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December 24, 2020

The Honorable Ronald D. Kouchi,  
President and Members  
of the Senate  
Thirty-First State Legislature  
State Capitol, Room 409  
Honolulu, Hawaii 96813

The Honorable Scott K. Saiki,  
Speaker and Members of the  
House of Representatives  
Thirty-First State Legislature  
State Capitol, Room 431  
Honolulu, Hawaii 96813

Dear President Kouchi, Speaker Saiki, and Members of the Legislature:

For your information and consideration, I am transmitting a copy of the report on *Hawaii's Targeted & Emerging Industries, 2020 Update Report*, as required by Sections §201-16 and §201-19, Hawaii Revised Statutes. In accordance with Section 93-16, Hawaii Revised Statutes, I am also informing you that the report may be viewed electronically at: [https://files.hawaii.gov/dbedt/economic/data\\_reports/emerging-industries/Hawaii Targeted Emerging Industries 2020 Update Report.pdf](https://files.hawaii.gov/dbedt/economic/data_reports/emerging-industries/Hawaii%20Targeted%20Emerging%20Industries%202020%20Update%20Report.pdf).

With aloha,

Mike McCartney

Enclosure

c: Legislative Reference Bureau



# Hawaii's Targeted & Emerging Industries

## *2020 Update Report*



**Department of Business, Economic Development and Tourism**

**December 2020**

In accordance with Chapters §201-16 and §201-19, Hawaii Revised Statutes, this publication was produced by the Research and Economic Analysis Division (READ) of the Department of Business, Economic Development & Tourism (DBEDT), State of Hawaii which is responsible for its content and presentation.



This report is prepared by Dr. Binsheng Li, Economist, under the direction of Dr. Eugene Tian, Division Administrator. Dr. Joseph Roos, Economic Research Program Manager, reviewed and provided inputs for this report.

**Hawaii Department of Business, Economic Development & Tourism**  
**December 2020**

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## EXECUTIVE SUMMARY

In 2009 DBEDT Research compiled and published a performance review of Hawaii's targeted industry portfolio to provide a framework to measure and analyze industry performance.<sup>1</sup> The portfolio consisted of several dozen economic activities that had been suggested, proposed or actively promoted over the past several decades as potential new growth industries. The purpose of the review was to better define those activities for measurement purposes and to find out which had performed best in recent years. This report is the 11<sup>th</sup> update of the report as required by Sections §201-16 (Annual Report; Workforce Development) and §201-19, (Annual Report; Research and Statistics for Growth Industries), Hawaii Revised Statutes.

The activities were grouped into four performance categories. *Base-growth* activities rated the highest on the basis of State and national performance and were more concentrated in Hawaii's economy than the nation overall. Industries in this category had developed a competitive national advantage and were probably exporting some proportion of industry output. *Emerging* activities also rated high on performance but had not reached a level of concentration that would as yet suggest a competitive advantage. *Transitioning* activities in the portfolio were showing growth in jobs over the measurement period (and in some cases impressive growth), but were outperformed by the same activity nationally, suggesting that Hawaii was not as competitive. Finally, *declining* activities lost jobs over the measurement period and in most cases (but not all) were less competitive than their national counterpart. This update report extends the performance measures through 2019. Table 1 provides a comprehensive overview of performance among activities in the Targeted Industry Portfolio over the 2009 to 2019 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:

- Eight activities were high performing, with positive job growth combined with a job growth rate that was higher than the nation for the same activity. Among those were Cultural Activities, Pharmacies, Film, TV, Video Production/Distribution, Specialty Health Care Services, Alternative Power Generation, Specialty Education, Hospitals & Nursing Facilities, and Agriculture Support Services.
- The high-performing activities in the targeted industry portfolio (Base-growth and Emerging) accounted for about 53,009 jobs or 6.0% of total civilian jobs in 2019. However, between 2009 and 2019 those activities generated 14.6% of the total gain in jobs for the civilian economy, or about 15,017 new jobs.
- Among the best performing activities, Cultural Activities, Specialty Health Care Services, Alternative Power Generation, and Film, TV, Video Production/Distribution grew jobs over 6% per year during the 2009 to 2019 period.
- Adjusting for overlaps, total targeted jobs reached 162,397 jobs in 2019, an increase of 20,890 jobs from 2009.

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<sup>1</sup> *Benchmarking Hawaii's Emerging Industries*, DBEDT, December 2009, [http://dbedt.hawaii.gov/economic/reports\\_studies/emerging-industries/](http://dbedt.hawaii.gov/economic/reports_studies/emerging-industries/)

Table 1. Overall Performance of the Targeted Industry Portfolio

| INDUSTRY GROUPS                           | Jobs in Hawaii |              | Avg. Ann. Job Growth (2009-2019) |       | Concentration of Industry in Hawaii Compared to U.S. |                      | Avg. Annual Earnings (2019) |           |
|---|----------------|--------------|----------------------------------|-------|--|----------------------|-----------------------------|-----------|
|   | 2019           | Change 09-19 | HI                               | U.S.  | 2019   | % Point Change 09-19 | HI                          | U.S.      |
|   |                |              |                                  |       |  |                      |                             |           |
| TOTAL CIVILIAN JOBS                       | 883,214        | 102,653      | 1.2%                             | 1.6%  | 100%   | 0.00%                | \$57,861                    | \$62,331  |
| TOTAL TARGETED JOBS WITHOUT OVERLAP       | 162,397        | 20,890       | 1.4%                             | 1.8%  | 81%  | 0.22%                | \$62,498                    | \$75,927  |
| <b>Base-Growth Activities</b>             |                |              |                                  |       |  |                      |                             |           |
| Cultural Activities                       | 3,611          | 1,994        | 8.4%                             | 3.0%  | 379%   | 160%                 | \$54,695                    | \$59,443  |
| Pharmacies                                | 3,537          | 132          | 0.4%                             | -0.5% | 116%   | 14%                  | \$50,562                    | \$52,208  |
| Film, TV, Video Production/Distrib        | 2,160          | 928          | 5.8%                             | 1.5%  | 113%   | 41%                  | \$70,840                    | \$106,493 |
| Specialty Health Care Services            | 13,799         | 6,479        | 6.5%                             | 4.3%  | 106%   | 23%                  | \$62,166                    | \$50,590  |
| Alternative Power Generation              | 297            | 136          | 6.3%                             | -4.3% | 102%   | 67%                  | \$119,826                   | \$180,169 |
| <b>Emerging Activities</b>                |                |              |                                  |       |  |                      |                             |           |
| Specialty Education                       | 6,427          | 2,073        | 4.0%                             | 3.4%  | 97%  | 9%                   | \$25,160                    | \$28,344  |
| Hospitals & Nursing Facilities            | 21,310         | 2,710        | 1.4%                             | 0.7%  | 72%  | 7%                   | \$91,908                    | \$72,466  |
| Agric. Support Services                   | 1,868          | 565          | 3.7%                             | 2.5%  | 64%  | 9%                   | \$50,748                    | \$54,683  |
| <b>Transitioning Activities</b>           |                |              |                                  |       |  |                      |                             |           |
| Art Education                             | 849            | 257          | 3.7%                             | 3.8%  | 68%  | 2%                   | \$12,782                    | \$13,135  |
| Technical Consulting Services             | 5,537          | 1,671        | 3.7%                             | 3.8%  | 66%  | 2%                   | \$67,037                    | \$88,561  |
| Music                                     | 1,338          | 282          | 2.4%                             | 2.6%  | 144%   | 3%                   | \$36,615                    | \$43,154  |
| Engineering and Related Serv.             | 6,603          | 603          | 1.0%                             | 1.2%  | 90%  | 2%                   | \$105,761                   | \$102,070 |
| Chemical & Pharmaceutical Mfg             | 124            | 7            | 0.5%                             | 0.8%  | 6%   | 0%                   | \$74,668                    | \$142,829 |
| Higher Education                          | 5,692          | 401          | 0.7%                             | 1.0%  | 65%  | 1%                   | \$32,159                    | \$57,576  |
| Agric. Processing                         | 7,139          | 964          | 1.5%                             | 1.8%  | 89%  | 1%                   | \$50,377                    | \$60,498  |
| Marketing, Photography & Related          | 12,361         | 2,326        | 2.1%                             | 2.5%  | 94%  | 0%                   | \$32,012                    | \$55,639  |
| Business Consulting                       | 6,020          | 1,522        | 3.0%                             | 3.5%  | 62%  | -1%                  | \$66,576                    | \$88,201  |
| Agric. Packaging & Warehsg                | 244            | 51           | 2.4%                             | 2.9%  | 25%  | 0%                   | \$45,339                    | \$54,421  |
| Technology Equipment Distr.               | 853            | 4            | 0.1%                             | 0.9%  | 34%  | -1%                  | \$123,076                   | \$137,062 |
| Design Services                           | 2,014          | 168          | 0.9%                             | 1.8%  | 89%  | -5%                  | \$37,185                    | \$47,162  |
| Health Practitioners                      | 22,604         | 2,004        | 0.9%                             | 2.1%  | 91%  | -7%                  | \$86,556                    | \$85,127  |
| Medical and Diagnostic Testing*           | 1,834          | 148          | 0.8%                             | 2.2%  | 138%   | -14%                 | \$72,046                    | \$80,836  |
| Performing and Creative Arts              | 10,270         | 1,083        | 1.1%                             | 3.3%  | 115%   | -21%                 | \$24,186                    | \$29,028  |
| Computer Services and Software Publishers | 5,063          | 254          | 0.5%                             | 4.2%  | 40%  | -15%                 | \$96,357                    | \$135,742 |

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

| INDUSTRY GROUPS                        | Jobs in Hawaii |              | Avg. Ann. Job Growth (2009-2019) |       | Concentration of Industry in Hawaii Compared to U.S. |       | Avg. Annual Earnings (2019) |           |
|--|----------------|--------------|----------------------------------|-------|--|-------|-----------------------------|-----------|
|  | 2019           | Change 09-19 | % Point Change 09-19             |       | 2019   | 09-19 | U.S.                        |           |
|  |                |              | HI                               | U.S.  |  |       | HI                          | U.S.      |
| <b>Declining Activities</b>            |                |              |                                  |       |  |       |                             |           |
| Farm Production                        | 13,371         | -27          | 0.0%                             | 0.3%  | 96%  | 1%    | \$32,922                    | \$35,897  |
| Information & Telecom Tech.            | 5,164          | -96          | -0.2%                            | 2.0%  | 56%  | -11%  | \$89,429                    | \$140,635 |
| Engineering and Research & Development | 5,645          | -161         | -0.3%                            | 1.2%  | 77%  | -9%   | \$108,399                   | \$117,059 |
| Architecture                           | 1,945          | -121         | -0.6%                            | 0.7%  | 131%   | -13%  | \$91,565                    | \$82,782  |
| Agric. Inputs                          | 406            | -29          | -0.7%                            | 0.7%  | 38%  | -4%   | \$56,102                    | \$74,776  |
| Computer Sys. Design & Related         | 6,116          | -497         | -0.8%                            | 3.5%  | 52%  | -25%  | \$91,845                    | \$124,674 |
| Fishing, Forestry & Hunting            | 1,523          | -156         | -1.0%                            | -0.7% | 350%   | 4%    | \$26,042                    | \$40,486  |
| Apparel                                | 1,005          | -140         | -1.3%                            | -2.8% | 162%   | 29%   | \$26,718                    | \$45,398  |
| Radio and Television Broadcasting      | 1,038          | -229         | -2.0%                            | 0.4%  | 89%  | -19%  | \$75,178                    | \$90,387  |
| Call Centers                           | 288            | -76          | -2.3%                            | 1.6%  | 13%  | -5%   | \$27,126                    | \$45,728  |
| Other Technology Mfg                   | 423            | -206         | -3.9%                            | 0.6%  | 7%   | -4%   | \$65,706                    | \$121,955 |
| Publishing & Information               | 1,756          | -1,010       | -4.4%                            | -0.2% | 51%  | -25%  | \$55,716                    | \$131,988 |
| R&D Services (exc. Biotech.)           | 1,231          | -858         | -5.2%                            | 1.2%  | 51%  | -43%  | \$90,901                    | \$131,839 |
| Biotechnology                          | 333            | -331         | -6.7%                            | 4.5%  | 33%  | -66%  | \$89,412                    | \$195,218 |

\*The 1,834 jobs in this industry were allocated to both the Technology and Health and Wellness Sector.

Source: DBEDT based on data from Economic Modeling Specialists, Inc. (EMSI). The sum of the individual industries does not add up to the total due to adjusting for overlaps among sectors.

- About 71% of the high-performing activities had average annual earnings that exceeded \$62,000 in 2019. Alternative Power Generation had the highest average earnings at \$119,826. By comparison, the average earnings for the civilian economy in 2019 was \$57,861.
- Sixteen activities, which accounted for 88,547 jobs in 2019, fell into the Transitioning category. They gained jobs over the period but did not keep up with national growth for the same activities resulting in a loss of competitive national industry share. However, seven of those activities – Art Education, Technical Consulting Services, Business Consulting, Music, Agriculture Packaging & Warehousing, Marketing, Photography & Related, and Agriculture Processing - grew faster in terms of jobs than the civilian economy as a whole.
- The positive side of the Transitioning activities in the portfolio was that they did contribute to job growth in the economy. They were also an important source of high paying jobs. About 55% of jobs in Transitioning category had average earnings over \$65,000 in 2019. The main concern of these activities was that they were not as competitive as the same activities at the national level.
- Fourteen activities in the portfolio fell into the Declining industry category as the result of net job losses for the 2009 to 2019 period. Notable among these were Farm Production, Computer System Design & Related, Engineering and Research & Development, Information & Telecom Technology, Architecture, Publishing & Information, Fishing, Forestry & Hunting, R&D Services (exc. Biotech.), Radio and Television Broadcasting, and Apparel.
- Among the 14 declining industries only three of them lost job at the U.S. level for the 2009 to 2019 period, they are Apparel, Publishing & Information, and Fishing, Forestry & Hunting.

- Jobs in the Declining industry group totaled an estimated 40,245 in 2019 (4.6% of all civilian jobs), representing a loss of about 3,937 jobs from 2009. About 54% of the jobs in the Declining industry group had above average earnings in Hawaii.
- Declining industries are not necessarily dying activities. In some cases, like Publishing & Information activity, the technology for developing and delivering information is improving rapidly, and perhaps reducing the need for workers. In these cases, the declining activities may stabilize at some point and resume some growth as the economy expands. Finally, some Declining activities may be tied to other activities such as tourism and defense and may be reflecting the cycles of those industries, rather than independent local or export markets.

It is important to note that the measures and classifications used in the targeted industry portfolio are descriptive but not diagnostic. That is, the measures alone do not reveal why the industries performed as they did. They also do not reveal the role of these activities in the economy. It is not clear if the high performing industries are growing independently or are feeding off growth in other activities. It is also not clear which industries are devoting their output primarily to export as opposed to local consumption markets, although the measures of concentration help identify probable export candidates. The purpose of this performance assessment is to assist economic developers and policy makers understand which targeted industries are achieving the expected potential and which are not.

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## INTRODUCTION

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In 2009 in accordance with Chapters §201-16 and §201-19, Hawaii Revised Statutes, DBEDT Research reviewed the range of economic activities that have been suggested over the years as candidates for diversifying the State’s economy. These activities have been labeled variously as *emerging, targeted and growth* industries. The activities ranged from technology specialties, to diversified agriculture and have been pursued by various stakeholders including state and local governments, business groups and community-based organizations.

The report of that review sought to improve the definition of the various activities that had been targeted for promotion in a way that would permit their performance to be measured. The result of the review was the creation of a targeted industry portfolio of around three dozen activities, and performance measures for 2002 to 2008. This is the eleventh report that updates the review of targeted industry performance at the state level to 2019. In this study, the targeted industry performance at the county level are also examined.

### **Defining Targeted Industries**

For the first report in 2009, more than a dozen major studies, reports and efforts were reviewed to construct a list of sectors, industries and activities that have been of interest over the last several decades. The activities were then defined for measurement purposes and criteria were established to identify those that could justifiably be called *emerging* industries.

For the purpose of this report, the term “targeted” simply means that at some point in the past an activity was of interest for its potential contribution to growth and diversification by agencies, organizations or stakeholders. These ranged from activities that had simply been suggested as having potential, to industries that had been actively pursued with public resources for their growth potential, like Biotechnology and the Film/TV industry.

Even if it appeared that an activity was no longer of significant development interest it still was included in the portfolio. The portfolio was made broadly inclusive and detailed so that many specific activities could be assessed for their contribution to economic growth and diversification over the years. Some industries in the portfolio will show exceptional performance and others will show relatively poor performance over the periods measured. This range permits us to focus on weaknesses in the portfolio as well as strengths.

### **The Targeted Industry Portfolio**

Table 2 lists the industries of the portfolio. The portfolio industries have also been grouped into major areas of interest such as Technology, Creative and Agribusiness. A detailed description of each portfolio industry was presented in the 2009 report and readers are referred to that report for more detail. For most of these industry groups, definitions for measurement purposes have been adopted from previous studies, particularly for the technology sector, the creative sector, and health and wellness. Activities included in each sector are not necessarily mutually exclusive to each other. For example, a moderate overlap exists between the creative and technology sectors because of their mutually dependent relationship. The Medical Labs, Diagnostic and Imaging Centers group is included in both the Technology sector and the Health & Wellness sector.

Table 2. Targeted Industry Portfolio

|  |  |
|--|--|
| <b>TECHNOLOGY SECTOR</b>                     | <b>AGRIBUSINESS</b>                          |
| Alternative Power Generation                 | Agriculture Inputs                           |
| Biotechnology                                | Agric. Packaging & Warehousing               |
| Chemical & Pharmaceutical Manufacturing      | Agriculture Processing                       |
| Computer Sys. Design & Related               | Agriculture Support Services                 |
| Engineering and Related Serv.                | Farm Production                              |
| Information & Telecom Tech.                  | Fishing, Forestry & Hunting                  |
| Medical Labs, Diagnostic and Imaging Centers | <b>HEALTH &amp; WELLNESS</b>                 |
| Other Technology Manufacturing               | Health Practitioners                         |
| R&D Services (exc. Biotech.)                 | Hospitals & Nursing Facilities               |
| Technical Consulting Services                | Medical Labs, Diagnostic and Imaging Centers |
| Technology Equipment Distr.                  | Pharmacies                                   |
| <b>CREATIVE SECTOR</b>                       | Specialty Health Care Services               |
| Art Education                                | <b>EDUCATION (PRIVATE)</b>                   |
| Architecture                                 | Higher Education                             |
| Business Consulting                          | Specialty Education                          |
| Computer Services and Software Publishers    | <b>OTHER TARGETS</b>                         |
| Cultural Activities                          | Apparel                                      |
| Design Services                              | Call Centers                                 |
| Engineering and Research & Development       |  |
| Film, TV, Video Production/Distribution      |  |
| Marketing, Photography & Related             |  |
| Music  |  |
| Performing and Creative Arts                 |  |
| Publishing & Information                     |  |
| Radio and Television Broadcasting            |  |

Source: DBEDT

## Measuring Targeted Industries

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

One of the key performance measures is the change of jobs over time. While most industries show some decline in a recession, we would expect promising industries to show a net increase in jobs over the entire business cycle. The rate of job growth for each portfolio activity, relative to the rest of the state, has important implications for diversifying the state's economy. Activities that grow faster than the overall state economy would help increase economic diversification.

Another performance measure is Hawaii's competitiveness and concentration of activities compared to the nation overall. If the respective activity is growing faster in Hawaii than the nation, this suggests that the state has a competitive advantage in this activity. Also, if the activity has a greater employment concentration in the state than the nation (as measured by the percentage of total jobs), it is likely an activity in which Hawaii has a competitive advantage. A higher concentration (as measured by the percentage of total jobs) also suggests that the activity has matured to the point that it is likely exporting a portion of its output directly or indirectly.

The average earnings for workers in each activity were examined. Higher earnings generally come from high quality jobs. A relatively higher earnings average suggests that the activity is creating high quality jobs that can help keep Hawaii's highly educated youth in the state.

By combining these performance measures, we attempt to group the portfolio activities into four performance categories as in Table 3. A popular framework in the economic development research is the industry life cycle model. This model breaks down industries in the economy into four generalized stages. The first stage of the life cycle is usually called the emerging stage of an industry. This characterizes relatively new and rapid growing activities that are usually serving new markets inside or outside the local economy. The second stage identifies base-growth industries that have passed through the emerging stage and have become strong, competitive sources of economic growth in the economy. As base-growth industries mature, they reach their full market potential and growth slows. This represents the transition stage. A majority are relatively healthy; but have slowed and have become less competitive over time. Declining industries lose jobs over time and shrink as a proportion of the economy. If the industry is unable to reinvent itself with new products and markets, it will continue to wither and fade away.

Not all industries or their evolution will fit nicely into the model, especially over short periods of time. Some industries may emerge but never rise to the level moving from weakly emerging to the transitioning or declining stage or move back and forth among the different stages over a period of time. Likewise, an industry that has slowed from a base-growth to a transitioning industry may have a revival and move back to base growth status. In the short-term, business cycle fluctuations impact the forward and backward movements of the industry life cycle. However, in the long-term, the model should provide a fairly accurate picture of the performance of industries.

Table 3. Performance Map Criteria (Industry Life Cycle)

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

### Data Sources

Jobs and earnings reported in this report include wage and salary positions and estimates for self-employed and proprietors. The data were obtained via a subscription to the data bases of Economic Modeling Specialists, Inc. (EMSI). EMSI uses data from Bureau of Labor Statistics, Bureau of Economic Analysis and others to construct very detailed industry data series regarding jobs, occupations and earnings for the states and counties.

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## TECHNOLOGY SECTOR

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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.<sup>2</sup> The project adopted a definition for technology established by the U.S. Bureau of Labor Statistics (BLS).<sup>3</sup> The BLS approach classifies industries as being in the technology sector based on the proportion of highly trained technical workers in the industries. This update report followed the earlier definition with a few adjustments that were necessary due to changes in new NAICS coding system. The earlier definition excluded wireless telecom services from the technology sector, because the services could not meet the BLS criteria to be in the Technology sector. Wired services, however, are no longer reported separately from other telecom services since the 2012 revision in NAICS. Facing the increased competition with new telecom services, many wired carriers chose to close or reduce the traditional wired services in order to expand services with more market potential. As a result, a variety of services are often served by a single carrier and the change in the 2012 NAICS was a reflection of these market trends. This update report adjusted the earlier definition by applying the BLS approach to new NAICS codes.

### Size & Growth

With the adjustments described above, the technology sector accounted for 28,515 jobs in 2019, or 3.2% of all civilian jobs in Hawaii including self-employed and sole proprietors. For the 2009 to 2019 period, the technology sector had an annual average 0.2% gain in jobs, 1.0 percentage point lower than the average annual growth for the civilian economy.

The 2019 estimate shows that the technology sector had a net gain of 235 jobs in 2019 from 2018. Technical Consulting Services added 375 jobs, followed by Engineering and Related Services (added 140 jobs), and Alternative Power Generation (added 97 jobs). The major categories with job losses in 2019 were Computer System Design and Related (lost 384 jobs) and Information & Telecom Technology (lost 115 jobs).

For the 2009 to 2019 period, Alternative Power Generation had the strongest job growth among the technology industry groups. However, it is important to note that total jobs for Alternative Power Generation is still relatively small at 297 jobs. Other high-performing activities in the technology sector were Technical Consulting Services, Engineering and Related Services.

The five technology industry groups that lost jobs during the 2009 to 2019 period were Biotechnology, R&D Services, Other Technology Manufacturing, Computer System Design and Related, and Information & Telecom Technology.

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<sup>2</sup> Hawaii Science & Technology Institute, *Innovation and Technology in Hawaii: An Economic and Workforce Profile*, October 2008.

<sup>3</sup> As yet there is no official or universally agreed upon definition for the technology sector.

Figure 1. Hawaii’s Technology Sector Jobs and Growth Rate, 2009-2019

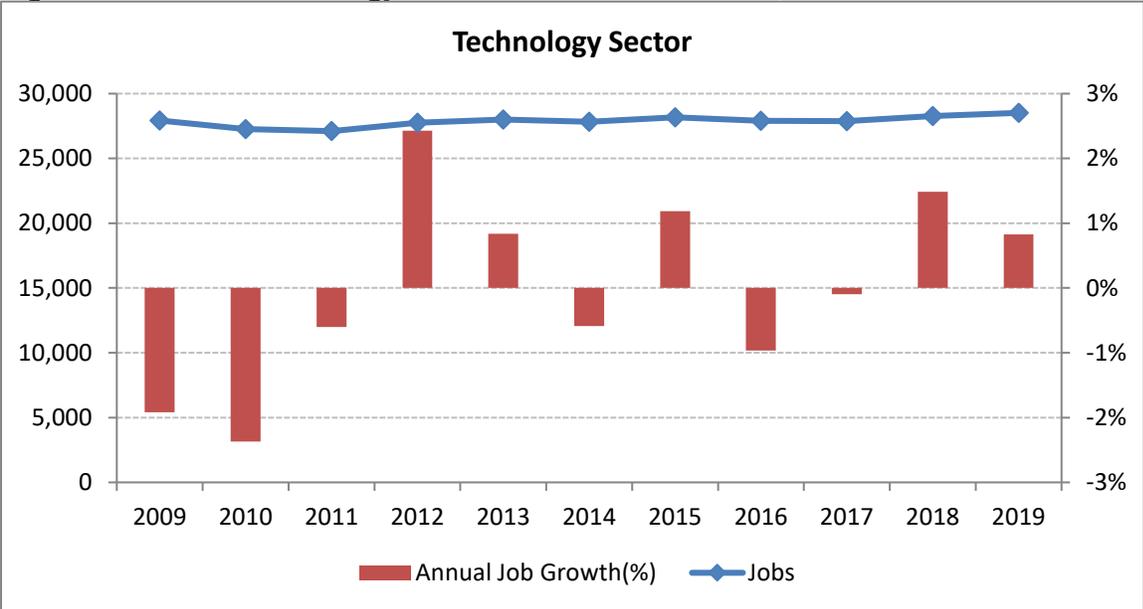


Table 4. Jobs<sup>1</sup> in Technology Sector, Average Annual Growth over 2009-2019

|                                  | Annual Job Growth |           |           |           | Jobs in 2019 |
|----------------------------------|-------------------|-----------|-----------|-----------|--------------|
|                                  | 2009-2019         | 2009-2010 | 2010-2013 | 2013-2019 |              |
| Civilian Total                   | 1.2%              | -0.8%     | 1.7%      | 1.4%      | 883,214      |
| Technology Sector Total          | 0.2%              | -2.4%     | 0.9%      | 0.3%      | 28,515       |
| Alternative Power Gen.           | 6.3%              | 22.2%     | 18.1%     | -1.4%     | 297          |
| Technical Consulting Services    | 3.7%              | 3.6%      | 3.3%      | 3.8%      | 5,537        |
| Engineering and Related Services | 1.0%              | -1.5%     | 0.9%      | 1.4%      | 6,603        |
| Medical and Diagnostic Testing   | 0.8%              | 0.5%      | -0.2%     | 1.4%      | 1,834        |
| Chemical & Pharmaceutical Mfg    | 0.5%              | -21.2%    | 16.5%     | -2.7%     | 124          |
| Technology Equip Distribution    | 0.1%              | -5.0%     | -2.4%     | 2.2%      | 853          |
| Information & Telecom Tech.      | -0.2%             | -5.1%     | 1.4%      | -0.1%     | 5,164        |
| Computer Sys Design and Related  | -0.8%             | -2.3%     | 0.5%      | -1.2%     | 6,116        |
| Other Technology Mfg             | -3.9%             | -8.3%     | -7.8%     | -1.1%     | 423          |
| R&D Serv. (except Biotechnology) | -5.2%             | -9.9%     | -1.9%     | -5.9%     | 1,231        |
| Biotechnology                    | -6.7%             | -1.6%     | -2.3%     | -9.6%     | 333          |

<sup>1</sup>Includes wage & salary, sole proprietors & self-employed.

Source: DBEDT based on data from Economic Modeling Specialists, Inc. (EMSI).

## Competitive Metrics

The sixth column of Table 5 shows the difference in percentage points between job growth in Hawaii and the U.S. for the technology sector industry groups. Overall, Hawaii's technology sector grew jobs less than the same activities in the nation.

Alternative Power Generation outperformed their national counterparts by 10.6 percentage points during the 2009-2019 period. Biotechnology underperformed their national counterparts by 11.2 percentage points.

Table 5. Hawaii Technology Sector Performance Compared with Nation

|                                | Jobs per Avg. Annual |                |                  | Avg. Annual Job Growth |               | When U.S. = 100%                |                       |                           |
|--------------------------------|----------------------|----------------|------------------|------------------------|---------------|---------------------------------|-----------------------|---------------------------|
|                                | Jobs<br>2019         | Estabs<br>2019 | Earnings<br>2019 | 09-19                  | above<br>U.S. | Concen-<br>tration 1/<br>Estabs | Jobs<br>per<br>Estabs | Avg.<br>Annual<br>Earning |
|                                |                      |                |                  |                        |               |                                 |                       |                           |
| Total Civilian                 | 883,214              | 17.3           | 57,861           | 1.2%                   | -0.4%         | 100%                            | 88%                   | 93%                       |
| <b>TECHNOLOGY SECTOR</b>       | <b>28,515</b>        | <b>11.2</b>    | <b>89,233</b>    | <b>0.2%</b>            | <b>-1.9%</b>  | <b>54%</b>                      | <b>79%</b>            | <b>74%</b>                |
| Engineering and Related Serv.  | 6,603                | 9.5            | 105,761          | 1.0%                   | -0.2%         | 90%                             | 69%                   | 104%                      |
| Computer Sys. Design & Related | 6,116                | 10.9           | 91,845           | -0.8%                  | -4.3%         | 52%                             | 117%                  | 74%                       |
| Technical Consulting Services  | 5,537                | 14.9           | 67,037           | 3.7%                   | -0.1%         | 66%                             | 146%                  | 76%                       |
| Information & Telecom Tech.    | 5,164                | 11.2           | 89,429           | -0.2%                  | -2.2%         | 56%                             | 57%                   | 64%                       |
| Medical and Diagnostic Testing | 1,834                | 13.9           | 72,046           | 0.8%                   | -1.4%         | 138%                            | 102%                  | 89%                       |
| R&D Services (exc. Biotech.)   | 1,231                | 11.0           | 90,901           | -5.2%                  | -6.3%         | 51%                             | 42%                   | 69%                       |
| Technology Equipment Distr.    | 853                  | 8.1            | 123,076          | 0.1%                   | -0.8%         | 34%                             | 68%                   | 90%                       |
| Other Technology Mfg           | 423                  | 15.2           | 65,706           | -3.9%                  | -4.5%         | 7%                              | 29%                   | 54%                       |
| Biotechnology                  | 333                  | 11.2           | 89,412           | -6.7%                  | -11.2%        | 33%                             | 49%                   | 46%                       |
| Alternative Power Generation   | 297                  | 8.3            | 119,826          | 6.3%                   | 10.6%         | 102%                            | 25%                   | 67%                       |
| Chemical & Pharmaceutical Mfg  | 124                  | 13.4           | 74,668           | 0.5%                   | -0.3%         | 6%                              | 23%                   | 52%                       |

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

Source: See Table 4 for data source.

Over the 2009 to 2019 period, Computer System Design & Related Services lost competitive ground to their national counterparts. It is important to note it was a large group with 6,116 jobs.

Three forces may have influenced the negative job growth in the Information Technology group. First, the inclusion of wired telecom service, an activity with declining demand, could be a lag for overall job growth this category. Second, productivity gains in information technology may have reduced the labor required to produce the same output of services. Third, in recent years there has been a consolidation of internet services, especially web hosting, into fewer providers around the country that serve national markets. It is difficult for local internet services to compete with the economies of scale of these large internet service companies.

In terms of concentration, most of Hawaii's technology industry groups are still a relatively small percentage of Hawaii's total economy, compared with the technology industry groups at the national level. In 2019, Hawaii's proportion of the state's workforce in technology was 54% of the proportion nationally. One noteworthy exception is Medical and Diagnostic Testing, which was 38% more concentrated in Hawaii than the nation overall.

The average earnings in Hawaii's technology sector was relatively high, at \$89,233 in 2019. As a group, it was 54% higher than the average for Hawaii's economy. Average earnings of the eleven technology industry groups all exceeded the average for Hawaii's economy. However, workers in most of the Hawaii technology sector groups were not paid as much as the U.S. average for the same activities. The average earnings in Hawaii's technology sector was only 74% of the average earnings paid nationally. The largest earnings gaps between Hawaii and the U.S. were found in Biotechnology, Chemical & Pharmaceutical Manufacturing, Other Technology Manufacturing, Information & Telecom Technology, and Alternative Power Generation.

## Overall Performance

By combining the growth and competitive measures, the technology industry groups can be placed in several performance categories as shown earlier (Table 3).

Only one technology industry group was in the high performing Base-Growth and Emerging categories by showing positive growth and also outperforming their national counterpart. This industry group was Alternative Power Generation. The only difference between the Base-Growth and Emerging categories is their level of concentration in the state's economy. Base-Growth industry groups have reached or exceeded national concentrations, while the Emerging industry groups have yet to reach national concentration levels. Beyond that, both categories showed positive and competitive growth in jobs.

Five groups in the technology sector were in the Transitioning category for the 2009 to 2019 period. Including Technical Consulting Services, Engineering and Related Services, Chemical & Pharmaceutical Manufacturing, Technology Equipment Distribution, and Medical and Diagnostic Testing. While job growth was positive in these industry groups, they still lost some competitive share to the national industry groups.

Information & Telecom Technology, Computer System Design & Related Services, Other Technology Manufacturing, R&D Services (except Biotechnology), and Biotechnology fell into the Declining category for 2009 to 2019 due to job losses during the period. These groups also lost more jobs proportionately than the same activity nationally, resulting in the loss of competitive share to the U.S. economy.

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

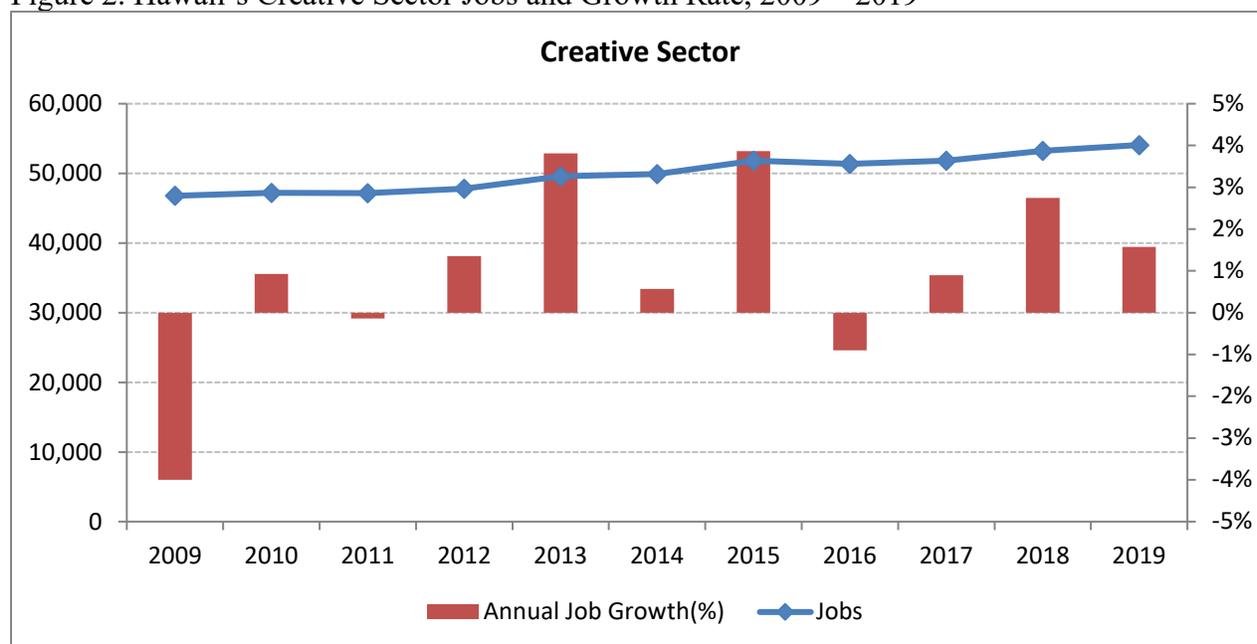
## CREATIVE SECTOR

In 2010, DBEDT's 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.<sup>4</sup> The report expanded the scope of creative activity beyond the previous focal areas of arts and culture. The new definition added a number of industries such as Computer and Digital Media, Engineering/R&D, Marketing, and Design, among others. The purpose was to better reflect the integration of art, technology and other creative activities.

### Size & Growth

The thirteen creative industry groups accounted for an estimated 54,071 jobs in 2019, about 6.1% of all civilian jobs in Hawaii. Marketing, Photograph & Related and Performing and Creative Arts were the two largest groups in the sector, together the two groups accounted for about 42% of jobs in the sector in 2019.

Figure 2. Hawaii's Creative Sector Jobs and Growth Rate, 2009 – 2019



As a group, the creative sector's job growth was 0.3 of a percentage point above the annual average growth rate of the state civilian economy over the 2009 to 2019 period. The sector's growth rate was higher than the Hawaii's civilian economy during the 2009 to 2010 period. And the growth rate of the creative sector from 2010 to 2019 was similar to that of the state's overall civilian economy.

Cultural Activities grew jobs the most over the 2009 to 2019 period, 8.4% per year on average. Most job growth in Cultural Activities was achieved in the Museum category. Jobs in this category increased from 657 in 2009 to 2,154 in 2019. Film, TV, Video Production/Distribution showed the second highest job growth with a 5.8% average annual increase in jobs for the period.

<sup>4</sup> DBEDT, *Hawaii's Creative Industries: Update Report 2010*, June 2010. [http://dbedt.hawaii.gov/economic/reports\\_studies/hawaii-creative-report/](http://dbedt.hawaii.gov/economic/reports_studies/hawaii-creative-report/)

Film/TV Production varied widely depending on the number of productions filmed during the year. With many new productions filmed in Hawaii in late 2010, the number of 2010 jobs more than doubled from the 2009 level. However, during the overall 2009 to 2019 period, the number of jobs in Film/TV Production decreased from 2,551 jobs to 2,160 jobs.

Four groups in the sector, Publishing & Information, Radio/TV Broadcasting, Architecture, and Engineering and R&D failed to gain jobs over the 2009 to 2019 period. These groups experienced a sharp decline in jobs during the contraction period. With the closing of the Honolulu Advertiser in 2010, jobs in Publishing & Information decreased from 2,766 in 2009 to 1,756 in 2019.

Table 6. Jobs in Creative Sector: Average Annual Growth over 2009-2019

|                                    | Annual Job Growth |           |           |           | Jobs in 2019 |
|------------------------------------|-------------------|-----------|-----------|-----------|--------------|
|                                    | 2009-2019         | 2009-2010 | 2010-2013 | 2013-2019 |              |
| Civilian Total                     | 1.2%              | -0.8%     | 1.7%      | 1.4%      | 883,214      |
| Creative Sector Total              | 1.5%              | 0.9%      | 1.7%      | 1.4%      | 54,071       |
| Cultural Activities                | 8.4%              | 1.7%      | 26.4%     | 1.4%      | 3,611        |
| Film, TV, Video Production/Distrib | 5.8%              | 107.1%    | -14.1%    | 4.9%      | 2,160        |
| Art Education                      | 3.7%              | -0.9%     | 10.1%     | 1.3%      | 849          |
| Business Consulting                | 3.0%              | 3.1%      | 2.2%      | 3.3%      | 6,020        |
| Music                              | 2.4%              | -5.7%     | 6.7%      | 1.7%      | 1,338        |
| Marketing, Photography & Related   | 2.1%              | 2.6%      | 2.6%      | 1.8%      | 12,361       |
| Performing and Creative Arts       | 1.1%              | -4.1%     | -0.1%     | 2.6%      | 10,270       |
| Design Services                    | 0.9%              | 2.3%      | 3.0%      | -0.4%     | 2,014        |
| Computer Serv. & Software Publis.  | 0.5%              | -3.3%     | 1.6%      | 0.6%      | 5,063        |
| Engineering and R & D              | -0.3%             | -4.0%     | 0.5%      | 0.0%      | 5,645        |
| Architecture                       | -0.6%             | -2.5%     | -1.0%     | -0.1%     | 1,945        |
| Radio and Television Broadcasting  | -2.0%             | -10.2%    | 1.3%      | -2.1%     | 1,038        |
| Publishing & Information           | -4.4%             | -12.3%    | -5.4%     | -2.6%     | 1,756        |

Source: See Table 4 for data source.

## Competitive Metrics

Many activities in the creative sector lost competitive share to the U.S. economy over the 2009 to 2019 period. Only two among the thirteen groups in this sector outperformed their national counterparts during this period. In addition to Cultural Activities that had the highest growth, Film, TV, Video Production/Distribution also outperformed their national counterpart during the period.

A number of creative industry groups have levels of concentration in the state's economy that exceed the nation as a whole. Cultural Activities are more than three times as concentrated in Hawaii. Music, Architecture, Performing and Creative Arts, and Film, TV, Video Production/Distribution also exceed national concentrations. In contrast, most business and technology oriented activities in the sector, such as Business Consulting, Computer Services and Software Publishers, and Publishing & Information show a much lower concentration in Hawaii than the same industries nationally.

With average annual earnings of \$55,186 in 2019, the earnings in the creative sector were below the average for the overall Hawaii economy. Compared with the same activities nationally, the average earnings in Hawaii was only 65% of the national average. The lower earnings in Hawaii were found in both business and technology-oriented and artistic-oriented activities in the sector. Among the thirteen activities in the creative sector, only workers in Architecture were paid higher in Hawaii than the nation overall. The activities that showed significant earnings gaps between Hawaii and the U.S. include Publishing & Information, Marketing/Photography & Related, Film, TV, Video Production/Distribution, and Computer Services and Software Publishers.

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

|                                     | Jobs          |                |                                    | Avg. Annual Job Growth |              | When U.S. = 100%                |                       |                           |
|-------------------------------------|---------------|----------------|------------------------------------|------------------------|--------------|---------------------------------|-----------------------|---------------------------|
|                                     | Jobs<br>2019  | Estabs<br>2019 | Avg.<br>Annual<br>Earnings<br>2019 | above                  |              | Concen-<br>tration 1/<br>Estabs | Jobs<br>per<br>Estabs | Avg.<br>Annual<br>Earning |
|                                     |               |                |                                    | 09-19                  | U.S.         |                                 |                       |                           |
| Total Civilian                      | 883,214       | 17.3           | 57,861                             | 1.2%                   | -0.4%        | 100%                            | 88%                   | 93%                       |
| <b>CREATIVE SECTOR</b>              | <b>54,071</b> | <b>18.1</b>    | <b>55,186</b>                      | <b>1.5%</b>            | <b>-1.2%</b> | <b>83%</b>                      | <b>126%</b>           | <b>65%</b>                |
| Marketing, Photography & Related    | 12,361        | 31.2           | 32,012                             | 2.1%                   | -0.4%        | 94%                             | 179%                  | 58%                       |
| Performing and Creative Arts        | 10,270        | 41.3           | 24,186                             | 1.1%                   | -2.1%        | 115%                            | 109%                  | 83%                       |
| Business Consulting                 | 6,020         | 15.0           | 66,576                             | 3.0%                   | -0.5%        | 62%                             | 150%                  | 75%                       |
| Engineering and Research & Dev.     | 5,645         | 9.2            | 108,399                            | -0.3%                  | -1.5%        | 77%                             | 54%                   | 93%                       |
| Computer Services and Software Pub. | 5,063         | 10.4           | 96,357                             | 0.5%                   | -3.7%        | 40%                             | 106%                  | 71%                       |
| Cultural Activities                 | 3,611         | 18.3           | 54,695                             | 8.4%                   | 5.4%         | 379%                            | 131%                  | 92%                       |
| Film, TV, Video Production/Distrib  | 2,160         | 14.1           | 70,840                             | 5.8%                   | 4.3%         | 113%                            | 84%                   | 67%                       |
| Design Services                     | 2,014         | 26.9           | 37,185                             | 0.9%                   | -1.0%        | 89%                             | 214%                  | 79%                       |
| Architecture                        | 1,945         | 10.9           | 91,565                             | -0.6%                  | -1.3%        | 131%                            | 100%                  | 111%                      |
| Publishing & Information            | 1,756         | 17.9           | 55,716                             | -4.4%                  | -4.3%        | 51%                             | 101%                  | 42%                       |
| Music                               | 1,338         | 27.3           | 36,615                             | 2.4%                   | -0.2%        | 144%                            | 164%                  | 85%                       |
| Radio and Television Broadcasting   | 1,038         | 13.3           | 75,178                             | -2.0%                  | -2.3%        | 89%                             | 41%                   | 83%                       |
| Art Education                       | 849           | 78.2           | 12,782                             | 3.7%                   | -0.1%        | 68%                             | 392%                  | 97%                       |

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

Source: See Table 4 for data source.

## Overall Performance

Based on the performance metrics above, the creative industry groups are placed into the performance categories as below. Two groups, Cultural Activities, Film, and TV, Video Production/Distribution are rated as high performing for growth and competitiveness, compared with the same activities nationally.

Seven other groups – Art Education, Music, Marketing, Photography & Related, Business Consulting, Design Services, Performing and Creative Arts, and Computer Services and Software Publishers - grew jobs over the period but came up short competitively, compared with the performance of the same industry group nationally over the 2009 to 2019 period.

Architecture, Engineering and Research & Development, Radio and Television Broadcasting, and Publishing & Information were in the lowest performance group. All lost jobs over the 2009 to 2019 period.

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

## AGRIBUSINESS

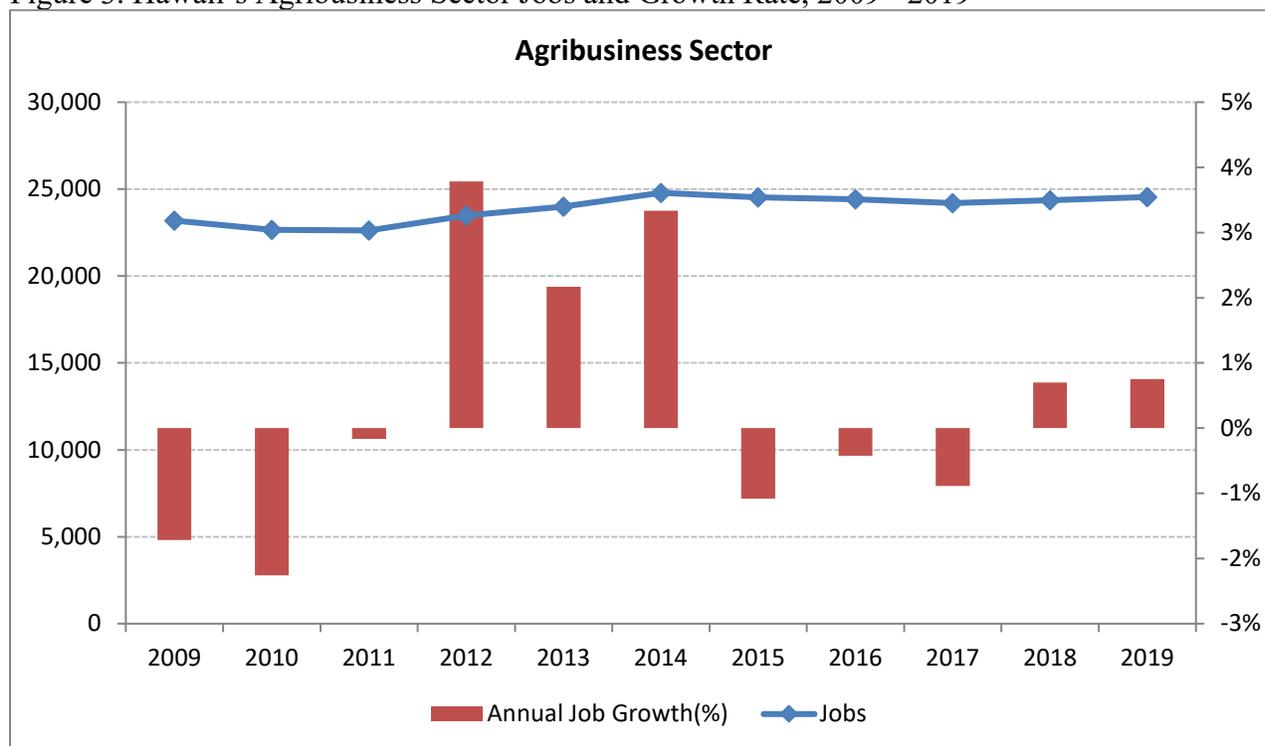
In 2019, the 24,551 jobs in Agribusiness were found in a range of inter-related industry groups that support the core farm sector. Most of the agribusiness jobs, including self-employed, are in Farm Production (54%). The second largest industry group in the sector was Agricultural Processing at 29% of the sector's jobs.

### Size & Growth

The agribusiness sector achieved a small positive job growth rate over the 2009 to 2019 period. Although three of the six Agribusiness industry groups lost jobs over the period, job gains among three other groups exceeded the losses.

The largest activity in the agribusiness sector is Farm Production. Jobs in this group decreased slightly over the 2009 to 2019 period. From 2009 to 2011, jobs in this group decreased. From 2011 to 2014 jobs increased slightly in this group. From 2014 to 2019, jobs in this group decreased again.

Figure 3. Hawaii's Agribusiness Sector Jobs and Growth Rate, 2009 - 2019



The best performing agribusiness industry group over the 2009 to 2019 cycle was the Agricultural Support Services, with a 3.7% average annual increase in jobs. Other high-performing groups in agribusiness, during the 2009 to 2019 period, were Agricultural Packaging & Warehousing and Agricultural Processing. Job growth in these groups averaged 2.4%, and 1.5% per year, respectively, over this period.

Table 8. Jobs in Agribusiness Sector: Average Annual Growth over 2009-2019

|                             | Annual Job Growth |           |           |           | Jobs in 2019 |
|-----------------------------|-------------------|-----------|-----------|-----------|--------------|
|                             | 2009-2019         | 2009-2010 | 2010-2013 | 2013-2019 |              |
| Civilian Total              | 1.2%              | -0.8%     | 1.7%      | 1.4%      | 883,214      |
| Agribusiness Total          | 0.6%              | -2.3%     | 1.9%      | 0.4%      | 24,551       |
| Agric. Support Services     | 3.7%              | -1.9%     | 2.9%      | 5.0%      | 1,868        |
| Agric. Packaging & Warehsg  | 2.4%              | -12.2%    | 16.5%     | -1.5%     | 244          |
| Agric. Processing           | 1.5%              | -4.2%     | 5.4%      | 0.5%      | 7,139        |
| Farm Production             | 0.0%              | -1.7%     | 0.2%      | 0.1%      | 13,371       |
| Agric. Inputs               | -0.7%             | -2.0%     | -1.3%     | -0.2%     | 406          |
| Fishing, Forestry & Hunting | -1.0%             | 1.0%      | 0.5%      | -2.0%     | 1,523        |

Source: See Table 4 for data source

### Competitive Metrics

Competitive metrics show that the comparable U.S. agricultural sector also experienced a job gain over the 2009 to 2019 period.

Only one of the three groups that gained jobs over the 2009 to 2019 period outperformed the same activities in the nation. Agricultural Support Services outperformed the same activities for the nation overall by 1.2 percentage point per year.

Table 9. Hawaii Agribusiness Sector Performance Compared with Nation

|                             | Jobs per Annual |             |               | Avg. Annual Job Growth |              | When U.S. = 100% |                 |                     |
|-----------------------------|-----------------|-------------|---------------|------------------------|--------------|------------------|-----------------|---------------------|
|                             | Jobs            | Estabs      | Earnings      | above                  |              | Concentration 1/ | Jobs per Estabs | Avg. Annual Earning |
|                             | 2019            | 2019        | 2019          | 09-19                  | U.S.         |                  |                 |                     |
| Total Civilian              | 883,214         | 17.3        | 57,861        | 1.2%                   | -0.4%        | 100%             | 88%             | 93%                 |
| <b>AGRIBUSINESS</b>         | <b>24,551</b>   | <b>25.4</b> | <b>39,434</b> | <b>0.6%</b>            | <b>-0.4%</b> | <b>90%</b>       | <b>79%</b>      | <b>83%</b>          |
| Farm Production             | 13,371          | 30.4        | 32,922        | 0.0%                   | -0.3%        | 96%              | 82%             | 92%                 |
| Agric. Processing           | 7,139           | 19.9        | 50,377        | 1.5%                   | -0.3%        | 89%              | 42%             | 83%                 |
| Agric. Support Services     | 1,868           | 19.7        | 50,748        | 3.7%                   | 1.2%         | 64%              | 129%            | 93%                 |
| Fishing, Forestry & Hunting | 1,523           | 38.4        | 26,042        | -1.0%                  | -0.3%        | 350%             | 134%            | 64%                 |
| Agric. Inputs               | 406             | 17.8        | 56,102        | -0.7%                  | -1.3%        | 38%              | 127%            | 75%                 |
| Agric. Packaging & Warehsg  | 244             | 22.1        | 45,339        | 2.4%                   | -0.5%        | 25%              | 51%             | 83%                 |

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

Agribusiness had a lower concentration level in Hawaii than the nation for most activities. The clear exception was Fishing, Forestry & Hunting that is significantly more concentrated in Hawaii than the nation.

### Overall Performance

From an overall performance standpoint, only one group – Agriculture Support Services – was in the Base-Growth or Emerging categories for the 2009 to 2019 period.

Agriculture Processing and Agricultural Packaging & Warehousing were in the Transitioning category, and Farm Production, Agricultural Inputs, and Fishing, Forestry & Hunting fell into the Declining category over the 2009 to 2019 period.

| Emerging Activities   | Base-Growth Activities                              |
|---|---|
| Agric. Support Services   |   |
| Declining Activities  | Transitioning Activities                            |
| Farm Production<br>Agric. Inputs<br>Fishing, Forestry & Hunting | Agric. Packaging & Warehousing<br>Agric. Processing |

## HEALTH & WELLNESS

Health and Wellness has been of interest for several decades as a potential export activity. It has been proposed that first class medical and related health facilities in Hawaii could spur Health and Wellness tourism among the more affluent in Asian-Pacific countries that may not have the same level of health care. Unfortunately, there is no readily available data regarding such visitors.

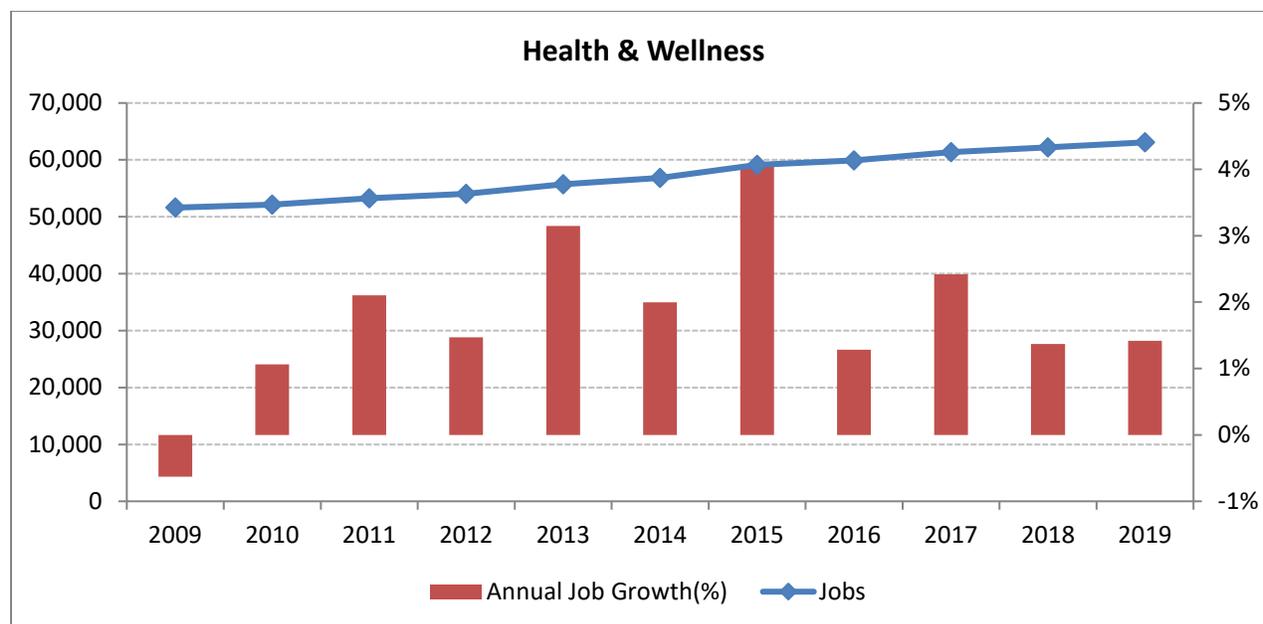
Recuperation and rejuvenation services have also been proposed as potential export activities that could utilize Hawaii's beauty and calming environment. Spas and similar, non-medical treatment services have been integrated into the hotel industry and serve a specialized tourism market. However, these facilities and their markets are not distinct enough to be reflected separately in standard statistical data.

In order to provide some underlying data to support future discussions on the topic of the Health and Wellness sector, DBEDT adopted with some minor modifications, a definition for Health and Wellness developed by researchers on Kauai for that county's Comprehensive Economic Development Strategy in 2005.<sup>5</sup> This definition identifies the major industry groups of Hawaii's health care sector.

### Size & Growth

The Health and Wellness Sector accounted for an estimated 63,083 jobs in 2019. About 69.7% of the jobs were among Health Care Practitioners and in Hospital & Nursing Facilities. All the industry groups in Health and Wellness grew jobs over the 2009 to 2019 period.

Figure 4. Hawaii's Health and Wellness Sector Jobs and Growth Rate, 2009 - 2019



Overall, the Health and Wellness sector grew faster than the rest of the economy during the 2009-2019 period. This sector had job growth for each year during the 2009 to 2019 period.

<sup>5</sup> 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) experienced a 0.4% average annual job increase over the 2009 to 2019 period. However, this sector showed a decline during the 2009-2010 period, losing 59 jobs in the two-year period.

Health Practitioners showed modest growth. For the 2009 to 2019 period, this sector had an average job growth of 0.9% per year.

The highest job growth was observed in Specialty Health Care Services, a relatively small industry group, during the 2009-2019 period. This subsector gained jobs at an annual average rate of 6.5% during the period.

Table 10. Jobs in Health and Wellness: Average Annual Growth over 2009-2019

|                                  | Annual Job Growth |           |           |           | Jobs in 2019 |
|----------------------------------|-------------------|-----------|-----------|-----------|--------------|
|                                  | 2009-2019         | 2009-2010 | 2010-2013 | 2013-2019 |              |
| Civilian Total                   | 1.2%              | -0.8%     | 1.7%      | 1.4%      | 883,214      |
| Health & Wellness Total          | 2.0%              | 1.1%      | 2.2%      | 2.1%      | 63,083       |
| Specialty Health Care Services   | 6.5%              | 1.2%      | 6.7%      | 7.4%      | 13,799       |
| Hospitals & Nursing Facilities   | 1.4%              | 2.1%      | 0.5%      | 1.7%      | 21,310       |
| Health Practitioners             | 0.9%              | 0.6%      | 2.2%      | 0.4%      | 22,604       |
| Medical Labs and Imaging Centers | 0.8%              | 0.5%      | -0.2%     | 1.4%      | 1,834        |
| Pharmacies                       | 0.4%              | -1.5%     | 2.9%      | -0.5%     | 3,537        |

Source: See Table 4 for data source.

## Competitive Metrics

Overall, the growth in Hawaii's Health and Wellness Sector was slightly above the national average for the same sector over the 2009 to 2019 period. The higher job growth in Hawaii's Specialty Health Care Services, Hospitals & Nursing Facilities, and Pharmacies offset the lower job growth in other groups of the sector.

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

|                                  | Jobs per      |             | Avg. Annual   | Avg. Annual Job Growth |             | When U.S. = 100% |                 |                     |
|----------------------------------|---------------|-------------|---------------|------------------------|-------------|------------------|-----------------|---------------------|
|                                  | Jobs          | Estabs      | Earnings      | above                  |             | Concentration 1/ | Jobs per Estabs | Avg. Annual Earning |
|                                  | 2019          | 2019        | 2019          | 09-19                  | U.S.        |                  |                 |                     |
| Total Civilian                   | 883,214       | 17.3        | 57,861        | 1.2%                   | -0.4%       | 100%             | 88%             | 93%                 |
| <b>HEALTH &amp; WELLNESS</b>     | <b>63,083</b> | <b>12.4</b> | <b>80,589</b> | <b>2.0%</b>            | <b>0.3%</b> | <b>88%</b>       | <b>53%</b>      | <b>112%</b>         |
| Health Practitioners             | 22,604        | 11.6        | 86,556        | 0.9%                   | -1.1%       | 91%              | 102%            | 102%                |
| Hospitals & Nursing Facilities   | 21,310        | 10.9        | 91,908        | 1.4%                   | 0.7%        | 72%              | 5%              | 127%                |
| Specialty Health Care Services   | 13,799        | 16.1        | 62,166        | 6.5%                   | 2.2%        | 106%             | 42%             | 123%                |
| Pharmacies                       | 3,537         | 19.8        | 50,562        | 0.4%                   | 0.9%        | 116%             | 182%            | 97%                 |
| Medical Labs and Imaging Centers | 1,834         | 13.9        | 72,046        | 0.8%                   | -1.4%       | 138%             | 102%            | 89%                 |

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

At \$80,589, the average earnings for the Health & Wellness Sector as a whole, exceeded the national average in 2019 by about 12%. This was the only major sector in the targeted industry portfolio that had earnings above the U.S. average for the same sector. Except for Medical Labs & Imaging Centers, all other groups in the sector had earnings either close to or higher than the U.S. average.

## Overall Performance

Among the Health & Wellness industry groups, Specialty Health Care Services, Pharmacies, and Hospitals & Nursing Facilities performed the best in terms of growth and competitiveness.

Health Practitioners and Medical Labs & Imaging Centers were in the Transitioning category. These groups grew jobs but lost competitive national share due to better growth at the U.S. level.

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

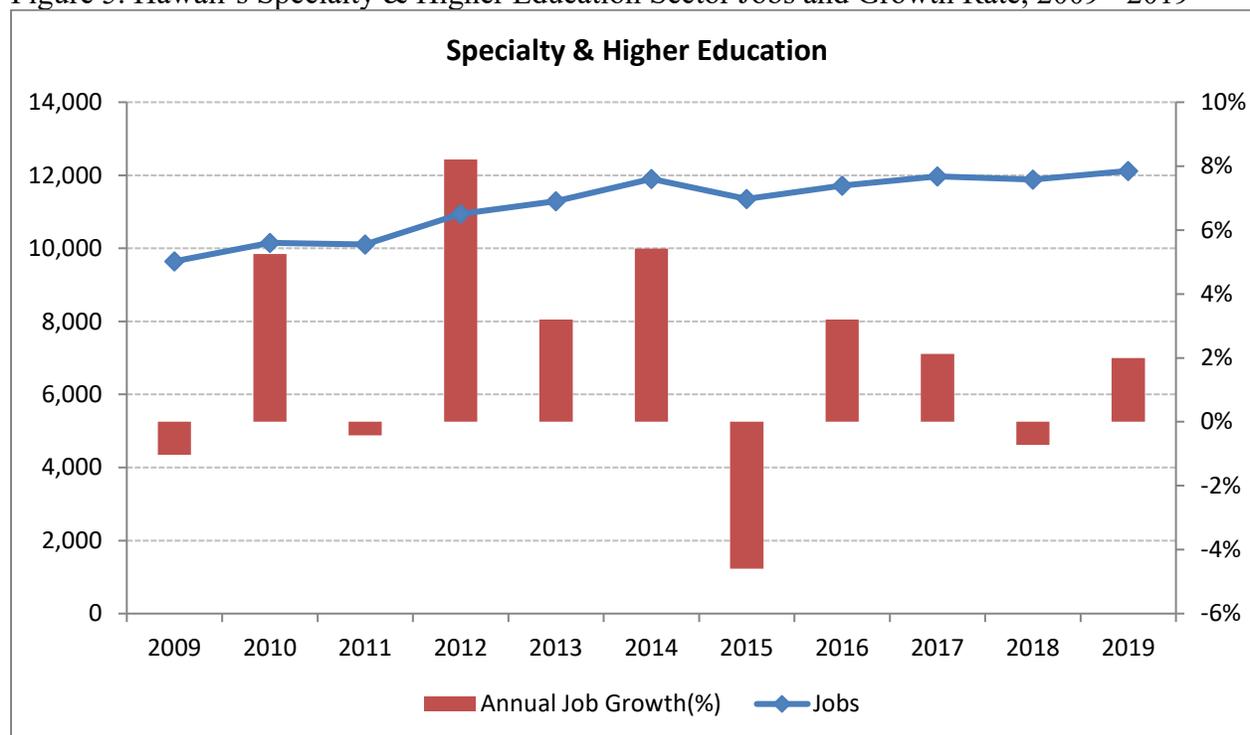
## EDUCATION

The private education sector, which includes private colleges and specialty schools, is an important segment of Hawaii's economy. One area of particular interest for economic development is the number of international students in Hawaii. There is strong potential for Hawaii's higher education system to attract more students from around the world. For calendar year 2019, Hawaii had an estimated 13,371 international students (full-time and part-time), with annual expenditures of \$185 million dollars.<sup>6</sup> While the topic of foreign students is outside of the main focus of this section, it is an area that should be monitored as an area for economic development. The following section examines the growth and performance of the education activity of the private sector colleges and specialty schools.

### Size & Growth

Private post-secondary and specialty education in Hawaii accounted for 12,119 jobs in 2019. These sectors together performed better than the rest of the Hawaii economy. Jobs grew 2.3% annually, adding 2,474 new jobs to the economy over the past ten years.

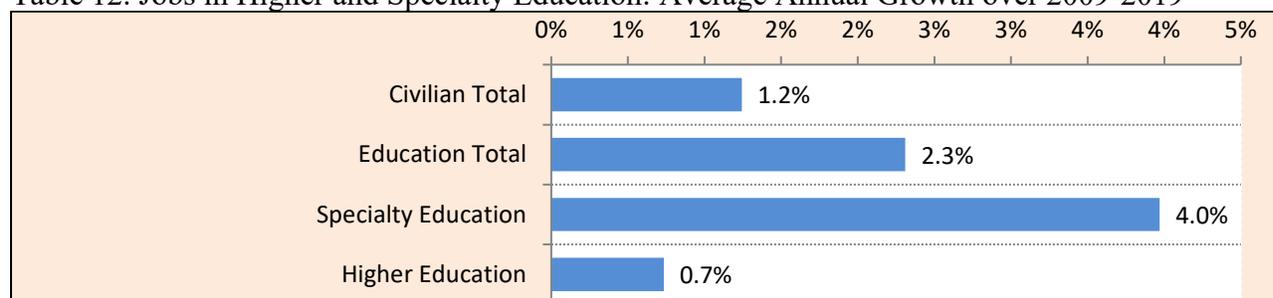
Figure 5. Hawaii's Specialty & Higher Education Sector Jobs and Growth Rate, 2009 - 2019



Both Specialty Education and Higher Education gained jobs over the 2009 to 2019 period. From 2009 to 2019, Specialty Education added jobs every year; while Higher Education lost jobs in 2011, 2015, 2018, and 2019. During the contraction period, in contrast to a majority of the other sectors, both Specialty Education and Higher Education grew jobs more than the overall economy. This reflects the tendency for educational enrollments to increase during economic declines.

<sup>6</sup> DBEDT. 2020. The Economic Impact of International Students in Hawaii – Calendar Year 2019, <https://files.hawaii.gov/dbedt/economic/reports/2020-10-foreign-student.pdf>

Table 12. Jobs in Higher and Specialty Education: Average Annual Growth over 2009-2019



|                     | Annual Job Growth |
|---------------------|-------------------|
|                     | 2009-2019         |
| Civilian Total      | 1.2%              |
| Education Total     | 2.3%              |
| Specialty Education | 4.0%              |
| Higher Education    | 0.7%              |

|                     | Annual Job Growth |           |           |           | Jobs in 2019 |
|---------------------|-------------------|-----------|-----------|-----------|--------------|
|                     | 2009-2019         | 2009-2010 | 2010-2013 | 2013-2019 |              |
| Civilian Total      | 1.2%              | -0.8%     | 1.7%      | 1.4%      | 883,214      |
| Education Total     | 2.3%              | 5.3%      | 3.6%      | 1.2%      | 12,119       |
| Specialty Education | 4.0%              | 7.1%      | 4.5%      | 3.2%      | 6,427        |
| Higher Education    | 0.7%              | 3.8%      | 2.9%      | -0.8%     | 5,692        |

Source: See Table 4 for data source.

### Competitive Metrics

For Specialty Education, the high growth in jobs over the 2009 to 2019 period was above the growth rate of the same activities nationally. As a result, the national competitive share of the Hawaii Specialty Education group was higher. For Higher Education, however, job growth in Hawaii was below the national level and Hawaii loss some national competitive share.

The annual earnings of Specialty Education in Hawaii averaged \$25,160 in 2019, which was about 44% of the earning average of civilian jobs in Hawaii. This level of earnings was about 89% of the national level for the same group. The average earnings for Hawaii Higher Education was higher than Specialty Education. However, it was only about 56% of the national earnings for the same activities in 2019.

Table 13. Hawaii Private Education Sector Performance Compared with Nation

|                            | Jobs per Annual |             |                      | Avg. Annual Job Growth |             | When U.S. = 100% |                 |                     |
|----------------------------|-----------------|-------------|----------------------|------------------------|-------------|------------------|-----------------|---------------------|
|                            | Jobs            | Estabs      | Avg. Annual Earnings | above                  |             | Concentration 1/ | Jobs per Estabs | Avg. Annual Earning |
|                            | 2019            | 2019        | 2019                 | 09-19                  | U.S.        |                  |                 |                     |
| Total Civilian             | 883,214         | 17.3        | 57,861               | 1.2%                   | -0.4%       | 100%             | 88%             | 93%                 |
| <b>EDUCATION (PRIVATE)</b> | <b>12,119</b>   | <b>35.2</b> | <b>28,447</b>        | <b>2.3%</b>            | <b>0.3%</b> | <b>79%</b>       | <b>95%</b>      | <b>63%</b>          |
| Specialty Education        | 6,427           | 39.7        | 25,160               | 4.0%                   | 0.6%        | 97%              | 221%            | 89%                 |
| Higher Education           | 5,692           | 31.1        | 32,159               | 0.7%                   | -0.3%       | 65%              | 17%             | 56%                 |

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

Source: See Table 4 for data source.

## Overall Performance

During the 2009 to 2019 period, both the Higher Education group and the Specialty Education group increased jobs, but only the Specialty Education group increased competitiveness and fell into the Emerging category; the Higher Education group lost competitiveness and fell into the Transitioning category.

|                             |                                 |
|-----------------------------|---------------------------------|
| <b>Emerging Activities</b>  | <b>Base-Growth Activities</b>   |
| Specialty Education         |                                 |
| <b>Declining Activities</b> | <b>Transitioning Activities</b> |
|                             | Higher Education                |

## OTHER TARGETED ACTIVITIES

Apparel and Call Centers have been pursued as sources of economic diversification. Apparel was promoted based on Hawaii's unique style and cultural heritage that brought Hawaiian/Aloha wear to worldwide prominence. However, over the years, a large portion of the garment manufacturing jobs have been outsourced overseas. While there is still some manufacturing of Hawaiian wear in the state, it is more common to find garments with labels that say designed in Hawaii but manufactured elsewhere. Call Centers were promoted based on Hawaii's developing communications technology capacity, its mid Pacific location and multi-lingual resources.

### Size & Growth

Apparel Manufacturing in Hawaii lost jobs in the past ten years. From 2009 to 2019, jobs in the Apparel group decreased 1.3% per year on average.

Call Center activity expanded in the early 2000s, increasing jobs from 210 in 2002 to 485 in 2004. The activity sustained this level of jobs for several years until 2006 and then continued to contract until recently. From 2009 to 2019, jobs in the Call Center group decreased 2.3% per year on average.

Figure 6. Hawaii's Apparel Manufacturing Sector Jobs and Growth Rate, 2009 - 2019

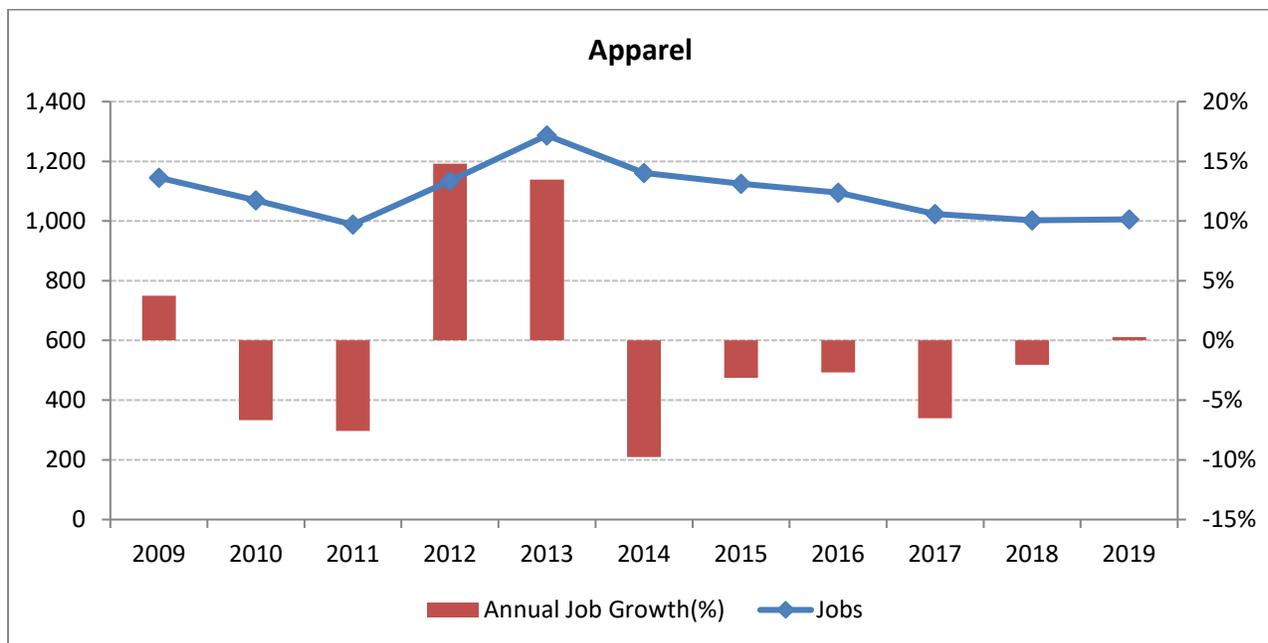


Figure 7. Hawaii's Call Centers Annual Jobs and Growth Rate, 2009 - 2019

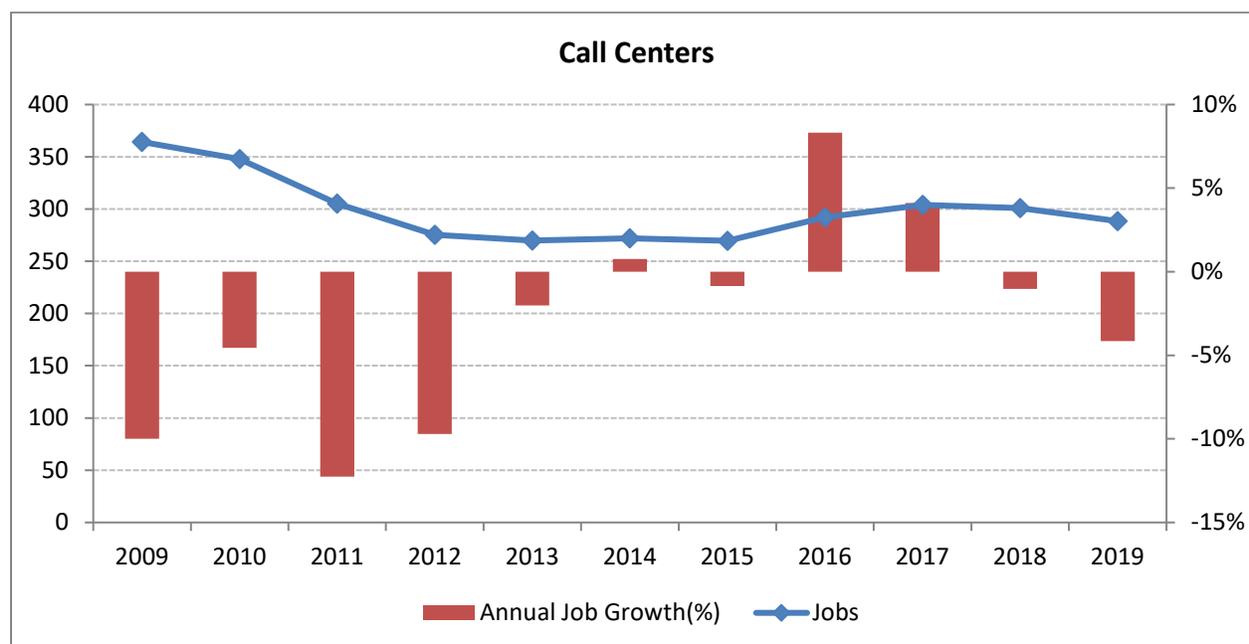


Table 14. Jobs in Apparel and Call Centers: Average Annual Growth over 2009-2019

|                | -3% | -2% | -2% | -1% | -1% | 0%   | 1% | 1% | 2%    |
|----------------|-----|-----|-----|-----|-----|------|----|----|-------|
| Civilian Total |     |     |     |     |     | 1.2% |    |    |       |
| Apparel        |     |     |     |     |     |      |    |    | -1.3% |
| Call Centers   |     |     |     |     |     |      |    |    | -2.3% |

|                | Annual Job Growth |           |           |           | Jobs in 2019 |
|----------------|-------------------|-----------|-----------|-----------|--------------|
|                | 2009-2019         | 2009-2010 | 2010-2013 | 2013-2019 |              |
| Civilian Total | 1.2%              | -0.8%     | 1.7%      | 1.4%      | 883,214      |
| Apparel        | -1.3%             | -6.7%     | 6.4%      | -4.0%     | 1,005        |
| Call Centers   | -2.3%             | -4.5%     | -8.1%     | 1.1%      | 288          |

Source: See Table 4 for data source.

### Competitive Metrics

In terms of job growth, Apparel decreased in both Hawaii and the nation. During the 2009-2019 period, Apparel in Hawaii lost 1.3% of its jobs annually, while the U.S. apparel industry lost 2.8% of its jobs annually. This partially reflects the global outsourcing trend for manufacturing in general.

During the 2009 to 2019 period, the U.S. Call Center industry had a steady job increase of 1.6% per year. In contrast, the Call Center industry in Hawaii experienced an average job decrease of 2.3% per year, during the same period.

The concentration level of Apparel in 2019 was 62% above the national level. In contrast, Call Centers had a very low job concentration in Hawaii's economy compared to the activity nationally. The concentration of Call Centers in Hawaii was only 13% of the national level in 2019.

The annual average earnings for Apparel and Call Center were \$26,718 and \$27,126 respectively in 2019. These earning levels were about 59% of the average earnings nationally.

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

|              | Jobs per |        | Avg. Annual Earnings | Avg. Annual Job Growth |       | When U.S. = 100% |                 |                     |
|--------------|----------|--------|----------------------|------------------------|-------|------------------|-----------------|---------------------|
|              | Jobs     | Estabs |                      | above                  |       | Concentration 1/ | Jobs per Estabs | Avg. Annual Earning |
|              | 2019     | 2019   | 09-19                | U.S.                   |       |                  |                 |                     |
| OTHERS       | 1,294    | 37.3   | 26,809               | -1.5%                  | -2.0% | 44%              | 93%             | 59%                 |
| Apparel      | 1,005    | 37.4   | 26,718               | -1.3%                  | 1.5%  | 162%             | 169%            | 59%                 |
| Call Centers | 288      | 36.9   | 27,126               | -2.3%                  | -3.9% | 13%              | 72%             | 59%                 |

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

### Overall Performance

Based on the performance metrics, during the 2009 to 2019 period. Both the Apparel group and the Call Center group fell into the declining category, with an average job loss of 1.3% and 2.3% per year, respectively.

| Emerging Activities     | Base-Growth Activities   |
|-------------------------|--------------------------|
|                         |                          |
| Declining Activities    | Transitioning Activities |
| Apparel<br>Call Centers |                          |

## PERFORMANCE BY COUNTY

The following tables summarize the 2009 to 2019 county performance of the statewide targeted & emerging industries. Performance has been organized by Best Performing Targets (registering as base-growth & emerging industry groups) and Other Targeted Industry Performance (those that fell into the transitioning and declining categories).

The total number of jobs in Hawaii's targeted & emerging industries without overlaps was 162,397 in 2019. Honolulu accounted for about 70%, followed by Hawaii County at 14%, Maui at 11%, and Kauai at 5%. From 2009 to 2019, adjusting for overlaps, total jobs in the targeted & emerging industries increased by 20,890 jobs. Honolulu added 13,997 jobs, followed by Hawaii at 2,985 jobs, Maui at 2,635 jobs, and Kauai at 950 jobs.

Table 16. Jobs and Job changes from 2009 to 2019 by County

|                            | 2019 Jobs                |          |         |         |        |
|----------------------------|--------------------------|----------|---------|---------|--------|
|                            | State                    | Honolulu | Hawaii  | Maui    | Kauai  |
| Total Civilian             | 883,214                  | 612,556  | 109,264 | 111,813 | 49,581 |
| Total Targeted w/o Overlap | 162,397                  | 113,365  | 22,707  | 18,300  | 7,609  |
| TECHNOLOGY SECTOR          | 28,515                   | 22,924   | 2,541   | 2,001   | 957    |
| CREATIVE SECTOR            | 54,071                   | 39,245   | 5,639   | 6,531   | 2,475  |
| AGRIBUSINESS               | 24,551                   | 10,666   | 8,776   | 3,152   | 1,956  |
| HEALTH & WELLNESS          | 63,083                   | 46,525   | 6,604   | 7,348   | 2,602  |
| EDUCATION (PRIVATE)        | 12,119                   | 9,911    | 978     | 791     | 251    |
| OTHERS                     | 1,294                    | 1,113    | 66      | 87      | 27     |
|                            | % in State 2019 Jobs     |          |         |         |        |
| Total Civilian             | 100%                     | 69%      | 12%     | 13%     | 6%     |
| Total Targeted w/o Overlap | 100%                     | 70%      | 14%     | 11%     | 5%     |
| TECHNOLOGY SECTOR          | 100%                     | 80%      | 9%      | 7%      | 3%     |
| CREATIVE SECTOR            | 100%                     | 73%      | 10%     | 12%     | 5%     |
| AGRIBUSINESS               | 100%                     | 43%      | 36%     | 13%     | 8%     |
| HEALTH & WELLNESS          | 100%                     | 74%      | 10%     | 12%     | 4%     |
| EDUCATION (PRIVATE)        | 100%                     | 82%      | 8%      | 7%      | 2%     |
| OTHERS                     | 100%                     | 86%      | 5%      | 7%      | 2%     |
|                            | Job Changes 2009 to 2019 |          |         |         |        |
| Total Civilian             | 102,653                  | 60,642   | 14,863  | 18,274  | 8,874  |
| Total Targeted w/o Overlap | 20,890                   | 13,997   | 2,985   | 2,635   | 950    |
| TECHNOLOGY SECTOR          | 581                      | 173      | 256     | 53      | 59     |
| CREATIVE SECTOR            | 7,291                    | 5,870    | 630     | 345     | 312    |
| AGRIBUSINESS               | 1,368                    | 1,665    | 538     | -884    | 48     |
| HEALTH & WELLNESS          | 11,472                   | 6,645    | 1,409   | 2,928   | 504    |
| EDUCATION (PRIVATE)        | 2,474                    | 1,505    | 378     | 318     | 85     |
| OTHERS                     | -216                     | -190     | -27     | 8       | -7     |

Source: See Table 4 for data source.

## City & County of Honolulu

Adjusting for overlaps, Honolulu accounted for 113,365 of the state's targeted & emerging industry jobs in 2019, an 1.3% average annual increase from 2009. As shown in Table 17, among the six major sectors, only one sector was high performing Emerging activities in Honolulu County in the 2009 to 2019 period. Four sectors were in the Transitioning category, and one sector was in the Declining category.

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

| INDUSTRY GROUPS                 | Jobs in Honolulu |              | Avg. Ann. Job Growth (2009-2019) |      | Concentration of Industry in Honolulu Compared to U.S. |              | Avg. Annual Earnings 2019 |           |
|---------------------------------|------------------|--------------|----------------------------------|------|--|--------------|---------------------------|-----------|
|                                 | 2019             | Change 09-19 | % Point                          |      | 2019   | Change 09-19 | Honolulu                  | U.S.      |
|                                 |                  |              | Honolulu                         | U.S. |  |              |                           |           |
| TOTAL CIVILIAN JOBS             | 612,556          | 60,642       | 1.0%                             | 1.6% | 100%   | 0%           | \$61,588                  | \$62,331  |
| TOTAL TARGETED JOBS W/O OVERLAP | 113,365          | 13,997       | 1.3%                             | 1.8% | 81%  | 1%           | \$68,605                  | \$75,927  |
| <b>Emerging Activities</b>      |                  |              |                                  |      |  |              |                           |           |
| AGRIBUSINESS                    | 10,666           | 1,665        | 1.7%                             | 1.0% | 56%  | 7%           | \$47,417                  | \$47,342  |
| <b>Transitioning Activities</b> |                  |              |                                  |      |  |              |                           |           |
| HEALTH & WELLNESS               | 46,525           | 6,645        | 1.6%                             | 1.7% | 94%  | 4%           | \$84,548                  | \$72,146  |
| EDUCATION (PRIVATE)             | 9,911            | 1,505        | 1.7%                             | 2.0% | 93%  | 2%           | \$29,330                  | \$44,985  |
| CREATIVE SECTOR                 | 39,245           | 5,870        | 1.6%                             | 2.6% | 87%  | -3%          | \$61,524                  | \$84,918  |
| TECHNOLOGY SECTOR               | 22,924           | 173          | 0.1%                             | 2.1% | 63%  | -10%         | \$93,012                  | \$120,435 |
| <b>Declining Activities</b>     |                  |              |                                  |      |  |              |                           |           |
| OTHERS                          | 1,113            | -190         | -1.6%                            | 0.5% | 55%  | -9%          | \$27,408                  | \$45,658  |

Source: See Table 4 for data source. The sum of the individual industries does not add up to the total due to adjusting for overlaps among sectors.

Table 18 shows the performance of detailed targeted & emerging industry groups in Honolulu. Among the 38 detailed industry groups, 13 groups were high performing, with positive job growth combined with a job growth rate that was higher than the nation for the same activity. The high-performing activities in the target industry portfolio accounted for about 38,558 jobs or 6.3% of all civilian jobs in 2019. Between 2009 and 2019, those groups generated 20.2% of the total gain in jobs for the civilian economy, or about 12,245 new jobs.

About 31% of the high-performing activities had average annual earnings that exceeded \$70,000 in 2019. By comparison, the average earnings for the civilian economy in 2019 was \$61,588 by the 2019 estimate.

From 2009 to 2019, 12 activities, which included 69,795 jobs, fell into the Transitioning category. They gained jobs over the period but did not keep up with national growth for the same activities resulting in a loss of competitive national industry share. However, four of those activities grew faster in terms of jobs than the civilian economy as a whole.

Thirteen activities in the portfolio fell into the Declining industry category as the result of net job losses for the 2009 to 2019 period. Jobs in the Declining industry groups totaled an estimated 20,610 in 2019, representing a loss of 3,427 jobs from 2009.

Table 18. Performance of the Detailed Honolulu Targeted Industry Portfolio

| INDUSTRY GROUPS                    | Jobs in Honolulu |              | Avg. Ann. Job Growth (2009-2019) |       | Concentration of Industry in Honolulu Compared to U.S. |                      | Avg. Annual Earnings 2019 |           |
|------------------------------------|------------------|--------------|----------------------------------|-------|--|----------------------|---------------------------|-----------|
|                                    | 2019             | Change 09-19 | Honolulu                         | U.S.  | 2019   | % Point Change 09-19 | Honolulu                  | U.S.      |
|                                    |                  |              |                                  |       |  |                      |                           |           |
| <b>Base-Growth Activities</b>      |                  |              |                                  |       |  |                      |                           |           |
| Cultural Activities                | 3,319            | 1,889        | 8.8%                             | 3.0%  | 502%   | 229%                 | \$54,691                  | \$59,443  |
| Film, TV, Video Production/Distrib | 1,934            | 916          | 6.6%                             | 1.5%  | 146%   | 62%                  | \$71,603                  | \$106,493 |
| Music                              | 879              | 341          | 5.0%                             | 2.6%  | 137%   | 35%                  | \$43,614                  | \$43,154  |
| Pharmacies                         | 2,597            | 204          | 0.8%                             | -0.5% | 123%   | 21%                  | \$50,556                  | \$52,208  |
| Engineering and Related Serv.      | 5,741            | 721          | 1.4%                             | 1.2%  | 113%   | 8%                   | \$110,122                 | \$102,070 |
| Specialty Health Care Services     | 9,852            | 4,195        | 5.7%                             | 4.3%  | 109%   | 19%                  | \$64,930                  | \$50,590  |
| <b>Emerging Activities</b>         |                  |              |                                  |       |  |                      |                           |           |
| Specialty Education                | 4,544            | 1,353        | 3.6%                             | 3.4%  | 99%  | 7%                   | \$25,250                  | \$28,344  |
| Art Education                      | 660              | 231          | 4.4%                             | 3.8%  | 76%  | 9%                   | \$12,530                  | \$13,135  |
| Technical Consulting Services      | 4,375            | 1,406        | 4.0%                             | 3.8%  | 75%  | 6%                   | \$74,461                  | \$88,561  |
| Agric. Support Services            | 1,237            | 392          | 3.9%                             | 2.5%  | 62%  | 11%                  | \$52,114                  | \$54,683  |
| Agric. Inputs                      | 260              | 73           | 3.4%                             | 0.7%  | 35%  | 10%                  | \$64,163                  | \$74,776  |
| Farm Production                    | 3,098            | 499          | 1.8%                             | 0.3%  | 32%  | 6%                   | \$38,744                  | \$35,897  |
| Chemical & Pharmaceutical Mfg      | 62               | 25           | 5.2%                             | 0.8%  | 4%   | 2%                   | \$72,610                  | \$142,829 |

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

| INDUSTRY GROUPS                     | Jobs in Honolulu |              | Avg. Ann. Job Growth (2009-2019) |       | Concentration of Industry in Honolulu Compared to U.S. |                      | Avg. Annual Earnings 2019 |           |
|-------------------------------------|------------------|--------------|----------------------------------|-------|--|----------------------|---------------------------|-----------|
|                                     | 2019             | Change 09-19 | Honolulu                         | U.S.  | 2019   | % Point Change 09-19 | Honolulu                  | U.S.      |
|                                     |                  |              |                                  |       |  |                      |                           |           |
| <b>Transitioning Activities</b>     |                  |              |                                  |       |  |                      |                           |           |
| Hospitals & Nursing Facilities      | 17,225           | 1,013        | 0.6%                             | 0.7%  | 84%  | 4%                   | \$94,637                  | \$72,466  |
| Agric. Processing                   | 5,183            | 774          | 1.6%                             | 1.8%  | 94%  | 4%                   | \$52,461                  | \$60,498  |
| Marketing, Photography & Related    | 8,637            | 1,694        | 2.2%                             | 2.5%  | 95%  | 2%                   | \$33,648                  | \$55,639  |
| Business Consulting                 | 4,757            | 1,253        | 3.1%                             | 3.5%  | 70%  | 2%                   | \$73,719                  | \$88,201  |
| Technology Equipment Distr.         | 826              | 14           | 0.2%                             | 0.9%  | 48%  | 0%                   | \$124,230                 | \$137,062 |
| Higher Education                    | 5,367            | 152          | 0.3%                             | 1.0%  | 88%  | -1%                  | \$32,784                  | \$57,576  |
| Agric. Packaging & Warehsg          | 182              | 29           | 1.8%                             | 2.9%  | 27%  | -1%                  | \$51,094                  | \$54,421  |
| Design Services                     | 1,295            | 77           | 0.6%                             | 1.8%  | 82%  | -5%                  | \$38,427                  | \$47,162  |
| Health Practitioners                | 15,431           | 1,135        | 0.8%                             | 2.1%  | 90%  | -6%                  | \$92,544                  | \$85,127  |
| Medical and Diagnostic Testing      | 1,420            | 98           | 0.7%                             | 2.2%  | 154%   | -14%                 | \$73,521                  | \$80,836  |
| Performing and Creative Arts        | 5,357            | 487          | 1.0%                             | 3.3%  | 86%  | -16%                 | \$24,865                  | \$29,028  |
| Computer Services and Software Pub. | 4,114            | 26           | 0.1%                             | 4.2%  | 47%  | -19%                 | \$100,235                 | \$135,742 |
| <b>Declining Activities</b>         |                  |              |                                  |       |  |                      |                           |           |
| Alternative Power Generation        | 87               | -1           | -0.1%                            | -4.3% | 43%  | 17%                  | \$96,038                  | \$180,169 |
| Engineering and Research & Dev.     | 4,607            | -66          | -0.1%                            | 1.2%  | 90%  | -7%                  | \$110,884                 | \$117,059 |
| Architecture                        | 1,557            | -53          | -0.3%                            | 0.7%  | 151%   | -7%                  | \$98,350                  | \$82,782  |
| Information & Telecom Tech.         | 4,063            | -159         | -0.4%                            | 2.0%  | 63%  | -12%                 | \$90,424                  | \$140,635 |
| Computer Sys. Design & Related      | 5,194            | -596         | -1.1%                            | 3.5%  | 64%  | -31%                 | \$95,239                  | \$124,674 |
| Apparel                             | 865              | -108         | -1.2%                            | -2.8% | 202%   | 41%                  | \$27,691                  | \$45,398  |
| Fishing, Forestry & Hunting         | 706              | -103         | -1.4%                            | -0.7% | 234%   | -2%                  | \$33,095                  | \$40,486  |
| Radio and Television Broadcasting   | 829              | -185         | -2.0%                            | 0.4%  | 102%   | -20%                 | \$81,810                  | \$90,387  |
| Call Centers                        | 248              | -81          | -2.8%                            | 1.6%  | 15%  | -7%                  | \$26,416                  | \$45,728  |
| Publishing & Information            | 1,299            | -740         | -4.4%                            | -0.2% | 55%  | -25%                 | \$61,171                  | \$131,988 |
| Other Technology Mfg                | 310              | -225         | -5.3%                            | 0.6%  | 7%   | -5%                  | \$74,929                  | \$121,955 |
| R&D Services (exc. Biotech.)        | 657              | -805         | -7.7%                            | 1.2%  | 39%  | -53%                 | \$78,195                  | \$131,839 |
| Biotechnology                       | 187              | -305         | -9.2%                            | 4.5%  | 27%  | -77%                 | \$93,507                  | \$195,218 |

Source: See Table 4 for data source.

## Hawaii County

Adjusting for overlaps, Hawaii County accounted for 22,707 of the state's targeted & emerging industry jobs in 2019, a 1.4% average annual increase from 2009. As shown in Table 19, among the six major sectors, two sectors were high performing in Hawaii County in the 2009 to 2019 period. Three sectors were in the Transitioning category and one sector lost jobs.

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

| INDUSTRY GROUPS                 | Jobs in HI County |              | Avg. Ann. Job Growth (2009-2019) |      | Concentration of Industry in HI County Compared to U.S. |       | Avg. Annual Earnings 2019 |           |
|---------------------------------|-------------------|--------------|----------------------------------|------|---|-------|---------------------------|-----------|
|                                 | 2019              | Change 09-19 | HI                               |      | % Point Change  |       | 2019                      |           |
|                                 |                   |              | County                           | U.S. | 2019  | 09-19 | HI County                 | U.S.      |
| TOTAL CIVILIAN JOBS             | 109,264           | 14,863       | 1.5%                             | 1.6% | 100%  | 0%    | \$47,308                  | \$62,331  |
| TOTAL TARGETED JOBS W/O OVERLAP | 22,707            | 2,985        | 1.4%                             | 1.8% | 91%   | -2%   | \$43,324                  | \$75,927  |
| <b>Emerging Activities</b>      |                   |              |                                  |      |   |       |                           |           |
| EDUCATION (PRIVATE)             | 978               | 378          | 5.0%                             | 2.0% | 51%   | 14%   | \$27,688                  | \$44,985  |
| HEALTH & WELLNESS               | 6,604             | 1,409        | 2.4%                             | 1.7% | 75%   | 6%    | \$62,189                  | \$72,146  |
| <b>Transitioning Activities</b> |                   |              |                                  |      |   |       |                           |           |
| AGRIBUSINESS                    | 8,776             | 538          | 0.6%                             | 1.0% | 259%  | -5%   | \$30,386                  | \$47,342  |
| TECHNOLOGY SECTOR               | 2,541             | 256          | 1.1%                             | 2.1% | 39%   | -4%   | \$71,408                  | \$120,435 |
| CREATIVE SECTOR                 | 5,639             | 630          | 1.2%                             | 2.6% | 70%   | -9%   | \$38,603                  | \$84,918  |
| <b>Declining Activities</b>     |                   |              |                                  |      |   |       |                           |           |
| OTHERS                          | 66                | -27          | -3.4%                            | 0.5% | 18%   | -8%   | \$22,488                  | \$45,658  |

Source: See Table 4 for data source. The sum of the individual industries does not add up to the total due to adjusting for overlaps among sectors.

Table 20 shows the performance of detailed targeted & emerging industry groups in Hawaii County. Among the 38 detailed industry groups, 15 groups were high performing. The high-performing activities in the target industry portfolio accounted for about 13,383 jobs or 12.2% of all civilian jobs in 2019. Between 2009 and 2019, those groups generated 16.3% of the total gain in jobs for the civilian economy or about 2,428 new jobs.

About 14.7% of the high-performing activities had average annual earnings that exceeded \$60,000 in 2019. By comparison, the earnings average for the civilian economy in 2019 was \$47,308 by the 2019 estimate.

From 2009 to 2019, 11 activities with 9,243 jobs fell into the Transitioning category. They gained jobs over the period but did not keep up with national growth for the same activities resulting in a loss of competitive national industry share. However, four of those activities grew faster in terms of jobs than the civilian economy as a whole.

Twelve activities in the portfolio fell into the Declining industry category, as a result of net job losses for the 2009 to 2019 period. Jobs in the Declining industry groups totaled an estimated 1,763 in 2019, representing a loss of 246 jobs from 2009.

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

| INDUSTRY GROUPS                         | Jobs in HI County |              | Avg. Ann. Job Growth (2009-2019) |       | Concentration of Industry in HI County Compared to U.S. |       | Avg. Annual Earnings 2019 |           |
|---|-------------------|--------------|----------------------------------|-------|---|-------|---------------------------|-----------|
|   | 2019              | Change 09-19 | % Point Change                   |       | 2019  | 09-19 | HI County                 | U.S.      |
|   |                   |              | HI County                        | U.S.  |   |       |                           |           |
| <b>Base-Growth Activities</b>           |                   |              |                                  |       |   |       |                           |           |
| Fishing, Forestry & Hunting             | 477               | 4            | 0.1%                             | -0.7% | 885%  | 80%   | \$19,777                  | \$40,486  |
| Alternative Power Generation            | 154               | 106          | 12.3%                            | -4.3% | 425%  | 340%  | \$131,114                 | \$180,169 |
| Farm Production                         | 6,794             | 293          | 0.4%                             | 0.3%  | 393%  | 12%   | \$28,050                  | \$35,897  |
| Music                                   | 256               | 101          | 5.2%                             | 2.6%  | 223%  | 52%   | \$22,370                  | \$43,154  |
| Cultural Activities                     | 169               | 83           | 7.0%                             | 3.0%  | 144%  | 47%   | \$61,675                  | \$59,443  |
| Design Services                         | 312               | 55           | 2.0%                             | 1.8%  | 111%  | 3%    | \$34,426                  | \$47,162  |
| Specialty Health Care Services          | 1,766             | 924          | 7.7%                             | 4.3%  | 109%  | 31%   | \$50,908                  | \$50,590  |
| Specialty Education                     | 890               | 344          | 5.0%                             | 3.4%  | 109%  | 17%   | \$27,391                  | \$28,344  |
| Pharmacies                              | 383               | 43           | 1.2%                             | -0.5% | 102%  | 17%   | \$49,785                  | \$52,208  |
| <b>Emerging Activities</b>              |                   |              |                                  |       |   |       |                           |           |
| Agric. Support Services                 | 311               | 96           | 3.8%                             | 2.5%  | 87%   | 11%   | \$42,763                  | \$54,683  |
| Radio and Television Broadcasting       | 90                | 31           | 4.4%                             | 0.4%  | 62%   | 21%   | \$39,329                  | \$90,387  |
| Agric. Packaging & Warehsg              | 50                | 39           | 16.7%                            | 2.9%  | 42%   | 30%   | \$32,719                  | \$54,421  |
| Hospitals & Nursing Facilities          | 1,287             | 148          | 1.2%                             | 0.7%  | 35%   | 2%    | \$63,079                  | \$72,466  |
| Computer Services and Software Publish. | 357               | 127          | 4.5%                             | 4.2%  | 23%   | 1%    | \$65,361                  | \$135,742 |
| Higher Education                        | 87                | 34           | 5.0%                             | 1.0%  | 8%  | 3%    | \$30,724                  | \$57,576  |

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

| INDUSTRY GROUPS                        | Jobs in HI County |              | Avg. Ann. Job Growth (2009-2019) |       | Concentration of Industry in HI County Compared to U.S. |       | Avg. Annual Earnings 2019 |           |
|--|-------------------|--------------|----------------------------------|-------|---|-------|---------------------------|-----------|
|  | 2019              | Change 09-19 | % Point Change                   |       | 2019  | 09-19 | HI County                 | U.S.      |
|  |                   |              | HI County                        | U.S.  |   |       |                           |           |
| <b>Transitioning Activities</b>        |                   |              |                                  |       |   |       |                           |           |
| Agric. Processing                      | 1,052             | 136          | 1.4%                             | 1.8%  | 107%  | -2%   | \$45,454                  | \$60,498  |
| Art Education                          | 64                | 17           | 3.2%                             | 3.8%  | 41%   | -1%   | \$11,080                  | \$13,135  |
| Information & Telecom Tech.            | 477               | 63           | 1.4%                             | 2.0%  | 41%   | -2%   | \$81,089                  | \$140,635 |
| Health Practitioners                   | 2,955             | 296          | 1.1%                             | 2.1%  | 97%   | -8%   | \$70,446                  | \$85,127  |
| R&D Services (exc. Biotech.)           | 363               | 3            | 0.1%                             | 1.2%  | 122%  | -12%  | \$105,567                 | \$131,839 |
| Computer Sys. Design & Related         | 341               | 69           | 2.3%                             | 3.5%  | 24%   | -3%   | \$58,904                  | \$124,674 |
| Marketing, Photography & Related       | 1,322             | 156          | 1.3%                             | 2.5%  | 82%   | -9%   | \$25,427                  | \$55,639  |
| Business Consulting                    | 578               | 82           | 1.5%                             | 3.5%  | 48%   | -9%   | \$37,361                  | \$88,201  |
| Biotechnology                          | 11                | 2            | 2.3%                             | 4.5%  | 9%  | -2%   | \$19,612                  | \$195,218 |
| Technical Consulting Services          | 529               | 72           | 1.5%                             | 3.8%  | 51%   | -12%  | \$37,043                  | \$88,561  |
| Performing and Creative Arts           | 1,551             | 108          | 0.7%                             | 3.3%  | 140%  | -37%  | \$21,252                  | \$29,028  |
| <b>Declining Activities</b>            |                   |              |                                  |       |   |       |                           |           |
| Engineering and Research & Development | 556               | -1           | 0.0%                             | 1.2%  | 61%   | -7%   | \$95,349                  | \$117,059 |
| Medical and Diagnostic Testing         | 213               | -1           | 0.0%                             | 2.2%  | 129%  | -30%  | \$58,090                  | \$80,836  |
| Call Centers                           | 19                | -1           | -0.3%                            | 1.6%  | 6%  | -1%   | \$41,969                  | \$45,728  |
| Other Technology Mfg                   | 51                | -2           | -0.4%                            | 0.6%  | 7%  | -1%   | \$30,266                  | \$121,955 |
| Film, TV, Video Production/Distrib     | 86                | -5           | -0.6%                            | 1.5%  | 37%   | -8%   | \$61,665                  | \$106,493 |
| Engineering and Related Serv.          | 348               | -25          | -0.7%                            | 1.2%  | 39%   | -7%   | \$75,318                  | \$102,070 |
| Architecture                           | 147               | -18          | -1.1%                            | 0.7%  | 80%   | -15%  | \$75,516                  | \$82,782  |
| Technology Equipment Distr.            | 7                 | -2           | -2.8%                            | 0.9%  | 2%  | -1%   | \$96,155                  | \$137,062 |
| Agric. Inputs                          | 92                | -30          | -2.8%                            | 0.7%  | 68%   | -27%  | \$42,380                  | \$74,776  |
| Apparel                                | 48                | -26          | -4.3%                            | -2.8% | 62%   | -9%   | \$14,901                  | \$45,398  |
| Chemical & Pharmaceutical Mfg          | 46                | -27          | -4.5%                            | 0.8%  | 18%   | -12%  | \$75,572                  | \$142,829 |
| Publishing & Information               | 150               | -108         | -5.3%                            | -0.2% | 35%   | -23%  | \$36,817                  | \$131,988 |

Source: See Table 4 for data source

## Maui County

Adjusting for overlaps, Maui accounted for 18,300 of the state's targeted & emerging industry jobs in 2019, a 1.6% average annual increase from 2009. As shown in Table 21, among the six major sectors, three sectors were high performing in Maui County in the 2009 to 2019 period. Two sectors were in the Transitioning category and one sector lost jobs.

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

| INDUSTRY GROUPS                 | Jobs in Maui |              | Avg. Ann. Job Growth (2009-2019) |      | Concentration of Industry in Maui Compared to U.S. |                      | Avg. Annual Earnings 2019 |           |
|---------------------------------|--------------|--------------|----------------------------------|------|--|----------------------|---------------------------|-----------|
|                                 | 2019         | Change 09-19 | Maui                             | U.S. | 2019   | % Point Change 09-19 | Maui                      | U.S.      |
|                                 |              |              |                                  |      |  |                      |                           |           |
| TOTAL CIVILIAN JOBS             | 111,813      | 18,274       | 1.8%                             | 1.6% | 100%   | 0%                   | \$50,706                  | \$62,331  |
| TOTAL TARGETED JOBS W/O OVERLAP | 18,300       | 2,635        | 1.6%                             | 1.8% | 72%  | -3%                  | \$53,383                  | \$75,927  |
| <b>Emerging Activities</b>      |              |              |                                  |      |  |                      |                           |           |
| HEALTH & WELLNESS               | 7,348        | 2,928        | 5.2%                             | 1.7% | 81%  | 22%                  | \$74,390                  | \$72,146  |
| EDUCATION (PRIVATE)             | 791          | 318          | 5.3%                             | 2.0% | 41%  | 11%                  | \$24,265                  | \$44,985  |
| OTHERS                          | 87           | 8            | 1.0%                             | 0.5% | 24%  | 1%                   | \$24,388                  | \$45,658  |
| <b>Transitioning Activities</b> |              |              |                                  |      |  |                      |                           |           |
| TECHNOLOGY SECTOR               | 2,001        | 53           | 0.3%                             | 2.1% | 30%  | -7%                  | \$73,999                  | \$120,435 |
| CREATIVE SECTOR                 | 6,531        | 345          | 0.5%                             | 2.6% | 79%  | -19%                 | \$38,079                  | \$84,918  |
| <b>Declining Activities</b>     |              |              |                                  |      |  |                      |                           |           |
| AGRIBUSINESS                    | 3,089        | -973         | -2.7%                            | 0.8% | 91%  | -40%                 | \$38,311                  | \$46,532  |

Source: See Table 4 for data source. The sum of the individual industries does not add up to the total due to adjusting for overlaps among sectors.

Table 22 shows the performance of detailed targeted & emerging industry groups in Maui. Among the detailed industry groups, 11 groups were high performing. The high-performing activities in the target industry portfolio accounted for about 5,182 jobs or 4.6% of all civilian jobs in 2019. Between 2009 and 2019, those groups generated 17.4% of the total gain in jobs for the civilian economy or about 3,185 new jobs.

About 77.2% of the high-performing activities had average annual earnings that exceeded \$60,000 in 2019. By comparison, the earnings average for the civilian economy in 2019 was an estimated \$50,706.

In 2019, eight activities with 9,269 jobs fell into the Transitioning category. They gained jobs over the period but did not keep up with national growth for the same activities, resulting in a loss of competitive national industry share. However, three of those activities grew faster in terms of jobs than the civilian economy as a whole.

Nineteen activities in the portfolio fell into the Declining industry category as the result of net job losses for the 2009 to 2019 period. Jobs in the Declining industry groups totaled an estimated 5,300 in 2019, representing a loss of 1,697 jobs from 2009.

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

| INDUSTRY GROUPS                           | Jobs in Maui |              | Avg. Ann. Job Growth (2009-2019) |      | Concentration of Industry in Maui Compared to U.S. |                      | Avg. Annual Earnings 2019 |           |
|---|--------------|--------------|----------------------------------|------|--|----------------------|---------------------------|-----------|
|   | 2019         | Change 09-19 | Maui                             | U.S. | 2019   | % Point Change 09-19 | Maui                      | U.S.      |
|   |              |              |                                  |      |  |                      |                           |           |
| <b>Base-Growth Activities</b>             |              |              |                                  |      |  |                      |                           |           |
| Specialty Health Care Services            | 1,662        | 1,132        | 12.1%                            | 4.3% | 101%   | 51%                  | \$62,022                  | \$50,590  |
| <b>Emerging Activities</b>                |              |              |                                  |      |  |                      |                           |           |
| Medical and Diagnostic Testing            | 158          | 65           | 5.4%                             | 2.2% | 94%  | 24%                  | \$75,534                  | \$80,836  |
| Specialty Education                       | 755          | 300          | 5.2%                             | 3.4% | 90%  | 13%                  | \$23,217                  | \$28,344  |
| Agric. Support Services                   | 241          | 71           | 3.6%                             | 2.5% | 66%  | 6%                   | \$54,978                  | \$54,683  |
| Cultural Activities                       | 74           | 20           | 3.2%                             | 3.0% | 61%  | 0%                   | \$50,555                  | \$59,443  |
| Hospitals & Nursing Facilities            | 2,070        | 1,497        | 13.7%                            | 0.7% | 55%  | 39%                  | \$89,745                  | \$72,466  |
| Film, TV, Video Production/Distrib        | 94           | 34           | 4.6%                             | 1.5% | 39%  | 10%                  | \$61,067                  | \$106,493 |
| Call Centers                              | 22           | 11           | 7.3%                             | 1.6% | 8%   | 3%                   | \$22,675                  | \$45,728  |
| Other Technology Mfg                      | 54           | 28           | 7.5%                             | 0.6% | 7%   | 3%                   | \$50,814                  | \$121,955 |
| Chemical & Pharmaceutical Mfg             | 15           | 9            | 8.9%                             | 0.8% | 6%   | 3%                   | \$80,395                  | \$142,829 |
| Higher Education                          | 35           | 18           | 7.3%                             | 1.0% | 3%   | 1%                   | \$46,829                  | \$57,576  |
| <b>Transitioning Activities</b>           |              |              |                                  |      |  |                      |                           |           |
| Design Services                           | 309          | 34           | 1.2%                             | 1.8% | 108%   | -9%                  | \$38,188                  | \$47,162  |
| Business Consulting                       | 465          | 103          | 2.5%                             | 3.5% | 38%  | -4%                  | \$39,648                  | \$88,201  |
| Marketing, Photography & Related          | 1,583        | 228          | 1.6%                             | 2.5% | 95%  | -11%                 | \$29,468                  | \$55,639  |
| Technical Consulting Services             | 423          | 99           | 2.7%                             | 3.8% | 40%  | -5%                  | \$38,405                  | \$88,561  |
| Health Practitioners                      | 3,079        | 273          | 0.9%                             | 2.1% | 98%  | -13%                 | \$73,519                  | \$85,127  |
| Computer Services and Software Publishers | 423          | 97           | 2.6%                             | 4.2% | 26%  | -5%                  | \$85,385                  | \$135,742 |
| Performing and Creative Arts              | 2,582        | 338          | 1.4%                             | 3.3% | 228%   | -50%                 | \$25,415                  | \$29,028  |
| Computer Sys. Design & Related            | 404          | 45           | 1.2%                             | 3.5% | 27%  | -7%                  | \$77,901                  | \$124,674 |

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

| INDUSTRY GROUPS                        | Jobs in Maui |              | Avg. Ann. Job Growth (2009-2019) |       | Concentration of Industry in Maui Compared to U.S. |                      | Avg. Annual Earnings 2019 |           |
|--|--------------|--------------|----------------------------------|-------|--|----------------------|---------------------------|-----------|
|  | 2019         | Change 09-19 | Maui                             | U.S.  | 2019   | % Point Change 09-19 | Maui                      | U.S.      |
|  |              |              |                                  |       |  |                      |                           |           |
| <b>Declining Activities</b>            |              |              |                                  |       |  |                      |                           |           |
| Apparel                                | 65           | -3           | -0.5%                            | -2.8% | 83%  | 16%                  | \$24,976                  | \$45,398  |
| Art Education                          | 85           | -8           | -0.9%                            | 3.8%  | 54%  | -33%                 | \$17,835                  | \$13,135  |
| Pharmacies                             | 378          | -38          | -1.0%                            | -0.5% | 98%  | -6%                  | \$51,289                  | \$52,208  |
| Information & Telecom Tech.            | 433          | -46          | -1.0%                            | 2.0%  | 37%  | -14%                 | \$90,630                  | \$140,635 |
| Fishing, Forestry & Hunting            | 197          | -38          | -1.7%                            | -0.7% | 357%   | -46%                 | \$20,697                  | \$40,486  |
| Engineering and Research & Development | 327          | -65          | -1.8%                            | 1.2%  | 35%  | -13%                 | \$99,620                  | \$117,059 |
| Agric. Processing                      | 548          | -112         | -1.8%                            | 1.8%  | 54%  | -25%                 | \$46,641                  | \$60,498  |
| Engineering and Related Serv.          | 340          | -83          | -2.2%                            | 1.2%  | 37%  | -15%                 | \$83,551                  | \$102,070 |
| R&D Services (exc. Biotech.)           | 144          | -40          | -2.4%                            | 1.2%  | 47%  | -22%                 | \$95,445                  | \$131,839 |
| Farm Production                        | 2,117        | -734         | -2.9%                            | 0.3%  | 120%   | -49%                 | \$36,528                  | \$35,897  |
| Architecture                           | 157          | -57          | -3.1%                            | 0.7%  | 83%  | -41%                 | \$61,000                  | \$82,782  |
| Technology Equipment Distr.            | 15           | -7           | -3.8%                            | 0.9%  | 5%   | -3%                  | \$72,211                  | \$137,062 |
| Biotechnology                          | 4            | -2           | -4.0%                            | 4.5%  | 3%   | -5%                  | \$108,428                 | \$195,218 |
| Publishing & Information               | 224          | -119         | -4.2%                            | -0.2% | 51%  | -27%                 | \$40,887                  | \$131,988 |
| Radio and Television Broadcasting      | 71           | -68          | -6.5%                            | 0.4%  | 48%  | -51%                 | \$58,835                  | \$90,387  |
| Agric. Packaging & Warehsg             | 6            | -8           | -8.1%                            | 2.9%  | 5%   | -11%                 | \$12,756                  | \$54,421  |
| Alternative Power Generation           | 10           | -14          | -8.1%                            | -4.3% | 27%  | -15%                 | \$145,565                 | \$180,169 |
| Music                                  | 136          | -191         | -8.4%                            | 2.6%  | 116%   | -248%                | \$26,146                  | \$43,154  |
| Agric. Inputs                          | 42           | -63          | -8.8%                            | 0.7%  | 31%  | -53%                 | \$37,745                  | \$74,776  |

Source: See Table 4 for data source.

## Kauai County

Adjusting for overlaps, Kauai County accounted for 7,609 of the state's targeted & emerging industry jobs in 2019, an 1.3% annual increase from 2009. As shown in Table 23, among the six major sectors, two sectors were high performing in Kauai County in the 2009 to 2019 period. Three sectors were in the Transitioning category and one sector lost jobs.

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

| INDUSTRY GROUPS                 | Jobs in Kauai |              | Avg. Ann. Job Growth (2009-2019) |      | Concentration of Industry in Kauai Compared to U.S. |                      | Avg. Annual Earnings 2019 |           |
|---------------------------------|---------------|--------------|----------------------------------|------|---|----------------------|---------------------------|-----------|
|                                 | 2019          | Change 09-19 | Kauai                            | U.S. | 2019  | % Point Change 09-19 | Kauai                     | U.S.      |
| TOTAL CIVILIAN JOBS             | 49,581        | 8,874        | 2.0%                             | 1.6% | 100%  | 0%                   | \$48,287                  | \$62,331  |
| TOTAL TARGETED JOBS W/O OVERLAP | 7,609         | 950          | 1.3%                             | 1.8% | 67%   | -5%                  | \$51,451                  | \$75,927  |
| <b>Emerging Activities</b>      |               |              |                                  |      |   |                      |                           |           |
| EDUCATION (PRIVATE)             | 251           | 85           | 4.2%                             | 2.0% | 29%   | 5%                   | \$23,349                  | \$44,985  |
| HEALTH & WELLNESS               | 2,602         | 504          | 2.2%                             | 1.7% | 65%   | 1%                   | \$74,002                  | \$72,146  |
| <b>Transitioning Activities</b> |               |              |                                  |      |   |                      |                           |           |
| AGRIBUSINESS                    | 1,956         | 48           | 0.2%                             | 1.0% | 127%  | -15%                 | \$37,711                  | \$47,342  |
| CREATIVE SECTOR                 | 2,475         | 312          | 1.4%                             | 2.6% | 68%   | -12%                 | \$36,275                  | \$84,918  |
| TECHNOLOGY SECTOR               | 957           | 59           | 0.6%                             | 2.1% | 32%   | -6%                  | \$74,873                  | \$120,435 |
| <b>Declining Activities</b>     |               |              |                                  |      |   |                      |                           |           |
| OTHERS                          | 27            | -7           | -2.3%                            | 0.5% | 17%   | -6%                  | \$20,636                  | \$45,658  |

Source: See Table 4 for data source. The sum of the individual industries does not add up to the total due to adjusting for overlaps among sectors.

Table 24 shows the performance of detailed targeted & emerging industry groups in Kauai. Among the detailed industry groups with jobs in 2019, 12 groups were in the high performing category; with positive job growth combined with a job growth rate that was higher than the nation for the same activity. The high performing activities in the target industry portfolio accounted for about 2,935 jobs or 5.9% of all civilian jobs in 2019. Between 2009 and 2019, these groups generated 11.9% of the total gain in jobs for the civilian economy or about 1,060 new jobs.

In 2019, about 40.4% of the high-performing activities had average annual earnings that exceeded \$60,000 by comparison; the earnings average for the overall civilian economy was lower at \$48,287.

Seven activities with 2,567 jobs fell into the Transitioning category for 2019. They gained jobs over the period but did not keep up with national growth for the same activities resulting in a loss of competitive national industry share. Two of the seven activities grew faster than the civilian economy as a whole in terms of jobs.

Sixteen activities in the portfolio fell into the Declining industry category as the result of net job losses for the 2009 to 2019 period. Jobs in the Declining industry groups totaled an estimated 2,724 in 2019, representing a loss of 381 jobs from 2009.

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

| INDUSTRY GROUPS                  | Jobs in Kauai |              | Avg. Ann. Job Growth (2009-2019) |       | Concentration of Industry in Kauai Compared to U.S. |                      | Avg. Annual Earnings 2019 |           |
|----------------------------------|---------------|--------------|----------------------------------|-------|---|----------------------|---------------------------|-----------|
|                                  | 2019          | Change 09-19 | Kauai                            | U.S.  | 2019  | % Point Change 09-19 | Kauai                     | U.S.      |
|                                  |               |              |                                  |       |   |                      |                           |           |
| <b>Base-Growth Activities</b>    |               |              |                                  |       |   |                      |                           |           |
| Alternative Power Generation     | 46            | 45           | 41.6%                            | -4.3% | 281%  | 275%                 | \$121,414                 | \$180,169 |
| Music                            | 67            | 31           | 6.6%                             | 2.6%  | 128%  | 38%                  | \$20,312                  | \$43,154  |
| <b>Emerging Activities</b>       |               |              |                                  |       |   |                      |                           |           |
| Architecture                     | 83            | 7            | 0.9%                             | 0.7%  | 100%  | -1%                  | \$50,723                  | \$82,782  |
| Health Practitioners             | 1,139         | 304          | 3.2%                             | 2.1%  | 82%   | 6%                   | \$82,463                  | \$85,127  |
| Agric. Processing                | 356           | 165          | 6.5%                             | 1.8%  | 79%   | 27%                  | \$40,332                  | \$60,498  |
| Specialty Health Care Services   | 519           | 227          | 5.9%                             | 4.3%  | 71%   | 8%                   | \$48,473                  | \$50,590  |
| Specialty Education              | 237           | 75           | 3.9%                             | 3.4%  | 64%   | 1%                   | \$21,184                  | \$28,344  |
| Art Education                    | 40            | 16           | 5.5%                             | 3.8%  | 57%   | 7%                   | \$8,864                   | \$13,135  |
| Technical Consulting Services    | 209           | 93           | 6.0%                             | 3.8%  | 44%   | 7%                   | \$44,860                  | \$88,561  |
| Business Consulting              | 218           | 84           | 5.0%                             | 3.5%  | 40%   | 4%                   | \$44,501                  | \$88,201  |
| Higher Education                 | 15            | 10           | 12.7%                            | 1.0%  | 3%  | 2%                   | \$58,513                  | \$57,576  |
| Other Technology Mfg             | 8             | 1            | 1.1%                             | 0.6%  | 2%  | 0%                   | \$34,737                  | \$121,955 |
| <b>Transitioning Activities</b>  |               |              |                                  |       |   |                      |                           |           |
| Hospitals & Nursing Facilities   | 722           | 47           | 0.7%                             | 0.7%  | 44%   | -2%                  | \$84,444                  | \$72,466  |
| Marketing, Photography & Related | 695           | 130          | 2.1%                             | 2.5%  | 94%   | -8%                  | \$27,327                  | \$55,639  |
| Performing and Creative Arts     | 780           | 150          | 2.2%                             | 3.3%  | 155%  | -24%                 | \$21,286                  | \$29,028  |
| Information & Telecom Tech.      | 147           | 8            | 0.6%                             | 2.0%  | 28%   | -5%                  | \$77,775                  | \$140,635 |
| Design Services                  | 98            | 2            | 0.2%                             | 1.8%  | 77%   | -17%                 | \$26,466                  | \$47,162  |
| Agric. Support Services          | 78            | 6            | 0.8%                             | 2.5%  | 48%   | -11%                 | \$47,859                  | \$54,683  |
| Cultural Activities              | 47            | 0            | 0.0%                             | 3.0%  | 87%   | -33%                 | \$35,583                  | \$59,443  |

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

| INDUSTRY GROUPS                           | Jobs in Kauai |              | Avg. Ann. Job Growth (2009-2019) |       | Concentration of Industry in Kauai Compared to U.S. |                      | Avg. Annual Earnings 2019 |           |
|---|---------------|--------------|----------------------------------|-------|---|----------------------|---------------------------|-----------|
|   | 2019          | Change 09-19 | Kauai                            | U.S.  | 2019  | % Point Change 09-19 | Kauai                     | U.S.      |
|   |               |              |                                  |       |   |                      |                           |           |
| <b>Declining Activities</b>               |               |              |                                  |       |   |                      |                           |           |
| Computer Services and Software Publishers | 150           | -8           | -0.6%                            | 4.2%  | 21%   | -14%                 | \$85,559                  | \$135,742 |
| Farm Production                           | 1,361         | -86          | -0.6%                            | 0.3%  | 174%  | -23%                 | \$38,376                  | \$35,897  |
| Apparel                                   | 27            | -2           | -0.7%                            | -2.8% | 79%   | 13%                  | \$20,636                  | \$45,398  |
| Computer Sys. Design & Related            | 164           | -14          | -0.8%                            | 3.5%  | 25%   | -15%                 | \$82,201                  | \$124,674 |
| Engineering and Related Serv.             | 145           | -19          | -1.2%                            | 1.2%  | 35%   | -11%                 | \$58,218                  | \$102,070 |
| Fishing, Forestry & Hunting               | 144           | -19          | -1.2%                            | -0.7% | 588%  | -53%                 | \$19,520                  | \$40,486  |
| Radio and Television Broadcasting         | 48            | -8           | -1.5%                            | 0.4%  | 74%   | -19%                 | \$51,910                  | \$90,387  |
| Biotechnology                             | 130           | -26          | -1.8%                            | 4.5%  | 231%  | -215%                | \$88,256                  | \$195,218 |
| R&D Services (exc. Biotech.)              | 65            | -14          | -1.9%                            | 1.2%  | 48%   | -20%                 | \$125,421                 | \$131,839 |
| Engineering and Research & Development    | 126           | -38          | -2.6%                            | 1.2%  | 31%   | -16%                 | \$97,533                  | \$117,059 |
| Medical and Diagnostic Testing            | 43            | -14          | -2.8%                            | 2.2%  | 57%   | -41%                 | \$79,487                  | \$80,836  |
| Pharmacies                                | 179           | -60          | -2.8%                            | -0.5% | 105%  | -33%                 | \$50,707                  | \$52,208  |
| Film, TV, Video Production/Distrib        | 45            | -17          | -3.1%                            | 1.5%  | 42%   | -27%                 | \$76,074                  | \$106,493 |
| Publishing & Information                  | 79            | -39          | -3.9%                            | -0.2% | 41%   | -21%                 | \$41,339                  | \$131,988 |
| Agric. Inputs                             | 12            | -10          | -5.7%                            | 0.7%  | 20%   | -19%                 | \$49,887                  | \$74,776  |
| Agric. Packaging & Warehsg                | 6             | -9           | -9.3%                            | 2.9%  | 10%   | -27%                 | \$7,431                   | \$54,421  |

Source: See Table 4 for data source.

## CONCLUSIONS

This report is the 11th 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 - 2019 update reports extended those measurements through the contraction phase, providing an analysis of how targets performed over the ups and downs of the business cycle. This updated report added the 2019 data to illustrate how targeted industries have been performing after the recovery period of the recession.

Table 25 summarizes the best performing targeted industry groups for the 2009 to 2019 period in terms of average growth and national competitiveness. They all showed positive growth and at the same time outperformed the same activities nationally over the measurement period. Among the eight best performing industry groups, four groups had average earnings above the average for Hawaii's economy.

Table 25. Highest Performing Targeted Activities, 2009 to 2019

| INDUSTRY GROUPS                            | Jobs in Hawaii |              | Avg. Ann. Job Growth (2009-2019) |       | Concentration of Industry in Hawaii Compared to U.S. |       | Avg. Annual Earnings (2019) |           |
|--|----------------|--------------|----------------------------------|-------|--|-------|-----------------------------|-----------|
|  | 2019           | Change 09-19 | HI                               | U.S.  | % Point Change                                       |       | HI                          | U.S.      |
|  |                |              |                                  |       | 2019   | 09-19 |                             |           |
| TOTAL CIVILIAN JOBS                        | 883,214        | 102,653      | 1.2%                             | 1.6%  | 100%   | 0%    | \$57,861                    | \$62,331  |
| TOTAL TARGETED JOBS WITHOUT OVERLAP        | 162,397        | 20,890       | 1.4%                             | 1.8%  | 81%  | 0%    | \$62,498                    | \$75,927  |
| <b>Base-Growth and Emerging Activities</b> |                |              |                                  |       |  |       |                             |           |
| Above Average State Earnings               |                |              |                                  |       |  |       |                             |           |
| Alternative Power Generation               | 297            | 136          | 6.3%                             | -4.3% | 102%   | 67%   | \$119,826                   | \$180,169 |
| Hospitals & Nursing Facilities             | 21,310         | 2,710        | 1.4%                             | 0.7%  | 72%  | 7%    | \$91,908                    | \$72,466  |
| Film, TV, Video Production/Distrib         | 2,160          | 928          | 5.8%                             | 1.5%  | 113%   | 41%   | \$70,840                    | \$106,493 |
| Specialty Health Care Services             | 13,799         | 6,479        | 6.5%                             | 4.3%  | 106%   | 23%   | \$62,166                    | \$50,590  |
| Below Average State Earnings               |                |              |                                  |       |  |       |                             |           |
| Cultural Activities                        | 3,611          | 1,994        | 8.4%                             | 3.0%  | 379%   | 160%  | \$54,695                    | \$59,443  |
| Agric. Support Services                    | 1,868          | 565          | 3.7%                             | 2.5%  | 64%  | 9%    | \$50,748                    | \$54,683  |
| Pharmacies                                 | 3,537          | 132          | 0.4%                             | -0.5% | 116%   | 14%   | \$50,562                    | \$52,208  |
| Specialty Education                        | 6,427          | 2,073        | 4.0%                             | 3.4%  | 97%  | 9%    | \$25,160                    | \$28,344  |

\* For definition and data source, See Table 4