Hawaii's Targeted & Emerging Industries

2017 Update Report

Department of Business, Economic Development and Tourism

December 2017

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 stakeholders 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. Based on a review of regional economic methods, each activity was measured between 2002 and 2008 for both its contribution to job growth in Hawaii's economy and also how well the activity performed relative to its national counterpart. This period corresponded closely to the expansion phase of the most recent economic cycle for Hawaii and the U.S. in terms of employment.

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 2017. Table S-1 provides a comprehensive overview of performance among activities in the Targeted Industry Portfolio over the 2007 to 2017 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:

- Twelve 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, Design Services, Specialty Health Care Services, Film, TV, Video Production/Distribution, Agriculture Processing, Alternative Power Generation, Engineering and Related Services, Higher Education, Hospitals & Nursing Facilities, Agriculture Support Services, and Chemical & Pharmaceutical Manufacturing.
- The high-performing activities in the targeted industry portfolio (Base-growth and Emerging) accounted for about 66,025 jobs or 7.6% of total civilian jobs in 2017. However, between 2007 and 2017 those activities generated 27.8% of the total gain in jobs for the civilian economy, or about 14,100 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 2007 to 2017 period.
- Adjusting for overlaps, total targeted jobs reached 159,864 jobs in 2017, an increase of 15,547 jobs from 2007.

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

TABLE S-1. OVERALL PERFORMANCE OF THE TARGETED INDUSTRY PORTFOLIO

INDUSTRY GROUPS	JOBS IN HAWAII		AVG. ANN. JOB GROWTH (2007-2017^{p})		CONCENTRATION OF INDUSTRY IN HAWAII COMPARED TO U.S.		AVG ANNUAL EARNINGS (2017^{p})	
	2017^{p}	CHANGE 2007-2017^{p}	HAWAII	U.S.	2017^{p}	% Point CHNG 2007-2017^{p}	HAWAII	U.S.
TOTAL CIVILIAN JOBS	863,461	50,909	0.6%	1.0%	100%	0%	$53,596	$55,901
TOTAL TARGETED JOBS WITHOUT OVERLAP	159,864	15,547	1.0%	1.4%	82%	0%	$57,540	$68,811
Base-Growth Activities								
Cultural Activities	3,608	1,918	7.9%	2.8%	394%	160%	$49,106	$53,962
Fishing, Forestry & Hunting	1,888	190	1.1%	0.7%	361%	25%	$26,882	$35,205
Design Services	2,417	328	1.5%	0.6%	111%	13%	$28,899	$39,369
Specialty Health Care Services	13,425	6,112	6.3%	4.7%	109%	19%	$55,153	$45,584
Film, TV, Video Production/Distrib	2,036	456	2.6%	0.8%	107%	20%	$54,096	$97,684
Emerging Activities								
Agric. Processing	7,358	801	1.2%	1.0%	96%	5%	$49,826	$58,387
Alternative Power Generation	283	171	9.7%	-4.0%	93%	70%	$108,362	$160,679
Engineering and Related Serv.	6,307	70	0.1%	-0.1%	90%	5%	$94,520	$93,526
Higher Education	6,413	1,557	2.8%	1.8%	71%	9%	$28,099	$54,114
Hospitals & Nursing Facilities	20,612	2,175	1.1%	0.9%	70%	4%	$84,086	$66,778
Agric. Support Services	1,569	346	2.5%	1.8%	59%	6%	$45,121	$49,652
Chemical & Pharmaceutical Mfg	109	8	0.8%	-0.1%	5%	1%	$104,939	$135,549
Transitioning Activities								
Specialty Education	6,336	2,318	4.7%	4.8%	92%	2%	$20,517	$23,061
Marketing, Photography & Related	12,510	1,980	1.7%	1.9%	99%	2%	$27,642	$48,140
Business Consulting	4,975	681	1.5%	2.2%	58%	-2%	$62,673	$80,668
Technical Consulting Services	4,558	779	1.9%	2.6%	62%	-2%	$62,289	$80,449
Art Education	929	294	3.9%	5.0%	71%	-5%	$9,601	$10,271
Music	1,306	145	1.2%	2.4%	139%	-12%	$25,866	$39,975
Health Practitioners	20,959	737	0.4%	1.7%	89%	-9%	$83,956	$81,291
Medical and Diagnostic Testing*	1,739	21	0.1%	2.1%	134%	-23%	$62,633	$72,887
Computer Sys. Design & Related	6,491	114	0.2%	2.9%	60%	-16%	$84,266	$110,759
Computer Services and Software Publishers	4,963	245	0.5%	3.4%	43%	-12%	$89,085	$119,962
Declining Activities								
Other Technology Mfg	452	-3	-0.1%	-0.4%	8%	1%	$60,606	$114,555
Farm Production	13,450	-224	-0.2%	0.3%	94%	-1%	$31,228	$31,420
Engineering and Research & Development	5,394	-101	-0.2%	0.4%	77%	-2%	$100,395	$108,722
Agric. Inputs	402	-13	-0.3%	0.5%	37%	-2%	$70,233	$69,360
Pharmacies	3,749	-147	-0.4%	0.0%	115%	0%	$49,027	$49,006
Information & Telecom Tech.	5,609	-394	-0.7%	1.1%	63%	-10%	$86,484	$123,716
Performing and Creative Arts	8,922	-998	-1.1%	2.2%	111%	-37%	$21,392	$26,868
Technology Equipment Distr.	702	-86	-1.1%	-0.5%	30%	-1%	$109,193	$119,980
Architecture	1,994	-299	-1.4%	-1.0%	134%	0%	$80,215	$73,052
Apparel	1,138	-247	-1.9%	-2.8%	153%	18%	$54,333	$42,064
R&D Services (exc. Biotech.)	1,334	-410	-2.6%	0.8%	58%	-21%	$93,259	$123,228
Radio and Television Broadcasting	1,055	-336	-2.7%	-0.3%	87%	-20%	$68,346	$84,469
Biotechnology	474	-234	-3.9%	2.4%	58%	-48%	$81,192	$172,903
Call Centers	275	-139	-4.0%	2.7%	11%	-10%	$29,090	$39,902
Publishing & Information	2,120	-1,083	-4.0%	-1.3%	61%	-17%	$50,977	$109,532
Agric. Packaging & Warehsg	244	-155	-4.8%	0.4%	30%	-19%	$63,013	$55,800

Source: DBEDT based on data from Economic Modeling Specialists, Inc. (EMSI). Estimates for 2017 are based on early 2017 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.
*The 1,739 jobs in this industry were allocated to both the Technology and Health and Wellness Sector.

- About 62% of the high-performing activities had average annual earnings that exceeded $55,000 in 2017. Alternative Power Generation had the highest average earnings at $108,362. By comparison, the average earnings for the civilian economy in 2017 was $53,596 based on the projected 2017 estimate.
- Ten activities, which accounted for 64,768 jobs in 2017, 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 - Specialty Education, Marketing, Photography & Related, Business Consulting, Technical Consulting Services, Art Education, and Music - 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 50% of jobs in Transitioning category had average earnings over $83,000 in 2017. 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 2007 to 2017 period. Notable among these were Publishing & Information, Performing and Creative Arts, R&D Services (except Biotech.), Information & Telecom Technology, Architecture, Radio and Television Broadcasting, Apparel, and Biotechnology.
- Except for Information & Telecom Technology, Call Centers, Biotechnology, Performing and Creative Arts, 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 47,314 in 2017 (5.5% of all civilian jobs), representing a loss of about 4,870 jobs from 2007. About 39.7% 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 eighth report that updates the review of targeted industry performance at the state level to 2017 (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 1 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 1. TARGETED INDUSTRY PORTFOLIO

TECHNOLOGY SECTOR	AGRIBUSINESS
Alternative Power Generation	Agric. Inputs
Biotechnology	Agric. Packaging & Warehsg
Chemical & Pharmaceutical Mfg	Agric. Processing
Computer Sys. Design & Related	Agric. Support Services
Engineering and Related Serv.	Farm Production
Information & Telecom Tech.	Fishing, Forestry & Hunting
Medical Labs, Diagnostic and Imaging Centers	**HEALTH & WELLNESS**
Other Technology Mfg	Health Practitioners
R&D Services (exc. Biotech.)	Hospitals & Nursing Facilities
Technical Consulting Services	Medical Labs, Diagnostic and Imaging Centers
Technology Equipment Distr.	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/Distrib	
Marketing, Photography & Related	
Music	
Performing and Creative Arts	
Publishing & Information	
Radio and Television Broadcasting	

Measuring Targeted Industries

In this updated report, the industry groups of the targeted industry portfolio are presented by the major sectors shown in Table 1. 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 2. 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 2. 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

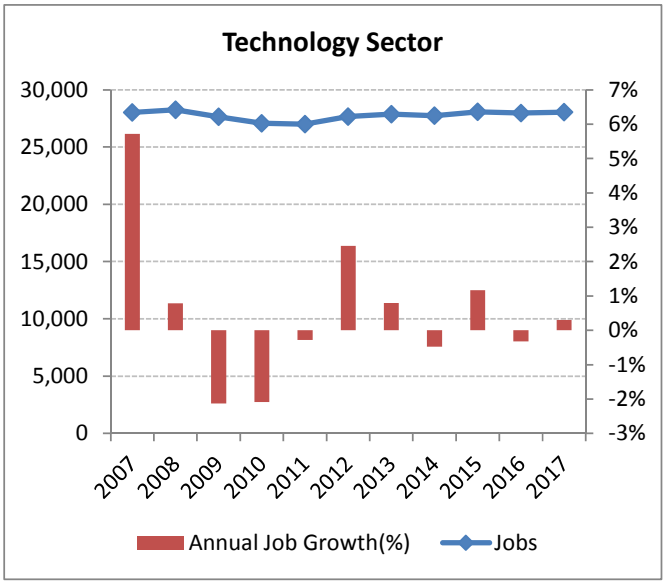
Jobs and earnings reported in this report include wage and salary positions and estimates for self-employed and proprietors. The data were obtained via a subscription to the data bases of Economic Modeling Specialists, Inc. (EMSI). EMSI uses data from Bureau of Labor Statistics, Bureau of Economic Analysis 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 28,059 jobs in 2017, or 3.2% of all civilian jobs in Hawaii including self-employed and sole proprietors. For the 2007 to 2017 period, the technology sector had an annual average 0.01% gain in jobs, 0.6 of a percentage point lower than the average annual growth for the civilian economy.



The 2017 estimate shows that the technology sector had a net gain of 85 jobs or 0.3% in 2017 from 2016. Technical Consulting Services added 87 jobs, followed by Information & Telecom Technology (48 jobs). The major categories with job losses in 2017 were R&D Services (except Biotechnology) (lost 37 jobs) and Biotechnology (lost 31 jobs).

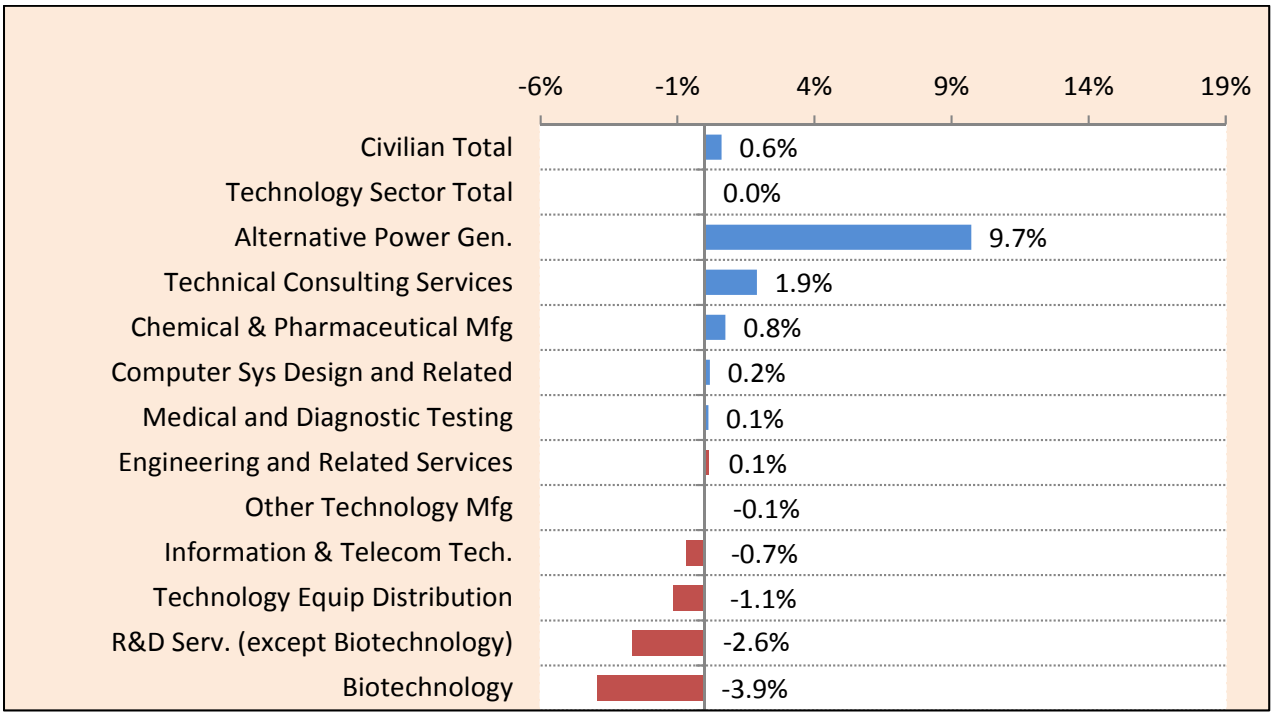
For the 2007 to 2017 period, Alternative Power Generation had the strongest job growth among the technology industry groups. However, it is important to note that total jobs for Alternative Power Generation is still relatively small at 283 jobs. Other high-performing activities in the technology sector were Technical Consulting Services, and Chemical & Pharmaceutical Manufacturing.

[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.

The five technology industry groups that lost jobs during the 2007 to 2017 period were Biotechnology, R&D Services, Technology Equipment Distribution, Information & Telecom Technology, and Other Technology Manufacturing.

TABLE 3. JOBS[1] IN TECHNOLOGY SECTOR, AVERAGE ANNUAL GROWTH OVER 2007-2017



	Annual Job Growth				Jobs in 2017p
	2007-2017p	2007-2009	2009-2012	2012-2017p	
Civilian Total	0.6%	-2.0%	0.6%	1.7%	863,461
Technology Sector Total	0.0%	-0.7%	0.0%	0.3%	28,059
Alternative Power Gen.	9.7%	19.0%	37.6%	-7.3%	283
Technical Consulting Services	1.9%	0.8%	2.9%	1.8%	4,558
Chemical & Pharmaceutical Mfg	0.8%	-0.6%	7.3%	-2.5%	109
Computer Sys Design and Related	0.2%	1.4%	-0.6%	0.1%	6,491
Medical and Diagnostic Testing	0.1%	-0.9%	0.3%	0.4%	1,739
Engineering and Related Services	0.1%	-1.9%	0.4%	0.7%	6,307
Other Technology Mfg	-0.1%	15.1%	1.2%	-6.3%	452
Information & Telecom Tech.	-0.7%	-6.4%	-2.6%	2.9%	5,609
Technology Equip Distribution	-1.1%	4.0%	-3.1%	-2.0%	702
R&D Serv. (except Biotechnology)	-2.6%	4.6%	-2.7%	-5.4%	1,334
Biotechnology	-3.9%	-2.3%	0.6%	-7.2%	474

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

Source: DBEDT based on data from Economic Modeling Specialists, Inc. (EMSI). "P" designates "projection" for 2017 based on early 2017 actual data and EMSI estimates.

Competitive Metrics

The sixth column of Table 4 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.

Except for Technical Consulting Services, most fast growing activities in the technology sector outperformed their national counterparts during the 2007-2017 period. Among these, Alternative Power Generation had the most significant gains, at 13.7 percentage points above the nation.

TABLE 4. HAWAII TECHNOLOGY SECTOR PERFORMANCE COMPARED WITH NATION

	Jobs (2017p)	Jobs per Estabs (2017p)	Avg. Annual Earnings (2017p)	Avg. Ann. Job Growth		When U.S.=100%		
				2007-2017p	above or below U.S.	Concen-tration[1]	Jobs per Estabs	Avg. Ann. Earning
Total Civilian	863,461	18.7	53,596	0.6%	-0.4%	100%	94%	96%
TECHNOLOGY SECTOR	**28,059**	**12.0**	**83,045**	**0.0%**	**-1.1%**	**57%**	**82%**	**76%**
Alternative Power Generation	283	9.2	108,362	9.7%	13.7%	93%	21%	67%
Technical Consulting Services	4,558	16.1	62,289	1.9%	-0.7%	62%	165%	77%
Chemical & Pharmaceutical Mfg	109	9.5	104,939	0.8%	0.9%	5%	14%	77%
Computer Sys. Design & Related	6,491	11.9	84,266	0.2%	-2.8%	60%	125%	76%
Medical and Diagnostic Testing	1,739	16.0	62,633	0.1%	-1.9%	134%	113%	86%
Engineering and Related Serv.	6,307	10.6	94,520	0.1%	0.2%	90%	77%	101%
Other Technology Mfg	452	16.5	60,606	-0.1%	0.4%	8%	33%	53%
Information & Telecom Tech.	5,609	11.6	86,484	-0.7%	-1.8%	63%	50%	70%
Technology Equipment Distr.	702	9.2	109,193	-1.1%	-0.6%	30%	64%	91%
R&D Services (exc. Biotech.)	1,334	10.7	93,259	-2.6%	-3.5%	58%	39%	76%
Biotechnology	474	12.3	81,192	-3.9%	-6.4%	58%	54%	47%

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

Source: see Table 3 for data source.

Although it had positive job growth over the 2007 to 2017 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 6,400 jobs.

Other Technology Manufacturing, Information & Telecom Technology, Technology Equipment Distribution, R&D Services (except Biotechnology), and Biotechnology jobs declined in Hawaii during the 2007-2017 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 2017, Hawaii's proportion of the state's workforce in technology was 57% of the proportion nationally. One noteworthy exception is Medical and Diagnostic Testing, which was 34% more concentrated in Hawaii than the nation overall.

The average earnings in Hawaii's technology sector was relatively high, at $83,045 in 2017. As a group, it was 55% 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 76% 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 2.

Three technology industry groups were in the high performing Base-Growth and Emerging categories by showing positive growth and also outperforming their national counterpart. These three industry groups were Alternative Power Generation, Engineering and Related Services, and Chemical & Pharmaceutical Manufacturing. 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 2007 to 2017 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 shares to the national industry groups.

Biotechnology, R&D Services, Technology Equipment Distribution, Information & Telecom Technology, and Other Technology Manufacturing fell into the Declining category for 2007 to 2017 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 Chemical & Pharmaceutical Mfg Engineering and Related Serv.	
Declining Activities	**Transitioning Activities**
Other Technology Mfg Information & Telecom Tech. Technology Equipment Distr. R&D Services (exc. Biotech.) Biotechnology	Technical Consulting Services Medical and Diagnostic Testing Computer Sys. Design & Related

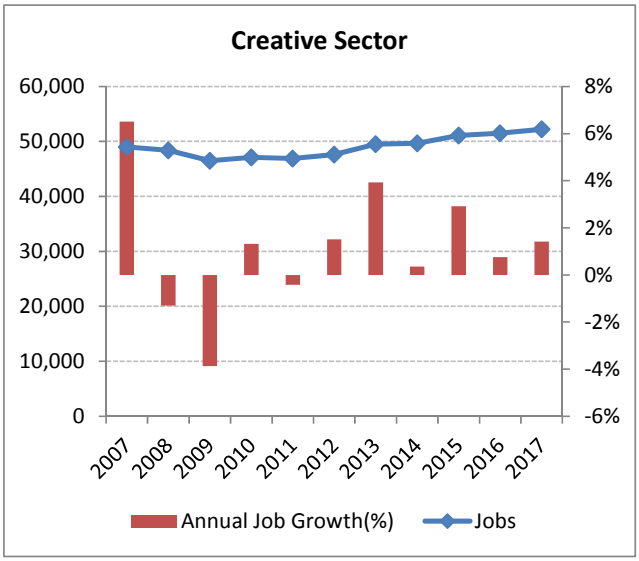
CREATIVE SECTOR

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 52,231 jobs in 2017, about 6.0% 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 41.0% of jobs in the sector in 2017.

As a group, the creative sector's job growth was about the same as the state civilian economy over the 2007 to 2017 period at 0.6% per year. The sector's negative growth was more than Hawaii's civilian economy during the 2007 to 2009 period. However, the growth rate of the creative sector from 2009 to 2017 was higher than that of the state's overall civilian economy.



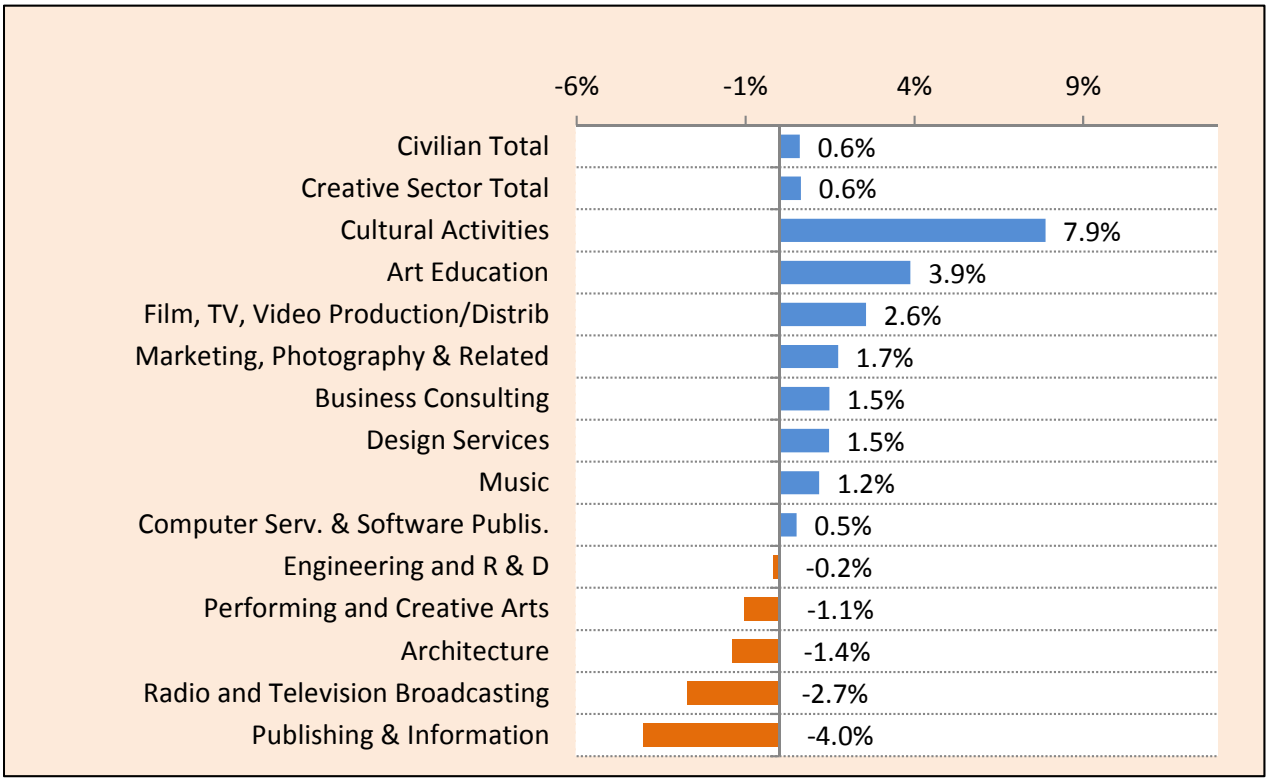
Cultural Activities grew jobs the most over the 2007 to 2017 period, 7.9% per year on average. Most job growth in Cultural Activities was achieved in the Museum category. Jobs in this category increased from 751 in 2007 to 2,111 in 2017. Art Education showed the second highest job growth with a 3.9% 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 than doubled from the 2009 level. However, during the overall 2010 to 2017 period, the number of jobs in Film/TV Production decreased from 2,632 jobs to 2,036 jobs.

Five groups in the sector, Publishing & Information, Radio/TV Broadcasting, Architecture, Performing and Creative Arts, and Engineering and R & D failed to gain jobs over the 2007 to 2017 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 3,202 in 2007 to 2,120 in 2017.

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

TABLE 5. JOBS IN CREATIVE SECTOR: AVERAGE ANNUAL GROWTH OVER 2007-2017



	Annual Job Growth				Jobs in
	2007-2017p	2007-2009	2009-2012	2012-2017p	2017p
Civilian Total	0.6%	-2.0%	0.6%	1.7%	863,461
Creative Sector Total	0.6%	-2.6%	0.8%	1.9%	52,231
Cultural Activities	7.9%	0.3%	21.5%	3.5%	3,608
Art Education	3.9%	-3.3%	3.4%	7.2%	929
Film, TV, Video Production/Distrib	2.6%	-16.3%	9.0%	7.2%	2,036
Marketing, Photography & Related	1.7%	-2.6%	1.5%	3.7%	12,510
Business Consulting	1.5%	2.0%	2.6%	0.6%	4,975
Design Services	1.5%	-6.1%	1.8%	4.5%	2,417
Music	1.2%	-4.2%	1.6%	3.2%	1,306
Computer Serv. & Software Publis.	0.5%	0.6%	-0.9%	1.3%	4,963
Engineering and R & D	-0.2%	1.2%	0.4%	-1.1%	5,394
Performing and Creative Arts	-1.1%	-3.6%	-2.1%	0.6%	8,922
Architecture	-1.4%	-5.1%	-2.6%	0.8%	1,994
Radio and Television Broadcasting	-2.7%	-4.5%	-3.7%	-1.4%	1,055
Publishing & Information	-4.0%	-6.9%	-8.4%	-0.1%	2,120

Source: see Table 3 for data source ("P" designates projection)

Competitive Metrics

Many activities in the creative sector lost competitive share to the U.S. economy over the 2007 to 2017 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 Design Services 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 about four times as concentrated in Hawaii. Music, Architecture, Performing and Creative Arts, Design Services, 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 $49,247 in 2017, 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 65% 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 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 6. HAWAII'S CREATIVE SECTOR – PERFORMANCE COMPARED WITH THE NATION

	Jobs (2017p)	Jobs per Estabs (2017p)	Avg. Annual Earnings (2017p)	Avg. Ann. Job Growth 2007-2017p	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	863,461	18.7	53,596	0.6%	-0.4%	100%	94%	96%
CREATIVE SECTOR	**52,231**	**20.3**	**49,247**	**0.6%**	**-1.1%**	**85%**	**137%**	**65%**
Cultural Activities	3,608	20.4	49,106	7.9%	5.1%	394%	138%	91%
Art Education	929	104.2	9,601	3.9%	-1.1%	71%	460%	93%
Film, TV, Video Production/Distrib	2,036	18.5	54,096	2.6%	1.8%	107%	97%	55%
Marketing, Photography & Related	12,510	36.2	27,642	1.7%	-0.2%	99%	192%	57%
Business Consulting	4,975	16.0	62,673	1.5%	-0.7%	58%	169%	78%
Design Services	2,417	34.6	28,899	1.5%	0.9%	111%	267%	73%
Music	1,306	38.7	25,866	1.2%	-1.2%	139%	224%	65%
Computer Services and Software Publishers	4,963	11.2	89,085	0.5%	-2.9%	43%	110%	74%
Engineering and Research & Development	5,394	10.0	100,395	-0.2%	-0.6%	77%	58%	92%
Performing and Creative Arts	8,922	46.7	21,392	-1.1%	-3.2%	111%	123%	80%
Architecture	1,994	12.5	80,215	-1.4%	-0.4%	134%	112%	110%
Radio and Television Broadcasting	1,055	14.6	68,346	-2.7%	-2.4%	87%	45%	81%
Publishing & Information	2,120	19.6	50,977	-4.0%	-2.8%	61%	102%	47%

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

Source: see Table 3 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 Design Services are rated as high performing for growth and competitiveness, compared with the same activities nationally.

Five other groups – Marketing, Photography & Related, Design Services, Business Consulting, Art Education, Music, 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 2007 to 2017 period.

Engineering and Research & Development, Performing and Creative Arts, Architecture, Radio and Television Broadcasting, and Publishing & Information were in the lowest performance group. All lost jobs over the 2007 to 2017 period.

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

AGRIBUSINESS

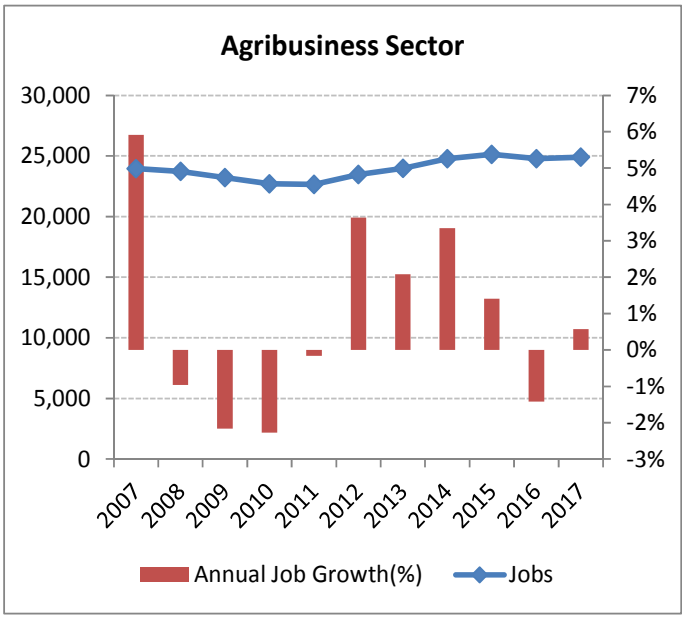
In 2017, the 24,911 jobs in Agribusiness were found in a range of inter-related industry groups that support the core farm sector. Most of the agribusiness jobs, including self-employed, are in Farm Production (54%). The second largest industry group in the sector was Agricultural Processing at 30% of 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 positive job growth over the 2007 to 2017 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 was relatively stable over the 2007 to 2017 period. From 2007 to 2011, jobs in this group decreased slightly. From 2011 to 2017 jobs increased in this group. From 2007 to 2017, Farm Production lost 224 jobs or 0.2% per year on average. Job loss in the Farm Production group was more than offset by job gains in the Agricultural Processing, which added 801 jobs over the same period.



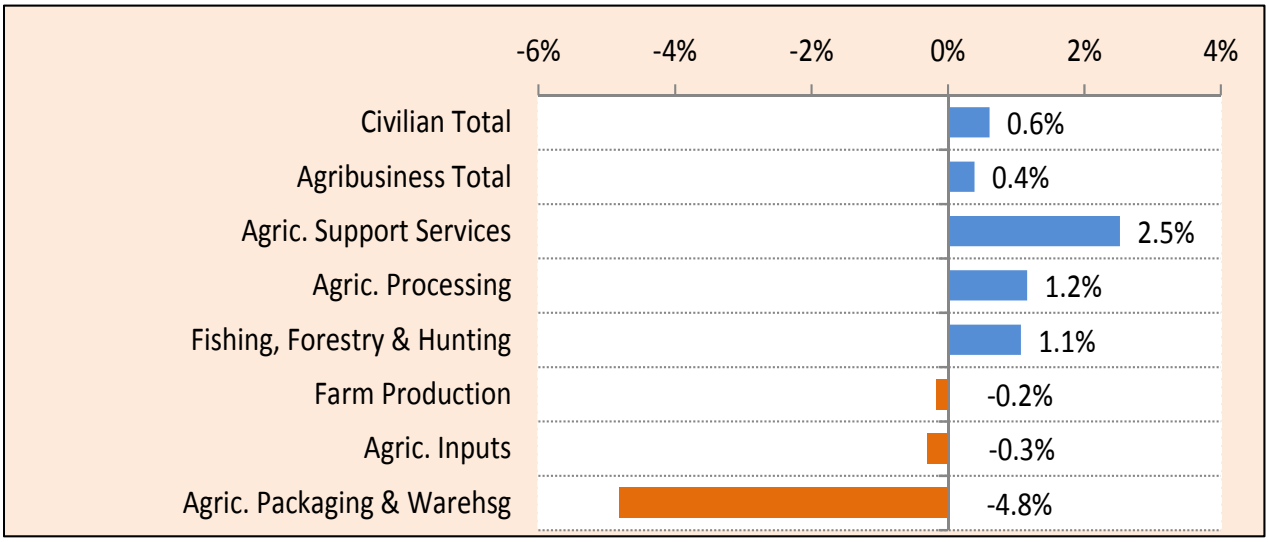
The best performing agribusiness industry group over the 2007 to 2017 cycle was the Agricultural Support Services, with a 2.5% average annual increase in jobs.

Other high-performing groups in agribusiness, during the 2007 to 2017 period, were Agricultural Processing, and Fishing & Forestry/Hunting. Job growth in these groups averaged 1.2%, and 1.1% per year, respectively, over this period.

In addition to Farm Production, Agricultural Packaging & Warehousing and Agricultural Inputs also lost jobs over the 2007 to 2017 period. During the same period, Job growth in Agricultural Packaging & Warehousing group averaged a negative 4.8% per year.

[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

TABLE 7. JOBS IN AGRIBUSINESS SECTOR: AVERAGE ANNUAL GROWTH OVER 2007-2017



	Annual Job Growth				Jobs in
	2007-2017p	2007-2009	2009-2012	2012-2017p	2017p
Civilian Total	0.6%	-2.0%	0.6%	1.7%	863,461
Agribusiness Total	0.4%	-1.6%	0.4%	1.2%	24,911
Agric. Support Services	2.5%	2.6%	1.5%	3.1%	1,569
Agric. Processing	1.2%	-3.0%	2.6%	2.0%	7,358
Fishing, Forestry & Hunting	1.1%	-0.6%	-1.3%	3.2%	1,888
Farm Production	-0.2%	-1.0%	-0.5%	0.4%	13,450
Agric. Inputs	-0.3%	2.1%	-4.2%	1.1%	402
Agric. Packaging & Warehsg	-4.8%	-21.9%	3.8%	-2.2%	244

Source: see Table 3 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 2007 to 2017 period.

Four of the five groups that gained jobs over the 2007 to 2017 period outperformed the same activities in the nation. Among these, Agricultural Support Services gained jobs at 2.5% annually, while its national counterpart gained 1.8% annually. Fishing, Forestry & Hunting, and Agricultural Processing outperformed the same activities for the nation overall by 0.4%, and 0.2% per year, respectively.

TABLE 8. HAWAII AGRIBUSINESS SECTOR PERFORMANCE COMPARED WITH NATION

	Jobs (2017p)	Jobs per Estabs (2017p)	Avg. Annual Earnings (2017p)	Avg. Ann. Job Growth 2007-2017p	Avg. Ann. Job Growth above or below U.S.	When U.S.=100% Concen-tration[1]	When U.S.=100% Jobs per Estabs	When U.S.=100% Avg. Ann. Earning
Total Civilian	863,461	18.7	53,596	0.6%	-0.4%	100%	94%	96%
AGRIBUSINESS	**24,911**	**26.2**	**38,207**	**0.4%**	**-0.3%**	**92%**	**79%**	**88%**
Agric. Support Services	1,569	22.2	45,121	2.5%	0.7%	59%	155%	91%
Agric. Processing	7,358	20.1	49,826	1.2%	0.2%	96%	39%	85%
Fishing, Forestry & Hunting	1,888	37.2	26,882	1.1%	0.4%	361%	107%	76%
Farm Production	13,450	32.0	31,228	-0.2%	-0.5%	94%	83%	99%
Agric. Inputs	402	14.2	70,233	-0.3%	-0.8%	37%	92%	101%
Agric. Packaging & Warehsg	244	15.9	63,013	-4.8%	-5.2%	30%	43%	113%

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

Source: see Table 3 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, three groups – Fishing, Forestry & Hunting, Agriculture Support Services, and Agricultural Processing – were in the high performance Base-Growth or Emerging categories for the 2007 to 2017 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, Agricultural Inputs, and Farm Production fell into the Declining category, declining 4.8%, 0.3%, and 0.2% per year, respectively over the 2007 to 2017 period.

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

HEALTH & WELLNESS

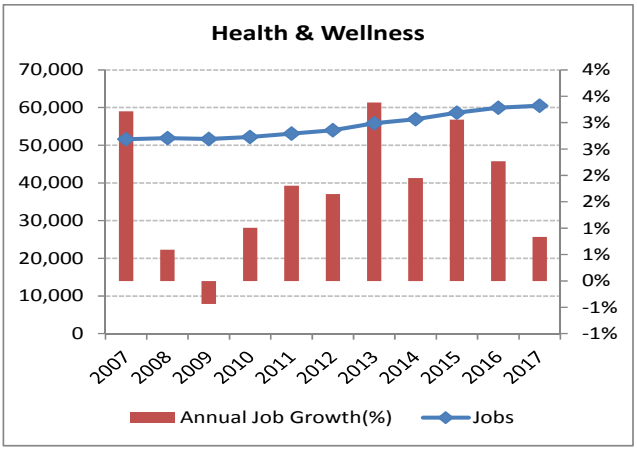
Health and Wellness has been of interest for several decades as a potential export activity. It has been proposed that first class medical and related health facilities in Hawaii could spur Health and Wellness tourism among the more affluent in Asian-Pacific countries that may not have the same level 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 60,484 jobs in 2017. 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, except Pharmacies, grew jobs over the 2007 to 2017 period.



Overall, the Health and Wellness sector grew faster than the rest of the economy during the 2007-2017 period. Except for 2009, this sector had job growth for each year during the 2007 to 2017 period.

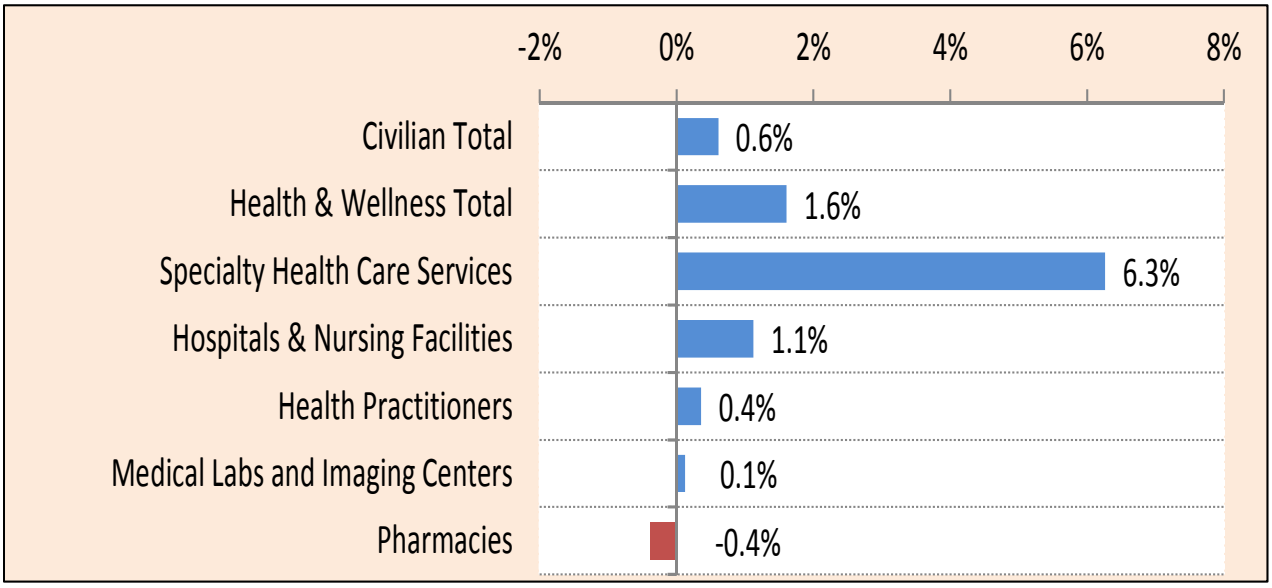
Pharmacies (a retailing industry which includes drug stores) experienced a sharp decline during the 2007-2010 contraction period. Pharmacies lost 559 jobs in the 3 year period. The reason for the decline is not clear. However, the filling of prescriptions through the internet, rather than in pharmacies, has become a more common practice in recent years.

Health Practitioners, that had lost jobs previous to 2007, showed modest growth since then including the contraction period. For the 2007 to 2017 period, this sector had an average job growth of 0.4% per year.

[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

The highest job growth was observed in Specialty Health Care, a relatively small industry group. Except for a modest job loss in 2008, this industry group achieved high growth during the 2007-2017 period. This subsector gained jobs at an annual average rate of 6.3% during the period.

TABLE 9. JOBS IN HEALTH AND WELLNESS: AVERAGE ANNUAL GROWTH OVER 2007-2017



	Annual Job Growth				Jobs in
	2007-2017p	2007-2009	2009-2012	2012-2017p	2017p
Civilian Total	0.6%	-2.0%	0.6%	1.7%	863,461
Health & Wellness Total	1.6%	0.1%	1.5%	2.3%	60,484
Specialty Health Care Services	6.3%	0.5%	3.8%	10.2%	13,425
Hospitals & Nursing Facilities	1.1%	0.5%	0.4%	1.8%	20,612
Health Practitioners	0.4%	0.9%	1.9%	-0.8%	20,959
Medical Labs and Imaging Centers	0.1%	-0.9%	0.3%	0.4%	1,739
Pharmacies	-0.4%	-6.6%	0.3%	1.8%	3,749

Source: see Table 3 for data source ("P" designates projection)

Competitive Metrics

Overall, the growth in Hawaii's Health and Wellness Sector was slightly below the national average for the same sector over the 2007 to 2017 period. The higher job growth in Hawaii's Specialty Health Care Services offset the lower job growth in other groups of the sector.

TABLE 10. HAWAII HEALTH AND WELLNESS SECTOR PERFORMANCE COMPARED WITH NATION

	Jobs (2017p)	Jobs per Estabs (2017p)	Avg. Annual Earnings (2017p)	Avg. Ann. Job Growth 2007-2017p	Avg. Ann. Job Growth above or below U.S.	When U.S.=100% Concen-tration[1]	When U.S.=100% Jobs per Estabs	When U.S.=100% Avg. Ann. Earning
Total Civilian	863,461	18.7	53,596	0.6%	-0.4%	100%	94%	96%
HEALTH & WELLNESS	**60,484**	**13.4**	**74,829**	**1.6%**	**-0.1%**	**87%**	**56%**	**111%**
Specialty Health Care Services	13,425	18.1	55,153	6.3%	1.6%	109%	45%	121%
Hospitals & Nursing Facilities	20,612	11.9	84,086	1.1%	0.3%	70%	5%	126%
Health Practitioners	20,959	11.9	83,956	0.4%	-1.4%	89%	109%	103%
Medical Labs and Imaging Centers	1,739	16.0	62,633	0.1%	-1.9%	134%	113%	86%
Pharmacies	3,749	20.4	49,027	-0.4%	-0.4%	115%	177%	100%

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

Source: see Table 3 for data source.

At $74,829, the average earnings for the Health & Wellness Sector, as a whole, exceeded the national average in 2017 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 groups in the sector had earnings either similar 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 0.4% per year over the 2007 to 2017 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

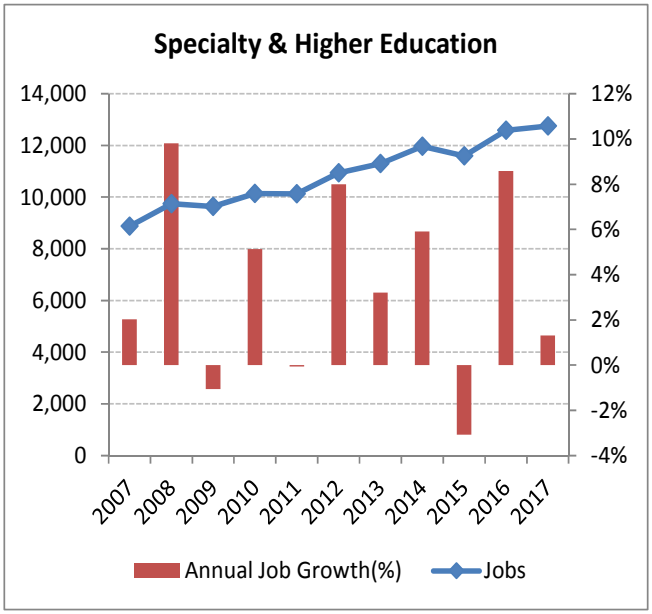
EDUCATION

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 foreign students in Hawaii. There is strong potential for Hawaii's higher education system to attract more students from around the world. However, while the number of foreign students in the U.S. overall has been increasing, the number of foreign students in Hawaii has been decreasing. For the 2016/17 school year, Hawaii had an estimated 3,855 full-time foreign students and this was a decrease over the previous year.[7] In contrast to Hawaii's decline, the number of foreign students in the U.S. overall increased to 1,078,822 full-time students, a 3.4 percent increase over the previous year. 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

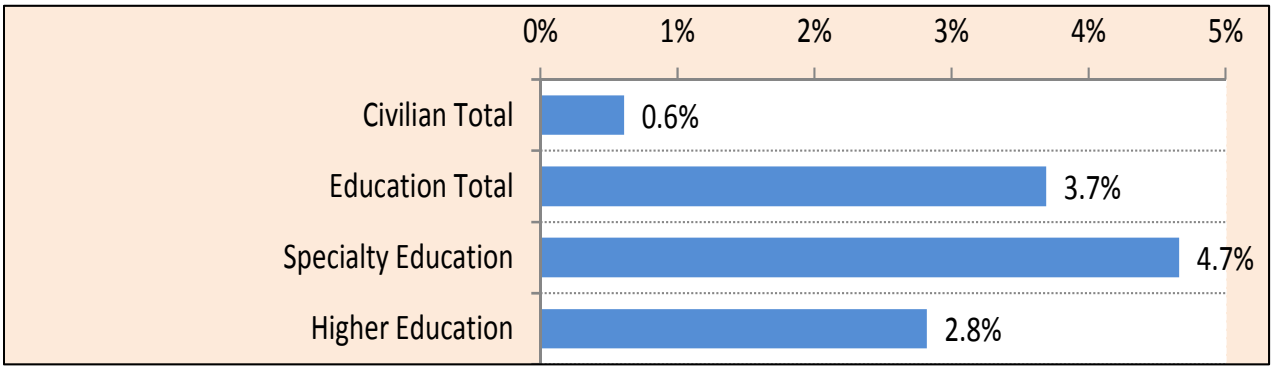
Private post-secondary and specialty education in Hawaii accounted for 12,749 jobs in 2017. These sectors together performed better than the rest of the Hawaii economy. Jobs grew 3.7% annually, adding 3,875 new jobs to the economy over the past ten years.

Both Specialty Education and Higher Education gained jobs over the 2007 to 2017 period. From 2007 to 2017, Specialty Education added jobs every year; while Higher Education lost jobs in 2009, 2011, 2015, and 2017. 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] Institute of International Education, Open Doors Fact Sheet for 2016/17 school year.

TABLE 11. JOBS IN HIGHER AND SPECIALTY EDUCATION: AVERAGE ANNUAL GROWTH OVER 2007-2017



	Annual Job Growth				Jobs in 2017p
	2007-2017p	2007-2009	2009-2012	2012-2017p	
Civilian Total	0.6%	-2.0%	0.6%	1.7%	863,461
Education Total	3.7%	4.2%	4.3%	3.1%	12,749
Specialty Education	4.7%	4.1%	5.2%	4.5%	6,336
Higher Education	2.8%	4.3%	3.5%	1.8%	6,413

Source: see Table 3 for data source ("P" designates projection)

Competitive Metrics

For Specialty Education, the high growth in jobs over the 2007 to 2017 period was about the same compared with the performance of the same activities nationally. As a result, the national competitive share of the Hawaii Specialty Education group remained about the same. For Higher Education, however, job growth in Hawaii was above the national level and Hawaii gained some national competitive share. Overall, the Hawaii Education Sector gained some national competitive share.

The Education sector also increased in terms of concentration. In 2007 the private Higher and Specialty Education activities together were about 72% as concentrated as the same activities nationally. By 2017, that concentration had increased to 80% of the national level.

The annual earnings of Specialty Education in Hawaii averaged $20,517 in 2017, 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 52% of the national earnings for the same activities in 2017.

TABLE 12. HAWAII PRIVATE EDUCATION SECTOR PERFORMANCE COMPARED WITH NATION

	Jobs (2017p)	Jobs per Estabs (2017p)	Avg. Annual Earnings (2017p)	Avg. Ann. Job Growth 2007-2017p	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	863,461	18.7	53,596	0.6%	-0.4%	100%	94%	96%
EDUCATION (PRIVATE)	**12,749**	**41.1**	**24,331**	**3.7%**	**0.7%**	**80%**	**97%**	**60%**
Specialty Education	6,336	48.7	20,517	4.7%	-0.1%	92%	234%	89%
Higher Education	6,413	35.6	28,099	2.8%	1.0%	71%	17%	52%

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

Source: see Table 3 for data source.

Overall Performance

During the 2007 to 2017 period, both the Higher Education group and the Specialty Education group increased jobs, but only the Higher Education group increased competitiveness and fell into the Emerging category; the Specialty Education group lost competitiveness and fell into the Transitioning category.

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

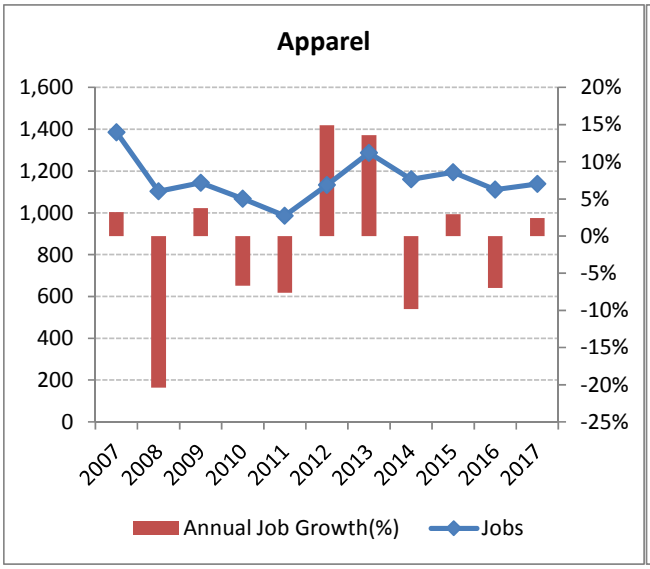
OTHER TARGETED ACTIVITIES

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 from 2007 to 2011, but increased jobs from 2011 to 2017. Jobs in Apparel decreased from 1,386 in 2007 to 986 in 2011, and then increased to 1,138 in 2017. From 2007 to 2017, jobs in the Apparel group decreased 1.9% 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. The current level of jobs for Call Center activity is only about 57% of the peak year.



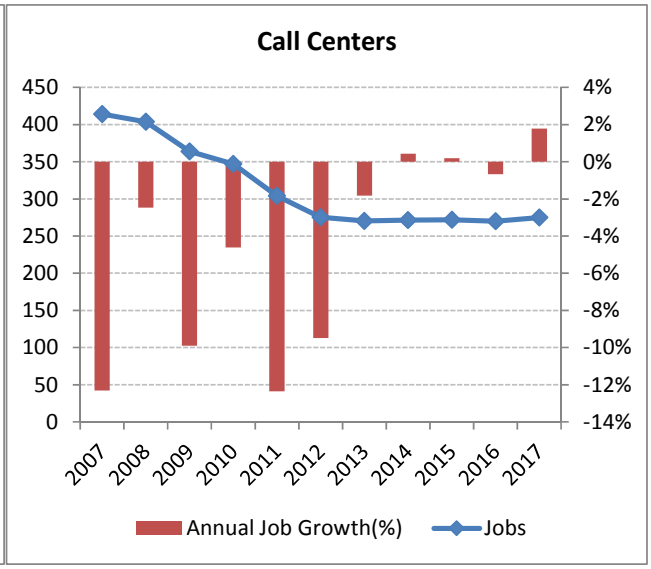
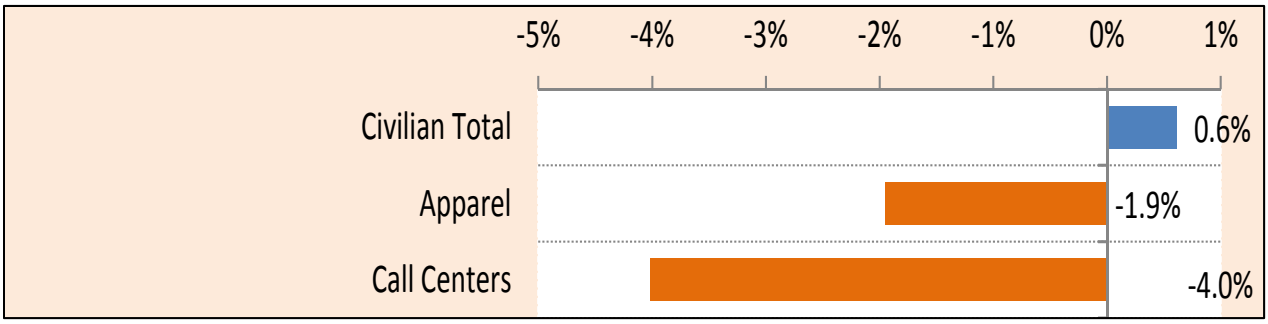


TABLE 13. JOBS IN APPAREL AND CALL CENTERS: AVERAGE ANNUAL GROWTH OVER 2007-2017



	Annual Job Growth				Jobs in
	2007-2017p	2007-2009	2009-2012	2012-2017p	2017p
Civilian Total	0.6%	-2.0%	0.6%	1.7%	863,461
Apparel	-1.9%	-9.1%	-0.3%	0.1%	1,138
Call Centers	-4.0%	-6.3%	-8.9%	0.0%	275

Source: see Table 3 for data source ("P" designates projection)

Competitive Metrics

In terms of job growth, Apparel decreased in both Hawaii and the nation. During the 2007-2017 period, Apparel in Hawaii lost 1.9% of its jobs annually, while the U.S. apparel industry lost 2.8% of its jobs annually. This partially reflects the global outsourcing trend for manufacturing in general.

During the 2007 to 2017 period, nationally, the Call Center industry had a steady job increase of 2.7% per year. In contrast, the Call Center industry in Hawaii experienced an average job decrease of 4.0% per year, during the same period.

The concentration level of Apparel in 2017 was 53% 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 2017, down from 21% in 2007.

The annual average earnings for Apparel and Call Center were $54,333 and $29,090 respectively in 2017. These earning levels were about 129% for Apparel and 73% for Call Centers of the average earnings nationally.

TABLE 14. HAWAII APPAREL AND CALL CENTERS PERFORMANCE COMPARED WITH NATION

	Jobs (2017p)	Jobs per Estabs (2017p)	Avg. Annual Earnings (2017p)	Avg. Ann. Job Growth 2007-2017p	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	863,461	18.7	53,596	0.6%	-0.4%	100%	94%	96%
Apparel	1,138	18.4	54,333	-1.9%	0.9%	153%	71%	129%
Call Centers	275	34.4	29,090	-4.0%	-6.7%	11%	58%	73%

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

Source: see Table 3 for data source.

Overall Performance

Based on the performance metrics, during the 2007 to 2017 period. Both the Apparel group and the Call Center group fell into the declining category, with an average job loss of 1.9% and 4.0% per year, respectively.

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

PERFORMANCE BY COUNTY

The following tables summarize the 2007 to 2017 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 159,864 in 2017. Honolulu accounted for about 71%, followed by Hawaii County at 14%, Maui at 10%, and Kauai at 5%. From 2007 to 2017, adjusting for overlaps, total jobs in the targeted & emerging industries increased by 15,547 jobs. Honolulu added 12,447 jobs, followed by Hawaii at 2,358 jobs, Kauai at 703 jobs, and Maui lost 198 jobs.

TABLE 15. JOBS AND JOB CHANGES FROM 2007 TO 2017 BY COUNTY

	2017 Jobs				
	State	Honolulu	Hawaii	Maui	Kauai
Total Civilian	863,461	606,665	105,043	106,228	45,525
Total Targeted w/o Overlap	159,864	113,205	22,709	16,310	7,232
TECHNOLOGY SECTOR	28,059	22,451	2,559	2,083	882
CREATIVE SECTOR	52,231	37,554	5,636	6,428	2,400
AGRIBUSINESS	24,911	10,387	9,053	3,566	1,898
HEALTH & WELLNESS	60,484	46,859	6,297	4,995	2,317
EDUCATION (PRIVATE)	12,749	10,640	1,037	676	244
OTHERS	1,413	1,148	110	107	48
	% in State 2017 Jobs				
	State	Honolulu	Hawaii	Maui	Kauai
Total Civilian	100%	70%	12%	12%	5%
Total Targeted w/o Overlap	100%	71%	14%	10%	5%
TECHNOLOGY SECTOR	100%	80%	9%	7%	3%
CREATIVE SECTOR	100%	72%	11%	12%	5%
AGRIBUSINESS	100%	42%	36%	14%	8%
HEALTH & WELLNESS	100%	77%	10%	8%	4%
EDUCATION (PRIVATE)	100%	83%	8%	5%	2%
OTHERS	100%	81%	8%	8%	3%
	Job Changes 2007-2017				
	State	Honolulu	Hawaii	Maui	Kauai
Total Civilian	50,909	39,886	3,790	5,118	2,115
Total Targeted w/o Overlap	15,547	12,447	2,358	-198	703
TECHNOLOGY SECTOR	35	-195	200	101	-97
CREATIVE SECTOR	3,230	2,955	371	-343	91
AGRIBUSINESS	945	1,322	216	-829	230
HEALTH & WELLNESS	8,898	6,744	1,232	692	300
EDUCATION (PRIVATE)	3,875	2,916	528	216	66
OTHERS	-386	-468	26	39	17

Source: see Table 3 for data source.

City & County of Honolulu

Adjusting for overlaps, Honolulu accounted for 113,205 of the state's targeted & emerging industry jobs in 2017, a 1.2% average annual increase from 2007. As shown in Table 16, among the six major sectors, two sectors were high performing Emerging activities in Honolulu County in the 2007 to 2017 period. Two sectors were in the Transitioning category, and two sectors were in the Declining category.

Table 16. Performance of the Major Groups of Honolulu Targeted Industry Portfolio

INDUSTRY GROUPS	JOBS IN HONOLULU		AVG. ANN. JOB GROWTH (2007-2017P)		CONCENTRATION OF INDUSTRY IN HONOLULU COMPARED TO U.S.		AVG ANNUAL EARNINGS (2017P)	
	2017P	CHANGE 2007-2017P	HONOLULU	U.S.	2017P	% Point CHNG 2007-2017P	HONOLULU	U.S.
TOTAL CIVILIAN JOBS	606,665	39,886	0.7%	1.0%	100%	0%	$57,180	$55,901
TOTAL TARGETED JOBS W/O OVERLAP	113,205	12,447	1.2%	1.4%	83%	1%	$63,177	$68,811
Emerging Activities								
EDUCATION (PRIVATE)	10,640	2,916	3.3%	3.0%	95%	5%	$25,289	$40,640
AGRIBUSINESS	10,387	1,322	1.4%	0.7%	55%	5%	$45,247	$43,207
Transitioning Activities								
HEALTH & WELLNESS	46,859	6,744	1.6%	1.7%	95%	1%	$78,013	$67,214
CREATIVE SECTOR	37,554	2,955	0.8%	1.7%	87%	-5%	$54,998	$75,563
Declining Activities								
TECHNOLOGY SECTOR	22,451	-195	-0.1%	1.2%	65%	-7%	$86,737	$108,930
OTHERS	1,148	-468	-3.4%	1.1%	50%	-27%	$47,779	$40,399

Source: see Table 3 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 17 shows the performance of detailed targeted & emerging industry groups in Honolulu. Among the 38 detailed industry groups, 13 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 56,151 jobs or 9.3% of all civilian jobs in 2017. Between 2007 and 2017, those groups generated 30.3% of the total gain in jobs for the civilian economy, or about 12,087 new jobs.

About 43% of the high-performing activities had average annual earnings that exceeded $86,000 in 2017. By comparison, the average earnings for the civilian economy in 2017 was $57,180 by the projected 2017 estimate.

In 2017, nine activities, which included 41,413 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 2007 to 2017 period. Jobs in the Declining industry groups totaled an estimated 30,136 in 2017, representing a loss of 3,688 jobs from 2007.

Table 17. Performance of the Detailed Honolulu Targeted Industry Portfolio

INDUSTRY GROUPS	JOBS IN HONOLULU		AVG. ANN. JOB GROWTH (2007-2017P)		CONCENTRATION OF INDUSTRY IN HONOLULU COMPARED TO U.S.		AVG ANNUAL EARNINGS (2017P)	
	2017P	CHANGE 2007-2017P	HONOLULU	U.S.	2017P	% Point CHNG 2007-2017P	HONOLULU	U.S.
Base-Growth Activities								
Cultural Activities	3,293	1,810	8.3%	2.8%	511%	217%	$49,176	$53,962
Film, TV, Video Production/Distrib	1,778	414	2.7%	0.8%	133%	26%	$56,787	$97,684
Specialty Health Care Services	10,267	4,571	6.1%	4.7%	118%	18%	$56,115	$45,584
Engineering and Related Serv.	5,354	220	0.4%	-0.1%	109%	8%	$98,647	$93,526
Design Services	1,585	219	1.5%	0.6%	103%	12%	$29,414	$39,369
Emerging Activities								
Agric. Processing	5,296	769	1.6%	1.0%	98%	8%	$50,071	$58,387
Higher Education	6,136	1,343	2.5%	1.8%	97%	9%	$28,374	$54,114
Hospitals & Nursing Facilities	18,136	1,958	1.1%	0.9%	88%	5%	$86,843	$66,778
Alternative Power Generation	134	81	9.8%	-4.0%	63%	47%	$86,175	$160,679
Agric. Support Services	1,006	249	2.9%	1.8%	54%	7%	$47,650	$49,652
Agric. Inputs	226	58	3.0%	0.5%	29%	7%	$88,520	$69,360
Farm Production	2,875	371	1.4%	0.3%	29%	4%	$32,778	$31,420
Chemical & Pharmaceutical Mfg	64	22	4.3%	-0.1%	5%	2%	$99,007	$135,549
Transitioning Activities								
Marketing, Photography & Related	8,596	1,333	1.7%	1.9%	97%	1%	$29,499	$48,140
Technical Consulting Services	3,518	727	2.3%	2.6%	68%	0%	$69,385	$80,449
Engineering and Research & Development	4,391	40	0.1%	0.4%	89%	0%	$102,399	$108,722
Business Consulting	3,886	661	1.9%	2.2%	65%	0%	$69,145	$80,668
Specialty Education	4,504	1,572	4.4%	4.8%	93%	-1%	$21,087	$23,061
Fishing, Forestry & Hunting	767	8	0.1%	0.7%	209%	-7%	$37,095	$35,205
Art Education	703	242	4.3%	5.0%	76%	-3%	$9,480	$10,271
Health Practitioners	14,460	271	0.2%	1.7%	87%	-11%	$88,834	$81,291
Music	586	28	0.5%	2.4%	89%	-15%	$30,537	$39,975
Declining Activities								
Medical and Diagnostic Testing	1,340	-10	-0.1%	2.1%	147%	-29%	$65,411	$72,887
Computer Services and Software Publishers	3,991	-68	-0.2%	3.4%	49%	-19%	$92,941	$119,962
Pharmacies	2,656	-45	-0.2%	0.0%	116%	2%	$49,800	$49,006
Computer Sys. Design & Related	5,470	-173	-0.3%	2.9%	72%	-24%	$86,776	$110,759
Performing and Creative Arts	4,828	-312	-0.6%	2.2%	86%	-24%	$21,288	$26,868
Information & Telecom Tech.	4,445	-330	-0.7%	1.1%	72%	-12%	$89,604	$123,716
Technology Equipment Distr.	669	-87	-1.2%	-0.5%	41%	-2%	$112,884	$119,980
Architecture	1,564	-214	-1.3%	-1.0%	150%	0%	$87,973	$73,052
Other Technology Mfg	352	-50	-1.3%	-0.4%	9%	-1%	$63,631	$114,555
Radio and Television Broadcasting	869	-260	-2.6%	-0.3%	103%	-23%	$73,561	$84,469
Apparel	912	-338	-3.1%	-2.8%	175%	0%	$53,144	$42,064
R&D Services (exc. Biotech.)	835	-338	-3.3%	0.8%	51%	-25%	$92,393	$123,228
Call Centers	236	-131	-4.3%	2.7%	13%	-13%	$27,065	$39,902
Agric. Packaging & Warehsg	216	-134	-4.7%	0.4%	38%	-24%	$65,475	$55,800
Publishing & Information	1,484	-940	-4.8%	-1.3%	61%	-24%	$56,743	$109,532
Biotechnology	268	-258	-6.5%	2.4%	46%	-66%	$79,703	$172,903

Source: see Table 3 for data source ("P" designates projection)

Hawaii County

Adjusting for overlaps, Hawaii County accounted for 22,709 of the state's targeted & emerging industry jobs in 2017, a 1.1% average annual increase from 2007. As shown in Table 18, among the six major sectors, three sectors were high performing in Hawaii County in the 2007 to 2017 period. Three sectors were in the Transitioning category and there were no job losses.

Table 18. Performance of the Major Groups of Hawaii County Targeted Industry Portfolio

INDUSTRY GROUPS	JOBS IN HAWAII COUNTY		AVG. ANN. JOB GROWTH (2007-2017^{p})		CONCENTRATION OF INDUSTRY IN HAWAII COMPARED TO U.S.		AVG ANNUAL EARNINGS (2017^{p})	
	2017^{p}	CHANGE 2007-2017^{p}	HAWAII COUNTY	U.S.	2017^{p}	% Point CHNG 2007-2017^{p}	HAWAII COUNTY	U.S.
TOTAL CIVILIAN JOBS	105,043	3,790	0.4%	1.0%	100%	0%	$43,070	$55,901
TOTAL TARGETED JOBS W/O OVERLAP	22,709	2,358	1.1%	1.4%	96%	3%	$39,529	$68,811
Emerging Activities								
EDUCATION (PRIVATE)	1,037	528	7.4%	3.0%	53%	20%	$22,866	$40,640
OTHERS	110	26	2.7%	1.1%	28%	5%	$63,213	$40,399
HEALTH & WELLNESS	6,297	1,232	2.2%	1.7%	74%	8%	$56,472	$67,214
Transitioning Activities								
TECHNOLOGY SECTOR	2,559	200	0.8%	1.2%	43%	1%	$62,754	$108,930
AGRIBUSINESS	9,053	216	0.2%	0.7%	275%	5%	$29,502	$43,207
CREATIVE SECTOR	5,636	371	0.7%	1.7%	76%	-3%	$35,106	$75,563

Source: see Table 3 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 19 shows the performance of detailed targeted & emerging industry groups in Hawaii County. Among the 38 detailed industry groups, 20 groups were high performing. The high-performing activities in the target industry portfolio accounted for about 8,053 jobs or 7.7% of all civilian jobs in 2017. Between 2007 and 2017, those groups generated 55.7% of the total gain in jobs for the civilian economy or about 2,111 new jobs.

About 14.7% of the high-performing activities had average annual earnings that exceeded $73,000 in 2017. By comparison, the earnings average for the civilian economy in 2017 was $43,070 by the projected 2017 estimate.

In 2017, ten activities with 14,974 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, eight of those activities grew faster in terms of jobs than the civilian economy as a whole.

Eight activities in the portfolio fell into the Declining industry category, as a result of net job losses for the 2007 to 2017 period. Jobs in the Declining industry groups totaled an estimated 1,408 in 2017, representing a loss of 262 jobs from 2007.

Table 19. Performance of the Detailed Hawaii County Targeted Industry Portfolio

INDUSTRY GROUPS	JOBS IN HAWAII COUNTY		AVG. ANN. JOB GROWTH (2007-2017P)		CONCENTRATION OF INDUSTRY IN HAWAII COMPARED TO U.S.		AVG ANNUAL EARNINGS (2017P)	
	2017P	CHANGE 2007-2017P	HAWAII COUNTY	U.S.	2017P	% Point CHNG 2007-2017P	HAWAII COUNTY	U.S.
Base-Growth Activities								
Fishing, Forestry & Hunting	620	94	1.6%	0.7%	973%	138%	$20,943	$35,205
Medical and Diagnostic Testing	264	55	2.4%	2.1%	167%	14%	$44,976	$72,887
Cultural Activities	185	67	4.6%	2.8%	166%	35%	$52,566	$53,962
Design Services	348	41	1.3%	0.6%	131%	16%	$25,936	$39,369
Specialty Education	951	486	7.4%	4.8%	113%	30%	$22,430	$23,061
Pharmacies	448	65	1.6%	0.0%	113%	22%	$44,581	$49,006
Specialty Health Care Services	1,568	725	6.4%	4.7%	104%	21%	$46,101	$45,584
Emerging Activities								
Apparel	90	33	4.6%	-2.8%	100%	55%	$66,350	$42,064
Architecture	179	10	0.6%	-1.0%	99%	20%	$56,412	$73,052
Agric. Support Services	296	63	2.4%	1.8%	92%	10%	$37,092	$49,652
Engineering and Research & Development	610	49	0.8%	0.4%	72%	7%	$92,839	$108,722
Information & Telecom Tech.	571	86	1.6%	1.1%	53%	6%	$73,325	$123,716
Engineering and Related Serv.	422	34	0.8%	-0.1%	50%	7%	$68,253	$93,526
Film, TV, Video Production/Distrib	111	28	2.9%	0.8%	48%	11%	$35,996	$97,684
Hospitals & Nursing Facilities	1,204	192	1.8%	0.9%	34%	5%	$59,691	$66,778
Biotechnology	27	9	3.9%	2.4%	27%	5%	$62,345	$172,903
Agric. Packaging & Warehsg	22	6	3.0%	0.4%	22%	6%	$51,749	$55,800
Higher Education	86	42	6.8%	1.8%	8%	3%	$27,658	$54,114
Technology Equipment Distr.	20	14	12.1%	-0.5%	7%	5%	$16,451	$119,980
Other Technology Mfg	30	14	6.7%	-0.4%	4%	2%	$14,581	$114,555
Transitioning Activities								
R&D Services (exc. Biotech.)	377	28	0.8%	0.8%	134%	7%	$101,565	$123,228
Farm Production	6,971	42	0.1%	0.3%	401%	14%	$26,639	$31,420
Art Education	86	32	4.7%	5.0%	54%	2%	$7,720	$10,271
Computer Services and Software Publishers	355	90	3.0%	3.4%	25%	0%	$60,175	$119,962
Agric. Processing	1,052	40	0.4%	1.0%	113%	0%	$50,352	$58,387
Marketing, Photography & Related	1,384	130	1.0%	1.9%	90%	-3%	$21,071	$48,140
Health Practitioners	2,813	195	0.7%	1.7%	98%	-4%	$63,851	$81,291
Computer Sys. Design & Related	355	58	1.8%	2.9%	27%	-1%	$55,452	$110,759
Music	181	19	1.1%	2.4%	158%	-10%	$23,344	$39,975
Performing and Creative Arts	1,399	36	0.3%	2.2%	144%	-20%	$19,761	$26,868
Declining Activities								
Technical Consulting Services	463	-17	-0.4%	2.6%	52%	-14%	$27,570	$80,449
Business Consulting	486	-40	-0.8%	2.2%	47%	-12%	$30,575	$80,668
Publishing & Information	247	-66	-2.3%	-1.3%	58%	-3%	$32,398	$109,532
Agric. Inputs	92	-27	-2.6%	0.5%	69%	-19%	$36,154	$69,360
Call Centers	20	-7	-3.0%	2.7%	6%	-4%	$48,747	$39,902
Radio and Television Broadcasting	65	-25	-3.2%	-0.3%	44%	-12%	$38,610	$84,469
Alternative Power Generation	24	-29	-7.5%	-4.0%	65%	-25%	$171,732	$160,679
Chemical & Pharmaceutical Mfg	6	-51	-20.0%	-0.1%	2%	-19%	$118,271	$135,549

Source: see Table 3 for data source ("P" designates projection)

Maui County

Adjusting for overlaps, Maui accounted for 16,310 of the state's targeted & emerging industry jobs in 2017, a 0.1% average annual increase from 2007. As shown in Table 20, among the six major sectors, only two sectors were high performing in Maui County in the 2007 to 2017 period. Two sectors were in the Transitioning category and two sectors lost jobs.

Table 20. Performance of the Major Groups of Maui County Targeted Industry Portfolio

INDUSTRY GROUPS	JOBS IN MAUI		AVG. ANN. JOB GROWTH (2007-2017^{p})		CONCENTRATION OF INDUSTRY IN MAUI COMPARED TO U.S.		AVG ANNUAL EARNINGS (2017^{p})	
	2017^{p}	CHANGE 2007-2017^{p}	MAUI	U.S.	2017^{p}	% Point CHNG 2007-2017^{p}	MAUI	U.S.
TOTAL CIVILIAN JOBS	106,228	5,118	0.5%	1.0%	100%	0%	$46,525	$55,901
TOTAL TARGETED JOBS W/O OVERLAP	16,310	-198	-0.1%	1.4%	68%	-7%	$47,163	$68,811
Emerging Activities								
OTHERS	107	39	4.6%	1.1%	27%	9%	$53,428	$40,399
EDUCATION (PRIVATE)	676	216	3.9%	3.0%	34%	4%	$15,931	$40,640
Transitioning Activities								
HEALTH & WELLNESS	4,995	692	1.5%	1.7%	58%	2%	$67,322	$67,214
TECHNOLOGY SECTOR	2,083	101	0.5%	1.2%	35%	-1%	$71,144	$108,930
Declining Activities								
CREATIVE SECTOR	6,428	-343	-0.5%	1.7%	85%	-16%	$34,150	$75,563
AGRIBUSINESS	3,566	-829	-2.1%	0.7%	107%	-27%	$40,388	$43,207

Source: see Table 3 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 21 shows the performance of detailed targeted & emerging industry groups in Maui. Among the detailed industry groups, 11 groups were high performing. The high-performing activities in the target industry portfolio accounted for about 3,062 jobs or 2.9% of all civilian jobs in 2017. Between 2007 and 2017, those groups generated 30.5% of the total gain in jobs for the civilian economy or about 1,561 new jobs.

About 31.8% of the high-performing activities had average annual earnings that exceeded $73,000 in 2017. By comparison, the earnings average for the civilian economy in 2017 was an estimated $46,525.

In 2017, ten activities with 6,925 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, seven 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 2007 to 2017 period. Jobs in the Declining industry groups totaled an estimated 7,733 in 2017, representing a loss of 2,396 jobs from 2007.

Table 21. Performance of the Detailed Maui County Targeted Industry Portfolio

INDUSTRY GROUPS	JOBS IN MAUI		AVG. ANN. JOB GROWTH (2007-2017[P])		CONCENTRATION OF INDUSTRY IN MAUI COMPARED TO U.S.		AVG ANNUAL EARNINGS (2017[P])	
	2017[P]	CHANGE 2007-2017[P]	MAUI	U.S.	2017[P]	% Point CHNG 2007-2017[P]	MAUI	U.S.
Base-Growth Activities								
Alternative Power Generation	63	58	29.0%	-4.0%	170%	161%	$139,535	$160,679
Design Services	373	76	2.3%	0.6%	139%	28%	$30,116	$39,369
Apparel	92	42	6.3%	-2.8%	100%	61%	$55,680	$42,064
Emerging Activities								
Specialty Health Care Services	1,287	809	10.4%	4.7%	85%	37%	$60,301	$45,584
Biotechnology	77	67	23.0%	2.4%	76%	64%	$61,888	$172,903
Cultural Activities	75	33	6.1%	2.8%	66%	20%	$49,511	$53,962
Film, TV, Video Production/Distrib	104	40	5.0%	0.8%	44%	16%	$34,774	$97,684
Computer Sys. Design & Related	469	194	5.5%	2.9%	35%	9%	$77,737	$110,759
Computer Services and Software Publishers	442	194	6.0%	3.4%	31%	8%	$78,056	$119,962
Other Technology Mfg	55	33	9.5%	-0.4%	8%	5%	$68,686	$114,555
Higher Education	26	13	7.6%	1.8%	2%	1%	$29,150	$54,114
Transitioning Activities								
Agric. Support Services	188	28	1.6%	1.8%	57%	1%	$46,558	$49,652
Fishing, Forestry & Hunting	266	11	0.4%	0.7%	413%	8%	$19,260	$35,205
Marketing, Photography & Related	1,625	215	1.4%	1.9%	105%	0%	$25,345	$48,140
Specialty Education	650	203	3.8%	4.8%	76%	-3%	$15,408	$23,061
Music	477	58	1.3%	2.4%	412%	-25%	$21,883	$39,975
Business Consulting	425	33	0.8%	2.2%	40%	-4%	$51,645	$80,668
Health Practitioners	2,687	89	0.3%	1.7%	93%	-9%	$76,142	$81,291
Technical Consulting Services	403	36	0.9%	2.6%	45%	-5%	$51,772	$80,449
Medical and Diagnostic Testing	103	0	0.0%	2.1%	64%	-11%	$52,705	$72,887
Art Education	102	6	0.6%	5.0%	63%	-29%	$13,358	$10,271
Declining Activities								
Publishing & Information	304	-44	-1.3%	-1.3%	71%	3%	$39,484	$109,532
Pharmacies	444	-73	-1.5%	0.0%	110%	-12%	$47,153	$49,006
Call Centers	16	-3	-1.8%	2.7%	5%	-3%	$40,239	$39,902
Agric. Processing	655	-142	-1.9%	1.0%	70%	-20%	$50,278	$58,387
Engineering and Related Serv.	380	-84	-2.0%	-0.1%	44%	-7%	$73,071	$93,526
Architecture	182	-44	-2.2%	-1.0%	100%	-7%	$49,417	$73,052
Radio and Television Broadcasting	87	-23	-2.3%	-0.3%	58%	-10%	$48,142	$84,469
Hospitals & Nursing Facilities	475	-132	-2.4%	0.9%	13%	-4%	$58,453	$66,778
Farm Production	2,392	-683	-2.5%	0.3%	136%	-36%	$39,056	$31,420
Information & Telecom Tech.	409	-143	-3.0%	1.1%	38%	-17%	$76,196	$123,716
Performing and Creative Arts	1,957	-769	-3.3%	2.2%	199%	-129%	$22,188	$26,868
Engineering and Research & Development	276	-119	-3.5%	0.4%	32%	-13%	$83,121	$108,722
Agric. Inputs	62	-35	-4.4%	0.5%	46%	-26%	$60,913	$69,360
R&D Services (exc. Biotech.)	84	-77	-6.3%	0.8%	30%	-29%	$54,353	$123,228
Technology Equipment Distr.	8	-15	-10.4%	-0.5%	3%	-5%	$57,194	$119,980
Agric. Packaging & Warehsg	4	-9	-10.9%	0.4%	4%	-9%	$13,292	$55,800

Source: see Table 3 for data source ("P" designates projection)

Kauai County

Adjusting for overlaps, Kauai County accounted for 7,232 of the state's targeted & emerging industry jobs in 2017, a 1.0% annual increase from 2007. As shown in Table 22, among the six major sectors, three sectors were high performing in Kauai County in the 2007 to 2017 period. Two sectors were in the Transitioning category and one sector lost jobs.

Table 22. Performance of the Major Groups of Kauai County Targeted Industry Portfolio

INDUSTRY GROUPS	JOBS IN KAUAI		AVG. ANN. JOB GROWTH (2007-2017^{p})		CONCENTRATION OF INDUSTRY IN KAUAI COMPARED TO U.S.		AVG ANNUAL EARNINGS (2017^{p})	
	2017^{p}	CHANGE 2007-2017^{p}	KAUAI	U.S.	2017^{p}	% Point CHNG 2007-2017^{p}	KAUAI	U.S.
TOTAL CIVILIAN JOBS	45,525	2,115	0.5%	1.0%	100%	0%	$44,770	$55,901
TOTAL TARGETED JOBS W/O OVERLAP	7,232	703	1.0%	1.4%	70%	1%	$49,149	$68,811
Base-Growth Activities								
AGRIBUSINESS	1,898	230	1.3%	0.7%	133%	14%	$37,108	$43,207
Emerging Activities								
OTHERS	48	17	4.5%	1.1%	28%	9%	$48,208	$40,399
EDUCATION (PRIVATE)	244	66	3.2%	3.0%	29%	2%	$17,169	$40,640
Transitioning Activities								
HEALTH & WELLNESS	2,317	300	1.4%	1.7%	63%	1%	$76,190	$67,214
CREATIVE SECTOR	2,400	91	0.4%	1.7%	74%	-6%	$30,198	$75,563
Declining Activities								
TECHNOLOGY SECTOR	882	-97	-1.0%	1.2%	34%	-6%	$71,360	$108,930

Source: see Table 3 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 23 shows the performance of detailed targeted & emerging industry groups in Kauai. Among the detailed industry groups with jobs in 2017, 13 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 4,557 jobs or 10.0% of all civilian jobs in 2017. Between 2007 and 2017, these groups generated 42.6% of the total gain in jobs for the civilian economy or about 902 new jobs.

In 2017, about 41% 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 $44,770. Eight activities with 1,783 jobs fell into the Transitioning category for 2017. 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. Seven of the eight activities grew faster than the civilian economy as a whole in terms of jobs.

Sixteen activities in the portfolio fell into the Declining industry category as the result of net job losses for the 2007 to 2017 period. Jobs in the Declining industry groups totaled an estimated 1,414 in 2017, representing a loss of 463 jobs from 2007.

Table 23. Performance of the Detailed Kauai County Targeted Industry Portfolio

INDUSTRY GROUPS	JOBS IN KAUAI		AVG. ANN. JOB GROWTH (2007-2017[P])		CONCENTRATION OF INDUSTRY IN KAUAI COMPARED TO U.S.		AVG ANNUAL EARNINGS (2017[P])	
	2017[P]	CHANGE 2007-2017[P]	KAUAI	U.S.	2017[P]	% Point CHNG 2007-2017[P]	KAUAI	U.S.
Base-Growth Activities								
Fishing, Forestry & Hunting	235	78	4.1%	0.7%	851%	269%	$17,816	$35,205
Alternative Power Generation	62	60	41.7%	-4.0%	388%	380%	$99,833	$160,679
Farm Production	1,211	45	0.4%	0.3%	161%	9%	$38,481	$31,420
Music	61	39	11.0%	2.4%	122%	70%	$18,384	$39,975
Marketing, Photography & Related	767	175	2.6%	1.9%	115%	13%	$21,168	$48,140
Apparel	44	15	4.4%	-2.8%	114%	61%	$51,540	$42,064
Emerging Activities								
Agric. Processing	350	130	4.7%	1.0%	87%	29%	$43,951	$58,387
Health Practitioners	998	182	2.0%	1.7%	80%	6%	$91,002	$81,291
Hospitals & Nursing Facilities	796	157	2.2%	0.9%	51%	9%	$73,424	$66,778
Chemical & Pharmaceutical Mfg	6	4	14.1%	-0.1%	5%	4%	$24,376	$135,549
Other Technology Mfg	11	6	7.7%	-0.4%	4%	2%	$40,849	$114,555
Higher Education	13	8	10.4%	1.8%	3%	2%	$40,344	$54,114
Call Centers	4	2	7.1%	2.7%	3%	1%	$5,930	$39,902
Transitioning Activities								
Art Education	38	14	4.8%	5.0%	55%	2%	$6,023	$10,271
Technical Consulting Services	170	29	1.9%	2.6%	44%	-1%	$32,756	$80,449
Business Consulting	173	23	1.4%	2.2%	38%	-1%	$32,575	$80,668
Agric. Support Services	79	6	0.8%	1.8%	56%	-3%	$39,616	$49,652
Performing and Creative Arts	737	48	0.7%	2.2%	175%	-18%	$19,827	$26,868
Specialty Education	231	58	2.9%	4.8%	63%	-9%	$15,882	$23,061
Cultural Activities	52	4	0.9%	2.8%	109%	-16%	$32,322	$53,962
Specialty Health Care Services	303	8	0.3%	4.7%	47%	-22%	$47,546	$45,584
Declining Activities								
Computer Sys. Design & Related	151	-1	-0.1%	2.9%	26%	-7%	$70,232	$110,759
Design Services	111	-9	-0.8%	0.6%	97%	-8%	$26,745	$39,369
Information & Telecom Tech.	168	-16	-0.9%	1.1%	36%	-6%	$69,114	$123,716
Pharmacies	187	-24	-1.2%	0.0%	109%	-8%	$47,150	$49,006
Computer Services and Software Publishers	127	-17	-1.3%	3.4%	21%	-11%	$73,279	$119,962
Agric. Inputs	22	-8	-3.3%	0.5%	37%	-14%	$51,848	$69,360
Publishing & Information	78	-34	-3.5%	-1.3%	43%	-8%	$44,421	$109,532
Engineering and Research & Development	109	-51	-3.8%	0.4%	30%	-13%	$99,752	$108,722
Engineering and Related Serv.	146	-78	-4.2%	-0.1%	39%	-18%	$72,883	$93,526
Film, TV, Video Production/Distrib	43	-23	-4.2%	0.8%	43%	-25%	$36,238	$97,684
Biotechnology	99	-55	-4.3%	2.4%	228%	-201%	$101,523	$172,903
Architecture	69	-50	-5.3%	-1.0%	89%	-43%	$47,546	$73,052
Medical and Diagnostic Testing	32	-24	-5.4%	2.1%	47%	-49%	$123,023	$72,887
R&D Services (exc. Biotech.)	35	-26	-5.4%	0.8%	29%	-23%	$105,822	$123,228
Radio and Television Broadcasting	34	-29	-5.9%	-0.3%	54%	-38%	$43,626	$84,469
Agric. Packaging & Warehsg	2	-19	-22.1%	0.4%	4%	-43%	$11,151	$55,800

Source: see Table 3 for data source ("P" designates projection)

CONCLUSIONS

This report is the eighth 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 - 2016 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 2017 projected data to illustrate how targeted industries have been performing after the recovery period of the recession.

Table 24 summarizes the best performing targeted industry groups for the 2007 to 2017 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 twelve best performing industry groups, six groups had average earnings above the average for Hawaii's economy.

TABLE 24. HIGHEST PERFORMING TARGETED ACTIVITIES, 2007 TO 2017

INDUSTRY GROUPS	JOBS IN HAWAII		AVG. ANN. JOB GROWTH (2007-2017^{p})		CONCENTRATION OF INDUSTRY IN HAWAII COMPARED TO U.S.		AVG ANNUAL EARNINGS (2017^{p})	
	2017^{p}	CHANGE 2007-2017^{p}	HAWAII	U.S.	2017^{p}	% Point CHNG 2007-2017^{p}	HAWAII	U.S.
TOTAL CIVILIAN JOBS	863,461	50,909	0.6%	1.0%	100%	0%	$53,596	$55,901
TOTAL TARGETED JOBS WITHOUT OVERLAP	159,864	15,547	1.0%	1.4%	82%	0%	$57,540	$68,811
Base-Growth and Emerging Activities								
Above Average State Earnings								
Alternative Power Generation	283	171	9.7%	-4.0%	93%	70%	$108,362	$160,679
Chemical & Pharmaceutical Mfg	109	8	0.8%	-0.1%	5%	1%	$104,939	$135,549
Engineering and Related Serv.	6,307	70	0.1%	-0.1%	90%	5%	$94,520	$93,526
Hospitals & Nursing Facilities	20,612	2,175	1.1%	0.9%	70%	4%	$84,086	$66,778
Specialty Health Care Services	13,425	6,112	6.3%	4.7%	109%	19%	$55,153	$45,584
Film, TV, Video Production/Distrib	2,036	456	2.6%	0.8%	107%	20%	$54,096	$97,684
Below Average State Earnings								
Agric. Processing	7,358	801	1.2%	1.0%	96%	5%	$49,826	$58,387
Cultural Activities	3,608	1,918	7.9%	2.8%	394%	160%	$49,106	$53,962
Agric. Support Services	1,569	346	2.5%	1.8%	59%	6%	$45,121	$49,652
Design Services	2,417	328	1.5%	0.6%	111%	13%	$28,899	$39,369
Higher Education	6,413	1,557	2.8%	1.8%	71%	9%	$28,099	$54,114
Fishing, Forestry & Hunting	1,888	190	1.1%	0.7%	361%	25%	$26,882	$35,205

* For definition and data source, see Table 3