

UNIVERSITY OF HAWAI‘I SYSTEM REPORT



REPORT TO THE 2015 LEGISLATURE

Report on Findings from the
Hawai'i Physician Workforce Assessment Project

Act 18, SSLH 2009 (Section 5),
as amended by Act 186, SLH 2012

January 2015

Hawai‘i Physician Workforce

In accordance with Act 18, SSLH 2009 (Section 5),
as amended by Act 186, SLH 2012
A report to the 2015 Hawai‘i State Legislature:
Findings from the Hawai‘i Physician Workforce Assessment Project

Prepared by:

Kelley Withy, MD, PhD

John A. Burns School of Medicine

Area Health Education Center

On behalf of the University of Hawai‘i at Mānoa, John A. Burns - School of Medicine

December 2014

2014 Hawai‘i Physician Workforce Assessment Executive Summary

The physician workforce in Hawai‘i has decreased from 2,894 Full Time Equivalents (FTEs) of physicians providing patient care in 2013 to **2,802 FTEs** in 2014. This loss of nearly 100 physicians may be due to the improved economic climate allowing for retirement, combined with the increasing requirements of clinical care due to changes in the healthcare system (electronic health records, ICD-10, ePrescribing, etc). Utilizing a new projection model purchased from IHS Global, the minimum current demand, not taking into account shortages of Non-physician Clinicians in Hawai‘i or the oversupply of some specialties artificially decreasing demand, is **3,276 FTEs** to meet the needs of an equivalent demographic population elsewhere in America. When specialty-specific shortages are considered individually and the excess of physicians in areas of surplus are excluded from the calculation, the shortage of physicians is estimated at **655 FTEs**. This indicates a continuing shortage of 20% of physician FTEs statewide. A best case scenario for future workforce numbers is that by 2020, Hawai‘i will have a shortage of 800 physician FTEs.

The physician specialties with the greatest shortages are primary care, particularly on neighbor islands, as well as, the following specialties which have shortages of over 30% statewide: Infectious Disease, Colorectal Surgery, Pathology, General Surgery, Pulmonology, Neurology, Neurosurgery, Orthopedic Surgery, Family Medicine, Cardiothoracic Surgery, Rheumatology, Cardiology, Hematology/Oncology, and the Pediatric subspecialties of Endocrinology, Cardiology, Neurology, Hematology/Oncology and Gastroenterology. The specialties with the largest number of additional providers needed are Family Medicine (174 needed), General Surgery (57 needed), Pathology (44 needed), Internal Medicine (39 needed), Orthopedic Surgery (36 needed), Cardiology (32 needed), Anesthesia (31 needed) and Neurology (31 needed).

In addition to researching the size of the physician workforce in Hawai‘i, the Physician Workforce Assessment special fund supported the following activities during the 2014 year: Hosting the Hawai‘i Health Workforce Summit and Job Fair for 340 participants; health careers recruitment activities including development of a Hawai‘i health careers pathway book; convening and co-chairing the Governor’s Healthcare Transformation Workforce Meetings that included planning for a potential Hawai‘i Health Workforce Center; promoting jobs in collaboration with the Hawai‘i Physician Recruiters group; and continuation of the Hawai‘i State Loan Repayment Program new federal grant funding that

expands loan repayment to 25 Behavioral Health and Primary Care providers once local matching funding is procured.

Hawai'i Physician Shortage: Supply and Demand

The **supply** of physicians in Hawai'i is estimated based on responses to a voluntary survey of physicians administered at time of state medical license application, queries of local community contacts, internet searches and direct calling of physician offices to confirm hours of active patient care. Data were obtained for 95% of the providers who report working in Hawai'i. Of the 9,109 physicians licensed to practice in Hawai'i as of October 22, 2014, only 3,594 physicians are actively practicing in non-military settings. The total full time equivalents (FTEs) of direct patient care provided by these physicians (including those providing telehealth to Hawai'i patients from outside the state) is 2,802 FTEs.

The **demand** for physician services is estimated using a model purchased from IHS Global in 2014. The major components of the demand model include: 1) a population database that contains characteristics and health risk factors for a representative sample of the population in each Hawai'i county, 2) predictive equations based on national data that relate a person's demographic, socioeconomic and health risk factor characteristics to his or her demand for healthcare services by care delivery setting, and 3) national care delivery patterns that convert demand for healthcare services to demand for FTE physicians. For purposes of physician workforce modeling the relevant settings are physician offices, outpatient clinics, hospital emergency departments, and hospital inpatient settings. While the forecasting equations and staffing patterns are based on national data, a population database was constructed for Hawai'i that was representative of the population in each Hawai'i county. This was done using county-level population information (e.g., age-gender-race/ethnicity), whether a county was considered metropolitan or non-metropolitan, and information from the Behavioral Risk Factor Surveillance System (BRFSS) for the population, including summary statistics by county for factors such as prevalence of obesity, diabetes, current smoking status, and other risk factors used in the model.

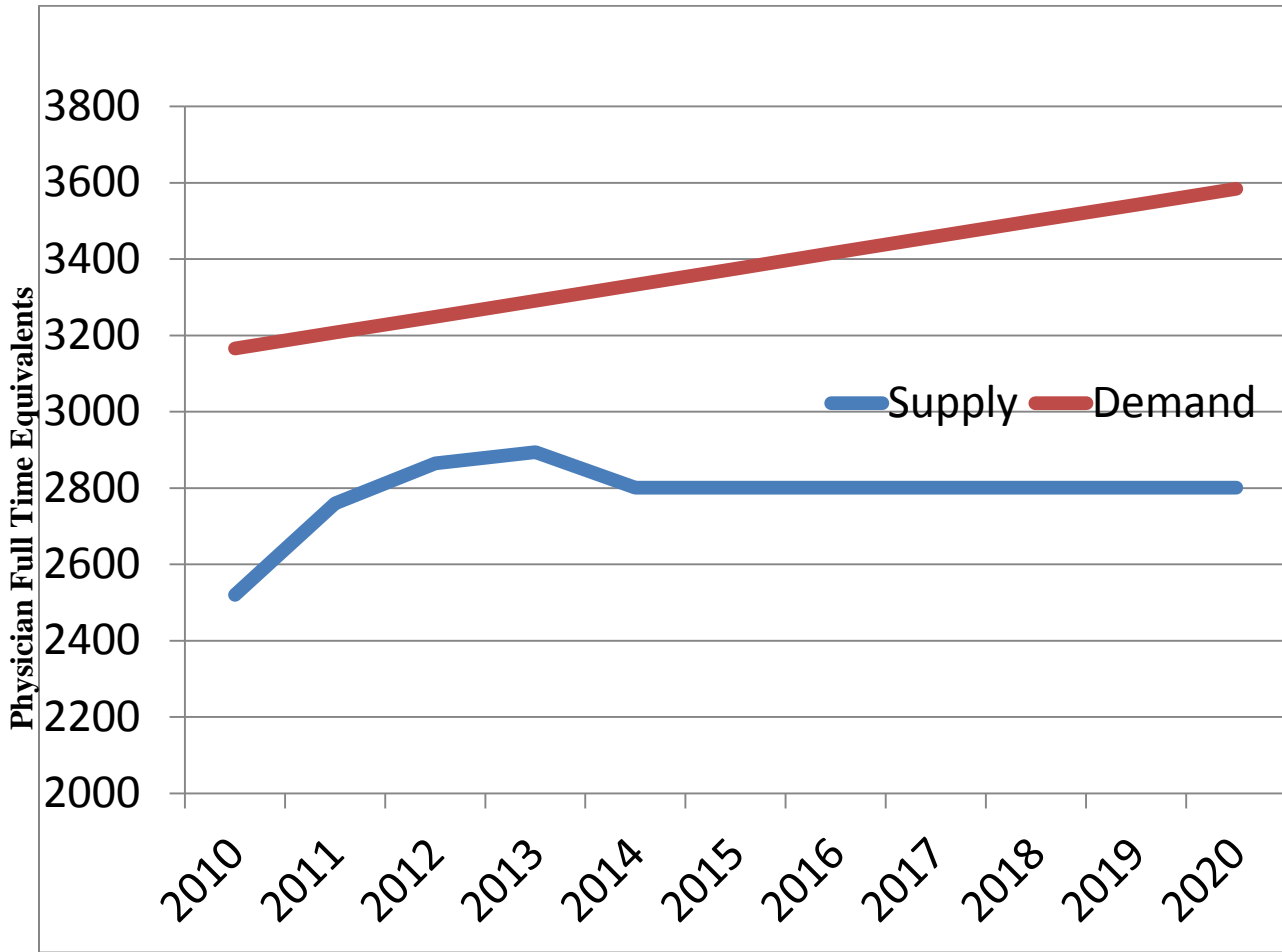
Applying the model to Hawai'i, therefore, produced estimates of physician demand by select specialty if people in each county were to receive a level of care consistent with the national average, but adjusting for differences across counties in demographics, health and economic factors that affect demand for health care services. One adaptation was made based on Hawaii's geographic differences from the mainland.

Two specialties, Emergency Medicine and Critical Care, were assessed at the 75th percentile utilization level to adjust for the fact that there are geographically isolated hospitals which must have a minimal staffing level to function. While pediatric subspecialties are included in this table, additional research must be done to confirm accuracy of both the demand model and the supply numbers as a new methodology was used to perform the demand and in most cases, a provider that works in a subspecialty will provide care to both adult and child patients, making it difficult to differentiate what percent of time is spent caring for pediatric patients. For example, while there is significant anecdotal unmet need for Child and Adolescent Psychiatry across the state, the numbers indicate there are adequate Child Psychiatrists practicing in Hawai‘i, although a geographic maldistribution may be present on the neighbor islands. It is also possible that the Psychiatrists who have listed both Adult and Child/Adolescent Psychiatry are performing more Adult Psychiatry than Child/Adolescent Psychiatry. Additional research must be performed to confirm whether this is the case.

Also of note is that there is not yet a category of demand for hospitalists, however because they are taken out of the primary care supply, they have been included in the “Other” category for both supply and demand until accurate estimates of demand are created. The specialties included in the “other” category are hospitalist, pediatric hospitalist, occupational medicine, sleep medicine, complementary and alternative medicine, pain medicine, preventive medicine and radiation oncology. Because the demand model is new this year, the assessment of change in specialties with the greatest shortages is not included in the report, however will be tracked using the new demand model from 2014 forward. The total estimated demand for physicians is 3,276 FTEs.

Projections of future supply are difficult to assess as there is no clear indications of trends based on the four years of data available. Therefore the projections in the model offered are based on Hawai‘i being able to maintain our current physician numbers by replacing those who retire or leave every year. If this is the case, then by 2020 we will be 800 physicians short; this assumes that the physicians still practicing will practice in the specialties most needed. Since this is rarely the case, it is likely that our perception of the shortage will be greater than the numbers in the model suggest. In addition, there is an assessment of physician assistants and advanced practice nurse practitioners currently underway and if these important patient care provider populations are also demonstrated to be at 50% or less of demand, then the demand for physicians will be perceived as even higher. Based on the calculations described above, the trends in physician supply and demand in Hawai‘i are graphed in Figure 1 below.

Figure 1. Trends in Physician Changes and Future Projections



The supply and demand of different specialties on a statewide basis is outlined in Table 1 by specialty of greatest percentage of unmet demand. Remember when reading this table that the percent shortage is distinct from the number of providers needed, so that for specialties with low numbers, a single new provider can make a significant impact on shortage percent.

Table 1: Statewide Supply and Demand Estimates 2014 Ranked by Percentage of Shortage

Statewide	Demand	Supply	FTE Shortage	% Shortage
Pediatric Endocrinology	3.9	1	2.9	74.4%
Infectious Disease	37.6	13.13	24.47	65.1%
Colorectal Surgery	6.6	2.32	4.28	64.8%
Pediatric Cardiology	10.6	4.5	6.1	57.5%
Pathology	81.1	36.78	44.32	54.6%
General Surgery	112	54.79	57.21	51.1%

Pediatric Neurology	5	2.65	2.35	47.0%
Pulmonology	52.9	28.14	24.76	46.8%
Neurology	68.2	37.47	30.73	45.1%
Neurological Surgery	20.2	11.3	8.9	44.1%
Pediatric Hematology/Oncology	6.5	3.92	2.58	39.7%
Orthopedic Surgery	102.9	67.14	35.76	34.8%
General & Family Practice	504.2	329.84	174.36	34.6%
Thoracic Surgery	19.4	12.81	6.59	34.0%
Rheumatology	17.9	11.84	6.06	33.9%
Cardiology	96.3	64.33	31.97	33.2%
Pediatric Gastroenterology	3.7	2.5	1.2	32.4%
Hematology & Oncology	51.6	35.11	16.49	32.0%
Urology	43.6	31.73	11.87	27.2%
Allergy & Immunology	19.8	14.45	5.35	27.0%
Otolaryngology	41.5	31.17	10.33	24.9%
Nephrology	32.7	24.78	7.92	24.2%
Critical Care	25.1	20	5.1	20.3%
Anesthesiology	159.6	128.43	31.17	19.5%
Plastic Surgery	30.9	25.88	5.02	16.2%
Gastroenterology	56.7	48	8.7	15.3%
OB-GYN	180.9	160.22	20.68	11.4%
Vascular Surgery	12	10.85	1.15	9.6%
General Internal Medicine	459.1	420.25	38.85	8.5%
Psychiatry	161.5	148.67	12.83	7.9%
Pediatrics	239.9	225.08	14.82	6.2%
Radiology	129.6	130.93	-1.33	-1.0%
Endocrinology	24	24.33	-0.33	-1.4%
Physical Medicine and Rehabilitation	33.1	34.29	-1.19	-3.6%
Emergency Medicine	171.2	180.79	-9.59	-5.6%
Dermatology	44.8	50.91	-6.11	-13.6%
Ophthalmology	81.3	98.76	-17.46	-21.5%
Child & Adolescent Psychiatry	26.8	34.32	-7.52	-28.1%
Neonatal-perinatal	21.5	27.98	-6.48	-30.1%
Pediatric Rheumatology	0.6	1	-0.4	-66.7%
Geriatrics	15.2	34.34	-19.14	-125.9%
Other: Hospitalist, Complementary & Alternative Medicine, Radiological Oncology, Preventative Medicine, Pain Medicine	64.3	173.3	-109	-169.5%
Total	3276.3	2800.03	476.27	

Table 2: Statewide Supply and Demand Estimates 2014 Without Excess FTEs

Statewide	Demand	Supply	FTE Shortage	% Shortage
Pediatric Endocrinology	3.9	1	2.9	74.4%
Infectious Disease	37.6	13.13	24.47	65.1%
Colorectal Surgery	6.6	2.32	4.28	64.8%
Pediatric Cardiology	10.6	4.5	6.1	57.5%
Pathology	81.1	36.78	44.32	54.6%
General Surgery	112	54.79	57.21	51.1%
Pediatric Neurology	5	2.65	2.35	47.0%
Pulmonology	52.9	28.14	24.76	46.8%
Neurology	68.2	37.47	30.73	45.1%
Neurological Surgery	20.2	11.3	8.9	44.1%
Pediatric Hematology/Oncology	6.5	3.92	2.58	39.7%
Orthopedic Surgery	102.9	67.14	35.76	34.8%
General & Family Practice	504.2	329.84	174.36	34.6%
Thoracic Surgery	19.4	12.81	6.59	34.0%
Rheumatology	17.9	11.84	6.06	33.9%
Cardiology	96.3	64.33	31.97	33.2%
Pediatric Gastroenterology	3.7	2.5	1.2	32.4%
Hematology & Oncology	51.6	35.11	16.49	32.0%
Urology	43.6	31.73	11.87	27.2%
Allergy & Immunology	19.8	14.45	5.35	27.0%
Otolaryngology	41.5	31.17	10.33	24.9%
Nephrology	32.7	24.78	7.92	24.2%
Critical Care	25.1	20	5.1	20.3%
Anesthesiology	159.6	128.43	31.17	19.5%
Plastic Surgery	30.9	25.88	5.02	16.2%
Gastroenterology	56.7	48	8.7	15.3%
OB-GYN	180.9	160.22	20.68	11.4%
Vascular Surgery	12	10.85	1.15	9.6%
General Internal Medicine	459.1	420.25	38.85	8.5%
Psychiatry	161.5	148.67	12.83	7.9%
Pediatrics	239.9	225.08	14.82	6.2%
Radiology	129.6	130.93	0	0.0%
Endocrinology	24	24.33	0	0.0%
Physical Medicine and Rehabilitation	33.1	34.29	0	0.0%
Emergency Medicine	171.2	180.79	0	0.0%
Dermatology	44.8	50.91	0	0.0%
Ophthalmology	81.3	98.76	0	0.0%
Child & Adolescent Psychiatry	26.8	34.32	0	0.0%
Neonatal-perinatal	21.5	27.98	0	0.0%
Pediatric Rheumatology	0.6	1	0	0.0%

Geriatrics	15.2	34.34	0	0.0%
Other: Hospitalist, Complementary & Alternative Medicine, Radiological Oncology, Preventative Medicine, Pain Medicine	64.3	173.3	0	0.0%
Total	3276.3	2800.03	654.82	20%

Table 3: Demand Ranked by Shortage of Full Time Equivalent

Statewide	Demand	Supply	FTE Shortage	% Shortage
General & Family Practice	504.2	329.84	174.36	34.6%
General Surgery	112	54.79	57.21	51.1%
Pathology	81.1	36.78	44.32	54.6%
General Internal Medicine	459.1	420.25	38.85	8.5%
Orthopedic Surgery	102.9	67.14	35.76	34.8%
Cardiology	96.3	64.33	31.97	33.2%
Anesthesiology	159.6	128.43	31.17	19.5%
Neurology	68.2	37.47	30.73	45.1%
Pulmonology	52.9	28.14	24.76	46.8%
Infectious Disease	37.6	13.13	24.47	65.1%
OB-GYN	180.9	160.22	20.68	11.4%
Hematology & Oncology	51.6	35.11	16.49	32.0%
Pediatrics	239.9	225.08	14.82	6.2%
Psychiatry	161.5	148.67	12.83	7.9%
Urology	43.6	31.73	11.87	27.2%
Otolaryngology	41.5	31.17	10.33	24.9%
Neurological Surgery	20.2	11.3	8.9	44.1%
Gastroenterology	56.7	48	8.7	15.3%
Nephrology	32.7	24.78	7.92	24.2%
Thoracic Surgery	19.4	12.81	6.59	34.0%
Pediatric Cardiology	10.6	4.5	6.1	57.5%
Rheumatology	17.9	11.84	6.06	33.9%
Allergy & Immunology	19.8	14.45	5.35	27.0%
Critical Care	25.1	20	5.1	20.3%
Plastic Surgery	30.9	25.88	5.02	16.2%
Colorectal Surgery	6.6	2.32	4.28	64.8%
Pediatric Endocrinology	3.9	1	2.9	74.4%
Pediatric Hematology/Oncology	6.5	3.92	2.58	39.7%
Pediatric Neurology	5	2.65	2.35	47.0%
Pediatric Gastroenterology	3.7	2.5	1.2	32.4%
Vascular Surgery	12	10.85	1.15	9.6%

Demand by County

The physician shortages are still greatest in the most rural areas of our state. The following four tables outline the supply and demand tables for each county of Hawai‘i. Further breakout can be provided upon request (for example by island within Maui) by emailing wityh@hawaii.edu.

Table 4: Hawai‘i Supply Demand Table

Hawai‘i Island	Demand	Supply	FTE Shortage	% Shortage
Colorectal Surgery	1	0	1	100.0%
Neonatal-perinatal	3	0	3	100.0%
Pediatric Rheumatology	0.1	0	0.1	100.0%
Pediatric Cardiology	1.5	0	1.5	100.0%
Pediatric Gastroenterology	0.5	0	0.5	100.0%
Pediatric Neurology	0.7	0	0.7	100.0%
Plastic Surgery	4.5	0.75	3.75	83.3%
Neurological Surgery	2.9	0.5	2.4	82.8%
Infectious Disease	5.3	1	4.3	81.1%
Allergy & Immunology	2.8	0.65	2.15	76.8%
Nephrology	4.5	1.05	3.45	76.7%
Hematology & Oncology	8.2	2.2	6	73.2%
Critical Care	3.6	1	2.6	72.2%
Orthopedic Surgery	14.6	4.2	10.4	71.2%
Pulmonology	7.6	2.2	5.4	71.1%
Neurology	9.7	2.88	6.82	70.3%
Pathology	11.6	3.5	8.1	69.8%
Otolaryngology	5.8	2	3.8	65.5%
Endocrinology	3.3	1.15	2.15	65.2%
Urology	6.3	2.2	4.1	65.1%
Rheumatology	2.6	0.95	1.65	63.5%
Physical Medicine and Rehabilitation	4.6	1.83	2.77	60.2%
Cardiology	13.8	5.7	8.1	58.7%
Thoracic Surgery	2.8	1.3	1.5	53.6%
Anesthesiology	23.1	11.76	11.34	49.1%
Pediatric Hematology/Oncology	0.9	0.5	0.4	44.4%
Psychiatry	23	13.99	9.01	39.2%
General Surgery	16.1	9.91	6.19	38.4%
Dermatology	6.4	3.95	2.45	38.3%
General Internal Medicine	64.4	40.43	23.97	37.2%
Pediatrics	33.7	22.64	11.06	32.8%
OB-GYN	24.8	17.34	7.46	30.1%
Gastroenterology	8.1	5.7	2.4	29.6%

Radiology	19.6	13.93	5.67	28.9%
Ophthalmology	11.3	9.33	1.97	17.4%
Emergency Medicine	30.7	28.52	2.18	7.1%
Child & Adolescent Psychiatry	3.8	4.74	0	0.0%
General & Family Practice	71.1	78.89	0	0.0%
Geriatrics	2.1	3.48	0	0.0%
Other: Hospitalist, Complementary & Alternative Medicine, Radiological Oncology, Preventative Medicine, Pain Medicine	9.3	23.72	0	0.0%
Pediatric Endocrinology	0.5	0.5	0	0.0%
Vascular Surgery	1.7	1.8	0	0.0%
Total	471.9	326.19	170.34	36.1%

Table 5: Maui Supply Demand Table

Maui	Demand	Supply	FTE Shortage	% Shortage
Colorectal Surgery	0.8	0	0.8	100.0%
Geriatrics	1.5	0	1.5	100.0%
Neonatal-perinatal	2.4	0	2.4	100.0%
Pediatric Endocrinology	0.5	0	0.5	100.0%
Pediatric Hematology/Oncology	0.8	0	0.8	100.0%
Pediatric Rheumatology	0.1	0	0.1	100.0%
Pediatric Cardiology	1.2	0	1.2	100.0%
Pediatric Neurology	0.6	0	0.6	100.0%
Thoracic Surgery	2.3	0.25	2.05	89.1%
Rheumatology	2.1	0.37	1.73	82.4%
Infectious Disease	4.3	1.1	3.2	74.4%
Pathology	9.2	3	6.2	67.4%
Critical Care	2.8	1.05	1.75	62.5%
General Surgery	13	5.25	7.75	59.6%
Neurological Surgery	2.3	1	1.3	56.5%
Gastroenterology	6.6	3	3.6	54.5%
Pulmonology	6.1	2.85	3.25	53.3%
Neurology	7.9	3.75	4.15	52.5%
Vascular Surgery	1.3	0.75	0.55	42.3%
Psychiatry	19	11.17	7.83	41.2%
Plastic Surgery	3.7	2.28	1.42	38.4%
Ophthalmology	9.4	6.06	3.34	35.5%
Allergy & Immunology	2.3	1.5	0.8	34.8%
Endocrinology	2.6	1.75	0.85	32.7%
Orthopedic Surgery	12	8.13	3.87	32.3%
Urology	5.1	3.6	1.5	29.4%

Hematology & Oncology	6.5	4.7	1.8	27.7%
Emergency Medicine	25.4	18.97	6.43	25.3%
Pediatrics	28.4	21.71	6.69	23.6%
General Internal Medicine	52.2	41.18	11.02	21.1%
Physical Medicine and Rehabilitation	3.8	3.13	0.67	17.6%
Anesthesiology	18.8	16.12	2.68	14.3%
Otolaryngology	4.8	4.25	0.55	11.5%
General & Family Practice	58.6	52.04	6.56	11.2%
OB-GYN	20.7	20.06	0.64	3.1%
Child & Adolescent Psychiatry	3.2	3.17	0.03	0.9%
Cardiology	10.9	11.34	0	0.0%
Dermatology	5.2	7.6	0	0.0%
Nephrology	3.7	3.75	0	0.0%
Other: Hospitalist, Complementary & Alternative Medicine, Radiological Oncology, Preventative Medicine, Pain Medicine	7.6	21.79	0	0.0%
Pediatric Gastroenterology	0.4	0.95	0	0.0%
Radiology	15.6	18.36	0	0.0%
Total	385.7	305.98	100.11	26.0%

Table 6: Kaua‘i Supply Demand Table

Kaua‘i	Demand	Supply	FTE Shortage	% Shortage
Critical Care	1.3	0	1.3	100.0%
Endocrinology	1.2	0	1.2	100.0%
Neonatal-perinatal	1	0	1	100.0%
Neurological Surgery	1	0	1	100.0%
Pediatric Endocrinology	0.2	0	0.2	100.0%
Pediatric Hematology/Oncology	0.3	0	0.3	100.0%
Pediatric Card	0.5	0	0.5	100.0%
Pediatric GI	0.2	0	0.2	100.0%
Pediatric Neurology	0.3	0	0.3	100.0%
Thoracic Surgery	1	0	1	100.0%
Vascular Surgery	0.6	0.05	0.55	91.7%
Rheumatology	0.9	0.13	0.77	85.6%
Plastic Surgery	1.6	0.25	1.35	84.4%
Pulmonology	2.7	0.5	2.2	81.5%
Allergy & Immunology	1	0.2	0.8	80.0%
Pathology	4.1	1	3.1	75.6%
Neurology	3.5	1	2.5	71.4%
Orthopedic Surgery	5.3	1.6	3.7	69.8%
OB-GYN	8.7	3.1	5.6	64.4%

Cardiology	4.9	1.76	3.14	64.1%
Dermatology	2.3	0.93	1.37	59.6%
Hematology & Oncology	2.9	1.5	1.4	48.3%
Urology	2.2	1.15	1.05	47.7%
Infectious Disease	1.9	1	0.9	47.4%
General Internal Medicine	23.1	12.53	10.57	45.8%
Nephrology	1.6	0.9	0.7	43.8%
Physical Medicine and Rehabilitation	1.7	1	0.7	41.2%
Geriatrics	0.8	0.5	0.3	37.5%
General Surgery	5.8	3.75	2.05	35.3%
Gastroenterology	2.9	2	0.9	31.0%
General & Family Practice	25.4	17.63	7.77	30.6%
Psychiatry	8.2	5.78	2.42	29.5%
Radiology	6.9	5	1.9	27.5%
Colorectal Surgery	0.4	0.32	0.08	20.0%
Pediatrics	12.1	10.55	1.55	12.8%
Anesthesiology	8.3	7.52	0.78	9.4%
Child & Adolescent Psychiatry	1.4	2.5	0	0.0%
Emergency Medicine	11	15.66	0	0.0%
Ophthalmology	4.1	4.68	0	0.0%
Other: Hospitalist, Urgent Care, etc.	3.3	7.78	0	0.0%
Otolaryngology	2.1	2.45	0	0.0%
Pediatric Rheumatology	0	0	0	0.0%
Total	168.7	114.72	65.15	38.6%

Table 7: O‘ahu Supply Demand Table

O‘ahu	Demand	Supply	FTE Shortage	% Shortage
Pediatric Endocrinology	2.7	0.5	2.2	81.5%
Infectious Disease	26.1	10.03	16.07	61.6%
Colorectal Surgery	4.4	2	2.4	54.5%
General Surgery	77.1	35.88	41.22	53.5%
General & Family Practice	349.1	181.28	167.82	48.1%
Pathology	56.2	29.28	26.92	47.9%
Pediatric Gastroenterology	2.6	1.55	1.05	40.4%
Pediatric Cardiology	7.4	4.5	2.9	39.2%
Pulmonology	36.5	22.59	13.91	38.1%
Neurology	47.1	29.84	17.26	36.6%
Cardiology	66.7	45.53	21.17	31.7%
Neurological Surgery	14	9.8	4.2	30.0%
Endocrinology	16.9	12.3	4.6	27.2%
Orthopedic Surgery	71	53.21	17.79	25.1%

Pediatric Hematology/Oncology	4.5	3.42	1.08	24.0%
Pediatric Neurology	3.4	2.65	0.75	22.1%
Otolaryngology	28.8	22.47	6.33	22.0%
Hematology & Oncology	34	26.71	7.29	21.4%
Urology	30	24.78	5.22	17.4%
Nephrology	22.9	19.08	3.82	16.7%
Rheumatology	12.3	10.39	1.91	15.5%
Thoracic Surgery	13.3	11.26	2.04	15.3%
Anesthesiology	109.4	93.03	16.37	15.0%
Allergy & Immunology	13.7	12.1	1.6	11.7%
OB-GYN	126.7	119.72	6.98	5.5%
Gastroenterology	39.1	37.3	1.8	4.6%
Vascular Surgery	8.4	8.25	0.15	1.8%
Child & Adolescent Psychiatry	18.4	23.91	0	0.0%
Critical Care	17.4	17.95	0	0.0%
Dermatology	30.9	38.43	0	0.0%
Emergency Medicine	104.1	126.7	0	0.0%
General Internal Medicine	319.4	326.11	0	0.0%
Geriatrics	10.8	30.36	0	0.0%
Neonatal-perinatal	15.1	27.98	0	0.0%
Ophthalmology	56.5	78.69	0	0.0%
Other: Hospitalist, Complementary & Alternative Medicine, Radiological Oncology, Preventative Medicine, Pain Medicine	44.1	120.01	0	0.0%
Pediatric Rheumatology	0.4	1	0	0.0%
Pediatrics	165.7	170.18	0	0.0%
Physical Medicine and Rehabilitation	23	28.33	0	0.0%
Plastic Surgery	21.1	22.6	0	0.0%
Psychiatry	111.3	117.73	0	0.0%
Radiology	87.5	93.64	0	0.0%
Total	2247.3	2053.07	394.85	17.6%

Solutions Being Implemented

Efforts to grow the population of satisfied physicians working in patient care in Hawai‘i are many. The Physician Workforce Research Team held the first Physician Workforce Summit in 2010 in order to prioritize the interventions to initiate first. At the first Summit, ten solutions were identified as the most important interventions in Hawai‘i to improve the physician workforce. These are: Expand the pathway to health careers; Expand rural training opportunities; Support practice reform such as Patient Centered Medical Home; Foster interprofessional teamwork in practice; Enact payment reform; Implement a rural payment differential; Advance community involvement in physician recruitment/retention; Advance medical malpractice reform; Foster administrative simplification; and Support Electronic Health Records. In 2012, with the reauthorization of the Physician Workforce Assessment activities and the emphasis on solutions created in Act 186, SLH 2012, the Physician Workforce Research team began closer collaboration with the Hawai‘i Medical Education Counsel and identified two additional activities: a state loan repayment program and an initiative to recruit Hawai‘i medical training graduates back to practice in Hawai‘i.

Activities have been accomplished in all areas except for Enactment of a Rural Payment Differential, which has met with resistance in the changing medical insurance marketplace. The most notable successes of the Physician Workforce Assessment activities are listed below by category:

- 1) Expand the pathway to health careers: The Physician Workforce Assessment team has made contact with over 3,000 health professions students in the intervening year. Even more exciting, is the development of a 140+ page health careers booklet with information on all the health professions in Hawai‘i and local resources for pursuit of health careers which can be viewed at www.ahec.hawaii.edu.
- 2) Expand rural training opportunities: Additional rural training sites and providers were attained for JABSOM medical students
- 3) Support Practice Reform was addressed at the 2014 Hawai‘i Health Workforce Summit that offered eight hours of Continuing Education to the 340 participants. The Summit addressed New Models of Care, Payment Reform, Administrative Simplification, Interprofessional Practice and Telemedicine.
- 4) Interprofessional Practice was addressed at the Workforce Summit and Dr. Withy is a member of

the University of Hawai‘i Interprofessional education group that is doing an assessment of all interprofessional training in Hawai‘i.

- 5) Payment reform was also addressed at the Workforce Summit, and Dr. Withy has been a member of the Governor’s Healthcare Transformation Task Force Multipayer Committee.
- 6) Rural Payment Differential-no action.
- 7) Community Involvement-the Physician Workforce Assessment team is working with the Hawai‘i State Rural Health Association to provide the welcome wagon for rural providers and to date has supported the welcome of 11 local healthcare providers. Hawai‘i State Rural Health Association is in discussion with Hawai‘i Island Healthcare Alliance to create a welcome event for new providers on Big Island.
- 8) Medical Malpractice Reform was introduced in 2013 and the impact is being studied, but is initially disappointing. Dr. Withy regularly recruits additional physicians to participate in the Medical Inquiry and Conciliation Panels.
- 9) Administrative Simplification-Dr. Withy researched the extent of prior authorization forms from the eight local health insurers in Hawai‘i and found that there are 536 different prior authorization forms for providers in Hawai‘i to complete. An article is planned in the 2015 Workforce edition of the Hawai‘i Journal of Public Health and Medicine.
- 10) Electronic Health Records-Dr. Withy is on the Physician Advisory Group of the Hawai‘i Health Information Exchange and assisting with research on what will help physicians adapt to electronic information collection.
- 11) The Hawai‘i State Loan Repayment Program has received an additional four years of funding at \$311,875 a year for the period of 9/1/2014 through 8/30/2018. The 16 current loan repayers are continuing, but the federal funds must be matched by local funding, so there will be a legislative request in the 2015 legislative session for matching funds. Applications are being accepted for loan repayment at this time, but will be processed only if there is a source of local matching.
- 12) Finally, a ‘pop-up’ exhibitor stand is being developed to recruit healthcare providers to Hawai‘i and will be used by recruiters attending conferences across the country as part of a collaborative effort on the part of the Hawai‘i Physician Recruitment Committee and the Hawai‘i Physician Workforce Assessment to recruit providers to Hawai‘i. All Hawai‘i graduates are offered information on job openings and we have a list of 53 mainland physicians to whom we regularly send employment information.

In addition to these activities, Dr. Withy is co-chair of the Governor's Healthcare Transformation Task Force Workforce Committee and has assumed the responsibility to host this committee which is examining how to create a Health Workforce Center for all health professions in Hawai'i.

Next Steps

The Physician Workforce Research Team will continue to conduct the research and implement the solutions described above. Additional research will be conducted to identify who is entering and leaving the workforce, and assess both the Physician Assistant and Advanced Practice Nurse Practitioner workforce to enhance the accuracy of the demand for healthcare services. In addition, annual Health Workforce Summits are planned emphasizing systems and payment reforms and other factors that will improve provider recruitment and career satisfaction. The annual summit is now being combined with a job fair for medical providers, that is designed to get students and residents participating in regular career preparation activities (CV writing, contract review and interviewing skills) that will be offered by the Hawai'i Physician Recruiters group upon request throughout the year. The web based job bank will be continued at www.ahec.hawaii.edu, and outreach for Hawai'i positions will be introduced at medical conferences across the country. More information on ongoing and upcoming activities is available at the AHEC website: www.ahec.hawaii.edu. The AHEC office number is 808-692-1060 and Dr. Withy's direct office line at JABSOM is 808-692-1070 and email is withy@hawaii.edu.