Hawaii's Targeted & Emerging Industries

2018 Update Report

Department of Business, Economic Development and Tourism

December 2018

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.

The DBEDT Research and Economic Analysis Division wishes to thank the many agencies stake-holders who have provided valuable input into the development of the Targeted Industry Portfolio and performance measurements.

Hawaii Department of Business, Economic Development & Tourism

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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 9th update of the 2009 report to cover the 2008-2018 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 in 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 2018. Table 1 provides a comprehensive overview of performance among activities in the Targeted Industry Portfolio over the 2008 to 2018 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:

- Ten 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, Film, TV, Video Production/Distribution, Specialty Health Care Services, Marketing, Photography & Related, Alternative Power Generation, Specialty Education, Engineering and Related Services, Hospitals & Nursing Facilities, Agriculture Support Services, and Agricultural Inputs.
- The high-performing activities in the targeted industry portfolio (Base-growth and Emerging) accounted for about 70,170 jobs or 8.0% of total civilian jobs in 2018. However, between 2008 and 2018 those activities generated 27.2% of the total gain in jobs for the civilian economy, or about 18,490 new jobs.
- Among the best performing activities, Alternative Power Generation, Cultural Activities, and Specialty Health Care Services grew jobs over 6% per year during the 2008 to 2018 period.
- Adjusting for overlaps, total targeted jobs reached 163,807 jobs in 2018, an increase of 19,269 jobs from 2008.

[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		Avg. Ann. Job Growth (2008-2018p)		Concentration of Industry in Hawaii Compared to U.S.		Avg Annual Earnings (2018p)	
	2018p	Chg 2008-2018p	HI	U.S.	2018p	% Point Chg 2008-2018p	HI	U.S.
Total Civilian Jobs	876,415	68,093	0.8%	1.0%	100%	0.00%	$54,721	$58,046
Total Targeted Jobs w/o Overlap	163,807	19,269	1.3%	1.4%	82%	0.43%	$58,299	$70,266
Base-Growth Activities								
Cultural Activities	3,514	1,807	7.5%	2.7%	365%	138%	$51,272	$55,176
Film, TV, Video Production/Distrib	2,281	861	4.9%	0.5%	122%	44%	$57,935	$100,078
Specialty Health Care Services	13,992	6,687	6.7%	4.6%	108%	21%	$55,536	$46,357
Emerging Activities								
Marketing, Photography & Related	13,294	2,736	2.3%	2.1%	99%	5%	$27,831	$48,473
Alternative Power Generation	312	149	6.7%	-3.6%	98%	63%	$104,108	$165,533
Specialty Education	6,708	2,507	4.8%	4.5%	94%	4%	$20,884	$23,568
Engineering and Related Serv.	6,385	156	0.2%	0.1%	89%	3%	$94,753	$95,130
Hospitals & Nursing Facilities	21,537	3,179	1.6%	0.7%	72%	8%	$84,067	$68,459
Agric. Support Services	1,621	301	2.1%	1.3%	62%	6%	$47,161	$51,240
Agric. Inputs	526	107	2.3%	0.6%	46%	8%	$63,162	$71,521
Transitioning Activities								
Design Services	2,225	203	1.0%	1.0%	96%	2%	$29,101	$39,384
Agric. Processing	7,244	782	1.1%	1.3%	92%	1%	$49,856	$59,303
Music	1,478	322	2.5%	2.7%	151%	0%	$33,577	$40,066
Technical Consulting Services	4,994	1,024	2.3%	2.8%	63%	-1%	$61,313	$80,017
Business Consulting	5,452	986	2.0%	2.5%	59%	-2%	$60,835	$80,017
Health Practitioners	22,107	1,484	0.7%	1.9%	90%	-9%	$85,297	$82,068
Higher Education	5,763	220	0.4%	1.7%	62%	-7%	$36,035	$56,670
Art Education	896	262	3.5%	5.0%	65%	-8%	$10,759	$10,460
Medical and Diagnostic Testing*	1,763	44	0.3%	2.1%	132%	-22%	$65,127	$74,847
Performing and Creative Arts	10,019	483	0.5%	2.8%	116%	-26%	$20,726	$26,262
Computer Services and Software Publishers	5,257	424	0.8%	3.3%	43%	-10%	$87,348	$123,116
Computer Sys. Design & Related	6,671	122	0.2%	2.8%	58%	-15%	$84,874	$112,909

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

Industry Groups	Jobs in Hawaii		Avg. Ann. Job Growth (2008-2018p)		Concentration of Industry in Hawaii Compared to U.S.		Avg Annual Earnings (2018p)	
	2018p	Chg 2008-2018p	HI	U.S.	2018p	% Point Chg 2008-2018p	HI	U.S.
Declining Activities								
Pharmacies	3,804	-83	-0.2%	-0.2%	117%	3%	$46,772	$49,548
Farm Production	13,123	-400	-0.3%	0.3%	92%	-3%	$33,650	$31,935
Chemical & Pharmaceutical Mfg	84	-4	-0.4%	0.0%	4%	0%	$142,873	$137,351
Information & Telecom Tech.	5,396	-257	-0.5%	1.0%	61%	-8%	$83,404	$130,949
Engineering and Research & Development	5,298	-320	-0.6%	0.2%	75%	-5%	$100,608	$110,105
Fishing, Forestry & Hunting	1,532	-156	-1.0%	-1.4%	359%	24%	$26,273	$36,362
Apparel	988	-115	-1.1%	-3.0%	148%	29%	$65,209	$45,089
Technology Equipment Distr.	768	-94	-1.2%	-0.2%	32%	-2%	$99,410	$123,600
Architecture	2,032	-286	-1.3%	-0.6%	133%	-7%	$77,431	$73,407
Radio & Television Broadcast-ing	1,106	-287	-2.3%	-0.6%	95%	-15%	$64,974	$86,917
Other Technology Mfg	442	-120	-2.4%	-0.3%	7%	-1%	$61,539	$117,645
Call Centers	281	-123	-3.6%	2.2%	11%	-8%	$26,645	$41,425
Agric. Packaging & Warehsg	217	-106	-3.9%	0.7%	26%	-14%	$54,408	$56,800
Publishing & Information	1,949	-1,006	-4.1%	-1.4%	57%	-17%	$52,232	$121,033
R&D Services (exc. Biotech.)	1,205	-706	-4.5%	0.3%	53%	-31%	$87,009	$124,749
Biotechnology	398	-309	-5.6%	2.7%	45%	-57%	$77,558	$186,702

*The 1,763 jobs in this industry were allocated to both the Technology and Health and Wellness Sector.
Source: DBEDT based on data from Economic Modeling Specialists, Inc. (EMSI). Estimates for 2018 are based on early 2018 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 64% of the high-performing activities had average annual earnings that exceeded $55,000 in 2018. Alternative Power Generation had the highest average earnings at $104,108. By comparison, the average earnings for the civilian economy in 2018 was $54,721 based on the projected 2018 estimate.
- Twelve activities, which accounted for 73,870 jobs in 2018, 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, seven of those activities – Design Services, Agricultural Processing, Music, Technical Consulting Services, Business Consulting, Art Education, and Computer Services and Software Publishers - 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 46% of jobs in Transitioning category had average earnings over $84,800 in 2018. The main concern of these activities was that they were not as competitive as the same activities at the national level.

- Sixteen activities in the portfolio fell into the Declining industry category as the result of net job losses for the 2008 to 2018 period. Notable among these were Publishing & Information, R&D Services (except Biotech.), Farm Production, Engineering and Research & Development, Biotechnology, Architecture, and Radio and Television Broadcasting.

- Except for Information & Telecom Technology, Call Centers, Biotechnology, R&D Services (except Biotech.), Engineering and Research & Development, Farm Production, and Agriculture Packaging & Warehousing the Declining activities also lost jobs at the U.S. level, suggesting that there were some national forces influencing the declines. However, the competitive measures show that the losses were generally more severe for Hawaii than nationally.

- Jobs in the Declining industry group totaled an estimated 38,623 in 2018 (4.4% of all civilian jobs), representing a loss of about 4,373 jobs from 2008. About 45.9% of the jobs in the Declining industry group had above average earnings in Hawaii.

- Declining industries are not necessarily dying activities. In some cases, like Publishing & Information activity, 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 ninth report that updates the review of targeted industry performance at the state level to 2018 (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 in 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. 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
Alternative Power Generation
Biotechnology
Chemical & Pharmaceutical Mfg
Computer Sys. Design & Related
Engineering and Related Serv.
Information & Telecom Tech.
Medical Labs, Diagnostic and Imaging Centers
Other Technology Mfg
R&D Services (exc. Biotech.)
Technical Consulting Services
Technology Equipment Distr.
CREATIVE SECTOR
Art Education
Architecture
Business Consulting
Computer Services and Software Publishers
Cultural Activities
Design Services
Engineering and Research & Development
Film, TV, Video Production/Distrib
Marketing, Photography & Related
Music
Performing and Creative Arts
Publishing & Information
Radio and Television Broadcasting

AGRIBUSINESS
Agric. Inputs
Agric. Packaging & Warehsg
Agric. Processing
Agric. Support Services
Farm Production
Fishing, Forestry & Hunting
HEALTH & WELLNESS
Health Practitioners
Hospitals & Nursing Facilities
Medical Labs, Diagnostic and Imaging Centers
Pharmacies
Specialty Health Care Services
EDUCATION (PRIVATE)
Higher Education
Specialty Education
OTHER TARGETS
Apparel
Call Centers

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, hopefully, be more clear 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 in 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 well educated youth in the state.

By combining these performance measures, we attempt to group the portfolio activities into four performance categories as in 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 fast 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 state, 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)

Emerging Activities		*Base-Growth Activities*
Positive job growth Increasing competitive national market share (outperforming the same activity nationally) Lower concentration in Hawaii than nationally	→	Positive job growth Increasing competitive national market share (outperforming the same activity nationally) Higher concentration in Hawaii than nationally
		↓
Declining Activities		*Transitioning Activities*
Losing jobs over period	←	Positive job growth Losing competitive national market share

Data Sources

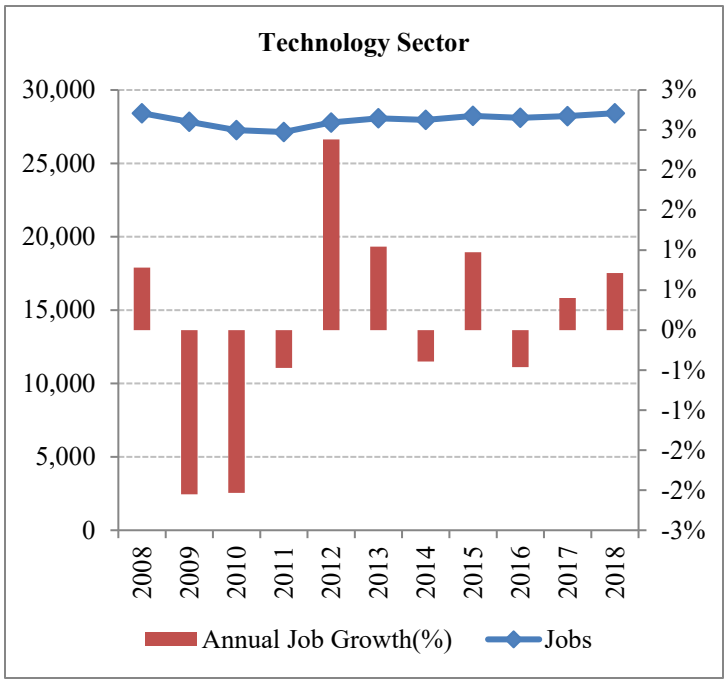
Jobs and earnings reported in this report include wage and salary positions and estimates for self-employed and proprietors. The data were obtained via a subscription to the data bases of Economic Modeling Specialists, Inc. (EMSI). EMSI uses data from Bureau of Labor Statistics, Bureau of Economic Analysis 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 new 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 in NAICS. 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 28,419 jobs in 2018, or 3.2% of all civilian jobs in Hawaii including self-employed and sole proprietors. For the 2008 to 2018 period, the technology sector had an annual average 0.0% gain in jobs, 0.8 of a percentage point lower than the average annual growth for the civilian economy.



The 2018 estimate shows that the technology sector had a net gain of 201 jobs or 0.7% in 2018 from 2017. Technical Consulting Services added 121 jobs, followed by Engineering and Related Services (47 jobs), and Technology Equipment Distribution (46 jobs). The major categories with job losses in 2018 were R&D Services (except Biotechnology) (lost 31 jobs) and Biotechnology (lost 18 jobs).

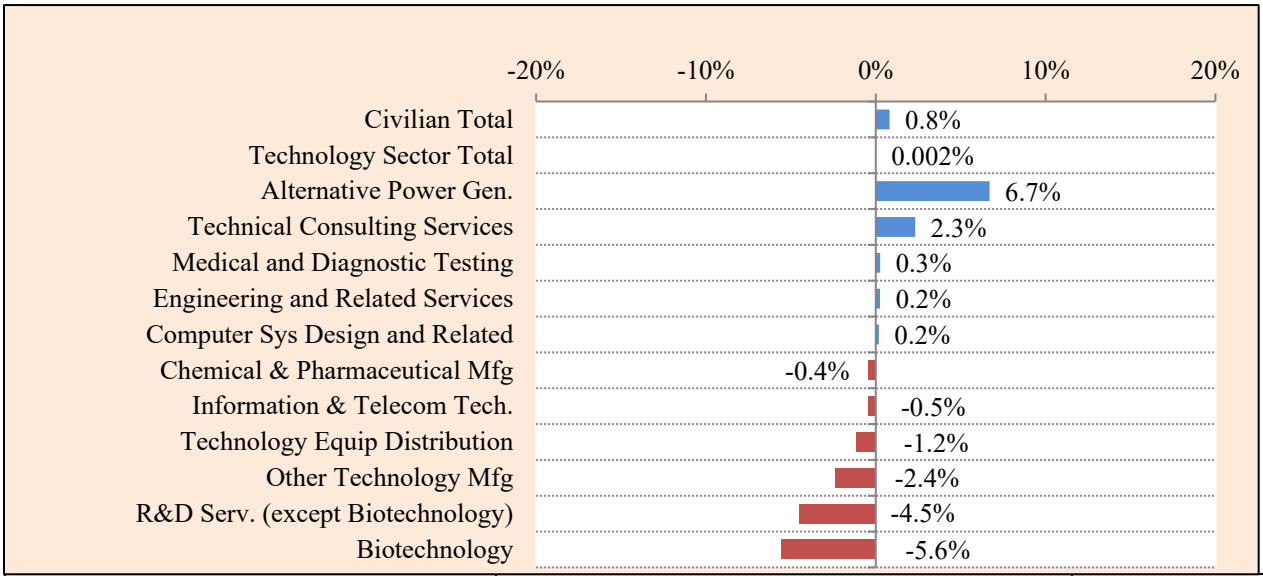
[2] Hawaii Science & Technology Institute, *Innovation and Technology in Hawaii: An Economic and Workforce Profile*, October 2008.

[3] As yet there is no official or universally agreed upon definition for the technology sector.

For the 2008 to 2018 period, Alternative Power Generation had the strongest job growth among the technology industry groups. However, it is important to note that total jobs for Alternative Power Generation is still relatively small at 312 jobs. Other high-performing activities in the technology sector were Technical Consulting Services, and Medical and Diagnostic Testing.

The six technology industry groups that lost jobs during the 2008 to 2018 period were Biotechnology, R&D Services, Other Technology Manufacturing, Technology Equipment Distribution, Information & Telecom Technology, and Chemical & Pharmaceutical Manufacturing.

Table 4. Jobs[1] in Technology Sector, Average Annual Growth over 2008-2018



	Avg. Annual Job Growth				
	2008-2018p	2008-2010	2010-2013	2013-2018p	Jobs in 2018p
Civilian Total	0.8%	-2.2%	1.7%	1.5%	876,415
Technology Sector Total	0.002%	-2.0%	1.0%	0.2%	28,419
Alternative Power Gen.	6.7%	-9.7%	35.8%	-1.3%	312
Technical Consulting Services	2.3%	0.6%	3.2%	2.5%	4,994
Medical and Diagnostic Testing	0.3%	-0.6%	-0.2%	0.9%	1,763
Engineering and Related Services	0.2%	-2.6%	0.9%	1.0%	6,385
Computer Sys Design and Related	0.2%	-0.7%	0.5%	0.3%	6,671
Chemical & Pharmaceutical Mfg	-0.4%	9.1%	15.3%	-12.1%	84
Information & Telecom Tech.	-0.5%	-6.0%	1.4%	0.7%	5,396
Technology Equip Distribution	-1.2%	-3.7%	-2.6%	0.7%	768
Other Technology Mfg	-2.4%	1.6%	-6.0%	-1.7%	442
R&D Serv. (except Biotechnology)	-4.5%	0.0%	-1.9%	-7.8%	1,205
Biotechnology	-5.6%	-3.5%	-2.6%	-8.1%	398

[1]Includes wage & salary, sole proprietors & self-employed.
Source: DBEDT based on data from Economic Modeling Specialists, Inc. (EMSI). "P" designates "projection" for 2018 based on early 2018 actual data and EMSI estimates.

Competitive Metrics

The sixth column of Table 5 shows the difference in percentage points between job growth in 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 10.3 percentage points during the 2008-2018 period. Technical Consulting Services underperformed their national counterparts by 0.5 of a percentage point.

Table 5. Hawaii Technology Sector Performance Compared with Nation

	Jobs (2018p)	Jobs per Estabs (2018p)	Avg. Annual Earnings (2018p)	Avg. Ann. Job Growth 2008-2018p	Avg. Ann. Job Growth above or below U.S.	When U.S.=100% Concentration[1]	When U.S.=100% Jobs per Estabs	When U.S.=100% Avg. Ann. Earning
Total Civilian	876,415	18.3	54,721	0.8%	-0.2%	100%	92%	94%
TECHNOLOGY SECTOR	**28,419**	**12.2**	**81,849**	**0.0%**	**-1.2%**	**56%**	**83%**	**73%**
Alternative Power Generation	312	9.6	104,108	6.7%	10.3%	98%	23%	63%
Technical Consulting Services	4,994	16.3	61,313	2.3%	-0.5%	63%	160%	77%
Medical and Diagnostic Testing	1,763	15.4	65,127	0.3%	-1.8%	132%	109%	87%
Engineering and Related Serv.	6,385	10.6	94,753	0.2%	0.1%	89%	76%	100%
Computer Sys. Design & Related	6,671	11.8	84,874	0.2%	-2.6%	58%	123%	75%
Chemical & Pharmaceutical Mfg	84	7.0	142,873	-0.4%	-0.4%	4%	11%	104%
Information & Telecom Tech.	5,396	12.0	83,404	-0.5%	-1.5%	61%	55%	64%
Technology Equipment Distr.	768	10.1	99,410	-1.2%	-0.9%	32%	73%	80%
Other Technology Mfg	442	16.2	61,539	-2.4%	-2.0%	7%	33%	52%
R&D Services (exc. Biotech.)	1,205	11.5	87,009	-4.5%	-4.8%	53%	40%	70%
Biotechnology	398	12.9	77,558	-5.6%	-8.3%	45%	52%	42%

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

Although it had positive job growth over the 2008 to 2018 period, Computer System Design & Related Services lost competitive ground to their national counterparts. It is important to note it was a large group with over 6,600 jobs.

Other Technology Manufacturing, Information & Telecom Technology, Technology Equipment Distribution, R&D Services (except Biotechnology), Chemical & Pharmaceutical Manufacturing, and Biotechnology jobs declined in Hawaii during the 2008-2018 period. Although Technology Equipment Distribution jobs also declined in the nation, the decline in Hawaii was higher. 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 2018, Hawaii's proportion of the state's workforce in technology was 56% of the proportion nationally. One noteworthy exception is Medical and Diagnostic Testing, which was 32% more concentrated in Hawaii than the nation overall.

The average earnings in Hawaii's technology sector was relatively high, at $81,849 in 2018. As a group, it was 50% 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 in Hawaii's technology sector, as a whole, was only 73% of the average earnings paid nationally. The largest earnings gaps between Hawaii and the U.S. were found in Biotechnology, Other Technology Manufacturing, Alternative Power Generation, 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.

Two technology industry groups were in the high performing Base-Growth and Emerging categories by showing positive growth and also outperforming their national counterpart. These two industry groups were Alternative Power Generation, and Engineering and Related Services. 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.

Three groups in the technology sector were in the Transitioning category for the 2008 to 2018 period. Including the two big activities in the technology sector – Computer System Design & Related Services and Technical Consulting Services. While job growth was positive in these industry groups, they still lost some competitive share to the national industry groups.

Chemical & Pharmaceutical Manufacturing. Biotechnology, R&D Services, Technology Equipment Distribution, Information & Telecom Technology, and Other Technology Manufacturing fell into the Declining category for 2008 to 2018 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.

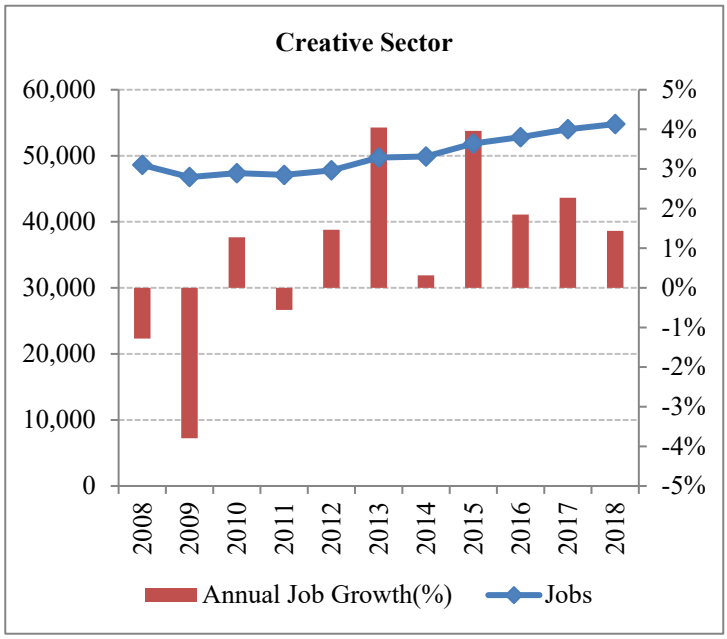
Emerging Activities	**Base-Growth Activities**
Alternative Power Generation Engineering and Related Serv.	
Declining Activities	**Transitioning Activities**
Chemical & Pharmaceutical Mfg Information & Telecom Tech. Technology Equipment Distr. Other Technology Mfg R&D Services (exc. Biotech.) Biotechnology	Technical Consulting Services Medical and Diagnostic Testing Computer Sys. Design & Related

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 54,800 jobs in 2018, about 6.3% of all civilian jobs in Hawaii. Marketing, Photograph & Related and Performing and Creative Arts were the two largest groups in the sector, together the two groups accounted for about 42.5% of jobs in the sector in 2018.



As a group, the creative sector's job growth was 0.4 of a percentage point above the annual average growth rate of the state civilian economy over the 2008 to 2018 period. The sector's negative growth was less than Hawaii's civilian economy during the 2008 to 2010 period. And the positive growth rate of the creative sector from 2010 to 2018 was higher than that of the state's overall civilian economy.

Cultural Activities grew jobs the most over the 2008 to 2018 period, 7.5% per year on average. Most job growth in Cultural Activities was achieved in the Museum category. Jobs in this category increased from 730 in 2008 to 2,032 in 2018. Film, TV, Video Production/Distribution showed the second highest job growth with a 4.9% average annual increase in jobs for the period.

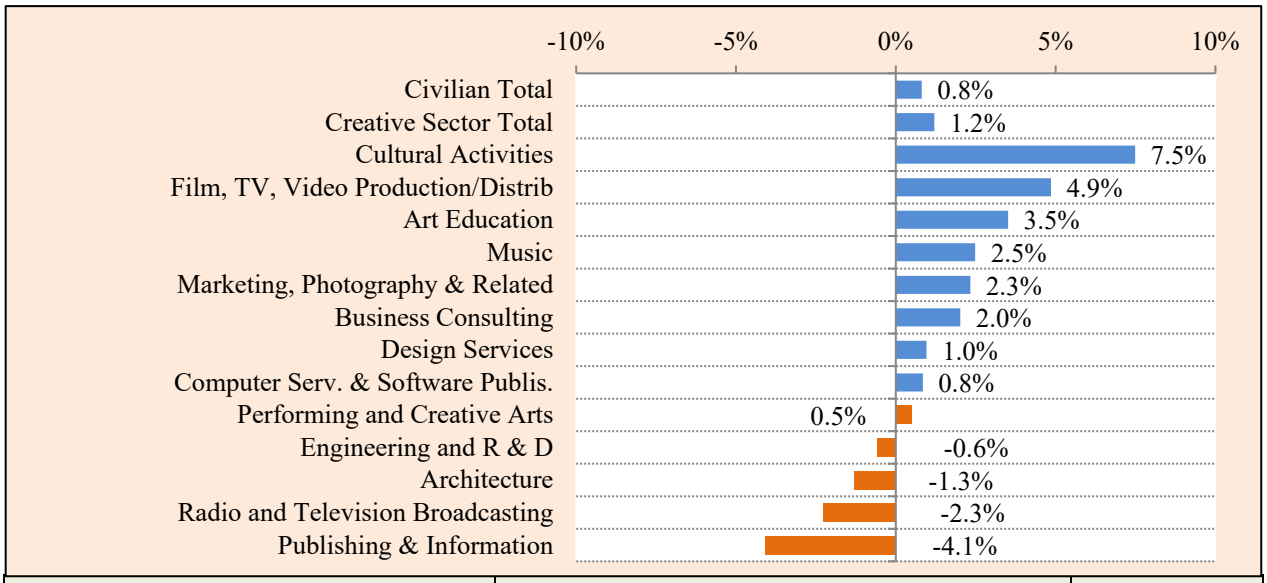
Film/TV Production varied widely depending on the number of productions filmed during the year. With many new productions filmed in Hawaii in late 2010, the number of 2010 jobs more

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

than doubled from the 2009 level. However, during the overall 2010 to 2018 period, the number of jobs in Film/TV Production decreased from 2,633 jobs to 2,281 jobs.

Four groups in the sector, Publishing & Information, Radio/TV Broadcasting, Architecture, and Engineering and R&D failed to gain jobs over the 2008 to 2018 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 2,955 in 2008 to 1,949 in 2018.

Table 6. Jobs in Creative Sector: Average Annual Growth over 2008-2018



	Avg. Annual Job Growth				
	2008-2018p	2008-2010	2010-2013	2013-2018p	Jobs in 2018p
Civilian Total	0.8%	-2.2%	1.7%	1.5%	876,415
Creative Sector Total	1.2%	-1.3%	1.6%	2.0%	54,800
Cultural Activities	7.5%	-2.2%	26.5%	1.2%	3,514
Film, TV, Video Production/Distrib	4.9%	36.2%	-16.0%	7.9%	2,281
Art Education	3.5%	-3.5%	10.2%	2.6%	896
Music	2.5%	-6.9%	7.1%	3.7%	1,478
Marketing, Photography & Related	2.3%	-1.2%	2.6%	3.6%	13,294
Business Consulting	2.0%	2.0%	2.2%	1.9%	5,452
Design Services	1.0%	-3.4%	3.1%	1.5%	2,225
Computer Serv. & Software Publis.	0.8%	-1.9%	1.6%	1.5%	5,257
Performing and Creative Arts	0.5%	-3.8%	-0.2%	2.7%	10,019
Engineering and R&D	-0.6%	-0.1%	0.5%	-1.4%	5,298
Architecture	-1.3%	-6.7%	-1.0%	0.8%	2,032
Radio and Television Broadcasting	-2.3%	-9.6%	1.4%	-1.4%	1,106
Publishing & Information	-4.1%	-9.5%	-3.6%	-2.1%	1,949

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 2008 to 2018 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 an average annual earnings of $48,701 in 2018, 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 in Hawaii was only 64% of the national average. The lower earnings in 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 and Art Education 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, Film, TV, Video Production/Distribution, and Marketing/Photography & Related.

Table 7. Hawaii's Creative Sector Performance Compared with Nation

	Jobs (2018p)	Jobs per Estabs (2018p)	Avg. Annual Earnings (2018p)	Avg. Ann. Job Growth 2008-2018p	Avg. Ann. Job Growth above or below U.S.	When U.S.=100% Concentration[1]	When U.S.=100% Jobs per Estabs	When U.S.=100% Avg. Ann. Earning
Total Civilian	876,415	18.3	54,721	0.8%	-0.2%	100%	92%	94%
CREATIVE SECTOR	**54,800**	**20.5**	**48,701**	**1.2%**	**-0.6%**	**85%**	**137%**	**64%**
Cultural Activities	3,514	19.5	51,272	7.5%	4.7%	365%	131%	93%
Film, TV, Video Production/Distrib	2,281	17.3	57,935	4.9%	4.3%	122%	96%	58%
Art Education	896	92.9	10,759	3.5%	-1.5%	65%	410%	103%
Music	1,478	29.8	33,577	2.5%	-0.2%	151%	168%	84%
Marketing, Photography & Related	13,294	35.9	27,831	2.3%	0.2%	99%	188%	57%
Business Consulting	5,452	16.4	60,835	2.0%	-0.5%	59%	165%	76%
Design Services	2,225	34.4	29,101	1.0%	-0.1%	96%	258%	74%
Computer Services and Software Publishers	5,257	11.4	87,348	0.8%	-2.4%	43%	112%	71%
Performing and Creative Arts	10,019	48.2	20,726	0.5%	-2.3%	116%	121%	79%
Engineering and Research & Development	5,298	9.9	100,608	-0.6%	-0.8%	75%	57%	91%
Architecture	2,032	12.9	77,431	-1.3%	-0.7%	133%	114%	105%
Radio and Television Broadcasting	1,106	15.4	64,974	-2.3%	-1.7%	95%	49%	75%
Publishing & Information	1,949	19.1	52,232	-4.1%	-2.7%	57%	104%	43%

1. Proportion of jobs in the activity in 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 – Design Services, Music, Business Consulting, Art Education, Performing and Creative Arts, and Computer Services & Software Publishing - grew jobs over the period but came up short competitively, compared with the performance of the same industry group nationally over the 2008 to 2018 period.

Engineering and Research & Development, Architecture, Radio and Television Broadcasting, and Publishing & Information were in the lowest performance group. All lost jobs over the 2008 to 2018 period.

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

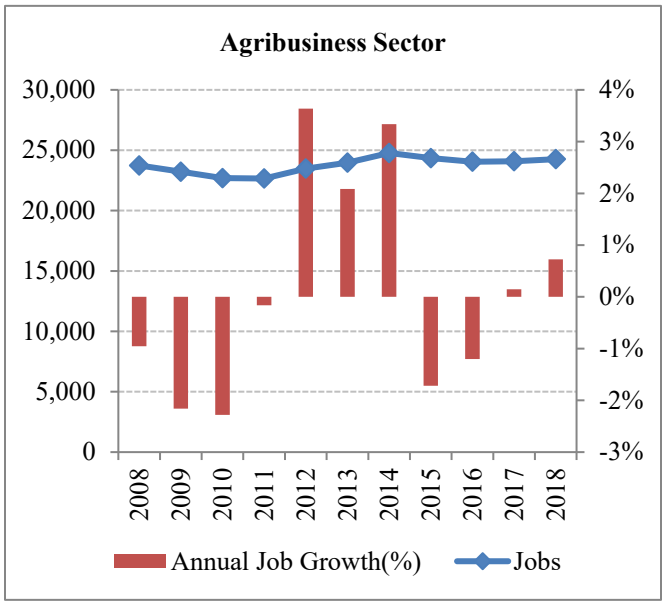
AGRIBUSINESS

In 2018, the 24,263 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 (54%). The second largest industry group in the sector was Agricultural Processing at 30% of the sector's jobs.

A breakdown of employment for the Farm Production by individual crop and livestock activities, that includes self-employed and proprietors, is not available. However, agricultural values show that seed crops, primarily corn seed research and development, were the largest component in terms of value at 41.4% in 2010 (latest data available).[5] This production value of seed corn was more than double of its value in 2006. Hawaii's two other major agricultural products, sugarcane and coffee, accounted for 11.7% and 5.6% respectively of the total value of agriculture production in 2010.

Size & Growth

The agribusiness sector as a whole was able to achieve a small positive job growth over the 2008 to 2018 period. Although three of the six Agribusiness industry groups lost jobs over the period, job gains among three other groups exceeded the losses.



The largest activity in the agribusiness sector is Farm Production. Jobs in this group decreased over the 2008 to 2018 period. From 2008 to 2011, jobs in this group decreased. From 2011 to 2018 jobs increased slightly in this group. From 2008 to 2018, Farm Production lost 400 jobs or 0.3% per year on average. Job loss in the Farm Production group was more than offset by job gains in the Agricultural Processing, which added 782 jobs over the same period.

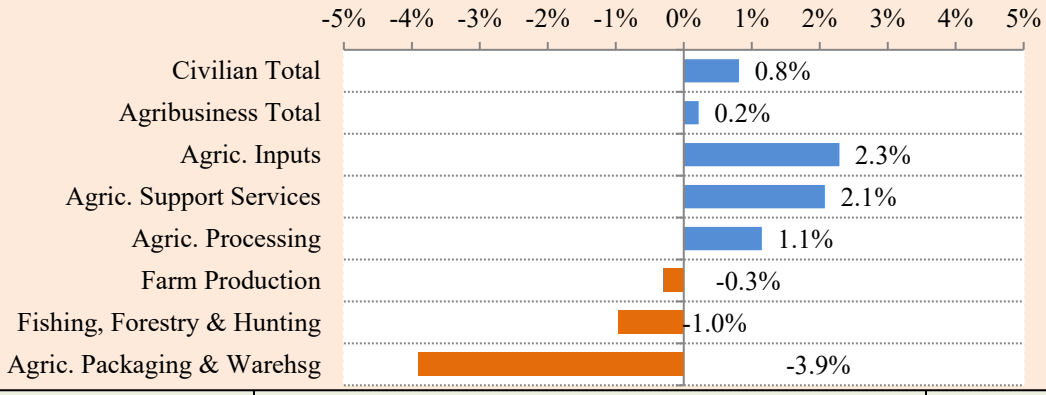
The best performing agribusiness industry group over the 2008 to 2018 cycle was the Agricultural Inputs, with a 2.3% average annual increase in jobs.

[5] Source: U.S. Department of Agriculture, National Agricultural Statistical Service. The most recent data may be found at http://www.nass.usda.gov/Statistics_by_State/Hawaii/Publications/Annual_Statistical_Bulletin/index.asp

Other high-performing groups in agribusiness, during the 2008 to 2018 period, were Agricultural Support Services, and Agricultural Processing. Job growth in these groups averaged 2.2%, and 1.1% per year, respectively, over this period.

In addition to Farm Production, Fishing, Forestry & Hunting, and Agricultural Packaging & Warehousing also lost jobs over the 2008 to 2018 period. During the same period, Job growth in Agricultural Packaging & Warehousing group averaged a negative 3.9% per year.

Table 8. Jobs in Agribusiness Sector: Average Annual Growth over 2008-2018



	Avg. Annual Job Growth				Jobs in 2018p
	2008-2018p	2008-2010	2010-2013	2013-2018p	
Civilian Total	0.8%	-2.2%	1.7%	1.5%	876,415
Agribusiness Total	0.2%	-2.2%	1.8%	0.2%	24,263
Agric. Inputs	2.3%	2.5%	-3.5%	5.8%	526
Agric. Support Services	2.1%	-2.0%	2.6%	3.4%	1,621
Agric. Processing	1.1%	-4.3%	5.4%	0.9%	7,244
Farm Production	-0.3%	-1.3%	0.3%	-0.3%	13,123
Fishing, Forestry & Hunting	-1.0%	0.3%	0.4%	-2.3%	1,532
Agric. Packaging & Warehsg	-3.9%	-23.7%	12.2%	-4.0%	217

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 2008 to 2018 period.

Two of the three groups that gained jobs over the 2008 to 2018 period outperformed the same activities in the nation. Among these, Agricultural Inputs gained jobs at 2.3% annually, while its national counterpart gained 0.6% annually. Agricultural Support Services outperformed the same activities for the nation overall by 0.8% per year.

Table 9. Hawaii Agribusiness Sector Performance Compared with Nation

	Jobs (2018p)	Jobs per Estabs (2018p)	Avg. Annual Earnings (2018p)	Avg. Ann. Job Growth 2008-2018p	Avg. Ann. Job Growth above or below U.S.	When U.S.=100% Con-cen-tration[1]	When U.S.=100% Jobs per Estabs	When U.S.=100% Avg. Ann. Earning
Total Civilian	876,415	18.3	54,721	0.8%	-0.2%	100%	92%	94%
AGRIBUSINESS	**24,263**	**25.2**	**39,751**	**0.2%**	**-0.4%**	**89%**	**77%**	**90%**
Agric. Inputs	526	15.8	63,162	2.3%	1.7%	46%	103%	88%
Agric. Support Services	1,621	21.2	47,161	2.1%	0.8%	62%	152%	92%
Agric. Processing	7,244	20.1	49,856	1.1%	-0.1%	92%	40%	84%
Farm Production	13,123	29.7	33,650	-0.3%	-0.6%	92%	78%	105%
Fishing, Forestry & Hunting	1,532	38.1	26,273	-1.0%	0.4%	359%	137%	72%
Agric. Packaging & Warehsg	217	18.4	54,408	-3.9%	-4.6%	26%	49%	96%

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 in Hawaii than the nation for most activities. The clear exception was Fishing, Forestry & Hunting that is significantly more concentrated in Hawaii than the nation.

Overall Performance

From an overall performance standpoint, two groups – Agriculture Support Services, and Agricultural Inputs – were in the high performance Base-Growth or Emerging categories for the 2008 to 2018 period.

Farm Production in Hawaii is made up of a number of very disparate industry groups, with some like seed corn production showing exceptional growth in recent years, while others like pineapple production have been in sharp contraction. For this reason, the interpretations of performance in Farm Production should be made cautiously. It is beyond the scope of this report to delve into the various components of Farm Production. The dynamics of Hawaii farming activity make it difficult to effectively monitor Farming performance, especially with the sketchiness of jobs data for key areas like seed corn and other crop areas.

Agricultural Packaging & Warehousing, Fishing, Forestry & Hunting, and Farm Production fell into the Declining category, declining 3.9%, 1.0%, and 0.3% per year, respectively over the 2008 to 2018 period.

Emerging Activities	**Base-Growth Activities**
Agric. Inputs Agric. Support Services	
Declining Activities	**Transitioning Activities**
Farm Production Fishing, Forestry & Hunting Agric. Packaging & Warehsg	Agric. Processing

HEALTH & WELLNESS

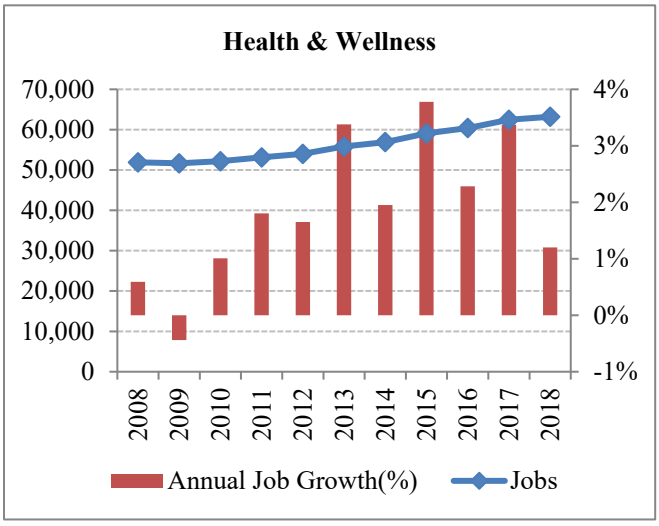
Health and Wellness has been of interest for several decades as a potential export activity. It has been proposed that first class medical and related health facilities in Hawaii could spur Health and Wellness tourism among the more affluent in Asian-Pacific countries that may not have the same level 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.[6] This definition identifies the major industry groups of Hawaii's health care sector.

Size & Growth

The Health and Wellness Sector accounted for an estimated 63,203 jobs in 2018. About 69.1% of the jobs were among Health Care Practitioners and in Hospital & Nursing Facilities. All of the industry groups in Health and Wellness, except Pharmacies, grew jobs over the 2008 to 2018 period.



Overall, the Health and Wellness sector grew faster than the rest of the economy during the 2008-2018 period. Except for 2009, this sector had job growth for each year during the 2008 to 2018 period.

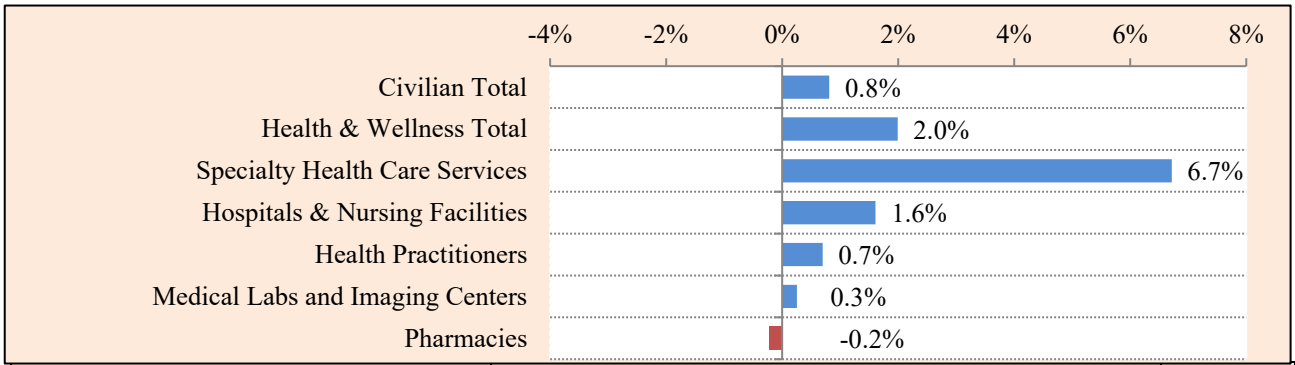
Pharmacies (a retailing industry which includes drug stores) experienced a sharp decline during the 2008-2010 contraction period. Pharmacies lost 549 jobs in the two-year period. The reason for the decline is not clear. However, the filling of prescriptions through the internet, rather than in pharmacies, has become a more common practice in recent years.

[6] 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

Health Practitioners showed modest growth. For the 2008 to 2018 period, this sector had an average job growth of 0.7% per year.

The highest job growth was observed in Specialty Health Care, a relatively small industry group, during the 2008-2018 period. This subsector gained jobs at an annual average rate of 6.7% during the period.

Table 10. Jobs in Health and Wellness: Average Annual Growth over 2008-2018



	Avg. Annual Job Growth				Jobs in 2018p
	2008-2018p	2008-2010	2010-2013	2013-2018p	
Civilian Total	0.8%	-2.2%	1.7%	1.5%	876,415
Health & Wellness Total	2.0%	0.3%	2.3%	2.5%	63,203
Specialty Health Care Services	6.7%	1.3%	6.8%	9.0%	13,992
Hospitals & Nursing Facilities	1.6%	1.7%	0.5%	2.2%	21,537
Health Practitioners	0.7%	0.1%	2.2%	0.0%	22,107
Medical Labs and Imaging Centers	0.3%	-0.6%	-0.2%	0.9%	1,763
Pharmacies	-0.2%	-7.3%	3.0%	0.8%	3,804

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

Competitive Metrics

Overall, the growth in Hawaii's Health and Wellness Sector was slightly above the national average for the same sector over the 2008 to 2018 period. The higher job growth in Hawaii's Specialty Health Care Services and Hospitals & Nursing Facilities offset the lower job growth in other groups of the sector.

Table 11. Hawaii Health and Wellness Sector Performance Compared with Nation

	Jobs (2018p)	Jobs per Estabs (2018p)	Avg. Annual Earnings (2018p)	Avg. Ann. Job Growth 2008-2018p	Avg. Ann. Job Growth above or below U.S.	When U.S.=100% Con-cen-tra-tion[1]	When U.S.=100% Jobs per Estabs	When U.S.=100% Avg. Ann. Earning
Total Civilian	876,415	18.3	54,721	0.8%	-0.2%	100%	92%	94%
HEALTH & WELLNESS	**63,203**	**13.3**	**75,408**	**2.0%**	**0.3%**	**88%**	**55%**	**110%**
Specialty Health Care Services	13,992	18.0	55,536	6.7%	2.1%	108%	44%	120%
Hospitals & Nursing Facilities	21,537	11.9	84,067	1.6%	0.9%	72%	5%	123%
Health Practitioners	22,107	11.7	85,297	0.7%	-1.2%	90%	103%	104%
Medical Labs & Imaging Centers	1,763	15.4	65,127	0.3%	-1.8%	132%	109%	87%
Pharmacies	3,804	21.4	46,772	-0.2%	0.0%	117%	187%	94%

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

At $75,408, the average earnings for the Health & Wellness Sector as a whole, exceeded the national average in 2018 by about 10%. 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 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 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.

Only Pharmacies fell into the Declining category, declining 0.2% per year over the 2008 to 2018 period.

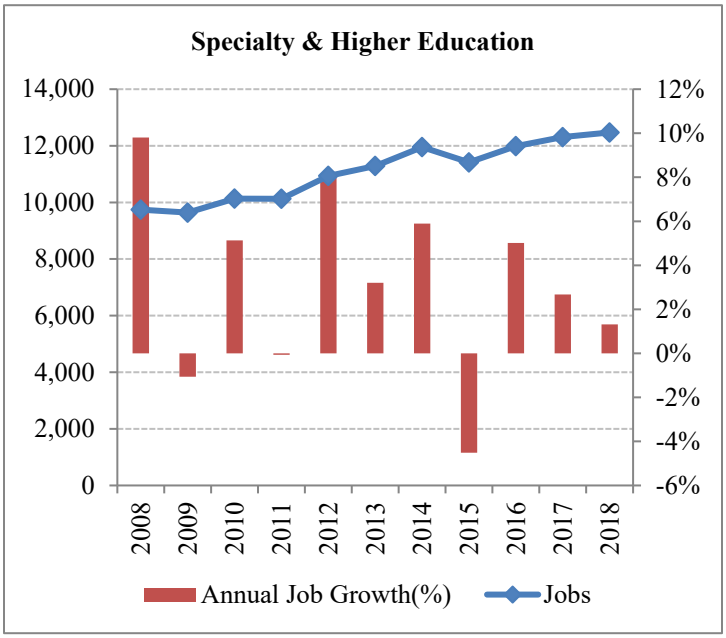
Emerging Activities	**Base-Growth Activities**
Hospitals & Nursing Facilities	Specialty Health Care Services
Declining Activities	**Transitioning Activities**
Pharmacies	Health Practitioners Medical Labs and Imaging Centers

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 2017, Hawaii had an estimated 12,916 international students (full-time and part-time), with annual expenditures of $241.5 million dollars.[7] 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

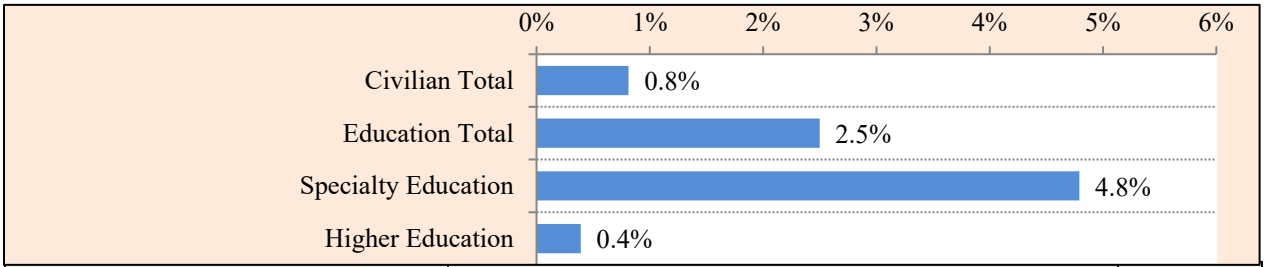
Private post-secondary and specialty education in Hawaii accounted for 12,472 jobs in 2018. These sectors together performed better than the rest of the Hawaii economy. Jobs grew 2.5% annually, adding 2,728 new jobs to the economy over the past ten years.



Both Specialty Education and Higher Education gained jobs over the 2008 to 2018 period. From 2008 to 2018, Specialty Education added jobs every year; while Higher Education lost jobs in 2009, 2011, 2015, 2017, and 2018. 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.

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

Table 12. Jobs in Higher and Specialty Education: Average Annual Growth over 2008-2018



	Avg. Annual Job Growth				Jobs in 2018p
	2008-2018p	2008-2010	2010-2013	2013-2018p	
Civilian Total	0.8%	-2.2%	1.7%	1.5%	876,415
Education Total	2.5%	2.0%	3.7%	2.0%	12,472
Specialty Education	4.8%	5.2%	4.5%	4.8%	6,708
Higher Education	0.4%	-0.5%	2.9%	-0.7%	5,763

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

Competitive Metrics

For Specialty Education, the high growth in jobs over the 2008 to 2018 period was slightly above the growth rate of the same activities nationally. As a result, the national competitive share of the Hawaii Specialty Education group was slightly higher. For Higher Education, however, job growth in Hawaii was below the national level and Hawaii loss some national competitive share.

The annual earnings of Specialty Education in Hawaii averaged $20,884 in 2018, which was about 38% of the earning average of civilian jobs in Hawaii. This level of earnings was about 89% of the national level for the same group. The average earnings for Hawaii Higher Education was higher than Specialty Education, but was only about 64% of the national earnings for the same activities in 2018.

Table 13. Hawaii Private Education Sector Performance Compared with Nation

	Jobs (2018p)	Jobs per Estabs (2018p)	Avg. Annual Earnings (2018p)	Avg. Ann. Job Growth 2008-2018p	Avg. Ann. Job Growth above or below U.S.	When U.S.=100% Con-cen-tration[1]	When U.S.=100% Jobs per Estabs	When U.S.=100% Avg. Ann. Earning
Total Civilian	876,415	18.3	54,721	0.8%	-0.2%	100%	92%	94%
EDUCATION (PRIVATE)	**12,472**	**35.9**	**27,886**	**2.5%**	**-0.4%**	**76%**	**85%**	**66%**
Specialty Education	6,708	47.9	20,884	4.8%	0.3%	94%	233%	89%
Higher Education	5,763	27.8	36,035	0.4%	-1.4%	62%	13%	64%

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

Overall Performance

During the 2008 to 2018 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.

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 2008 to 2018, jobs in the Apparel group decreased 1.1% 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 2008 to 2018, jobs in the Call Center group decreased 3.6% per year on average.

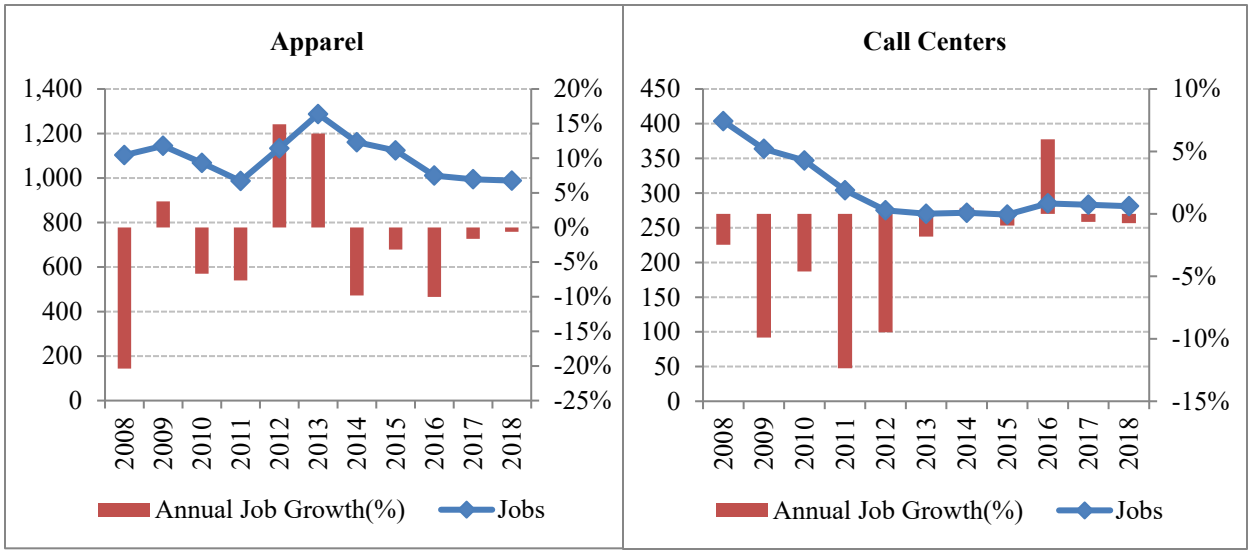
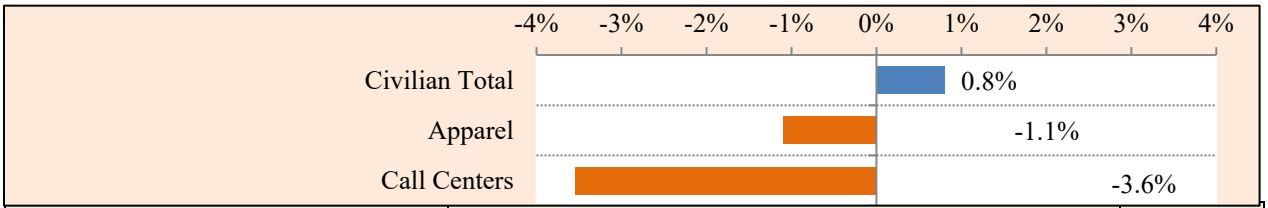


Table 14. Jobs in Apparel and Call Centers: Average Annual Growth over 2008-2018



	Avg. Annual Job Growth				Jobs in 2018p
	2008-2018p	2008-2010	2010-2013	2013-2018p	
Civilian Total	0.8%	-2.2%	1.7%	1.5%	876,415
Apparel	-1.1%	-1.6%	6.4%	-5.1%	988
Call Centers	-3.6%	-7.3%	-8.0%	0.8%	281

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 2008-2018 period, Apparel in Hawaii lost 1.1% of its jobs annually, while the U.S. apparel industry lost 3.0% of its jobs annually. This partially reflects the global outsourcing trend for manufacturing in general.

During the 2008 to 2018 period, nationally, the Call Center industry had a steady job increase of 2.2% per year. In contrast, the Call Center industry in Hawaii experienced an average job decrease of 3.6% per year, during the same period.

The concentration level of Apparel in 2018 was 48% above the national level. In contrast, Call Centers had a 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 2018.

The annual average earnings for Apparel and Call Center were $65,209 and $26,645 respectively in 2018. These earning levels were about 145% for Apparel and 64% for Call Centers of the average earnings nationally.

Table 15. Hawaii Apparel and Call Centers Performance Compared with Nation

	Jobs (2018p)	Jobs per Estabs (2018p)	Avg. Annual Earnings (2018p)	Avg. Ann. Job Growth 2008-2018p	Avg. Ann. Job Growth above or be-low U.S.	When U.S.=100% Con-cen-tration[1]	When U.S.=100% Jobs per Estabs	When U.S.=100% Avg. Ann. Earn-ing
Total Civilian	876,415	18.3	54,721	0.8%	-0.2%	100%	92%	94%
Apparel	988	15.3	65,209	-1.1%	1.9%	148%	66%	145%
Call Centers	281	37.5	26,645	-3.6%	-5.7%	11%	67%	64%

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

Overall Performance

Based on the performance metrics, during the 2008 to 2018 period. Both the Apparel group and the Call Center group fell into the declining category, with an average job loss of 1.1% and 3.6% per year, respectively.

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

PERFORMANCE BY COUNTY

The following tables summarize the 2008 to 2018 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 in Hawaii's targeted & emerging industries without overlaps was 163,807 in 2018. Honolulu accounted for about 70%, followed by Hawaii County at 14%, Maui at 11%, and Kauai at 5%. From 2008 to 2018, adjusting for overlaps, total jobs in the targeted & emerging industries increased by 19,269 jobs. Honolulu added 13,271 jobs, followed by Hawaii at 3,214 jobs, Maui at 1,820 jobs, and Kauai at 663 jobs.

Table 16. Jobs and Job changes from 2008 to 2018 by County

	2018 Jobs				
	State	Honolulu	Hawaii	Maui	Kauai
Total Civilian	876,415	613,380	107,313	108,140	47,582
Total Targeted w/o Overlap	163,807	114,816	23,087	17,927	7,510
Technology Sector	28,419	22,811	2,511	2,151	892
Creative Sector	54,800	38,985	6,125	6,834	2,666
Agribusiness	24,263	10,503	8,670	3,176	1,913
Health & Wellness	63,203	47,722	6,593	6,521	2,342
Education (Private)	12,472	10,133	1,081	743	277
Others	1,269	1,061	83	80	45
	% in State 2018 Jobs				
	State	Honolulu	Hawaii	Maui	Kauai
Total Civilian	100%	70%	12%	12%	5%
Total Targeted w/o Overlap	100%	70%	14%	11%	5%
Technology Sector	100%	80%	9%	8%	3%
Creative Sector	100%	71%	11%	12%	5%
Agribusiness	100%	43%	36%	13%	8%
Health & Wellness	100%	76%	10%	10%	4%
Education (Private)	100%	81%	9%	6%	2%
Others	100%	84%	7%	6%	4%
	Job Changes 2008-2018				
	State	Honolulu	Hawaii	Maui	Kauai
Total Civilian	68,093	47,518	7,962	8,432	4,181
Total Targeted w/o Overlap	19,269	13,271	3,214	1,820	663
Technology Sector	4	-153	104	187	-126
Creative Sector	6,184	4,329	1,005	391	315
Agribusiness	527	1,399	256	-1,102	-27
Health & Wellness	11,311	7,382	1,469	2,181	338
Education (Private)	2,728	1,603	528	264	95
Others	-237	-293	19	21	16

Source: See Table 4 for data source.

City & County of Honolulu

Adjusting for overlaps, Honolulu accounted for 114,816 of the state's targeted & emerging industry jobs in 2018, a 1.2% average annual increase from 2008. As shown in Table 17, among the six major sectors, only one sector was high performing Emerging activities in Honolulu County in the 2008 to 2018 period. Three sectors were in the Transitioning category, and two sectors were in the Declining category.

Table 17. Performance of the Major Groups of Honolulu Targeted Industry Portfolio

Industry Groups	Jobs in Honolulu County		Avg. Ann. Job Growth (2008-2018P)		Concentration of Industry in Honolulu County Compared to U.S.		Avg Annual Earnings (2018P)	
	2018P	Chg 2008-2018P	Hono-lulu	U.S.	2018P	% Point Chg 2008-2018P	Hono-lulu	U.S.
Total Civilian Jobs	613,380	47,518	0.8%	1.0%	100%	0%	$58,387	$58,046
Total Targeted Jobs w/o Overlap	114,816	13,271	1.2%	1.4%	82%	0%	$63,848	$70,266
Emerging Activities								
Agribusiness	10,503	1,399	1.4%	0.6%	55%	5%	$46,196	$44,202
Transitioning Activities								
Health & Wellness	47,722	7,382	1.7%	1.7%	95%	2%	$78,377	$68,400
Creative Sector	38,985	4,329	1.2%	1.9%	87%	-4%	$54,791	$76,464
Education (Private)	10,133	1,603	1.7%	2.9%	88%	-8%	$29,493	$42,274
Declining Activities								
Technology Sector	22,811	-153	-0.1%	1.2%	64%	-7%	$85,563	$111,582
Others	1,061	-293	-2.4%	0.8%	48%	-17%	$54,799	$42,206

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 18 shows the performance of detailed targeted & emerging industry groups in Honolulu. Among the 38 detailed industry groups, 12 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 51,840 jobs or 8.5% of all civilian jobs in 2018. Between 2008 and 2018, those groups generated 23.9% of the total gain in jobs for the civilian economy, or about 11,347 new jobs.

About 45% of the high-performing activities had average annual earnings that exceeded $86,000 in 2018. By comparison, the average earnings for the civilian economy in 2018 was $58,387 by the projected 2018 estimate.

In 2018, 11 activities, which included 50,764 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.

Fifteen activities in the portfolio fell into the Declining industry category as the result of net job losses for the 2008 to 2018 period. Jobs in the Declining industry groups totaled an estimated 27,243 in 2018, representing a loss of 3,600 jobs from 2008.

Table 18. Performance of the Detailed Honolulu Targeted Industry Portfolio

Industry Groups	Jobs in Honolulu County		Avg. Ann. Job Growth (2008-2018[p])		Concentration of Industry in Honolulu County Compared to U.S.		Avg Annual Earnings (2018[p])	
	2018[p]	Chg 2008-2018[p]	Hono-lulu	U.S.	2018[p]	% Point Chg 2008-2018[p]	Honolulu	U.S.
Base-Growth Activities								
Cultural Activities	3,182	1,678	7.8%	2.7%	472%	186%	$51,520	$55,176
Film, TV, Video Production/Dis-trib	2,025	765	4.9%	0.5%	155%	56%	$60,660	$100,078
Pharmacies	2,730	18	0.1%	-0.2%	120%	6%	$47,316	$49,548
Specialty Health Care Services	10,645	4,943	6.4%	4.6%	117%	21%	$56,439	$46,357
Engineering and Related Serv.	5,426	289	0.5%	0.1%	108%	7%	$98,956	$95,130
Emerging Activities								
Agric. Processing	5,390	771	1.6%	1.3%	98%	5%	$51,154	$59,303
Hospitals & Nursing Facilities	17,882	1,862	1.1%	0.7%	86%	5%	$87,197	$68,459
Alternative Power Generation	174	88	7.3%	-3.6%	78%	52%	$86,164	$165,533
Agric. Support Services	1,083	271	2.9%	1.3%	59%	10%	$49,353	$51,240
Agric. Inputs	304	125	5.4%	0.6%	38%	15%	$78,626	$71,521
Farm Production	2,955	523	2.0%	0.3%	29%	5%	$34,239	$31,935
Chemical & Pharmaceutical Mfg	46	14	3.9%	0.0%	3%	1%	$143,610	$137,351
Transitioning Activities								
Marketing, Photography & Re-lated	8,994	1,661	2.1%	2.1%	96%	2%	$29,415	$48,473
Specialty Education	4,739	1,683	4.5%	4.5%	95%	2%	$21,152	$23,568
Technical Consulting Services	3,900	902	2.7%	2.8%	70%	1%	$67,490	$80,017
Business Consulting	4,274	854	2.3%	2.5%	66%	0%	$66,840	$80,017
Design Services	1,418	88	0.6%	1.0%	88%	-1%	$30,066	$39,384
Art Education	697	234	4.2%	5.0%	73%	-4%	$10,105	$10,460
Health Practitioners	15,097	541	0.4%	1.9%	87%	-12%	$90,016	$82,068
Medical and Diagnostic Testing	1,368	18	0.1%	2.1%	146%	-27%	$67,349	$74,847
Music	622	41	0.7%	2.7%	91%	-17%	$47,674	$40,066
Performing and Creative Arts	5,367	311	0.6%	2.8%	89%	-19%	$21,100	$26,262
Computer Services and Software Publishers	4,287	168	0.4%	3.3%	50%	-15%	$91,955	$123,116

Table 18. Performance of the Detailed Honolulu Targeted Industry Portfolio (Cont.)

Industry Groups	Jobs in Honolulu County		Avg. Ann. Job Growth (2008-2018P)		Concentration of Industry in Honolulu County Compared to U.S.		Avg Annual Earnings (2018P)	
	2018P	Chg 2008-2018P	Hono-lulu	U.S.	2018P	Chg 2008-2018P	Honolulu	U.S.
Declining Activities								
Computer Sys. Design & Related	5,688	-76	-0.1%	2.8%	71%	-22%	$87,980	$112,909
Higher Education	5,394	-80	-0.1%	1.7%	83%	-15%	$36,821	$56,670
Information & Telecom Tech.	4,286	-177	-0.4%	1.0%	69%	-8%	$86,836	$130,949
Engineering and Research & Development	4,260	-215	-0.5%	0.2%	86%	-4%	$102,195	$110,105
Architecture	1,587	-206	-1.2%	-0.6%	148%	-6%	$85,284	$73,407
Technology Equipment Distr.	728	-96	-1.2%	-0.2%	43%	-4%	$103,117	$123,600
Apparel	815	-183	-2.0%	-3.0%	174%	21%	$63,600	$45,089
Radio and Television Broadcast-ing	900	-216	-2.1%	-0.6%	110%	-15%	$69,817	$86,917
Fishing, Forestry & Hunting	597	-154	-2.3%	-1.4%	200%	-13%	$34,872	$36,362
Other Technology Mfg	337	-139	-3.4%	-0.3%	8%	-3%	$67,280	$117,645
Call Centers	246	-110	-3.6%	2.2%	14%	-11%	$25,614	$41,425
Publishing & Information	1,372	-835	-4.6%	-1.4%	57%	-21%	$57,406	$121,033
Agric. Packaging & Warehsg	176	-137	-5.6%	0.7%	30%	-26%	$58,176	$56,800
R&D Services (exc. Biotech.)	660	-655	-6.7%	0.3%	41%	-41%	$79,081	$124,749
Biotechnology	198	-320	-9.2%	2.7%	32%	-75%	$77,686	$186,702

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

Hawaii County

Adjusting for overlaps, Hawaii County accounted for 23,087 of the state's targeted & emerging industry jobs in 2018, an 1.5% average annual increase from 2008. As shown in Table 19, among the six major sectors, three sectors were high performing in Hawaii County in the 2008 to 2018 period. Three sectors were in the Transitioning category and there were no job losses.

Table 19. Performance of the Major Groups of Hawaii County Targeted Industry Portfolio

	Jobs in Hawaii County		Avg. Ann. Job Growth (2008-2018P)		Concentration of Industry in Hawaii County Compared to U.S.		Avg Annual Earnings (2018P)	
Industry Groups	2018P	Chg 2008-2018P	Hawaii	U.S.	2018P	Chg 2008-2018P	Hawaii	U.S.
Total Civilian Jobs	107,313	7,962	0.8%	1.0%	100%	0%	$44,149	$58,046
Total Targeted Jobs w/o Overlap	23,087	3,214	1.5%	1.4%	94%	3%	$41,136	$70,266
Emerging Activities								
Education (Private)	1,081	528	6.9%	2.9%	54%	18%	$24,174	$42,274
Others	83	19	2.7%	0.8%	22%	4%	$71,730	$42,206
Health & Wellness	6,593	1,469	2.6%	1.7%	75%	8%	$57,564	$68,400
Transitioning Activities								
Creative Sector	6,125	1,005	1.8%	1.9%	78%	2%	$34,992	$76,464
Agribusiness	8,670	256	0.3%	0.6%	260%	-2%	$32,900	$44,202
Technology Sector	2,511	104	0.4%	1.2%	40%	-2%	$61,829	$111,582

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 20 shows the performance of detailed targeted & emerging industry groups in Hawaii County. Among the 38 detailed industry groups, 22 groups were high performing. The high-performing activities in the target industry portfolio accounted for about 9,800 jobs or 9.1% of all civilian jobs in 2018. Between 2008 and 2018, those groups generated 33.1% of the total gain in jobs for the civilian economy or about 2,633 new jobs.

About 11.0% of the high-performing activities had average annual earnings that exceeded $73,000 in 2018. By comparison, the earnings average for the civilian economy in 2018 was $44,149 by the projected 2018 estimate.

In 2018, seven activities with 13,063 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.

Nine activities in the portfolio fell into the Declining industry category, as a result of net job losses for the 2008 to 2018 period. Jobs in the Declining industry groups totaled an estimated 1,999 in 2018, representing a loss of 245 jobs from 2008.

Table 20. Performance of the Detailed Hawaii County Targeted Industry Portfolio

Industry Groups	Jobs in Hawaii County		Avg. Ann. Job Growth (2008-2018[p])		Concentration of Industry in Hawaii County Compared to U.S..		Avg Annual Earnings (2018[p])	
	2018[p]	Chg 2008-2018[p]	Hawaii	U.S.	2018[p]	Chg 2008-2018[p]	Hawaii	U.S.
Base-Growth Activities								
Music	230	74	3.9%	2.7%	192%	26%	$23,837	$40,066
Cultural Activities	205	103	7.2%	2.7%	174%	64%	$51,573	$55,176
R&D Services (exc. Biotech.)	388	24	0.6%	0.3%	139%	9%	$101,369	$124,749
Design Services	363	78	2.5%	1.0%	128%	20%	$25,171	$39,384
Specialty Education	988	486	7.0%	4.5%	113%	26%	$23,627	$23,568
Pharmacies	440	66	1.6%	-0.2%	110%	21%	$43,033	$49,548
Architecture	196	15	0.8%	-0.6%	104%	16%	$52,419	$73,407
Specialty Health Care Services	1,600	783	7.0%	4.6%	101%	22%	$49,822	$46,357
Emerging Activities								
Agric. Inputs	137	26	2.2%	0.6%	98%	17%	$35,799	$71,521
Marketing, Photography & Related	1,520	302	2.2%	2.1%	92%	4%	$22,469	$48,473
Apparel	67	25	4.7%	-3.0%	82%	45%	$77,394	$45,089
Engineering and Research & Development	620	49	0.8%	0.2%	71%	6%	$95,939	$110,105
Radio and Television Broadcast-ing	85	6	0.7%	-0.6%	60%	9%	$36,894	$86,917
Information & Telecom Tech.	548	82	1.6%	1.0%	50%	4%	$68,250	$130,949
Engineering and Related Serv.	439	38	0.9%	0.1%	50%	5%	$70,335	$95,130
Film, TV, Video Production/ Distrib	100	37	4.8%	0.5%	44%	16%	$36,520	$100,078
Hospitals & Nursing Facilities	1,316	221	1.9%	0.7%	36%	5%	$58,799	$68,459
Agric. Packaging & Warehsg	33	30	25.3%	0.7%	33%	29%	$44,295	$56,800
Computer Services and Software Publishers	391	127	4.0%	3.3%	26%	3%	$52,531	$123,116
Biotechnology	21	11	7.9%	2.7%	19%	8%	$31,436	$186,702
Higher Education	93	42	6.3%	1.7%	8%	3%	$30,020	$56,670
Technology Equipment Distr.	18	7	5.2%	-0.2%	6%	3%	$23,565	$123,600

Table 20. Performance of the Detailed Hawaii County Targeted Industry Portfolio (Cont.)

Industry Groups	Jobs in Hawaii County		Avg. Ann. Job Growth (2008-2018P)		Concentration of Industry in Hawaii County Compared to U.S..		Avg Annual Earnings (2018P)	
	2018P	Chg 2008-2018P	Hawaii	U.S.	2018P	Chg 2008-2018P	Hawaii	U.S.
Transitioning Activities								
Computer Sys. Design & Related	379	89	2.7%	2.8%	27%	1%	$50,827	$112,909
Farm Production	6,735	112	0.2%	0.3%	384%	7%	$30,944	$31,935
Agric. Support Services	274	23	0.9%	1.3%	85%	-1%	$38,405	$51,240
Health Practitioners	3,035	411	1.5%	1.9%	100%	-2%	$64,351	$82,068
Agric. Processing	970	67	0.7%	1.3%	100%	-3%	$49,860	$59,303
Performing and Creative Arts	1,594	282	2.0%	2.8%	150%	-8%	$19,401	$26,262
Art Education	77	21	3.2%	5.0%	46%	-7%	$11,005	$10,460
Declining Activities								
Fishing, Forestry & Hunting	522	-2	0.0%	-1.4%	999%	152%	$22,266	$36,362
Medical and Diagnostic Testing	202	-13	-0.6%	2.1%	123%	-33%	$40,519	$74,847
Business Consulting	495	-42	-0.8%	2.5%	44%	-16%	$35,688	$80,017
Technical Consulting Services	456	-41	-0.9%	2.8%	47%	-19%	$35,453	$80,017
Publishing & Information	249	-48	-1.8%	-1.4%	59%	-1%	$33,916	$121,033
Other Technology Mfg	39	-10	-2.2%	-0.3%	5%	-1%	$14,829	$117,645
Call Centers	16	-5	-2.9%	2.2%	5%	-3%	$47,712	$41,425
Alternative Power Generation	15	-37	-11.8%	-3.6%	37%	-52%	$131,148	$165,533
Chemical & Pharmaceutical Mfg	6	-47	-19.5%	0.0%	2%	-18%	$66,850	$137,351

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

Maui County

Adjusting for overlaps, Maui accounted for 17,927 of the state's targeted & emerging industry jobs in 2018, a 1.1% average annual increase from 2008. As shown in Table 21, among the six major sectors, three sectors were high performing in Maui County in the 2008 to 2018 period. Two sectors were in the Transitioning category and one sector lost jobs.

Table 21. Performance of the Major Groups of Maui County Targeted Industry Portfolio

Industry Groups	Jobs in Maui County		Avg. Ann. Job Growth (2008-2018p)		Concentration of Industry in Maui County Compared to U.S.		Avg Annual Earnings (2018p)	
	2018[P]	Chg 2008-2018p	Maui	U.S.	2018[P]	% Point Chg 2008-2018[P]	Maui	U.S.
Total Civilian Jobs	108,140	8,432	0.8%	1.0%	100%	0%	$47,709	$58,046
Total Targeted Jobs w/o Overlap	17,927	1,820	1.1%	1.4%	72%	-1%	$49,368	$70,266
Emerging Activities								
Education (Private)	743	264	4.5%	2.9%	37%	6%	$16,934	$42,274
Health & Wellness	6,521	2,181	4.2%	1.7%	73%	17%	$71,616	$68,400
Others	80	21	3.0%	0.8%	21%	4%	$60,283	$42,206
Transitioning Activities								
Technology Sector	2,151	187	0.9%	1.2%	34%	0%	$69,969	$111,582
Creative Sector	6,834	391	0.6%	1.9%	86%	-9%	$32,780	$76,464
Declining Activities								
Agribusiness	3,176	-1,102	-2.9%	0.6%	95%	-38%	$38,317	$44,202

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 22 shows the performance of detailed targeted & emerging industry groups in Maui. Among the detailed industry groups, 17 groups were high performing. The high-performing activities in the target industry portfolio accounted for about 7,397 jobs or 6.8% of all civilian jobs in 2018. Between 2008 and 2018, those groups generated 39.5% of the total gain in jobs for the civilian economy or about 3,326 new jobs.

About 13.2% of the high-performing activities had average annual earnings that exceeded $73,000 in 2018. By comparison, the earnings average for the civilian economy in 2018 was an estimated $47,709.

In 2018, five activities with 4,532 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, three 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 2008 to 2018 period. Jobs in the Declining industry groups totaled an estimated 7,426 in 2018, representing a loss of 2,037 jobs from 2008.

Table 22. Performance of the Detailed Maui County Targeted Industry Portfolio

Industry Groups	Jobs in Maui County		Avg. Ann. Job Growth (2008-2018p)		Concentration of Industry in Maui County Compared to U.S.		Avg Annual Earnings (2018p)	
	2018[p]	Chg 2008-2018p	Maui	U.S.	2018[p]	% Point Chg 2008-2018[p]	Maui	U.S.
Base-Growth Activities								
Music	530	143	3.2%	2.7%	439%	29%	$23,889	$40,066
Alternative Power Generation	112	89	16.9%	-3.6%	285%	245%	$128,534	$165,533
Marketing, Photography & Related	1,807	442	2.8%	2.1%	109%	10%	$25,211	$48,473
Emerging Activities								
Medical and Diagnostic Testing	149	52	4.4%	2.1%	90%	20%	$71,320	$74,847
Specialty Health Care Services	1,419	921	11.0%	4.6%	88%	41%	$57,486	$46,357
Apparel	63	23	4.8%	-3.0%	77%	42%	$69,492	$45,089
Biotechnology	73	62	21.6%	2.7%	67%	55%	$59,629	$186,702
Cultural Activities	72	25	4.3%	2.7%	61%	10%	$52,206	$55,176
Film, TV, Video Production/Distrib	108	66	9.9%	0.5%	47%	28%	$37,042	$100,078
Hospitals & Nursing Facilities	1,643	1,063	11.0%	0.7%	45%	28%	$72,063	$68,459
Business Consulting	473	111	2.7%	2.5%	41%	2%	$44,471	$80,017
Computer Sys. Design & Related	424	123	3.5%	2.8%	30%	3%	$76,243	$112,909
Computer Services and Software Publishers	412	133	4.0%	3.3%	28%	2%	$74,187	$123,116
Chemical & Pharmaceutical Mfg	30	27	27.1%	0.0%	12%	11%	$156,440	$137,351
Other Technology Mfg	52	32	10.4%	-0.3%	7%	5%	$62,284	$117,645
Agric. Packaging & Warehsg	5	2	6.6%	0.7%	5%	2%	$12,912	$56,800
Higher Education	26	12	6.2%	1.7%	2%	1%	$28,279	$56,670
Transitioning Activities								
Specialty Education	717	252	4.4%	4.5%	81%	1%	$16,522	$23,568
Technical Consulting Services	434	97	2.6%	2.8%	44%	0%	$45,328	$80,017
Design Services	320	19	0.6%	1.0%	112%	-2%	$30,509	$39,384
Agric. Support Services	180	4	0.2%	1.3%	56%	-5%	$43,793	$51,240
Health Practitioners	2,882	228	0.8%	1.9%	95%	-8%	$81,969	$82,068

Table 22. Performance of the Detailed Maui County Targeted Industry Portfolio (Cont.)

Industry Groups	Jobs in Maui County		Avg. Ann. Job Growth (2008-2018p)		Concentration of Industry in Maui County Compared to U.S.		Avg Annual Earnings (2018p)	
	2018[p]	Chg 2008-2018p	Maui	U.S.	2018[p]	% Point Chg 2008-2018[p]	Maui	U.S.
Declining Activities								
Art Education	85	-4	-0.5%	5.0%	50%	-34%	$17,190	$10,460
Performing and Creative Arts	2,228	-244	-1.0%	2.8%	209%	-89%	$21,578	$26,262
Fishing, Forestry & Hunting	222	-31	-1.3%	-1.4%	422%	14%	$20,324	$36,362
Call Centers	17	-3	-1.5%	2.2%	6%	-2%	$25,465	$41,425
Pharmacies	428	-83	-1.8%	-0.2%	107%	-15%	$47,153	$49,548
Engineering and Related Serv.	375	-88	-2.1%	0.1%	42%	-9%	$71,533	$95,130
Architecture	180	-52	-2.5%	-0.6%	95%	-18%	$49,473	$73,407
Information & Telecom Tech.	394	-135	-2.9%	1.0%	36%	-16%	$71,091	$130,949
Publishing & Information	252	-86	-2.9%	-1.4%	60%	-9%	$42,114	$121,033
Agric. Processing	535	-193	-3.0%	1.3%	55%	-28%	$43,528	$59,303
Engineering and Research & Development	282	-105	-3.1%	0.2%	32%	-12%	$82,944	$110,105
Farm Production	2,176	-835	-3.2%	0.3%	123%	-48%	$38,051	$31,935
Technology Equipment Distr.	15	-9	-4.9%	-0.2%	5%	-3%	$32,902	$123,600
Radio and Television Broadcasting	85	-56	-4.9%	-0.6%	59%	-31%	$49,295	$86,917
R&D Services (exc. Biotech.)	95	-63	-5.0%	0.3%	34%	-23%	$63,135	$124,749
Agric. Inputs	57	-50	-6.0%	0.6%	41%	-38%	$54,708	$71,521

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

Kauai County

Adjusting for overlaps, Kauai County accounted for 7,510 of the state's targeted & emerging industry jobs in 2018, a 0.9% annual increase from 2008. As shown in Table 23, among the six major sectors, two sectors were high performing in Kauai County in the 2008 to 2018 period. Two sectors were in the Transitioning category and two sectors lost jobs.

Table 23. Performance of the Major Groups of Kauai County Targeted Industry Portfolio

	Jobs in Kauai County		Avg. Ann. Job Growth (2008-2018p)		Concentration of Industry in Kauai County Compared to U.S.		Avg Annual Earnings (2018p)	
Industry Groups	2018[P]	Chg 2008-2018[P]	Kauai	U.S.	2018[P]	% Point Chg 2008-2018[P]	Kauai	U.S.
Total Civilian Jobs	47,582	4,181	0.9%	1.0%	100%	0%	$44,663	$58,046
Total Targeted Jobs w/o Overlap	7,510	663	0.9%	1.4%	69%	-3%	$48,234	$70,266
Base-Growth Activities								
Emerging Activities								
Others	45	16	4.5%	0.8%	27%	8%	$66,389	$42,206
Education (Private)	277	95	4.3%	2.9%	31%	4%	$18,980	$42,274
Transitioning Activities								
Health & Wellness	2,342	338	1.6%	1.7%	60%	0%	$75,270	$68,400
Creative Sector	2,666	315	1.3%	1.9%	77%	-4%	$30,748	$76,464
Declining Activities								
Agribusiness	1,913	-27	-0.1%	0.6%	129%	-9%	$37,780	$44,202
Technology Sector	892	-126	-1.3%	1.2%	32%	-9%	$67,775	$111,582

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 Kauai. Among the detailed industry groups with jobs in 2018, 14 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 3,175 jobs or 6.7% of all civilian jobs in 2018. Between 2008 and 2018, these groups generated 21.7% of the total gain in jobs for the civilian economy or about 907 new jobs.

In 2018, about 34.7% of the high-performing activities had average annual earnings that exceeded $73,000 by comparison; the earnings average for the overall civilian economy was lower at $44,663. Six activities with 2,235 jobs fell into the Transitioning category for 2018. 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 six activities grew faster than the civilian economy as a whole in terms of jobs.

Eighteen activities in the portfolio fell into the Declining industry category as the result of net job losses for the 2008 to 2018 period. Jobs in the Declining industry groups totaled an estimated 2,680 in 2018, representing a loss of 588 jobs from 2008.

Table 24. Performance of the Detailed Kauai County Targeted Industry Portfolio

Industry Groups	Jobs in Kauai County		Avg. Ann. Job Growth (2008-2018p)		Concentration of Industry in Kauai County Compared to U.S.		Avg Annual Earnings (2018p)	
	2018p	Chg 2008-2018p	Kauai	U.S.	2018p	% Point Chg 2008-2018p	Kauai	U.S.
Base-Growth Activities								
Fishing, Forestry & Hunting	191	30	1.7%	-1.4%	823%	229%	$17,258	$36,362
Music	95	65	12.3%	2.7%	179%	106%	$18,652	$40,066
Apparel	43	20	6.8%	-3.0%	117%	73%	$70,419	$45,089
Marketing, Photography & Related	827	196	2.7%	2.1%	114%	8%	$23,965	$48,473
Emerging Activities								
Design Services	124	18	1.6%	1.0%	99%	6%	$25,925	$39,384
Agric. Processing	350	137	5.1%	1.3%	82%	26%	$39,535	$59,303
Health Practitioners	1,091	304	3.3%	1.9%	81%	11%	$87,061	$82,068
Alternative Power Generation	11	9	21.0%	-3.6%	61%	55%	$102,628	$165,533
Agric. Inputs	28	5	2.0%	0.6%	46%	7%	$46,514	$71,521
Technical Consulting Services	190	55	3.5%	2.8%	44%	3%	$29,711	$80,017
Business Consulting	197	52	3.1%	2.5%	39%	3%	$29,311	$80,017
Other Technology Mfg	13	4	4.3%	-0.3%	4%	1%	$34,767	$117,645
Higher Education	13	9	12.1%	1.7%	3%	2%	$48,488	$56,670
Chemical & Pharmaceutical Mfg	3	3	NA	0.0%	2%	2%	$153,613	$137,351
Transitioning Activities								
Hospitals & Nursing Facilities	693	29	0.4%	0.7%	43%	-1%	$79,828	$68,459
Specialty Education	264	86	4.0%	4.5%	68%	-3%	$17,487	$23,568
Agric. Support Services	85	4	0.5%	1.3%	60%	-4%	$54,542	$51,240
Performing and Creative Arts	829	135	1.8%	2.8%	177%	-15%	$18,568	$26,262
Art Education	37	11	3.7%	5.0%	50%	-6%	$7,820	$10,460
Specialty Health Care Services	328	40	1.3%	4.6%	46%	-17%	$45,682	$46,357

Table 24. Performance of the Detailed Kauai County Targeted Industry Portfolio (Cont.)

Industry Groups	Jobs in Kauai County		Avg. Ann. Job Growth (2008-2018p)		Concentration of Industry in Kauai County Compared to U.S.		Avg Annual Earnings (2018p)	
	2018p	Chg 2008-2018p	Kauai	U.S.	2018p	% Point Chg 2008-2018p	Kauai	U.S.
Declining Activities								
Cultural Activities	54	0	0.0%	2.7%	103%	-30%	$33,794	$55,176
Technology Equipment Distr.	1	0	-0.4%	-0.2%	1%	0%	$20,825	$123,600
Computer Sys. Design & Related	168	-10	-0.6%	2.8%	27%	-10%	$72,419	$112,909
Film, TV, Video Production/ Distrib	48	-5	-0.9%	0.5%	48%	-7%	$34,549	$100,078
Pharmacies	186	-21	-1.1%	-0.2%	105%	-8%	$38,238	$49,548
Computer Services and Software Publishers	149	-20	-1.2%	3.3%	23%	-12%	$74,281	$123,116
Farm Production	1,256	-201	-1.5%	0.3%	162%	-28%	$39,124	$31,935
Information & Telecom Tech.	159	-26	-1.5%	1.0%	33%	-9%	$69,000	$130,949
R&D Services (exc. Biotech.)	58	-12	-1.8%	0.3%	47%	-10%	$111,603	$124,749
Engineering and Research & Development	126	-40	-2.7%	0.2%	33%	-11%	$100,897	$110,105
Medical and Diagnostic Testing	44	-14	-2.7%	2.1%	61%	-37%	$87,831	$74,847
Publishing & Information	74	-34	-3.7%	-1.4%	40%	-10%	$52,073	$121,033
Engineering and Related Serv.	140	-73	-4.1%	0.1%	36%	-18%	$65,855	$95,130
Radio and Television Broadcasting	36	-21	-4.6%	-0.6%	57%	-27%	$47,486	$86,917
Biotechnology	105	-63	-4.6%	2.7%	220%	-235%	$96,295	$186,702
Architecture	70	-44	-4.7%	-0.6%	84%	-43%	$40,828	$73,407
Agric. Packaging & Warehsg	3	-2	-4.8%	0.7%	6%	-4%	$12,674	$56,800
Call Centers	3	-4	-8.9%	2.2%	2%	-4%	$4,726	$41,425

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

CONCLUSIONS

This report is the ninth 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 - 2017 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 2018 projected data to illustrate how targeted industries have been performing after the recovery period of the recession.

Table 25 summarizes the best performing targeted industry groups for the 2008 to 2018 period in terms of average growth and national competitiveness. They all showed positive growth and at the same time outperformed the same activities nationally over the measurement period. Among the ten best performing industry groups, six groups had average earnings above the average for Hawaii's economy.

Table 25. Highest Performing Targeted Activities, 2008 to 2018

	Jobs in Hawaii		Avg. Ann. Job Growth (2008-2018p)		Concentration of Industry in Hawaii Compared to U.S.		Avg Annual Earnings (2018p)	
Industry Groups	2018[p]	Chg 2008-2018[p]	Hawaii	U.S.	2018[p]	% Point Chg 2008-2018[p]	Hawaii	U.S.
Total Civilian Jobs	876,415	68,093	0.8%	1.0%	100%	0%	$54,721	$58,046
Total Targeted Jobs w/o Overlap	163,807	19,269	1.3%	1.4%	82%	0%	$58,299	$70,266
Base-Growth and Emerging Activities								
Above Average State Earnings								
Alternative Power Generation	312	149	6.7%	-3.6%	98%	63%	$104,108	$165,533
Engineering and Related Serv.	6,385	156	0.2%	0.1%	89%	3%	$94,753	$95,130
Hospitals & Nursing Facilities	21,537	3,179	1.6%	0.7%	72%	8%	$84,067	$68,459
Agric. Inputs	526	107	2.3%	0.6%	46%	8%	$63,162	$71,521
Film, TV, Video Production/Distrib.	2,281	861	4.9%	0.5%	122%	44%	$57,935	$100,078
Specialty Health Care Services	13,992	6,687	6.7%	4.6%	108%	21%	$55,536	$46,357
Below Average State Earnings								
Cultural Activities	3,514	1,807	7.5%	2.7%	365%	138%	$51,272	$55,176
Agric. Support Services	1,621	301	2.1%	1.3%	62%	6%	$47,161	$51,240
Marketing, Photography & Related	13,294	2,736	2.3%	2.1%	99%	5%	$27,831	$48,473
Specialty Education	6,708	2,507	4.8%	4.5%	94%	4%	$20,884	$23,568

* For definition and data source, See Table 4