



The Impacts of COVID-19 on Hawaii's Real GDP and Job Growth and Industrial Structures



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EXECUTIVE SUMMARY

Using the annualized quarterly real GDP (Gross domestic product) data and the monthly average nonagricultural W&S (wage and salary) job data, the impacts of COVID-19 on the Hawaii's economic growth and industrial structures can be estimated.

Impact on Real GDP

Before COVID-19 affected Hawaii, the real GDP in Hawaii was relatively stable. From the first quarter of 2015 to the first quarter of 2020, the average quarterly growth rate of Hawaii's real GDP was only about 0.15%. In the second quarter of 2020, total real GDP in Hawaii decreased 15.8% from the same quarter of the previous year. This decrease was mainly due to the impacts of COVID-19. Starting from the third quarter of 2020, Hawaii's real GDP increased continuously. From the second quarter of 2020 to the fourth quarter of 2021, real GDP in Hawaii increased 14.4%. However, by the fourth quarter of 2021 total real GDP in Hawaii was still 4.4% below the before COVID-19 level in the fourth quarter of 2019.

Negative Growth Period: From the second quarter of 2019 to the second quarter of 2020, Hawaii's total annualized quarterly real GDP decreased 15.8% or \$12,488 million; total private sectors' real GDP decreased 19.4% or \$12,240 million, and total government real GDP decreased 1.8% or \$289 million. Among the 22 industrial sectors, the Accommodation and Food Services sector decreased the most at 58.1% or \$4,371 million; followed by the Arts, Entertainment, and Recreation sector at 54.0% or \$533 million, Transportation and Warehousing sector at 50.3% or \$2,303 million, Other Services (except government) at 25.7% or \$454 million, and Manufacturing at 20.1% or \$325 million. There were five sectors with increased real GDP during the same period. Real GDP increased the most in the Agriculture, Forestry, Fishing and Hunting sector at 25.2% or \$128 million; followed by Federal Civilian Government at 3.2% or \$136 million, Finance and Insurance at 3.1% or \$81 million, Military Government at 2.9% or \$122 million, and Utilities at 1.4% or \$22 million.

Recovery Period: From the second quarter of 2020 to the fourth quarter of 2021, Hawaii's total annualized quarterly real GDP increased 14.4% or \$9,583 million; total private sectors' real GDP increased 18.4% or \$9,374 million, and total government real GDP increased 1.5% or \$237 million. Among the 22 industrial sectors, the Accommodation and Food Services sector increased the most at 128.3% or \$4,053 million; followed by Arts, Entertainment, and Recreation at 89.6% or \$407 million, Information at 32.7% or \$646 million, Administrative and Support and Waste Management at 26.6% or \$525 million, and Transportation and Warehousing at 22.0% or \$502 million. There were six sectors with decreased real GDP during the same period. Real GDP decreased the most in the Agriculture, Forestry, Fishing and Hunting sector at 30.7% or \$194 million; followed by Utilities at 12.6% or \$203 million, Mining, Quarrying, and Oil and Gas Extraction at 6.0% or \$4 million, Federal Civilian Government at 2.9% or \$127 million, Construction at 1.9% or \$74 million, and Military Government at 0.6% or \$28 million.

During the combined negative growth and recovery period, Hawaii's total annualized quarterly real GDP decreased 3.7% or \$2,905 million; total private sectors' real GDP decreased 4.5% or \$2,866 million, and total government real GDP decreased 0.3% or \$52 million. Among the 22 industrial sectors, the Transportation and Warehousing sector decreased the most at 39.3% or \$1,801 million; followed by Mining, Quarrying, and Oil and Gas Extraction at 19.5% or \$16 million, Other Services (except government) at 14.0% or \$248 million, Agriculture, Forestry, Fishing and Hunting at 13.2% or \$67 million, and Arts, Entertainment, and Recreation at 12.8% or \$126 million. There were seven sectors

with increased real GDP during the same period. Real GDP increased the most in the Information sector at 21.9% or \$471 million; followed by Finance and Insurance at 15.5% or \$404 million.

Impact on Wage & Salary Jobs

Before COVID-19 affected Hawaii, the total nonagricultural W&S jobs in Hawaii was very stable. From January 2019 to March 2020, the average monthly nonagricultural W&S jobs in Hawaii increased only 0.9%. In April 2020, total nonagricultural W&S jobs decreased 22.4% from the same month of the previous year. This decrease was mainly due to the impacts of COVID-19. From April 2020 to September 2020, total nonagricultural W&S jobs remained at the low level. From September 2020 to March 2022, total nonagricultural W&S jobs gradually increased, with the job number in March 2022 18.3% above the lowest job number in September 2020. However, compared with the April 2019 number, the March 2022 job number was still 8.5% below the April 2019 jobs.

Negative Growth Period: From April 2019 to April 2020, Hawaii's total nonagricultural W&S jobs decreased 22.4% or 147,100 jobs, total private sectors' W&S jobs decreased 25.8% or 136,600 jobs, and total government W&S jobs decreased 8.2% or 10,500 jobs. Among the 20 industrial sectors, Arts, Entertainment, & Recreation sector decreased the most at 56.2% or 7,700 jobs; followed by Accommodation & Food Services at 52.3% or 58,900 jobs, Transportation & Warehousing at 32.7% or 10,400 jobs, Other Services at 26.2% or 7,500 jobs, and Manufacturing at 24.8% or 3,500 jobs. During this period, only Federal Government increased jobs.

Recovery Period: From April 2020 to March 2022, Hawaii's total nonagricultural W&S jobs increased 17.9% or 91,400 jobs, total private sectors' W&S jobs increased 22.1% or 87,000 jobs, and total government W&S jobs increased 3.8% or 4,400 jobs. Among the 20 industrial sectors, Accommodation & Food Services sector increased the most at 79.5% or 42,700 jobs; followed by Arts, Entertainment, & Recreation at 66.7% or 4,000 jobs. During this period, four sectors decreased jobs slightly.

The decrease in W&S jobs due to the initial impacts of COVID-19 was only partially recovered by March 2022. From April 2019 to March 2022, Hawaii's total nonagricultural W&S jobs decreased 8.5% or 55,700 jobs, total private sectors' W&S jobs decreased 9.4% or 49,600 jobs, and total government W&S jobs decreased 4.8% or 6,100 jobs. Among the 20 industrial sectors, Arts, Entertainment, & Recreation sector decreased the most at 27.0% or 3,700 jobs; followed by Real Estate & Rental & Leasing at 17.3% or 2,300 jobs, Accommodation & Food Services at 14.4% or 16,200 jobs, and Transportation & Warehousing at 14.2% or 4,500 jobs. During this period, only Federal Government and Information increased jobs slightly.

Both real GDP and W&S jobs were relatively stable before the second quarter of 2020. In the second quarter of 2020, both real GDP and W&S jobs decreased substantially mainly due to the impacts of COVID-19, and the negative impacts on W&S jobs were significantly larger than that of real GDP. Starting from the third quarter of 2020, both real GDP and W&S jobs were increasing, but the recovery in W&S jobs was consistently behind that of the real GDP.

I. INTRODUCTION

Hawaii's economic growth measured in real Gross Domestic Product (RGDP) and job growth measured in nonagricultural wage & salary jobs (W&S jobs) were affected by COVID-19. While the impacts were changing overtime, the impacts on different industries were not the same, some industries were affected more seriously than other industries. Due to the impacts of COVID-19, Hawaii's economic structures were also changing overtime.

Research Objectives

This study attempts to analyze the impacts of COVID-19 on Hawaii's economic growth and W&S job growth using quarterly RGDP by industry data and monthly W&S job by industry data. In addition to analyze the impacts on the whole economy, the industries most affected and least affected were identified. This study also attempts to examine the economic structure changes due to the impacts of COVID-19.

Data Sources

Data used in this study mainly come from two sources, one is the U.S. Bureau of Economic Analysis (BEA). In the BEA's GDP by State Account, annualized quarterly RGDP (in 2012\$) by industry data are available. The RGDP data at the 2-digit North American Industry Classification System (NAICS) code level for the state are available up to the fourth quarter of 2021. Based on the availability of BEA data, Hawaii's total RGDP can be separated into 22 industry sectors, including 19 private sectors, and three government sectors. This study mainly used the RGDP data from 2019Q1 to 2021Q4. Real GDP is an inflation-adjusted measure of GDP. The RGDP data are measured in chained (2012) dollars.

The second data source is the Hawaii State Department of Business, Economic Development & Tourism (DBEDT) monthly average nonagricultural wage & salary job data. This study used monthly W&S job data by industry from January 2019 to March 2022. Based on the availability of data, Hawaii's total nonagricultural W&S jobs can be separated into 20 industry sectors, including 17 private sectors and three government sectors. Most of the private sectors of W&S jobs are the same as the sectors in RGDP. Only the two sectors (Mining, Quarrying, and Oil and Gas Extraction and Construction) of RGDP are combined into one sector (Natural Resources & Mining & Construction) of W&S jobs. In addition, the Agriculture, Forestry, Fishing and Hunting sector of RGDP was not included in the nonagricultural W&S jobs. For the government sectors, the sectors of W&S jobs are different from the sectors of RGDP. W&S jobs for Federal government include only Federal civilian jobs.

Major Industry Groups of the Economy

RGDP from BEA is grouped into 22 industry groups. As shown in Table 1, in the fourth quarter of 2021, the state of Hawaii annualized RGDP was approximately \$75,982 million. The annualized RGDP of private sectors was \$65,358 million or 79.4% of total RGDP, and the annualized government sectors RGDP was \$15,618 million or 20.6% of total RGDP. Among the 22 industry sectors, the Real Estate and Rental and Leasing sector had the most RGDP at about \$13,227 million or 17.4%; followed by Accommodation and Food Services at about \$7,212 million or 9.5%, State and Local Government at about \$7,008 million or 9.2%, Health Care and Social Assistance at about \$6,158 million or 8.1%, and Retail Trade at about \$5,225 million or 6.9%. The top five groups in Hawaii accounted for 51.1% of total RGDP in the fourth quarter of 2021.

TABLE 1. ANNUALIZED REAL GDP BY INDUSTRY IN HAWAII, QUARTER 4, 2021

SECTOR	Industry Group	RGDP in 2012\$M	
		2021:Q4	% of Total
	Total	75,982	100.0%
	Private industries	60,358	79.4%
	Government	15,618	20.6%
1	Real estate and rental and leasing	13,227	17.4%
2	Accommodation and food services	7,212	9.5%
3	State and local government	7,008	9.2%
4	Health care and social assistance	6,158	8.1%
5	Retail trade	5,225	6.9%
6	Military government	4,349	5.7%
7	Federal civilian government	4,235	5.6%
8	Construction	3,753	4.9%
9	Professional, scientific, and technical services	3,738	4.9%
10	Finance and insurance	3,009	4.0%
11	Transportation and warehousing	2,782	3.7%
12	Information	2,625	3.5%
13	Wholesale trade	2,514	3.3%
14	Administrative and support and waste management	2,498	3.3%
15	Manufacturing	1,562	2.1%
16	Other services (except government)	1,520	2.0%
17	Utilities	1,406	1.9%
18	Management of companies and enterprises	1,200	1.6%
19	Arts, entertainment, and recreation	861	1.1%
20	Educational services	790	1.0%
21	Agriculture, forestry, fishing and hunting	439	0.6%
22	Mining, quarrying, and oil and gas extraction	67	0.1%

Source: BEA and DBEDT, READ.

Total nonagricultural W&S job released by DBEDT is grouped into 20 industry groups. As shown in Table 2, in March 2022, the state of Hawaii employed 601,800 nonagricultural W&S jobs. The total private sectors employed 480,200 W&S jobs or 79.8% and the total government sectors employed 121,600 W&S jobs or 20.2%. Among the 20 industry sectors, the Accommodation & Food Services sector employed the most W&S jobs at 96,400 jobs or 16.0%; followed by Health Care and Social Assistance at 71,000 jobs or 11.8%, State Government at 68,800 jobs or 11.4%, Retail Trade at 64,300 jobs or 10.7%, and Natural Resources & Mining & Construction at 36,900 jobs or 6.1%. The top five groups in Hawaii accounted for 56.1% of total nonagricultural W&S jobs in March 2022.

TABLE 2. AVERAGE NONAGRICULTURAL WAGE & SALARY JOBS IN HAWAII, MARCH 2022

SECTOR	Industry Group	W&S Jobs	
		Mar-22	% in Total
	Total	601,800	100.0%
	Private	480,200	79.8%
	Government	121,600	20.2%
1	Accommodation & Food Services	96,400	16.0%
2	Health Care & Social Assistance	71,000	11.8%
3	State Government	68,800	11.4%
4	Retail Trade	64,300	10.7%
5	Nat. Resources & Mining & Construction	36,900	6.1%
6	Management & Remediation Services	35,400	5.9%
7	Federal Government	34,600	5.7%
8	Transportation & Warehousing	27,300	4.5%
9	Other Services	25,100	4.2%
10	Professional, Scientific & Tech. Svcs.	24,900	4.1%
11	Local Government	18,200	3.0%
12	Wholesale Trade	16,300	2.7%
13	Finance & Insurance	15,300	2.5%
14	Educational Services	13,700	2.3%
15	Manufacturing	12,300	2.0%
16	Real Estate & Rental & Leasing	11,000	1.8%
17	Arts, Entertainment, & Recreation	10,000	1.7%
18	Management of Companies & Enterprises	8,600	1.4%
19	Information	8,200	1.4%
20	Utilities	3,500	0.6%

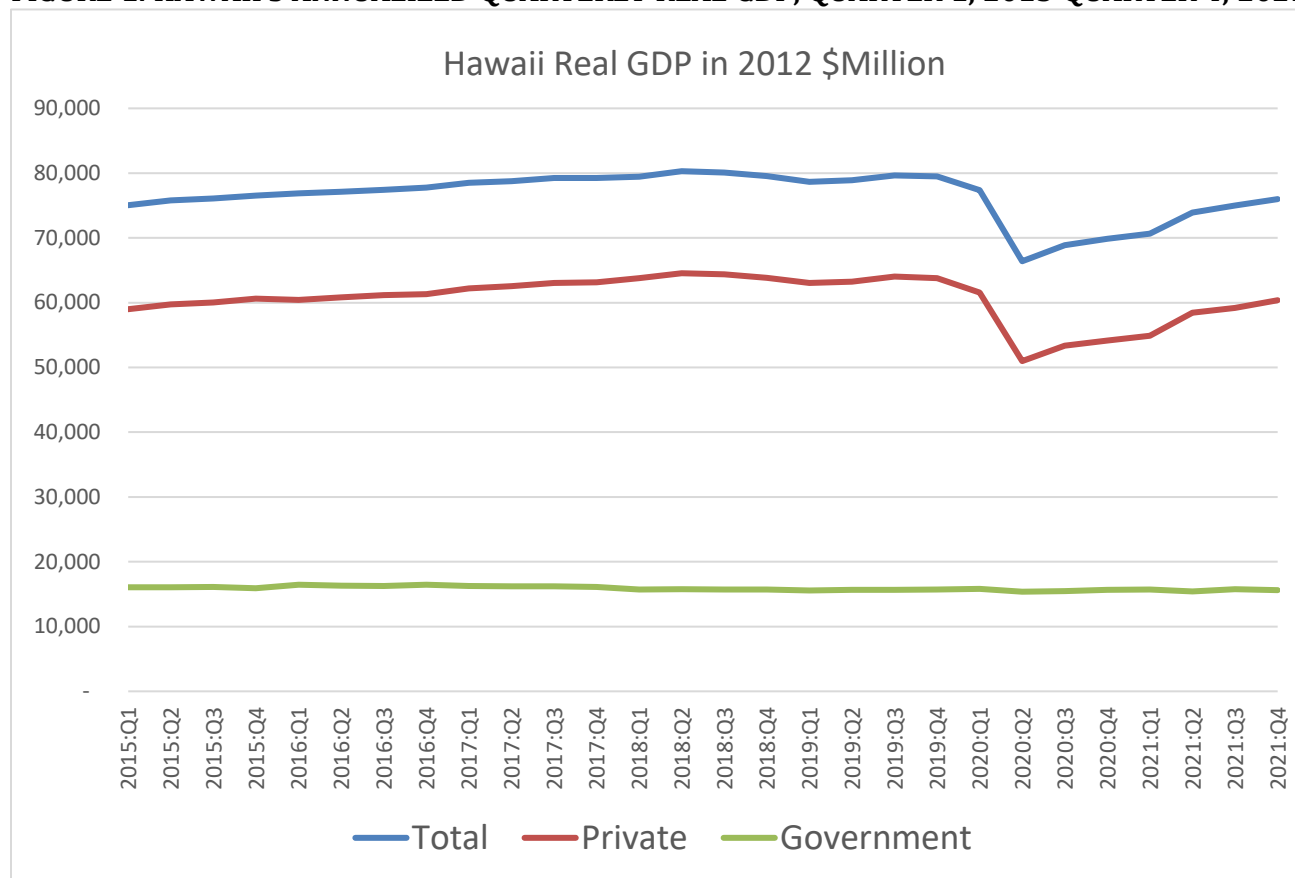
II. IMPACTS ON ECONOMIC GROWTH AND INDUSTRY CONTRIBUTIONS TO STATE REAL GDP

COVID-19 started to affect Hawaii's economy in early 2020. This section analyzes the impacts of COVID-19 on Hawaii's real GDP. The impacts on each industrial sector are examined.

Impacts on Real GDP Growth in Hawaii

As shown in Figure 1, before COVID-19 impacted Hawaii, real GDP in Hawaii was relatively stable. From the first quarter of 2015 to the first quarter of 2020, the average quarterly growth rate of Hawaii's real GDP was about 0.15%. In the second quarter of 2020, total real GDP in Hawaii decreased 15.8% from the same quarter of the previous year. This decrease was mainly due to the impacts of COVID-19. From the second quarter of 2020 to the fourth quarter of 2021, real GDP in Hawaii gradually increased. In the fourth quarter of 2021, total real GDP in Hawaii was 14.4% above the bottom in the second quarter of 2020.

FIGURE 1. HAWAII'S ANNUALIZED QUARTERLY REAL GDP, QUARTER 1, 2015-QUARTER 4, 2021



Source: BEA and DBEDT, READ.

As shown in Table 3, from the second quarter of 2019 to the second quarter of 2020, Hawaii's total real GDP decreased 15.8% or \$12,488 million; total private sectors' real GDP decreased 19.4% or \$12,240 million, and total government real GDP decreased 1.8% or \$289 million. Among the 22 industrial sectors, the Accommodation and Food Services Sector decreased the most at 58.1% or \$4,371

million; followed by the Arts, Entertainment, and Recreation sector at 54.0% or \$533 million, Transportation and Warehousing sector at 50.3% or \$2,303 million, Other Services (except government) at 25.7% or \$454 million, and Manufacturing at 20.1% or \$325 million. There were five sectors with increased real GDP during the same period. Real GDP increased the most in the Agriculture, Forestry, Fishing and Hunting sector at 25.2% or \$128 million; followed by Federal Civilian Government at 3.2% or \$136 million, Finance and Insurance at 3.1% or \$81 million, Military Government at 2.9% or \$122 million, and Utilities at 1.4% or \$22 million.

TABLE 3. HAWAII REAL GDP BY INDUSTRY, QUARTER 2, 2019 AND QUARTER 2, 2020

SECTOR	Industry Group	Annualized Real GDP in 2012\$			
		2019:Q2	2020:Q2	Changes 19Q2-20Q2	
		\$M	\$M	%	\$M
1	Accommodation and food services	7,529	3,158	-58.1%	-4,371
2	Arts, entertainment, and recreation	987	454	-54.0%	-533
3	Transportation and warehousing	4,583	2,280	-50.3%	-2,303
4	Other services (except government)	1,768	1,313	-25.7%	-454
5	Manufacturing	1,618	1,293	-20.1%	-325
6	Educational services	871	699	-19.7%	-171
7	Administrative and support and waste management	2,412	1,973	-18.2%	-439
8	Retail trade	5,910	4,921	-16.7%	-989
9	Mining, quarrying, and oil and gas extraction	84	72	-14.3%	-12
10	Wholesale trade	2,623	2,250	-14.2%	-373
11	Health care and social assistance	5,927	5,136	-13.3%	-791
12	Professional, scientific, and technical services	3,586	3,235	-9.8%	-351
13	Information	2,154	1,979	-8.1%	-175
14	State and local government	7,156	6,639	-7.2%	-518
15	Real estate and rental and leasing	13,387	12,524	-6.4%	-863
16	Management of companies and enterprises	1,209	1,153	-4.6%	-56
17	Construction	3,883	3,828	-1.4%	-55
18	Utilities	1,588	1,610	1.4%	22
19	Military government	4,255	4,377	2.9%	122
20	Finance and insurance	2,605	2,686	3.1%	81
21	Federal civilian government	4,225	4,361	3.2%	136
22	Agriculture, forestry, fishing and hunting	506	633	25.2%	128
23	Total	78,887	66,399	-15.8%	-12,488
24	Private industries	63,224	50,984	-19.4%	-12,240
25	Government	15,670	15,381	-1.8%	-289

Source: BEA and DBEDT, READ.

Table 4 shows the real GDP growth during the recovery period by industry sectors. From the second quarter of 2020 to the fourth quarter of 2021, Hawaii's total annualized quarterly real GDP increased 14.4% or \$9,583 million; total private sectors' real GDP increased 18.4% or \$9,374 million, and total government real GDP increased 1.5% or \$237 million. Among the 22 industrial sectors, the Accommodation and Food Services sector increased the most at 128.3% or \$4,053 million; followed by

Arts, Entertainment, and Recreation at 89.6% or \$407 million, Information at 32.7% or \$646 million, Administrative and Support and Waste Management at 26.6% or \$525 million, and Transportation and Warehousing at 22.0% or \$502 million. There were six sectors with decreased real GDP during the same period. Real GDP decreased the most in the Agriculture, Forestry, Fishing and Hunting sector at 30.7% or \$194 million; followed by Utilities at 12.6% or \$203 million, Mining, Quarrying, and Oil and Gas Extraction at 6.0% or \$4 million, Federal Civilian Government at 2.9% or \$127 million, Construction at 1.9% or \$74 million, and Military Government at 0.6% or \$28 million.

TABLE 4. HAWAII REAL GDP BY INDUSTRY, QUARTER 2, 2020 AND QUARTER 4, 2021

SECTOR	Industry Group	Annualized Real GDP in 2012\$			
		2020:Q2	2021:Q4	Changes 20Q2-21Q4	
		\$M	\$M	%	\$M
1	Accommodation and food services	3,158	7,212	128.3%	4,053
2	Arts, entertainment, and recreation	454	861	89.6%	407
3	Information	1,979	2,625	32.7%	646
4	Administrative and support and waste management	1,973	2,498	26.6%	525
5	Transportation and warehousing	2,280	2,782	22.0%	502
6	Manufacturing	1,293	1,562	20.8%	269
7	Health care and social assistance	5,136	6,158	19.9%	1,022
8	Other services (except government)	1,313	1,520	15.7%	207
9	Professional, scientific, and technical services	3,235	3,738	15.6%	503
10	Educational services	699	790	13.0%	91
11	Finance and insurance	2,686	3,009	12.0%	323
12	Wholesale trade	2,250	2,514	11.7%	264
13	Retail trade	4,921	5,225	6.2%	304
14	Real estate and rental and leasing	12,524	13,227	5.6%	704
15	State and local government	6,639	7,008	5.6%	369
16	Management of companies and enterprises	1,153	1,200	4.1%	48
17	Military government	4,377	4,349	-0.6%	-28
18	Construction	3,828	3,753	-1.9%	-74
19	Federal civilian government	4,361	4,235	-2.9%	-127
20	Mining, quarrying, and oil and gas extraction	72	67	-6.0%	-4
21	Utilities	1,610	1,406	-12.6%	-203
22	Agriculture, forestry, fishing and hunting	633	439	-30.7%	-194
23	Total	66,399	75,982	14.4%	9,583
24	Private industries	50,984	60,358	18.4%	9,374
25	Government	15,381	15,618	1.5%	237

Source: BEA and DBEDT, READ.

The real GDP, from the second quarter of 2019 to the fourth quarter of 2021 by industry, are provided in Table 5. During the combined negative growth and recovery periods, Hawaii's total annualized quarterly real GDP decreased 3.7% or \$2,905 million; total private sectors' real GDP decreased 4.5% or \$2,866 million, and total government real GDP decreased 0.3% or \$52 million. Among the 22 industrial sectors, the Transportation and Warehousing sector decreased the most at 39.3% or

\$1,801 million; followed by Mining, Quarrying, and Oil and Gas Extraction at 19.5% or \$16 million, Other Services (except government) at 14.0% or \$248 million, Agriculture, Forestry, Fishing and Hunting at 13.2% or \$67 million, and Arts, Entertainment, and Recreation at 12.8% or \$126 million. There were seven sectors with increased real GDP during the same period. Real GDP increased the most in the Information sector at 21.9% or \$471 million; followed by Finance and Insurance at 15.5% or \$404 million.

TABLE 5. HAWAII REAL GDP BY INDUSTRY, QUARTER 2, 2019 AND QUARTER 4, 2021

SECTOR	Industry Group	Annualized Real GDP in 2012\$			
		2019:Q2	2021:Q4	Changes 19Q2-21Q4	
		\$M	\$M	%	\$M
1	Transportation and warehousing	4,583	2,782	-39.3%	-1,801
2	Mining, quarrying, and oil and gas extraction	84	67	-19.5%	-16
3	Other services (except government)	1,768	1,520	-14.0%	-248
4	Agriculture, forestry, fishing and hunting	506	439	-13.2%	-67
5	Arts, entertainment, and recreation	987	861	-12.8%	-126
6	Retail trade	5,910	5,225	-11.6%	-686
7	Utilities	1,588	1,406	-11.4%	-182
8	Educational services	871	790	-9.3%	-81
9	Accommodation and food services	7,529	7,212	-4.2%	-318
10	Wholesale trade	2,623	2,514	-4.1%	-109
11	Manufacturing	1,618	1,562	-3.5%	-56
12	Construction	3,883	3,753	-3.3%	-130
13	State and local government	7,156	7,008	-2.1%	-148
14	Real estate and rental and leasing	13,387	13,227	-1.2%	-159
15	Management of companies and enterprises	1,209	1,200	-0.7%	-8
16	Federal civilian government	4,225	4,235	0.2%	10
17	Military government	4,255	4,349	2.2%	94
18	Administrative and support and waste management	2,412	2,498	3.6%	87
19	Health care and social assistance	5,927	6,158	3.9%	231
20	Professional, scientific, and technical services	3,586	3,738	4.3%	153
21	Finance and insurance	2,605	3,009	15.5%	404
22	Information	2,154	2,625	21.9%	471
23	Total	78,887	75,982	-3.7%	-2,905
24	Private industries	63,224	60,358	-4.5%	-2,866
25	Government	15,670	15,618	-0.3%	-52

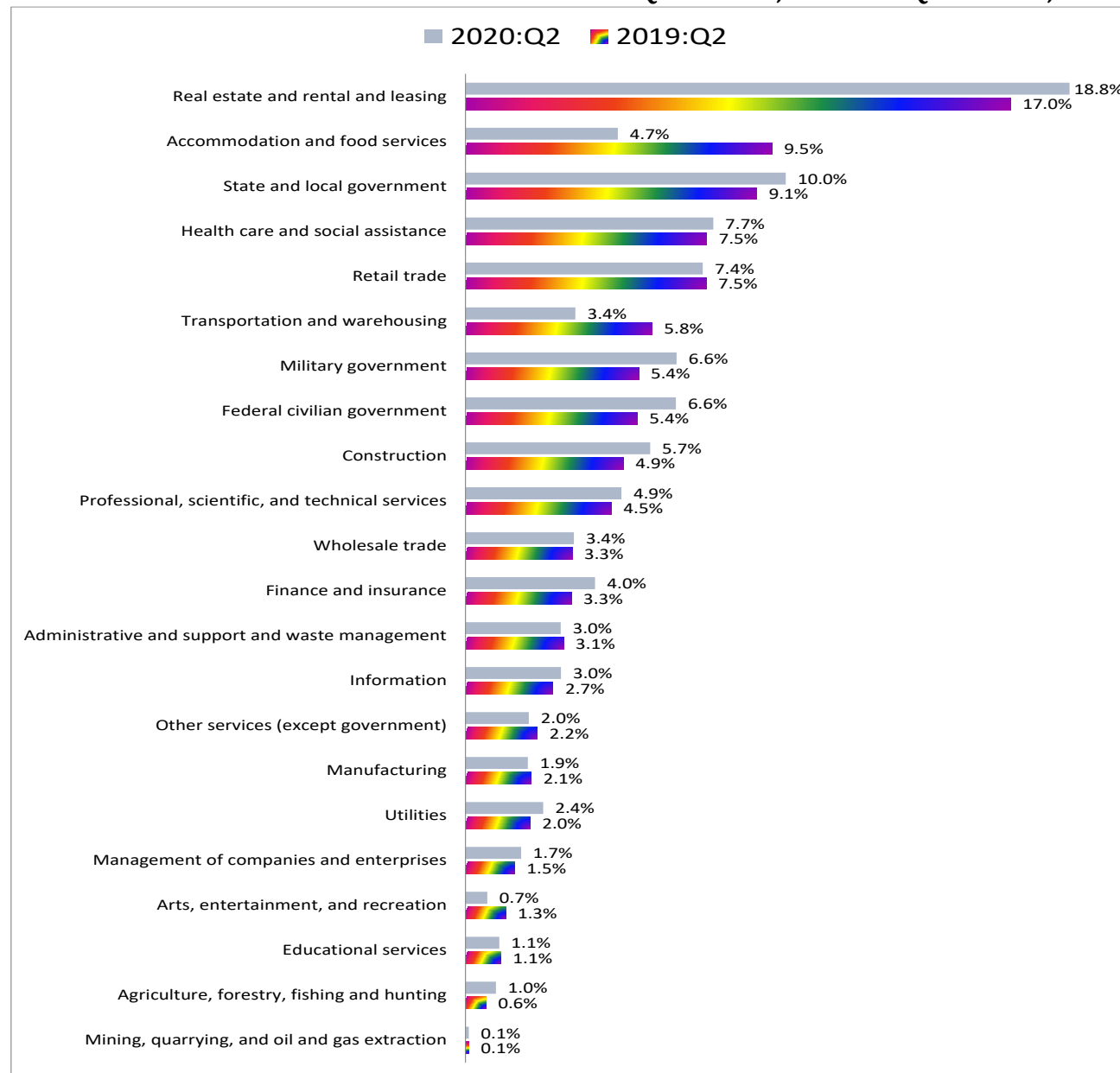
Source: BEA and DBEDT, READ.

Impacts on Industry Contribution to Real GDP

Due to difference in the impacts of COVID-19 on each industries' real GDP, the contributions to the overall economy as defined by the shares of real GDP in total real GDP are also changing before and

after the COVID-19 impacts in Hawaii. Figure 2 compares the industry structure of real GDP in the second quarter 2019 and in the second quarter of 2020. In the second quarter of 2019, the top five sectors in Hawaii were Real Estate and Rental and Leasing, Accommodation and Food Services, State and Local Government, Health Care and Social Assistance, and Retail Trade. The five sectors together accounted for about 50.6% of Hawaii's total real GDP in the second quarter of 2019. In the second quarter of 2020, the Accommodation and Food Services was replaced by the Military Government in the top five sectors.

FIGURE 2. THE SHARES OF REAL GDP BY INDUSTRY IN QUARTER 2, 2019 AND QUARTER 2, 2020



Source: BEA and DBEDT, READ.

Table 6 compares the industry contribution to state total real GDP between the second quarter, 2019 and the second quarter of 2020. From the second quarter of 2019 to the second quarter of 2020, the Accommodation and Food Services sector lost its share in real GDP the most, decreased 4.8 percentage points from 9.5% to 4.7%; followed by Transportation and Warehousing, decreased 2.4

percentage points from 5.8% to 3.4%. On the other hand, the Military Government and Federal Civilian Government both increased their shares in real GDP by 1.2 percentage point from 5.4% to 6.6%.

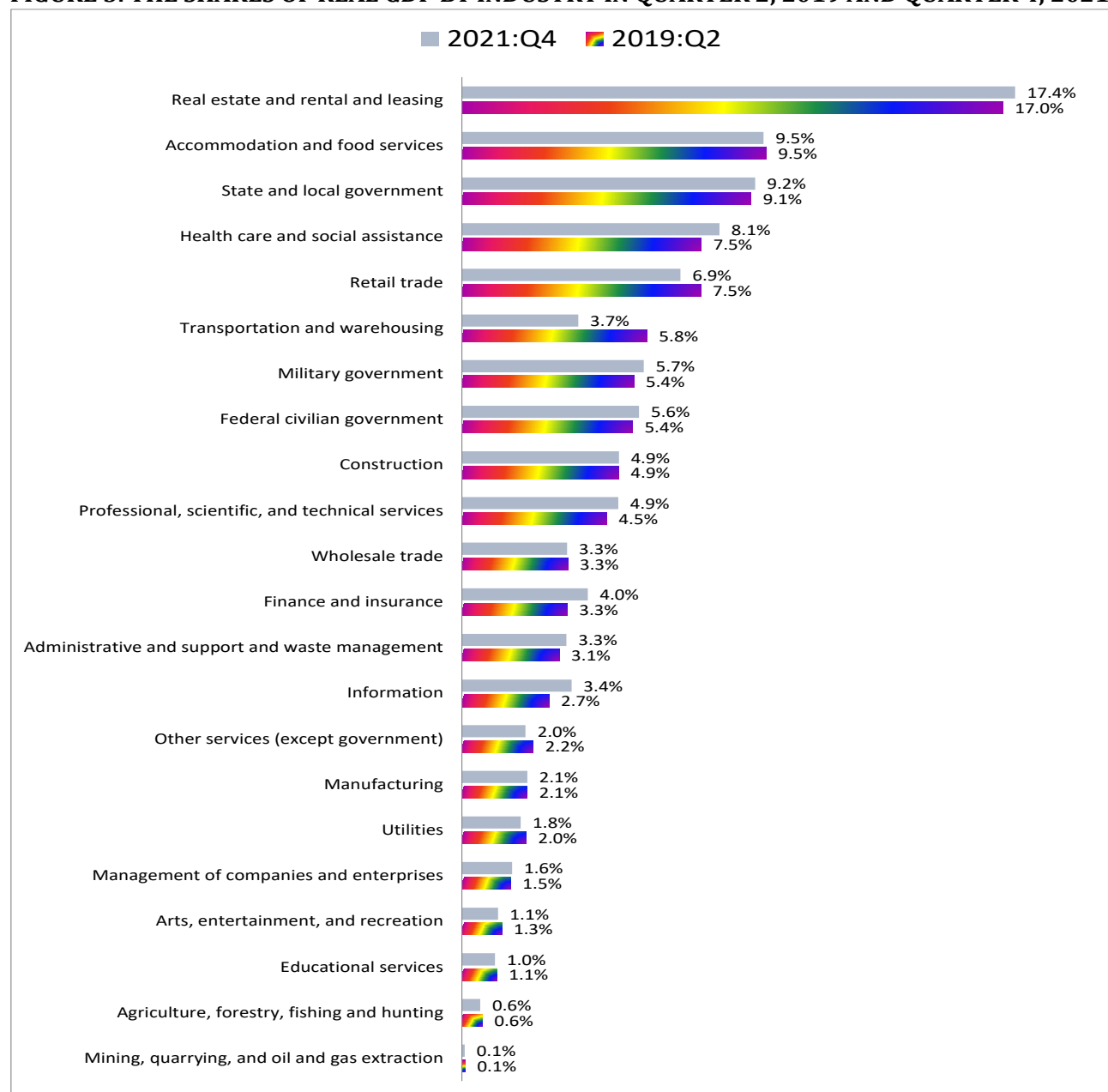
TABLE 6. SHARES OF REAL GDP BY INDUSTRY, QUARTER 2, 2019 AND QUARTER 2, 2020

SECTOR	Industry Group	Share in Total RGDP		
		2019:Q2	2020:Q2	Changes 19Q2-20Q2
1	Accommodation and food services	9.5%	4.7%	-4.8%
2	Transportation and warehousing	5.8%	3.4%	-2.4%
3	Arts, entertainment, and recreation	1.3%	0.7%	-0.6%
4	Other services (except government)	2.2%	2.0%	-0.3%
5	Manufacturing	2.1%	1.9%	-0.1%
6	Retail trade	7.5%	7.4%	-0.1%
7	Administrative and support and waste management	3.1%	3.0%	-0.1%
8	Educational services	1.1%	1.1%	-0.1%
9	Mining, quarrying, and oil and gas extraction	0.1%	0.1%	0.0%
10	Wholesale trade	3.3%	3.4%	0.1%
11	Management of companies and enterprises	1.5%	1.7%	0.2%
12	Health care and social assistance	7.5%	7.7%	0.2%
13	Information	2.7%	3.0%	0.2%
14	Agriculture, forestry, fishing and hunting	0.6%	1.0%	0.3%
15	Professional, scientific, and technical services	4.5%	4.9%	0.3%
16	Utilities	2.0%	2.4%	0.4%
17	Finance and insurance	3.3%	4.0%	0.7%
18	Construction	4.9%	5.7%	0.8%
19	State and local government	9.1%	10.0%	0.9%
20	Military government	5.4%	6.6%	1.2%
21	Federal civilian government	5.4%	6.6%	1.2%
22	Real estate and rental and leasing	17.0%	18.8%	1.8%

Source: BEA and DBEDT, READ.

Figure 3 compares the industry structure of real GDP in the second quarter 2019 and in the fourth quarter of 2021. In the fourth quarter of 2021, the top five sectors in Hawaii were Real Estate and Rental and Leasing, Accommodation and Food Services, State and Local Government, Health Care and Social Assistance, and Retail Trade. The top five sectors in the fourth quarter of 2021 were the same as the top five sectors in the second quarter of 2019. The five sectors together accounted for about 51.0% of Hawaii's total real GDP in the fourth quarter of 2021, almost the same as that in the second quarter of 2019.

FIGURE 3. THE SHARES OF REAL GDP BY INDUSTRY IN QUARTER 2, 2019 AND QUARTER 4, 2021



Source: BEA and DBEDT, READ.

Table 7 compares the industrial structure of real GDP between the second quarter, 2019 and the fourth quarter of 2021. After the initial impacts of COVID-19 and the recovery period, the Transportation and Warehousing sector still lost its share in real GDP the most, decreased 2.2 percentage points from 5.8% to 3.7%; followed by Retail Trade, decreased 0.6 of a percentage point from 7.5% to 6.9%. On the other hand, the Information sector increased its share of real GDP by 0.7 of a percentage point.

TABLE 7. SHARES OF REAL GDP BY INDUSTRY, QUARTER 2, 2019 AND QUARTER 4, 2021

SECTOR	Industry Group	Share in Total RGDP		
		2019:Q2	2021:Q4	Changes 19Q2-21Q4
1	Transportation and warehousing	5.8%	3.7%	-2.2%
2	Retail trade	7.5%	6.9%	-0.6%
3	Other services (except government)	2.2%	2.0%	-0.2%
4	Utilities	2.0%	1.8%	-0.2%
5	Arts, entertainment, and recreation	1.3%	1.1%	-0.1%
6	Accommodation and food services	9.5%	9.5%	-0.1%
7	Educational services	1.1%	1.0%	-0.1%
8	Agriculture, forestry, fishing and hunting	0.6%	0.6%	-0.1%
9	Wholesale trade	3.3%	3.3%	0.0%
10	Mining, quarrying, and oil and gas extraction	0.1%	0.1%	0.0%
11	Manufacturing	2.1%	2.1%	0.0%
12	Construction	4.9%	4.9%	0.0%
13	Management of companies and enterprises	1.5%	1.6%	0.0%
14	State and local government	9.1%	9.2%	0.1%
15	Federal civilian government	5.4%	5.6%	0.2%
16	Administrative and support and waste management	3.1%	3.3%	0.2%
17	Military government	5.4%	5.7%	0.3%
18	Professional, scientific, and technical services	4.5%	4.9%	0.4%
19	Real estate and rental and leasing	17.0%	17.4%	0.4%
20	Health care and social assistance	7.5%	8.1%	0.6%
21	Finance and insurance	3.3%	4.0%	0.6%
22	Information	2.7%	3.4%	0.7%

Source: BEA and DBEDT, READ.

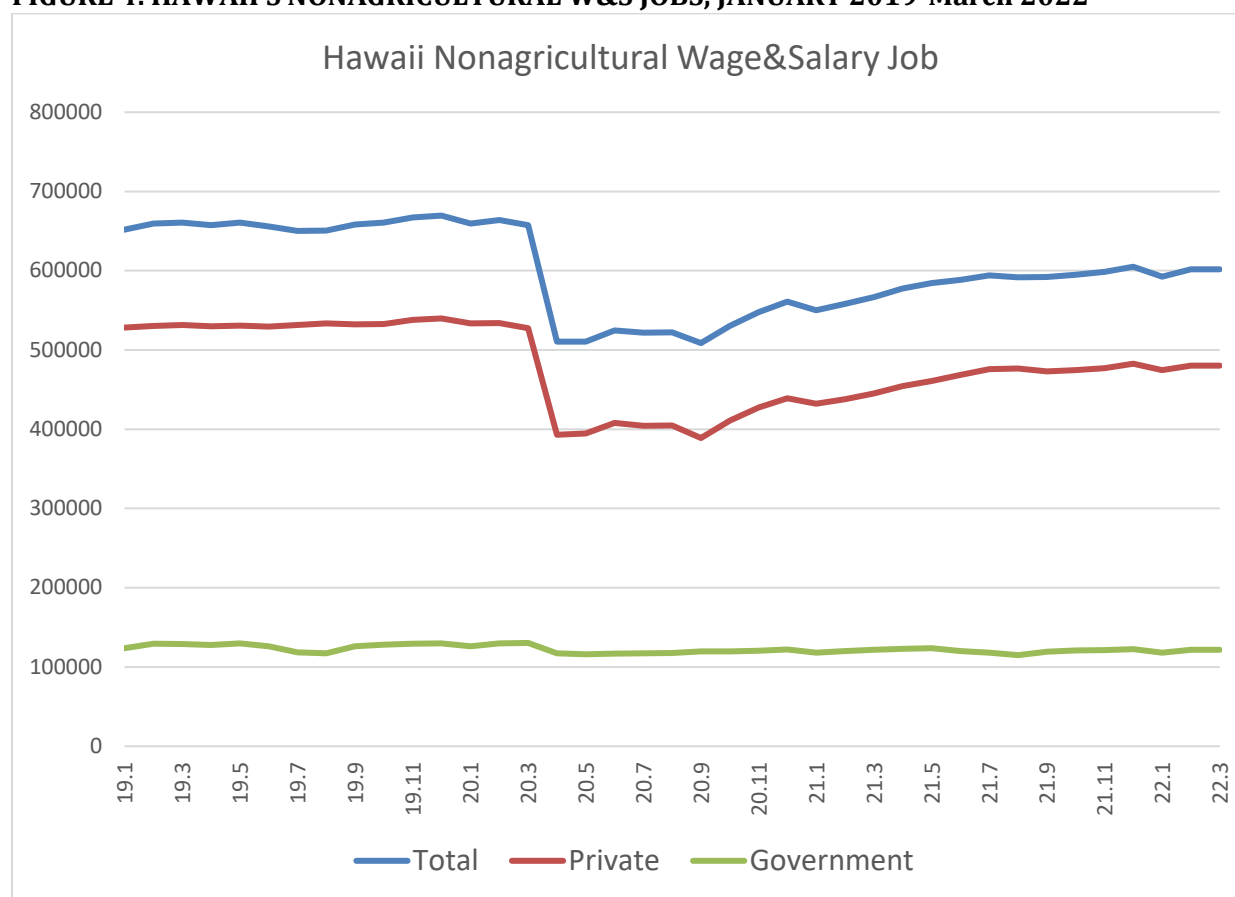
III. IMPACTS ON JOB GROWTH AND INDUSTRY CONTRIBUTION TO TOTAL JOBS

The COVID-19 impacts on jobs are different from the impacts on real GDP. This section analyzes the impacts of COVID-19 on Hawaii's nonagricultural W&S jobs. The impacts on each industrial sector are examined.

Impacts on Nonagricultural W&S Job Growth in Hawaii

As shown in Figure 4, before COVID-19 affected Hawaii, the total nonagricultural W&S jobs in Hawaii was very stable. From January 2019 to March 2020, the average monthly nonagricultural W&S jobs in Hawaii increased only 0.9%. In April 2020, total nonagricultural W&S jobs decreased 22.4% from the same month of the previous year. This decrease was mainly due to the impacts of COVID-19. From April 2020 to September 2020, total nonagricultural W&S jobs remained at the low level. From September 2020 to March 2022, total nonagricultural W&S jobs gradually increased, with the total number of jobs in March 2022 at 18.3% above the lowest job number in September 2020. However, compared with the April 2019 number, the March 2022 job number was still 8.5% below the April 2019 jobs.

FIGURE 4. HAWAII'S NONAGRICULTURAL W&S JOBS, JANUARY 2019-March 2022



Source: DBEDT, READ.

As shown in Table 8, from April 2019 to April 2020, Hawaii's total nonagricultural W&S jobs decreased 22.4% or 147,100 jobs, total private sectors' W&S jobs decreased 25.8% or 136,600 jobs, and

total government W&S jobs decreased 8.2% or 10,500 jobs. Among the 20 industrial sectors, Arts, Entertainment, & Recreation sector decreased the most at 56.2% or 7,700 jobs; followed by Accommodation & Food Services at 52.3% or 58,900 jobs, Transportation & Warehousing at 32.7% or 10,400 jobs, Other Services at 26.2% or 7,500 jobs, and Manufacturing at 24.8% or 3,500 jobs. During this period, only Federal Government increased jobs.

TABLE 8. HAWAII NONAGRICULTURAL W&S JOBS, APRIL 2019 AND APRIL 2020

SECTOR	Industry Group	Nonagricultural W&S Job			
		Apr-19 Jobs	Apr-20 Jobs	Changes 19.4-20.4	
1	Arts, Entertainment, & Recreation	13,700	6,000	-56.2%	-7,700
2	Accommodation & Food Services	112,600	53,700	-52.3%	-58,900
3	Transportation & Warehousing	31,800	21,400	-32.7%	-10,400
4	Other Services	28,600	21,100	-26.2%	-7,500
5	Manufacturing	14,100	10,600	-24.8%	-3,500
6	Educational Services	14,400	11,000	-23.6%	-3,400
7	Retail Trade	70,700	54,400	-23.1%	-16,300
8	Management & Remediation Services	38,600	29,900	-22.5%	-8,700
9	Real Estate & Rental & Leasing	13,300	10,500	-21.1%	-2,800
10	Information	8,100	6,400	-21.0%	-1,700
11	State Government	75,200	64,000	-14.9%	-11,200
12	Wholesale Trade	18,300	16,100	-12.0%	-2,200
13	Health Care & Social Assistance	73,500	66,000	-10.2%	-7,500
14	Nat. Resources & Mining & Construction	37,600	34,500	-8.2%	-3,100
15	Management of Companies & Enterprises	9,000	8,300	-7.8%	-700
16	Professional, Scientific & Tech. Svcs.	25,100	23,200	-7.6%	-1,900
17	Finance & Insurance	16,700	16,400	-1.8%	-300
18	Local Government	18,800	18,500	-1.6%	-300
19	Utilities	3,700	3,700	0.0%	0
20	Federal Government	33,700	34,700	3.0%	1,000
21	Total	657,500	510,400	-22.4%	-147,100
22	Private	529,800	393,200	-25.8%	-136,600
23	Government	127,700	117,200	-8.2%	-10,500

Source: DBEDT, READ.

As shown in Table 9, from April 2020 to March 2022, Hawaii's total nonagricultural W&S jobs increased 17.9% or 91,400 jobs, total private sectors' W&S jobs increased 22.1% or 87,000 jobs, and total government W&S jobs increased 3.8% or 4,400 jobs. Among the 20 industrial sectors, Accommodation & Food Services sector increased the most at 79.5% or 42,700 jobs; followed by Arts, Entertainment, & Recreation at 66.7% or 4,000 jobs. During this period, four sectors decreased jobs slightly.

TABLE 9. HAWAII NONAGRICULTURAL W&S JOBS, APRIL 2020 AND MARCH 2022

SECTOR	Industry Group	Nonagricultural W&S Job			
		Apr-20	Mar-22	Changes 20.4-22.3	
		Jobs	Jobs	%	Jobs
1	Accommodation & Food Services	53,700	96,400	79.5%	42,700
2	Arts, Entertainment, & Recreation	6,000	10,000	66.7%	4,000
3	Information	6,400	8,200	28.1%	1,800
4	Transportation & Warehousing	21,400	27,300	27.6%	5,900
5	Educational Services	11,000	13,700	24.5%	2,700
6	Other Services	21,100	25,100	19.0%	4,000
7	Management & Remediation Services	29,900	35,400	18.4%	5,500
8	Retail Trade	54,400	64,300	18.2%	9,900
9	Manufacturing	10,600	12,300	16.0%	1,700
10	Health Care & Social Assistance	66,000	71,000	7.6%	5,000
11	State Government	64,000	68,800	7.5%	4,800
12	Professional, Scientific & Tech. Svcs.	23,200	24,900	7.3%	1,700
13	Nat. Resources & Mining & Construction	34,500	36,900	7.0%	2,400
14	Real Estate & Rental & Leasing	10,500	11,000	4.8%	500
15	Management of Companies & Enterprises	8,300	8,600	3.6%	300
16	Wholesale Trade	16,100	16,300	1.2%	200
17	Federal Government	34,700	34,600	-0.3%	-100
18	Local Government	18,500	18,200	-1.6%	-300
19	Utilities	3,700	3,500	-5.4%	-200
20	Finance & Insurance	16,400	15,300	-6.7%	-1,100
21	Total	510,400	601,800	17.9%	91,400
22	Private	393,200	480,200	22.1%	87,000
23	Government	117,200	121,600	3.8%	4,400

Source: DBEDT, READ.

The decrease in W&S jobs due to the initial impacts of COVID-19 was only partially recovered by March 2022. From April 2019 to March 2022, Hawaii's total nonagricultural W&S jobs decreased 8.5% or 55,700 jobs, total private sectors' W&S jobs decreased 9.4% or 49,600 jobs, and total government W&S jobs decreased 4.8% or 6,100 jobs. Among the 20 industrial sectors, Arts, Entertainment, & Recreation sector decreased the most at 27.0% or 3,700 jobs; followed by Real Estate & Rental & Leasing at 17.3% or 2,300 jobs, Accommodation & Food Services at 14.4% or 16,200 jobs, and Transportation & Warehousing at 14.2% or 4,500 jobs. During this period, only Federal Government and Information increased jobs slightly.

TABLE 10. HAWAII NONAGRICULTURAL W&S JOBS, APRIL 2019 AND MARCH 2022

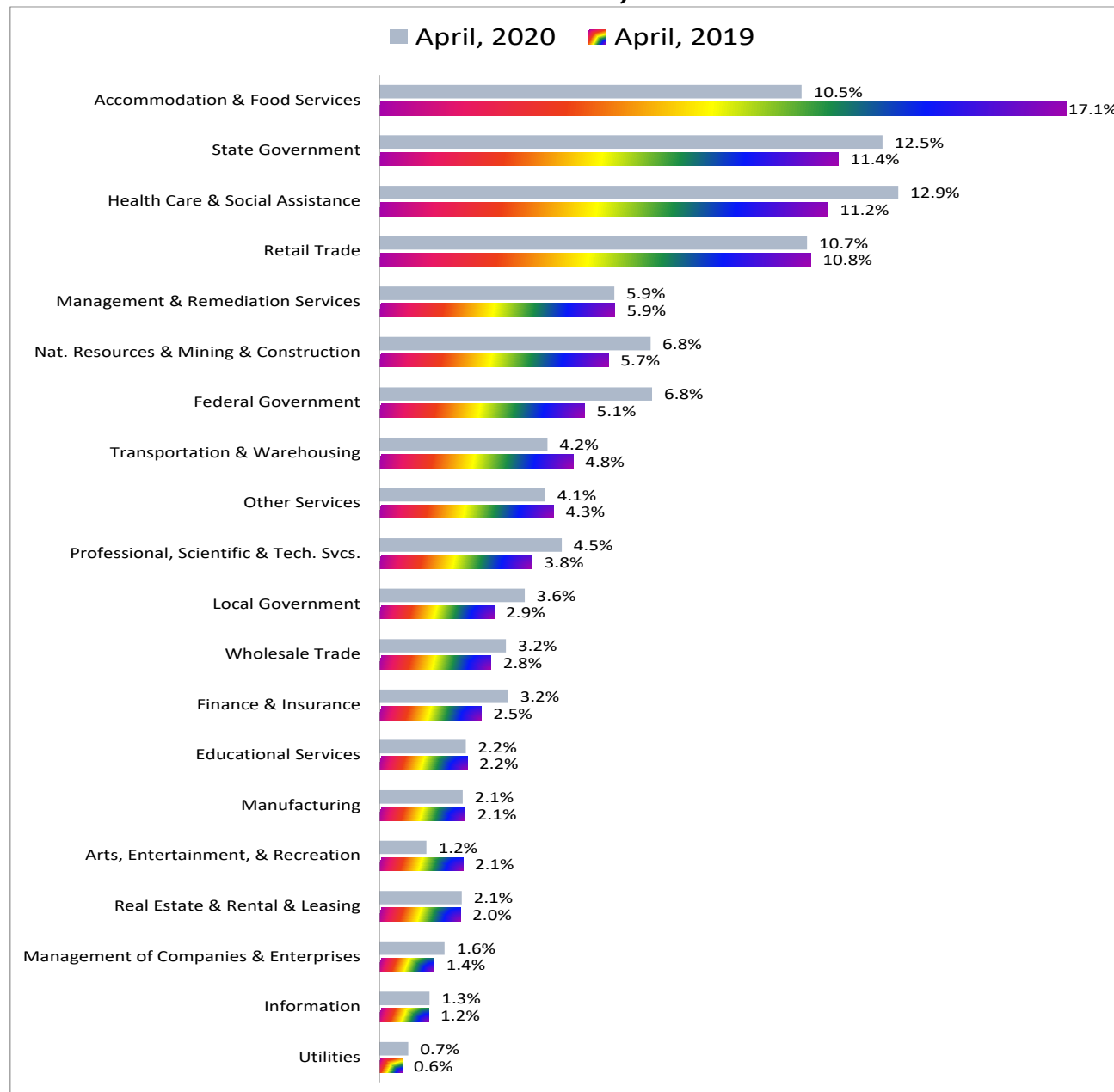
SECTOR	Industry Group	Nonagricultural W&S Job			
		Apr-19	Mar-22	Changes 19.4-22.3	
		Jobs	Jobs	%	Jobs
1	Arts, Entertainment, & Recreation	13,700	10,000	-27.0%	-3,700
2	Real Estate & Rental & Leasing	13,300	11,000	-17.3%	-2,300
3	Accommodation & Food Services	112,600	96,400	-14.4%	-16,200
4	Transportation & Warehousing	31,800	27,300	-14.2%	-4,500
5	Manufacturing	14,100	12,300	-12.8%	-1,800
6	Other Services	28,600	25,100	-12.2%	-3,500
7	Wholesale Trade	18,300	16,300	-10.9%	-2,000
8	Retail Trade	70,700	64,300	-9.1%	-6,400
9	State Government	75,200	68,800	-8.5%	-6,400
10	Finance & Insurance	16,700	15,300	-8.4%	-1,400
11	Management & Remediation Services	38,600	35,400	-8.3%	-3,200
12	Utilities	3,700	3,500	-5.4%	-200
13	Educational Services	14,400	13,700	-4.9%	-700
14	Management of Companies & Enterprises	9,000	8,600	-4.4%	-400
15	Health Care & Social Assistance	73,500	71,000	-3.4%	-2,500
16	Local Government	18,800	18,200	-3.2%	-600
17	Nat. Resources & Mining & Construction	37,600	36,900	-1.9%	-700
18	Professional, Scientific & Tech. Svcs.	25,100	24,900	-0.8%	-200
19	Information	8,100	8,200	1.2%	100
20	Federal Government	33,700	34,600	2.7%	900
21	Total	657,500	601,800	-8.5%	-55,700
22	Private	529,800	480,200	-9.4%	-49,600
23	Government	127,700	121,600	-4.8%	-6,100

Source: DBEDT, READ.

Impacts on the Industry Contribution to Total W&S Jobs

Due to difference in the impacts of COVID-19 on each industries' W&S jobs, the industrial structures measured by the shares of W&S jobs in total W&S jobs are also changing before and after the COVID-19 impacts in Hawaii. Figure 5 compares the industry structure of W&S jobs in April 2019 and in April 2020. In April 2019, the top five sectors in Hawaii were Accommodation & Food Services, State Government, Health Care & Social Assistance, Retail Trade, and Management & Remediation Services. The five sectors together accounted for about 56.4% of Hawaii's total nonagricultural W&S jobs in April 2019. In April 2020, the share of Accommodation & Food Services decreased substantially.

FIGURE 5. THE SHARES OF NONAGRICULTURAL W&S JOBS IN APRIL 2019 AND APRIL 2020



Source: DBEDT, READ.

Table 11 compares the industrial structure of W&S jobs between April 2019 and April 2020. During this period, the private sectors lost its share in W&S jobs by 3.6 percentage points, and the government sectors added its share by 3.6 percentage points. Among the 20 sectors, the Accommodation and Food Services sector lost its share the most, decreased 6.6 percentage points from 17.1% to 10.5%; followed by Arts, Entertainment, & Recreation, decreased 0.9 of a percentage point from 2.1% to 1.2%. On the other hand, the Health Care & Social Assistance sector and the Federal Government sector both increased their shares by 1.7 percentage point.

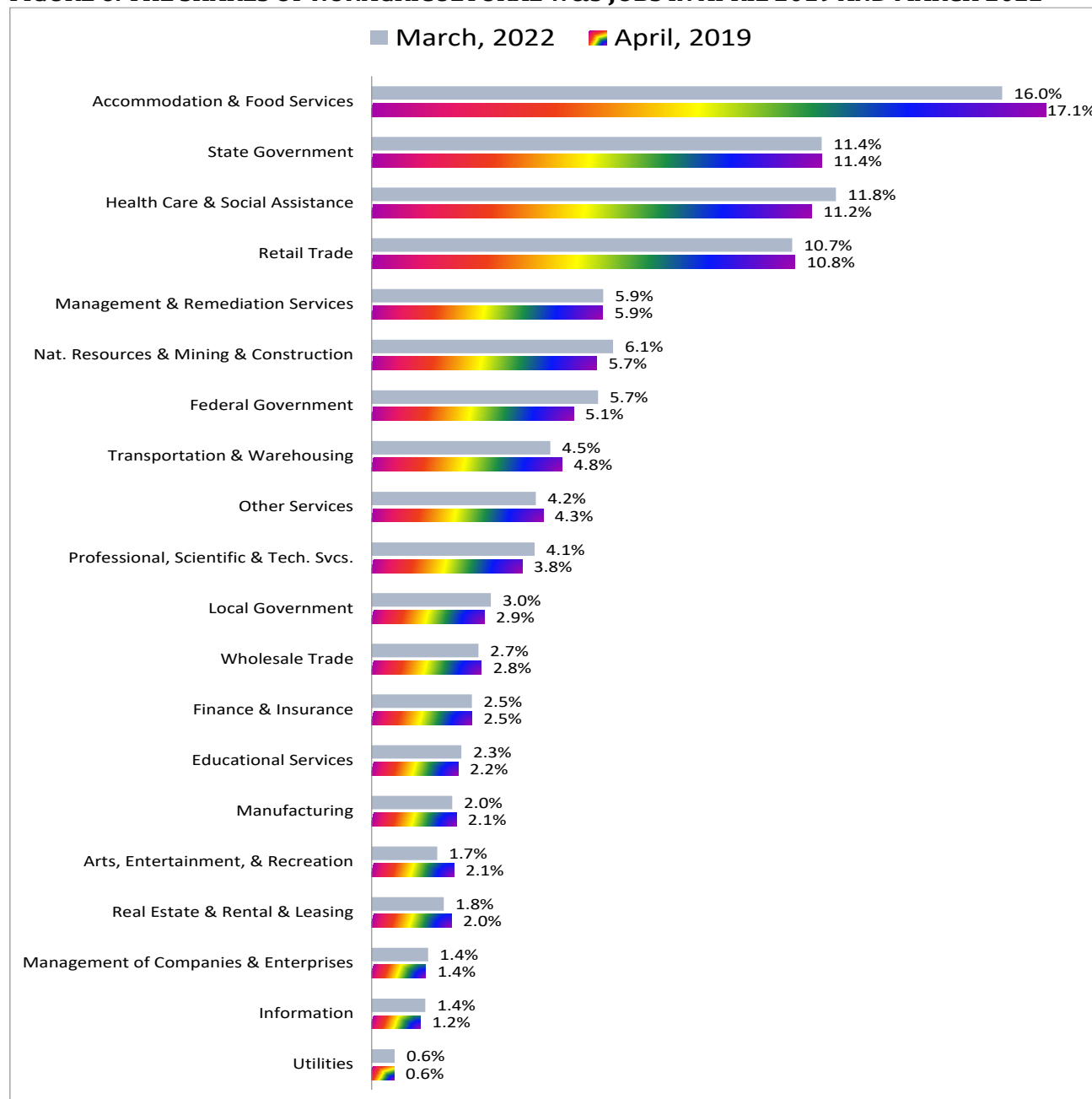
TABLE 11. SHARES OF NONAGRICULTURAL W&S JOBS, APRIL 2019 AND APRIL 2020

SECTOR	Industry Group	% of Nonagricultural W&S Jobs		
		Apr-19	Apr-20	Changes 19.4-20.4
1	Accommodation & Food Services	17.1%	10.5%	-6.6%
2	Arts, Entertainment, & Recreation	2.1%	1.2%	-0.9%
3	Transportation & Warehousing (1)	4.8%	4.2%	-0.7%
4	Retail Trade	10.7%	10.5%	-0.2%
5	Other Services	4.3%	4.1%	-0.2%
6	Manufacturing	2.1%	2.1%	-0.1%
7	Educational Services	2.2%	2.2%	0.0%
8	Information	1.2%	1.3%	0.0%
9	Real Estate & Rental & Leasing	2.0%	2.1%	0.0%
10	Management & Remediation Services	6.1%	6.1%	0.1%
11	Utilities	0.6%	0.7%	0.2%
12	Management of Companies & Enterprises	1.4%	1.6%	0.2%
13	Wholesale Trade	2.8%	3.1%	0.4%
14	Finance & Insurance	2.5%	3.2%	0.7%
15	Professional, Scientific & Tech. Svcs.	3.8%	4.5%	0.7%
16	Local Government	2.9%	3.6%	0.8%
17	Nat. Resources & Mining & Construction	5.7%	6.7%	1.0%
18	State Government	11.4%	12.6%	1.1%
19	Federal Government	5.1%	6.8%	1.7%
20	Health Care & Social Assistance	11.1%	12.9%	1.7%
21	Private	80.6%	77.0%	-3.6%
22	Government	19.4%	23.0%	3.6%

Source: DBEDT, READ.

Figure 6 compares the industry structure of nonagricultural W&S jobs in April 2019 and in March 2022. In March 2022, the top five sectors in Hawaii were accommodation and Food Services, Health Care and Social Assistance, State Government, Retail Trade, and Construction. The top five sectors in March 2022 accounted for about 56.1% of Hawaii's total nonagricultural W&S jobs in March 2022, almost the same as that in April 2019 (56.4%).

FIGURE 6. THE SHARES OF NONAGRICULTURAL W&S JOBS IN APRIL 2019 AND MARCH 2022



Source: DBEDT, READ.

Table 12 compares the industrial structure of W&S jobs between April 2019 and March 2022. After the initial impacts of COVID-19 and the recovery period, the Accommodation & Food Services sector still lost its share in W&S jobs the most, decreased 1.1 percentage point from 17.1% to 16.0%. On the other hand, the Federal Government increased its share of W&S jobs by 0.6 of a percentage-point from 5.1% to 5.7%.

TABLE 12. SHARES OF NONAGRICULTURAL W&S JOBS, APRIL 2019 AND MARCH 2022

SECTOR	Industry Group	Nonagricultural W&S Jobs		
		Apr-19	Mar-22	Changes 19.4-22.3
1	Accommodation & Food Services	17.1%	16.0%	-1.1%
2	Arts, Entertainment, & Recreation	2.1%	1.7%	-0.4%
3	Transportation & Warehousing	4.8%	4.5%	-0.3%
4	Real Estate & Rental & Leasing	2.0%	1.8%	-0.2%
5	Other Services	4.3%	4.2%	-0.2%
6	Manufacturing	2.1%	2.0%	-0.1%
7	Wholesale Trade	2.8%	2.7%	-0.1%
8	Retail Trade	10.8%	10.7%	-0.1%
9	State Government	11.4%	11.4%	0.0%
10	Finance & Insurance	2.5%	2.5%	0.0%
11	Management & Remediation Services	5.9%	5.9%	0.0%
12	Utilities	0.6%	0.6%	0.0%
13	Management of Companies & Enterprises	1.4%	1.4%	0.1%
14	Educational Services	2.2%	2.3%	0.1%
15	Information	1.2%	1.4%	0.1%
16	Local Government	2.9%	3.0%	0.2%
17	Professional, Scientific & Tech. Svcs.	3.8%	4.1%	0.3%
18	Nat. Resources & Mining & Construction	5.7%	6.1%	0.4%
19	Health Care & Social Assistance	11.2%	11.8%	0.6%
20	Federal Government	5.1%	5.7%	0.6%
21	Private	80.6%	79.8%	-0.8%
22	Government	19.4%	20.2%	0.8%

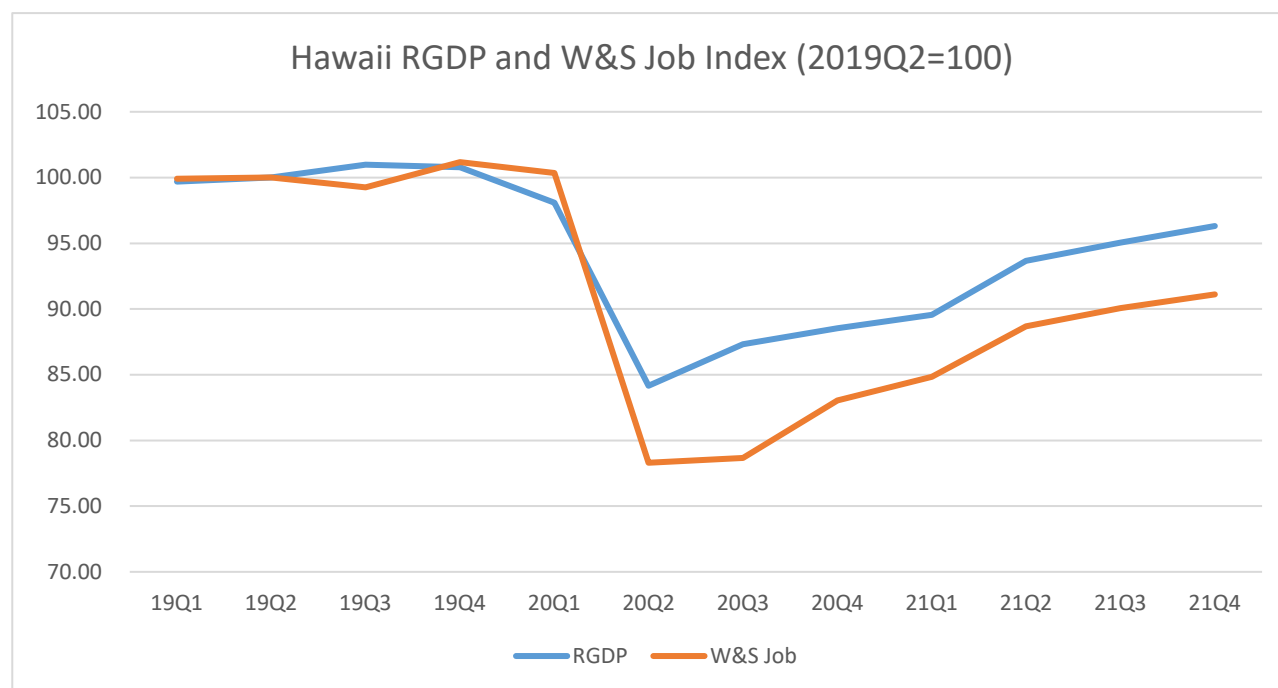
Source: DBEDT, READ.

IV. COMPARISON OF IMPACTS ON RGDP AND W&S JOBS

In order to compare the impacts of COVID-19 on Hawaii's real GDP and nonagricultural W&S jobs, the monthly nonagricultural W&S job data were converted into quarterly data, and the agriculture, forestry, fishing and hunting sector was removed from the total real GDP data.

Figure 7 shows the indexes of Hawaii's total nonagricultural real GDP and W&S jobs from the first quarter 2019 to the fourth quarter 2021 with the values in the second quarter 2019 equal 100. As shown in Figure 7, both real GDP and W&S jobs were relatively stable before the second quarter of 2020. In the second quarter of 2020, both real GDP and W&S jobs decreased substantially mainly due to the impacts of COVID-19, and the negative impacts on W&S jobs were significantly larger than that of real GDP. Starting from the third quarter of 2020, both real GDP and W&S jobs were increasing, but the recovery in W&S jobs was consistently behind that of the real GDP.

FIGURE 7. THE INDEXES OF TOTAL NONAGRICULTURAL REAL GDP AND W&S JOBS



Source: DBEDT, READ.

Table 13 compares the initial COVID-19 impacts on real GDP and W&S jobs in the second quarter of 2020. In the second quarter of 2020, total nonagricultural real GDP decreased 15.9% from the same quarter of 2019, while nonagricultural W&S jobs decreased 21.7% during the same period, 5.8 percentage points more than that of real GDP. W&S jobs decreased more in most of the sectors than that of real GDP. The largest gap was found in the Real Estate and Rental and Leasing sector, with real GDP decreased 6.4% while W&S jobs decreased 22.4%.

TABLE 13. COMPARISON OF INITIAL COVID-19 IMPACTS ON REAL GDP AND W&S JOBS

SECTOR	Industry Group	Changes 19Q2-20Q2		
		RGDP	W&S Job	Difference
1	Real estate and rental and leasing	-6.4%	-22.4%	-16.0%
2	Information	-8.1%	-19.6%	-11.5%
3	Government	-1.8%	-8.9%	-7.0%
4	Nonagricultural Total	-15.9%	-21.7%	-5.8%
5	Finance and insurance	3.1%	-2.0%	-5.1%
6	Management of companies and enterprises	-4.6%	-9.3%	-4.6%
7	Retail trade	-16.7%	-21.0%	-4.2%
8	Administrative and support and waste management	-18.2%	-20.7%	-2.5%
9	Construction	-1.4%	-3.5%	-2.0%
10	Educational services	-19.7%	-21.5%	-1.9%
11	Utilities	1.4%	0.0%	-1.4%
12	Manufacturing	-20.1%	-21.0%	-0.9%
13	Arts, entertainment, and recreation	-54.0%	-53.8%	0.2%
14	Other services (except government)	-25.7%	-24.3%	1.4%
15	Wholesale trade	-14.2%	-12.2%	2.0%
16	Professional, scientific, and technical services	-9.8%	-6.4%	3.4%
17	Accommodation and food services	-58.1%	-54.0%	4.0%
18	Health care and social assistance	-13.3%	-6.6%	6.7%
19	Mining, quarrying, and oil and gas extraction	-14.3%	-2.7%	11.7%
20	Transportation and warehousing	-50.3%	-36.2%	14.1%

Source: DBEDT, READ.

Table 14 compares the changes of nonagricultural real GDP and W&S jobs during the recovery period from the second quarter 2020 to the fourth quarter 2021. During this period, real GDP increased 14.9%, while W&S jobs increased 16.4%, 1.5 percentage point above that of the real GDP.

TABLE 14. COMPARISON OF CHANGES IN REAL GDP AND W&S JOBS FROM SECOND QUARTER 2020 TO FOURTH QUARTER 2021

SECTOR	Industry Group	Changes 20Q2-21Q4		
		RGDP	W&S Job	Difference
1	Accommodation and food services	128.3%	77.4%	-50.9%
2	Arts, entertainment, and recreation	89.6%	52.3%	-37.3%
3	Health care and social assistance	19.9%	4.8%	-15.1%
4	Finance and insurance	12.0%	-2.6%	-14.7%
5	Administrative and support and waste management	26.6%	15.2%	-11.4%
6	Information	32.7%	21.9%	-10.8%
7	Wholesale trade	11.7%	1.7%	-10.1%
8	Manufacturing	20.8%	11.4%	-9.4%
9	Professional, scientific, and technical services	15.6%	6.7%	-8.8%
10	Mining, quarrying, and oil and gas extraction	-6.0%	-6.9%	-0.9%
11	Other services (except government)	15.7%	15.0%	-0.7%
12	Management of companies and enterprises	4.1%	5.3%	1.2%
13	Nonagricultural Total	14.9%	16.4%	1.5%
14	Government	1.5%	4.2%	2.6%
15	Construction	-1.9%	0.8%	2.8%
16	Real estate and rental and leasing	5.6%	10.0%	4.3%
17	Utilities	-12.6%	-4.5%	8.1%
18	Educational services	13.0%	21.8%	8.8%
19	Retail trade	6.2%	16.9%	10.7%
20	Transportation and warehousing	22.0%	37.0%	15.0%

Source: DBEDT, READ.

Table 15 compares the changes of nonagricultural real GDP and W&S jobs from the second quarter 2019 to the fourth quarter 2021. During this period, real GDP decreased 3.3%, while W&S jobs decreased 8.9%, 5.6 percentage points above that of the real GDP.

TABLE 15. COMPARISON OF CHANGES IN REAL GDP AND W&S JOBS FROM SECOND QUARTER 2019 TO FOURTH QUARTER 2021

SECTOR	Industry Group	Changes 19Q2-21Q4		
		RGDP	W&S Job	Difference
1	Information	21.9%	-2.0%	-23.9%
2	Finance and insurance	15.5%	-4.6%	-20.1%
3	Arts, entertainment, and recreation	-12.8%	-29.7%	-16.9%
4	Accommodation and food services	-4.2%	-18.4%	-14.2%
5	Real estate and rental and leasing	-1.2%	-14.7%	-13.5%
6	Administrative and support and waste management	3.6%	-8.6%	-12.2%
7	Manufacturing	-3.5%	-12.1%	-8.6%
8	Wholesale trade	-4.1%	-10.7%	-6.6%
9	Health care and social assistance	3.9%	-2.1%	-6.0%
10	Nonagricultural Total	-3.3%	-8.9%	-5.5%
11	Government	-0.3%	-5.1%	-4.7%
12	Professional, scientific, and technical services	4.3%	-0.1%	-4.4%
13	Management of companies and enterprises	-0.7%	-4.4%	-3.8%
14	Construction	-3.3%	-2.7%	0.7%
15	Other services (except government)	-14.0%	-12.9%	1.1%
16	Retail trade	-11.6%	-7.6%	4.0%
17	Educational services	-9.3%	-4.4%	4.8%
18	Utilities	-11.4%	-4.5%	6.9%
19	Mining, quarrying, and oil and gas extraction	-19.5%	-9.4%	10.1%
20	Transportation and warehousing	-39.3%	-12.5%	26.8%

Source: DBEDT, READ.