there may be few candidates or hires per job; a ratio of over one indicates that there is an excess of candidates (or hires) for the jobs posted online in that occupation.

As shown in Figure 2, both sources of data support persistent shortages in healthcare practitioners and technical occupations. The ratios comparing average job postings to average hires and job openings to candidates is clearly less than one whether data from Lightcast[™] or the Hawaii Workforce Infonet is used. It is less clear, based on the data, the extent to which shortages persist for healthcare support occupations. Data from Lightcast[™] indicates that the average number of hires between 2019 and 2022 greatly exceeded the average number of online job postings, while data from the Hawaii Workforce Infonet indicates that the number of candidates for healthcare support occupations is still less than the number of online job openings.



Figure 2. Hawaii Healthcare Job Postings vs. Candidates/Hires

Sources: Data on 2019-2022 monthly average job postings and hires is from LightcastTM's Job Posting Activity in the Occupation Overview Reports for Healthcare Practitioners and Technical Occupations and Healthcare Support Occupations, accessed February 3, 2023. Data on job openings and candidates as of March 9, 2023 is from the DLIR <u>Hawaii Workforce Infonet</u>, Labor Market Analysis, Occupation Profile, Supply and Demand, accessed March 10, 2023. Ratios are calculated by DBEDT.

DBEDT further examined data for four select occupations: physicians (SOC 29-1210), registered nurses (SOC 29-1140), home health and personal care aides (SOC 31-1120), and nursing assistants, orderlies, and psychiatric aides (SOC 31-1130). Similar patterns emerge. Data from

¹⁸ Similar to the job openings data, job postings reflect online postings and exclude duplicates. Hires are reported in the Quarterly Workforce Indicators when a person's social security number appears on a company's payroll and was not there the quarter before. According to Lightcast[™], hires are calculated using Lightcast[™] jobs data, information on separation rates from BLS, and industry-based hires from the U.S. Census Bureau.

both Lightcast[™] and the Hawaii Workforce Infonet continue to indicate shortages amongst physicians and registered nurses (both in the healthcare practitioners and technical occupations group).¹⁹ The 2021-2022 monthly average data from Lightcast[™] suggests a surplus of hires relative to online job openings for home health and personal care aides and nursing assistants, orderlies, and psychiatric aides (both in the healthcare support occupations group). Data from the Hawaii Workforce Infonet suggests shortages in both healthcare support occupations.



Figure 3. Hawaii Healthcare Job Postings vs. Candidates/Hires: Selected Occupations

Sources: Data on 2021-2022 monthly average job postings and hires is from Lightcast[™]'s Job Posting Activity in the Occupation Overview Reports for Physicians (accessed March 13, 2023); Registered Nurses (accessed March 13, 2023); Home Health and Personal Care Aides (accessed March 8, 2023); and Nursing Assistants, Orderlies, and Psychiatric Aides (accessed March 10, 2023). Data on March 9, 2023 job openings and candidates is from the DLIR <u>Hawaii Workforce Infonet</u>, Occupation Profile, Jobs and Candidates Available Table. DBEDT aggregated the data for Physicians, Home Health and Personal Care Aides, and Nursing Assistants, Orderlies, and Psychiatric Aides the data for Physicians are calculated by DBEDT.

¹⁹ LightcastTM provides monthly average postings and hires over a two-year period (2021-2022) for detailed occupations.

There are important caveats to this data. First, both Lightcast[™] and Hawaii Workforce Infonet use online job postings as indicators of demand. If a significant share of recruiting for certain occupations occurs via "offline" channels (e.g., recruiting occurs directly from schools, through internships, or in-person events where the job opportunities are not posted online), this will not be reflected in the data.²⁰ For example, according to the HAH Workforce Report, the University of Hawaii Community College System and HAH have partnered to integrate employers' hiring processes into healthcare certificate training courses, so that students can apply for positions while completing the courses. In addition, Hawaii Pacific Health has partnered with high schools to provide healthcare training and certificate programs to high school students.²¹ If positions are being filled by recruiting candidates directly from such programs (and these positions are not posted online), this would contribute to hires exceeding the number of online job postings. Second, basing the candidates available on online resumes will understate the supply of candidates to the extent that candidates do not post their resumes online to the Hawaii Workforce Infonet website. This may also occur if a lot of recruiting is done offline or informally or through other channels. As a result, although the data above is informative, these limitations should be recognized.

In sum, industry-based studies and data on job postings and candidates/hires indicate a current shortage of workers in the healthcare practitioners and technical occupations group, and specifically among physicians and registered nurses. The job postings and hires/candidates data provides mixed results for healthcare support occupation, however, more must be understood to identify the recruiting channels most utilized for these occupations as it appears that online postings do not adequately capture occupation demand. Factors impacting the demand for health care in Hawaii are discussed next.

²⁰ It is notable that the openings reported by the Hawaii Workforce Infonet appear to significantly exceed the postings reported by Lightcast[™]. Both use de-duplication processes to filter job openings. Without further information regarding the differences between these processes, it is unclear whether the higher counts reported on the Hawaii Workforce Infonet website result from differences in methodology or whether job openings were significantly higher on March 9, 2023 compared to the 2021-2022 period.

²¹ HAH Workforce Report, at 48-49. The expansion of entry-level certification programs with transition-toemployment support at the high school and adult education levels is in progress. HAH Workforce Report, at 54. Several Hawaii public high schools currently offer Career and Technical Education (CTE) pathways which allow students to undertake programs of study and participate in work-based learning in several areas, including Health Services. See <u>Hawaii DOE | Career and Technical Education (hawaiipublicschools.org)</u> and <u>Hawaii Academies 2021</u>. To the extent that programs such as CTE allow employers to directly recruit candidates for job openings, this would not be reflected in the data. Home health and personal care aides, and nursing assistants, orderlies, and psychiatric aides typically need a high school diploma or equivalent, with some positions not requiring formal education. See <u>Home Health and Personal Care Aides : Occupational Outlook Handbook: : U.S. Bureau of Labor Statistics (bls.gov)</u> <u>Psychiatric Technicians and Aides : Occupational Outlook Handbook: : U.S. Bureau of Labor Statistics (bls.gov)</u>

III. The Demand for Health Care Services

The demand for health care services is a function of the population in the surrounding area and the population's health characteristics. DBEDT examined the following factors likely to impact the demand for health care in Hawaii: trends in the state's resident population and de facto population, the projected aging of Hawaii's population, and trends in certain health indicators.

A. Hawaii's Resident and De Facto Population

Hawaii's resident population has been declining, largely due to domestic out-migration. Table 6 shows the resident population for the State of Hawaii and for each of the four counties for the years 2019 through 2022. Hawaii's overall resident population declined by 0.5% in 2022 relative to 2021. The resident populations of Honolulu County and Maui County declined by 0.9% and 0.3%, respectively, while the resident population of Hawaii County grew by 1.2%. The resident population for Kauai County remained stable.

		Percen	it Change Ye	e over the ar	e Prior			
	2019	2020	2021	2022	2019	2020	2021	2022
State of Hawaii	1,456,371	1,451,043	1,447,154	1,440,196	-0.2%	-0.4%	-0.3%	-0.5%
Honolulu County	1,018,275	1,012,305	1,004,673	995,638	-0.3%	-0.6%	-0.8%	-0.9%
Hawaii County	199,843	200,712	203,792	206,315	-0.2%	0.4%	1.5%	1.2%
Maui County	164,844	164,840	164,898	164,433	0.0%	0.0%	0.0%	-0.3%
Kauai County	73,409	73,186	73,791	73,810	0.0%	-0.3%	0.8%	0.0%

Table 6. Resident Population for the State of Hawaii and by County

Source: U.S. Census Bureau and DBEDT.

Figure 4 shows that out-migration has driven recent declines in resident population. Domestic migration from Hawaii of 15,212 persons was offset by international migration to Hawaii of 5,785 persons, resulting in a net migration of -9,427.²²

²² <u>Research & Economic Analysis | Migration Dashboard (hawaii.gov)</u>, accessed March 9, 2023.



Figure 4. Sources of Resident Population Change

Source: U.S. Census Bureau and DBEDT. Figure 4 is from the DBEDT Research and Economic Analysis Division's <u>Migration Dashboard</u>, accessed March 9, 2023.

Since visitors typically comprise a significant proportion of the population in Hawaii, it is appropriate to also examine the state's de facto population when considering the demand for health care. The de facto population is defined as the number of persons physically present in an area, regardless of military status or usual place of residence.²³ Figure 5 illustrates Hawaii's de facto population over time, compared to its resident population. As Hawaii's resident population began to plateau in 2017 and decrease in 2019, visitors remained a significant and growing share of Hawaii's de facto population. The de facto population dropped in 2020 due to the decrease in visitors during the COVID-19 pandemic but partially rebounded in 2021. Hawaii's de facto population in 2021 was 95.5% of the state's pre-pandemic (2019) de facto population level, and DBEDT forecasts that resident population is expected to remain stable as visitor levels continue to increase through 2026.²⁴ It appears unlikely that the demand for health care will decrease, at least in the near term, based on forecasted population trends.

²³ De facto population counts include visitors present but exclude residents temporarily absent.

²⁴ DBEDT's first quarter 2023 economic forecast extends through 2026. See <u>Department of Business, Economic</u> <u>Development & Tourism | State Continues to Forecast a Better Hawaii Economy than the Nation in 2023</u>.



Figure 5. State of Hawaii Resident and De Facto Population, 2013-2022

Source: U.S. Census Bureau, Bureau of Economic Analysis, and DBEDT. Hawaii's de facto population is not yet available for 2022.

B. The Aging of Hawaii's Population

While Hawaii's resident population is expected to remain somewhat constant over the next few years, the age distribution of the population is expected to change. In 2021, older adults, defined as persons 65 years of age and over, comprised 19.5% of Hawaii's population. By comparison, older adults comprised 16.8% of the U.S. population in 2021.²⁵ In December 2021, DBEDT published a report examining the growth and characteristics of the older adult, or elderly,²⁶ population in Hawaii and found that the share of the population 65 years of age and older was expected to increase over time.

²⁵ Based on U.S. Census Bureau, Population Division, Annual Estimates of the Resident Population for Selected Age Groups by Sex for the United States: April 1, 2020 to July 1, 2021 (NC-EST2021-AGESEX), Release Date: June 2022, and DBEDT calculations.

²⁶ The terms "older adult" and "elderly" are used interchangeably in this report.





Source: DBEDT, <u>The Elderly Population in Hawaii: Current Living Circumstances and Housing Options</u>, December 2021, Figure 1. The figure reflects DBEDT projections for Hawaii with adjustments to reflect the actual counts of total population from the 2020 Decennial Census.

Based on DBEDT's projections, the share of older adults is expected to increase rapidly between 2020 and 2030 as those born between 1946 and 1964, or the "baby boomers", age. DBEDT projected that the share of the population 65 years of age and older will increase to 22.6% of the total population by 2030, and to 23.7% in 2040. DBEDT further found that, starting in 2030, there would be a rapid increase in the population 85 years of age and over as the baby boomers grow older and advances in health care prolong life expectancy. DBEDT notes in the report that those 85 years of age or older are much more likely to have at least one disability.²⁷ This trend has a number of implications regarding the demand for government and social services as well as for health care.

C. Hawaii Health Indicators and Chronic Diseases

Finally, DBEDT examined data on health indicators for chronic diseases identified as among the most prevalent and costly.²⁸ The information below is based on data from the Behavioral Risk

²⁷ Based on these projections, one in four older adults will be 85 years or older by 2040. Moreover, 70.9% of those 85 years of age or older had at least one disability, based on 2015-2019 American Community Survey data. This compares to 21.1% for adults 65 to 74 years of age and 39.5% for adults 75 to 84 years of age. The Elderly Population in Hawaii: Current Living Circumstances and Housing Options, December 2021, at 3. A person is considered to have a disability if they have hearing difficulty, vision difficulty, cognitive disability, ambulatory disability, self-care difficulty, and/or independent living difficulty. <u>How Disability Data are Collected from The American Community Survey (census.gov)</u>, last accessed March 6, 2023.

²⁸ Leading chronic diseases include: heart disease, stroke, cancer, diabetes, dementia/Alzheimer's disease, and asthma. See <u>Chronic Disease Prevention & Health Promotion Division (hawaii.gov)</u>, accessed March 2, 2023 and <u>Peck, K.; Sentell, T.; Pirkle, C. Making the Case: Investing in Chronic Disease Prevention in Hawai`i. Published July 8, 2021</u>. Data on the percent of adults diagnosed with dementia or Alzheimer's disease was not available based on

Factor Surveillance System (BRFSS)²⁹, the Youth Risk Behavior Surveillance System (YRBSS), and the National Survey on Drug Use and Health, as maintained by the State of Hawaii Department of Health (DOH).³⁰

Figure 7 shows the percentages of adults in the state of Hawaii who have diabetes, have had heart disease (including stroke), have had cancer, who have arthritis, who have asthma, and who are obese, from 2011 through the last year for which data is available. The rate of obesity was examined because obesity increases the risk of developing several chronic conditions.³¹ Figures 8 examines the age distribution of those who have the disease or condition in the most recent year for which data is available.

According to BFRSS/DOH estimates, rates of diabetes, obesity, and cancer have increased over time, with statistical significance. The rate of arthritis has also increased over time, but not significantly. The rates of heart disease and asthma decreased over time, not significantly. In examining the incidence of these chronic diseases and conditions by age, the percentages of adults with diabetes, who have had heart disease, who have had cancer, and have arthritis appear to increase with age. There is not a clear trend between age and the incidence of asthma or obesity. These results are generally consistent with the Centers for Disease Control and Prevention National Center for Chronic Disease Prevention and Health Promotion's assessment that "aging increase the risk of chronic diseases such as dementias, heart disease, type 2 diabetes, arthritis, and cancer."³²

the BRFSS survey. Data from the Centers for Medicare and Medicaid Services indicate that the percent of Medicare beneficiaries who were treated for Alzheimer's disease or dementia was ranged between 9-10% for the period 2010-2020, but fell to 7% in 2021. It is not clear what accounts for the reduction in 2021. Medicare beneficiaries include those 65 years of age or older, those under 65 years of age with certain disabilities, and persons of any age with end-stage renal disease.

²⁹ The Hawaii BRFSS survey is an annual telephone survey of Hawaii residents conducted by the Hawaii State Department of Health in collaboration with the Centers for Disease Control and Prevention (CDC). Data on preventive health practices and risk behaviors linked to chronic diseases, injuries, and preventable infectious diseases in the adult population are collected.

³⁰ All data on health indicators was accessed through the Hawaii State Department of Health Hawaii <u>Hawai'i Health</u> <u>Data Warehouse (hhdw.org)</u>. Data was last accessed March 8, 2023.

³¹ <u>Chronic Disease Prevention & Health Promotion Division (hawaii.gov)</u>, accessed on March 2, 2023. The CDC identifies obesity as a common, serious, and costly chronic disease affecting adults and children. See <u>Overweight &</u> <u>Obesity | CDC</u>, last accessed March 6, 2023.

³² <u>Promoting Health for Older Adults | CDC</u> Factsheet, accessed March 2, 2023. As indicated earlier, comparable BFRSS/DOH data was not available for dementia/Alzheimer's disease but most persons with dementia are 65 years of age or older. <u>Alzheimer's Disease Fact Sheet | National Institute on Aging (nih.gov)</u>, accessed March 2, 2023.





The specific indicators are: 1) the percentage of adults who have ever been diagnosed with diabetes; 2) percentage of adults who have ever been told by a health care provider that they had coronary heart disease; 3) percent of adults who have ever been told by a health professional that they have any type of cancer, except skin cancer; 4) percent of adults who have been told by a health professional that they have arthritis; 5) percent of adults who have been told by a health professional that they have arthritis; 5) percent of adults who have been told by a health care provider that they currently have asthma; and 6) percent of adults who are obese according to the Body Mass Index.

Source: Hawaii Health Matters: Indicators, last accessed March 24, 2023.





Source: Hawaii Health Matters: Indicators, last accessed March 24, 2023.

Finally, while the health indicators above are related to chronic diseases in adults, DBEDT also examined two health indicators for adolescents: the rate of obesity in teenagers and the percent of teenagers who experienced major depressive episodes. Childhood obesity is associated with adult obesity and an increased risk for adverse health conditions and chronic disease. In addition, worsening adolescent mental health has been identified by the CDC as a concerning trend on a national level.³³ DBEDT examined the incidence of teens experiencing

³³ According to the CDC's <u>Youth Risk Behavior Surveillance Data Summary & Trends Report: 2011-2021</u>, in 2021, 42% of students felt persistently sad of hopeless and 29% experienced poor mental health. <u>Mental Health | DASH |</u>

major depressive episodes as a proxy for mental health. Both the rate of obesity in teenagers and the percent of teenagers experiencing major depressive episodes appear to have increased significantly between 2015 and 2019. See Figure 9. Based on recently released YRBSS/DOH data, the rate of teens who are obese fell in 2021. Although similar data for the COVID-19 pandemic and post-pandemic years (2020, 2021, 2022) was not available regarding teens who experienced major depressive episodes, reports indicate that mental health worsened during the pandemic, particularly for youth and young adults.³⁴





Sources: <u>Hawaii Health Matters</u> :: <u>Indicators</u> :: <u>Teens who are Obese</u> :: <u>State</u> : <u>Hawaii</u> and <u>Hawaii Health Matters</u> :: <u>Indicators</u> :: <u>Adolescents who Experience Major Depressive Episodes</u> :: <u>State</u> : <u>Hawaii</u>, last accessed April 11, 2023.

It appears likely that the demand for health care services in Hawaii will increase given trends in the magnitude and age distribution of its population and trends in several health indicators.³⁵ Although the trends of some health indicators are mixed, it appears that the rates of diabetes, cancer, and arthritis may further increase as Hawaii's population ages. Increases in the rate of obesity could also result in greater demand for health care as obesity increases the risk of developing several chronic diseases and health conditions.³⁶ In addition, mental health, which

<u>CDC</u>, last accessed March 8, 2023. See also the U.S. Surgeon General's 2021 <u>Advisory on Protecting Youth Mental</u> <u>Health</u>, accessed April 6, 2023.

³⁴ Anxiety And Depression: Youth Mental Health Got Worse During The Pandemic - Honolulu Civil Beat, last accessed March 8, 2023, and <u>COVID-19 pandemic harming mental health of Hawaii residents, especially young and lower-income people, survey reveals | Honolulu Star-Advertiser (staradvertiser.com), last accessed March 8, 2023. See also <u>National Report Spotlights Hawaii's Need For Suicide Prevention - Honolulu Civil Beat</u>, last accessed March 8, 2023.</u>

³⁵ This is consistent with, for example, the forecast of physician demand conducted for the Hawaii Physician Workforce Report, which projects a steady increase in demand for physicians through 2030. Hawaii Physician Workforce Report, at 8.

³⁶ According to the CDC, obesity in children and adults increases the risk for high blood pressure, type 2 diabetes, breathing problems, joint problems, gallstones and gallbladder disease. In addition, childhood obesity is associated with anxiety and depression, low self-esteem, social problems such as bullying and stigma, and obesity as an adult.

appeared to be worsening for teens in the years prior to the pandemic, appears to have further worsened during the pandemic. In addition to increasing the demand for mental health services,³⁷ indicators such as depression are associated with an increased risk of physical health issues such as diabetes, heart disease and stroke.³⁸ Finally, research is ongoing regarding the impacts of "long COVID", where older adults as well as younger adults, including those who were physically fit before COVID, have reported post-COVID symptoms including but not limited to fatigue, chest pain, cough, joint or muscle pain, and shortness of breath.³⁹ These considerations underscore the importance of ensuring that Hawaii is able to provide adequate health care services, and to further understand the characteristics of and conditions facing its health care workforce.

IV. Hawaii's Health Care Workforce

DBEDT examined several sources of data to compile information on the characteristics of Hawaii's health care workers. DBEDT first examined the locations of providers licensed to provide health care in Hawaii based on the geographic reports compiled by the State of Hawaii Professional and Vocational Licensing Division. While the geographic reports provide information on all licensed providers, they do not include demographic information such as age, gender, housing tenure, whether a provider works full-time or part-time, or income level. As such, and as discussed in Section IV.B, DBEDT used data from the U.S. Census Bureau's 2017-2021 ACS PUMS to compile more detailed demographic information.

A. The Geographic Distribution of Licensed Hawaii Health Care Providers

As a first step in understanding the "supply", or "potential supply", of health care providers, DBEDT examined data on all health care providers licensed to provide care in the State of Hawaii.⁴⁰ The provider groups included: physicians and surgeons,⁴¹ certified physician

Adult obesity is associated with a higher risk for stroke, cancer, premature death, and depression/anxiety. <u>Consequences of Obesity | Overweight & Obesity | CDC</u>, last accessed March 6, 2023.

³⁷ While psychiatrists are included as physicians in SOC 29-1210, psychologists, mental health counselors, and other mental health service providers are captured in other SOC categories (e.g., 19-3030, 21-1010, etc.)

³⁸ <u>About Mental Health (cdc.gov)</u>, last accessed March 8, 2023.

³⁹ See <u>Post-COVID Conditions: Information for Healthcare Providers (cdc.gov)</u> and <u>Guidance on "Long COVID" as a</u> <u>Disability Under the ADA, Section | HHS.gov</u>, last accessed March 24, 2023.

⁴⁰ Based on data from the Hawaii State Department of Commerce and Consumer Affairs (DCCA), Professional and Vocational Licensing Division Geographic Reports. This data includes permanent licenses only and does not include interns, residents, providers who provide state government services only, or limited/temporary licenses for emergency/shortage conditions. It does not include inactive licenses. Data on the number of providers licensed to

assistants, advanced practice registered nurses, registered nurses, pharmacists, dentists, optometrists, physical therapists, psychologists, and mental health counselors. The percentage distribution for all provider groups by place of residence is presented in Table 7.⁴²

Of the 11,427 physicians and surgeons licensed to practice in Hawaii as of February 2022, 47% (5,411) resided in Hawaii. Of the 5,411 physicians and surgeons licensed to practice and residing in Hawaii, over three-quarters (4,126) reside on Oahu, with 10% (543) residing on Hawaii Island, 9% (501) residing on Maui Island, 4% (226) residing on Kauai, 0.2% (13) on Molokai and 0.04% (2) on Lanai. Of the 27,620 registered nurses licensed to practice in Hawaii, approximately 59% (16,200) resided in Hawaii. Of the registered nurses residing in Hawaii, 73% (11,872) reside on Oahu, 12% (1,915) on Hawaii Island, 10% (1,577) on Maui Island, 5% (773) on Kauai, 0.3% (45) on Molokai and 0.1% (18) on Lanai. Of the selected providers, the group with the highest percentage of licensed providers residing within the State are dentists (84% residing in Hawaii) and certified physical assistants (81% residing in Hawaii).

	Percent of Total Licensed Providers				ŀ	Percent of Total Providers with a Hawaii Address							
Type of		Residin	g in				Re	esiding or	1				
provider	Hawaii	Mainland	Foreign	Total	Oahu	Hawaii	Maui	Kauai	Molokai	Lanai	Total		
		US											
Physicians and	17 1%	57 5%	0.2%	100%	76.2%	10.0%	0.2%	1 2%	0.24%	0.04%	100%		
surgeons	47.470	52.570	0.270	100%	70.570	10.070	9.570	4.270	0.2470	0.0470	100%		
Certified													
physician	80.7%	19.3%	0%	100%	60.9%	14.6%	19.3%	5.2%	0%	0%	100%		
assistants													
Adv. practice													
registered	65.3%	34.6%	0.1%	100%	75.1%	12.8%	7.4%	4.2%	0.37%	0.15%	100%		
nurses													
Registered	58 7%	<i>/</i> 11.2%	0.1%	100%	73 3%	11.8%	9.7%	1.8%	0.28%	0 11%	100%		
nurses	50.770	41.270	0.170	10070	/ 3.370	11.070	5.770	4.070	0.2070	0.1170	10070		
Pharmacists	58.1%	41.8%	0.1%	100%	76.0%	11.3%	7.6%	4.8%	0.21%	0.07%	100%		
Dentists	83.5%	16.5%	0%	100%	75.3%	9.9%	10.0%	4.4%	0.29%	0.10%	100%		
Optometrists	73.1%	26.9%	0%	100%	77.5%	10.9%	7.8%	3.4%	0.34%	0%	100%		
Physical	67 10/	22.6%	0.2%	100%	70 10/	11 00/	11 70/	C 10/	0 2 4 9/	0%	100%		
therapists	07.1%	52.0%	0.5%	100%	/0.1%	11.0%	11.7%	0.1%	0.54%	0%	100%		
Psychologists	67.5%	32.5%	0%	100%	77.5%	11.5%	6.8%	3.9%	0%	0.24%	100%		
Mental health counselors	77.1%	22.9%	0.0%	100%	71.3%	17.0%	8.9%	2.2%	0.55%	0%	100%		

Table 7. Percentage Distribution of Selected Groups of Licensed Health Care Providers,by Place of Address

Source: Licensed provider place of residence based on DCCA PVL Geographic Report as of February 24, 2022. Calculations by DBEDT.

practice in Hawaii, by place of address, was compiled and tabulated by DBEDT for selected health care occupations as part of the 2018, 2019, 2020, and 2021 editions of the State of Hawaii Data Book.

⁴¹ This group includes physicians, osteopathic physicians and surgeons, and podiatrists.

⁴² The number of licensed healthcare providers, by place of residence, for selected provider groups is provided as Table A3.

As shown, the island of Molokai had no licensed certified physician assistants or licensed psychologists as of February 2022. The island of Lanai had no licensed certified physician assistants, licensed optometrists, licensed physical therapists or licensed mental health counselors.

Figures 10 and 11 show the distribution by place of residence for four categories of health workers: physicians and surgeons; registered nurses; dentists; and certified physical assistants.





Source: Licensed provider place of residence based on DCCA PVL Geographic Report as of February 24, 2022. Calculations by DBEDT.



Figure 11. Percentage of Licensed Healthcare Providers Residing in Hawaii, by Island of Residence, as of February 2022: Selected Providers

To examine how the number of healthcare providers residing in-state compares to the state's de facto population, DBEDT calculated a ratio equal to the number of licensed healthcare providers residing in Hawaii over the state's de facto population. ⁴³ As shown in Figure 12, the number of licensed providers per 1,000 persons generally stayed the same or increased between 2019 and 2020 and stayed the same or fell between 2020 and 2021. Although there were modest increases several groups of licensed Hawaii health care providers in 2020, temporary increases in the number of providers per capita in 2020 appear largely driven by the significant reduction in visitors during that year, which decreased the 2020 de facto population.

Source: Licensed provider place of residence based on DCCA PVL Geographic Report as of February 24, 2022. Calculations by DBEDT.

⁴³ The de facto population is based on data from the U.S. Census Bureau, Population Division; Hawaii Tourism Authority, Tourism Research, *Annual Visitor Research Report*; and the DBEDT Population Estimates. De facto population estimates are not yet available for 2022.

The exception to this trend is in licensed Registered Nurses per 1,000 persons, which increased in 2021 relative to 2020.





Data on licensed providers is as of April 2019 for "2019", as of February 2020 for "2020", and as of February 2021 for "2021". The de facto population is based on the annual de facto population estimates for each year. Source: DCCA PVL Geographic Reports, the U.S. Census Bureau, Bureau of Economic Analysis, and DBEDT. Calculations provided by DBEDT.

DBEDT next examined the ratio of licensed healthcare providers residing in each county per de facto population for each county. As shown in Table 8, the trends identified at the state level persist at the county level as well: the number of licensed providers per capita stayed the same or increased between 2019 and 2020 and then stayed the same or decreased between 2020 and 2021. Exceptions to this trend are the number of licensed Registered Nurses and Advanced Practice Registered Nurses per 1,000 persons on Oahu, both of which increased in 2021.

In addition, the number of licensed healthcare providers per 1,000 persons tends to be lower on the neighbor islands than on Oahu, with few exceptions. For example, the number of physicians and surgeons per 1,000 persons on Oahu as of February 2021 was 3.8, compared to 2.5 on Hawaii Island, 2.4 on Kauai, and 2.3 in Maui County. The number of registered nurses per 1,000 persons was 11.8 on Oahu, 8.8 on Hawaii Island, 8.7 on Kauai, and 7.9 in Maui County.

Type of provider	Oahu				Hawaii			Maui County			Kauai		
	2019	2020	2021	2019	2020	2021	2019	2020	2021	2019	2020	2021	
Physicians and surgeons	3.6	4.0	3.8	2.3	2.7	2.5	2.0	2.7	2.3	2.0	2.6	2.4	
Certified physician assistants	0.2	0.2	0.2	0.1	0.2	0.2	0.2	0.3	0.3	0.1	0.2	0.2	
Adv. practice registered nurses	0.8	0.9	1.0	0.6	0.7	0.7	0.4	0.5	0.5	0.6	0.6	0.6	
Registered nurses	11.4	11.4	11.8	8.8	8.9	8.8	7.3	8.8	7.9	8.0	9.3	8.7	
Pharmacists	1.0	1.1	1.1	0.7	0.8	0.8	0.6	0.7	0.6	0.7	0.9	0.9	
Dentists	0.8	0.8	0.8	0.5	0.5	0.5	0.5	0.6	0.5	0.5	0.7	0.6	
Optometrists	0.2	0.2	0.2	0.1	0.1	0.1	0.1	0.2	0.1	0.1	0.2	0.1	
Physical therapists	0.7	0.7	0.7	0.6	0.6	0.6	0.5	0.7	0.6	0.6	0.8	0.8	
Psychologists	0.6	0.6	0.6	0.4	0.4	0.4	0.2	0.3	0.3	0.3	0.4	0.4	
Mental health counselors	0.3	0.3	0.3	0.3	0.4	0.4	0.2	0.2	0.2	0.1	0.2	0.2	

Table 8. Licensed Providers Residing in Hawaii per 1,000 Persons (De Facto Population),Selected Health Care Occupations

Note: Data on licensed providers is as of April 2019 for "2019", as of February 2020 for "2020", and as of February 2021 for "2021". The de facto population is based on the annual de facto population estimate for each year. Sources: DCCA PVL Geographic Reports, the U.S. Census Bureau, Bureau of Economic Analysis, and DBEDT. Calculations provided by DBEDT.

In sum, the data on licensed providers indicates that many healthcare providers licensed to practice in Hawaii reside out-of-state, that the number of licensed providers per capita temporarily increased in several occupational groups during 2020 but then largely fell in 2021 (consistent with the 2020 reduction in visitors to the state), and that the number of licensed providers per capita is higher on Oahu than on the neighbor islands. There are also important limitations to this data, however. First, this data does not reflect more granular occupational specialties (e.g., cardiologists, neurologists, orthopedists, etc.) As such, this data does not inform whether there are areas of medical specialization where employment may be particularly high or low. ⁴⁴ Second, although the data reflects all licensed health care providers in the occupation groups above, it does not reflect whether providers are full-time or part-time, or whether providers are actively practicing.⁴⁵ Finally, as mentioned earlier, the licensing reports do not provide demographic information (e.g., age, gender, income, etc.) for the providers.

⁴⁴ As noted in the Hawaii Physician Workforce Report, "it is unlikely a specialty physician can fill in for a physician of another specialty." Hawaii Physician Workforce Report, page 5.

⁴⁵ A provider may hold an active license but choose not to actively practice.

B. The Demographic Characteristics of Hawaii's Health care Workers with Comparisons to Workers Born in Hawaii and Living on the Mainland

To gain further insight regarding Hawaii's health care workforce, DBEDT examined data from the U.S. Census Bureau's 2017-2021 ACS PUMS and Lightcast[™]. According to Lightcast[™], healthcare practitioners and technical occupations (SOC 29-0000) comprised 32.1% of the jobs in the health care and social assistance industry in Hawaii in 2022, while healthcare support occupations (SOC 31-0000) comprised 25.1% of the jobs.⁴⁶ Healthcare practitioners and technical occupations include a range of occupations including but not limited to: physicians, surgeons, dentists, podiatrists, optometrists, pharmacists, registered nurses, emergency medical technicians, health practitioner support technologists, and therapists. Healthcare support occupations include home health and personal care aides; nursing assistants, orderlies, and psychiatric aides; occupational therapy assistants and aides; physical therapist assistants and aides; massage therapists; and miscellaneous health support. A full list of the occupations included in the ACS PUMS 2017-2021 sample for healthcare practitioners and technical occupations and healthcare support occupations is listed in Table A4.⁴⁷

In the tables that follow, demographic characteristics were examined for the two largest occupation groups in the health care and social assistance industry (healthcare practitioners and technical occupations and healthcare support occupations) as well as for the four largest occupations represented in the data at the five-digit SOC level. These occupations are: physicians (SOC 29-1210), registered nurses (SOC 29-1140), home health and personal care aides (SOC 31-1120), and nursing assistants, orderlies, and psychiatric aides (SOC 31-1130). Data is presented separately for health care workers residing in Hawaii as well as for health care workers born in Hawaii and residing on the U.S. mainland. While the data on healthcare workers born in Hawaii and living on the mainland is informative, the sample is considerably

⁴⁶ Other occupation groups included in the health care and social assistance industry are office and administrative support occupations (13.1%), community and social service occupations (7.9%), management occupations (5.0%), personal care and service occupations (4.0%), and other (12.8%).

⁴⁷ For a complete listing of the 2018 Standard Occupational Classification system, see <u>2018 Standard Occupational</u> <u>Classification System: U.S. Bureau of Labor Statistics (bls.gov</u>). The ACS PUMS data set used for the purposes of this analysis includes data for all civilians employed in the 29-0000 and 31-0000 occupation groups in the State of Hawaii, as well as data for all civilians employed in the 29-0000 and 31-0000 occupation groups that were born in Hawaii and living on the U.S. mainland. The data does not include those who are in the armed forces, unemployed, or not in the labor force. The data also excludes five observations for physicians who indicate that their highest level of educational attainment is a bachelor's degree due to concern that such observations either represent synthetic data or respondent error. These observations comprise less than 0.3% of the data for Hawaii healthcare workers, less than 0.2% of the data for Hawaii born healthcare workers living on the mainland, less than two percent of the data for Hawaii physicians, and less than one percent of the data for Hawaii born physicians living on the mainland.

smaller than the sample of Hawaii health care workers.⁴⁸ This should be considered when reviewing comparisons between the two groups.

1. Age, Gender, Place of Birth/Residence, and Race

Age

The average age for Hawaii workers in healthcare practitioners and technical occupations and healthcare support occupations is in the low 40s. See Table 9. However, the average age of physicians is older (median age of 48 years, mean age of 50.7 years), with 25 percent of physicians being 62 years of age or older.⁴⁹ The median age of home health and personal care aides was also higher (median age of 48 years, mean age of 46.3 years) compared to registered nurses and nursing assistants, orderlies, and psychiatric aides. There is also a wider range in the ages of home health and personal care aides, with the youngest ten percent being 21 years of age and under, and the oldest ten percent being 65 years of age and older.

Occupation Group	10th	25 th	Median	75 th	90 th	iviean	
Healthcare Practitioners and Technical Occupations	28	33	42	52	62	43.3	
Physicians	34	41	48	62	70	50.7	
Registered Nurses	28	33	41	50	60	42.5	
Healthcare Support Occupations	23	29	41	53	61	41.5	
Home Health and Personal Care Aides	21	34	48	58	65	46.3	
Nursing Assistants, Orderlies, and Psychiatric Aides	24	28	39	53	61	41.0	

Table 9. Age of Hawaii Healthcare Workers: Median, Mean and Selected Percentiles

Source: DBEDT calculations using the Public Use Microdata Sample of the 2017-2021 American Community Survey.

Table 10 provides the percentile age distribution of healthcare workers born in Hawaii and living on the mainland. That healthcare workers born in Hawaii and living on the mainland are generally younger than those in Hawaii can be seen by comparing mean and median ages across all occupation groups. The differences are pronounced and consistent for physicians: Hawaii physicians are older than their Hawaii born, living on the mainland counterparts at the 10th, 25th, 50th, 75th, and 90th percentiles and approximately five years older at the 75th and 90th percentiles. See Figure 13, Physicians. There are also consistent differences between the ages

⁴⁸ The unweighted sample sizes for groups by occupation are as follows: Hawaii registered nurses (n=671); Hawaii physicians (n=218); Hawaii home health and personal care aides (n=259); Hawaii nursing assistants, orderlies, and psychiatric aides (n=243); Hawaii-born, living on the mainland registered nurses (n=290); Hawaii-born, living on the mainland physicians (n=102); Hawaii-born, living on the mainland home health and personal care aides (n=97); and Hawaii-born, living on the mainland nursing assistants, orderlies, and psychiatric aides (n=58).

⁴⁹ Nineteen percent of Hawaii physicians were 65 years of age or older.

of Hawaii nursing assistants, orderlies and psychiatric aides and those who are born in Hawaii and living on the mainland.

Table 10. Age of Healthcare Workers Born in Hawaii, Living on the Mainland: Median, Mea	n
and Selected Percentiles	

			Mean			
Occupation Group	10th	25 th	Median	75 th	90 th	
Healthcare Practitioners and Technical Occupations	27	32	40	52	59	41.7
Physicians	31	37	44	57	65	46.8
Registered Nurses	27	33	40	51	60	41.9
Healthcare Support Occupations	23	27	40	53	60	40.7
Home Health and Personal Care Aides	21	30	42	55	67	44.3
Nursing Assistants, Orderlies, and Psychiatric Aides	23	25	34	46	58	37.4









Gender

Over 69% of Hawaii workers in healthcare practitioners and technical occupations and over 86% of workers in healthcare support occupations are women. While there are high percentages of women (over 80%) among home health and personal care aides; nursing assistants, orderlies, and psychiatric aides; and registered nurses, the proportion of women physicians is much lower (41%), compared to the proportion of men. When Hawaii healthcare workers are compared to those who were born in Hawaii but now live on the mainland, a greater proportion of those living on the mainland are women in healthcare practitioners and technical occupations, including physicians and registered nurses, as well as for nursing assistants, orderlies, and psychiatric aides. While there is a higher percentage of Hawaii-born men working as home health and personal care aides on the mainland compared to those in Hawaii, women still comprise 75% of the mainland group.

Occupation Group	Male	Female	Total
Healthcare Practitioners and Technical Occupations	30.8%	69.2%	100%
Physicians	59.2%	40.8%	100%
Registered Nurses	17.7%	82.3%	100%
Healthcare Support Occupations	13.5%	86.5%	100%
Home Health and Personal Care Aides	16.4%	83.6%	100%
Nursing Assistants, Orderlies, and Psychiatric Aides	15.1%	84.9%	100%

Table 11. Percentage Distribution by Gender: Hawaii Workers

Source: DBEDT calculations using the Public Use Microdata Sample of the 2017-2021 American Community Survey.

Occupation Group	Male	Female	Total
Healthcare Practitioners and Technical Occupations	26.0%	74.0%	100%
Physicians	54.4%	45.6%	100%
Registered Nurses	10.0%	90.0%	100%
Healthcare Support Occupations	19.0%	81.0%	100%
Home Health and Personal Care Aides	25.0%	75.0%	100%
Nursing Assistants, Orderlies, and Psychiatric Aides	7.2%	92.8%	100%

Table 12. Percentage Distribution by Gender: Workers Born in Hawaii, Living on the Mainland

Source: DBEDT calculations using the Public Use Microdata Sample of the 2017-2021 American Community Survey.

Place of Birth, Place of Residence

Less than half of Hawaii workers in health care practitioners and technical occupations and health care support occupations were born in Hawaii (45.6% and 38.3%, respectively). See Table 13. Approximately one third of Hawaii physicians were born in Hawaii, with 41.7% born in another U.S. state and 25.1% born in a U.S. territory or foreign country. Approximately 40% of home health and personal care aides were born in a U.S. territory or foreign country; this increases to 59.1% for nursing assistants, orderlies, and psychiatric aides.

Occupation Group	Hawaii	Other U.S. State	U.S. Territories or Foreign	Total
Healthcare Practitioners and Technical Occupations	45.6%	31.9%	22.5%	100%
Physicians	33.2%	41.7%	25.1%	100%
Registered Nurses	39.9%	30.5%	29.6%	100%
Healthcare Support Occupations	38.3%	20.6%	41.1%	100%
Home Health and Personal Care Aides	36.8%	22.6%	40.6%	100%
Nursing Assistants, Orderlies, and Psychiatric Aides	28.9%	12.0%	59.1%	100%

Table 13. Percentag	e Distribution b	y Place of Birth	: Hawaii Workers

Source: DBEDT calculations using the Public Use Microdata Sample of the 2017-2021 American Community Survey.

Among healthcare workers that were born in Hawaii and living on the mainland, approximately one quarter of those in the healthcare practitioners and technical occupations and healthcare support occupations reside in California. The next most popular state is Washington, with approximately 10 and 11% of healthcare practitioners and technical occupations and healthcare support occupations, respectively.

Race

Asian workers have the largest representation across all of the Hawaii occupation groups examined. See Table 14. Asian workers comprise almost two-thirds of nursing assistants, orderlies, and psychiatric aides, and almost one half of home health and personal care aides and registered nurses. Forty-three percent of Hawaii physicians are Asian, followed by 36.2% of physicians being white. In contrast, healthcare workers who are born in Hawaii and living on the mainland are much less likely to be Asian and more likely to be white (Table 15). This holds across all occupational categories examined.

		Not Hispanic or Latino									
Occupation Group	Hispanic or Latino (of any race)	White alone	Black or African American alone	American Indian or Alaskan Native alone	Asian alone	Native Hawaiian or Other Pacific Islander alone	Other Race alone	Two or More Races			
Healthcare Practitioners and Technical Occupations	8.9%	24.7%	1.1%	0.1%	45.0%	4.3%	0.0%	15.8%			
Physicians	5.2%	36.2%	0.4%	0.0%	43.1%	2.5%	0.0%	12.5%			
Registered Nurses	8.7%	24.1%	0.8%	0.0%	47.6%	3.2%	0.0%	15.5%			
Healthcare Support Occupations	8.2%	14.3%	1.2%	0.0%	53.9%	6.9%	0.1%	15.3%			
Home Health and Personal Care Aides	9.6%	14.4%	2.1%	0.0%	48.1%	11.8%	0.4%	13.6%			
Nursing Assistants, Orderlies, and Psychiatric Aides	6.9%	7.3%	2.5%	0.0%	65.1%	8.0%	0.0%	10.3%			

Table 14. Percentage Distribution by Race: Hawaii Workers

Source: DBEDT calculations using the Public Use Microdata Sample of the 2017-2021 American Community Survey.

					<u> </u>			
				Not His	spanic or	Latino		
Occupation Group	Hispanic or Latino (of any race)	White alone	Black or African American alone	American Indian or Alaskan Native alone	Asian alone	Native Hawaiian or Other Pacific Islander alone	Other Race alone	Two or More Races
Healthcare Practitioners and Technical Occupations	5.7%	42.9%	2.1%	0.2%	25.1%	6.8%	0.8%	16.4%
Physicians	5.5%	41.1%	0.0%	0.0%	27.3%	3.1%	2.2%	20.8%
Registered Nurses	6.6%	46.8%	3.0%	0.0%	20.1%	6.8%	0.3%	16.4%
Healthcare Support Occupations	11.8%	36.8%	4.5%	0.3%	18.5%	13.4%	0.9%	13.8%
Home Health and Personal Care Aides	12.2%	33.9%	3.7%	0.0%	18.8%	17.1%	1.8%	12.5%
Nursing Assistants, Orderlies, and Psychiatric Aides	2.9%	50.2%	5.1%	0.0%	17.0%	9.9%	0.0%	14.8%

Table 15. Percent Distribution of Race: Workers Born in Hawaii, Living on the Mainland

2. Educational Attainment and Class of Worker

Highest Educational Attainment

The distribution of educational attainment for Hawaii workers generally mirrors the educational requirements of the various occupations. Overall, 36.3% of workers in the healthcare practitioners and technical occupations group hold a bachelor's degree, with an additional 36.5% holding a graduate or professional degree, and 22.1% holding an associate's degree or having some college. Among physicians, all hold graduate or professional degrees, consistent with the requirement to hold a medical degree.⁵⁰ Over 60% of registered nurses hold a bachelor's degree, with 21.1% having an associate's degree or some college.⁵¹

In healthcare support occupations, almost half of workers have an associate's degree or some college, while 20.3% have a bachelor's degree and 23.7% are high school graduates. Among home health and personal care aides, 46.1% have an associate's degree or some college education while 28.3% are high school graduates. Similarly, for nursing assistants, orderlies, and psychiatric aides, 50.9% have an associate's degree or some college education and 24.4% are high school graduates.

Occupation Group	Less than high school degree	High school graduate	Associate's degree or some college	Bachelor's degree	Graduate or professional degree	Total
Healthcare Practitioners and Technical Occupations	0.5%	4.6%	22.1%	36.3%	36.5%	100%
Physicians	0.0%	0.0%	0.0%	0.0%	100.0%	100%
Registered Nurses	0.4%	1.2%	21.1%	62.8%	14.6%	100%
Healthcare Support Occupations	3.8%	23.7%	48.5%	20.3%	3.7%	100%
Home Health and Personal Care Aides	4.4%	28.3%	46.1%	15.6%	5.6%	100%
Nursing Assistants, Orderlies, and Psychiatric Aides	3.2%	24.4%	50.9%	19.1%	2.5%	100%

Table 16. Percentage Distribution b	v Highest Educationa	l Attainment: Hawaii Work	ers
	,		

⁵⁰ As indicated earlier, five observations for physicians who indicated that their highest level of educational attainment is a bachelor's degree were dropped from the sample.

⁵¹ The typical entry-level education for registered nurses is a bachelor's degree in nursing, though other education paths include an associate's degree in nursing or a diploma from an approved nursing program. <u>Registered Nurses:</u> <u>Occupational Outlook Handbook: : U.S. Bureau of Labor Statistics (bls.gov)</u>, accessed March 29, 2023.

Patterns in educational attainment for those born in Hawaii and living on the mainland are similar in being driven by educational requirements. Educational attainment is the same for physicians (graduate or professional degree), regardless of where they reside. In general, Hawaii registered nurses and home health and personal care aides appear to have slightly more education than those born in Hawaii and living on the mainland. Registered nurses in Hawaii are more likely to have a bachelor's degree (62.8% vs. 52.3%) and less likely to have an associate's degree or some college (21.2% vs. 32.4%). Home health and personal care aides in Hawaii are more likely to have an associate's degree or have some college (or a college degree) and less likely to have a high school degree or less than a high school degree.

Occupation Group	Less than high school degree	High school graduate	High chool aduate High Associate's degree or some college		Graduate or professional degree	Total
Healthcare Practitioners and Technical Occupations	0.2%	4.4%	32.0%	29.1%	34.3%	100%
Physicians	0.0%	0.0%	0.0%	0.0%	100.0%	100%
Registered Nurses	0.4%	1.1%	32.4%	52.3%	13.8%	100%
Healthcare Support Occupations	7.0%	23.3%	55.4%	11.8%	2.5%	100%
Home Health and Personal Care Aides	13.3%	31.9%	45.2%	7.4%	2.2%	100%
Nursing Assistants, Orderlies, and Psychiatric Aides	6.8%	12.7%	69.3%	11.2%	0.0%	100%

Table 17. Percentage Distribution by Highest Educational Attainment: Born in Hawaii, Livi	ing
on the Mainland	

Figure 14. Highest Educational Attainment for Hawaii Healthcare Workers and Workers Born in Hawaii, Living on the Mainland: Select Occupations



Class of Worker

Almost three quarters of Hawaii workers in the healthcare practitioners and technical occupations, as well as in the healthcare support occupations, are wage and salary employees. See Table 18. When examining specific occupations, physicians and home health and personal care aides have the highest rates of self-employment (over one quarter) and the lowest rates of being wage and salary employee (just over 60%). By comparison, higher percentages registered nurses and nursing assistants, orderlies, and psychiatric aides in Hawaii are wage and salary workers (79.3% and 84.5%, respectively) with low percentages of self-employment (1.1% and 4.9%, respectively). Almost twenty percent of registered nurses in Hawaii are government employees.

Occupation Group	Wage & Salary Employees	Government Employee	Self- Employed	Unpaid	Total
Healthcare Practitioners and Technical Occupations	74.3%	17.0%	8.7%	0.1%	100%
Physicians	61.3%	13.1%	25.5%	0.0%	100%
Registered Nurses	79.3%	19.6%	1.1%	0.0%	100%
Healthcare Support Occupations	74.1%	9.1%	16.4%	0.3%	100%
Home Health and Personal Care Aides	62.2%	10.4%	26.7%	0.8%	100%
Nursing Assistants, Orderlies, and Psychiatric Aides	84.5%	10.5%	4.9%	0.1%	100%

Table 18. Percentag	e Distribution	by Class of	f Worker:	Hawaii V	Workers
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Source: DBEDT calculations using the Public Use Microdata Sample of the 2017-2021 American Community Survey.

These patterns, where physicians and home and health and personal care aides have higher rates of self-employment, also persist in the data for healthcare workers born in Hawaii and living on the mainland (Table 19). However, a greater proportion of home health and personal care aides appear to work for the government (almost one-third). In addition, it appears that higher proportions of registered nurses and nursing assistants, orderlies, and psychiatric aides born in Hawaii and living on the mainland are wage and salary employees (89.8% and 94.7%, respectively).

Table 19. Percentage Distribution by	Class of Worker: Born in Hawaii, Living on the Mainland	
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Occupation Group	Wage & Salary Employees	Government Employee	Self- Employed	Unpaid	Total
Healthcare Practitioners and Technical Occupations	81.8%	10.1%	8.1%	0.0%	100%
Physicians	66.9%	10.3%	22.9%	0.0%	100%
Registered Nurses	89.8%	10.0%	0.2%	0.0%	100%
Healthcare Support Occupations	73.7%	17.3%	8.9%	0.0%	100%
Home Health and Personal Care Aides	54.0%	32.7%	13.2%	0.0%	100%
Nursing Assistants, Orderlies, and Psychiatric Aides	94.7%	5.3%	0.0%	0.0%	100%

3. Full-Time vs. Part-Time Workers, Income and Housing Tenure

Full-Time vs. Part-Time Workers

Approximately 69% of Hawaii workers in healthcare practitioners and technical occupations work full-time.⁵² The percentage of full-time workers is higher for physicians (79.6%) and lower for registered nurses (61.0%). Approximately 63% of Hawaii workers in healthcare support occupations work full-time, with 70.1% of nursing assistants, orderlies, and psychiatric aides working 40 hours or more and 53.9% percent of home health and personal care aides working full-time. Among the occupations examined, home health and personal care aides are most likely to work less than 20 hours per week (21.9%). These patterns are similar to those for Hawaii born healthcare workers living on the mainland, though it appears that Hawaii born registered nurses living on the mainland are slightly more likely to work 20-39 hours per week.

Occupation Group	Less than 20 hours	20 to 39 Hours	40 Hours or More	Total
Healthcare Practitioners and Technical Occupations	4.2%	27.0%	68.8%	100.0%
Physicians	4.4%	16.0%	79.6%	100.0%
Registered Nurses	3.1%	35.9%	61.0%	100.0%
Healthcare Support Occupations	10.8%	26.4%	62.8%	100.0%
Home Health and Personal Care Aides	21.9%	24.2%	53.9%	100.0%
Nursing Assistants, Orderlies, and Psychiatric Aides	5.8%	24.0%	70.1%	100.0%

Table 20. Percentage Distribution of Usual Hours Worked per Week: Hawaii Workers

Source: DBEDT calculations using the Public Use Microdata Sample of the 2017-2021 American Community Survey.

Table 21	. Percentage Distribution	Usual Hours Worked p	er Week: Worker	s Born in Hawaii,
Living on	the Mainland			

Occupation Group	Less than 20 hours	20 to 39 Hours	40 Hours or More	Total
Healthcare Practitioners and Technical Occupations	2.9%	31.5%	65.5%	100.0%
Physicians	1.4%	16.9%	81.6%	100.0%
Registered Nurses	3.0%	41.5%	55.5%	100.0%
Healthcare Support Occupations	7.6%	34.2%	58.2%	100.0%
Home Health and Personal Care Aides	13.3%	31.5%	55.2%	100.0%
Nursing Assistants, Orderlies, and				
Psychiatric Aides	4.0%	28.0%	68.0%	100.0%

⁵² Full-time is defined as working 40 or more hours per week.

Income

Table 22 presents the average annual income earned by full-time workers (i.e., those working 40 hours or more). As expected, average income varies significantly by occupation. Workers in healthcare practitioners and technical occupations earn more, on average, than those in healthcare support occupations. Hawaii health care workers appear to generally earn more, on average, than their mainland counterparts, with Hawaii healthcare workers earning more than those born in Hawaii and living on the mainland except in the category of physicians.

Occupation Group	Hawaii		Hawaii-born, Living on the Mainland				
	Mean	Ν	/ledian		Mean	N	/ledian
Healthcare Practitioners and Technical Occupations	\$ 118,616	\$	92,694	\$	115,116	\$	75,825
Physicians	\$ 260,222	\$	214,102	\$	322,172	\$	257,482
Registered Nurses	\$ 98,543	\$	94,782	\$	84,452	\$	76,220
Healthcare Support Occupations	\$ 42,214	\$	37,165	\$	41,332	\$	37,274
Home Health and Personal Care Aides	\$ 38,558	\$	32,115	\$	34,113	\$	31,700
Nursing Assistants, Orderlies, and Psychiatric Aides	\$ 40,812	\$	39,351	\$	36,797	\$	35,764

Table 22. ACS PUMS Average Annual Income	(2021 dollars): Full-Time Workers Only
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Source: DBEDT calculations using the Public Use Microdata Sample of the 2017-2021 American Community Survey.

To further examine the differences in compensation between Hawaii health care worker compensation and mainland worker compensation, DBEDT compared the results from the ACS to data on annual compensation from the BLS Occupational Employment & Wage Statistics (OEWS) survey and Lightcast[™].⁵³ Both OEWS and Lightcast[™] calculate annual compensation for *all* employees (part-time and full-time) by annualizing hourly average wages. The OEWS report also includes wage and salary employees only and does not include those that are self-employed. As a result, there is no expectation that estimated annual compensation will be the same across these data sources, however, the comparisons provide useful benchmarks for review.

Given Hawaii's high cost of living, DBEDT also examined two measures to adjust estimates of Hawaii compensation for the higher costs faced by Hawaii residents. DBEDT applied the U.S. Bureau of Economic Analysis Regional Price Parity (RPP) index to adjust the ACS PUMS and OEWS data on Hawaii median incomes (reflected as "RPP adj-Hawaii"). RPPs measure differences in price levels across states and metropolitan areas relative to the overall national

⁵³ Tables A5 and A6 provide annual compensation estimates based on OEWS and Lightcast[™] estimates. Both OEWS and Lightcast[™] data are for year 2021.

price level. In 2021, Hawaii had the highest RPP, at 113.2.⁵⁴ LightcastTM reports cost of living adjusted median compensation based on the C2ER Cost of Living Index for Hawaii of 150.3.⁵⁵

Figure 15 indicates that data from all three sources support that the average compensation for Hawaii workers in healthcare practitioners and technical occupations and healthcare support occupations is higher or close to the average compensation of workers living on the mainland. These differences become smaller once Hawaii's cost of living is considered, with data from Lightcast[™] indicating that Hawaii average incomes, as adjusted by the C2ER cost-of-living index, are below national averages.

Figure 16 presents ACS and Lightcast[™] median annual income estimates, by occupation.⁵⁶ Several items are noteworthy. First, the data from Lightcast[™] for median Hawaii physician income and registered nurse income are significantly higher than the median ACS full-time worker income estimates. Lightcast[™]'s higher annual compensation for Hawaii registered nurses appears consistent with the inclusion of highly compensated part-time nurses (e.g., travel nurses).⁵⁷ It is less clear what explains Lightcast[™]'s higher estimate of median Hawaii physician compensation.⁵⁸

⁵⁴ See <u>Regional Price Parities by State and Metro Area | U.S. Bureau of Economic Analysis (BEA)</u> and <u>Methodology-for-Regional-Price-Parities_0.pdf (bea.gov)</u> accessed April 6, 2023. RPPs primarily use price- and expenditurerelated survey data from U.S. federal agencies such as the BLS Consumer Price Index and U.S. Census ACS PUMS. An index above 100 means it is more expensive to live in the area relative to the national average, while an index below 100 means there is a lower cost of living.

⁵⁵ See <u>About - C2ER Cost of Living Index (coli.org)</u> and <u>2018-COLI-Manual.pdf</u>. The C2ER cost of living index is based on "the cost of maintaining a standard of living appropriate for moderately affluent professional and managerial households."

⁵⁶ A separate figure was not included with OEWS estimates as median and mean wage data was not available for certain occupations.

⁵⁷ As noted earlier, close to 40% of registered nurses in Hawaii work part-time. Moreover, the ACS data suggests that the average hourly wage of part-time registered nurses significantly exceeds the average hourly wage of full-time registered nurses. If, for example, Hawaii's workforce is comprised of a higher proportion of well-compensated travel nurses, this would be consistent with a higher average income once part-time workers are included.

⁵⁸ Based on the ACS data, while there are a few part-time physicians appear to earn a much higher hourly wage than full-time physicians, most part-time workers appear to earn a lower hourly wage.





Sources: 2017-2021 median income data (ACS) is from the ACS Public Use Microdata Sample of the 2017-2021 American Community Survey, restricted to full time workers only. The RPP for Hawaii is from the U.S. BEA 2021 Regional Price Parities. 2021 median incomes data (OEWS) is based on <u>OEWS-2021-Publication.pdf (hawaii.gov)</u> and <u>May 2021 National Occupational Employment and Wage Estimates (bls.gov)</u>. The third figure (2021 Median Incomes – Part-Time and Full-Time) is based on Lightcast[™] Occupation Overview Reports for Healthcare Practitioners and Technical Occupations and Healthcare Support Occupations, accessed February 3, 2023, with the cost-of-living adjustment based on the C2ER index.



Figure 16. Median Income (2021 dollars) by Occupation

Sources: 2017-2021 median income data (ACS) is from the Public Use Microdata Sample of the 2017-2021 American Community Survey. The RPP for Hawaii is from the U.S. BEA 2021 Regional Price Parities. 2021 Median Incomes – Part-Time and Full-Time, Select Occupations data is from Lightcast[™] Occupation Overview Reports for Physicians; Registered Nurses; Home Health and Personal Care Aides; and Nursing Assistants, Orderlies, and Psychiatric Aides, accessed February 3, 2023, with the cost-of-living adjustment based on the C2ER index.

Second, the median income for Hawaii-born physicians living on the mainland, based on the ACS sample, significantly exceeds the LightcastTM estimate of U.S. average physician income. That U.S. average annual physician income is lower is supported by data from OEWS, which reports a U.S. mean annual "wage" of \$252,480 (compared to the mean of \$322,172 for Hawaii born physicians living on the mainland). That physicians born in Hawaii and living on the mainland earn more, on average, than the average income of U.S. physicians could be consistent with a number of factors, including whether the physicians born in Hawaii and living

on the mainland may have moved to take highly paid specialist positions and/or may have moved to areas offering higher than average pay.⁵⁹

Based on the estimates above, once Hawaii's cost of living is considered, Hawaii's cost-of-living adjusted average incomes are closer to and, under certain assumptions, less than the national averages. The exception is for registered nurse incomes adjusted by the Hawaii RPP. Under the Lightcast[™] estimates and cost-of-living adjustment, Hawaii COL-adjusted incomes are lower than the national averages for all occupations examined. The magnitude of the difference is largest for physicians.

Housing Tenure

Approximately two-thirds of Hawaii workers in healthcare practitioners and technical occupations own their home. Patterns in Hawaii home ownership are consistent with income. Physicians are most likely to be homeowners (81.8%), followed by registered nurses (71.7%). Much lower percentages of those in healthcare support occupations own their home. Close to half of home health and personal care aides are homeowners and 54.3% of nursing assistants, orderlies, and psychiatric aides own their homes. See Table 23. Hawaii workers appear, however, more likely to own their home compared those born in Hawaii and living on the mainland. See Table 24 and Figure 17.

Table 23. Percentage	Distribution of Housing	Tenure: Hawaii Workers
0	0	

Occupation Group	Owner- Occupied	Renter	Occupied without rent	Total
Healthcare Practitioners and Technical Occupations	66.1%	32.8%	1.1%	100%
Physicians	81.8%	18.2%	0.0%	100%
Registered Nurses	71.7%	27.2%	1.1%	100%
Healthcare Support Occupations	45.9%	51.4%	2.7%	100%
Home Health and Personal Care Aides	49.5%	46.7%	3.9%	100%
Nursing Assistants, Orderlies, and Psychiatric Aides	54.3%	44.7%	1.0%	100%

⁵⁹ For example, a higher proportion of Hawaii born physicians moved to California (close to 36%) compared to Hawaii born healthcare workers as a whole.

Table 24. Percentage Distribution of Housing Tenure: Workers Born in Hawaii, Living on theMainland

Occupation Group	Owner- Occupied	Renter	Occupied without rent	Total
Healthcare Practitioners and Technical Occupations	56.9%	42.6%	0.5%	100%
Physicians	72.1%	27.9%	0.0%	100%
Registered Nurses	50.4%	49.3%	0.3%	100%
Healthcare Support Occupations	36.2%	62.4%	1.4%	100%
Home Health and Personal Care Aides	19.5%	77.6%	2.9%	100%
Nursing Assistants, Orderlies, and Psychiatric Aides	37.5%	62.2%	0.3%	100%

Figure 17. Comparison of Housing Tenure for Hawaii Healthcare Workers and Workers Born in Hawaii, Living on the Mainland: Select Occupations



V. Conclusion

Hawaii's health care and social assistance industry appears to have significant potential for growth. The aging of Hawaii's population and several health indicators suggest that demand for health care services and workers is likely to increase in the future. Long-run employment forecasts project significant growth, especially in healthcare support occupations. Industry studies and data on job postings relative to hires and candidates, however, indicate persistent labor shortages in several healthcare occupations, including among physicians and registered nurses. Industry efforts to increase the labor supply have included providing greater information, support, and workforce training, starting in the high schools and continuing through college, graduate school, and early employment. Efforts are also being made to increase the efficient allocation of physician resources by implementing ways to reduce administrative workload, expanding the scope of practice for nurse practitioners and physician assistants, and collaborating with non-physician providers as part of health care teams.

Data from geographic licensing reports indicate that there are large proportions of providers, especially physicians and registered nurses, licensed to provide health care in Hawaii but who reside out of state. Further understanding why this group of licensed providers chose not to reside in Hawaii would help inform measures to increase Hawaii's supply of health care workers, including how effective those measures might be. Data on health care workers that were born in Hawaii and are currently living on the mainland suggest that these health care workers tend to be younger, are more likely to be white, are generally more likely to be female, and are less likely to be homeowners. In addition, while the average incomes of Hawaii health care workers generally tend to exceed the average incomes of their U.S. counterparts, this difference is reduced when Hawaii incomes are adjusted to account for Hawaii's higher cost of living. Under certain assumptions, Hawaii's higher cost of living renders Hawaii's cost-of-living adjusted income for its healthcare workers lower than the national average incomes across all occupation groups examined.

Appendix

Table A1. 2022 North	American Industry	y Classification Sy	stem
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Sector	Description
11	Agriculture, Forestry, Fishing and Hunting
21	Mining, Quarrying, and Oil and Gas Extraction
22	Utilities
23	Construction
31-33	Manufacturing
42	Wholesale Trade
44-45	Retail Trade
48-49	Transportation and Warehousing
51	Information
52	Finance and Insurance
53	Real Estate and Rental and Leasing
54	Professional, Scientific, and Technical Services
55	Management of Companies and Enterprises
56	Administrative and Support and Waste Management
	and Remediation Services
61	Educational Services
62	Health Care and Social Assistance
71	Arts, Entertainment, and Recreation
72	Accommodation and Food Services
81	Other Services (except Public Administration)
92	Public Administration

Source: North American Industry Classification System (NAICS) U.S. Census Bureau

SOC	c		Employment		Change (2020-30)	
Code	Occupation Title	2020	2030	Number	Percent	Growth
00-000	Total, All Occupations	606,320	698,960	92,630	15.3%	1.4%
29-0000	Healthcare Practitioners and Technical Occupations	33,190	36,650	3,460	10.4%	1.0%
29-1011	Chiropractors	110	130	20	15.5%	1.4%
29-1021	Dentists, General	780	880	100	12.3%	1.2%
29-1031	Dietitians and Nutritionists	290	330	40	13.6%	1.3%
29-1041	Optometrists	240	270	30	12.5%	1.2%
29-1051	Pharmacists	1,550	1,510	-50	-3.1%	-0.3%
29-1071	Physician Assistants	310	410	100	33.9%	3.0%
29-1081	Podiatrists	60	60	0	5.4%	0.5%
29-1122	Occupational Therapists	310	370	60	18.0%	1.7%
29-1123	Physical Therapists	700	880	170	24.3%	2.2%
29-1126	Respiratory Therapists	340	420	70	21.2%	1.9%
29-1127	Speech-Language Pathologists	330	410	80	23.4%	2.1%
29-1129	Therapists, All Other	90	110	20	19.6%	1.8%
29-1131	Veterinarians	320	380	60	17.4%	1.6%
29-1141	Registered Nurses	11,770	12,800	1,030	8.8%	0.8%
29-1171	Nurse Practitioners	400	610	210	53.3%	4.4%
29-1181	Audiologists	100	120	20	24.0%	2.2%
29-1215	Family Medicine Physicians	380	410	30	9.0%	0.9%
29-1216	General Internal Medicine Physicians	310	310	0	0.0%	0.0%
29-1218	Obstetricians and Gynecologists	200	200	0	1.0%	0.1%
29-1221	Pediatricians, General	260	260	0	0.0%	0.0%
29-1223	Psychiatrists	190	210	20	12.8%	1.2%
29-1228	Physicians, All Other; and Ophthalmologists, Except Pediatric	2,340	2,490	150	6.5%	0.6%
29-1248	Surgeons, Except Ophthalmologists	260	260	0	0.0%	0.0%
29-1292	Dental Hygienists	990	1,130	150	14.9%	1.4%
29-1298	Acupuncturists, Health Diagnosing/Treating Practitioners, All Other	360	400	40	12.3%	1.2%
29-2010	Clinical Laboratory Technologists and Technicians	1,240	1,440	200	16.4%	1.5%
29-2031	Cardiovascular Technologists and Technicians	200	210	20	7.6%	0.7%
29-2032	Diagnostic Medical Sonographers	170	210	30	19.9%	1.8%
29-2033	Nuclear Medicine Technologists	40	40	0	8.1%	0.8%
29-2034	Radiologic Technologists	650	710	60	8.9%	0.9%

Table A2. Long-Term Occupational Projections to 2030, State of Hawaii, Health Care

SOC		Employment		Change (2020-30)		Annual
Code	Occupation Title	2020	2030	Number	Percent	Growth
29-2035	Magnetic Resonance Imaging Technologists	110	120	10	8.3%	0.8%
29-2040	Emergency Medical Technicians and Paramedics	510	560	50	8.8%	0.8%
29-2051	Dietetic Technicians	220	230	10	3.7%	0.4%
29-2052	Pharmacy Technicians	1,850	1,950	110	5.9%	0.6%
29-2053	Psychiatric Technicians	670	780	120	17.4%	1.6%
29-2055	Surgical Technologists	310	340	30	10.5%	1.0%
29-2056	Veterinary Technologists and Technicians	210	240	40	16.9%	1.6%
29-2057	Ophthalmic Medical Technicians	330	390	60	18.8%	1.7%
29-2061	Licensed Practical and Licensed Vocational Nurses	970	1,070	100	10.1%	1.0%
29-2081	Opticians, Dispensing	350	380	40	10.1%	1.0%
29-2091	Orthotists and Prosthetists	40	50	10	17.5%	1.6%
29-2098	Medical Dosimetrists, Medical Records Specialists, and Health Technologists and Technicians, All Other	1,070	1,160	90	8.1%	0.8%
29-9091	Athletic Trainers	120	150	30	26.9%	2.4%
29-9098	Health Information Technologists, Medical Registrars, Surgical Assistants, & Healthcare Practitioners, All Other	620	690	60	10.3%	1.0%
31-0000	Healthcare Support Occupations	23,410	28,900	5,490	23.5%	2.1%
31-1120	Home Health and Personal Care Aides	9,290	12,270	2,980	32.1%	2.8%
31-1131	Nursing Assistants	4,150	4,460	310	7.5%	0.7%
31-1132	Orderlies	100	100	10	6.3%	0.6%
31-2011	Occupational Therapy Assistants	70	90	20	33.3%	2.9%
31-2021	Physical Therapist Assistants	170	230	60	36.1%	3.1%
31-2022	Physical Therapist Aides	60	70	10	17.9%	1.7%
31-9011	Massage Therapists	1,130	1,690	560	49.7%	4.1%
31-9091	Dental Assistants	1,600	1,830	230	14.7%	1.4%
31-9092	Medical Assistants	4,230	5,160	930	22.1%	2.0%
31-9093	Medical Equipment Preparers	280	300	30	9.4%	0.9%
31-9094	Medical Transcriptionists	70	60	-10	-15.5%	-1.7%
31-9095	Pharmacy Aides	160	150	-10	-8.0%	-0.8%
31-9096	Veterinary Assistants and Laboratory Animal Caretakers	430	490	60	13.5%	1.3%
31-9099	Healthcare Support Workers, All Other	1,250	1,430	180	14.6%	1.4%

Table A2. Long-Term Occupational Projections to 2030, State of Hawaii, Health Care (contd.)

Source: DLIR, https://www.hirenethawaii.com/admin/gsipub/htmlarea/uploads/LTOP2020-30-State.xlsx

Turne of mussider	Total	State of Hawaii					Mainland	F		
Type of provider	Total	Total	Oahu	Hawaii	Maui	Kauai	Molokai	Lanai	U.S.	Foreign
Physicians and	11 427	F 411	4 1 2 6	F 4 2	501	220	10	2	F 007	10
Surgeons Certified	11,427	5,411	4,126	543	501	226	13	2	5,997	19
physician assistants Adv. practice	476	384	234	56	74	20	0	0	92	0
registered nurses	2,084	1,360	1,022	174	100	57	5	2	722	2
Registered nurses	27,620	16,200	11,872	1,915	1,577	773	45	18	11,391	29
Pharmacists	2,495	1,450	1,102	164	110	70	3	1	1,042	3
Dentists	1,246	1,041	784	103	104	46	3	1	205	0
Optometrists Physical	401	293	227	32	23	10	1	0	108	0
therapists	1,743	1,169	819	138	137	71	4	0	569	5
Psychologists Mental health	1,244	840	651	97	57	33	0	2	404	0
counselors	702	541	386	92	48	12	3	0	161	0

Table A3. Selected Health Care Providers Licensed in Hawaii, By Place of Address: February 24, 2022

Permanent licenses only. Does not include interns, residents, or providers who provide state government services only. Excludes inactive licenses. "Foreign" includes "Other". "Physicians and surgeons" includes physicians, osteopathic physicians and surgeons, and podiatrists.

Source: Hawaii State Department of Commerce and Consumer Affairs, Professional and Vocational Licensing Division, Licensing Branch, "Geographic Report (Current Licenses) as of February 24, 2022" https://cca.hawaii.gov/pvl/reports/ accessed April 25, 2022; and calculations by the Hawaii State Department of Business, Economic, Development & Tourism.

Table A4. Healthcare Practitioners and Technical Occupations and Healthcare Support Occupations:Detailed Standard Occupational Classification Code and Description in ACS PUMS 2017-2021 Dataset

	Ha	waii	US			
Occupation Group	Mean Median		Mean	Median		
Healthcare Practitioners and Technical Occupations	\$ 113,370 \$ 98,010		\$ 91,100	\$ 75,046		
Physicians	\$126,370 \$196,000 to to over \$366,600* \$208,000*		\$ 252,480	over \$208,000*		
Registered Nurses	\$ 106,530	\$ 111,070	\$ 82,750	\$ 77,605		
Healthcare Support Occupations	\$ 37,870	\$ 36,940	\$ 33,330	\$ 29,890		
Home Health and Personal Care Aides	\$ 30,160	\$ 29,470	\$ 29,260	\$ 29,432		
Nursing Assistants, Orderlies, and Psychiatric Aides	\$36,680 to \$40,520*	\$36,990 to \$37,750*	\$ 33,290	\$ 30,285		

Table A5. 2021 Annual Average Income: Full-Time and Part-Time Workers, No Self-Employed (OEWS)

* For physicians and nursing assistants, orderlies, and psychiatric aides, certain data was not reported. As a result, the data in these cells reflect the ranges reported for occupations where data was available. This may not reflect the full range of income for the occupation group.

Sources: <u>OEWS-2021-Publication.pdf (hawaii.gov)</u> and <u>May 2021 National Occupational Employment and Wage</u> <u>Estimates (bls.gov)</u>.

Table A6. 2021 Median Annual Compensation: Full-Time and Part-Time Workers

Occupation Group	H	lawaii	US		
Healthcare Practitioners and Technical					
Occupations	\$	95,522	\$	69,883	
Physicians	\$	235,524	\$	217,604	
Registered Nurses	\$	110,885	\$	77,544	
Healthcare Support Occupations	\$	36,442	\$	29,909	
Home Health and Personal Care Aides	\$	29,502	\$	29,393	
Nursing Assistants, Orderlies, and					
Psychiatric Aides	\$	37,029	\$	30,283	

Source: Lightcast[™] Occupation Overview reports for SOC codes 29-0000, 29-1210, 29-1240, 31-0000, 31-1120, and 31-1130, for the State of Hawaii, including QCEW Employees, Non-QCEW Employees, and Self-Employed workers.