Hawaii's Targeted & Emerging Industries

2013 Update Report

Department of Business, Economic Development and Tourism

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Hawaii Department of Business, Economic Development & Tourism

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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 2013. Table S-1 provides a comprehensive overview of performance among activities in the Targeted Industry Portfolio over the 2003 to 2013 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:

- More than a dozen activities were high performing, by not only exceeding the state average in terms of job growth, but also performing better than their national counterpart. Among those were Cultural Activities, R&D Services, Medical Testing, Aquaculture, Specialty Health Care, Business Consulting, Technology Manufacturing, and Film/TV Production.
- Adjusting for overlaps, the high-performing activities in the target industry portfolio (Base-growth and Emerging) accounted for about 67,000 jobs or 8.2% of all civilian jobs in 2013. However, between 2003 and 2013 those activities generated 16.8% of the total gain in jobs for the civilian economy, or about 14,900 new jobs.
- Among the best performing activities, Other Technology Mfg, Cultural Activities, Specialty Health Care, Business Consulting, and Alternative Power Generation grew jobs over 5% per year over the 2003 to 2013 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[1]	JOBS IN HAWAII		AVE. ANN. JOB GROWTH (2003-2013[p])		CONCENTRATION[2] OF INDUSTRY IN HAWAII COMPARED TO U.S.		AVE ANNUAL EARNINGS (2013[p])	
	2013[p]	CHANGE 2003-2013[p]	HAWAII	U.S.	2013[p]	% Point CHNG 2003-2013[p]	HAWAII	U.S.
TOTAL CIVILIAN JOBS	814,217	88,804	1.2%	1.0%	100%	0%	$46,727	$51,581
Base-Growth Activities								
Cultural Activities	3,014	1,441	6.7%	2.0%	379%	135%	$41,759	$47,969
Biotechnology	1,959	620	3.9%	2.2%	253%	34%	$53,668	$123,536
Aquaculture Production	233	73	3.8%	-1.6%	993%	403%	$39,167	$30,760
Music	1,248	220	2.0%	1.5%	156%	4%	$23,823	$40,512
Emerging Activities								
Other Technology Mfg	682	352	7.5%	0.0%	12%	6%	$58,243	$104,858
Specialty Health Care Services	8,763	4,112	6.5%	5.8%	79%	4%	$43,929	$40,520
Business Consulting	4,991	2,214	6.0%	4.7%	62%	6%	$56,542	$74,690
Alternative Power Generation	269	117	5.9%	-5.0%	87%	57%	$94,492	$154,680
Agric. Support Services	1,348	313	2.7%	2.1%	55%	2%	$37,740	$48,487
Chemical & Pharmaceutical Mfg	125	29	2.7%	-0.5%	7%	2%	$60,596	$136,290
Design Services	1,906	416	2.5%	1.9%	94%	4%	$19,714	$35,478
Film, TV, Video Production/Distrib	1,579	320	2.3%	0.4%	94%	15%	$52,986	$96,443
R& D Services (exc Biotechnology)	1,892	314	1.8%	1.8%	78%	-1%	$85,108	$114,403
Hospitals & Nursing Facilities	19,407	2,815	1.6%	1.1%	67%	2%	$72,806	$60,046
Agric. Inputs	407	24	0.6%	0.3%	37%	0%	$62,373	$67,322
Farm Production	13,411	573	0.4%	0.1%	94%	1%	$27,758	$26,951
Transitioning Activities								
Specialty Education	5,548	1,833	4.1%	5.3%	94%	-14%	$19,957	$22,945
Art Education	700	204	3.5%	5.1%	64%	-12%	$8,147	$10,233
Computer System Design and Relate	6,841	1,041	1.7%	3.2%	69%	-12%	$76,933	$101,022
Marketing, Photography & Related	10,929	1,547	1.5%	2.1%	94%	-7%	$22,715	$45,991
Medical and Diagnostic Testing	1,665	183	1.2%	2.7%	138%	-25%	$61,003	$69,540
Engineering and Related Services	6,036	469	0.8%	1.0%	87%	-3%	$84,504	$86,971
Performing and Creative Arts	8,870	219	0.3%	2.2%	122%	-28%	$18,916	$25,868
Health Practitioners	21,401	474	0.2%	2.1%	96%	-22%	$77,994	$78,185
Higher Education	5,225	107	0.2%	2.1%	60%	-14%	$33,216	$47,696
Declining Activities								
Agric. Processing	6,378	-53	-0.1%	-0.3%	93%	0%	$42,784	$54,535
Pharmacies	3,533	-81	-0.2%	0.6%	107%	-11%	$44,529	$45,071
Information & Telecom Technology	5,056	-184	-0.4%	-0.2%	63%	-2%	$78,567	$100,840
Fishing, Forestry & Hunting	1,622	-90	-0.5%	0.2%	339%	-31%	$28,263	$33,130
Agric. Packaging & Warehsg	253	-30	-1.1%	0.0%	32%	-4%	$59,122	$51,594
Architecture	1,925	-239	-1.2%	-0.7%	139%	-10%	$67,368	$62,911
Technology Equip Distribution	743	-93	-1.2%	-0.5%	32%	-3%	$93,862	$109,835
Radio and Television Broadcasting	1,172	-180	-1.4%	-0.6%	101%	-11%	$57,597	$77,567
Apparel	1,260	-256	-1.8%	-4.8%	161%	40%	$23,637	$39,598
Publishing & Information	2,144	-931	-3.5%	-1.3%	62%	-17%	$46,179	$76,962
Call Centers	289	-148	-4.1%	3.0%	13%	-14%	$17,170	$36,285

[1] Technical Consulting in Technology Sector, Computer and Digital Media, and Engineering and R&D in Creative Sector, and Medical Labs and Imaging Centers in Health & Wellness Sector are not separately included in this table because they overlap with other industry groups reported in the table.
[2] See Table 4 and narrative text for explanation of competitive measures.
Source: DBEDT based on data from Economic Modeling Specialists, Inc. (EMSI). Estimates for 2013 are based on early 2013 actual data and are also from EMSI.

- About 40% of the high-performing activities had the average annual earnings that exceeded $60,000 in 2013. Alternative Power Generation had the highest earnings average at $94,500. By comparison, the average earnings for the civilian economy in 2013 were $46,700 by the preliminary 2013 estimate.
- Nine activities, about 67,200 jobs in 2013, fell into the Transitioning category. They gained jobs over the period but did not keep up with national growth for same activities resulting in a loss of competitive national industry share. However, four of those activities - Specialty Education, Art Education, Computer System Design & Related, and Marketing/Photography & Related- 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 half of jobs in Transitioning category had average earnings over $70,000 in 2013. The concern is that they generally lost ground competitively to the same activities at the national level.
- About a dozen activities in the portfolio fell into the Declining industry category as the result of net job losses for the 2003 to 2013 period. Notable among these were Call centers, Publishing & Information, and Apparel.
- Except for Call Centers, Pharmacies, and Fishing, 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 24,400 in 2013 (3% of all civilian jobs), representing a loss of about 2,300 jobs from 2003. About 40% of jobs in the Declining industry had earnings averages above the average for Hawaii's economy.
- Declining industries are not necessarily dying activities. In some cases, like Information activity, the technology for developing and delivering information is improving rapidly, and perhaps reducing the need for workers. In those 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 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 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 the performance assessment is to assist economic developers and policy makers to understand which target industries are achieving the potential hoped for them and which are not. Future diagnostic efforts will benefit from the priorities economic developers provide for that research after reviewing the performance results in this report series.

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 fourth report that updates the review of targeted industry performance at the state level to 2013 (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 purposes of this report series, 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 exclusive to each other. Especially, there exist moderate overlaps between the creative and technology sectors because of their mutually dependent relationship.

TABLE 1. TARGETED INDUSTRY PORTFOLIO

TECHNOLOGY SECTOR	• Radio and Television Broadcasting
• Computer System Design and Related Services	• Music
• Engineering and Related Services	• Art Education
• Information & Telecom Technology	**AGRIBUSINESS**
• Technical Consulting Services	• Farm Production
• Biotechnology	• Agric. Processing
• R&D Services (except Biotechnology)	• Fishing, Forestry & Hunting
• Medical and Diagnostic Testing	• Agric. Support Services
• Technology Equipment Distribution	• Agric. Inputs
• Other Technology Mfg	• Agric. Packaging & Warehouse
• Alternative Power Generation	• Aquaculture Production
• Chemical & Pharmaceutical Mfg	**HEALTH & WELLNESS**
CREATIVE SECTOR	• Health Practitioners
• Marketing, Photography & Related	• Hospitals & Nursing Facilities
• Performing and Creative Arts	• Specialty Health Care Services
• Engineering and R&D	• Pharmacies
• Business Consulting	• Medical Labs and Imaging Centers
• Computer Services and Digital Media Products	**EDUCATION (PRIVATE)**
• Cultural Activities	• Higher Education
• Publishing & Information	• Specialty Education
• Film, TV, Video Production/Distribution	**OTHER TARGETS**
• Design Services	• APPAREL
• Architecture	• CALL CENTERS

Source: DBEDT.

Measuring Targeted Industries

In this update 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 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 in 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. How jobs among the portfolio activities have grown relative to the state as a whole also carries meaningful information. An activity that grows faster than the rest of the state's economy would help to diversify the economy.

The competitiveness and concentration of the activity in Hawaii compared to elsewhere are of interested. If the activity is growing faster in Hawaii than nationally, it suggests that the state has some amount of competitive advantage in the activity. Likewise, if the activity has achieved a greater proportion of jobs in the state than the same activity has in the national economy, it is likely an activity in which Hawaii has a competitive advantage. A higher proportion (or concentration) 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 the activity were reviewed. Higher earnings generally come from high quality jobs. A relatively higher earnings average in a competitive activity 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 industries in the economy into four generalized stages. The first state 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 state 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 becoming 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 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 statue 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 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.

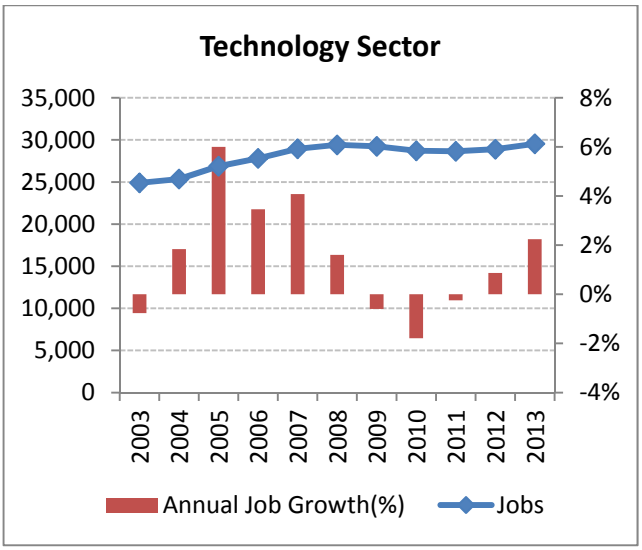
TECHNOLOGY SECTOR

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 reports 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 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 potentials. 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 29,500 jobs in 2013, 3.6% of all civilian jobs in Hawaii including self-employed and sole proprietors. For the 2003 to 2013 period, the technology sector posted an average 1.7% gain in jobs per year, 0.5% point higher than the average growth for the civilian economy.



The 2013 preliminary data shows that the technology sector added about 650 jobs (2.2%) in 2013. Besides Technical Consulting that gained jobs more than 10%, Medical Test, Computer System Design, Biotechnology, and Chemical & Pharmaceutical Mfg also added jobs by 3-5% in 2013.

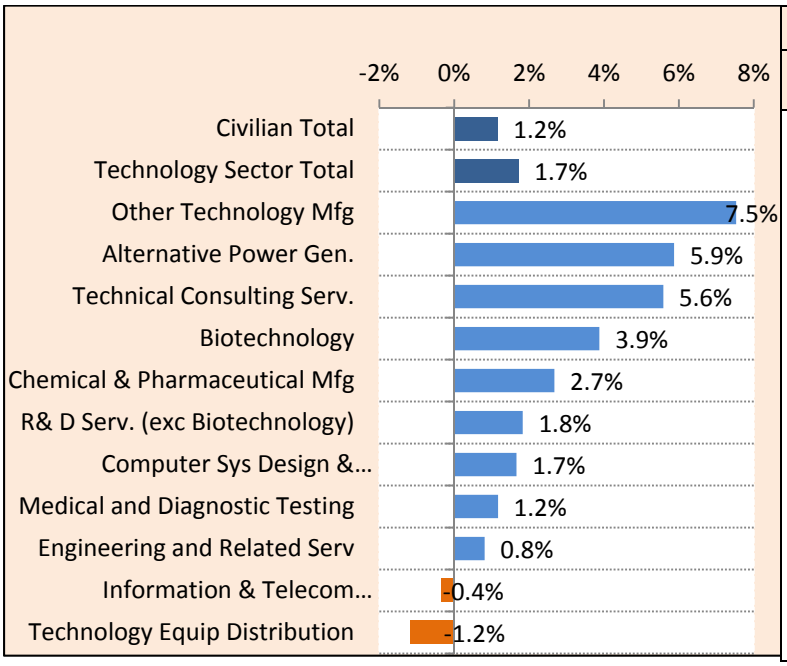
For the 2003 to 2013 measurement period, Other Technology Mfg. turned in the best performance among the technology industry groups in terms of job growth. Other high-performing activities in the technology sector were Alternative Power Generation, Technical Consulting Service, and Biotechnology. The performances of these activities were especially remarkable because they were relatively immune to the economy-wide decline in jobs from 2008 to 2010.

Two technology industry groups failed to see job growth over the 2003 to 2013 period. Those were Information & Telecom Tech, and 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. JOBS[1] IN TECHNOLOGY SECTOR, AVERAGE ANNUAL GROWTH OVER 2003-2013



	Annual Job Growth				
	2003-2013[p]	2003-2007	2007-2010	2010-2013[p]	Jobs in 2013[p]
Civilian Total	1.2%	3.1%	-1.6%	1.4%	814,217
Technology Sector Total	1.7%	3.8%	-0.3%	1.0%	29,542
Other Technology Mfg	7.5%	10.0%	7.2%	4.5%	682
Alternative Power Gen.	5.9%	-4.2%	0.8%	27.1%	269
Technical Consulting Serv.	5.6%	11.3%	1.8%	2.0%	4,274
Biotechnology	3.9%	2.3%	10.6%	-0.4%	1,959
Chemical & Pharmaceutical Mfg	2.7%	3.5%	6.0%	-1.6%	125
R& D Serv. (exc Biotechnology)	1.8%	5.3%	0.0%	-0.8%	1,892
Computer Sys Design &...	1.7%	2.7%	0.2%	1.8%	6,841
Medical and Diagnostic Testing	1.2%	3.8%	-0.4%	-0.6%	1,665
Engineering and Related Serv	0.8%	2.9%	-1.8%	0.7%	6,036
Information & Telecom...	-0.4%	2.6%	-4.8%	0.3%	5,056
Technology Equip Distribution	-1.2%	-1.5%	0.5%	-2.4%	743

[1]Includes wage & salary, sole proprietors & self employed.
Source: DBEDT based on data from Economic Modeling Specialists, Inc. (EMSI). Estimates for 2013 are based on early 2013 actual data and are also from EMSI.

Competitive Metrics

The 6th 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 Technology Consulting Services, most fast growing activities in the technology sector outperformed their national counterpart. Among those, Other Technology Mfg and Alternative Power Generation turned in the most important competitive gain, averaging 7%-11% points more job growth for 2003 to 2013 compared to their national counterpart.

However, two big technology industry groups – Computer & Related Services, Engineering & Related Services -lost some competitive ground to their national counterpart although they achieved a positive job growth over the 2003 to 2013 period.

Information Technology jobs declined in both Hawaii and the nation from 2003 to 2013, although a little more so in Hawaii. Three forces may have influenced this decline. First, the inclusion of wired telecom service, an activity with declining demand, should have been responsible for some decline in jobs. Second, productivity gains in information technology may have reduced the labor needed in the industry 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 nationwide markets. The economies of scale for these high volume providers have made the economics of stand-alone, local and regional internet services difficult.

In terms of concentration, most of the technology industry groups are still a relatively smaller proportion of Hawaii's economy than they are nationally. Hawaii's proportion of the state's workforce in technology is 64% of the proportion nationally in 2013. One noteworthy exception is Bio-

technology, which is 153% more concentrated in Hawaii than nationally. Medical Testing also shows a higher proportion of jobs in Hawaii. Hawaii's proportion of this industry group is 38% more than nationally.

The average earnings in Hawaii's technology sector were relatively high, at $74,100 in 2013. As a group, it was 59% 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 Hawaii technology sector were not paid as much as the U.S. average for the same activities. The average earnings in Hawaii technology sector as a whole were only 76% of the average earnings paid nationally. The biggest earnings gaps between Hawaii and the U.S. were found in Biotechnology, and Chemical & Pharmaceutical Mfg. [4]

TABLE 4. HAWAII TECHNOLOGY SECTOR PERFORMANCE COMPARED WITH NATION

				Avg. Ann. Job Growth		When U.S.=100%		
	Jobs (2013^p)	Jobs per Estabs (2013^p)	Avg. Annual Earnings (2013^p)	2003-2013^p	above or below U.S.	Concentration[1]	Jobs per Estabs	Avg. Ann. Earning
Total Civilian Jobs	814,217	21.2	46,727	1.2%	0.2%	100%	108%	91%
TECHNOLOGY SECTOR	**29,542**	**11.5**	**74,062**	**1.7%**	**0.2%**	**64%**	**75%**	**76%**
Other Technology Mfg	682	13.4	58,243	7.5%	7.6%	12%	26%	56%
Alternative Power Generation	269	22.4	94,492	5.9%	10.9%	87%	45%	61%
Technical Consulting Services	4,274	10.3	57,128	5.6%	0.0%	63%	107%	77%
Biotechnology	1,959	34.4	53,668	3.9%	1.7%	253%	187%	43%
Chemical & Pharmaceutical Mfg	125	17.9	60,596	2.7%	3.2%	7%	24%	44%
R& D Services (exc. Biotech.)	1,892	12.4	85,108	1.8%	0.1%	78%	43%	74%
Computer Sys. Design & Related	6,841	8.6	76,933	1.7%	-1.5%	69%	85%	76%
Medical and Diagnostic Testing	1,665	40.6	61,003	1.2%	-1.5%	138%	261%	88%
Engineering and Related Serv.	6,036	9.2	84,504	0.8%	-0.2%	87%	65%	97%
Information & Telecom Tech.	5,056	16.7	78,567	-0.4%	-0.1%	63%	70%	78%
Technology Equipment Distr.	743	9.9	93,862	-1.2%	-0.7%	32%	68%	85%

[1] Proportion of jobs in the activity in Hawaii compared to the proportion nationally
Source: see Table 3 for data source.

[4] The sub industry group activity of Biotech had average earnings relatively lower than other technology groups. This may be due to the number of field workers needed in the corn seed research industry.

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.

Five technology industry groups, Biotechnology, Other Technology Mfg, R&D Services, Alternative Power Generation, and Chemical & Pharmaceutical Mfg fell into the high performing, Base-Growth and Emerging categories by not only showing a positive growth but also outperforming their national counterpart. 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 Emerging industry groups have yet to reach national concentrations. Beyond that, both categories show positive and competitive growth in jobs.

Medical and the three big activities in the technology sector - Technology Consulting, Computer & Related Services, and Engineering & Related Services -all fell into the Transitioning category for the 2003 to 2013 period. While job growth was strong in these industry groups they still lost some competitive shares to the national industry groups.

Technology Equipment Distribution, and Information & Telecom Technology fell into the Declining category for 2003 to 2013 by seeing job loss over the period. These activities also lost more jobs proportionately than the same activity nationally, resulting in losses of competitive shares to the U.S. economy.

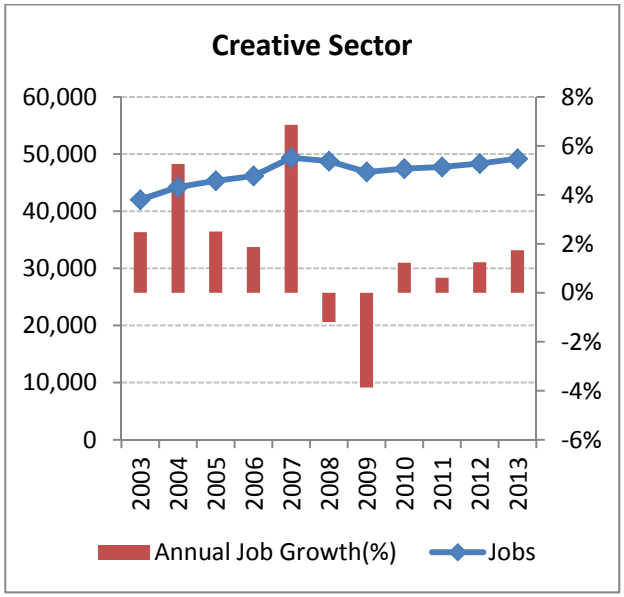
Emerging Activities	***Base-Growth Activities***
-Other Technology Mfg -R& D Services (except Biotechnology) -Alternative Power Generation -Chemical & Pharmaceutical Mfg	-Biotechnology
Declining Activities	***Transitioning Activities***
-Technology Equipment Distribution - Information & Telecom Technology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

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.[5] 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 better reflect the integration of art, technology and other creative activity.

Size & Growth

The thirteen creative industry groups accounted for an estimated 49,200 jobs in 2013, 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 outgrew the civilian economy over the 2003 to 2013 period. It grew jobs faster than Hawaii's economy during the 2003 to 2007 expansion phase while the impact of the recent recession was felt less in the sector. Although many activities in the sector experienced a job decline for an extended period, as a group the creative sector resumed a positive growth in 2010. Over the 2003 to 2013 period, the creative sector managed an average 1.6% job growth annually.

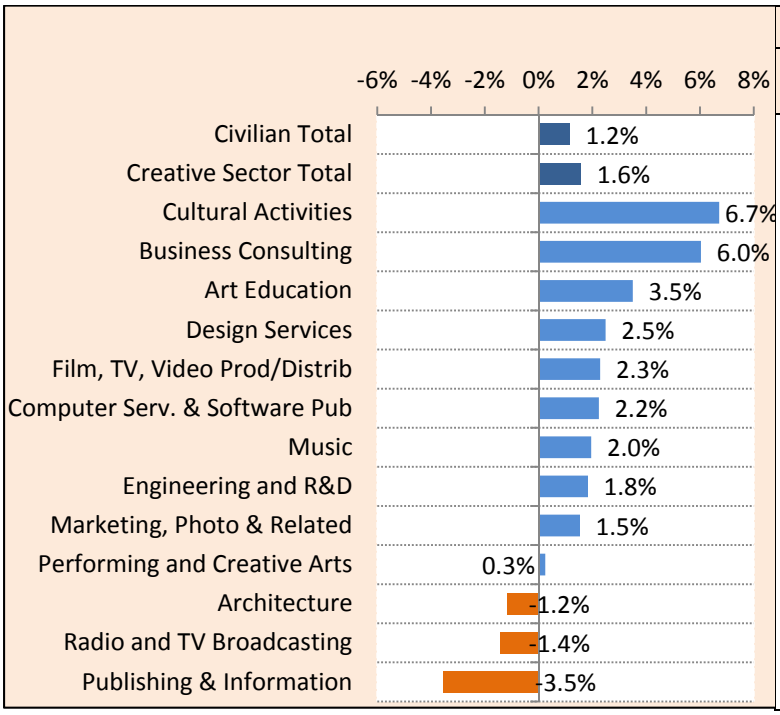
Cultural Activities grew jobs the most over the 2003 to 2013 period, 6.7% per year on average. Most job growth in Cultural Activities was achieved in Museum. Jobs in Museum increased from 692 in 2010 to 1,822 in 2011. Business Consulting showed the second highest job growth with a 6.0% average annual increase in jobs for the period.

Film/TV Production has shown great fluctuations in its activities depending on the number of productions filmed during the year. With many new shows filmed in Hawaii in late 2010, the number of 2010 jobs has more than doubled from its 2009 level. Although Hawaii could not keep up the high level of film activities beyond early 2011, the number of jobs in Film in the following years was close to its previous peak in 2005.

Three groups in the sector, Architecture, Radio/TV Broadcasting, and Publishing & Information failed to gain jobs over the 2003 to 2013 period. These groups experienced a sharp decline in jobs during the contraction period after only a fair growth during the expansion period. With the cease of Honolulu Advertiser in 2010, jobs in Publishing & Information decreased from 3,165 in 2007 to 2,136 in 2011.

[5] 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 2003-2013



Annual Job Growth				Jobs in 2013[p]
2003-2013[p]	2003-2007	2007-2010	2010-2013[p]	
1.2%	3.1%	-1.6%	1.4%	814,217
1.6%	4.1%	-1.3%	1.2%	49,184
6.7%	1.7%	-0.9%	22.5%	3,014
6.0%	11.8%	2.4%	2.4%	4,991
3.5%	6.4%	-2.4%	5.8%	700
2.5%	8.8%	-3.5%	0.4%	1,906
2.3%	6.1%	18.7%	-16.1%	1,579
2.2%	4.8%	-0.7%	1.8%	4,929
2.0%	3.2%	-5.1%	7.8%	1,248
1.8%	4.3%	-0.3%	0.8%	5,777
1.5%	3.1%	-0.9%	1.8%	10,929
0.3%	3.5%	-4.0%	0.4%	8,870
-1.2%	1.5%	-4.2%	-1.5%	1,925
-1.4%	0.7%	-6.1%	0.6%	1,172
-3.5%	0.7%	-8.6%	-4.0%	2,144

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 2003 to 2013 period. Only three among thirteen groups in the sector notably outperformed their national counterpart during the period. Besides Cultural Activities that achieved an abnormal job growth recently, Business Consulting and Film/TV Production gained jobs at a rate 1-2% point faster than their national counterpart.

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 almost four times as concentrated in Hawaii. Performing/Creative Arts, Music, and Architecture also exceed national concentrations. In contrast, most business and technology oriented activities in the sector, such as Business Consulting, Computer & Digital Media, and Publishing & Information, show much lower concentration in Hawaii than the same industries nationally.

At $44,900 of average annual earnings in 2013, the activities in the creative sector as a whole were making a little less than the average for the Hawaii economy. Compared with the same activities nationally, however, it 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 thirteen activities in the creative sector, only workers in Architecture were paid slightly higher in Hawaii than nationally. The activities that showed significant earnings gaps between Hawaii and the U.S. include Film/TV Production, Design Services, Music, and Marketing/Photography & Related.

TABLE 6. HAWAII CREATIVE SECTOR PERFORMANCE COMPARED WITH NATION

	Jobs (2013 p)	Jobs per Estabs (2013p)	Avg. Annual Earnings (2013p)	Avg. Ann. Job Growth 2003-2013p	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. Earn-ing
Total Civilian Jobs	814,217	21.2	46,727	1.2%	0.2%	100%	108%	91%
CREATIVE SECTOR	**49,184**	**14.4**	**44,912**	**1.6%**	**-0.6%**	**87%**	**95%**	**65%**
Cultural Activities	3,014	43.1	41,759	6.7%	4.8%	379%	307%	87%
Business Consulting	4,991	10.4	56,542	6.0%	1.3%	62%	109%	76%
Art Education	700	15.2	8,147	3.5%	-1.6%	64%	72%	80%
Design Services	1,906	14.3	19,714	2.5%	0.6%	94%	115%	56%
Film, TV, Video Production/Distrib	1,579	9.8	52,986	2.3%	1.9%	94%	53%	55%
Computer Serv. & Software Publis.	4,929	6.8	81,778	2.2%	-1.4%	49%	63%	75%
Music	1,248	19.5	23,823	2.0%	0.5%	156%	136%	59%
Engineering and R & D	5,777	10.2	91,552	1.8%	0.2%	81%	57%	90%
Marketing, Photography & Related	10,929	20.7	22,715	1.5%	-0.6%	94%	105%	49%
Performing and Creative Arts	8,870	34.6	18,916	0.3%	-1.9%	122%	92%	73%
Architecture	1,925	9.2	67,368	-1.2%	-0.5%	139%	86%	107%
Radio & Television Broadcasting	1,172	27.3	57,597	-1.4%	-0.8%	101%	88%	74%
Publishing & Information	2,144	16.4	46,179	-3.5%	-2.2%	62%	78%	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. Six groups, Cultural Activities, Music, Business Consulting, Engineering and R&D, Design Services, and Film are all rated as high performing for growth and competitiveness with the same activities nationally.

Another four groups - Art Education, Computer & Digital Media, Marketing & Photography, and Performing/Creative Arts, grew jobs over the period but came up short competitively compared with the performance of the same industry group nationally over the 2003 to 2013 period.

Radio/TV Broadcasting, Architecture, and Publishing & Information were placed in the lowest performance group. All lost jobs over the 2003 to 2013 period.

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

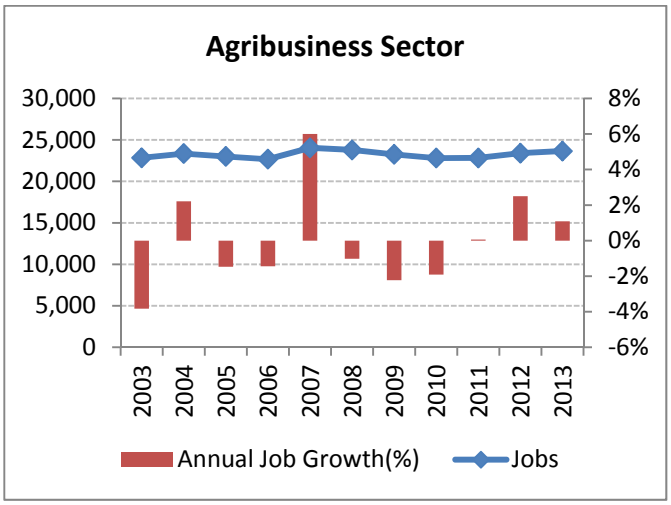
AGRIBUSINESS

The 23,700 jobs in Agribusiness are found in 2013 in a range of interrelated 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 27% of the sector's jobs.

A breakdown of employment for the Farm Production industry group 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.[6] 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

Agribusiness sector as a whole was able to achieve a positive job growth over the 2003 to 2013 period. Although three 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% in a year. Although it lost some jobs during the recession period, it was able to achieve a moderate job growth throughout the 2003 to 2013 period.

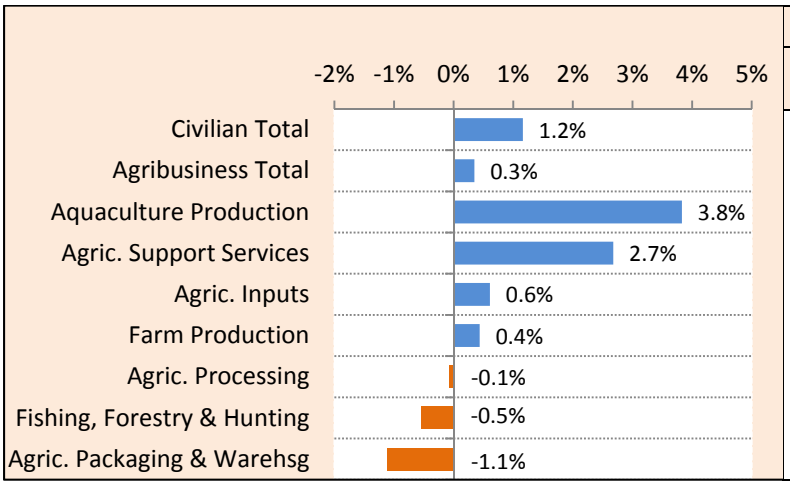
The best performing agribusiness industry group over the 2003 to 2013 cycle was the relatively small, Aquaculture industry with a 3.8% average annual increase in jobs.

Another high-performing group in agribusiness during the 2003 to 2013 period was Agricultural Support Services. This group experienced a job growth in most years of the measurement period, turning in an average 2.7% job growth per year over 2003 to 2013.

Fishing & Forestry/Hunting that lost about 23% of its jobs in 2003 didn't have to go through an additional severe job loss over the measurement period, resulting in an average 0.5% job loss annually over the 2003 to 2013 period.

[6] 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 2003-2013



	Annual Job Growth				Jobs in 2013[p]
	2003-2013[p]	2003-2007	2007-2010	2010-2013[p]	
Civilian Total	1.2%	3.1%	-1.6%	1.4%	814,217
Agribusiness Total	0.3%	1.3%	-1.7%	1.2%	23,652
Aquaculture Production	3.8%	8.2%	-3.8%	6.1%	233
Agric. Support Services	2.7%	4.3%	1.1%	2.1%	1,348
Agric. Inputs	0.6%	3.2%	0.1%	-2.2%	407
Farm Production	0.4%	1.2%	-0.9%	0.8%	13,411
Agric. Processing	-0.1%	0.6%	-3.4%	2.5%	6,378
Fishing, Forestry & Hunting	-0.5%	0.1%	-0.1%	-1.8%	1,622
Agric. Packaging & Warehsg	-1.1%	9.4%	-22.2%	9.8%	253

[1] Aquaculture is measured with BLS data for Wage and Salary jobs due to the absence of this specific industry in the EMSI data base.
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 period.

All four groups that gained jobs over the 2003 to 2013 period outperformed the same activities in the U.S.. Among those, Aquaculture gained jobs 3.8% annually while its national counterpart lost on average 1.6 % of its jobs annually. Fishing and Agricultural Packaging lost jobs over the period and lost jobs more than did nationally

TABLE 8. HAWAII AGRIBUSINESS SECTOR PERFORMANCE COMPARED WITH NATION

				Avg. Ann. Job Growth		When U.S.=100%		
	Jobs (2013[p])	Jobs per Estabs (2013[p])	Avg. Annual Earnings (2013[p])	2003-2013[p]	above or below U.S.	Concentration[1]	Jobs per Estabs	Avg. Ann. Earning
Total Civilian Jobs	814,217	21.2	46,727	1.2%	0.2%	100%	108%	91%
AGRIBUSINESS	**23,652**	**28.8**	**33,457**	**0.3%**	**0.2%**	**91%**	**84%**	**86%**
Aquaculture Production	233	11.6	39,167	3.8%	5.4%	993%	176%	127%
Agric. Support Services	1,348	13.5	37,740	2.7%	0.6%	55%	100%	78%
Agric. Inputs	407	12.3	62,373	0.6%	0.3%	37%	78%	93%
Farm Production	13,411	39.4	27,758	0.4%	0.3%	94%	96%	103%
Agric. Processing	6,378	24.7	42,784	-0.1%	0.2%	93%	45%	78%
Fishing, Forestry & Hunting	1,622	26.6	28,263	-0.5%	-0.7%	339%	84%	85%
Agric. Packaging & Warehsg	253	25.3	59,122	-1.1%	-1.1%	32%	72%	115%

[1] Proportion of jobs in the activity in Hawaii compared to the proportion nationally
Source: see Table 3 for data source.

Agribusiness shows less concentration in Hawaii than nationally in most activities. The clear exceptions are Aquaculture and Fishing that are significantly more concentrated in Hawaii. Even if there are only about 230 jobs in Aquaculture Production in Hawaii in 2013, its job concentration in Hawaii is almost 10 times as high as nationally. The concentration of Fishing & Forest/Hunting is also substantially higher than the national average.

Overall Performance

From an overall performance standpoint, four groups – Aquaculture, Agricultural Support Services, Agricultural Inputs and Farm Production - managed to rate in the highest, Base-Growth or Emerging performance category for the 2003 to 2013 period. Aquaculture in Hawaii grew jobs impressively while the same activity lost jobs nationally over the period. The earnings average for 2013 also exceeded its national counterpart by 27% .

Farm Production, which used to be a declining sector for a long period of time in the past, fell into Emerging category for the 2003 to 2013 period by adding about 1,000 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 growing showing exceptional growth in recent years, while others like pineapple growing 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 coupled with the sketchiness of jobs data for key areas like seed corn and other crop areas makes it difficult to effectively monitor Farming for performance purposes.

Losing jobs at 1.1% per year over the 2003 to 2013 period, Agricultural Packaging & Warehousing fells into Declining category. Other declining activities for 2003 to 2013 in Agribusiness included Agricultural Processing, and Fishing & Forestry/Hunting. Fishing and Agricultural Packaging lost jobs faster than nationally, resulting in a decline of competitive share.

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

HEALTH & WELLNESS

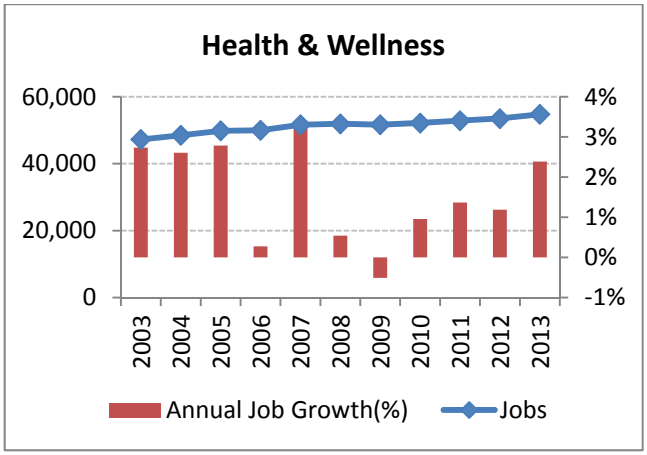
Health and Wellness has been of interest for several decades as a potential export activity. It has been proposed that first class medical and related health facilities in Hawaii could spur Health and Wellness tourism among the more affluent in Asian-Pacific countries that may not have the same level of health care. Unfortunately there are no readily available data on 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.[7] This definition identifies the major industry groups of Hawaii's health care sector.

Size & Growth

The Health and Wellness Sector accounted for an estimated 54,800 jobs in 2013. About 75% 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 2003 to 2013 period.



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

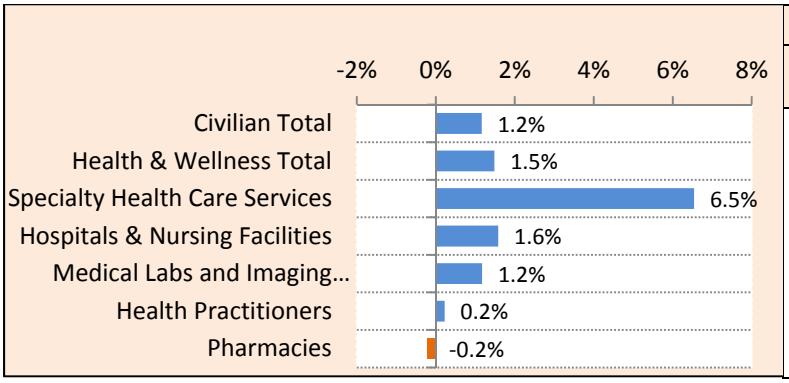
Pharmacies (a retailing industry which includes drug stores) expanded jobs moderately in the 2003 to 2007 expansion phase but experienced a sharp decline during the 2008-2010 contraction period. It lost 550 jobs in the 3 year period. The reason for the decline is not clear. However, the filling of prescriptions 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.

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

Health Practitioners 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 0.2% per year for the 2003 to 2013 period.

The highest job growth was observed in a relatively smaller industry groups, Specialty Health Care. Except a modest job loss in 2008, this industry group achieved a fast job growth during the whole observation period. The subsector gained jobs on average 6.5% per year during the period.

TABLE 9. JOBS IN HEALTH AND WELLNESS: AVERAGE ANNUAL GROWTH OVER 2003-2013



Annual Job Growth				Jobs in 2013[p]
2003-2013[p]	2003-2007	2007-2010	2010-2013[p]	
1.2%	3.1%	-1.6%	1.4%	814,217
1.5%	2.2%	0.3%	1.6%	54,769
6.5%	12.3%	0.4%	5.4%	8,763
1.6%	2.7%	1.0%	0.7%	19,407
1.2%	3.8%	-0.4%	-0.6%	1,665
0.2%	-0.9%	0.7%	1.2%	21,401
-0.2%	1.9%	-4.9%	1.8%	3,533

Source: see Table 3 for data source.

Competitive Metrics

Overall, the growth in Hawaii's health and wellness sector was below national growth, resulting in loss of some competitive share in the 2003 to 2013 period. This was due mainly to anemic job growth in the Health Practitioners and Pharmacies.

Only two industry groups, Medical Testing and Pharmacies, show concentrations above national levels. Health Practitioners had been 18% more concentrated than the national group when the measurement period began in 2003. However, that group lost 22% points of concentration in Hawaii, lowering it to 96% of national concentration in 2013.

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

	Jobs (2013[p])	Jobs per Estabs (2013)	Avg. Annual Earnings (2013)	Avg. Ann. Job Growth		When U.S.=100%		
				2003-2013	above or below U.S.	Concentration[1]	Jobs per Estabs	Avg. Ann. Earning
Total Civilian Jobs	814,217	21.2	46,727	1.2%	0.2%	100%	108%	91%
HEALTH & WELLNESS	**54,769**	**18.1**	**68,030**	**1.5%**	**-0.6%**	**82%**	**77%**	**109%**
Specialty Health Care Services	8,763	45.2	43,929	6.5%	0.7%	79%	107%	108%
Hospitals & Nursing Facilities	19,407	303.2	72,806	1.6%	0.5%	67%	119%	121%
Medical Labs & Imaging Centers	1,665	40.6	61,003	1.2%	-1.5%	138%	261%	88%
Health Practitioners	21,401	8.5	77,994	0.2%	-1.9%	96%	82%	100%
Pharmacies	3,533	16.8	44,529	-0.2%	-0.8%	107%	132%	99%

[1] Proportion of jobs in the activity in Hawaii compared to the proportion nationally
Source: see Table 3 for data source.

At $68,000, the average earnings for the health & wellness sector as a whole exceeded the national average in 2013 by nearly 9%. This is the only major sector in the targeted industry portfolio that has earnings above the U.S. average for the same sector. Except for Medical Testing, all groups in the sector have earnings either similar to or higher than the U.S. average.

Overall Performance

Among the health & wellness industry groups, Specialty Health Care, and Hospitals & Nursing Facilities performed the best in terms of growth and competitiveness. Both groups didn't exceed the national level in terms of industry concentration though.

Health Practitioners, and Medical Labs and Imaging Centers fells into Transitioning category. These groups grew jobs but lost some competitive national shares due to better growth at the U.S. level.

The only declining activity in health and wellness sector for 2003 to 2013 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 -Hospitals & Nursing Facilities	
Declining Activities	*Transitioning Activities*
-Pharmacies	-Health Practitioners -Medical Labs and Imaging Centers

EDUCATION

Education is another sector that has been proposed as a way to export Hawaii's expertise to the Asia-Pacific region. It has been thought that building an export market for Hawaii's higher education system could draw affluent students from the Asia-Pacific region.

However, it is not possible to isolate statistics on this market. The most readily available data for education activity reflects private sector colleges and specialty schools. Unfortunately, there is no information on the portion of these activities that represent educational exports. Hopefully, these data can be used with data on foreign students as they are developed to better evaluate the basis for educational export potential.

Size & Growth

Private post secondary and specialty education in Hawaii accounted for 10,800 jobs in 2013. These sectors together performed better than the rest of the Hawaii economy. Jobs grew 2.0% annually, adding almost 2,000 new jobs to the economy over the past ten years.

Main contributor to the job gains in the sector was Specialty Education. Higher Education lost jobs while rest of the economy was gaining jobs during the 2003-2007 expansion period. During the 2008-2010 contraction period, contrast to the most other sectors in the economy, both Specialty Education and Higher Education grew jobs on average 4.5% annually. There is a tendency for educational enrollments to rise during economic declines.

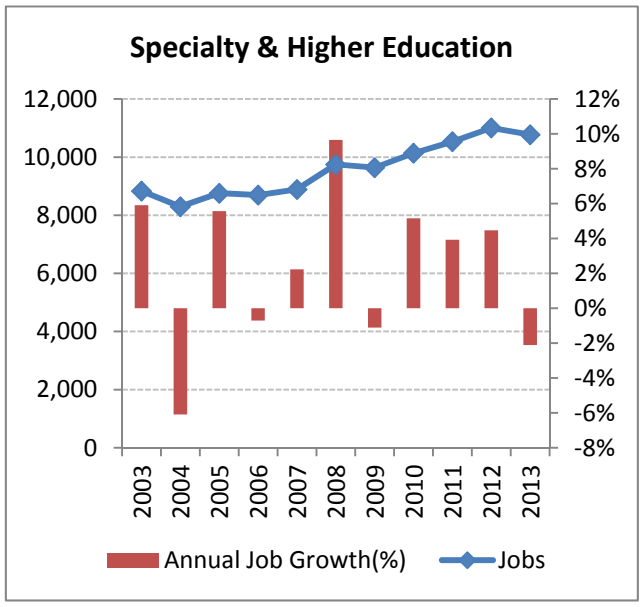
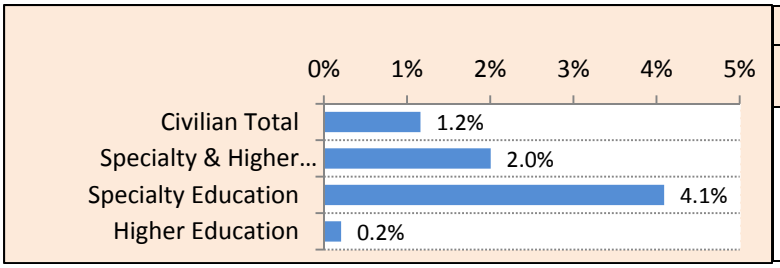


TABLE 11. JOBS IN HIGHER AND SPECIALTY EDUCATION: AVERAGE ANNUAL GROWTH OVER 2003-2013



Annual Job Growth				Jobs in 2013[p]
2003-2013[p]	2003-2007	2007-2010	2010-2013[p]	
1.2%	3.1%	-1.6%	1.4%	814,217
2.0%	0.2%	4.5%	2.1%	10,773
4.1%	2.1%	4.9%	6.1%	5,548
0.2%	-1.3%	4.2%	-1.6%	5,225

Source: see Table 3 for data source.

Competitive Metrics

Despite the high growth in private education jobs over the 2003 to 2013 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 2003 the private Higher and Specialty Education activities together were about 85% as concentrated as the same activities nationally. By 2013 that concentration had fallen to 74% of the national level.

Specialty education showed a sharp decline in concentration, falling nearly 14% points, from 8% higher concentration than nationally in 2003, to 94% of the national level in 2013.

The annual earnings of Specialty Education in Hawaii averaged at $26,400 in 2013, which is about half of the earning average of civilian jobs in Hawaii. This level of earnings was also relatively low compared with $37,700 nationally. The average earnings in Hawaii Higher Education were higher than those in Specialty Education, but were 30% lower than nationally paid for the same activities in 2013.

TABLE 12. HAWAII PRIVATE EDUCATION SECTOR PERFORMANCE COMPARED WITH NATION

				Avg. Ann. Job Growth		When U.S.=100%		
	Jobs (2013 p)	Jobs per Estabs (2013p)	Avg. Annual Earnings (2013p)	2003-2013p	above or below U.S.	Concen-tration[1]	Jobs per Estabs	Avg. Ann. Earn-ing
Total Civilian Jobs	814,217	21.2	46,727	1.2%	0.2%	100%	108%	91%
EDUCATION (PRIVATE)	**10,773**	**23.7**	**26,388**	**2.0%**	**-1.3%**	**74%**	**53%**	**70%**
Specialty Education	5,548	14.7	19,957	4.1%	-1.3%	94%	73%	87%
Higher Education	5,225	67.0	33,216	0.2%	-1.9%	60%	27%	70%

[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 growth of jobs, but loss of competitive share to the national sector, both Higher Education and Specialty Education fell into Transitioning category over the 2003 to 2013 period. They achieved a positive job growth over the period, but not as fast as the same activities nationally.

Transitioning Activities
-Specialty Education -Higher Education

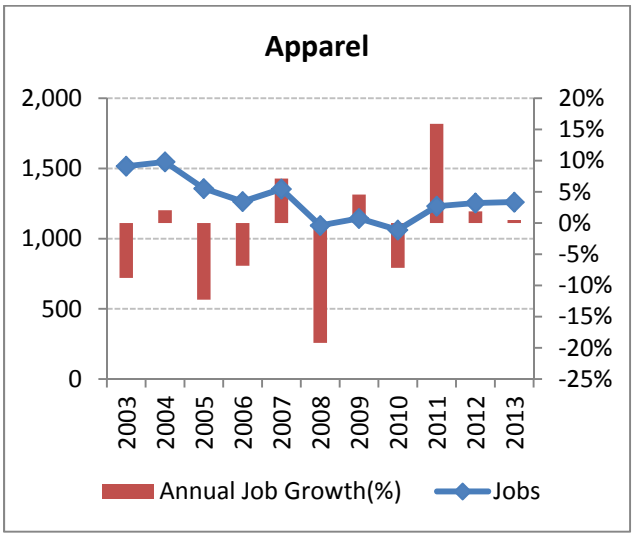
OTHER TARGETED ACTIVITIES

Apparel and Call Centers have been pursued as sources of economic diversification over the last decade or more. Apparel was promoted based on Hawaii's unique style and cultural heritage that brought Hawaiian/Aloha wear to worldwide prominence. However, over the years the labor intensive job of manufacturing garments was substantially 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 1,516 in 2003 to 1,062 in 2010. However, the industry regained some jobs since 2010 possibly stirred by high tourism demand in Hawaii in recent years. The 2013 preliminary data shows 1,260 jobs in Apparel in 2013.

Call Center activity exploded in early 2000s increasing jobs from 210 in 2002 to 437 in 2003. The activity sustained the high level of jobs for several years until 2006, and then continued to shrink until recently. The current level of jobs is about 60% of what the industry used to offer in its peak year. Due to the rapid job increase in Call Centers from 2002 to 2003, interpretation of long term performance of the sector varies radically depending on which year we use as a base year. Employing 2003, a peak year, as a new base year of measurement turned Call Centers from a growing sector to a declining sector.



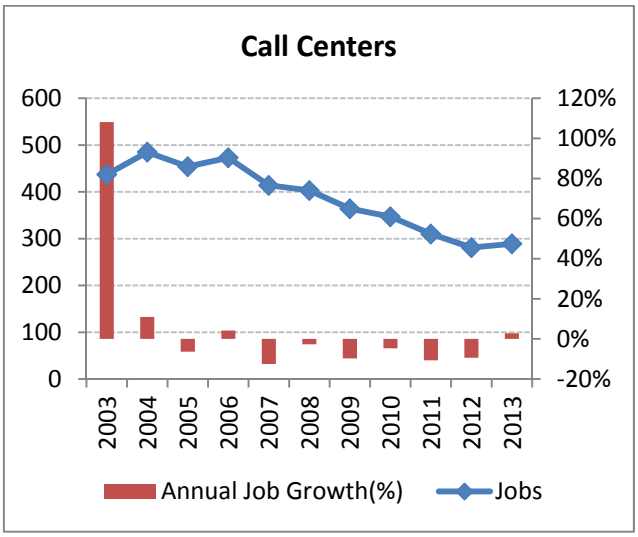
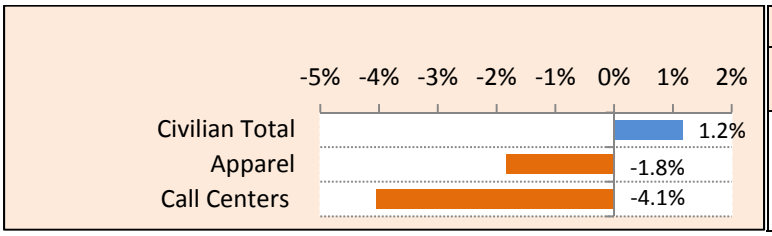


TABLE 13 . JOBS IN APPAREL AND CALL CENTERS: AVERAGE ANNUAL GROWTH OVER 2003-2013



Annual Job Growth				Jobs in 2013[p]
2003-2013[p]	2003-2007	2007-2010	2010-2013[p]	
1.2%	3.1%	-1.6%	1.4%	814,217
-1.8%	-2.8%	-7.8%	5.9%	1,260
-4.1%	-1.3%	-5.7%	-5.9%	289

Source: see Table 3 for data source.

Competitive Metrics

In terms of job growth, Apparel performed better than their national counterpart. Even if Apparel in Hawaii lost 1.8% of its jobs annually during the 2003-2013 period, the U.S. garment industry lost almost 5% of its jobs annually for the same period as much manufacturing has been outsourced aboard.

In contrast to Call Centers in Hawaii, the sector expanded relatively fast nationally. Call Centers at national level gained jobs on average 3% per year for the 2003 to 2013 period.

Apparel shows a 61% margin over the nation in terms of concentration in 2013. Unlike Apparel, Call Centers has a very low job concentration in Hawaii's economy compared to the activity nationally. The concentration of Call Centers in Hawaii is only 13% of the national level in 2013, down from 27% in 2003.

The annual earnings average for Apparel and Call Center are $23,600 and $17,200 respectively in 2013. These levels of earnings are only about half the average earnings nationally, suggesting that these sectors in Hawaii are predominantly part time activities for workers.

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

				Avg. Ann. Job Growth		When U.S.=100%		
	Jobs (2013[p])	Jobs per Estabs (2013[p])	Avg. Annual Earnings (2013[p])	2003-2013[p]	above or below U.S.	Concentration[1]	Jobs per Estabs	Avg. Ann. Earning
Total Civilian Jobs	814,217	21.2	46,727	1.2%	0.2%	100%	108%	91%
Apparel	1,260	22.9	23,637	-1.8%	2.9%	161%	92%	60%
Call Centers	289	11.1	17,170	-4.1%	-7.0%	13%	19%	47%

[1] Proportion of jobs in the activity in Hawaii compared to the proportion nationally
Source: see Table 3 for data source.

Overall Performance

Excluding the sharp growth from 2002 to 2003 from the measurement turned Call Centers into a declining sector. The sector lost jobs throughout the measurement period regardless of the business cycle that the economy has experienced.

Declining Activities
-Apparel -Call Centers

Losing jobs at 1.8% per year over the 2003 to 2013 economic cycle, Apparel also fell into the declining category. The job growth during 2010-2013 wasn't substantial enough to reverse the declining

trend. Garment manufacturing in Hawaii has an important implication for tourism revenues. Visitor who buy Hawaiian wear, often as gifts, prefer those actually made in Hawaii. If the local manufacturing of garments was to disappear, the impact on sales of Hawaiian wear would be of concern.

CONCLUSIONS

This report is the fourth 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 - 2011 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 2013 preliminary data to illustrate how target industries have been performing after the recovery period of the recession.

Table 15 summarizes the best performing target industry groups for the 2003 to 2013 period in terms of average growth and national competitiveness. They all showed positive growth and at the same time outperformed the same activity nationally over the measurement period. Among fifteen best performing industry groups, nine groups had earnings averages above the average for Hawaii's economy.

TABLE 15. HIGHEST PERFORMING TARGETED ACTIVITIES, 2003 TO 2013

INDUSTRY GROUPS	JOBS IN HAWAII		AVE. ANN. JOB GROWTH (2003-2013[p])		CONCENTRATION[2] OF INDUSTRY IN HAWAII COMPARED TO U.S.		AVE ANNUAL EARNINGS (2013[p])	
	2013[p]	CHANGE 2003-2013[p]	HAWAII	U.S.	2013[p]	% Point CHNG 2003-2013[p]	HAWAII	U.S.
TOTAL CIVILIAN JOBS	814,217	88,804	1.2%	1.0%	100%	0%	$46,727	$51,581
Base-Growth Activities								
Above Average State Earnings								
Alternative Power Generation	269	117	5.9%	-5.0%	87%	57%	$94,492	$154,680
R& D Services (exc Biotechnology)	1,892	314	1.8%	1.8%	78%	-1%	$85,108	$114,403
Hospitals & Nursing Facilities	19,407	2,815	1.6%	1.1%	67%	2%	$72,806	$60,046
Agric. Inputs	407	24	0.6%	0.3%	37%	0%	$62,373	$67,322
Chemical & Pharmaceutical Mfg	125	29	2.7%	-0.5%	7%	2%	$60,596	$136,290
Other Technology Mfg	682	352	7.5%	0.0%	12%	6%	$58,243	$104,858
Business Consulting	4,991	2,214	6.0%	4.7%	62%	6%	$56,542	$74,690
Biotechnology	1,959	620	3.9%	2.2%	253%	34%	$53,668	$123,536
Film, TV, Video Production/Distrib	1,579	320	2.3%	0.4%	94%	15%	$52,986	$96,443
Below Average State Earnings								
Cultural Activities	3,014	1,441	6.7%	2.0%	379%	135%	$41,759	$47,969
Specialty Health Care Services	8,763	4,112	6.5%	5.8%	79%	4%	$43,929	$40,520
Aquaculture Production	233	73	3.8%	-1.6%	993%	403%	$39,167	$30,760
Agric. Support Services	1,348	313	2.7%	2.1%	55%	2%	$37,740	$48,487
Farm Production	13,411	573	0.4%	0.1%	94%	1%	$27,758	$26,951
Music	1,248	220	2.0%	1.5%	156%	4%	$23,823	$40,512
Design Services	1,906	416	2.5%	1.9%	94%	4%	$19,714	$35,478

* For definition and data source, see Table 3