Hawaii's Targeted & Emerging Industries

2011 Update Report

Department of Business, Economic Development and Tourism

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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.

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 out-performed 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 2011. While the 2009 benchmark report and the 2010 update report used the year 2002 as a base year of comparison, this report adopted 2001 as a base year. This decision was made because the data for 2001 became newly available in the EMSI database and 2001 was more or less on the normal growth path, while the year 2002 has seen a temporary decline in employment due to the terrorist attack on September 11, 2001.

Although both the U.S. and Hawaii economy have shown many positive signs of recovery since late 2010, the first full year of the new expansion cycle started in 2011. This means that the 2001 to 2011 period is roughly a complete economic cycle in terms of employment and should reveal how well the targeted industry portfolio performed on average in both good and bad times and during the recovery.

Table S-1 provides a comprehensive overview of performance among activities in the Targeted Industry Portfolio. 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 counterparts. Among those were Film and TV, R&D, Medical Testing, Aquaculture, Specialty Health Care, Business Consulting, Technology Manufacturing and Computer & Digital Media.

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

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

INDUSTRY GROUPS[1]	HAWAII JOBS	JOB CHANGE IN HAWAII	AVE. ANN. JOB GROWTH 2001 - 2011		COMPETITIVE MEASURES[2]			AVE. ANNUAL EARNINGS 2011	
					GROWTH ABOVE OR BELOW U.S.	CONCENTRATION OF INDUSTRY IN HAWAII COMPARED TO U.S.			
	2011	2001-2011	HAWAII	U.S.	2001-2011	2011	% Point CHNG 2001-2011	HAWAII	U.S.
TOTAL CIVILIAN EMPLOY.	779,663	72,546	1.0%	0.6%	0.4%			$48,474	$51,816
Base-Growth Activities									
Film, TV, Video Prod/Distrib	**2,559**	1,473	8.9%	0.2%	8.7%	152%	83%	$51,109	$94,581
Research & Devel.	**4,015**	1,442	4.6%	1.8%	2.7%	127%	25%	$67,187	$109,222
Biotech R&D	2,046	870	5.7%	1.8%	3.9%	278%	79%	$49,332	$116,234
Medical Testing	**1,731**	494	3.4%	3.0%	0.4%	147%	0%	$59,824	$67,926
Aquculture Production	**202**	57	3.4%	-2.1%	5.4%	858%	338%	$41,829	$31,098
Cultural Activities	**2,387**	442	2.1%	1.4%	0.6%	279%	6%	$45,749	$44,592
Emerging Activities									
Technology Manufacturing	**1,326**	772	9.1%	-1.1%	10.2%	16%	10%	$70,550	$108,344
Specialty Health Care	**7,439**	3,735	7.2%	5.5%	1.7%	77%	9%	$43,700	$40,729
Call Centers	**354**	149	5.6%	1.1%	4.6%	17%	6%	$20,386	$34,771
Business Consulting	**4,805**	1,982	5.5%	4.5%	0.9%	63%	3%	$54,760	$76,212
Higher Education	**5,919**	1,261	2.4%	2.3%	0.2%	70%	-2%	$44,496	$57,357
Design Services	**1,459**	265	2.0%	1.6%	0.4%	89%	0%	$35,633	$44,051
Computer and Digital Media	**6,540**	1,026	1.7%	1.2%	0.5%	64%	1%	$68,771	$100,620
Engrng and Related	**5,288**	492	1.0%	0.3%	0.7%	86%	2%	$78,798	$82,076
Transitioning Activities									
Specialty Education	**5,106**	1,803	4.5%	5.4%	-1.0%	96%	-14%	$21,962	$23,478
Tech Consulting Services	**4,236**	1,487	4.4%	5.3%	-0.9%	64%	-9%	$53,717	$74,664
Art Education	**661**	208	3.9%	5.3%	-1.5%	69%	-13%	$9,966	$10,115
Agric. Support Services	**1,276**	229	2.0%	2.3%	-0.3%	53%	-4%	$42,356	$48,174
Hospitals/Nursing Facilities	**19,287**	2,311	1.3%	1.4%	-0.1%	66%	-3%	$67,699	$57,051
Performing and Creative Arts	**9,112**	578	0.7%	2.0%	-1.4%	134%	-26%	$20,550	$25,136
Health Practitioners	**20,772**	1,055	0.5%	2.3%	-1.8%	96%	-24%	$74,493	$76,187
Marketing/Photo & Related	**4,880**	83	0.2%	1.4%	-1.2%	81%	-14%	$34,569	$60,950
Declining Activities									
Farm Production	**13,508**	-60	0.0%	-1.0%	1.0%	95%	6%	$26,716	$29,587
Architecture	**1,918**	-53	-0.3%	-1.1%	0.8%	142%	6%	$71,700	$66,430
Agric. Packaging & Warehsg	**237**	-22	-0.9%	-0.9%	0.0%	31%	-1%	$52,107	$50,803
Music	**924**	-91	-0.9%	0.3%	-1.2%	127%	-22%	$29,342	$40,671
Pharmacies	**3,302**	-404	-1.1%	0.2%	-1.4%	102%	-20%	$42,297	$42,755
Agric. Inputs	**401**	-71	-1.6%	-0.7%	-0.9%	38%	-5%	$57,695	$64,412
Tech Equipment Distri.	**787**	-148	-1.7%	-1.1%	-0.6%	33%	-3%	$83,792	$107,246
Agric. Processing	**6,062**	-1,155	-1.7%	-0.5%	-1.2%	88%	-16%	$40,685	$52,227
Radio and TV Broadcasting	**1,180**	-293	-2.2%	-1.1%	-1.1%	102%	-17%	$60,602	$79,342
Fishing, Forestry & Hunting	**1,688**	-472	-2.4%	-0.8%	-1.6%	349%	-80%	$18,347	$28,869
Publishing & Information	**2,161**	-923	-3.5%	-2.2%	-1.3%	65%	-12%	$55,110	$71,314
Information and Tele Tech	**4,025**	-1,771	-3.6%	-2.6%	-1.0%	62%	-10%	$84,622	$97,254
Apparel	**1,166**	-1,029	-6.1%	-7.2%	1.1%	142%	11%	$19,245	$41,078

[1] Computer Service in Technology Sector, 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 2011 are based on early 2011 actual data and are also from EMSI.

- Adjusting for overlaps, the high-performing activities in the target industry portfolio (Base-growth and Emerging) accounted for about 44,600 jobs or 6% of all civilian jobs in 2011. However, between 2001 and 2011 those activities generated 19% of the total gain in jobs for the civilian economy, or about 13,700 new jobs.

- About 40% of the high-performing activities had the average annual earnings that were either close or exceeded $70,000 in 2011. Engineering and Related Activity had the highest average at $78,800. By comparison, the average earning for the civilian economy in 2011 was $48,500 by the preliminary 2011 estimate.

- Film/TV that fell under the Declining activities in the 2010 update report was rated as one of the best performing activities.[2] Film/TV is a volatile activity that depends on the number of productions filmed per year. With more new shows filmed in late 2010, the number of 2010 jobs has more than doubled from its 2009 level and is much higher than its previous peak in 2005. The high level of jobs in Film/TV continued in 2011.

- Scientific Research and Development was among the highest performing activities. While still a small industry group, R&D job growth averaged 4.6% over the 2001 to 2011 period, nearly five times faster than the growth in all civilian jobs and an average of 2.7 percentage points per year faster than growth of the same industry group nationally. Moreover, R&D has achieved a higher than national concentration in Hawaii's economy, 27% more concentrated than for the industry nationally. Within R&D, Biotechnology was also a very high performing activity, which had an even greater concentration in the economy than other R&D activity by 2011.

- Eight activities in the portfolio, such as Special Education, Technical Consulting, Arts Education, Agric. Support Services, Hospital/Nursing Facilities, Performing Arts, Health Practitioners, and Marketing & Related 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. Five of those activities, however, grew much 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. The concern is that they generally lost ground competitively to the same activities at the national level.

- Average earnings among the Transitioning activities were generally lower than for the high performing group with two activities in the Health Sector as exceptions. Hospitals/Nursing Facilities and Health Practitioners, that had the most jobs in the Transitioning group at about 40,000 combined, had high average earnings that were close or above $70,000.

- About a dozen activities in the portfolio fell into the Declining industry category as the result of net job losses for the 2001 to 2011 period. Notable among these were Information and Telecommunication, Agric. Processing, and Apparel.

[2] Film/TV jobs mainly reflect just the production crews. It does not include actors, directors, writers and other creative occupations. Those jobs are included in various industries of the Creative Sector. However, the distinction between those engaged in Film/TV as opposed to live performances is not made in the available data.

- Except for Music and Pharmacies, 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 37,400 in 2011 (4.8% of all civilian jobs), representing a loss of more than 6,500 jobs from 2001. Seven of the thirteen industry groups 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.

Some targeted activities of interest could not be measured using standard statistics that are generated for production industries. Among those are Astronomy, Dual Use Technology, Ocean Science and Technology, and some others. These activities are more market- and product-based and require special surveying efforts. Data from such efforts have been included in this report to the extent available. However, one thing is important to note: The jobs in those market- and product-based activities are included for the most part in one or more of the production-side industries presented in Table S-1.

It is also 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.

Primarily the performance assessment serves 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, which are very time and resource intensive, will benefit from the priorities economic developers provide for that research after reviewing the performance results in this report series.

OVERVIEW

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 second report that updates the review of targeted industry performance at the state level to 2011 (preliminary data), including data revisions for 2001-2010 made by data providers.

Defining & Measuring 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.

Defining the activities in the portfolio in a way that could be measured was a key step in assessing the portfolio. An economic activity can be defined in several ways. One way is by the *industry that produces a good or service*, for example the computer services industry. This definition focuses on firms and workers engaged in producing a range of products through the same production process. An economic activity can also be defined by a *particular good or service* produced such as computer programming, which would be a major product set of the computer services industry. Finally, an activity can be defined by the *market* it serves, such as digital special effects for films or applications support for mobile devices. These have been new markets for the computer services industry in recent years, although those markets are also served by elements of the Film industry.

Targeted industries proposed for Hawaii have been a mixture of all three of these concepts.[3] It is OK to emphasize different bases for defining the activity we want to develop. The problem comes when we want to measure and track the growth and performance of these activities over time. The ability to measure economic activity depends on the data available and the cost of obtaining the data if it does not exist. Most economic research utilizes existing data for economic activity that is produced regularly by established major statistical programs of government agencies. However, most of these statistical programs gather data based on jobs and earnings of standard industries rather than for products and markets.

To develop data on products and markets usually requires special surveys, which are expensive and time consuming. Researchers have relied on development agencies and industry groups to survey market side activity and provide some data. But while these surveys can shed light on the number of jobs, sales and earnings for products and markets, it is hard to relate the results of surveys with other important data like the occupations, skill sets and educational requirements for those jobs. Data gathered for jobs in standard industry groups, on the other hand, can take advantage of parallel programs that survey occupations and skill sets for those industries and other programs that can translate those occupations and skills into the necessary educational programs.

Thus, as explained in detail in the 2009 study, the targeted industry portfolio is measured and assessed on the basis of industry and firm data on the production side that most closely matches the corresponding products and markets of interest to economic development.

The Targeted Industry Portfolio

Table 1 lists the industries of the portfolio. The list shows two major classes of activities -- those that can be reasonably measured with industry data (first two columns) and activities that represent more of a product or market concept. This report contains ample data for the jobs and earnings of the industry-based targets. Data for jobs in the product and market-based activities in this report were taken from existing surveys and studies.

Despite the limitation on direct data about market-based targeted activity it is important to note that those data are, for the most part, accounted for on the production side of Table 1.[4] That is because these market-based activities consist of bits and pieces of outputs from various production-side activities in the first two columns. For instance, some jobs in the engineering, computer services and R&D industries on the production side are dedicated to market-side activities such as Astronomy, Ocean Science and Defense Dual Use. Thus market activity data are imbedded in the production data and accounted for. However without resource intensive surveys, that data cannot be easily parsed into the corresponding market-side activities.

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

[3] For instance, the effort to develop biotechnology focuses mainly on the firms, workforce and facilities involved in that activity regardless of the products produced, which range from seed corn research to tissue regeneration. On the other hand the state's interest in digital media is focused on specialized products from the computer, music and film industries, mainly to serve entertainment markets. Finally, interest in dual-use technology activity is primarily focused on markets, specifically the military and later commercial markets for the products and services of Hawaii firms over a range of technology industries and products.

[4] Except for Captive Insurance and Specialty Tourism.

groups, definitions for measurement purposes have been adopted from previous studies, particularly for the technology sector, the creative sector, and health and wellness. Jobs and earnings 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. These detailed industries can then be combined into groupings that approximate the target activities shown in the first two columns of Table 1.

TABLE 1. TARGETED INDUSTRY PORTFOLIO

PRODUCTION SIDE TARGETED GROUPS		MARKET-SIDE ACTIVITIES
TECHNOLOGY	Architecture	TECHNOLOGY
Computer Services	Design Services	Astronomy
Engineering and Related Services	Radio and TV Broadcasting	Ocean Science & Tech.
Biotechnology	Film, TV and Video Production	Energy Technology
Technical Consulting Services	Music	Defense Dual Use
Research and Development Services	AGRIBUSINESS	OTHER TARGETS
Info and Telecom Tech Services	Farm Production	Captive Insurance
Medical and Diagnostic Testing	Agricultural Processing	Specialty Tourism
Technology Equipment Distrib.	Fishing, Forestry & Hunting	
Technology Manufacturing	Agricultural Support Services	
CREATIVE INDUSTRIES	Agricultural Inputs	
Performing and Creative Arts	Aquaculture Production	
Engineering/R&D	Agricultural Packaging and Warehousing	
Computer and Digital Media	OTHER TARGETS	
Marketing and Related	Health & Wellness	
Business Consulting	Education	
Publishing and Information	Apparel	
Cultural Activities	Call Centers	

Source: DBEDT.

In establishing and refining the definitions and measurements of the targeted industries, DBEDT Research has collaborated with numerous agencies and stakeholders, particularly representatives of the University of Hawaii, Hawaii Science and Technology Council (HiSciTech), the Workforce Development Council, Office of Planning and numerous other stakeholders. Industry criteria and policies developed by the County Economic Development Boards for the Comprehensive Economic Development Strategy plan process also contributed to the development of the targeted industry portfolio.

Portfolio Overview

Table 2 summarizes the change in jobs among the major sectors of the targeted industry portfolio from 2001 to the current estimate for 2011.[5] The table emphasizes three time periods. The 2001 to 2007 period represents the most recent expansion period in the economy for both the U.S. and Hawaii in terms of employment.[6] The 2007 to 2010 period is closely aligned with the recent contraction phase in the U.S. and Hawaii economies in terms of jobs.[7] The 2010 to 2011 period shows how jobs in the sectors are estimated to have performed very recently.

During the growth phase of the economic cycle, Technology and Creative sectors outperformed the state's economy in terms of average yearly job growth. During the recent contraction in the economy, some targeted industry sectors experienced job losses. Percentage wise, however, job losses in all major targeted industries were less over the contraction period than the civilian economy.

TABLE 2. CHANGE IN JOBS FOR MAJOR TARGETED INDUSTRY SECTORS IN HAWAII

TARGETED INDUSTRY SECTORS	JOBS[1]				CHANGES IN JOBS AVE. ANN. GROWTH (%)			
	2001	2007	2010	2011est.	2001-2007	2007-2010	2010-2011	**2001-2011**
TOTAL CIVILIAN EMPLOY.	**707,117**	**808,418**	**771,981**	**779,663**	**2.3%**	**-1.5%**	**1.0%**	**1.0%**
TECHNOLOGY SECTOR	23,757	27,303	27,821	27,836	2.3%	0.6%	0.1%	1.6%
CREATIVE SECTOR	39,527	47,137	45,835	46,315	3.0%	-0.9%	1.0%	1.6%
AGRIBUSINESS	24,868	24,238	23,388	23,374	-0.4%	-1.2%	-0.1%	-0.6%
HEALTH & WELLNESS	45,340	51,594	52,051	52,531	2.2%	0.3%	0.9%	1.5%
EDUCATION (PVT)	7,961	8,873	9,898	11,025	1.8%	3.7%	11.4%	3.3%
OTHER TARGETED								
Apparel	2,195	1,372	1,145	1,166	-7.5%	-5.9%	1.8%	-6.1%
Call Centers	205	415	355	354	12.5%	-5.1%	-0.3%	5.6%

[1]Includes wage & salary, sole proprietors & self employed.
Source: DBEDT based on data from Economic Modeling Specialists, Inc. (EMSI). Estimates for 2011 are based on early 2011 actual data and are also from EMSI.

In this update report, the industry groups of the targeted industry portfolio are presented by the major sectors shown in Table 2. The performance measures are the same as those developed for the 2009 report. However they are presented in slightly different way that will hopefully be more clear and intuitive to readers unfamiliar with economic performance measures.

The first 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.

[5] Final 2011 data at the detailed level will not be available until late spring 2012.

[6] Hawaii's employment declined by 1% in 2002 while U.S. employment declined by 0.3% for the same year. These losses were all recovered in 2003.

[7] Employment growth peaked for both Hawaii and the U.S. in 2007 before declining in 2008.

Second, we are interested in measuring how jobs among the portfolio activities have grown relative to the state as a whole. An activity may be showing positive job growth but unless it grows faster than the rest of the state's economy it is not helping to diversify that economy.

Third, the competitiveness and concentration of the activity in Hawaii compared to elsewhere is 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.

Finally, we are interested in the average earnings for workers in the activity. 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.

Together, these measures will help us group the activities in the portfolio 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. This suggested that Hawaii was developing a competitive advantage in the activities and 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 out-performed by the same activity nationally, suggesting that Hawaii was not as competitive.

Finally, *Declining* activities lost jobs over the measurement period.

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.[8] The project adopted a producing-industry-side definition for technology established by the U.S. Bureau of Labor Statistics (BLS).[9] The BLS approach classifies industries as being in the technology sector based on the proportion of highly trained technical workers in the industries.

In this updated report, an adjustment was made to the definition of a group in the Technology Sector, Information and Telecom Tech Services, due to changes in the 2007 industry coding system. The original definition of Information & Telecom Tech Services didn't include wired telecom carriers because the nature of works in the wired services required relatively less technology. In this updated report, however, the wired telecom services were included under Information & Telecom Tech Services because the new 2007 industry coding system combined the wired telecom carriers with two other telecom activities in the technology group.

Demand for the wired telecom services fell sharply in recent years. This was mainly due to the increased competition with new telecom services such as wireless and cable services. Facing the declining demand, many wired carriers chose to close or reduce the traditional wired services to expand other telecom services with more potential. As a result, it appears that now a variety of services, both wired and wireless and cable products, are often served by a single carrier. Hawaii was not an exception to this trend. The change in the 2007 industry coding system was a reflection of those market trends.

Size & Growth

With the adjustment described above, the technology sector in 2011 accounted for about 3.4% of all civilian jobs in Hawaii, including self-employed and sole proprietors. For the 2001 to 2011 period, the technology sector posted an average 1.6% gain in jobs per year, about 50 percent higher than the average growth for the civilian economy.

Technology Manufacturing turned in the best performance among the technology industry groups in terms of job growth. Other high-performing activities in the technology sector were R&D and Tech Consulting Services. The performances of these activities were especially impressive because they were relatively immune to the economy-wide decline in jobs from 2008 to 2010.

Thanks to large job gains in both R&D Services and Technology Manufacturing, the Technology sector as a whole was able to achieve job growth even during the recession. However, not all activities in the technology sector were immune to the recession. Information & Telecom Tech Services, and Engineering and Related Services experienced sharp job losses during the contraction phase. Medical Testing also lost some jobs.

Two technology industry groups failed to see job growth over the 2001 to 2011 business cycle. Those were Information & Telecom Tech and the relatively smaller Technology Equipment Distribution.

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

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

Computer Services accounts for the largest share of technology jobs in Hawaii with about 23% of the total in 2011. That industry group is followed in size by Engineering and Related and Tech Consulting Services. The smallest industry groups in technology are Tech Manufacturing and Tech Equipment Distribution.

TABLE 3. CHANGE IN TECHNOLOGY SECTOR JOBS IN HAWAII

INDUSTRY GROUPS	JOBS				CHANGES IN JOBS AVE. ANN. GROWTH (%)			
	2001	2007	2010	2011est.	2001-2007	2007-2010	2010-2011	**2001-2011**
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TECHNOLOGY SECTOR	**23,757**	**27,303**	**27,821**	**27,836**	**2.3%**	**0.6%**	**0.1%**	**1.6%**
Computer Services	5,117	6,362	6,448	6,428	3.7%	0.4%	-0.3%	2.3%
Engineering and Related Serv.	4,796	5,723	5,329	5,288	3.0%	-2.3%	-0.8%	1.0%
Tech Consulting Serv.	2,749	3,890	4,081	4,236	6.0%	1.6%	3.8%	4.4%
Information & Tele Tech Serv.	5,796	4,693	4,127	4,025	-3.5%	-4.2%	-2.5%	-3.6%
R&D Serv.	2,573	3,402	3,938	4,015	4.8%	5.0%	2.0%	4.6%
Biotech R&D	1,176	1,464	1,981	2,046	3.7%	10.6%	3.3%	5.7%
Medical Testing	1,237	1,719	1,698	1,731	5.6%	-0.4%	1.9%	3.4%
Technology Manufacturing	554	709	1,383	1,326	4.2%	24.9%	-4.1%	9.1%
Technology Equip Mfg	414	472	622	645	2.2%	9.6%	3.7%	4.5%
Alternate Power Generation	45	131	657	573	19.5%	71.2%	-12.8%	29.0%
Chem & Pharmec. Mfg	95	106	104	108	1.8%	-0.6%	3.8%	1.3%
Tech Equip Distribution	935	805	817	787	-2.5%	0.5%	-3.7%	-1.7%

*For definition and data source, see Table 2

Competitive Metrics

Table 4 shows the difference in percentage points between job growth in Hawaii and the nation for the technology sector industry groups. In all but three groups did Hawaii outperform the nation in job growth. Overall, Hawaii's technology sector grew jobs 1.2% points faster than the U.S.

Technology Manufacturing led the way in technology's competitive performance, seeing job growth 10.2% points faster than it had nationally. This high performance in manufacturing was mainly attributed to an extraordinary job growth in Alternative Power Generation. With Hawaii's launch of an ambitious renewable energy plan, jobs in Alternative Power Generation increased from 164 in 2009 to 657 in 2010.

R&D industry group also turned in a very impressive competitive gain, averaging 2.7% points more job growth for 2001 to 2011 compared to its national counterpart. R&D showed strength even during the 2008 to 2010 contraction, with jobs growing at 3.8% points faster than nationally.

Three technology industry groups (Technical Consulting, Information & Telecom Tech, and Equipment Distribution) lost competitive ground to their national counterparts over the 2001 to 2011 period.

In terms of concentration, technology remains a smaller proportion of Hawaii's economy than it is nationally. Hawaii's proportion of the State's workforce in technology was about 65% of the proportion nationally. However, thanks to its more competitive performance, this is up 5 % points from 2001.

Most of the technology industry groups are still a relatively smaller proportion of Hawaii's economy than they are nationally. The most notable exception is Research and Development, which is 27% more concentrated in Hawaii than nationally. Within R&D, the biotechnology industry is even more concentrated, registering 178% more than nationally in terms of job proportion in the economy.

Medical Testing also showed a higher proportion of jobs in Hawaii. Hawaii's proportion of this industry group was 47% more than nationally.

TABLE 4. HAWAII TECHNOLOGY PERFORMANCE COMPARED WITH NATION

INDUSTRY GROUPS	AVE. ANN. JOB GROWTH (2001 - 2011)		AVE. ANN. JOB GROWTH ABOVE OR BELOW U.S.[1]				CONCENTRATION OF INDUSTRY IN HAWAII COMPARED TO U.S.[2]	
	HAWAII	U.S.	**2001-2011**	2001-2007	2007-2010	2010-2011	2011	% Point CHNG 2001-2011
ALL TECHNOLOGY SECTOR	**1.6%**	**0.4%**	**1.2%**	**1.6%**	**1.3%**	**-1.6%**	**65%**	**5%**
Tech Manufacturing	9.1%	-1.1%	10.2%	5.1%	27.0%	-4.7%	16%	10%
Alternate Power Generation	29.0%	-5.8%	34.7%	22.9%	83.2%	-12.5%	181%	173%
Technology Equip Mfg	4.5%	-0.8%	5.4%	3.1%	11.0%	2.6%	11%	4%
Chem & Pharmec. Mfg	1.3%	-0.8%	2.1%	1.9%	1.6%	5.1%	6%	1%
R&D Serv.	4.6%	1.8%	2.7%	2.5%	3.8%	0.9%	127%	25%
Biotech R&D	5.7%	1.8%	3.9%	1.0%	9.8%	3.6%	278%	79%
Tech Consulting Serv.	4.4%	5.3%	-0.9%	-1.6%	0.1%	-0.4%	64%	-9%
Medical Testing	3.4%	3.0%	0.4%	2.0%	-2.5%	-0.1%	147%	0%
Computer Services	2.3%	1.5%	0.8%	2.5%	-0.8%	-4.1%	72%	3%
Engineering and Related Serv	1.0%	0.3%	0.7%	1.1%	0.8%	-2.0%	86%	2%
Tech Equip Distribution	-1.7%	-1.1%	-0.6%	-1.6%	3.2%	-5.4%	33%	-3%
Information & Tele Tech Serv.	-3.6%	-2.6%	-1.0%	-0.2%	-2.7%	-1.1%	62%	-10%

[1] Difference between the average growth of jobs in Hawaii vs. growth for the same activity nationally. For instance, jobs in Hawaii's tech sector as a whole showed 1.2 percentage points more growth for 2001-2011 than the same activity nationally. A negative percentage indicates the national activity grew faster (or in some cases contracted less). This metric corresponds to the Competitive Share Effect of the Shift-Share Measure of regional growth.

[2] Proportion of jobs in the activity in Hawaii compared to the proportion nationally. A proportion of 100% means that the activity accounts for an equal percentage of the total economy for the state and nation. For example, the proportion of all state jobs in the technology sector as a whole in Hawaii was only 65% of the proportion that same industry represents in the national economy. But the last column shows that this represented a gain of 5 percentage points from 2001. (Measure corresponds to Location Quotient or LQ).

*See Table 2 for data source

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 S-1.

Table 5 shows the technology industry groups by performance rating. Most of the technology industry groups fell into the high performing, Base-Growth and Emerging categories.

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.

Technical Consulting Services fell into the Transitioning category for 2001 to 2011 period. While job growth was strong in this industry group it still lost some competitive share to the national industry group. Also, while the annual earnings average for this group was above the average for Hawaii's economy, it was the lowest among the major technology industry groups at $53,700 in 2011.

TABLE 5. TECHNOLOGY INDUSTRY GROUPS, OVERALL PERFORMANCE RANKINGS

INDUSTRY GROUPS	JOB CHANGE IN HAWAII 2001-2011	AVE. ANN JOB GROWTH ABOVE OR BELOW US 2001-2011	CONCENTRATION OF INDUSTRY IN HAWAII COMPARED TO U.S. 2011	% Point CHNG 2001-2011	AVE. ANNUAL EARNINGS (2011) HAWAII	U.S.
TOTAL CIVILIAN EMPLOY.	72,546	0.4%			$48,474	$51,816
TECHNOLOGY SECTOR	**4,079**	**1.2%**	**65%**	**5%**	**$70,379**	**$93,864**
Base-Growth Activities						
R&D Serv.	1,442	2.7%	127%	25%	$67,187	$109,222
-Biotech R&D	870	3.9%	278%	79%	$49,332	$116,234
Medical Testing	494	0.4%	147%	0%	$59,824	$67,926
Emerging Activities						
Tech Manufacturing	772	10.2%	16%	10%	$70,550	$108,344
Computer Services	1,311	0.8%	72%	3%	$68,674	$95,048
Engineering and Related	492	0.7%	86%	2%	$78,798	$82,076
Transitioning Activities						
Tech Consulting Serv.	1,487	-0.9%	64%	-9%	$53,717	$74,664
Declining Activities						
Tech Equip Distribution	-148	-0.6%	33%	-3%	$83,792	$107,246
Information & Tele Tech Serv.	-1,771	-1.0%	62%	-10%	$84,622	$97,254

*For definition and data source, see Table 4

Technology Equipment Distribution (a trade industry) and Information & Telecom Technology Services fell into the Declining category for 2001 to 2011 by seeing job loss over the period. Both activities lost more jobs proportionately than the same activity nationally, resulting in losses of competitive shares to the U.S. economy.

Information Technology jobs declined in both Hawaii and the nation from 2001 to 2011, although 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.

Overall, the industry groups of the technology sector performed relatively well over the 2001 to 2011 business cycle. As a group they grew jobs faster than the national economy and two groups, R&D and Medical Testing are now more concentrated in Hawaii's economy than for the nation as a whole. Average earnings for all Hawaii technology industry groups are below national averages, but all exceed the average for Hawaii. [10]

Market Side Activities

Table 1 noted several technology activities that could not be measured with industry- based data because they represented market- or product-based concepts, not addressed by standard statistical programs. It was noted that jobs associated with most, if not all of these activities are accounted for in the production-based industry data presented.

However, DBEDT Research has assembled the available information on these market-based technology activities, and that information is summarized below.

Astronomy

Astronomy activity has found Hawaii attractive because of the exceptionally clear viewing conditions atop its highest peak of Mauna Kea on the Big Island of Hawaii and atop Haleakala on Maui. Educational institutions, governments and scientific organizations throughout the world have invested hundreds of millions of dollars in observatories on the summits of Mauna Kea and Haleakala.

According to information from the UH Institute for Astronomy, there were 11 astronomical facilities on Mauna Kea and six on Maui's Haleakala in 2008. Total expenditures for astronomical facilities and support services on these two islands totaled $108 million in 2008, up from $94 million in 2005. There were 735 jobs associated with these facilities and support services in 2008, up from 678 jobs in 2005.

Mauna Kea has been chosen as the site for one of the three new super telescopes to be built in various locations around the world over the next decade. The new Mauna Kea telescope will be a giant, 30-meter instrument called the TMT (for Thirty Meter Telescope). It will be built by a consortium including an association of Canadian Universities, the California Institute of Technology and the University of California.

Ocean Science and Technology

Ocean science and technology is a mix of different fields including biology, chemistry, geology, physics, engineering and others. In Hawaii, the ocean science and technology sector encompasses both the public and private sectors. The majority of activities in this sector are in research and technical development projects funded by the government, non-profit organizations and some private sources.

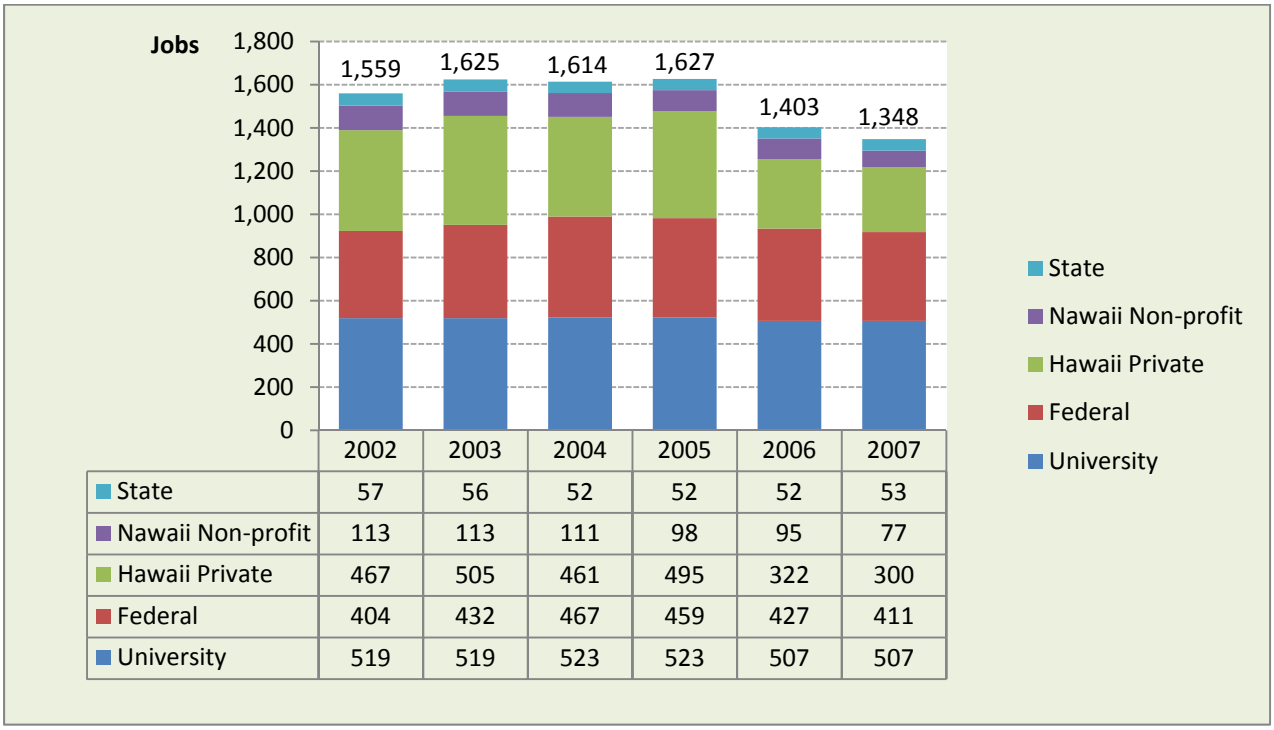
[10] The sub industry group activity of Biotech had average earnings relatively lower than other technology groups. This may be due to the number of field workers needed in the corn seed research industry.

Figure 1 charts the trend in jobs associated with Ocean S&T activity from 2002 to 2007, differentiated by performing sector. Performing sectors are the firms and agencies that received funding for projects.

The decline in total Ocean S&T jobs after 2005 corresponds to a decline in funding for those activities. A more thorough discussion of Ocean Science and Technology funding is presented in the 2009 Emerging Industries report.

The most recent survey on Ocean Science & Technology was conducted in 2008. The report of that survey may be accessed at:
http://hawaii.gov/dbedt/info/economic/data_reports/OceanScTechReport2007.pdf.

Figure 1. JOBS IN OCEAN SCIENCE & TECHNOLOGY (full-time equivalent)



	2002	2003	2004	2005	2006	2007
State	57	56	52	52	52	53
Nawaii Non-profit	113	113	111	98	95	77
Hawaii Private	467	505	461	495	322	300
Federal	404	432	467	459	427	411
University	519	519	523	523	507	507

Source: DBEDT, Ocean S&T Survey, 2008

Energy Technology

Energy technology targets a number of emerging markets by engaging a multitude of traditional industries. Those industries have allocated some of their activity to focus on the replacement or conservation of fossil fuels. While the system for industry classification does contain a classification for Other Power Generation and is included in the production side data of this report, that captures only a small part of the emerging field of alternate energy activity.

There are two major subsectors in energy technology. *Energy efficiency* is focused on reducing the use of energy in the economy, particularly in buildings. *Energy replacement* (renewable or alternate energy) is focused on replacing fossil fuel with alternative, preferably renewable sources like solar, wind, and other types.

Energy efficiency and energy replacement involve numerous traditional industries ranging from heating and plumping to engineering and architecture. For instance, solar panels may be in-

stalled by a number of different contracting specialties. About 20 different industries service some aspect or provide support for renewable energy and conservation. The 2009 Emerging Industries Report discusses in detail the range of industries associated with Energy Technology.

Dual Use (Military Technology Market)

Dual Use Technology has been a market opportunity for Hawaii companies to leverage investment in technology developed for military applications into products to serve commercial markets. For instance, a company developing corneal regeneration technology to treat battlefield eye injuries will likely find a market for that technology in the commercial medical sector.

Like other targets that represent market or product activities, data and information on the workers and revenues of firms serving the military technology market are difficult to develop. This is because they do not fit into the scheme of standard producing industries for which a rich set of data is compiled on a regular basis. Data for market and product based activity like Dual Use Technology must be developed through surveys or other estimating methods.

The most structured effort to gather data on the dual use sector to date was by the State Department of Labor and Industrial Relations (DLIR) in 2005. In support of the Workforce Development Council and Enterprise Honolulu, the Research and Statistics (R&S) Office of DLIR surveyed 132 companies in the dual use sector. The R&S survey estimated employment in the dual-use technology industry to be 1,204 workers in 2005 with an additional 108 positions vacant and needing to be filled.

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.[11] 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 13 creative industry groups accounted for an estimated 46,300 jobs in 2011, nearly 6% of all civilian jobs in Hawaii. Performing and Creative Arts activities are the largest industry group in the sector, accounting for almost 20 percent of jobs in the sector.

The creative sector outgrew the civilian economy in terms of jobs during the expansion period of 2001 to 2007 and experienced relatively milder job losses during the 2008 to 2010 contraction phase (Table 6). Consequently, overall the sector showed stronger growth than the rest of the economy for the 2001 to 2011 period.

TABLE 6. CHANGE IN CREATIVE SECTOR JOBS IN HAWAII

INDUSTRY GROUPS	JOBS				CHANGES IN JOBS AVE. ANN. GROWTH (%)			
	2001	2007	2010	2011est.	2001-2007	2007-2010	2010-2011	**2001-2011**
TOTAL CIVILIAN EMPLOY.	707,117	808,418	771,981	779,663	2.3%	-1.5%	1.0%	1.0%
CREATIVE SECTOR	**39,527**	**47,137**	**45,835**	**46,315**	**3.0%**	**-0.9%**	**1.0%**	**1.6%**
Performing and Creative Arts	8,534	9,900	9,195	9,112	2.5%	-2.4%	-0.9%	0.7%
Engineering and R&D Serv.	5,638	7,177	7,651	7,729	4.1%	2.2%	1.0%	3.2%
Computer and Digital Media	5,514	6,505	6,551	6,540	2.8%	0.2%	-0.2%	1.7%
Marketing, Photo. & Related	4,797	5,321	4,883	4,880	1.7%	-2.8%	-0.1%	0.2%
Business Consulting	2,823	4,333	4,649	4,805	7.4%	2.4%	3.4%	5.5%
Film, TV, Video Prod./Distrib.	1,086	1,412	2,428	2,559	4.5%	19.8%	5.4%	8.9%
Cultural Activities	1,945	2,300	2,098	2,387	2.8%	-3.0%	13.8%	2.1%
Publishing & Information	3,084	3,087	2,235	2,161	0.0%	-10.2%	-3.3%	-3.5%
Architecture	1,971	2,291	1,957	1,918	2.5%	-5.1%	-2.0%	-0.3%
Design Services	1,194	1,615	1,471	1,459	5.2%	-3.1%	-0.8%	2.0%
Radio and TV Broadcasting	1,473	1,392	1,158	1,180	-0.9%	-6.0%	1.9%	-2.2%
Music	1,015	1,167	959	924	2.4%	-6.3%	-3.6%	-0.9%
Art Education	453	637	600	661	5.8%	-2.0%	10.2%	3.9%

*For definition and data source, see Table 2

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

Film and TV grew jobs the most over the 2001 to 2011 period, 8.9% per year on average. Film and TV experienced a sharp decline in jobs during the contraction period. It lost almost 27% of the 2007 jobs in the following two years. The 2010 preliminary data in the DBEDT 2010 update report showed only a modest recovery of this loss by early 2010. However, the 2010 final data showed that by the end of 2010 the job had more than doubled from its 2009 level and the growth has continued in 2011.

Business Consulting showed the second highest job growth over the 2001 to 2011 period with a 5.5% average annual increase in jobs for the period. Publishing & Information that failed to gain jobs over the expansion period experienced a sharp decline in jobs from 2008. Through the next four years, it lost 30% of its 2007 jobs.

Competitive Metrics

As a whole, the industry groups of the creative sector gained a slight bit of competitive share to the U.S. economy from 2001 to 2011. It was mainly due to the competitive gain achieved in Film/TV, Engineering and R&D, and Business Consulting Services.

Individual industry group performance varied widely. Most business oriented creative industry groups such as Engineering/R&D, Business Consulting, Architecture, and Computer/Digital Media Services outperformed their national counterparts for the full 2001 to 2011 period. However most artistic-oriented industry groups either lost ground competitively to their national counterparts or just managed to hold their own. The artistic groups tend to be more dependent on tourism and that sector was the hardest hit in the 2008 to 2010 downturn.

TABLE 7. HAWAII CREATIVE SECTOR PERFORMANCE COMPARED WITH NATION

INDUSTRY GROUPS	AVE. ANN. JOB GROWTH (2001 - 2011)		AVE. ANN. JOB GROWTH ABOVE OR BELOW U.S.				CONCENTRATION OF INDUSTRY IN HAWAII COMPARED TO U.S.	
	HAWAII	U.S.	**2001-2011**	2001-2007	2007-2010	2010-2011	2011	% Point CHNG 2001-2011
CREATIVE SECTOR	**1.6%**	**1.4%**	**0.2%**	**0.7%**	**-0.4%**	**-0.8%**	**92%**	**-2%**
Film, TV, Video Prod./Distrib	8.9%	0.2%	8.7%	3.5%	20.7%	6.2%	152%	83%
Business Consulting Serv.	5.5%	4.5%	0.9%	1.0%	1.4%	-0.8%	63%	3%
Art Education	3.9%	5.3%	-1.5%	-0.5%	-6.4%	8.3%	69%	-13%
Engineering and R&D	3.2%	1.2%	2.0%	2.0%	2.6%	-0.2%	100%	14%
Cultural Activities	2.1%	1.4%	0.6%	1.4%	-4.0%	11.2%	279%	6%
Design Services	2.0%	1.6%	0.4%	0.9%	-0.1%	-1.1%	89%	0%
Computer and Digital Media	1.7%	1.2%	0.5%	1.9%	-0.9%	-3.5%	64%	1%
Performing and Creative Arts	0.7%	2.0%	-1.4%	-0.4%	-3.4%	-1.2%	134%	-26%
Marketing, Photo. & Related	0.2%	1.4%	-1.2%	-1.1%	-1.3%	-1.9%	81%	-14%
Architecture	-0.3%	-1.1%	0.8%	0.6%	2.3%	-2.5%	142%	6%
Music	-0.9%	0.3%	-1.2%	1.2%	-5.1%	-2.7%	127%	-22%
Radio and TV Broadcasting	-2.2%	-1.1%	-1.1%	-0.8%	-2.4%	1.1%	102%	-17%
Publishing & Information	-3.5%	-2.2%	-1.3%	1.0%	-4.7%	-4.0%	65%	-12%

*For definition and data source, see Table 4

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 twice as concentrated in Hawaii and Performing & Creative Arts, Film and TV, Architecture, Music also exceed national concentrations. Except for Performing Arts and Music, level of concentration also increased over the 2001 to 2011 period.

Overall Performance

Based on the performance metrics above, the creative industry groups are placed into the performance categories shown in Table 8. Six groups, Film and TV, Cultural Activities, Business Consulting, Engineering/R&D, Design Services, and Computer/Digital Media are all rated as high performing for growth and competitiveness with the same activities nationally.

Another three groups, Art Education, Performing and Creative Arts, and Marketing & Related grew jobs over the period but came up short competitively compared with the performance of the same industry group nationally over the 2001 to 2011 period. Those groups did not grow jobs fast enough to equal or exceed national growth.

Finally, four creative industry groups were in the lowest performance group. All lost jobs over the 2001-2011 time period. While Architecture and Music showed a slight decline, Publishing & Information and Radio and TV Broadcasting showed moderately large job losses and the losses were higher in Hawaii.

TABLE 8. CREATIVE INDUSTRY GROUPS, OVERALL PERFORMANCE RANKINGS

INDUSTRY GROUPS	JOB CHANGE IN HAWAII 2001-2011	AVE. ANN JOB GROWTH ABOVE OR BELOW US 2001-2011	CONCENTRATION OF INDUSTRY IN HAWAII COMPARED TO U.S. 2011	% Point CHNG 2001-2011	AVE. ANNUAL EARNINGS (2011) HAWAII	U.S.
TOTAL CIVILIAN EMPLOY.	72,546	0.4%			$48,474	$51,816
CREATIVE SECTOR	**6,788**	**0.2%**	**92%**	**-2%**	**$50,305**	**$72,807**
Base-Growth Activities						
Film, TV, Video Prod/Distrib	1,473	8.7%	152%	83%	$51,109	$94,581
Cultural Activities	442	0.6%	279%	6%	$45,749	$44,592
Emerging Activities						
Business Consulting	1,982	0.9%	63%	3%	$54,760	$76,212
Engineering and R&D Serv.	2,091	2.0%	100%	14%	$78,568	$99,822
Design Services	265	0.4%	89%	0%	$35,633	$44,051
Computer and Digital Media	1,026	0.5%	64%	1%	$68,771	$100,620
Transitioning Activities						
Art Education	208	-1.5%	69%	-13%	$9,966	$10,115
Performing and Creative Arts	578	-1.4%	134%	-26%	$20,550	$25,136
Marketing, Photo. & Related	83	-1.2%	81%	-14%	$34,569	$60,950
Declining Activities						
Architecture	-53	0.8%	142%	6%	$71,700	$66,430
Music	-91	-1.2%	127%	-22%	$29,342	$40,671
Radio and TV Broadcasting	-293	-1.1%	102%	-17%	$60,602	$79,342
Publishing & Information	-923	-1.3%	65%	-12%	$55,110	$71,314

*For definition and data source, see Table 4

AGRIBUSINESS

The 23,400 jobs in Agribusiness are found in a range of interrelated industry groups that support and service the core farm sector. Most of the agribusiness jobs, including self employed, were in actual farm production (58%). The second largest industry group in the sector was Agricultural Processing at 26% 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 45% in 2009.[12] The production value of seed corn was 26% up from its value in 2008. Hawaii's two other major agricultural products, sugarcane and coffee, accounted for 9% and 6% respectively of the total value of agriculture production in 2009. Pineapple growing has been consolidated into too few producers for statistics to be reported separately due to nondisclosure rules.

Size & Growth

The Agribusiness sector as a whole lost jobs at a gradual rate over the 2001 to 2011 period. Two Agribusiness industry groups showed job gains over the 2001-2011 time period but overall, job losses among declining groups exceeded the gains among groups that showed increases in jobs.

TABLE 9. CHANGE IN AGRIBUSINESS SECTOR JOBS IN HAWAII

INDUSTRY GROUPS	JOBS				CHANGES IN JOBS AVE. ANN. GROWTH (%)			
	2001	2007	2010	2011est.	2001-2007	2007-2010	2010-2011	**2001-2011**
TOTAL CIVILIAN EMPLOY.	707,117	808,418	771,981	779,663	2.3%	-1.5%	1.0%	1.0%
AGRIBUSINESS	**24,868**	**24,238**	**23,388**	**23,374**	**-0.4%**	**-1.2%**	**-0.1%**	**-0.6%**
Farm Production	13,568	13,715	13,598	13,508	0.2%	-0.3%	-0.7%	0.0%
Agric. Processing	7,217	6,601	6,012	6,062	-1.5%	-3.1%	0.8%	-1.7%
Fishing, Forestry & Hunting	2,160	1,702	1,667	1,688	-3.9%	-0.7%	1.3%	-2.4%
Agric. Support Services	1,047	1,229	1,293	1,276	2.7%	1.7%	-1.3%	2.0%
Agric. Inputs	472	411	417	401	-2.3%	0.5%	-3.8%	-1.6%
Agric. Packaging & Warehsg	259	361	206	237	5.7%	-17.1%	15.0%	-0.9%
Aquaculture Production[1]	145	219	195	202	7.1%	-3.8%	3.6%	3.4%

*For definition and data source, see Table 2

[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.

[12] 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

The best performing Agribusiness industry group over the 2001 to 2011 job cycle was the relatively small, Aquaculture industry with a 3.4% average annual increase in jobs. Agricultural Support Services was the only other industry group in Agribusiness to show a gain in jobs at an average 2.0% per year.

Agricultural Packaging /Warehousing that had gradually gained jobs throughout the expansion period and lost 43% of its 2007 jobs during the 2008-2010 contraction period, has showed a noteworthy rebounding in 2011.

Jobs in Farm Production, the largest group in the Agribusiness sector, have been fairly stable over the past ten year period though it experienced a moderate growth during the expansion period and a moderate decline during the contraction period.

Competitive Metrics

Competitive metrics show that while the Hawaii Agribusiness sector lost jobs overall, those losses were not proportionately more than experienced in the sector nationally (Table 10). As a result, the competitive share for the sector overall stayed at same levels for the 2001 to 2011 period. Only Fishing/Forestry & Hunting, Agriculture Processing, Agriculture Input, and Agriculture Support Services lost competitive share to the national Agribusiness sector.

In terms of concentration, Aquaculture and Fishing/Forest & Hunting were substantially higher than the national average. Overall, the level of concentration of Agribusiness in Hawaii's economy fell from 95% of the national concentration to 91% over the 2001 to 2011 period. Only Aquaculture production increased industry concentration over the measurement period.

TABLE 10. HAWAII AGRIBUSINESS SECTOR PERFORMANCE COMPARED WITH NATION

INDUSTRY GROUPS	AVE. ANN. JOB GROWTH (2001 - 2011)		AVE. ANN. JOB GROWTH ABOVE OR BELOW U.S.				CONCENTRATION OF INDUSTRY IN HAWAII COMPARED TO U.S.	
	HAWAII	U.S.	**2001-2011**	2001-2007	2007-2010	2010-2011	2011	% Point CHNG 2001-2011
AGRIBUSINESS	**-0.6%**	**-0.6%**	**0.0%**	**0.6%**	**-1.0%**	**-0.3%**	**91%**	**-4%**
Aquculture Production	3.4%	-2.1%	5.4%	6.9%	-0.9%	15.9%	858%	338%
Agric. Support Services	2.0%	2.3%	-0.3%	-0.2%	0.1%	-1.9%	53%	-4%
Farm Production	0.0%	-1.0%	1.0%	2.0%	-0.4%	-0.8%	95%	6%
Agric. Packaging & Warehsg	-0.9%	-0.9%	0.0%	6.2%	-15.0%	14.7%	31%	-1%
Agric. Inputs	-1.6%	-0.7%	-0.9%	-1.3%	1.5%	-5.4%	38%	-5%
Agric. Processing	-1.7%	-0.5%	-1.2%	-1.0%	-2.2%	0.7%	88%	-16%
Fishing, Forestry & Hunting	-2.4%	-0.8%	-1.6%	-3.1%	0.5%	0.9%	349%	-80%

*For definition and data source, see Table 4

Overall Performance

From an overall performance standpoint, only Aquaculture and Agricultural Support Services managed to rate in the highest, Base-Growth or Emerging performance category for the 2001 to 2011 period (Table 11). Aquaculture grew jobs impressively while the same activity lost jobs nationally over the period. The earnings average for 2011 also exceeded its national counterpart.

Although a small job loss over the period resulted in Farm Production falling into the Declining category, it outperformed the national industry for the period.

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. But it must be pointed out that 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. 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.

TABLE 11. AGRIBUSINESS INDUSTRY GROUPS, OVERALL PERFORMANCE RANKINGS

INDUSTRY GROUPS	JOB CHANGE IN HAWAII 2001-2011	AVE. ANN JOB GROWTH ABOVE OR BELOW US 2001-2011	CONCENTRATION OF INDUSTRY IN HAWAII COMPARED TO U.S. 2011	% Point CHNG 2001-2011	AVE. ANNUAL EARNINGS (2011) HAWAII	U.S.
TOTAL CIVILIAN EMPLOY.	72,546	0.4%			$48,474	$51,816
AGRIBUSINESS	**-1,494**	**0.0%**	**91%**	**-4%**	**$31,508**	**$39,395**
Base-Growth Activities						
Aquaculture Production	57	5.4%	858%	338%	$41,829	$31,098
Transitioning Activities						
Agric. Support Services	229	-0.3%	53%	-4%	$42,356	$48,174
Declining Activities						
Farm Production	-60	1.0%	95%	6%	$26,716	$29,587
Agric. Packaging & Warehsg	-22	0.0%	31%	-1%	$52,107	$50,803
Agric. Inputs	-71	-0.9%	38%	-5%	$57,695	$64,412
Agric. Processing	-1,155	-1.2%	88%	-16%	$40,685	$52,227
Fishing, Forestry & Hunting	-472	-1.6%	349%	-80%	$18,347	$28,869

*For definition and data source, see Table 4

Other declining activities for 2001 to 2011 in Agribusiness included Packaging and Warehousing, Agricultural Inputs, Agricultural Processing, and Fishing/Forestry & Hunting. Most of these lost jobs faster than nationally, resulting in a decline of competitive share.

While they are small industries, the declining performance in Agricultural Inputs and Agricultural Packaging/Warehousing is of particular concern because they are the two groups with the highest earnings in the Agribusiness sector. The same can be said for Agricultural Processing, which is a much greater portion of the Agribusiness sector and has one of the higher earnings averages among the sector's industry groups.

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.[13] This definition identifies the major industry groups of Hawaii's health care sector.

Size & Growth

The Health and Wellness Sector accounted for an estimated 52,500 jobs in 2011 (Table 12). Most of the jobs were among Health Care Practitioners and in Hospitals/Nursing Facilities. All of the industry groups in Health and Wellness except Pharmacies grew jobs over the 2001 to 2011 period. Overall the Health and Wellness Sector grew slightly slower than the rest of the economy in the expansion phase of the recent business cycle, but was able to add jobs in the contraction phase as the rest of the economy was losing jobs.

TABLE 12. CHANGE IN HEALTH & WELLNESS SECTOR JOBS IN HAWAII

INDUSTRY GROUPS	JOBS				CHANGES IN JOBS AVE. ANN. GROWTH (%)			
	2001	2007	2010	2011est.	2001-2007	2007-2010	2010-2011	**2001-2011**
TOTAL CIVILIAN EMPLOY.	707,117	808,418	771,981	779,663	2.3%	-1.5%	1.0%	1.0%
HEALTH & WELLNESS	**45,340**	**51,594**	**52,051**	**52,531**	**2.2%**	**0.3%**	**0.9%**	**1.5%**
Health Practitioners	19,717	20,056	20,621	20,772	0.3%	0.9%	0.7%	0.5%
Hospitals & Nursing Facilities	16,976	18,462	19,028	19,287	1.4%	1.0%	1.4%	1.3%
Specialty Health Care Services	3,704	7,398	7,336	7,439	12.2%	-0.3%	1.4%	7.2%
Pharmacies	3,706	3,959	3,368	3,302	1.1%	-5.2%	-2.0%	-1.1%
Medical Labs and Imaging Centers	1,237	1,719	1,698	1,731	5.6%	-0.4%	1.9%	3.4%

*For definition and data source, see Table 2

[13] 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

Pharmacies (a retailing industry which includes drug stores) expanded jobs moderately in the 2001 to 2007 expansion phase but experienced a sharp decline during the 2008-2010 time 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 achieved only a modest growth over the 2001 to 2007 expansion phase showed a faster growth over the contraction period, bringing up the overall growth of jobs to an average 0.5% per year for 2001 to 2011.

The relatively smaller industry groups, Specialty Health Care and Medical Testing, grew vigorously over the 2001 to 2007 period. Although this industry group experienced a modest job loss during the contraction phase, all of the job loss was recouped by the early 2011.

Competitive Metrics

Overall, the modest growth in Hawaii's health and wellness sector was below national growth, resulting in loss of some competitive share in the 2001 to 2011 period (Table 13). This was due mainly to anemic job growth in the Health Practitioners and Pharmacies.

Only two industry groups, Medical Testing and Pharmacies, showed concentrations above national levels. Health Practitioners had been more concentrated than the national group when the measurement period began in 2001. However, that group lost 24% points of concentration in Hawaii, bringing it to 96% of national concentration in 2011.

TABLE 13. HAWAII HEALTH & WELLNESS SECTOR PERFORMANCE COMPARED WITH NATION

INDUSTRY GROUPS	AVE. ANN. JOB GROWTH (2001 - 2011)		AVE. ANN. JOB GROWTH ABOVE OR BELOW U.S.				CONCENTRATION OF INDUSTRY IN HAWAII COMPARED TO U.S.	
	HAWAII	U.S.	**2001-2011**	2001-2007	2007-2010	2010-2011	2011	% Point CHNG 2001-2011
HEALTH & WELLNESS	**1.5%**	**2.2%**	**-0.7%**	**-0.3%**	**-1.5%**	**-0.6%**	**81%**	**-9%**
Specialty Health Care Serv.	7.2%	5.5%	1.7%	6.3%	-5.6%	-1.9%	77%	9%
Medical Testing	3.4%	3.0%	0.4%	2.0%	-2.5%	-0.1%	147%	0%
Hospitals & Nursing Facilities	1.3%	1.4%	-0.1%	-0.1%	-0.2%	0.2%	66%	-3%
Health Practitioners	0.5%	2.3%	-1.8%	-2.6%	-0.5%	-1.0%	96%	-24%
Pharmacies	-1.1%	0.2%	-1.4%	0.0%	-4.2%	-0.9%	102%	-20%

*For definition data source, see Table 4

Overall Performance

Among the health & wellness industry groups, Medical Testing and Specialty Health Care performed the best in terms of growth and competitiveness (Table 14). Only Medical Testing exceeded the national level in terms of industry concentration.

Hospitals/Nursing Facilities and Health Practitioners were Transitioning industry groups in this sector. 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 2001 to 2011was Pharmacies. As suggested earlier, competition from internet-based prescription processing could be playing a part in this.

TABLE 14. HAWAII HEALTH & WELLNESS GROUPS, OVERALL PERFORMANCE RANKINGS

INDUSTRY GROUPS	JOB CHANGE IN HAWAII 2001-2011	AVE. ANN JOB GROWTH ABOVE OR BELOW US 2001-2011	CONCENTRATION OF INDUSTRY IN HAWAII COMPARED TO U.S. 2011	% Point CHNG 2001-2011	AVE. ANNUAL EARNINGS (2011) HAWAII	U.S.
TOTAL CIVILIAN EMPLOY.	72,546	0.4%			$48,474	$51,816
HEALTH & WELLNESS	**7,191**	**-0.7%**	**81%**	**-9%**	**$65,130**	**$60,486**
Base-Growth Activities						
Medical Testing	494	0.4%	147%	0%	$59,824	$67,926
Emerging Activities						
Specialty Health Care Serv.	3,735	1.7%	77%	9%	$43,700	$40,729
Transitioning Activities						
Hospitals & Nursing Facilities	2,311	-0.1%	66%	-3%	$67,699	$57,051
Health Practitioners	1,055	-1.8%	96%	-24%	$74,493	$76,187
Declining Activities						
Pharmacies	-404	-1.4%	102%	-20%	$42,297	$42,755

*For definition and data source, see Table 4

At $65,100, the average earnings for the health & wellness sector as a whole exceeded the national average in 2011 by nearly 8%. 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.

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 private higher education system could draw affluent students from the Asia-Pacific region. Colleges such as University of the Pacific and others do appear to have tapped that market.

However, it is not possible to isolate statistics on this market. The best that can be done with standard statistics is to track jobs in the private system of post-secondary and specialty education. 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 about 11,000 jobs in 2011 (Table 15). This sector has grown much faster than the overall civilian workforce over the 2001 to 2011 period – an average 3.3% per year compared with 1.0% per year for the total civilian workforce.

Through the expansion period of the employment cycle (2001 to 2007), private education grew slower than the overall economy. However, during the contraction period, education accelerated job growth while jobs in the rest of the economy declined. There is a tendency for educational enrollments to rise during economic declines.

TABLE 15. CHANGE IN PRIVATE EDUCATION SECTOR JOBS IN HAWAII

INDUSTRY GROUPS	JOBS				CHANGES IN JOBS AVE. ANN. GROWTH (%)			
	2001	2007	2010	2011est.	2001-2007	2007-2010	2010-2011	**2001-2011**
TOTAL CIVILIAN EMPLOY.	707,117	808,418	771,981	779,663	2.3%	-1.5%	1.0%	1.0%
EDUCATION (Private)	**7,961**	**8,873**	**9,898**	**11,025**	**1.8%**	**3.7%**	**11.4%**	**3.3%**
Higher Education	4,658	4,856	5,300	5,919	0.7%	3.0%	11.7%	2.4%
Specialty Education	3,303	4,017	4,598	5,106	3.3%	4.6%	11.0%	4.5%

*For definition and data source, see Table 2

Competitive Metrics

Despite the high growth in private education jobs over the 2001 to 2011 period, it came up short compared with the performance of the same activities nationally (Table 16). As a result the Hawaii sector lost some national competitive share.

In addition, the sector declined in terms of concentration. In 2001 the private Higher and Specialty Education activities together were about 84% as concentrated as the same activities nationally. By 2011 that concentration had fallen to 80% of the national level.

Specialty education showed a sharp decline in concentration, falling nearly 14% points, from 10% higher concentration than nationally in 2001, to 96% of the national level in 2011.

TABLE 16. HAWAII PRIVATE EDUCATION SECTOR PERFORMANCE COMPARED WITH NATION

INDUSTRY GROUPS	AVE. ANN. JOB GROWTH (2001 - 2011)		AVE. ANN. JOB GROWTH ABOVE OR BELOW U.S.				CONCENTRATION OF INDUSTRY IN HAWAII COMPARED TO U.S.	
	HAWAII	U.S.	**2001-2011**	2001-2007	2007-2010	2010-2011	2011	% Point CHNG 2001-2011
EDUCATION	**3.3%**	**3.4%**	**-0.1%**	**-1.7%**	**0.2%**	**9.6%**	**80%**	**-4%**
Specialty Education	4.5%	5.4%	-1.0%	-2.8%	-0.6%	9.0%	96%	-14%
Higher Education	2.4%	2.3%	0.2%	-1.6%	0.4%	10.1%	70%	-2%

*For definition and data source, see Table 4

Overall Performance

Based on growth of jobs, but loss of competitive share to the national sector, Specialty Education fell into the Transitioning category over the 2001 to 2011 period (Table 17). However, Higher Education experienced gains in both jobs and competitive national market share in the period.

The sector also compared poorly with the U.S. in terms of average earnings. Hawaii's private Higher and Specialty Education averaged $34,000 in 2011 compared with $44,300 nationally. Both components of the sector had average earnings below the nation.

TABLE 17. EDUCATION SECTOR GROUPS, OVERALL PERFORMANCE RANKINGS

INDUSTRY GROUPS	JOB CHANGE IN HAWAII	AVE. ANN JOB GROWTH ABOVE OR BELOW US	CONCENTRATION OF INDUSTRY IN HAWAII COMPARED TO U.S.		AVE. ANNUAL EARNINGS (2011)	
	2001-2011	2001-2011	2011	% Point CHNG 2001-2011	HAWAII	U.S.
TOTAL CIVILIAN EMPLOY.	72,546	0.4%			$48,474	$51,816
EDUCATION (Private)	**3,064**	**-0.1%**	**80%**	**-4%**	**$34,060**	**$44,265**
Emerging Activities						
Higher Education	1,261	0.2%	70%	-2%	$44,496	$57,357
Transitioning Activities						
Specialty Education	1,803	-1.0%	96%	-14%	$21,962	$23,478

*For definition and data source, see Table 4

OTHER TARGETED ACTIVITIES

Four other targeted activities have been pursued as sources of economic diversification over the last decade or more, Apparel, Call Centers, Captive Insurance Companies and Specialty Tourism. The first two activities are able to be measured with standard industry statistics. The last two are market-based activities and will be discussed shortly.

The 2009 Report on Emerging Industries discusses Apparel and Call Centers in detail. 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 out-sourced 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

Within the period under study of 2001 to 2011, Apparel manufacturing has declined in terms of jobs at an average of 6% per year (Table 18). The decline ran throughout most of the period. Although the 2011 job has increase slightly from the 2010 level, it seems not more than annual fluctuation.

Call Center activity exploded in the early 2000s from 210 jobs in 2002 to 437 in 2003. The activity maintained the new high level of jobs until the economy-wide contraction started in 2008. Even if Call Centers lost some jobs throughout the contraction phase, the aggressive growth in the early 2000s was sufficient to show an overall gain over the measurement period.

TABLE 18. CHANGE IN HAWAII OTHER TARGETED ACTIVITIES JOBS

INDUSTRY GROUPS	JOBS				CHANGES IN JOBS AVE. ANN. GROWTH (%)			
	2001	2007	2010	2011est.	2001-2007	2007-2010	2010-2011	**2001-2011**
TOTAL CIVILIAN EMPLOY.	707,117	808,418	771,981	779,663	2.3%	-1.5%	1.0%	1.0%
OTHER TARGETED ACTIVITIES								
Apparel	2,195	1,372	1,145	1,166	-7.5%	-5.9%	1.8%	-6.1%
Call Centers	205	415	355	354	12.5%	-5.1%	-0.3%	5.6%

*For definition and data source, see Table 2

Competitive Metrics

Despite the poor growth over recent years, Call Centers have posted positive competitive metrics for the 2001 to 2011 period. Apparel showed a 42% margin over the nation in terms of concentration in 2011. However these results are primarily due to poorer performance nationally than underlying strength in the industries locally.

TABLE 19. HAWAII OTHER TARGETED ACTIVITIES PERFORMANCE COMPARED WITH NATION

INDUSTRY GROUPS	AVE. ANN. JOB GROWTH (2001 - 2011)		AVE. ANN. JOB GROWTH ABOVE OR BELOW U.S.				CONCENTRATION OF INDUSTRY IN HAWAII COMPARED TO U.S.	
	HAWAII	U.S.	**2001-2011**	2001-2007	2007-2010	2010-2011	2011	% Point CHNG 2001-2011
OTHER TARGETED ACTIVITIES								
Call Centers	5.6%	1.1%	4.6%	11.6%	-6.6%	-0.8%	17%	6%
Apparel	-6.1%	-7.2%	1.1%	1.1%	0.7%	3.0%	142%	11%

*For definition and data source, see Table 4

Overall Performance

For the period 2001 to 2011, the Call Centers industry group technically rated an Emerging industry classification due to its strong growth in the early 2000s. However, unless the decline in this activity during the contraction phase is reversed, it will likely drift towards the declining category over the next few years. The low earnings average of $20,000 per year suggests that this is either a very low paying industry, a predominantly part time activity for workers, or some combination of both.

Losing jobs at 6% per year over the 2001 to 2011 economic cycle, Apparel fell into the declining category. In terms of job growth, Apparel sector in Hawaii performed similarly to the U.S. garment industry that has been contracting rapidly in recent years as much manufacturing has been outsourced aboard. Like Call Centers, the average earnings are relatively low, suggesting that much of the labor force in Hawaii is part-time and businesses very small.

However, unlike Call Centers, garment manufacturing 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.

TABLE 20. HAWAII OTHER TARGETED ACTIVITIES, OVERALL PERFORMANCE RANKINGS

INDUSTRY GROUPS	JOB CHANGE IN HAWAII	AVE. ANN JOB GROWTH ABOVE OR BELOW US	CONCENTRATION OF INDUSTRY IN HAWAII COMPARED TO U.S.		AVE. ANNUAL EARNINGS (2011)	
	2001-2011	2001-2011	2011	% Point CHNG 2001-2011	HAWAII	U.S.
TOTAL CIVILIAN EMPLOY.	72,546	0.4%			$48,474	$51,816
Other Targeted Activities						
Emerging Activities						
Call Centers	149	4.6%	17%	6%	$20,386	$34,771
Declining Activities						
Apparel	-1,029	1.1%	142%	11%	$19,245	$41,078

*For definition and data source, see Table 4

Market Side Activities (Captive Insurance & Specialty Tourism)

An additional two activities, Captive Insurance and Specialty Tourism, are not readily measurable with standard industry data. The 2009 report found that Captive Insurance apparently generated only a limited number of direct jobs in Hawaii.

Specialty Tourism actually focuses on specialized markets within the scope of an existing major industry, Tourism. These markets include specialized *tourists* such as Conventioneers and Honeymooners, as well as specialized *purposes* for tourism such as Eco-Tourism, Cultural, Historical and even Technology and Medical Tourism (discussed earlier). Specialty Tourism activities certainly help diversify and reenergize the visitor industry by adding new reasons to visit Hawaii. However, it must be noted that they do not significantly diversify the industry and occupational base in a way that can help counter or soften periodic declines in major industries like tourism.

The available performance measures for Specialty Tourism may be found in the latest reports of the Hawaii Tourism Authority, Research Office.[14]

[14] http://www.hawaiitourismauthority.org/

CONCLUSIONS

This report is the second 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 update report extended those measurements through the contraction phase to 2010 providing an overall picture of how targets performed in good times and bad over the business cycle. This updated report added the 2011 preliminary data to illustrate how target industries have been recovering from the recession.

Table 21 summarizes the best performing target industry groups for the 2001 to 2011 period in terms of average growth and national competitiveness. Among 13 best performing industry groups, Engineering and Related, Technology Manufacturing, Computer & Digital Media, R&D Services, Medical Testing, Business Consulting, and Film/TV had earnings averages above the average for Hawaii's economy.

TABLE 21. HIGHEST PERFORMING TARGETED ACTIVITIES, 2001 TO 2011

INDUSTRY GROUPS	JOBS IN HAWAII		AVE. ANN. JOB GROWTH (2001 - 2011)		CONCENTRATION OF INDUSTRY IN HAWAII COMPARED TO U.S.		AVE. ANNUAL EARNINGS (2011)	
	2011	CHANGE 2001-2011	HAWAII	U.S.	2011	% Point CHNG 2001-2011	HAWAII	U.S.
TOTAL CIVILIAN EMPLOY.	779,663	72,546	1.0%	0.6%			$48,474	$51,816
Base-Growth & Emerging Activities								
Above Average State Earnings								
Engineering and Related	5,288	492	1.0%	0.3%	86%	2%	$78,798	$82,076
Tech Manufacturing	1,326	772	9.1%	-1.1%	16%	10%	$70,550	$108,344
Computer and Digital Media	6,540	1,026	1.7%	1.2%	64%	1%	$68,771	$100,620
R&D Services	4,015	1,442	4.6%	1.8%	127%	25%	$67,187	$109,222
Medical Testing	1,731	494	3.4%	3.0%	147%	0%	$59,824	$67,926
Business Consulting	4,805	1,982	5.5%	4.5%	63%	3%	$54,760	$76,212
Film, TV, Video Prod/Distrib	2,559	1,473	8.9%	0.2%	152%	83%	$51,109	$94,581
Below Average State Earnings								
Cultural Activities	2,387	442	2.1%	1.4%	279%	6%	$45,749	$44,592
Higher Education	5,919	1,261	2.4%	2.3%	70%	-2%	$44,496	$57,357
Specialty Health Care Serv.	7,439	3,735	7.2%	5.5%	77%	9%	$43,700	$40,729
Aquaculture Production	202	57	3.4%	-2.1%	858%	338%	$41,829	$31,098
Design Services	1,459	265	2.0%	1.6%	89%	0%	$35,633	$44,051
Call Centers	354	149	5.6%	1.1%	17%	6%	$20,386	$34,771

* For definition and data source, see Table 4