

Hawaii's Targeted & Emerging Industries

2014 Update Report



Department of Business, Economic Development and Tourism
November 2014

This publication is 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.

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EXECUTIVE SUMMARY

In late 2009 DBEDT Research compiled and published a performance review of Hawaii's targeted industry portfolio.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 nationally. 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 preliminary data for 2014. Table S-1 provides a comprehensive overview of performance among activities in the Targeted Industry Portfolio over the 2004 to 2014 period. In the body of this report the activities will be examined in detail by their major sector groups such as technology, creative industries, and others.

Key observations from the updated examination of the portfolio are:

- Eleven activities were high performing, with positive job growth combined with a job growth rate that was higher than the nation for the same activity. Among those were Alternative Power Generation, Other Technology manufacturing, Cultural Activities, Chemical & Pharmaceutical manufacturing, Music, Business Consulting, Specialty Health Care Services, Farm Production, Agriculture Inputs, Agriculture Processing, and Design Services.
- Adjusting for overlaps, the high-performing activities in the target industry portfolio (Base-growth and Emerging) accounted for about 42,934 jobs or 5.1% of all civilian jobs in 2014. However, between 2004 and 2014 those activities generated 11.6% of the total gain in jobs for the civilian economy, or about 10,100 new jobs.
- Among the best performing activities, Other Technology Manufacturing, Cultural Activities, Specialty Health Care, Business Consulting, and Alternative Power Generation grew jobs over 5% per year over the 2004 to 2014 period. While Cultural Activities and Alternative Power Generation experienced significant ups and downs over the business cycle, the other three were relatively immune to the last recession and showed robust job growth throughout the measurement period.

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 (2004-2014 ^p)		CONCENTRATION OF INDUSTRY IN HAWAII COMPARED TO U.S.		AVG ANNUAL EARNINGS (2014 ^p)	
	2014 ^p	CHANGE 2004-2014 ^p	HAWAII	U.S.	2014 ^p	% Point CHNG 2004-2014 ^p	HAWAII	U.S.
TOTAL CIVILIAN JOBS	836,288	86,570	1.1%	1.0%	100%	0%	\$51,320	\$52,905
Base-Growth Activities								
Cultural Activities	3,455	1,935	8.6%	2.6%	402%	171%	\$42,555	\$50,095
Music	1,327	330	2.9%	1.5%	166%	21%	\$35,036	\$40,295
Alternative Power Generation	299	268	25.4%	-5.3%	100%	94%	\$162,977	\$152,159
Emerging Activities								
Agric. Processing	6,973	262	0.4%	0.1%	98%	2%	\$44,856	\$54,393
Farm Production	13,624	687	0.5%	0.3%	95%	1%	\$28,299	\$28,172
Design Services	1,979	284	1.6%	1.4%	94%	1%	\$28,119	\$36,203
Specialty Health Care Services	9,132	3,915	5.8%	5.5%	80%	2%	\$44,401	\$40,624
Business Consulting	5,013	2,015	5.3%	4.6%	62%	3%	\$61,546	\$74,118
Agric. Inputs	390	37	1.0%	0.6%	34%	1%	\$74,475	\$66,613
Other Technology Mfg	607	307	7.3%	0.0%	10%	5%	\$59,033	\$104,711
Chemical & Pharmaceutical Mfg	176	64	4.6%	-0.2%	9%	3%	\$87,661	\$132,459
Transitioning Activities								
Hospitals & Nursing Facilities	19,733	1,644	0.9%	0.9%	68%	-1%	\$74,266	\$60,564
Art Education	704	207	3.6%	3.6%	70%	-1%	\$13,717	\$13,874
Engineering and Research & Development	5,767	701	1.3%	1.4%	80%	-2%	\$91,792	\$103,736
Engineering and Related Serv.	6,115	441	0.8%	0.9%	86%	-2%	\$85,986	\$88,241
Information & Telecom Tech.	5,475	222	0.4%	0.6%	65%	-2%	\$84,315	\$109,727
Biotechnology	631	79	1.3%	1.6%	90%	-3%	\$72,031	\$142,286
Agric. Support Services	1,393	234	1.9%	2.1%	55%	-2%	\$42,505	\$49,225
Technical Consulting Services	4,314	1,709	5.2%	5.5%	62%	-2%	\$62,790	\$73,669
R&D Services (exc. Biotech.)	1,817	186	1.1%	1.6%	74%	-4%	\$83,947	\$117,573
Marketing, Photography & Related	10,693	545	0.5%	1.5%	91%	-10%	\$25,106	\$46,231
Higher Education	5,016	441	0.9%	1.9%	56%	-6%	\$35,635	\$49,929
Specialty Education	4,969	1,240	2.9%	4.0%	90%	-11%	\$28,815	\$29,019
Health Practitioners	21,726	1,711	0.8%	2.2%	94%	-15%	\$79,036	\$76,554
Medical and Diagnostic Testing	1,653	120	0.8%	2.5%	132%	-26%	\$63,248	\$69,190
Medical Labs and Imaging Centers	1,653	120	0.8%	2.5%	132%	-26%	\$63,248	\$69,190
Computer Sys. Design & Related	6,413	323	0.5%	3.0%	63%	-18%	\$81,866	\$99,249
Computer Services and Software Publishers	4,760	418	0.9%	3.5%	45%	-13%	\$87,828	\$107,438
Declining Activities								
Performing and Creative Arts	8,879	-104	-0.1%	2.2%	117%	-32%	\$16,094	\$26,098
Pharmacies	3,536	-157	-0.4%	0.3%	109%	-9%	\$44,696	\$45,824
Radio and Television Broadcasting	1,323	-61	-0.4%	-0.3%	109%	-2%	\$65,682	\$77,458
Technology Equipment Distr.	765	-59	-0.7%	-0.1%	32%	-2%	\$94,767	\$110,841
Architecture	1,906	-155	-0.8%	-1.1%	137%	3%	\$70,783	\$64,511
Agric. Packaging & Warehsg	248	-36	-1.3%	0.4%	30%	-6%	\$58,858	\$51,611
Film, TV, Video Production/Distrib	1,376	-316	-2.0%	-0.7%	82%	-13%	\$55,655	\$96,356
Publishing & Information	2,223	-874	-3.3%	-1.1%	63%	-16%	\$57,802	\$96,232
Fishing, Forestry & Hunting	1,321	-593	-3.6%	-2.0%	308%	-60%	\$19,618	\$36,380
Apparel	818	-729	-6.2%	-5.7%	123%	-7%	\$36,872	\$42,000
Call Centers	242	-244	-6.7%	3.3%	10%	-18%	\$20,471	\$36,053

Source: DBEDT based on data from Economic Modeling Specialists, Inc. (EMSI). Estimates for 2014 are based on early 2014 actual data and are also from EMSI.

- About 14% of the high-performing activities had average annual earnings that exceeded \$60,000 in 2014. Alternative Power Generation had the highest earnings average at \$162,977. By comparison, the average earnings for the civilian economy in 2014 were \$51,320 by the preliminary 2014 estimate.
- Seventeen activities, about 100,413 jobs (adjusting for overlaps) in 2014, 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, Art Education, Engineering and Research & Development, Biotechnology, Agriculture Support Services, and Technical Consulting Services - grew faster in terms of jobs than the civilian economy as a whole.
- The positive side of the Transitioning activities in the portfolio is that they did contribute to job growth in the economy. They were also an important source of high paying jobs. About 72% of jobs in Transitioning category had average earnings over \$70,000 in 2014. The concern is that they generally lost ground competitively to the same activities at the national level.
- Eleven activities in the portfolio fell into the Declining industry category as the result of net job losses for the 2004 to 2014 period. Notable among these were Publishing & Information, Apparel, Fishing, Forestry & Hunting, Film, TV, Video Production/Distribution, and Call Centers.
- Except for Call Centers, Performing and Creative Arts, Pharmacies, 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 groups totaled an estimated 22,637 in 2014 (2.7% of all civilian jobs), representing a loss of about 3,328 jobs from 2004. About 34.6% of jobs in the Declining industry had above average earnings for Hawaii's economy.
- 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 like tourism and defense activity and may be reflecting the ups and downs in 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 help economic developers and policy makers understand which targeted industries are achieving the expected potential and which are not.

INTRODUCTION

In 2009, 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 fifth report that updates the review of targeted industry performance at the state level to 2014 (preliminary data).

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.

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 and Diagnostic Testing	HEALTH & WELLNESS
Other Technology Mfg	Health Practitioners
R&D Services (exc. Biotech.)	Hospitals & Nursing Facilities
Technical Consulting Services	Medical Labs 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	

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 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 measure 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 in the state.

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.

Combining these performance measures together we attempt to group the activities in the portfolio 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 newer, 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. These are mostly relatively healthy economic activities, 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. The ups and downs of the local and national business cycles have a lot to do with such forward and backward movement of industries on the life cycle. However, over a longer period of time, the model should provide a fairly accurate picture of the performance of industries

TABLE 2. PERFORMANCE MAP CRITERIA (INDUSTRY LIFE CYCLE)

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

Data Sources

Jobs and earnings reported in this report include wage and salary positions and estimates for self-employed and proprietors. The data were obtained via 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.

The update report from 2012 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 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 2007 revision in NAICS. Facing the increased competition with new telecom services, many wired carriers chose to close or reduce the traditional wired services to expand the services with more market potential. As a result, a variety of services are often served by a single carrier these days and the change in the 2007 NAICS was a reflection of these market trends. This update report adjusted the earlier definition by applying the BLS approach to new NAICS codes.

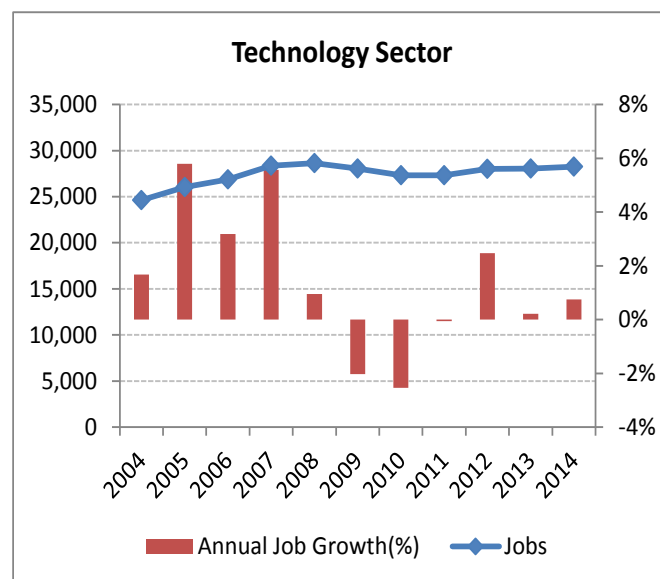
Size & Growth

With the adjustments described above, the technology sector accounted for 28,266 jobs in 2014, or 3.4% of all civilian jobs in Hawaii including self-employed and sole proprietors. For the 2004 to 2014 period, the technology sector had an annual average 1.4% gain in jobs, 0.3 of a percentage point higher than the average annual growth for the civilian economy.

The 2014 preliminary data shows that the technology sector added about 210 jobs or 0.7% in 2014. Information & Telecom Technology added 156 jobs, followed by Technical Consulting (67 jobs), and Other Technology Mfg. (34 jobs). The major categories with job losses in 2014 were Computer System Design and Related (lost 57 jobs) and Medical and Diagnostic Testing (lost 39 jobs).

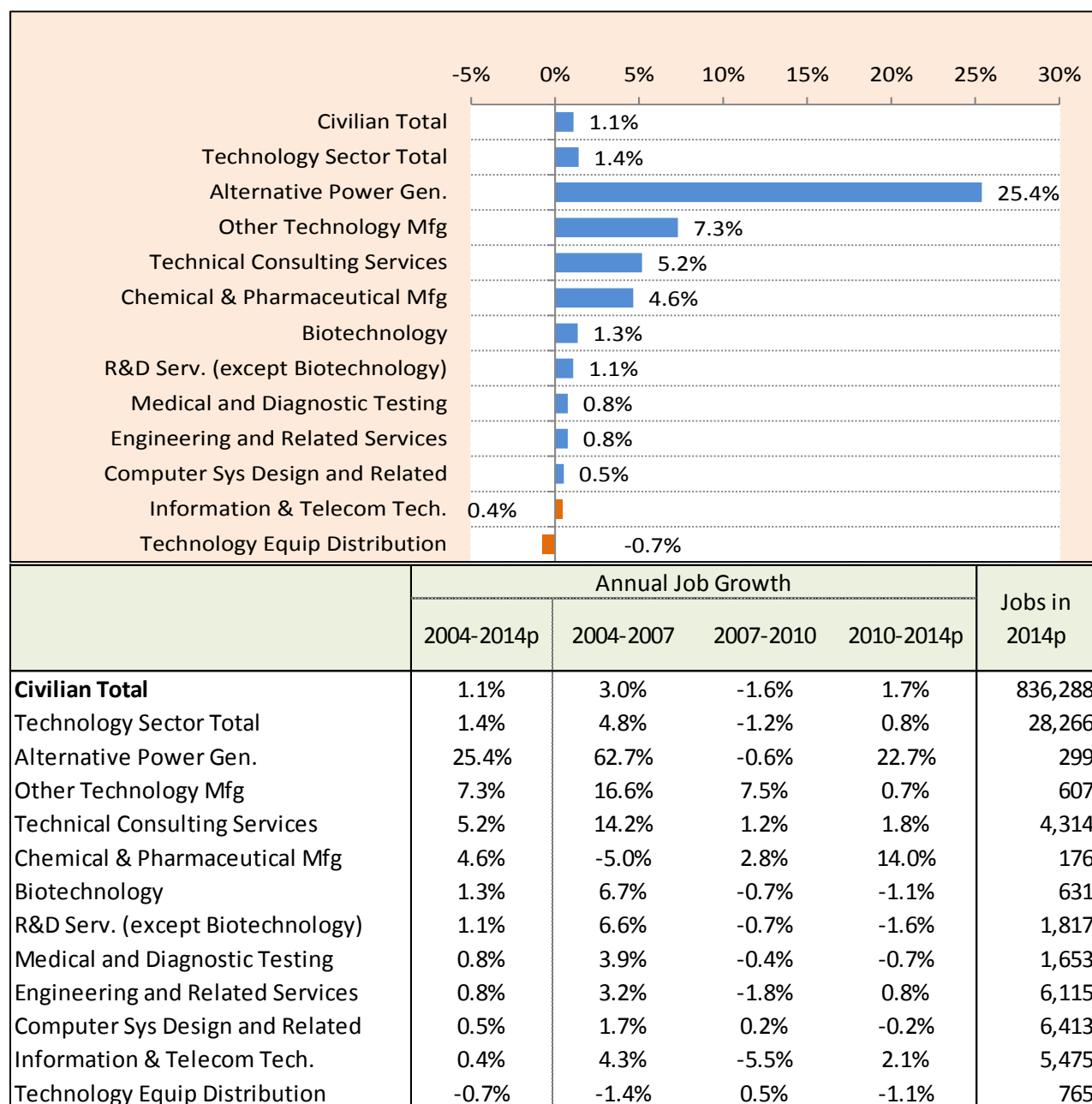
For the 2004 to 2014 period, Alternative Power Generation had the strongest job growth among the technology industry groups. Other high-performing activities in the technology sector were Other Technology Mfg., Technical Consulting Service, and Chemical & Pharmaceutical Mfg.

The only technology industry group that did not have job growth during the 2004 to 2014 period was Technology Equipment Distribution.



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.

TABLE 3. JOBS¹ IN TECHNOLOGY SECTOR, AVERAGE ANNUAL GROWTH OVER 2004-2014

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

Source: DBEDT based on data from Economic Modeling Specialists, Inc. (EMSI). "P" designates "projection for 2014 based on early 2014 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 at about the same rate as the same activities in the nation.

Except for Technology Consulting Services, most fast growing activities in the technology sector outperformed their national counterparts during the 2004-2014 period. Among these, Alternative Power Generation and Other Technology Mfg. had the most significant gains, averaging 30.7 and 7.3 percentage points, respectively.

TABLE 4. HAWAII TECHNOLOGY SECTOR PERFORMANCE COMPARED WITH NATION

	Jobs (2014p)	Jobs per Estabs (2014p)	Avg. Annual Earnings (2014p)	Avg. Ann. Job Growth		When U.S.=100%		
				2004- 2014p	above or below U.S.	Concen- tration ¹	Jobs per Estabs	Avg. Ann. Earning
Total Civilian	836,288	21.7	51,320	1.1%	0.1%	100%	109%	97%
TECHNOLOGY SECTOR	28,266	10.8	79,900	1.4%	-0.2%	59%	70%	80%
Alternative Power Generation	299	21.4	162,977	25.4%	30.7%	100%	47%	107%
Other Technology Mfg	607	12.6	59,033	7.3%	7.3%	10%	25%	56%
Technical Consulting Services	4,314	10.4	62,790	5.2%	-0.3%	62%	109%	85%
Chemical & Pharmaceutical Mfg	176	25.2	87,661	4.6%	4.9%	9%	34%	66%
Biotechnology	631	15.4	72,031	1.3%	-0.3%	90%	68%	51%
R&D Services (exc. Biotech.)	1,817	11.8	83,947	1.1%	-0.5%	74%	41%	71%
Medical and Diagnostic Testing	1,653	42.4	63,248	0.8%	-1.8%	132%	273%	91%
Engineering and Related Serv.	6,115	9.2	85,986	0.8%	-0.1%	86%	65%	97%
Computer Sys. Design & Related	6,413	7.6	81,866	0.5%	-2.4%	63%	76%	82%
Information & Telecom Tech.	5,475	17.5	84,315	0.4%	-0.2%	65%	70%	77%
Technology Equipment Distr.	765	11.1	94,767	-0.7%	-0.6%	32%	75%	85%

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

Source: see Table 3 for data source.

Although they had positive job growth over the 2004 to 2014 period, Computer System Design & Related Services, Engineering & Related Services, and Information & Telecom all lost competitive ground to their national counterparts. It is important to note these were all large groups with over 5000 jobs.

Technology Equipment Distribution jobs declined in both Hawaii and the nation during the 2004-2014 period, although the decline was slightly higher in Hawaii. Information Technology jobs experienced the lowest positive growth from 2004 to 2014 in Hawaii's technology sector. Three forces may have influenced this slow growth. 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 2014, Hawaii's proportion of the state's workforce in technology is 59% of the proportion nationally. One noteworthy exception is Medical and Diagnostic Testing, which is 32% more concentrated in Hawaii than the nation overall.

The average earnings in Hawaii's technology sector were relatively high, at \$79,900 in 2014. As a group, it was 56% higher than the average for Hawaii's economy. Average earnings of the eleven technology industry groups all exceeded the average for Hawaii's economy. However, workers in most

of the Hawaii technology sector groups were not paid as much as the U.S. average for the same activities. The average earnings in Hawaii's technology sector, as a whole, were only 80% of the average earnings paid nationally. The largest earnings gaps between Hawaii and the U.S. were found in Biotechnology, Other Technology Manufacturing, and Chemical & Pharmaceutical Manufacturing.

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, Other Technology Mfg, and Chemical & Pharmaceutical Mfg. 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.

Seven groups in the technology sector were in the Transitioning category for the 2004 to 2014 period. Including the four big activities in the technology sector - Technology Consulting, Computer & Related Services, Information & Telecom Technology, and Engineering & Related Services. While job growth was positive in these industry groups, they still lost some competitive shares to the national industry groups.

Technology Equipment Distribution fell into the Declining category for 2004 to 2014 due to job losses during the period. This group 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
Other Technology Mfg Chemical & Pharmaceutical Mfg	Alternative Power Gen.
Declining Activities	Transitioning Activities
Technology Equip Distribution	Biotechnology Engineering and Related Services Information & Telecom Tech. Technical Consulting Services R&D Serv. (except Biotechnology) Medical and Diagnostic Testing Computer Sys Design and Related

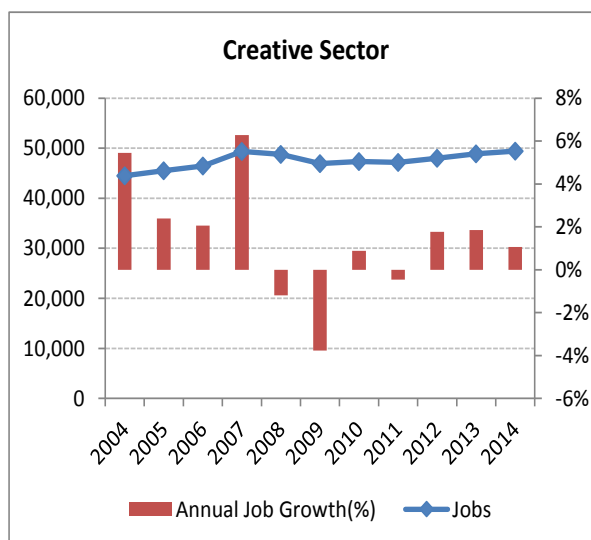
CREATIVE SECTOR

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 activity.

Size & Growth

The thirteen creative industry groups accounted for an estimated 49,403 jobs in 2014, 6% of all civilian jobs in Hawaii. Marketing/Photograph & Related, and Performing/Creative Arts were the two largest groups in the sector, accounting for about 40% of jobs in the sector.

As a group, the creative sector job growth was about the same as the state civilian economy over the 2004 to 2014 period at 1.1% per year. It grew jobs faster than Hawaii's civilian economy during the 2003 to 2007 expansion phase, and the impact of the 2007-2010 recession was felt less in the sector. However, the growth rate of the creative sector from 2010 to 2014 was lower than that of the state civilian economy.



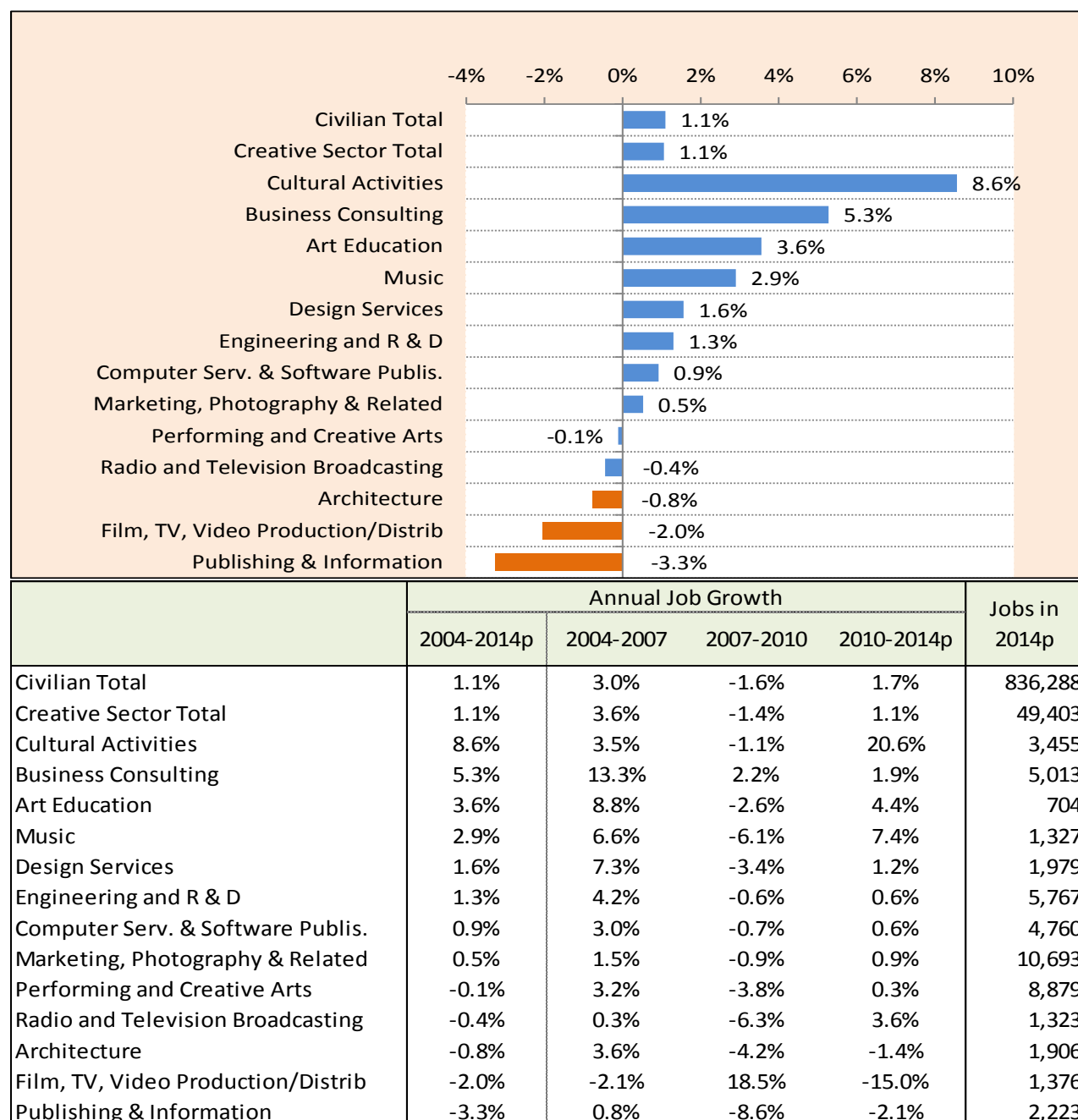
Cultural Activities grew jobs the most over the 2004 to 2014 period, 8.6% per year on average. Most job growth in Cultural Activities was achieved in the Museum category. Jobs in the Museum category increased from 692 in 2004 to 2,143 in 2014. Business Consulting showed the second highest job growth with a 5.3% average annual increase in jobs for the period.

Film/TV Production varied widely depending on the number of productions filmed during the year. With many new productions filmed in Hawaii in late 2010, the number of 2010 jobs more than doubled from the 2009 level. However, during the overall 2010 to 2014 period, the number of jobs in Film/TV Production decreased from 2,638 jobs to 1,376 jobs.

Five groups in the sector, Performing and Creative Arts, Architecture, Radio/TV Broadcasting, Film, TV, Video Production/Distribution, and Publishing & Information failed to gain jobs over the 2004 to 2014 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 3,173 in 2007 to 2,223 in 2014.

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 2004-2014



Source: see Table 3 for data source.

Competitive Metrics

Many activities in the creative sector lost competitive share to the U.S. economy over the 2004 to 2014 period. Only five among the thirteen groups in this sector outperformed their national counterparts during this period. In addition to Cultural Activities that had the highest growth, Business Consulting, Music, Architecture, 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 more than four times as concentrated in Hawaii. Performing and Creative Arts, Music, Radio and Television Broadcasting, and Architecture 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 \$47,628 in 2014, 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, however, the earnings were only 68% 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 slightly higher in Hawaii than the nation overall. The activities that showed significant earnings gaps between Hawaii and the U.S. include Film/TV Production, Performing and Creative Arts, Publishing & Information, and Marketing/Photography & Related.

TABLE 6. HAWAII'S CREATIVE SECTOR – PERFORMANCE COMPARED WITH THE NATION

	Jobs (2014p)	Jobs per Estabs (2014p)	Avg. Annual Earnings (2014p)	Avg. Ann. Job Growth		When U.S.=100%		
				2004- 2014p	above or below U.S.	Concen- tration ¹	Jobs per Estabs	Avg. Ann. Earning
Total Civilian	836,288	21.7	51,320	1.1%	0.1%	100%	109%	97%
CREATIVE SECTOR	49,403	14.0	47,628	1.1%	-0.9%	85%	93%	68%
Cultural Activities	3,455	46.7	42,555	8.6%	5.9%	402%	318%	85%
Business Consulting	5,013	10.4	61,546	5.3%	0.7%	62%	110%	83%
Art Education	704	13.0	13,717	3.6%	-0.1%	70%	69%	99%
Music	1,327	20.4	35,036	2.9%	1.4%	166%	144%	87%
Design Services	1,979	14.4	28,119	1.6%	0.2%	94%	113%	78%
Engineering and Research & Development	5,767	10.0	91,792	1.3%	-0.1%	80%	56%	88%
Computer Services and Software Publishers	4,760	6.1	87,828	0.9%	-2.5%	45%	57%	82%
Marketing, Photography & Related	10,693	19.9	25,106	0.5%	-1.0%	91%	103%	54%
Performing and Creative Arts	8,879	33.9	16,094	-0.1%	-2.4%	117%	88%	62%
Radio and Television Broadcasting	1,323	30.8	65,682	-0.4%	-0.1%	109%	96%	85%
Architecture	1,906	9.1	70,783	-0.8%	0.3%	137%	86%	110%
Film, TV, Video Production/Distrib	1,376	8.7	55,655	-2.0%	-1.4%	82%	49%	58%
Publishing & Information	2,223	15.8	57,802	-3.3%	-2.2%	63%	76%	60%

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. Four groups, Cultural Activities, Music, Business Consulting, and Design Services are all rated as high performing for growth and competitiveness with the same activities nationally.

Four other groups - Engineering and R&D, Marketing, Photography & Related, Art Education, 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 2004 to 2014 period.

Performing and Creative Arts, Radio/TV Broadcasting, Film, TV, Video Production and Distribution, Publishing & Information, and Architecture were in the lowest performance group. All lost jobs over the 2004 to 2014 period.

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

AGRIBUSINESS

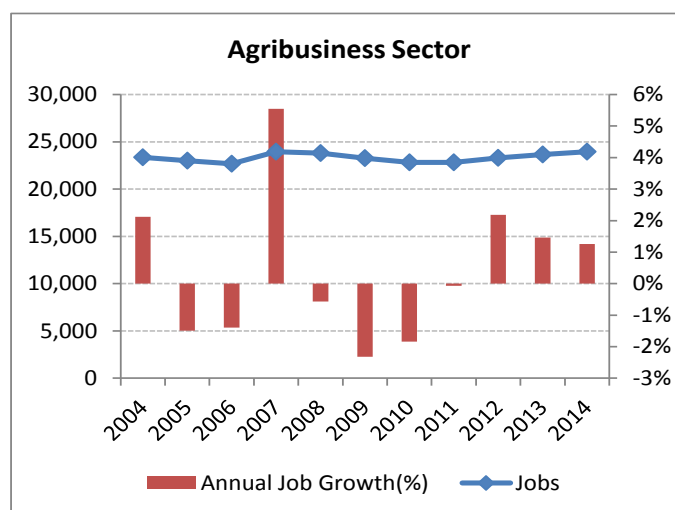
The 23,949 jobs in Agribusiness are found in 2014 in a range of inter-related industry groups that support and service the core farm sector. Most of the agribusiness jobs, including self-employed, are in actual farm production (57%). The second largest industry group in the sector is Agricultural Processing at 29% 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, have become the largest component in terms of value at 41.4% in 2010.⁵ This production value of seed corn was more than double 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 2004 to 2014 period. Although two of the six Agribusiness industry groups lost jobs over the period, job gains among four other groups exceeded the losses.

The largest activity in the agribusiness sector, Farm Production, has been a declining sector for an extended period of time in the past. The decline continued until 2006, and then in 2007 the sector increased job by over 8.6% over the previous year. Although it lost some jobs during the recession period, it was able to achieve a moderate job growth throughout the 2004 to 2014 period.



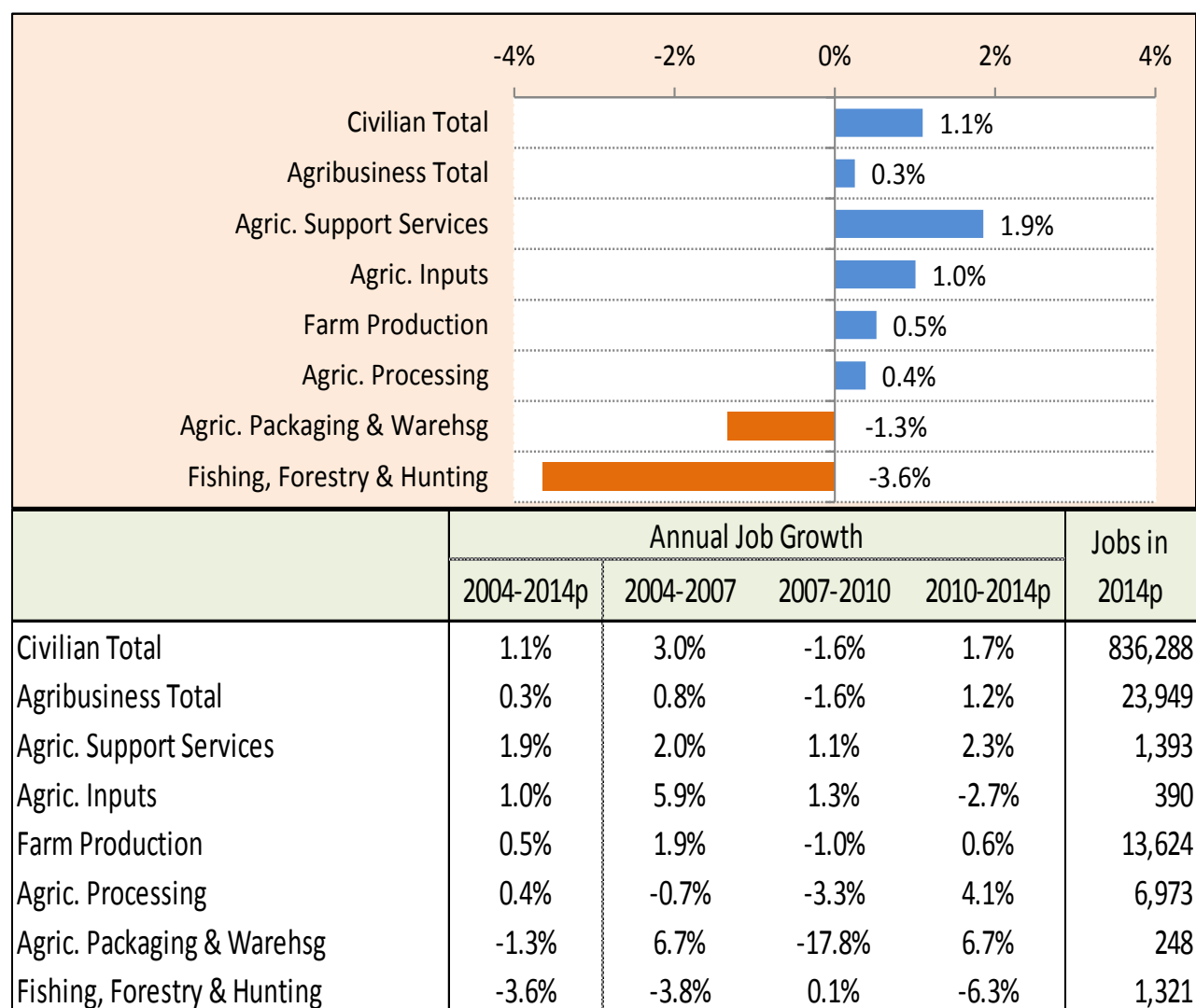
The best performing agribusiness industry group over the 2004 to 2014 cycle was the Agricultural Support Services, with a 1.9% average annual increase in jobs.

Other high-performing groups in agribusiness during the 2004 to 2014 period were Agricultural Inputs and Agricultural Processing. Job growth in these groups averaged 1.0% and 0.4% per year, respectively, over this period.

Fishing & Forestry/Hunting and Agricultural Packaging & Warehousing both lost jobs over the 2004 to 2014 period. Job growth in these groups averaged a negative 3.6% and a negative 1.3% per year, respectively over this period.

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 2004-2014



Source: see Table 3 for data source.

Competitive Metrics

Competitive metrics show that the comparable U.S. agricultural sector also experienced a slight job gain over the 2004 to 2014 period.

Three of the four groups that gained jobs over the 2004 to 2014 period outperformed the same activities in the nation. Among these, Agricultural Inputs gained jobs 1.0% annually, while its national counterpart gained 0.6% annually. Farm Production and Agricultural Processing outperformed the same activities in the nation by 0.2% per year. Fishing, Forestry & Hunting and Agricultural Packaging & Warehousing lost jobs over the period and the decrease exceeded the same category nationally.

TABLE 8. HAWAII AGRIBUSINESS SECTOR PERFORMANCE COMPARED WITH NATION

	Jobs (2014p)	Jobs per Estabs (2014p)	Avg. Annual Earnings (2014p)	Avg. Ann. Job Growth		When U.S.=100%		
				2004- 2014p	above or below U.S.	Concen- tration ¹	Jobs per Estabs	Avg. Ann. Earning
Total Civilian	836,288	21.7	51,320	1.1%	0.1%	100%	109%	97%
AGRIBUSINESS	23,949	29.2	34,535	0.3%	-0.1%	90%	86%	87%
Agric. Support Services	1,393	13.9	42,505	1.9%	-0.3%	55%	101%	86%
Agric. Inputs	390	11.5	74,475	1.0%	0.4%	34%	71%	112%
Farm Production	13,624	38.2	28,299	0.5%	0.2%	95%	95%	100%
Agric. Processing	6,973	27.2	44,856	0.4%	0.2%	98%	49%	82%
Agric. Packaging & Warehsg	248	20.7	58,858	-1.3%	-1.7%	30%	56%	114%
Fishing, Forestry & Hunting	1,321	21.3	19,618	-3.6%	-1.7%	308%	76%	54%

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 – Agricultural Inputs, Farm Production, and Agricultural Processing – were in the high performance Base-Growth or Emerging categories for the 2004 to 2014 period.

Farm Production, which was categorized as a declining sector previously, climbed into the Emerging category for the 2004 to 2014 period by adding about 1,092 jobs in 2007. The 2007 job gain in the sector took place mostly in Crop Production.

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 showing a 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 coupled with the sketchiness of jobs data for key areas like seed corn and other crop areas make it difficult to effectively monitor Farming for performance purposes.

Fishing, Forestry & Hunting and Agricultural Packaging & Warehousing fell into the Declining category, declining 3.6% and 1.3% per year respectively over the 2004 to 2014 period.

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

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.

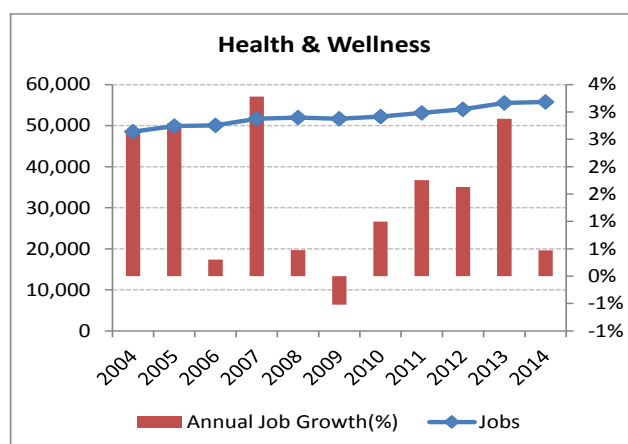
Recuperation and rejuvenation services have also been proposed as potential export activities that could utilize Hawaii's beauty and calming environment. In recent years, spas and similar, non-medical treatment services have been integrated into the hotel industry and serve a specialized tourism market. 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 55,779 jobs in 2014. About 74.3% 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 2004 to 2014 period.

Overall the Health and Wellness sector grew faster than the rest of the economy in the expansion phase of the recent business cycle. The impact of the recession was relatively insignificant.



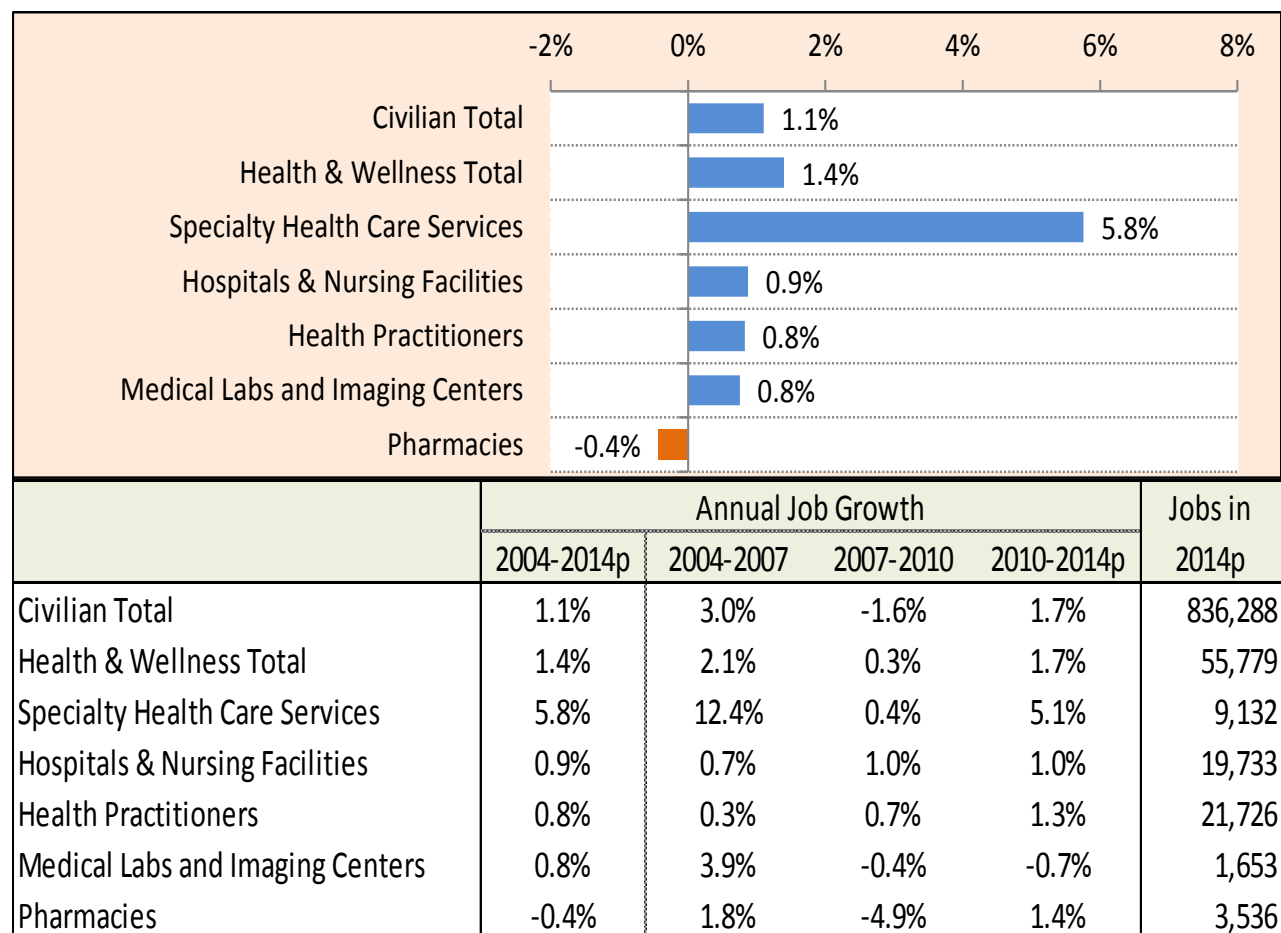
Pharmacies (a retailing industry which includes drug stores) expanded jobs moderately in the 2004 to 2007 expansion phase but experienced a sharp decline during the 2008-2010 contraction period. Pharmacies lost 550 jobs in the 3 year period. The reason for the decline is not clear. However, the filling of prescriptions through the internet, rather than in pharmacies has become a more common practice in recent years. Pharmacies also lost jobs nationally during the contraction period, but to a much lesser degree than in Hawaii.

Health Practitioners, that had lost jobs until 2006, showed a modest growth since then including the contraction period, bringing up the overall job growth to an average 0.8% per year for the 2004 to 2014 period.

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 2004-2014 period. The subsector gained jobs at an annual average rate of 5.8% during the period.

TABLE 9. JOBS IN HEALTH AND WELLNESS: AVERAGE ANNUAL GROWTH OVER 2004-2014



Source: see Table 3 for data source.

Competitive Metrics

Overall, the growth in Hawaii's health and wellness sector was below the national growth, resulting in the loss of competitive share for the 2004 to 2014 period. This was due mainly to anemic job growth in the Health Practitioners and Pharmacies.

Only two industry groups, Medical Labs & Imaging Centers and Pharmacies, show concentrations above national levels.

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

	Jobs (2014p)	Jobs per Estabs (2014p)	Avg. Annual Earnings (2014p)	Avg. Ann. Job Growth		When U.S.=100%		
				2004- 2014p	above or below U.S.	Concen- tration ¹	Jobs per Estabs	Avg. Ann. Earning
Total Civilian	836,288	21.7	51,320	1.1%	0.1%	100%	109%	97%
HEALTH & WELLNESS	55,779	18.3	69,034	1.4%	-0.6%	82%	78%	111%
Specialty Health Care Services	9,132	44.5	44,401	5.8%	0.3%	80%	106%	109%
Hospitals & Nursing Facilities	19,733	308.3	74,266	0.9%	-0.1%	68%	123%	123%
Health Practitioners	21,726	8.6	79,036	0.8%	-1.4%	94%	80%	103%
Medical Labs and Imaging Centers	1,653	42.4	63,248	0.8%	-1.8%	132%	273%	91%
Pharmacies	3,536	16.8	44,696	-0.4%	-0.7%	109%	145%	98%

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

Source: see Table 3 for data source.

At \$69,034, the average earnings for the health & wellness sector, as a whole, exceeded the national average in 2014 by about 11%. This is 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 performed the best in terms of growth and competitiveness. This group didn't exceed the national level in terms of industry concentration though.

Hospitals & Nursing Facilities, Health Practitioners, and Medical Labs and 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.

The only declining activity in the health and wellness sector for 2004-2014 period was Pharmacies. As suggested earlier, competition from internet-based prescription processing could be playing a part in this.

Emerging Activities	Base-Growth Activities
Specialty Health Care Services	
Declining Activities	Transitioning Activities
Pharmacies	Hospitals & Nursing Facilities 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 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 the Asia-Pacific region. However, while the number of foreign students in the U.S. has been increasing, the number of foreign students in Hawaii has been decreasing. In 2013, Hawaii had 4,450 foreign students, including both public and private institutions, and this was a 1% decrease from the 2010 number of 5,000 foreign students.⁷ In contrast, the number of foreign students in the U.S. increased 18.6%, from 690,923 students in 2010 to 819,644 students in 2013. While the topic of foreign students is outside of the main focus of this section, this is an area that should be examined in the future. 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 9,985 jobs in 2014. These sectors together performed better than the rest of the Hawaii economy. Jobs grew 1.9% annually, adding almost 1,700 new jobs to the economy over the past ten years.

The main contributor to the job gains in the sector was Specialty Education. Higher Education job growth was below the rest of the economy during the 2003-2007 expansion period. However, during the 2008-2010 contraction period in contrast to a majority of the other sectors, both Specialty Education and Higher Education grew jobs on average 4.3% annually. This reflects the tendency for educational enrollments to increase during economic declines.

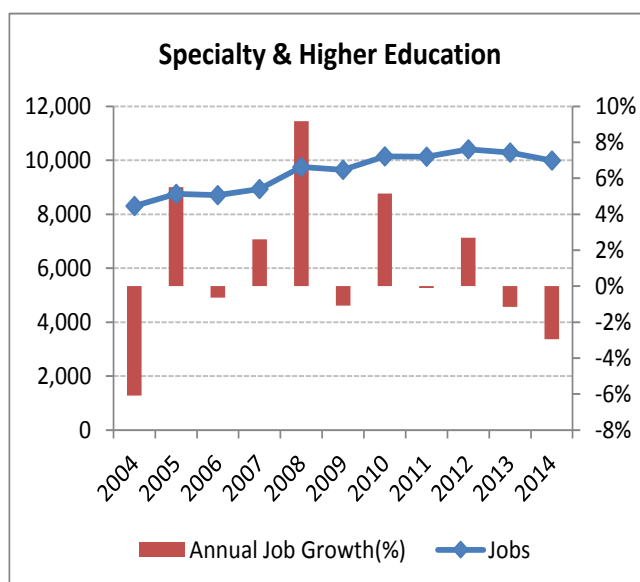
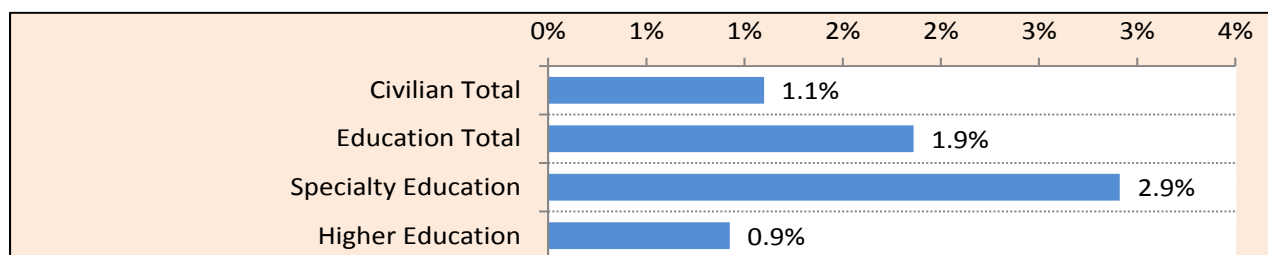


TABLE 11. JOBS IN HIGHER AND SPECIALTY EDUCATION: AVERAGE ANNUAL GROWTH OVER 2004-2014

	Annual Job Growth				Jobs in 2014p
	2004-2014p	2004-2007	2007-2010	2010-2014p	
Civilian Total	1.1%	3.0%	-1.6%	1.7%	836,288
Education Total	1.9%	2.5%	4.3%	-0.4%	9,985
Specialty Education	2.9%	2.9%	4.7%	1.6%	4,969
Higher Education	0.9%	2.1%	4.1%	-2.2%	5,016

Source: see Table 3 for data source.

⁷ Institute of International Education, Open Doors Fact Sheet 2013 and 2010.



Competitive Metrics

Despite the high growth in private education jobs over the 2004 to 2014 period, it came up short compared with the performance of the same activities nationally. As a result, the Hawaii sector lost some national competitive share.

In addition, the sector declined in terms of concentration. In 2004, the private Higher and Specialty Education activities together were about 75% as concentrated as the same activities nationally. By 2014, that concentration had fallen to 69% of the national level.

Specialty education showed a sharp decline in concentration, falling nearly 11 percentage points, from 1 percentage point above the concentration of the national level in 2004, to 90% of the national level in 2014.

The annual earnings of Specialty Education in Hawaii averaged \$28,815 in 2014, which is about 56% of the earning average of civilian jobs in Hawaii. This level of earnings was similar to the national level for the same group. The average earnings in Hawaii Higher Education were higher than those in Specialty Education, but were 29% lower than nationally paid for the same activities in 2014.

TABLE 12. HAWAII PRIVATE EDUCATION SECTOR PERFORMANCE COMPARED WITH NATION

	Jobs (2014p)	Jobs per Estabs (2014p)	Avg. Annual Earnings (2014p)	Avg. Ann. Job Growth		When U.S.=100%		
				2004- 2014p	above or below U.S.	Concen- tration ¹	Jobs per Estabs	Avg. Ann. Earning
Total Civilian	836,288	21.7	51,320	1.1%	0.1%	100%	109%	97%
EDUCATION (PRIVATE)	9,985	21.1	32,241	1.9%	-0.8%	69%	50%	77%
Specialty Education	4,969	12.8	28,815	2.9%	-1.1%	90%	71%	99%
Higher Education	5,016	58.3	35,635	0.9%	-1.0%	56%	24%	71%

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

Source: see Table 3 for data source.

Overall Performance

Due to the overall job growth combined with a loss of national competitive share, both Higher Education and Specialty Education were in the Transitioning category over the 2004 to 2014 period. They achieved a positive job growth over the period, but not as fast as the same activities nationally.

Transitioning Activities
Higher Education
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 continued to lose jobs throughout the 2000s. Jobs in Apparel decreased from 1,547 in 2004 to 818 in 2014.

Call Center activity exploded in 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 about 50% of the peak year. Due to the rapid job growth in Call Centers from 2002 to 2004, interpretation of long term performance of the sector varies widely depending on which year we use as a base year. Using the peak year of 2004 as a new base year of measurement, Call Centers falls from a growing sector to a declining sector.

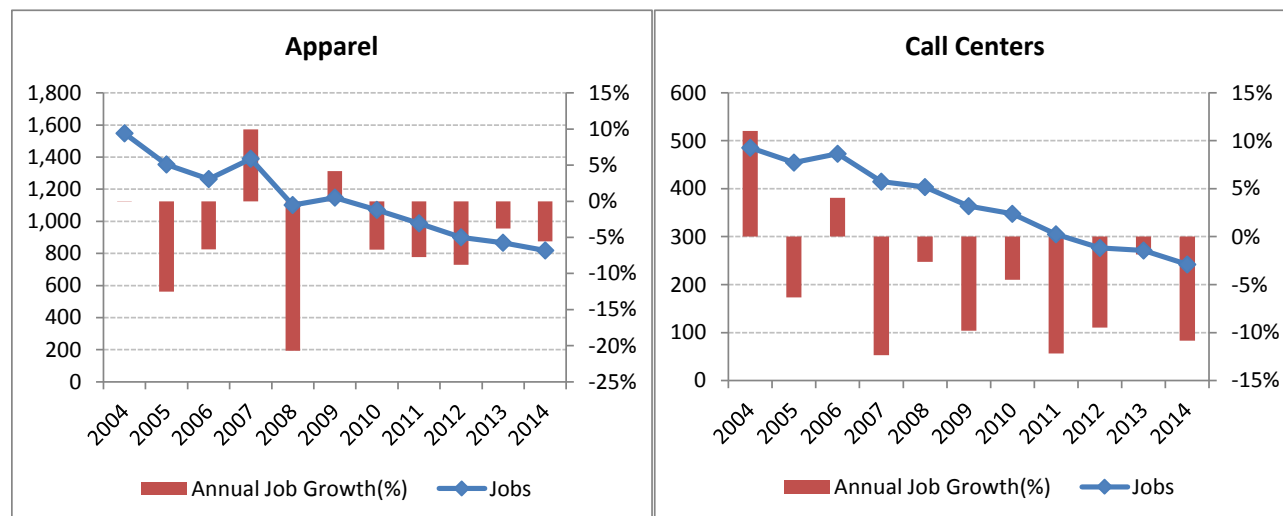
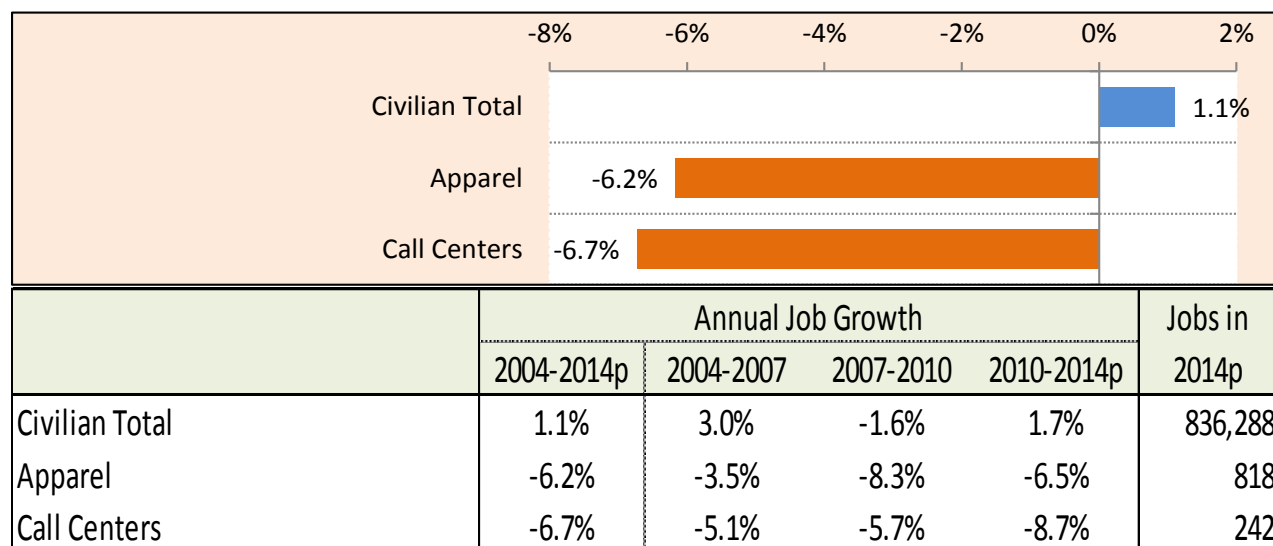


TABLE 13. JOBS IN APPAREL AND CALL CENTERS: AVERAGE ANNUAL GROWTH OVER 2004-2014



Source: see Table 3 for data source.

Competitive Metrics

In terms of job growth, Apparel decreased both in Hawaii and in the nation. During the 2004-2014 period, Apparel in Hawaii lost 6.2% of its jobs annually, while the U.S. garment industry lost 5.7% of its jobs annually. This reflects the trend of outsourcing manufacturing abroad.

In contrast to Call Centers in Hawaii, the sector expanded relatively fast nationally. Call Centers at national level gained jobs on average 3.3% per year for the 2004 to 2014 period, while Call Centers in Hawaii lost jobs on average 6.7% per year over the period.

The concentration level of Apparel in 2014 was 23% 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 10% of the national level in 2014, down from 28% in 2004.

The annual earnings average for Apparel and Call Center were \$36,872 and \$20,471 respectively in 2014. These earning levels were about 88% for Apparel and 57% for Call Centers of the average earnings nationally, suggesting that these sectors are predominantly part time activities in Hawaii.

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

	Jobs (2014p)	Jobs per Estabs (2014p)	Avg. Annual Earnings (2014p)	Avg. Ann. Job Growth		When U.S.=100%		
				2004-2014p	above or below U.S.	Concentration ¹	Jobs per Estabs	Avg. Ann. Earning
Total Civilian	836,288	21.7	51,320	1.1%	0.1%	100%	109%	97%
Apparel	818	14.4	36,872	-6.2%	-0.5%	123%	67%	88%
Call Centers	242	8.3	20,471	-6.7%	-10.0%	10%	14%	57%

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

Source: see Table 3 for data source.

Overall Performance

With an average negative 6.7% annual job growth from 2004 to 2014, the Call Centers falls into the declining category. Losing jobs at 6.2% per year over the 2004 to 2014 economic cycle, Apparel also fell into the declining category. Garment manufacturing in Hawaii has an important implication for tourism revenues. The visitors who buy Hawaiian wear often prefer made in Hawaii brands. If the local manufacturing of garments was to disappear, the impact on sales of Hawaiian wear could be of concern.

CONCLUSIONS

This report is the fifth 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 - 2012 update reports extended those measurements through the contraction phase providing an overall picture of how targets performed in good times and bad over the business cycle. This updated report added the 2014 preliminary data to illustrate how targeted industries have been performing after the recovery period of the recession.

Table 15 summarizes the best performing target industry groups for the 2004 to 2014 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 eleven best performing industry groups, five groups had earnings averages above the average for Hawaii's economy.

TABLE 15. HIGHEST PERFORMING TARGETED ACTIVITIES, 2004 TO 2014

INDUSTRY GROUPS	JOBS IN HAWAII		AVG. ANN. JOB GROWTH (2004-2014 ^p)		CONCENTRATION OF INDUSTRY IN HAWAII COMPARED TO U.S.		AVG ANNUAL EARNINGS (2014 ^p)	
	CHANGE		HAWAII	U.S.	2014 ^p	% Point CHNG 2004-2014 ^p	HAWAII	U.S.
	2014 ^p	2004-2014 ^p						
TOTAL CIVILIAN JOBS	836,288	86,570	1.1%	1.0%	100%	0%	\$51,320	\$52,905
Base-Growth and Emerging Activities								
Above Average State Earnings								
Alternative Power Generation	299	268	25.4%	-5.3%	100%	94%	\$162,977	\$152,159
Chemical & Pharmaceutical Mfg	176	64	4.6%	-0.2%	9%	3%	\$87,661	\$132,459
Agric. Inputs	390	37	1.0%	0.6%	34%	1%	\$74,475	\$66,613
Business Consulting	5,013	2,015	5.3%	4.6%	62%	3%	\$61,546	\$74,118
Other Technology Mfg	607	307	7.3%	0.0%	10%	5%	\$59,033	\$104,711
Below Average State Earnings								
Agric. Processing	6,973	262	0.4%	0.1%	98%	2%	\$44,856	\$54,393
Specialty Health Care Services	9,132	3,915	5.8%	5.5%	80%	2%	\$44,401	\$40,624
Cultural Activities	3,455	1,935	8.6%	2.6%	402%	171%	\$42,555	\$50,095
Music	1,327	330	2.9%	1.5%	166%	21%	\$35,036	\$40,295
Farm Production	13,624	687	0.5%	0.3%	95%	1%	\$28,299	\$28,172
Design Services	1,979	284	1.6%	1.4%	94%	1%	\$28,119	\$36,203

* For definition and data source, see Table 3