



**DEPARTMENT OF BUSINESS,
ECONOMIC DEVELOPMENT & TOURISM**

DEPT. COMM. NO. 229
DAVID Y. IGE
GOVERNOR
MIKE MCCARTNEY
DIRECTOR

RANDALL TANAKA
DEPUTY DIRECTOR

No. 1 Capitol District Building, 250 South Hotel Street, 5th Floor, Honolulu, Hawaii 96813
Mailing Address: P.O. Box 2359, Honolulu, Hawaii 96804
Web site: dbedt.hawaii.gov

Telephone: (808) 586-2355
Fax: (808) 586-2377

December 20, 2019

The Honorable Ronald D. Kouchi,
President and Members
of the Senate
Thirtieth State Legislature
State Capitol, Room 409
Honolulu, Hawaii 96813

The Honorable Scott K. Saiki,
Speaker and Members of the
House of Representatives
Thirtieth State Legislature
State Capitol, Room 431
Honolulu, Hawaii 96813

Dear President Kouchi, Speaker Saiki, and Members of the Legislature:

For your information and consideration, I am transmitting a copy of the report *Hawaii's Targeted and Emerging Industries, 2019 Update Report*, as required by 201-19 (b), Hawaii Revised Statutes. In accordance with Section 93-16, Hawaii Revised Statutes, I am also informing you that the report may be viewed electronically at: http://dbedt.hawaii.gov/economic/reports_studies/emerging-industries/.

With aloha,

Mike McCartney

Enclosure

c: Legislative Reference Bureau



Hawaii's Targeted & Emerging Industries

2019 Update Report



Department of Business, Economic Development and Tourism

December 2019

In accordance with Chapter 201-3(5), Hawaii Revised Statutes, this publication was produced by the Research and Economic Analysis Division (READ) of the Department of Business, Economic Development & Tourism (DBEDT), State of Hawaii which is responsible for its content and presentation.



This report was authored by Dr. Binsheng Li under the Economic Research Administrator Dr. Eugene Tian and Branch Chief Dr. Joseph Roos with assistance from Laura Meisinger.

Hawaii Department of Business, Economic Development & Tourism
December 2019

TABLE OF CONTENTS

INTRODUCTION	1
Defining Targeted Industries	1
The Targeted Industry Portfolio.....	1
Measuring Targeted Industries	3
Data Sources	4
TECHNOLOGY SECTOR.....	5
Size & Growth	5
Competitive Metrics.....	7
Overall Performance	9
CREATIVE SECTOR	10
Size & Growth	10
Competitive Metrics.....	13
Overall Performance	14
Size & Growth	15
Competitive Metrics.....	16
Overall Performance	17
HEALTH & WELLNESS.....	18
Size & Growth	18
Competitive Metrics.....	20
Overall Performance	20
EDUCATION	21
Size & Growth	21
Competitive Metrics.....	22
Overall Performance	23
OTHER TARGETED ACTIVITIES	24
Size & Growth	24
Competitive Metrics.....	26
Overall Performance	26
City & County of Honolulu	28
Hawaii County	31
Maui County	34

CONCLUSIONS..... 40

EXECUTIVE SUMMARY

In 2009 DBEDT Research compiled and published a performance review of Hawaii's targeted industry portfolio in accordance with Chapter 201-3(5), Hawaii Revised Statutes.¹ The portfolio consisted of several dozen economic activities that had been suggested, proposed or actively promoted over the past several decades as potential new growth industries. The purpose of the review was to better define those activities for measurement purposes and to find out which had performed best in recent years. This report is the 10th update of the 2009 report to cover the 2009 to 2019 period.

The activities were grouped into four performance categories. *Base-growth* activities rated the highest on the basis of state and national performance and were more concentrated for Hawaii's economy than the nation overall. Industries in this category had developed a competitive national advantage and were probably exporting some proportion of industry output. *Emerging* activities also rated high on performance but had not reached a level of concentration that would as yet suggest a competitive advantage. *Transitioning* activities in the portfolio were showing growth in jobs over the measurement period (and in some cases impressive growth), but were outperformed by the same activity nationally, suggesting that Hawaii was not as competitive. Finally, *Declining* activities lost jobs over the measurement period and in most cases (but not all) were less competitive than their national counterpart. This update report extends the performance measures through the projected data for 2019. Table 1 provides a comprehensive overview of performance among activities in the Targeted Industry Portfolio over the 2009 to 2019 period. In the body of this report, the activities will be examined in detail by their major sector groups such as technology, creative industries, and others. Key observations from the updated examination of the portfolio are:

- Eleven activities were high performing, with positive job growth combined with a job growth rate that was higher than the nation for the same activity. Among those were Cultural Activities, Fishing, Forestry & Hunting, Film, TV, Video Production/Distribution, Pharmacies, Specialty Health Care Services, Marketing, Photography & Related, Specialty Education, Alternative Power Generation, Hospitals & Nursing Facilities, Agriculture Support Services, and Agriculture Inputs.
- The high-performing activities in the Targeted Industry Portfolio (Base-growth and Emerging) accounted for about 68,887 jobs or 7.8% of total civilian jobs in 2019. Between 2009 and 2019, these activities generated 18.4% of the total gain in jobs for the civilian economy or about 18,695 new jobs.
- Among the best performing activities, Cultural Activities, Alternative Power Generation, and Film, TV, Video Production/Distribution, grew jobs over 7% per year during the 2009 to 2019 period.
- Adjusting for overlaps, total targeted jobs reached 162,232 jobs in 2019, an increase of 20,775 jobs from 2009.

¹*Benchmarking Hawaii's Emerging Industries*, DBEDT, December 2009, http://dbedt.hawaii.gov/economic/reports_studies/emerging-industries/

Table 1. Overall Performance of the Targeted Industry Portfolio

INDUSTRY GROUPS	Jobs in Hawaii		Average Annual Job Growth (2009-2019p)		Concentration of Industry in Hawaii Compared to U.S.		Average Annual Earnings (2019p)	
	2019p	Change 09-19p	HI	U.S.	2019p	% Point Change 09-19p	HI	U.S.
TOTAL CIVILIAN JOBS	881,749	101,641	1.2%	1.5%	100%	0.00%	\$56,936	\$60,854
TOTAL TARGETED JOBS WITHOUT OVERLAP	162,232	20,775	1.4%	1.6%	81%	0.53%	\$62,321	\$74,870
Base-Growth Activities								
Cultural Activities	3,626	2,009	8.4%	2.8%	380%	162%	\$52,567	\$57,954
Fishing, Forestry & Hunting	1,686	10	0.1%	-0.6%	380%	35%	\$28,971	\$39,594
Film, TV, Video Production/Distribution	2,500	1,267	7.3%	0.8%	139%	66%	\$92,881	\$109,210
Pharmacies	3,533	129	0.4%	-0.3%	112%	10%	\$50,120	\$51,092
Specialty Health Care Services	14,392	7,026	6.9%	4.3%	109%	26%	\$58,314	\$48,982
Emerging Activities								
Marketing, Photography & Related	12,799	2,755	2.5%	2.4%	98%	3%	\$32,361	\$54,962
Specialty Education	6,453	2,100	4.0%	3.4%	96%	8%	\$23,189	\$27,687
Alternative Power Generation	337	175	7.6%	-2.5%	95%	61%	\$81,746	\$156,188
Hospitals & Nursing Facilities	21,358	2,753	1.4%	0.6%	72%	7%	\$88,759	\$70,532
Agriculture Support Services	1,717	428	2.9%	1.7%	63%	9%	\$53,756	\$54,117
Agriculture Inputs	485	44	0.9%	0.8%	44%	2%	\$60,370	\$73,176
Transitioning Activities								
Art Education	849	255	3.6%	3.7%	67%	1%	\$11,177	\$12,662
Engineering and Related Services	6,591	591	0.9%	1.0%	90%	2%	\$100,734	\$99,970
Design Services	2,141	295	1.5%	1.6%	95%	2%	\$36,362	\$47,448
Music	1,376	312	2.6%	2.7%	144%	2%	\$42,399	\$43,822
Agriculture Processing	7,072	899	1.4%	1.6%	89%	0%	\$52,457	\$59,956
Technical Consulting Services	5,028	1,163	2.7%	3.0%	63%	-1%	\$70,367	\$91,154
Technology Equipment Distribution	865	16	0.2%	0.7%	35%	-1%	\$121,190	\$132,140
Business Consulting	5,488	992	2.0%	2.8%	59%	-3%	\$69,664	\$90,836
Higher Education	5,510	221	0.4%	1.3%	61%	-4%	\$35,669	\$56,609
Health Practitioners	22,045	1,495	0.7%	1.9%	89%	-9%	\$87,409	\$85,167
Medical and Diagnostic Testing*	1,821	133	0.8%	2.2%	135%	-17%	\$68,168	\$77,955
Agriculture Packaging & Warehousing	246	3	0.1%	1.6%	28%	-4%	\$51,324	\$57,665
Performing and Creative Arts	9,741	538	0.6%	2.5%	117%	-20%	\$25,814	\$30,825
Computer Services and Software Publishers	5,177	372	0.7%	3.9%	42%	-13%	\$94,730	\$132,697

*The 1,821 jobs in this industry were allocated to both the Technology and Health and Wellness Sectors.

Source: DBEDT based on data from Economic Modeling Specialists, Inc. (EMSI). Estimates for 2019 are based on early 2019 data from EMSI ("P" designates projection). The sum of the individual industries does not add up to the total due to adjusting for overlaps among sectors.

Table 1. Overall Performance of the Targeted Industry Portfolio (Continued)

INDUSTRY GROUPS	Jobs in Hawaii		Average Annual Job Growth (2009-2019p)		Concentration of Industry in Hawaii Compared to U.S.		Average Annual Earnings (2019p)	
	2019p	Change 09-19p	HI	U.S.	2019p	% Point Change 09-19p	HI	U.S.
Declining Activities								
Information & Telecom Technology	5,203	-57	-0.1%	1.7%	57%	-9%	\$90,529	\$139,273
Computer Systems Design & Related	6,510	-96	-0.1%	3.3%	56%	-21%	\$90,826	\$122,028
Architecture	1,997	-69	-0.3%	0.8%	131%	-12%	\$85,652	\$79,643
Engineering and Research & Development	5,474	-192	-0.3%	0.9%	76%	-8%	\$104,948	\$115,467
Farm Production	12,859	-552	-0.4%	0.2%	91%	-4%	\$31,504	\$34,934
Apparel	1,066	-78	-0.7%	-2.4%	164%	30%	\$28,415	\$44,566
Chemical & Pharmaceutical Manufacturing	83	-15	-1.6%	0.6%	4%	-1%	\$217,470	\$138,763
Radio and Television Broadcasting	1,053	-215	-1.8%	0.2%	90%	-18%	\$74,993	\$91,876
Call Centers	270	-93	-2.9%	1.8%	11%	-6%	\$27,976	\$43,854
Other Technology Manufacturing	466	-164	-3.0%	0.4%	8%	-3%	\$63,564	\$119,875
Publishing & Information	1,829	-942	-4.1%	-0.3%	53%	-23%	\$54,087	\$129,804
R&D Services (excluding Biotechnology)	1,152	-795	-5.1%	0.8%	49%	-38%	\$91,066	\$130,568
Biotechnology	321	-356	-7.2%	3.6%	34%	-66%	\$75,512	\$197,008

*The 1,821 jobs in this industry were allocated to both the Technology and Health and Wellness Sectors.

Source: DBEDT based on data from Economic Modeling Specialists, Inc. (EMSI). Estimates for 2019 are based on early 2019 data from EMSI (“P” designates projection). The sum of the individual industries does not add up to the total due to adjusting for overlaps among sectors.

- About 57% of the high-performing activities had average annual earnings that exceeded \$58,000 in 2019. Film, TV, Video Production/Distribution had the highest average earnings at \$92,881. By comparison, the average earnings for the civilian economy in 2019 was \$56,936 based on the projected 2019 estimate.
- Fourteen activities, which accounted for 73,950 jobs in 2019, fell into the Transitioning category. They gained jobs over the period but did not keep up with national growth for the same activities resulting in a loss of competitive national industry share. However, six of those activities – Art Education, Technical Consulting Services, Music, Business Consulting, Design Services, and Agriculture Processing - grew faster in terms of jobs than the civilian economy as a whole.
- The positive side of the Transitioning activities in the portfolio was that they did contribute to job growth in the economy. They were also an important source of high paying jobs. About 47% of jobs in Transitioning category had average earnings over \$87,000 in 2019. The main concern of these activities was that they were not as competitive as the same activities at the national level.

- Thirteen activities in the portfolio fell into the Declining industry category as the result of net job losses for the 2009 to 2019 period. Notable among these were Publishing & Information, R&D Services (excluding Biotechnology), Farm Production, Biotechnology, Radio and Television Broadcasting, and Engineering and Research & Development.
- Among the 13 declining industries only two of them lost jobs at the U.S. level for the 2009 to 2019 period, they were Apparel and Publishing & Information.
- Jobs in the Declining industry group totaled an estimated 38,284 in 2019 (4.3% of all civilian jobs), representing a loss of about 3,623 jobs from 2009. About 58% of the jobs in the Declining industry group had above average earnings for Hawaii.
- Declining industries are not necessarily dying activities. In some cases, like Publishing & Information activities, the technology for developing and delivering information is improving rapidly, and perhaps reducing the need for workers. In these cases, the declining activities may stabilize at some point and resume some growth as the economy expands. Finally, some Declining activities may be tied to other activities such as tourism and defense and may be reflecting the cycles of those industries, rather than independent local or export markets.

It is important to note that the measures and classifications used in the Targeted Industry Portfolio are descriptive but not diagnostic. That is, the measures alone do not reveal why the industries performed as they did. They also do not reveal the role of these activities in the economy. It is not clear if the high performing industries are growing independently or are feeding off growth in other activities. It is also not clear which industries are devoting their output primarily to export as opposed to local consumption markets, although the measures of concentration help identify probable export candidates. The purpose of this performance assessment is to assist economic developers and policy makers understand which targeted industries are achieving the expected potential and which are not.

INTRODUCTION

In 2009 in accordance with Chapter 201-3(5), Hawaii Revised Statutes, DBEDT research reviewed the range of economic activities that have been suggested over the years as candidates for diversifying the state's economy. These activities have been labeled variously as *Emerging, Targeted and Growth* industries. The activities ranged from technology specialties, to diversified agriculture and have been pursued by various stakeholders including state and local governments, business groups and community-based organizations.

The report of that review sought to improve the definition of the various activities that had been targeted for promotion in a way that would permit their performance to be measured. The result of the review was the construction of a Targeted Industry Portfolio of around three dozen activities, and performance measures for 2002 to 2008. This is the tenth report that updates the review of targeted industry performance at the state level to 2019 (projected data). In this study, the targeted industry performance at the county level are also examined.

Defining Targeted Industries

Act 148 (2007) directed DBEDT to identify and measure systematically the performance of *Emerging* industries for Hawaii's economy. For the first report in 2009, more than a dozen major studies, reports and efforts were reviewed to construct a list of sectors, industries and activities that have been of interest over the last several decades. The activities were then defined for measurement purposes and criteria were established to identify those that could justifiably be called *Emerging* industries.

For the purpose of this report, the term "targeted" simply means that at some point in the past an activity was of interest for its potential contribution to growth and diversification by agencies, organizations or stakeholders. These ranged from activities that had simply been suggested as having potential, to industries that had been actively pursued with public resources for their growth potential, like Biotechnology and the Film/TV industry.

Even if it appeared that an activity was no longer of significant development interest it still was included in the portfolio. The portfolio was made broadly inclusive and detailed so that many specific activities could be assessed for their contribution to economic growth and diversification over the years. Some industries in the portfolio will show exceptional performance and others will show relatively poor performance over the periods measured. This range permits us to focus on weaknesses in the portfolio as well as strengths.

The Targeted Industry Portfolio

Table 2 lists the industries of the portfolio. The portfolio industries have also been grouped into major areas of interest such as Technology, Creative and Agribusiness. A detailed description of each portfolio industry was presented in the 2009 report and readers are referred to that report for more detail. For most of these industry groups, definitions for measurement purposes have been adopted from previous studies, particularly for the Technology Sector, the Creative Sector, and Health and Wellness Sector. Activities included in each sector are not necessarily mutually exclusive to each other. For example, a moderate overlap exists between the Creative and Technology

Sectors because of their mutually dependent relationship. The Medical Labs, Diagnostic and Imaging Centers group is included in both the Technology Sector and the Health & Wellness Sector.

Table 2. Targeted Industry Portfolio

TECHNOLOGY SECTOR	AGRIBUSINESS
Alternative Power Generation	Agriculture Inputs
Biotechnology	Agriculture Packaging & Warehousing
Chemical & Pharmaceutical Manufacturing	Agriculture Processing
Computer System Design & Related	Agriculture Support Services
Engineering and Related Service	Farm Production
Information & Telecom Technology	Fishing, Forestry & Hunting
Medical Labs, Diagnostic and Imaging Centers	HEALTH & WELLNESS
Other Technology Manufacturing	Health Practitioners
R&D Services (excluding Biotechnology)	Hospitals & Nursing Facilities
Technical Consulting Services	Medical Labs, Diagnostic and Imaging Centers
Technology Equipment Distribution	Pharmacies
CREATIVE SECTOR	Specialty Health Care Services
Art Education	EDUCATION (PRIVATE)
Architecture	Higher Education
Business Consulting	Specialty Education
Computer Services and Software Publishers	OTHER TARGETS
Cultural Activities	Apparel
Design Services	Call Centers
Engineering and Research & Development	
Film, TV, Video Production/Distribution	
Marketing, Photography & Related	
Music	
Performing and Creative Arts	
Publishing & Information	
Radio and Television Broadcasting	

Source: DBEDT

Measuring Targeted Industries

In this updated report, the industry groups of the Targeted Industry Portfolio are presented by the major sectors shown in Table 2. The performance measures are the same as those developed for the 2009 report. However, they are presented in a slightly different way that will be clearer and intuitive to readers unfamiliar with economic performance measures.

One of the key performance measures is the change of jobs over time. While most industries show some decline in a recession, we would expect promising industries to show a net increase in jobs over the entire business cycle. The rate of job growth for each portfolio activity, relative to the rest of the state, has important implications for diversifying the state's economy. Activities that grow faster than the overall state economy would help increase economic diversification.

Another performance measure is Hawaii's competitiveness and concentration of activities compared to the nation overall. If the respective activity is growing faster for Hawaii than the nation, this suggests that the state has a competitive advantage in this activity. Also, if the activity has a greater employment concentration in the state than the nation (as measured by the percentage of total jobs), it is likely an activity in which Hawaii has a competitive advantage. A higher concentration (as measured by the percentage of total jobs) also suggests that the activity has matured to the point that it is likely exporting a portion of its output directly or indirectly.

The average earnings for workers in each activity were examined. Higher earnings generally come from high quality jobs. A relatively higher earnings average suggests that the activity is creating high quality jobs that can help keep Hawaii's highly educated youth in the state.

By combining these performance measures, we attempt to group the portfolio activities into four performance categories (Table 3). A popular framework in the economic development research is the industry life cycle model. This model breaks down industries in the economy into four generalized stages. The first stage of the life cycle is usually called the Emerging stage of an industry. This characterizes relatively new and rapid growing activities that are usually serving new markets inside or outside the local economy. The second stage identifies Base-growth industries that have passed through the Emerging stage and have become strong, competitive sources of economic growth in the economy. As Base-growth industries mature, they reach their full market potential and growth slows. This represents the Transition stage. A majority are relatively healthy but have slowed and have become less competitive over time. Declining industries lose jobs over time and shrink as a proportion of the economy. If the industry is unable to reinvent itself with new products and markets, it will continue to wither and fade away.

Not all industries or their evolution will fit nicely into the model, especially over short periods of time. Some industries may emerge but never rise to the level, moving from weakly Emerging to the Transitioning or Declining stage or move back and forth among the different stages over a period of time. Likewise, an industry that has slowed from a Base-growth to a Transitioning industry may have a revival and move back to Base-growth status. In the short-term, business cycle fluctuations impact the forward and backward movements of the industry life cycle. However, in the long-term, the model should provide a fairly accurate picture of the performance of industries.

Table 3. Performance Map Criteria (Industry Life Cycle)

<i>Emerging Activities</i>		<i>Base-Growth Activities</i>
Positive job growth Increasing competitive national market share (outperforming the same activity nationally) Lower concentration in Hawaii than the nation	➔	Positive job growth Increasing competitive national market share (outperforming the same activity nationally) Higher concentration in Hawaii than the nation
		⬇
<i>Declining Activities</i>		<i>Transitioning Activities</i>
Losing jobs over period	➔	Positive job growth Losing competitive national market share

Data Sources

Jobs and earnings reported in this report include wage and salary positions and estimates for self-employed and proprietors. The data were obtained via a subscription to the data bases of Economic Modeling Specialists, Inc. (EMSI). EMSI uses data from Bureau of Labor Statistics, Bureau of Economic Analysis and others to construct very detailed industry data series regarding jobs, occupations and earnings for the states and counties.

TECHNOLOGY SECTOR

A joint project in 2008 between DBEDT, the Hawaii Science and Technology Association (HiSciTech) and other stakeholders updated the definition of the Technology Sector for Hawaii and established baseline measurements.² The project adopted a definition for technology established by the U.S. Bureau of Labor Statistics (BLS).³ The BLS approach classifies industries as being in the Technology Sector based on the proportion of highly trained technical workers in the industries. This update report followed the earlier definition with a few adjustments that were necessary due to changes in the NAICS coding system. The earlier definition excluded wireless telecom services from the Technology Sector, because the services could not meet the BLS criteria to be in the Technology Sector. Wired services, however, are no longer reported separately from other telecom services since the 2012 revision of NAICS codes. Facing the increased competition with new telecom services, many wired carriers chose to close or reduce the traditional wired services in order to expand services with more market potential. As a result, a variety of services are often served by a single carrier and the change in the 2012 NAICS was a reflection of these market trends. This update report adjusted the earlier definition by applying the BLS approach to new NAICS codes.

Size & Growth

With the adjustments described above, the Technology Sector accounted for 28,377 jobs in 2019, or 3.2% of all civilian jobs for Hawaii including self-employed and sole proprietors. For the 2009 to 2019 period, the Technology Sector had an annual average 0.2% gain in jobs, 1.0 percentage point lower than the average annual growth for the civilian economy.

The 2019 estimate shows that the Technology Sector had a net loss of 11 jobs in 2019 from 2018. Technical Consulting Services added 69 jobs, followed by Engineering and Related Services (added 32 jobs). The major categories with job losses in 2019 were Computer System Design and Related (lost 83 jobs) and Information & Telecom Technology (lost 38 jobs).

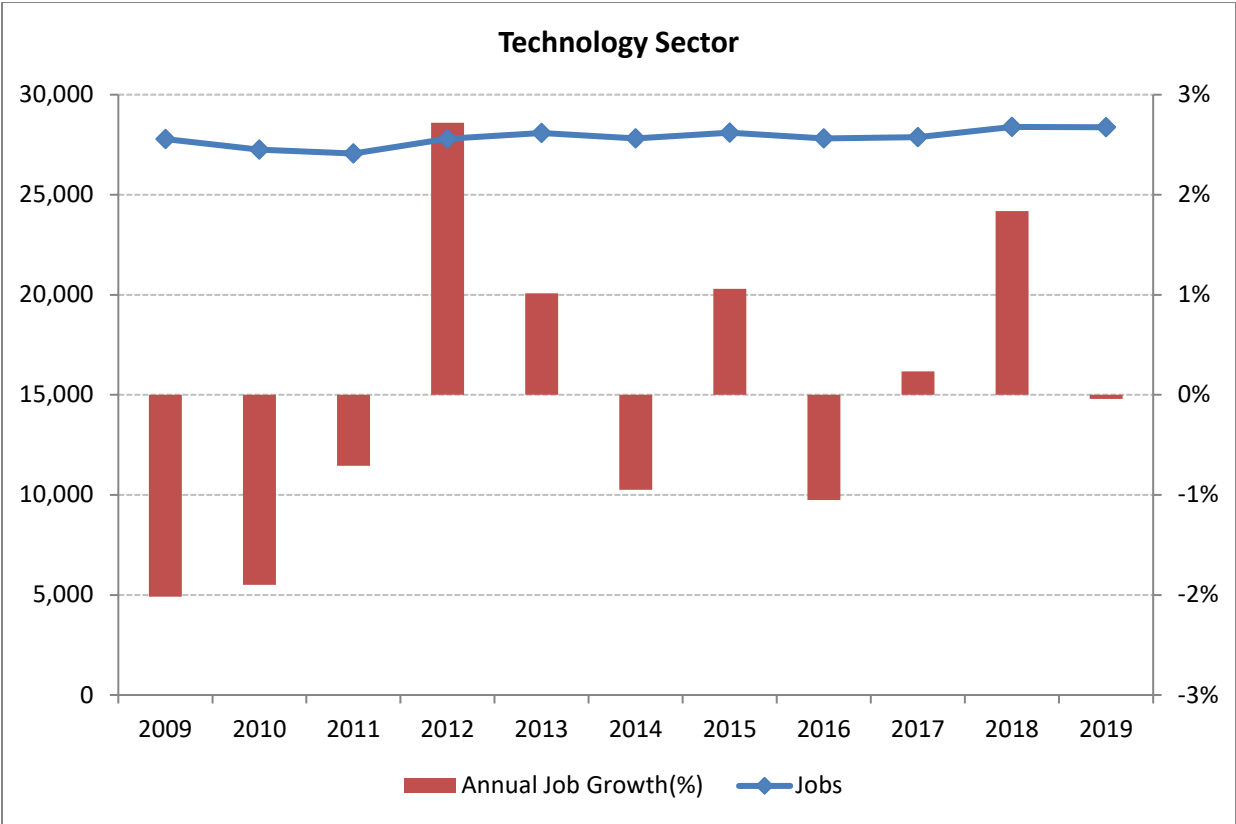
For the 2009 to 2019 period, Alternative Power Generation had the strongest job growth among the technology industry groups. However, it is important to note that the number of total jobs for Alternative Power Generation is still relatively small at 337 jobs. Other high-performing activities in the Technology Sector were Technical Consulting Services, Engineering and Related Services.

The six technology industry groups that lost jobs during the 2009 to 2019 period were Biotechnology, R&D Services, Other Technology Manufacturing, Chemical & Pharmaceutical Manufacturing, Computer System Design and Related, and Information & Telecom Technology.

²Hawaii Science & Technology Institute, *Innovation and Technology in Hawaii: An Economic and Workforce Profile*, October 2008.

³As yet there is no official or universally agreed upon definition for the Technology Sector.

Figure 1. Hawaii’s Technology Sector Jobs and Growth Rate, 2009-2019



Source: DBEDT based on data from Economic Modeling Specialists, Inc. (EMSI)

Table 4. Jobs¹ in the Technology Sector, Average Annual Growth, 2009-2019

	Annual Job Growth				Jobs in 2019p
	2009-2019p	2009-2010	2010-2013	2013-2019p	
Civilian Total	1.2%	-0.8%	1.7%	1.4%	881,749
Technology Sector Total	0.2%	-1.9%	1.0%	0.2%	28,377
Alternative Power Generation	7.6%	-17.7%	35.7%	0.2%	337
Technical Consulting Services	2.7%	3.7%	3.3%	2.2%	5,028
Engineering and Related Services	0.9%	-1.5%	0.9%	1.4%	6,591
Medical and Diagnostic Testing	0.8%	0.5%	-0.2%	1.3%	1,821
Technology Equipment Distribution	0.2%	-5.1%	-2.4%	2.4%	865
Information & Telecom Technology	-0.1%	-5.1%	1.4%	0.0%	5,203
Computer System Design and Related	-0.1%	-2.3%	0.5%	-0.1%	6,510
Chemical & Pharmaceutical Manufacturing	-1.6%	6.5%	13.0%	-9.4%	83
Other Technology Manufacturing	-3.0%	-8.2%	-4.9%	-1.1%	466
R&D Services (except Biotechnology)	-5.1%	-1.8%	-1.9%	-7.2%	1,152
Biotechnology	-7.2%	-2.7%	-2.6%	-10.1%	321

¹Includes wage & salary, sole proprietors & self-employed.

Source: DBEDT based on data from Economic Modeling Specialists, Inc. (EMSI). "P" designates "projection" for 2019 based on early 2019 actual data and EMSI estimates.

Competitive Metrics

The sixth column of Table 5 shows the difference in percentage points between job growth for Hawaii and the U.S. for the Technology Sector industry groups. Overall, Hawaii's Technology Sector grew jobs less than the same activities in the nation.

Alternative Power Generation outperformed their national counterparts by 10.1 percentage points during the 2009 to 2019 period. In contrast, Biotechnology underperformed their national counterparts by 10.8 percentage points.

Table 5. Hawaii Technology Sector Performance Compared with the Nation

	Jobs (2019p)	Jobs per Estab- lishment (2019p)	Average Annual Earnings (2019p)	Average Annual Job Growth		When U.S. = 100%		
				09-19p	above U.S.	Con- centra- tion 1/	Jobs per Estab- lishment	Average Annual Earning
Total Civilian	881,749	17.6	56,936	1.2%	-0.3%	100%	89%	94%
TECHNOLOGY SECTOR	28,377	11.3	88,571	0.2%	-1.6%	55%	79%	74%
Engineering and Related Service	6,591	9.9	100,734	0.9%	-0.1%	90%	72%	101%
Computer System Design & Related	6,510	11.0	90,826	-0.1%	-3.4%	56%	118%	74%
Information & Telecom Technology	5,203	11.0	90,529	-0.1%	-1.8%	57%	54%	65%
Technical Consulting Services	5,028	14.2	70,367	2.7%	-0.4%	63%	145%	77%
Medical and Diagnostic Testing	1,821	14.7	68,168	0.8%	-1.5%	135%	104%	87%
R&D Services (excluding Bio-technology)	1,152	11.0	91,066	-5.1%	-5.9%	49%	41%	70%
Technology Equipment Distribution	865	8.3	121,190	0.2%	-0.6%	35%	68%	92%
Other Technology Manufacturing	466	15.7	63,564	-3.0%	-3.3%	8%	31%	53%
Alternative Power Generation	337	12.2	81,746	7.6%	10.1%	95%	29%	52%
Biotechnology	321	13.2	75,512	-7.2%	-10.8%	34%	58%	38%
Chemical & Pharmaceutical Manufacturing	83	4.6	217,470	-1.6%	-2.3%	4%	8%	157%

1. Proportion of jobs in the activity for Hawaii compared to the proportion nationally
Source: See Table 4 for data source.

Over the 2009 to 2019 period, Computer System Design & Related Services lost competitive ground to their national counterparts. It is important to note it was a large group with 6,510 jobs.

Three forces may have influenced the negative job growth in the Information Technology group. First, the inclusion of wired telecom service, an activity with declining demand, could be a lag for overall job growth this category. Second, productivity gains in information technology may have reduced the labor required to produce the same output of services. Third, in recent years there has been a consolidation of internet services, especially web hosting, into fewer providers around the country that serve national markets. It is difficult for local internet services to compete with the economies of scale of these large internet service companies.

In terms of concentration, most of Hawaii's technology industry groups are still a relatively small percentage of Hawaii's total economy, compared with the technology industry groups at the national level. In 2019, Hawaii's proportion of the state's workforce in technology was 55% of the proportion nationally. One noteworthy exception was Medical and Diagnostic Testing, which was 35% more concentrated for Hawaii than the nation overall.

The average earnings for Hawaii's Technology Sector was relatively high, at \$88,571 in 2019. As a group, it was 56% higher than the average for Hawaii's economy. Average earnings of the eleven technology industry groups all exceeded the average for Hawaii's economy. However, workers in most of the Hawaii Technology Sector groups were not paid as much as the U.S. average for the same activities. The average earnings for Hawaii's Technology Sector as a whole, was only 74% of the average earnings paid nationally. The largest earnings gaps between Hawaii and the U.S. were found in Biotechnology, Alternative Power Generation, Other Technology Manufacturing, and Information & Telecom Technology.

Overall Performance

By combining the growth and competitive measures, the technology industry groups can be placed in several performance categories as shown earlier in Table 3.

Only one technology industry group was in the high performing Base-Growth and Emerging categories by showing positive growth and also outperforming their national counterpart. This industry group was Alternative Power Generation. The only difference between the Base-Growth and Emerging categories is their level of concentration in the state's economy. Base-Growth industry groups have reached or exceeded national concentrations, while the Emerging industry groups have yet to reach national concentration levels. Beyond that, both categories showed positive and competitive growth in jobs.

Four groups in the Technology Sector were in the Transitioning category for the 2009 to 2019 period. Including Engineering and Related Services, Technical Consulting Services, Technology Equipment Distribution, and Medical and Diagnostic Testing. While job growth was positive in these industry groups, they still lost some competitive share to the national industry groups.

Information & Telecom Technology, Computer System Design & Related Services, Chemical & Pharmaceutical Manufacturing, Other Technology Manufacturing, R&D Services (except Biotechnology), and Biotechnology fell into the Declining category for 2009 to 2019 due to job losses during the period. These groups also lost more jobs proportionately than the same activity nationally, resulting in the loss of competitive share to the U.S. economy.

Table 6. Performance of the Technology Sector by Industry

Emerging Activities	Base-Growth Activities
Alternative Power Generation	
Declining Activities	Transitioning Activities
Information & Telecom Technology	Engineering and Related Service
Computer System Design & Related	Technical Consulting Services
Chemical & Pharmaceutical Manufacturing	Technology Equipment Distribution
Other Technology Manufacturing	Medical and Diagnostic Testing
R&D Services (excluding Biotechnology)	
Biotechnology	

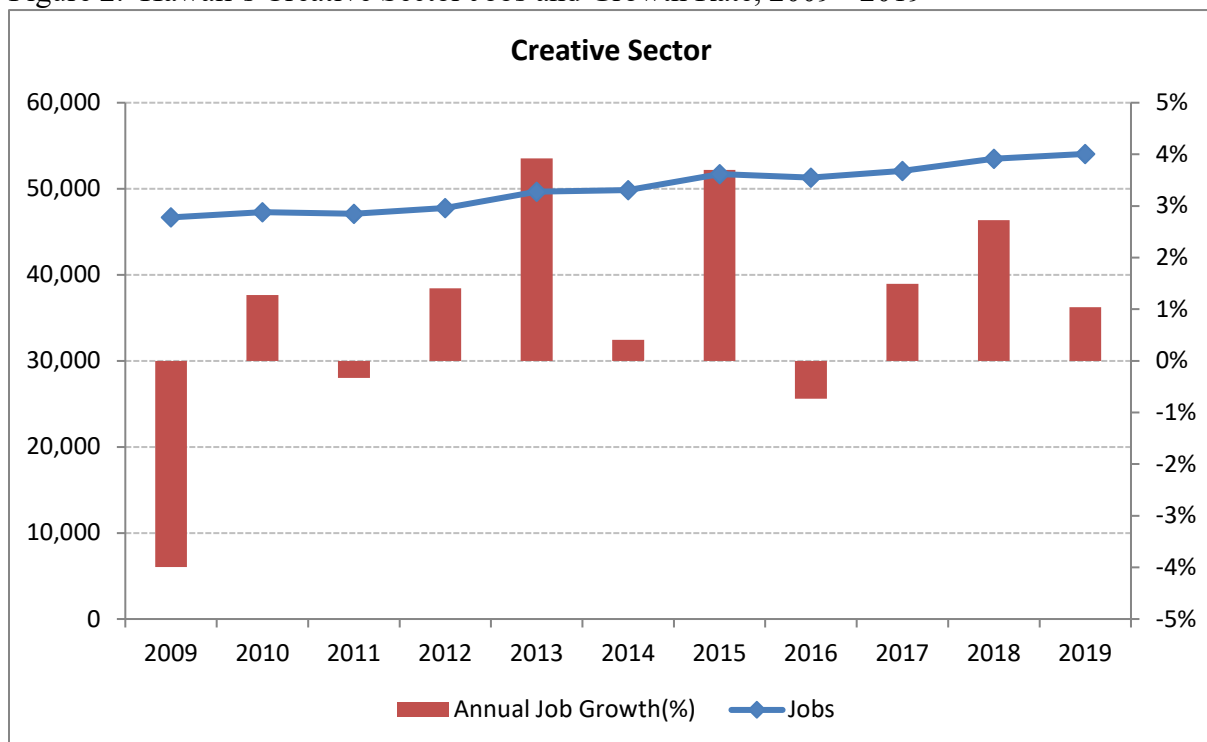
CREATIVE SECTOR

In 2010, the DBEDT Research Division and Creative Industries divisions collaborated on an update of data and industry definitions for the Creative Sector, based on a review of models nationally.⁴ The report expanded the scope of creative activity beyond the previous focal areas of arts and culture. The new definition added a number of industries such as Computer and Digital Media, Engineering/R&D, Marketing, and Design, among others. The purpose was to better reflect the integration of art, technology and other creative activities.

Size & Growth

The thirteen creative industry groups accounted for an estimated 54,051 jobs in 2019, about 6.1% of all civilian jobs for Hawaii. Marketing, Photograph & Related and Performing and Creative Arts were the two largest groups in the sector, together the two groups accounted for about 41.7% of jobs in the sector in 2019.

Figure 2. Hawaii's Creative Sector Jobs and Growth Rate, 2009 - 2019



Source: DBEDT based on data from Economic Modeling Specialists, Inc. (EMSI)

⁴DBEDT, *Hawaii's Creative Industries: Update Report 2010*, June 2010. http://dbedt.hawaii.gov/economic/reports_studies/hawaii-creative-report/

As a group, the Creative Sector's job growth was 0.3 of a percentage point above the annual average growth rate of the state civilian economy over the 2009 to 2019 period. The sector's growth rate was higher than the Hawaii's civilian economy during the 2009 to 2010 period. And the growth rate of the Creative Sector from 2010 to 2019 was similar to that of the state's overall civilian economy.

Cultural Activities grew jobs the most over the 2009 to 2019 period, 8.4% per year on average. Most job growth in Cultural Activities was achieved in the Museum category. Jobs in this category increased from 656 in 2009 to 2,149 in 2019. Film, TV, Video Production/Distribution showed the second highest job growth, with a 7.3% average annual increase in jobs for the period.

Film/TV Production varied widely depending on the number of productions filmed during the year. With many new productions filmed in Hawaii in late 2010, the number of 2010 jobs more than doubled from the 2009 level. However, during the overall 2010 to 2019 period, the number of jobs in Film/TV Production decreased from 2,556 jobs to 2,500 jobs.

Four groups in the sector, Publishing & Information, Radio/TV Broadcasting, Architecture, and Engineering and R&D failed to gain jobs over the 2009 to 2019 period. These groups experienced a sharp decline in jobs during the contraction period. With the closing of the Honolulu Advertiser in 2010, jobs in Publishing & Information decreased from 2,770 in 2009 to 1,829 in 2019.

Table 7. Jobs in Creative Sector: Average Annual Growth, 2009-2019

	Annual Job Growth				Jobs in 2019p
	2009-2019p	2009-2010	2010-2013	2013-2019p	
Civilian Total	1.2%	-0.8%	1.7%	1.4%	881,749
Creative Sector Total	1.5%	1.3%	1.6%	1.4%	54,051
Cultural Activities	8.4%	1.7%	26.4%	1.5%	3,626
Film, TV, Video Production/Distribution	7.3%	107.4%	-14.2%	7.6%	2,500
Art Education	3.6%	-0.7%	10.2%	1.2%	849
Music	2.6%	-5.6%	6.5%	2.1%	1,376
Marketing, Photography & Related	2.5%	2.6%	2.7%	2.3%	12,799
Business Consulting	2.0%	3.1%	2.2%	1.7%	5,488
Design Services	1.5%	2.3%	3.1%	0.6%	2,141
Computer Service & Software Publishing	0.7%	-3.4%	1.6%	1.0%	5,177
Performing and Creative Arts	0.6%	-4.2%	-0.1%	1.7%	9,741
Architecture	-0.3%	-2.4%	-1.0%	0.4%	1,997
Engineering and R & D	-0.3%	-1.1%	0.5%	-0.6%	5,474
Radio and Television Broadcasting	-1.8%	-10.2%	1.3%	-1.9%	1,053
Publishing & Information	-4.1%	-12.7%	-5.3%	-1.9%	1,829

Source: See Table 4 for data source ("P" designates projection)

Competitive Metrics

Many activities in the Creative Sector lost competitive share to the U.S. economy over the 2009 to 2019 period. Only three among the thirteen groups in this sector outperformed their national counterparts during this period. In addition to Cultural Activities that had the highest growth, Film, TV, Video Production/Distribution, and Marketing, Photography & Related also outperformed their national counterpart during the period. A number of creative industry groups have levels of concentration in the state's economy that exceed the nation as a whole. Cultural Activities are more than three times as concentrated in Hawaii. Music, Architecture, Performing and Creative Arts, and Film, TV, Video Production/Distribution also exceed national concentrations. In contrast, most business and technology-oriented activities in the sector, such as Business Consulting, Computer Services and Software Publishers, and Publishing & Information show a much lower concentration in Hawaii than the same industries nationally.

With average annual earnings of \$56,065 in 2019, the activities in the Creative Sector were making a little less than the average for the overall Hawaii economy. Compared with the same activities nationally, the average earnings for Hawaii was only 66% of the national average. The lower earnings for Hawaii were found in both business and technology-oriented and artistic-oriented activities in the sector. Among the thirteen activities in the Creative Sector, only workers in Architecture were paid higher in Hawaii than the nation overall. The activities that showed significant earnings gaps between Hawaii and the U.S. include Publishing & Information, Marketing/Photography & Related, and Computer Services and Software Publishers.

Table 8. Hawaii's Creative Sector Performance Compared with the Nation

	Jobs (2019p)	Jobs per Estab- lishment (2019p)	Average Annual Earnings (2019p)	Average Annual Job Growth		When U.S. = 100%		
				09-19p	above U.S.	Con- centra- tion 1/ lishment	Jobs per Estab- lishment	Average Annual Earning
Total Civilian	881,749	17.6	56,936	1.2%	-0.3%	100%	89%	94%
CREATIVE SECTOR	54,051	17.8	56,065	1.5%	-0.8%	85%	125%	66%
Marketing, Photography & Related	12,799	30.9	32,361	2.5%	0.0%	98%	174%	59%
Performing and Creative Arts	9,741	38.7	25,814	0.6%	-1.9%	117%	107%	84%
Business Consulting	5,488	14.4	69,664	2.0%	-0.8%	59%	150%	77%
Engineering and Research & Development	5,474	9.5	104,948	-0.3%	-1.3%	76%	56%	91%
Computer Services and Software Publishers	5,177	10.6	94,730	0.7%	-3.1%	42%	107%	71%
Cultural Activities	3,626	19.0	52,567	8.4%	5.6%	380%	135%	91%
Film, TV, Video Production/Distribution	2,500	10.8	92,881	7.3%	6.5%	139%	66%	85%
Design Services	2,141	27.5	36,362	1.5%	-0.1%	95%	220%	77%
Architecture	1,997	11.7	85,652	-0.3%	-1.2%	131%	105%	108%
Publishing & Information	1,829	18.5	54,087	-4.1%	-3.7%	53%	103%	42%
Music	1,376	23.6	42,399	2.6%	-0.1%	144%	138%	97%
Radio and Television Broadcasting	1,053	13.3	74,993	-1.8%	-2.1%	90%	42%	82%
Art Education	849	89.5	11,177	3.6%	-0.1%	67%	441%	88%

1. Proportion of jobs in the activity for Hawaii compared to the proportion nationally
Source: See Table 4 for data source.

Overall Performance

Based on the performance metrics above, the creative industry groups are placed into the performance categories as below. Three groups, Cultural Activities, Film, TV, Video Production/Distribution, and Marketing, Photography & Related are rated as high performing for growth and competitiveness, compared with the same activities nationally.

Six other groups – Art Education, Design Services, Music, Business Consulting, Performing and Creative Arts, and Computer Services and Software Publishers - grew jobs over the period but came up short competitively, compared with the performance of the same industry group nationally over the 2009 to 2019 period.

Architecture, Engineering and Research & Development, Radio and Television Broadcasting, and Publishing & Information were in the lowest performance group. All lost jobs over the 2009 to 2019 period.

Table 9. Performance of the Creative Sector by Industry

Emerging Activities	Base-Growth Activities
Marketing, Photography & Related	Cultural Activities Film, TV, Video Production/Distribution
Declining Activities	Transitioning Activities
Architecture Engineering and Research & Development Radio and Television Broadcasting Publishing & Information	Art Education Design Services Music Business Consulting Performing and Creative Arts Computer Services and Software Publishers

AGRIBUSINESS

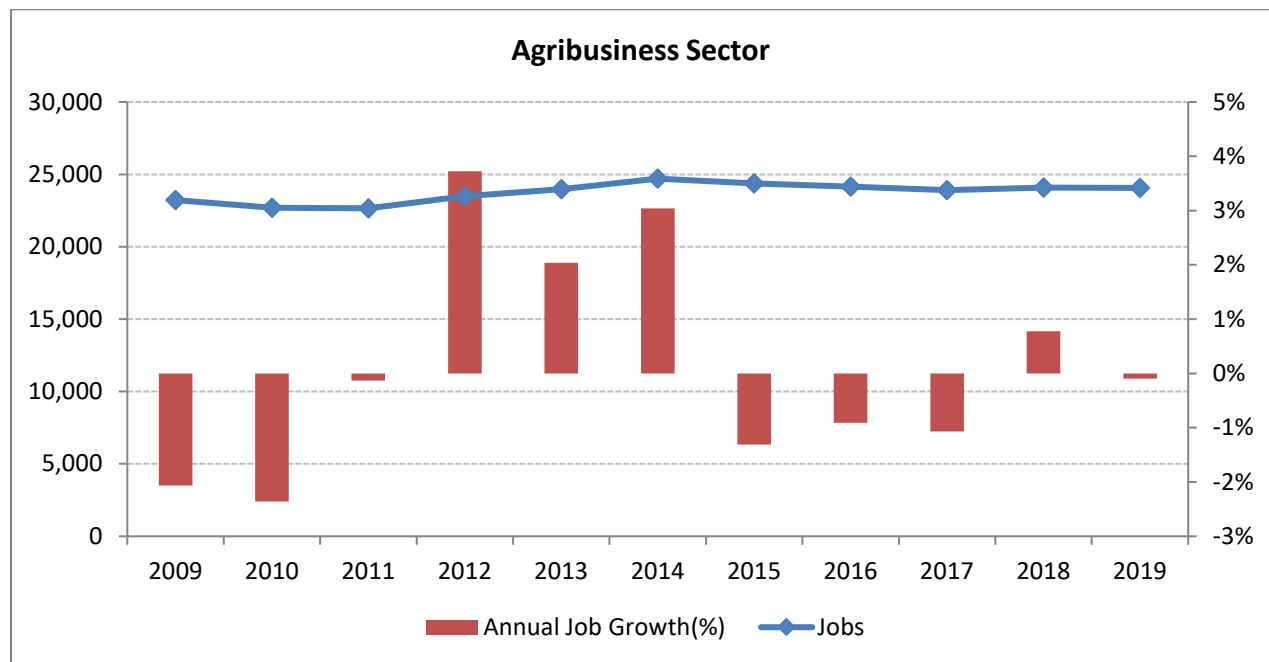
In 2019, the 24,065 jobs in Agribusiness were found in a range of inter-related industry groups that support the core farm sector. Most of the agribusiness jobs, including self-employed, are in Farm Production (53%). The second largest industry group in the sector was Agricultural Processing at 29% of the sector’s jobs.

Size & Growth

The Agribusiness Sector as a whole was able to achieve a small positive job growth over the 2009 to 2019 period. Although one of the six Agribusiness industry groups lost jobs over the period, job gains among five other groups exceeded the losses.

The largest activity in the Agribusiness Sector is Farm Production. Jobs in this group decreased over the 2009 to 2019 period. From 2009 to 2011, jobs in this group decreased. From 2011 to 2014 jobs increased slightly in this group. From 2014 to 2019, jobs in this group decreased again. Farm Production lost 552 jobs. Job loss in the Farm Production group was more than offset by job gains in the Agricultural Processing, which added 899 jobs over the same period.

Figure 3. Hawaii’s Agribusiness Sector Jobs and Growth Rate, 2009 - 2019



Source: DBEDT based on data from Economic Modeling Specialists, Inc. (EMSI)

The best performing agribusiness industry group over the 2009 to 2019 cycle was the Agricultural Support Services, with a 2.9% average annual increase in jobs.

Other high-performing groups in agribusiness, during the 2009 to 2019 period, were Agricultural Processing and Agricultural Inputs. Job growth in these groups averaged 1.4%, and 0.9% per year, respectively, over this period.

Table 10. Jobs in Agribusiness Sector: Average Annual Growth, 2009-2019

	Annual Job Growth				Jobs in 2019p
	2009-2019p	2009-2010	2010-2013	2013-2019p	
Civilian Total	1.2%	-0.8%	1.7%	1.4%	881,749
Agribusiness Total	0.4%	-2.4%	1.9%	0.1%	24,065
Agriculture Support Services	2.9%	-1.7%	2.6%	3.8%	1,717
Agriculture Processing	1.4%	-4.2%	5.4%	0.4%	7,072
Agriculture Inputs	0.9%	-1.8%	-2.1%	3.0%	485
Agriculture Packaging & Warehousing	0.1%	-22.4%	12.0%	-1.2%	246
Fishing, Forestry & Hunting	0.1%	1.4%	0.4%	-0.3%	1,686
Farm Production	-0.4%	-1.7%	0.3%	-0.6%	12,859

Source: See Table 4 for data source ("P" designates projected estimate)

Competitive Metrics

Competitive metrics show that the comparable U.S. Agricultural Sector also experienced a job gain over the 2009 to 2019 period.

Three of the five groups that gained jobs over the 2009 to 2019 period outperformed the same activities in the nation. Among these, Agricultural Inputs gained jobs at 0.9% annually, while its national counterpart gained 0.8% annually. Agricultural Support Services outperformed respective activities for the nation overall by 1.2 percentage point per year.

Table 11. Hawaii Agribusiness Sector Performance Compared with the Nation

	Jobs (2019p)	Jobs per Estab- lishment (2019p)	Average Annual Earnings (2019p)	Average Annual Job Growth		When U.S. = 100%		
				09-19p	above U.S.	Con- centra- tion 1/	Jobs per Estab- lishment	Average Annual Earning
Total Civilian	881,749	17.6	56,936	1.2%	-0.3%	100%	89%	94%
AGRIBUSINESS	24,065	25.1	39,856	0.4%	-0.5%	89%	78%	86%
Farm Production	12,859	31.7	31,504	-0.4%	-0.7%	91%	85%	90%
Agriculture Processing	7,072	19.1	52,457	1.4%	-0.2%	89%	40%	87%
Agriculture Support Services	1,717	18.6	53,756	2.9%	1.2%	63%	131%	99%
Fishing, Forestry & Hunting	1,686	34.5	28,971	0.1%	0.7%	380%	120%	73%
Agriculture Inputs	485	16.6	60,370	0.9%	0.1%	44%	114%	82%
Agriculture Packaging & Warehousing	246	19.5	51,324	0.1%	-1.5%	28%	50%	89%

1. Proportion of jobs in the activity in Hawaii compared to the proportion nationally
Source: See Table 4 for data source.

Agribusiness had a lower concentration level for Hawaii than the nation for most activities. The clear exception was Fishing, Forestry & Hunting, that is significantly more concentrated for Hawaii than the nation.

Overall Performance

From an overall performance standpoint, three groups – Agriculture Support Services, Agricultural Inputs, and Fishing, Forestry & Hunting – were in the Base-Growth or Emerging categories for the 2009 to 2019 period.

Agriculture Processing and Agricultural Packaging & Warehousing were in the Transitioning category, and Farm Production fell into the Declining category over the 2009 to 2019 period.

Table 12. Performance of the Agribusiness Sector by Industry

Emerging Activities	Base-Growth Activities
Agriculture Support Services Agriculture Inputs	Fishing, Forestry & Hunting
Declining Activities	Transitioning Activities
Farm Production	Agriculture Processing Agriculture Packaging & Warehousing

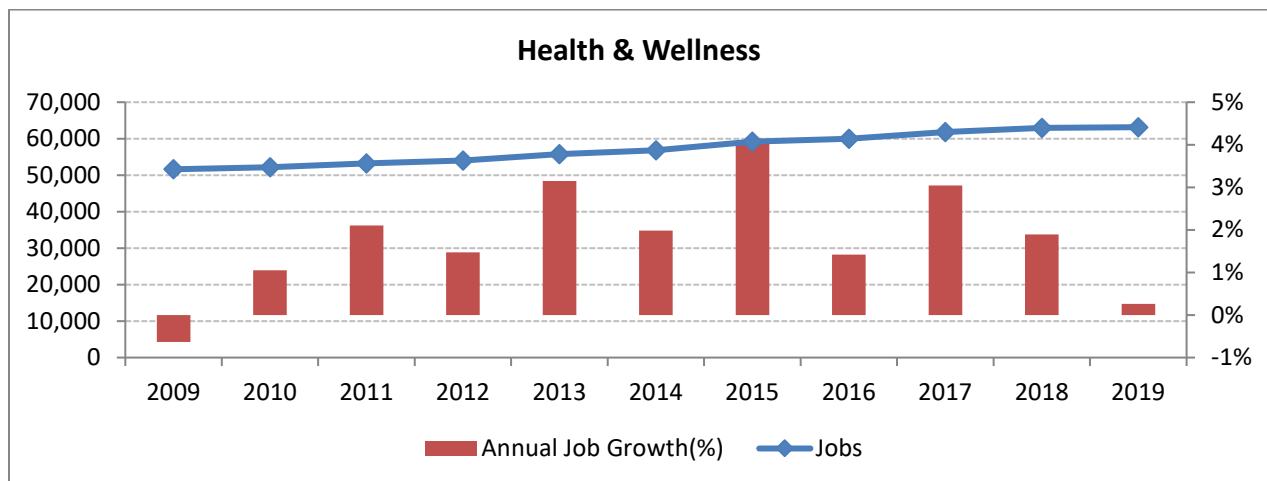
HEALTH & WELLNESS

Health and Wellness has been of interest for several decades as a potential export activity. It has been proposed that first class medical and related health facilities in Hawaii could spur Health and Wellness tourism among the more affluent in Asian-Pacific countries that may not have access to similar levels of health care. Unfortunately, there is no readily available data regarding such visitors. Recuperation and rejuvenation services have also been proposed as potential export activities that could utilize Hawaii's beauty and calming environment. Spas and similar, non-medical treatment services have been integrated into the hotel industry and serve a specialized tourism market. However, these facilities and their markets are not distinct enough to be reflected separately in standard statistical data. In order to provide some underlying data to support future discussions on the topic of the Health and Wellness Sector, DBEDT adopted with some minor modifications, a definition for Health and Wellness developed by researchers on Kauai for that county's Comprehensive Economic Development Strategy in 2005.⁵ This definition identifies the major industry groups of Hawaii's health care Sector.

Size & Growth

The Health and Wellness Sector accounted for an estimated 63,149 jobs in 2019. About 68.7% of the jobs were among Health Care Practitioners and in Hospital & Nursing Facilities. All of the industry groups in Health and Wellness grew jobs over the 2009 to 2019 period.

Figure 4. Hawaii's Health and Wellness Sector Jobs and Growth Rate, 2009 - 2019



Source: DBEDT based on data from Economic Modeling Specialists, Inc. (EMSI)

⁵ Hawaii Office of Planning, *Hawaii Statewide Comprehensive Economic Development Strategy (CEDs)*, 2005. Modifications included translating from the 1997 to the 2002 NAICS industry codes. Report is at <http://hawaii.gov/dbedt/op/projects.htm>

Overall, the Health and Wellness Sector grew faster than the rest of the economy during the 2009 to 2019 period. This sector had job growth for each year during the 2009 to 2019 period.

Pharmacies (a retailing industry which includes drug stores) experienced job declines during the 2009 to 2011 period. Pharmacies lost 58 jobs in the two-year period. The reason for the decline is not clear. However, the filling of prescriptions through the internet, rather than in pharmacies, has become a more common practice in recent years.

Health Practitioners showed modest growth. For the 2009 to 2019 period, this sector had an average job growth of 0.7% per year.

The highest job growth was observed in Specialty Health Care Services, a relatively small industry group, during the 2009 to 2019 period. This subsector gained jobs at an annual average rate of 6.9% during the period.

Table 13. Jobs in Health and Wellness: Average Annual Growth, 2009-2019

	Annual Job Growth				Jobs in 2019p
	2009-2019p	2009-2010	2010-2013	2013-2019p	
Civilian Total	1.2%	-0.8%	1.7%	1.4%	881,749
Health & Wellness Total	2.0%	1.1%	2.2%	2.1%	63,149
Specialty Health Care Services	6.9%	1.3%	6.7%	8.0%	14,392
Hospitals & Nursing Facilities	1.4%	2.1%	0.5%	1.7%	21,358
Medical Labs and Imaging Centers	0.8%	0.5%	-0.2%	1.3%	1,821
Health Practitioners	0.7%	0.5%	2.2%	0.0%	22,045
Pharmacies	0.4%	-1.5%	2.9%	-0.5%	3,533

Source: See Table 4 for data source ("P" designates projection)

Competitive Metrics

Overall, the growth for Hawaii's Health and Wellness Sector was slightly above the national average for the same sector over the 2009 to 2019 period. The higher job growth for Hawaii's Specialty Health Care Services, Hospitals & Nursing Facilities, and Pharmacies offset the lower job growth in other groups of the sector.

Table 14. Hawaii Health and Wellness Sector Performance Compared with the Nation

	Jobs (2019p)	Jobs per Estab- lishment (2019p)	Average Annual Earnings (2019p)	Average Annual Job Growth		When U.S. = 100%		
				09-19p	above U.S.	Con- centra- tion 1/	Jobs per Estab- lishment	Average Annual Earning
Total Civilian	881,749	17.6	56,936	1.2%	-0.3%	100%	89%	94%
HEALTH & WELLNESS	63,149	12.7	78,593	2.0%	0.4%	88%	54%	111%
Health Practitioners	22,045	11.4	87,409	0.7%	-1.2%	89%	102%	103%
Hospitals & Nursing Facilities	21,358	11.3	88,759	1.4%	0.8%	72%	5%	126%
Specialty Health Care Services	14,392	17.1	58,314	6.9%	2.6%	109%	43%	119%
Pharmacies	3,533	20.0	50,120	0.4%	0.6%	112%	180%	98%
Medical Labs and Imaging Centers	1,821	14.7	68,168	0.8%	-1.5%	135%	104%	87%

1. Proportion of jobs in the activity for Hawaii compared to the proportion nationally

Source: See Table 4 for data source.

At \$78,593, the average earnings for the Health & Wellness Sector as a whole, exceeded the national average in 2019 by about 11%. This was the only major sector in the Targeted Industry Portfolio that had earnings above the U.S. average for the same sector. Except for Medical Labs & Imaging Centers, all other groups in the sector had earnings either close to or higher than the U.S. average.

Overall Performance

Among the Health & Wellness industry groups, Specialty Health Care Services, Pharmacies, and Hospitals & Nursing Facilities performed the best in terms of growth and competitiveness.

Health Practitioners and Medical Labs & Imaging Centers were in the Transitioning category. These groups grew jobs but lost competitive national share due to better growth at the U.S. level.

Table 15. Performance of the Health & Wellness Sector by Industry

Emerging Activities	Base-Growth Activities
Hospitals & Nursing Facilities	Pharmacies Specialty Health Care Services
Declining Activities	Transitioning Activities
	Health Practitioners Medical Labs and Imaging Centers

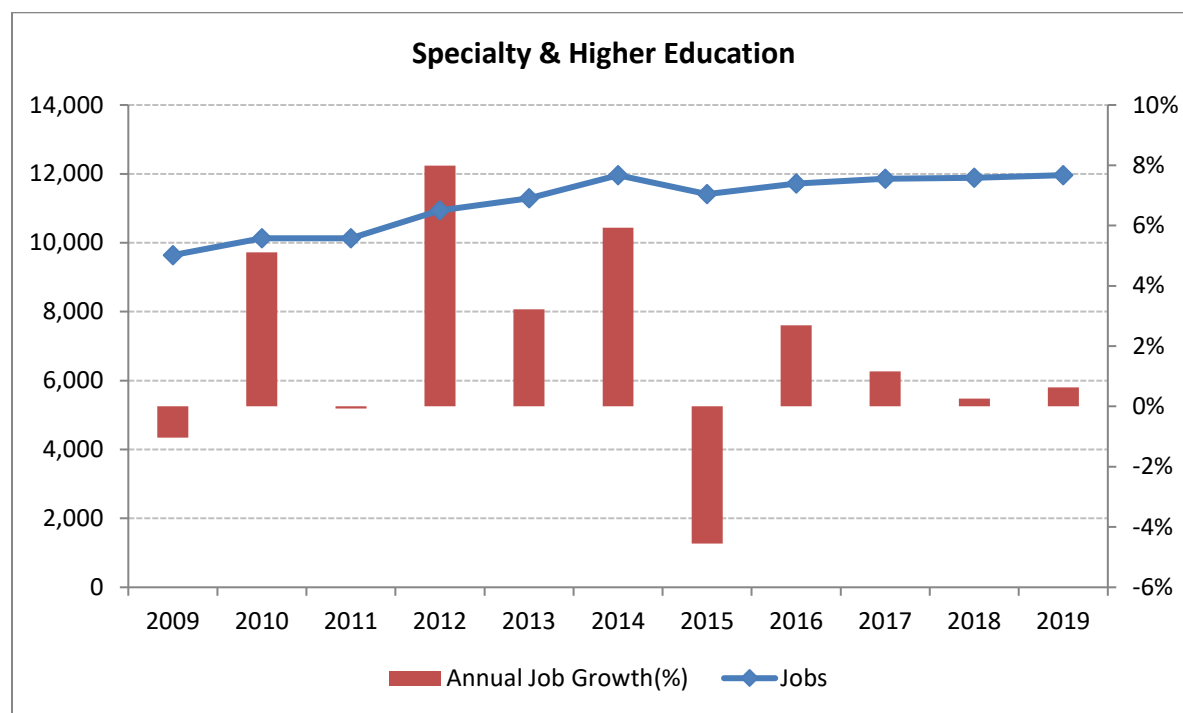
EDUCATION

The Private Education Sector, which includes private colleges and specialty schools, is an important segment of Hawaii's economy. One area of particular interest for economic development is the number of international students in Hawaii. There is strong potential for Hawaii's higher education system to attract more students from around the world. For calendar year 2018, Hawaii had an estimated 14,300 international students (full-time and part-time), with annual expenditures of \$216.9 million dollars.⁶ While the topic of foreign students is outside of the main focus of this section, it is an area that should be monitored as an area for economic development. The following section examines the growth and performance of the education activity of the private sector colleges and specialty schools.

Size & Growth

Private post-secondary and specialty education in Hawaii accounted for 11,963 jobs in 2019. These sectors together performed better than the rest of the Hawaii economy. Jobs grew 2.2% annually, adding 2,321 new jobs to the economy over the past ten years.

Figure 5. Hawaii's Specialty & Higher Education Sector Jobs and Growth Rate, 2009 - 2019

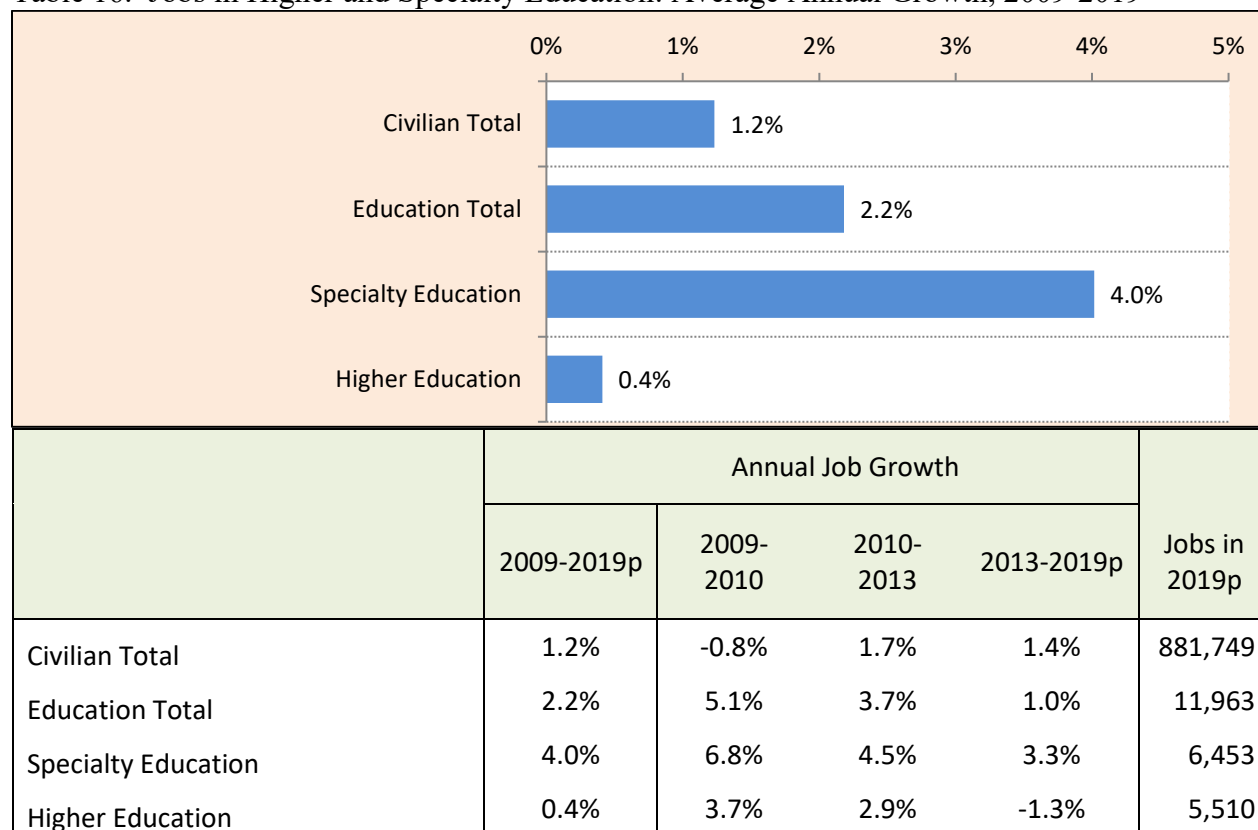


Source: DBEDT based on data from Economic Modeling Specialists, Inc. (EMSI)

⁶DBEDT. 2019. The Economic Impact of International Students in Hawaii – 2019 Update. November, <http://files.hawaii.gov/dbedt/economic/reports/2018-11-foreign-student.pdf>

Both Specialty Education and Higher Education gained jobs over the 2009 to 2019 period. From 2009 to 2019, Specialty Education added jobs every year; while Higher Education lost jobs in 2011, 2015, 2018, and 2019. During the contraction period, in contrast to a majority of the other sectors, both Specialty Education and Higher Education grew jobs more than the overall economy. This reflects the tendency for educational enrollments to increase during economic declines.

Table 16. Jobs in Higher and Specialty Education: Average Annual Growth, 2009-2019



Source: See Table 4 for data source ("P" designates projection)

Competitive Metrics

For Specialty Education, the high growth in jobs over the 2009 to 2019 period was above the growth rate of the same activities nationally. As a result, the national competitive share of the Hawaii Specialty Education group was higher. For Higher Education, however, job growth for Hawaii was below the national level and Hawaii lost some national competitive share.

The annual earnings of Specialty Education in Hawaii averaged \$23,189 in 2019, which was about 41% of the earning average of civilian jobs for Hawaii. This level of earnings was about 84% of the national level for the same group. The average earnings for Hawaii Higher Education was higher than Specialty Education. However, it was only about 63% of the national earnings for the same activities in 2019.

Table 17. Hawaii Private Education Sector Performance Compared with the Nation

	Jobs (2019p)	Jobs per Estab- lishment (2019p)	Average Annual Earnings (2019p)	Average Annual Job Growth		When U.S. = 100%		
				09-19p	above U.S.	Con- centra- tion 1/	Jobs per Estab- lishment	Average Annual Earning
Total Civilian	881,749	17.6	56,936	1.2%	-0.3%	100%	89%	94%
EDUCATION (PRIVATE)	11,963	34.6	28,937	2.2%	0.1%	76%	89%	65%
Specialty Education	6,453	43.1	23,189	4.0%	0.7%	96%	233%	84%
Higher Education	5,510	28.0	35,669	0.4%	-0.9%	61%	14%	63%

1. Proportion of jobs in the activity for Hawaii compared to the proportion nationally

Source: See Table 4 for data source.

Overall Performance

During the 2009 to 2019 period, both the Higher Education group and the Specialty Education group increased jobs, but only the Specialty Education group increased competitiveness and fell into the Emerging category; the Higher Education group lost competitiveness and fell into the Transitioning category.

Table 18. Performance of the Higher and Specialty Education Sector by Industry

Emerging Activities	Base-Growth Activities
Specialty Education	
Declining Activities	Transitioning Activities
	Higher Education

OTHER TARGETED ACTIVITIES

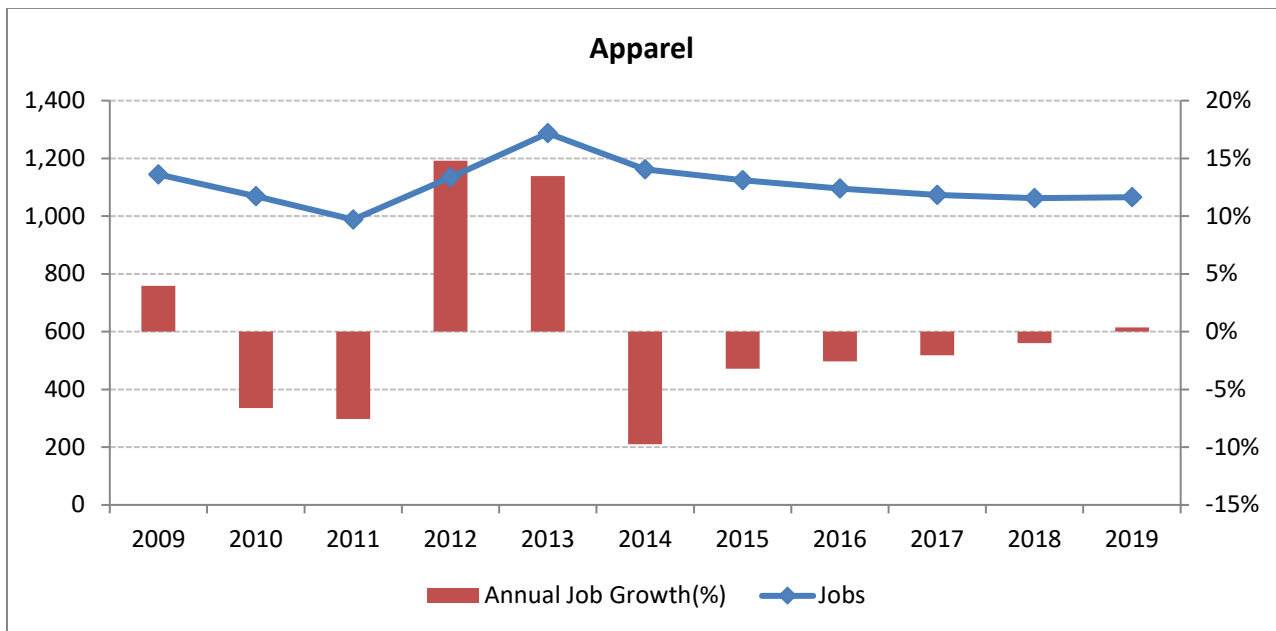
Apparel and Call Centers have been pursued as sources of economic diversification. Apparel was promoted based on Hawaii’s unique style and cultural heritage that brought Hawaiian/Aloha wear to worldwide prominence. However, over the years, a large portion of the garment manufacturing jobs have been outsourced overseas. While there is still some manufacturing of Hawaiian wear in the state, it is more common to find garments with labels that say designed in Hawaii but manufactured elsewhere. Call Centers were promoted based on Hawaii’s developing communications technology capacity, its mid Pacific location and multi-lingual resources.

Size & Growth

Apparel Manufacturing in Hawaii lost jobs in the past ten years. From 2009 to 2019, jobs in the Apparel group decreased 0.7% per year on average.

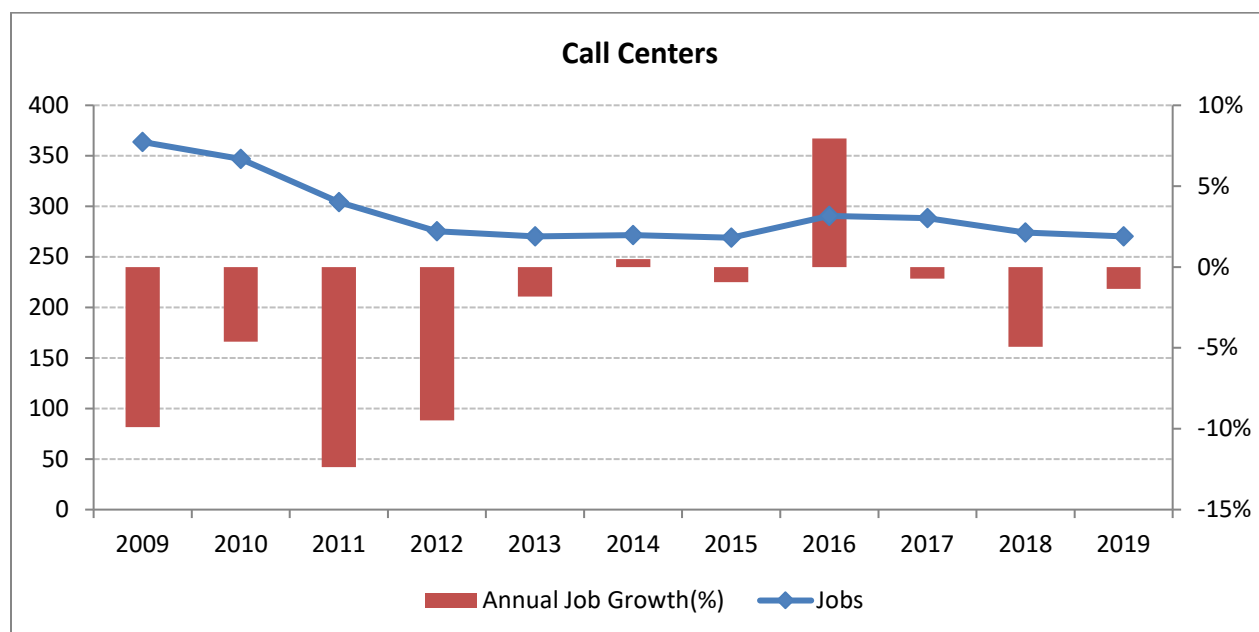
Call Center activity expanded in the early 2000s, increasing jobs from 210 in 2002 to 485 in 2004. The activity sustained this level of jobs for several years until 2006 and then continued to contract until recently. From 2009 to 2019, jobs in the Call Center group decreased 2.9% per year on average.

Figure 6. Hawaii’s Apparel Manufacturing Sector Jobs and Growth Rate, 2009 - 2019



Source: DBEDT based on data from Economic Modeling Specialists, Inc. (EMSI)

Figure 7. Hawaii’s Call Centers Annual Jobs and Growth Rate, 2009 - 2019



Source: DBEDT based on data from Economic Modeling Specialists, Inc. (EMSI)

Table 19. Jobs in Apparel and Call Centers: Average Annual Growth, 2009-2019

	Annual Job Growth				Jobs in 2019p
	2009-2019p	2009-2010	2010-2013	2013-2019p	
Civilian Total	1.2%	-0.8%	1.7%	1.4%	881,749
Apparel	-0.7%	-6.6%	6.4%	-3.1%	1,066
Call Centers	-2.9%	-4.6%	-8.0%	0.0%	270

Source: See Table 4 for data source (“P” designates projection)

Competitive Metrics

In terms of job growth, Apparel decreased in both Hawaii and the nation. During the 2009 to 2019 period, Apparel in Hawaii lost 0.7% of its jobs annually, while the U.S. apparel industry lost 2.4% of its jobs annually. This partially reflects the global outsourcing trend for manufacturing in general.

During the 2009 to 2019 period, the U.S. Call Center industry had a steady job increase of 1.8% per year. In contrast, the Call Center industry in Hawaii experienced an average job decrease of 2.9% per year, during the same period.

The concentration level of Apparel in 2019 was 64% above the national level. In contrast, Call Centers had very low job concentration in Hawaii's economy compared to the activity nationally. The concentration of Call Centers in Hawaii was only 11% of the national level in 2019.

The annual average earnings for Apparel and Call Center were \$28,415 and \$27,976 respectively in 2019. These earning levels were about 64% of the average earnings nationally.

Table 20. Hawaii Apparel and Call Centers Performance Compared with the Nation

	Jobs (2019p)	Jobs per Estab- lishment (2019p)	Average Annual Earnings (2019p)	Average Annual Job Growth		When U.S. = 100%		
				09-19p	above U.S.	Con- centra- tion 1/	Jobs per Estab- lishment	Average Annual Earning
Total Civilian	881,749	17.6	56,936	1.2%	-0.3%	100%	89%	94%
Apparel	1,066	35.2	28,415	-0.7%	1.7%	164%	156%	64%
Call Centers	270	35.7	27,976	-2.9%	-4.7%	11%	67%	64%

1. Proportion of jobs in the activity for Hawaii compared to the proportion nationally

Source: See Table 4 for data source ("P" designates projection).

Overall Performance

Based on the performance metrics, during the 2009 to 2019 period. Both the Apparel group and the Call Center group fell into the declining category, with an average job loss of 0.7% and 2.9% per year, respectively.

Table 21. Performance of the Call Center and Apparel Groups

Emerging Activities	Base-Growth Activities
Declining Activities	Transitioning Activities
Apparel	
Call Centers	

PERFORMANCE BY COUNTY

The following tables summarize the 2009 to 2019 county performance of the statewide Targeted & Emerging industries. Performance has been organized by Best Performing Targets (registering as Base-growth & Emerging industry groups) and Other Targeted Industry Performance (those that fell into the Transitioning and Declining categories).

The total number of jobs for Hawaii's Targeted & Emerging industries without overlaps was 162,232 in 2019. Honolulu accounted for about 70%, followed by Hawaii County at 14%, Maui at 11%, and Kauai at 5%. From 2009 to 2019, adjusting for overlaps, total jobs in the Targeted & Emerging industries increased by 20,775 jobs. Honolulu added 14,442 jobs, followed by Hawaii at 2,756 jobs, Maui at 2,445 jobs, and Kauai at 837 jobs.

Table 22. Jobs and Job changes from 2009 to 2019 by County

	2019 Jobs				
	State	Honolulu	Hawaii	Maui	Kauai
Total Civilian	881,749	616,534	107,216	109,673	48,326
Total Targeted without Overlap	162,232	113,929	22,528	17,795	7,529
TECHNOLOGY SECTOR	28,377	22,915	2,409	2,085	906
CREATIVE SECTOR	54,051	39,046	5,723	6,541	2,560
AGRIBUSINESS	24,065	10,437	8,615	3,089	1,923
HEALTH & WELLNESS	63,149	47,237	6,570	6,876	2,456
EDUCATION (PRIVATE)	11,963	9,712	991	748	273
OTHERS	1,337	1,106	98	89	44
	% in State 2019 Jobs				
Total Civilian	100%	70%	12%	12%	5%
Total Targeted without Overlap	100%	70%	14%	11%	5%
TECHNOLOGY SECTOR	100%	81%	8%	7%	3%
CREATIVE SECTOR	100%	72%	11%	12%	5%
AGRIBUSINESS	100%	43%	36%	13%	8%
HEALTH & WELLNESS	100%	75%	10%	11%	4%
EDUCATION (PRIVATE)	100%	81%	8%	6%	2%
OTHERS	100%	83%	7%	7%	3%
	Job Changes 2009 to 2019				
Total Civilian	101,641	65,228	12,703	16,106	7,604
Total Targeted without Overlap	20,775	14,442	2,756	2,445	837
TECHNOLOGY SECTOR	595	287	148	161	-11
CREATIVE SECTOR	7,377	5,711	708	531	299
AGRIBUSINESS	831	1,554	254	-973	-4
HEALTH & WELLNESS	11,536	7,087	1,417	2,613	487
EDUCATION (PRIVATE)	2,321	1,305	393	317	68
OTHERS	-172	-217	12	16	18

Source: See Table 4 for data source.

City & County of Honolulu

Adjusting for overlaps, Honolulu accounted for 113,929 of the state's Targeted & Emerging industry jobs in 2019, a 1.4% average annual increase from 2009. As shown in Table 23, among the six major sectors, only two sectors were high performing Emerging activities in Honolulu County in the 2009 to 2019 period. Three sectors were in the Transitioning category, and one sector was in the Declining category.

Table 23. Performance of the Major Groups of Honolulu Targeted Industry Portfolio

INDUSTRY GROUPS	Jobs in Honolulu		Average Annual Job Growth (2009-2019p)		Concentration of Industry in Honolulu Compared to U.S.		Average Annual Earnings (2019p)	
	2019p	Change 09-19p	% Point Change		2019p	Change 09-19p	2019p	
			Honolulu	U.S.			Honolulu	U.S.
TOTAL CIVILIAN JOBS	616,534	65,228	1.1%	1.5%	100%	0%	\$60,617	\$60,854
TOTAL TARGETED JOBS WITHOUT OVERLAP	113,929	14,442	1.4%	1.6%	81%	1%	\$68,082	\$74,870
Emerging Activities								
AGRIBUSINESS	10,437	1,554	1.6%	0.8%	55%	6%	\$49,208	\$46,532
HEALTH & WELLNESS	47,237	7,087	1.6%	1.6%	94%	3%	\$81,097	\$70,895
Transitioning Activities								
CREATIVE SECTOR	39,046	5,711	1.6%	2.2%	88%	-2%	\$62,375	\$84,654
EDUCATION (PRIVATE)	9,712	1,305	1.5%	2.1%	88%	-2%	\$30,006	\$44,359
TECHNOLOGY SECTOR	22,915	287	0.1%	1.8%	64%	-9%	\$91,974	\$118,947
Declining Activities								
OTHERS	1,106	-217	-1.8%	0.7%	52%	-12%	\$30,589	\$44,007

Source: See Table 4 for data source ("P" designates projection). The sum of the individual industries does not add up to the total due to adjusting for overlaps among sectors.

Table 24 shows the performance of detailed Targeted & Emerging industry groups in Honolulu. Among the 38 detailed industry groups, 14 groups were high performing, with positive job growth combined with a job growth rate that was higher than the nation for the same activity. The high-performing activities in the Target Industry Portfolio accounted for about 57,021 jobs or 9.2% of all civilian jobs in 2019. Between 2009 and 2019, those groups generated 20.7% of the total gain in jobs for the civilian economy, or about 13,483 new jobs.

About 44% of the high-performing activities had average annual earnings that exceeded \$90,000 in 2019. By comparison, the average earnings for the civilian economy in 2019 was \$60,617 by the projected 2019 estimate.

In 2019, 10 activities, which included 46,031 jobs, fell into the Transitioning category. They gained jobs over the period but did not keep up with national growth for the same activities resulting

in a loss of competitive national industry share. However, four of those activities grew faster in terms of jobs than the civilian economy as a whole.

Fourteen activities in the portfolio fell into the Declining industry category as the result of net job losses for the 2009 to 2019 period. Jobs in the Declining industry groups totaled an estimated 25,995 in 2019, representing a loss of 3,099 jobs from 2009.

Table 24. Performance of the Detailed Honolulu Targeted Industry Portfolio

INDUSTRY GROUPS	Jobs in Honolulu		Average Annual Job Growth (2009-2019p)		Concentration of Industry in Honolulu Compared to U.S.		Average Annual Earnings (2019p)	
	2019p	Change 09-19p	Honolulu	U.S.	2019p	% Point Change 09-19p	Honolulu	U.S.
Base-Growth Activities								
Cultural Activities	3,316	1,886	8.8%	2.8%	497%	224%	\$52,212	\$57,954
Film, TV, Video Production/Distribution	2,293	1,271	8.4%	0.8%	182%	97%	\$96,133	\$109,210
Specialty Health Care Services	10,764	5,025	6.5%	4.3%	117%	25%	\$58,993	\$48,982
Pharmacies	2,556	164	0.7%	-0.3%	116%	14%	\$50,328	\$51,092
Engineering and Related Service	5,645	622	1.2%	1.0%	111%	6%	\$105,134	\$99,970
Emerging Activities								
Specialty Education	4,584	1,392	3.7%	3.4%	98%	7%	\$23,002	\$27,687
Agriculture Processing	5,248	841	1.8%	1.6%	94%	5%	\$53,728	\$59,956
Alternative Power Generation	218	135	10.1%	-2.5%	88%	63%	\$54,626	\$156,188
Hospitals & Nursing Facilities	17,350	1,102	0.7%	0.6%	84%	3%	\$91,602	\$70,532
Art Education	665	236	4.5%	3.7%	75%	8%	\$10,704	\$12,662
Agriculture Support Services	1,154	335	3.5%	1.7%	61%	12%	\$53,245	\$54,117
Agriculture Inputs	279	86	3.7%	0.8%	36%	10%	\$73,741	\$73,176
Farm Production	2,910	371	1.4%	0.2%	30%	4%	\$39,117	\$34,934
Chemical & Pharmaceutical Manufacturing	37	16	6.0%	0.6%	3%	1%	\$255,158	\$138,763

Source: See Table 4 for data source (“P” designates projection)

Table 24. Performance of the Detailed Honolulu Targeted Industry Portfolio (Continued)

INDUSTRY GROUPS	Jobs in Honolulu		Average Annual Job Growth (2009-2019p)		Concentration of Industry in Honolulu Compared to U.S.		Average Annual Earnings (2019p)	
	2019p	Change 09-19p	Honolulu	U.S.	2019p	% Point Change 09-19p	Honolulu	U.S.
Transitioning Activities								
Technical Consulting Services	3,993	1,021	3.0%	3.0%	72%	2%	\$76,687	\$91,154
Marketing, Photography & Related	8,777	1,812	2.3%	2.4%	96%	3%	\$33,730	\$54,962
Music	682	136	2.3%	2.7%	102%	-1%	\$58,335	\$43,822
Technology Equipment Distribution	830	18	0.2%	0.7%	48%	-1%	\$124,075	\$132,140
Design Services	1,351	130	1.0%	1.6%	86%	-2%	\$37,272	\$47,448
Business Consulting	4,360	852	2.2%	2.8%	67%	-1%	\$75,740	\$90,836
Health Practitioners	15,163	719	0.5%	1.9%	88%	-10%	\$90,929	\$85,167
Medical and Diagnostic Testing	1,403	77	0.6%	2.2%	149%	-20%	\$70,565	\$77,955
Performing and Creative Arts	5,251	367	0.7%	2.5%	90%	-13%	\$26,577	\$30,825
Computer Services and Software Publishers	4,221	134	0.3%	3.9%	48%	-18%	\$98,142	\$132,697
Declining Activities								
Higher Education	5,128	-87	-0.2%	1.3%	81%	-9%	\$36,266	\$56,609
Information & Telecom Technology	4,115	-79	-0.2%	1.7%	65%	-10%	\$92,356	\$139,273
Architecture	1,562	-51	-0.3%	0.8%	147%	-12%	\$93,045	\$79,643
Engineering and Research & Development	4,404	-169	-0.4%	0.9%	87%	-8%	\$107,189	\$115,467
Computer Systems Design & Related	5,556	-231	-0.4%	3.3%	69%	-27%	\$93,514	\$122,028
Fishing, Forestry & Hunting	654	-56	-0.8%	-0.6%	211%	4%	\$38,057	\$39,594
Agriculture Packaging & Warehousing	192	-24	-1.1%	1.6%	32%	-8%	\$56,655	\$57,665
Apparel	874	-122	-1.3%	-2.4%	192%	27%	\$31,625	\$44,566
Radio and Television Broadcasting	856	-164	-1.7%	0.2%	105%	-18%	\$81,083	\$91,876
Call Centers	232	-95	-3.4%	1.8%	14%	-9%	\$26,686	\$43,854
Other Technology Manufacturing	365	-180	-3.9%	0.4%	9%	-4%	\$72,132	\$119,875
Publishing & Information	1,308	-730	-4.3%	-0.3%	55%	-25%	\$59,479	\$129,804
R&D Services (excluding Biotechnology)	571	-791	-8.3%	0.8%	35%	-52%	\$80,375	\$130,568
Biotechnology	181	-321	-9.7%	3.6%	27%	-77%	\$69,728	\$197,008

Source: See Table 4 for data source (“P” designates projection)

Hawaii County

Adjusting for overlaps, Hawaii County accounted for 22,528 of the state's Targeted & Emerging industry jobs in 2019, a 1.3% average annual increase from 2009. As shown in Table 25, among the six major sectors, three sectors were high performing for Hawaii County in the 2009 to 2019 period. Three sectors were in the Transitioning category and there were no job losses.

Table 25. Performance of the Major Groups of Hawaii County Targeted Industry Portfolio

INDUSTRY GROUPS	Jobs in HI County		Average Annual Job Growth (2009-2019p)		Concentration of Industry in HI County Compared to U.S.		Average Annual Earnings (2019p)	
	2019p	Change 09-19p	% Point Change 09-19p		2019p	Change 09-19p	HI County	U.S.
			HI County	U.S.				
TOTAL CIVILIAN JOBS	107,216	12,703	1.3%	1.5%	100%	0%	\$46,353	\$60,854
TOTAL TARGETED JOBS WITHOUT OVERLAP	22,528	2,756	1.3%	1.6%	93%	0%	\$42,527	\$74,870
Emerging Activities								
EDUCATION (PRIVATE)	991	393	5.2%	2.1%	52%	14%	\$27,409	\$44,359
HEALTH & WELLNESS	6,570	1,417	2.5%	1.6%	75%	7%	\$61,124	\$70,895
OTHERS	98	12	1.3%	0.7%	26%	2%	\$20,156	\$44,007
Transitioning Activities								
AGRIBUSINESS	8,615	254	0.3%	0.8%	261%	-7%	\$29,508	\$46,532
CREATIVE SECTOR	5,723	708	1.3%	2.2%	74%	-5%	\$40,274	\$84,654
TECHNOLOGY SECTOR	2,409	148	0.6%	1.8%	38%	-4%	\$67,943	\$118,947

Source: See Table 4 for data source ("P" designates projection). The sum of the individual industries does not add up to the total due to adjusting for overlaps among sectors.

Table 26 shows the performance of detailed Targeted & Emerging industry groups for Hawaii County. Among the 38 detailed industry groups, 17 groups were high performing. The high-performing activities in the Target Industry Portfolio accounted for about 7,462 jobs or 7.0% of all civilian jobs in 2019. Between 2009 and 2019, those groups generated 17.4% of the total gain in jobs for the civilian economy or about 2,214 new jobs.

About 39.7% of the high-performing activities had average annual earnings that exceeded \$60,000 in 2019. By comparison, the earnings average for the civilian economy in 2019 was \$46,353 by the projected 2019 estimate.

In 2019, ten activities with 14,803 jobs fell into the Transitioning category. They gained jobs over the period but did not keep up with national growth for some activities resulting in a loss of competitive national industry share. However, five of those activities grew faster in terms of jobs than the civilian economy as a whole.

Eleven activities in the portfolio fell into the Declining industry category, as a result of net job losses for the 2009 to 2019 period. Jobs in the Declining industry groups totaled an estimated 1,935 in 2019, representing a loss of 239 jobs from 2009.

Table 26. Performance of the Detailed Hawaii County Targeted Industry Portfolio

INDUSTRY GROUPS	Jobs in HI County		Average Annual Job Growth (2009-2019p)		Concentration of Industry in HI County Compared to U.S.		Average Annual Earnings (2019p)	
	2019p	Change 09-19p	HI County	U.S.	2019p	% Point Change 09-19p	HI	U.S.
							County	U.S.
Base-Growth Activities								
Fishing, Forestry & Hunting	594	51	0.9%	-0.6%	1101%	178%	\$25,857	\$39,594
Music	250	108	5.8%	2.7%	216%	60%	\$24,157	\$43,822
Cultural Activities	191	98	7.5%	2.8%	165%	61%	\$61,199	\$57,954
Design Services	347	91	3.1%	1.6%	127%	20%	\$32,399	\$47,448
Specialty Education	896	349	5.1%	3.4%	110%	19%	\$26,504	\$27,687
Specialty Health Care Services	1,701	863	7.3%	4.3%	106%	28%	\$51,673	\$48,982
Architecture	195	29	1.6%	0.8%	105%	10%	\$63,225	\$79,643
Apparel	81	13	1.8%	-2.4%	103%	37%	\$14,321	\$44,566
Pharmacies	389	49	1.3%	-0.3%	102%	17%	\$48,985	\$51,092
Emerging Activities								
Radio and Television Broadcasting	83	22	3.1%	0.2%	58%	15%	\$42,791	\$91,876
Engineering and Related Service	425	52	1.3%	1.0%	48%	3%	\$71,182	\$99,970
Information & Telecom Technology	520	122	2.7%	1.7%	47%	6%	\$80,731	\$139,273
Agriculture Packaging/Warehousing	40	33	19.1%	1.6%	38%	30%	\$39,055	\$57,665
Hospitals & Nursing Facilities	1,261	141	1.2%	0.6%	35%	3%	\$61,496	\$70,532
Computer Services and Software Publishers	373	139	4.8%	3.9%	25%	3%	\$67,698	\$132,697
Biotechnology	20	10	6.8%	3.6%	18%	5%	\$43,654	\$197,008
Higher Education	95	43	6.3%	1.3%	9%	3%	\$35,980	\$56,609

Source: See Table 4 for data source ("P" designates projection). The sum of the individual industries does not add up to the total due to adjusting for overlaps among sectors.

Table 26. Performance of the Detailed Hawaii County Targeted Industry Portfolio (Continued)

INDUSTRY GROUPS	Jobs in HI County		Average Annual Job Growth (2009-2019p)		Concentration of Industry in HI County Compared to U.S.		Average Annual Earnings (2019p)	
	2019p	Change 09-19p			% Point			
			HI County	U.S.	2019p	Change 09-19p	HI County	U.S.
Transitioning Activities								
Other Technology Manufacturing	49	1	0.3%	0.4%	7%	0%	\$17,954	\$119,875
Farm Production	6,668	101	0.2%	0.2%	389%	6%	\$25,829	\$34,934
Agriculture Support Services	261	38	1.6%	1.7%	79%	1%	\$45,635	\$54,117
Computer System Design & Related	355	83	2.7%	3.3%	25%	-1%	\$57,427	\$122,028
Health Practitioners	3,013	370	1.3%	1.9%	100%	-4%	\$69,172	\$85,167
Marketing, Photography & Related	1,390	226	1.8%	2.4%	87%	-3%	\$27,392	\$54,962
Engineering and Research & Development	578	17	0.3%	0.9%	66%	-3%	\$95,196	\$115,467
Agriculture Processing	938	38	0.4%	1.6%	97%	-10%	\$51,715	\$59,956
Art Education	62	13	2.4%	3.7%	40%	-4%	\$11,835	\$12,662
Performing and Creative Arts	1,489	73	0.5%	2.5%	146%	-27%	\$23,694	\$30,825
Declining Activities								
R&D Services (excluding Biotechnology)	359	-5	-0.2%	0.8%	125%	-9%	\$104,797	\$130,568
Film, TV, Video Production/Distribution	84	-1	-0.2%	0.8%	38%	-3%	\$54,853	\$109,210
Medical and Diagnostic Testing	206	-5	-0.3%	2.2%	126%	-31%	\$42,135	\$77,955
Business Consulting	466	-28	-0.6%	2.8%	41%	-15%	\$41,864	\$90,836
Agriculture Inputs	114	-7	-0.6%	0.8%	85%	-11%	\$40,758	\$73,176
Technical Consulting Services	425	-31	-0.7%	3.0%	44%	-18%	\$41,591	\$91,154
Technology Equipment Distribution	9	-1	-0.9%	0.7%	3%	0%	\$35,268	\$132,140
Call Centers	16	-2	-0.9%	1.8%	6%	-2%	\$49,691	\$43,854
Publishing & Information	216	-80	-3.1%	-0.3%	52%	-15%	\$33,371	\$129,804
Alternative Power Generation	21	-23	-7.0%	-2.5%	49%	-27%	\$150,262	\$156,188
Chemical & Pharmaceutical Manufacturing	18	-55	-13.1%	0.6%	7%	-23%	\$94,034	\$138,763

Source: See Table 4 for data source ("P" designates projection)

Maui County

Adjusting for overlaps, Maui accounted for 17,795 of the state's Targeted & Emerging industry jobs in 2019, an 1.5% average annual increase from 2009. As shown in Table 27, among the six major sectors, three sectors were high performing in Maui County in the 2009 to 2019 period. Two sectors were in the Transitioning category and one sector lost jobs.

Table 27. Performance of the Major Groups of Maui County Targeted Industry Portfolio

INDUSTRY GROUPS	Jobs in Maui		Average Annual Job Growth (2009-2019p)		Concentration of Industry in Maui Compared to U.S.		Average Annual Earnings (2019p)	
	2019p	Change 09-19p	% Point		2019p	Change 09-19p	Maui U.S.	
			Maui	U.S.			Maui	U.S.
TOTAL CIVILIAN JOBS	109,673	16,106	1.6%	1.5%	100%	0%	\$49,678	\$60,854
TOTAL TARGETED JOBS WITHOUT OVERLAP	17,795	2,445	1.5%	1.6%	72%	-1%	\$55,567	\$74,870
Emerging Activities								
EDUCATION (PRIVATE)	748	317	5.7%	2.1%	38%	11%	\$21,294	\$44,359
HEALTH & WELLNESS	6,876	2,613	4.9%	1.6%	77%	20%	\$78,422	\$70,895
OTHERS	89	16	2.1%	0.7%	24%	3%	\$16,151	\$44,007
Transitioning Activities								
TECHNOLOGY SECTOR	2,085	161	0.8%	1.8%	32%	-4%	\$80,277	\$118,947
CREATIVE SECTOR	6,541	531	0.8%	2.2%	82%	-13%	\$40,009	\$84,654
Declining Activities								
AGRIBUSINESS	3,089	-973	-2.7%	0.8%	91%	-40%	\$38,311	\$46,532

Source: See Table 4 for data source ("P" designates projection). The sum of the individual industries does not add up to the total due to adjusting for overlaps among sectors.

Table 28 shows the performance of detailed Targeted & Emerging industry groups in Maui. Among the detailed industry groups, 14 groups were high-performing. The high-performing activities in the Target Industry Portfolio accounted for about 7,037 jobs or 6.4% of all civilian jobs in 2019. Between 2009 and 2019, those groups generated 21.4% of the total gain in jobs for the civilian economy or about 3,449 new jobs.

About 57.2% of the high-performing activities had average annual earnings that exceeded \$60,000 in 2019. By comparison, the earnings average for the civilian economy in 2019 was an estimated \$49,678.

In 2019, eight activities with 5,076 jobs fell into the Transitioning category. They gained jobs over the period but did not keep up with national growth for the same activities, resulting in a loss of competitive national industry share. However, five of those activities grew faster in terms of jobs than the civilian economy as a whole.

Sixteen activities in the portfolio fell into the Declining industry category as the result of net job losses for the 2009 to 2019 period. Jobs in the Declining industry groups totaled an estimated 7,159 in 2019, representing a loss of 1,388 jobs from 2009.

Table 28. Performance of the Detailed Maui County Targeted Industry Portfolio

INDUSTRY GROUPS	Jobs in Maui		Average Annual Job Growth (2009-2019p)		Concentration of Industry in Maui Compared to U.S.		Average Annual Earnings (2019p)	
	2019p	Change 09-19p	Maui	U.S.	2019p	% Point Change 09-19p	Maui	U.S.
Base-Growth Activities								
Alternative Power Generation	88	56	10.6%	-2.5%	200%	143%	\$126,061	\$156,188
Design Services	321	47	1.6%	1.6%	115%	-1%	\$38,067	\$47,448
Marketing, Photography & Related	1,736	406	2.7%	2.4%	106%	2%	\$30,114	\$54,962
Emerging Activities								
Medical and Diagnostic Testing	156	65	5.5%	2.2%	93%	25%	\$70,979	\$77,955
Specialty Health Care Services	1,500	995	11.5%	4.3%	91%	44%	\$63,605	\$48,982
Apparel	70	11	1.7%	-2.4%	86%	29%	\$12,608	\$44,566
Specialty Education	714	299	5.6%	3.4%	86%	16%	\$20,182	\$27,687
Agriculture Support Services	214	40	2.1%	1.7%	63%	2%	\$65,574	\$54,117
Hospitals & Nursing Facilities	2,037	1,442	13.1%	0.6%	55%	38%	\$82,892	\$70,532
Film, TV, Video Production/Distribution	85	29	4.3%	0.8%	38%	11%	\$54,509	\$109,210
Chemical & Pharmaceutical Manufacturing	27	24	22.5%	0.6%	10%	9%	\$247,370	\$138,763
Call Centers	19	5	3.3%	1.8%	6%	1%	\$29,057	\$43,854
Other Technology Manufacturing	37	12	3.8%	0.4%	5%	1%	\$47,898	\$119,875
Higher Education	34	18	7.7%	1.3%	3%	1%	\$44,670	\$56,609
Transitioning Activities								
Business Consulting	465	110	2.7%	2.8%	40%	-1%	\$54,316	\$90,836
Technical Consulting Services	422	103	2.8%	3.0%	43%	-1%	\$54,547	\$91,154
Cultural Activities	67	15	2.5%	2.8%	57%	-3%	\$56,141	\$57,954
R&D Services (excluding Biotechnology)	154	4	0.3%	0.8%	52%	-3%	\$83,437	\$130,568
Computer Services and Software Publishers	420	101	2.8%	3.9%	27%	-3%	\$86,606	\$132,697
Health Practitioners	2,789	133	0.5%	1.9%	91%	-15%	\$87,559	\$85,167
Computer System Design & Related	417	65	1.7%	3.3%	29%	-5%	\$84,176	\$122,028
Music	343	9	0.3%	2.7%	289%	-82%	\$29,658	\$43,822

Source: See Table 4 for data source (“P” designates projection).

Table 28. Performance of the Detailed Maui County Targeted Industry Portfolio (Continued)

INDUSTRY GROUPS	Jobs in Maui		Average Annual Job Growth (2009-2019p)		Concentration of Industry in Maui Compared to U.S.		Average Annual Earnings (2019p)	
	2019p	Change 09-19p	Maui	U.S.	2019p	% Point Change 09-19p	Maui	U.S.
Declining Activities								
Performing and Creative Arts	2,198	-2	0.0%	2.5%	211%	-61%	\$27,426	\$30,825
Art Education	83	-2	-0.2%	3.7%	53%	-25%	\$15,702	\$12,662
Engineering and Research & Development	341	-16	-0.5%	0.9%	38%	-6%	\$92,296	\$115,467
Pharmacies	394	-22	-0.5%	-0.3%	101%	-4%	\$50,036	\$51,092
Fishing, Forestry & Hunting	241	-15	-0.6%	-0.6%	437%	-3%	\$20,845	\$39,594
Engineering and Related Service	369	-50	-1.3%	1.0%	41%	-11%	\$80,278	\$99,970
Technology Equipment Distribution	19	-4	-1.8%	0.7%	6%	-2%	\$53,446	\$132,140
Architecture	175	-36	-1.9%	0.8%	92%	-30%	\$59,748	\$79,643
Agriculture Processing	529	-135	-2.2%	1.6%	54%	-26%	\$46,194	\$59,956
Information & Telecom Technology	392	-109	-2.4%	1.7%	35%	-18%	\$88,590	\$139,273
Agriculture Packaging & Warehousing	9	-3	-2.6%	1.6%	8%	-4%	\$12,648	\$57,665
Publishing & Information	229	-74	-2.7%	-0.3%	54%	-16%	\$41,159	\$129,804
Farm Production	2,030	-822	-3.3%	0.2%	116%	-52%	\$35,471	\$34,934
Agriculture Inputs	66	-39	-4.5%	0.8%	48%	-35%	\$41,320	\$73,176
Radio and Television Broadcasting	80	-55	-5.2%	0.2%	55%	-41%	\$52,217	\$91,876
Biotechnology	4	-5	-7.4%	3.6%	3%	-7%	\$91,353	\$197,008

Source: See Table 4 for data source ("P" designates projection)

Kauai County

Adjusting for overlaps, Kauai County accounted for 7,529 of the state's Targeted & Emerging industry jobs in 2019, a 1.2% annual increase from 2009. As shown in Table 29, among the six major sectors, three sectors were high performing in Kauai County in the 2009 to 2019 period. Two sectors were in the Transitioning category and one sector lost jobs.

Table 29. Performance of the Major Groups of Kauai County Targeted Industry Portfolio

INDUSTRY GROUPS	Jobs in Kauai		Average Annual Job Growth (2009-2019p)		Concentration of Industry in Kauai Compared to U.S.		Average Annual Earnings (2019p)	
	2019p	Change 09-19p	Kauai	U.S.	2019p	% Point Change 09-19p	Kauai	U.S.
TOTAL CIVILIAN JOBS	48,326	7,604	1.7%	1.5%	100%	0%	\$46,965	\$60,854
TOTAL TARGETED JOBS WITHOUT OVERLAP	7,529	837	1.2%	1.6%	69%	-4%	\$51,523	\$74,870
Base-Growth Activities								
Emerging Activities								
HEALTH & WELLNESS	2,456	487	2.2%	1.6%	62%	2%	\$77,669	\$70,895
EDUCATION (PRIVATE)	273	68	2.9%	2.1%	32%	2%	\$25,101	\$44,359
OTHERS	44	18	5.2%	0.7%	27%	9%	\$14,313	\$44,007
Transitioning Activities								
CREATIVE SECTOR	2,560	299	1.2%	2.2%	73%	-9%	\$35,704	\$84,654
AGRIBUSINESS	1,923	-4	0.0%	0.8%	129%	-14%	\$37,900	\$46,532
Declining Activities								
TECHNOLOGY SECTOR	906	-11	-0.1%	1.8%	32%	-8%	\$74,374	\$118,947

Source: See Table 4 for data source ("P" designates projection). The sum of the individual industries does not add up to the total due to adjusting for overlaps among sectors.

Table 30 shows the performance of detailed Targeted & Emerging industry groups in Kauai. Among the detailed industry groups with jobs in 2019, 16 groups were in the high performing category, with positive job growth combined with a job growth rate that was higher than the nation for the same activity. The high performing activities in the Target Industry Portfolio accounted for about 3,974 jobs or 8.2% of total civilian jobs in 2019. Between 2009 and 2019, these groups generated 12.5% of the total gain in jobs for the civilian economy or about 950 new jobs.

In 2019, about 45.6% of the high-performing activities had average annual earnings that exceeded \$60,000 by comparison; the earnings average for the overall civilian economy was lower at \$46,965.

Seven activities with 1,827 jobs fell into the Transitioning category for 2019. They gained jobs over the period but did not keep up with national growth for the same activities resulting in a loss of competitive national industry share. Four of the seven activities grew faster than the civilian economy as a whole in terms of jobs.

Fifteen activities in the portfolio fell into the Declining industry category as the result of net job losses for the 2009 to 2019 period. Jobs in the Declining industry groups totaled an estimated 2,305 in 2019, representing a loss of 427 jobs from 2009.

Table 30. Performance of the Detailed Kauai County Targeted Industry Portfolio

INDUSTRY GROUPS	Jobs in Kauai		Average Annual Job Growth (2009-2019p)		Concentration of Industry in Kauai Compared to U.S.		Average Annual Earnings (2019p)	
	2019p	Change 09-19p	Kauai	U.S.	% Point		Kauai	U.S.
					2019p	Change 09-19p		
Base-Growth Activities								
Fishing, Forestry & Hunting	197	29	1.6%	-0.6%	811%	148%	\$18,147	\$39,594
Music	100	59	9.3%	2.7%	192%	87%	\$23,060	\$43,822
Apparel	41	19	6.7%	-2.4%	115%	67%	\$14,984	\$44,566
Pharmacies	185	7	0.4%	-0.3%	107%	5%	\$48,545	\$51,092
Marketing, Photography & Related	765	187	2.8%	2.4%	106%	2%	\$29,117	\$54,962
Emerging Activities								
Design Services	123	27	2.5%	1.6%	100%	6%	\$33,091	\$47,448
Agriculture Processing	357	155	5.9%	1.6%	82%	26%	\$45,006	\$59,956
Health Practitioners	1,080	273	3.0%	1.9%	80%	6%	\$88,473	\$85,167
Alternative Power Generation	9	7	15.5%	-2.5%	47%	38%	\$142,050	\$156,188
Hospitals & Nursing Facilities	709	67	1.0%	0.6%	44%	1%	\$84,570	\$70,532
Agriculture Inputs	25	4	1.5%	0.8%	42%	2%	\$48,915	\$73,176
Technical Consulting Services	173	56	3.9%	3.0%	40%	3%	\$31,280	\$91,154
Business Consulting	181	45	2.9%	2.8%	36%	0%	\$31,068	\$90,836
Other Technology Manufacturing	14	7	6.9%	0.4%	4%	2%	\$38,855	\$119,875
Higher Education	14	8	9.6%	1.3%	3%	1%	\$61,529	\$56,609
Chemical & Pharmaceutical Manufacturing	1	1	NA	0.6%	1%	1%	\$215,803	\$138,763
Transitioning Activities								
Agriculture Support Services	88	13	1.7%	1.7%	59%	-2%	\$55,866	\$54,117
Specialty Health Care Services	426	143	4.2%	4.3%	59%	-2%	\$49,044	\$48,982
Specialty Education	259	59	2.6%	3.4%	71%	-7%	\$23,141	\$27,687
Cultural Activities	51	9	2.1%	2.8%	98%	-10%	\$38,293	\$57,954
Performing and Creative Arts	804	102	1.4%	2.5%	175%	-24%	\$20,277	\$30,825
Art Education	39	8	2.3%	3.7%	56%	-10%	\$8,524	\$12,662
Information & Telecom Technology	159	0	0.0%	1.7%	32%	-7%	\$76,994	\$139,273

Source: See Table 4 for data source (“P” designates projection)

Table 30. Performance of the Detailed Kauai County Targeted Industry Portfolio (Continued)

INDUSTRY GROUPS	Jobs in Kauai		Average Annual Job Growth (2009-2019p)		Concentration of Industry in Kauai Compared to U.S.		Average Annual Earnings (2019p)	
	2019p	Change 09-19p	% Point		2019p	Change 09-19p	Kauai	U.S.
			Kauai	U.S.				
Declining Activities								
Technology Equipment Distribution	1	0	-0.6%	0.7%	0%	0%	\$21,816	\$132,140
Medical and Diagnostic Testing	56	-4	-0.6%	2.2%	76%	-27%	\$96,096	\$77,955
Computer System Design & Related	170	-11	-0.6%	3.3%	27%	-14%	\$84,482	\$122,028
Computer Services and Software Publishers	149	-11	-0.7%	3.9%	22%	-13%	\$83,789	\$132,697
R&D Services (excluding Biotechnology)	62	-5	-0.7%	0.8%	48%	-9%	\$124,277	\$130,568
Engineering and Research & Development	140	-13	-0.9%	0.9%	35%	-8%	\$104,569	\$115,467
Engineering and Related Service	146	-21	-1.3%	1.0%	37%	-11%	\$68,704	\$99,970
Farm Production	1,249	-202	-1.5%	0.2%	162%	-35%	\$37,600	\$34,934
Architecture	66	-11	-1.6%	0.8%	79%	-24%	\$45,595	\$79,643
Biotechnology	114	-41	-3.0%	3.6%	220%	-218%	\$88,904	\$197,008
Radio and Television Broadcasting	34	-17	-4.0%	0.2%	53%	-31%	\$53,579	\$91,876
Call Centers	3	-2	-4.5%	1.8%	2%	-2%	\$5,694	\$43,854
Agriculture Packaging & Warehousing	5	-3	-4.6%	1.6%	11%	-10%	\$12,587	\$57,665
Publishing & Information	69	-54	-5.6%	-0.3%	37%	-28%	\$57,572	\$129,804
Film, TV, Video Production/Distribution	39	-31	-5.8%	0.8%	39%	-39%	\$65,664	\$109,210

Source: See Table 4 for data source ("P" designates projection)

CONCLUSIONS

This report is the tenth update of the performance measures of Hawaii's Targeted Industry Portfolio that was developed in 2009. The 2009 report, which initially established and measured the Targeted Industry Portfolio, showed that a number of industry groups performed well during the expansion phase (as measured by change in jobs). The 2010 - 2018 update reports extended those measurements through the contraction phase, providing an analysis of how targets performed over the ups and downs of the business cycle. This updated report added the 2019 projected data to illustrate how targeted industries have been performing after the recovery period of the recession.

Table 31 summarizes the best performing targeted industry groups for the 2009 to 2019 period in terms of average growth and national competitiveness. They all showed positive growth and at the same time outperformed respective activities nationally over the measurement period. Among the 11 best performing industry groups, five groups had average earnings above the average for Hawaii's economy.

Table 31. Highest Performing Targeted Activities, 2009 to 2019

INDUSTRY GROUPS	Jobs in Hawaii		Average Annual Growth (2009-2019p)		Concentration of Hawaii Industry Compared to U.S.		Average Annual Earnings (2019p)	
	2019p	Change 09-19p	HI	U.S.	% Point Change		HI	U.S.
					2019p	09-19p		
TOTAL CIVILIAN JOBS	881,749	101,641	1.2%	1.5%	100%	0%	\$56,936	\$60,854
TOTAL TARGETED JOBS WITHOUT OVERLAP	162,232	20,775	1.4%	1.6%	81%	1%	\$62,321	\$74,870
Base-Growth and Emerging Activities								
Above Average State Earnings								
Film, TV, Video Production/Distribution	2,500	1,267	7.3%	0.8%	139%	66%	\$92,881	\$109,210
Hospitals & Nursing Facilities	21,358	2,753	1.4%	0.6%	72%	7%	\$88,759	\$70,532
Alternative Power Generation	337	175	7.6%	-2.5%	95%	61%	\$81,746	\$156,188
Agriculture Inputs	485	44	0.9%	0.8%	44%	2%	\$60,370	\$73,176
Specialty Health Care Services	14,392	7,026	6.9%	4.3%	109%	26%	\$58,314	\$48,982
Below Average State Earnings								
Agriculture Support Services	1,717	428	2.9%	1.7%	63%	9%	\$53,756	\$54,117
Cultural Activities	3,626	2,009	8.4%	2.8%	380%	162%	\$52,567	\$57,954
Pharmacies	3,533	129	0.4%	-0.3%	112%	10%	\$50,120	\$51,092
Marketing, Photography & Related	12,799	2,755	2.5%	2.4%	98%	3%	\$32,361	\$54,962
Fishing, Forestry & Hunting	1,686	10	0.1%	-0.6%	380%	35%	\$28,971	\$39,594
Specialty Education	6,453	2,100	4.0%	3.4%	96%	8%	\$23,189	\$27,687

Source: See Table 4 for data source ("P" designates projection).