

## Hawai'i's Coffee Production, Exports, and Labeling and Blend Requirements



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## INTRODUCTION

Hawai‘i’s coffee industry plays an important role in the local economy by contributing to employment, tourism, cultural heritage, and the livelihoods of small farmers who make up the majority of coffee growers. In the 2023-2024 season, coffee was cultivated on approximately 1,000 farms across 7,400 acres on five Hawaiian Islands, representing 4% of the state’s total cropland. Green coffee production totaled 3.4 million pounds, valued at \$67 million, with an average price of \$19.50 per pound. In 2023, Hawai‘i exported \$5.8 million worth of green coffee beans and \$3.8 million worth of roasted coffee to the international market, making coffee Hawai‘i’s top agricultural export commodity in terms of total dollar value. Despite accounting for 0.1% of global coffee production, Hawai‘i coffee holds a prestigious position in the international market due to its high quality, unique flavors, and limited supply. Especially, coffee from Kona, Ka‘ū, and Maui consistently score 85+ on the Specialty Coffee Association’s cupping scale, qualifying them as specialty or premium specialty coffee. Moreover, Hawai‘i has its own state grading system, enforced by the Hawai‘i Department of Agriculture and Biosecurity to ensure quality, authenticity, and reputation of Hawai‘i-grown coffee. This system adds value to Hawai‘i’s coffee industry by supporting premium pricing for top grades. As a result, Hawai‘i coffee has been largely independent of international market fluctuations as it caters to a niche segment focused on specialty coffee products. In 2024, Hawai‘i’s green coffee averaged \$27.42 per pound (f.a.s. value) for exports by ocean freight, far surpassing the global composite price of \$2.40 per pound (ex-dock value), as reported by the International Coffee Organization.

The purpose of this paper is to provide a brief overview of Hawai‘i’s coffee production and exports for the 2014-2024 period, with a particular focus on Japan, the largest market for Hawai‘i’s coffee exports. This paper presents a summary of publicly available data on Hawai‘i’s coffee production and exports, highlighting their trends and patterns over the past decade, as well as a formal analysis of Hawai‘i’s comparative advantage in its coffee products in the Japanese market. This paper also provides a brief history of Hawai‘i’s coffee labeling laws and discusses the potential impact of new labeling and blend requirements on Hawai‘i’s coffee industry. This discussion is largely based on the latest market observations and expert opinions obtained from interviews with industry stakeholders, including coffee associations, growers, millers, inspectors, and exporters. For the purposes of this paper, “Hawai‘i coffee” refers to both unroasted coffee beans (“green coffee”) and roasted coffee beans or roasted ground coffee (“roasted coffee”) that are grown and processed within the State of Hawai‘i. Additionally, Hawai‘i coffee may include blended coffee products that contain a significant proportion of green coffee beans imported from other countries but are marketed as Hawai‘i coffee on the label. Lastly, Hawai‘i’s coffee exports, as discussed in this paper, pertain to coffee exported to other countries from the State of Hawai‘i, unless it is specifically stated that the coffee is shipped from Hawai‘i to the mainland United States for further processing and/or re-exporting to international markets.

## HAWAI‘I’S GREEN AND ROASTED COFFEE PRODUCTION

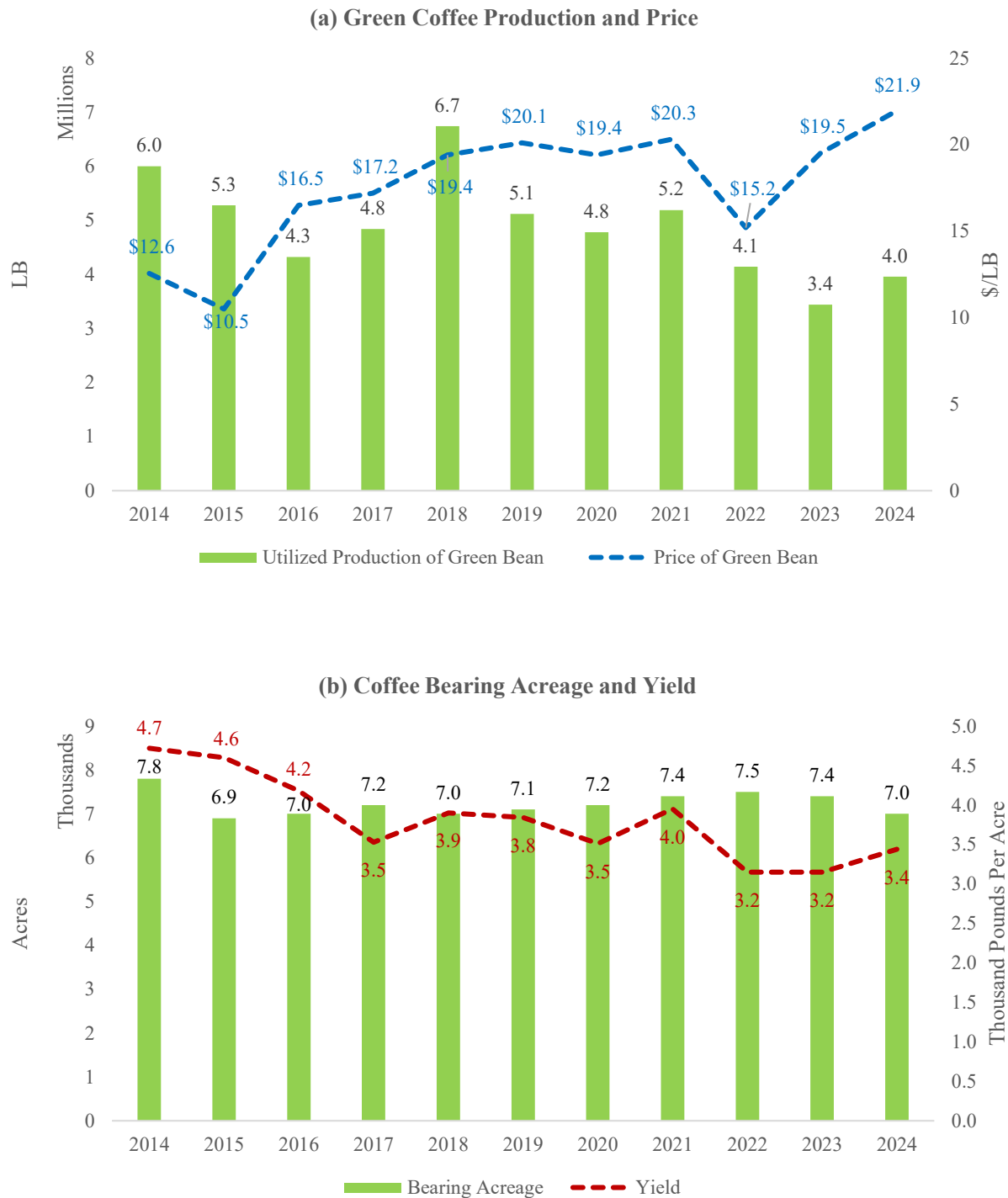
The production of green coffee beans is a complex, multistage process that involves the cultivation, harvesting, and processing of coffee cherries before drying the raw seeds. Not all coffee is fully utilized or sold in the market for various reasons such as processing losses or other uses. Figure 1 shows that Hawai‘i’s utilized production of green coffee dropped by one-third from 6 million pounds in 2014 to 4 million pounds in 2024. Bearing acreage<sup>1</sup> decreased by 10.3% from 7,800 acres in 2014 to 7,000 acres in 2024. The average yield per acre fell by 27% from 4.7 thousand pounds in 2014 to 3.4 thousand pounds in 2024, while the price of green coffee beans steadily increased from \$12.60 per pound in 2014 to \$21.90 per pound in 2024. Hawai‘i’s coffee growers have faced significant crop losses, as evidenced by declining yields, primarily due to invasive pests and diseases such as Coffee Berry Borer (CBB) and Coffee Leaf Rust (CLR). CBB, considered the most devastating pest for coffee, was first detected on Hawai‘i island in 2010 and has since spread to other islands, while CLR was first detected on Maui and Hawai‘i island in 2020 and quickly spread across other islands. Both CBB and CLR have led to a significant increase in labor costs and pesticide spraying for intensive monitoring and management. Moreover, persistent labor shortages, often cited by coffee growers as one of their biggest challenges, have exacerbated the situation. Coffee cultivation in Hawai‘i is also vulnerable to the impacts of climate change, volcano eruptions, wildfires, and extreme weather events like droughts and hurricanes. These conditions, coupled with high land prices, result in some of the highest production costs globally for Hawai‘i’s coffee growers, contributing to premium pricing for Hawai‘i-grown coffee in the international market.

The production of roasted coffee involves physical and chemical transformations of green coffee beans through the control of airflow, time, and temperature. Coffee roasters use specialized machines and techniques to produce value-added coffee products with desired flavor, aroma, and color. Additionally, coffee roasters can create unique blends and profiles by combining beans from various origins and varieties, as well as incorporating additional flavors such as vanilla, hazelnut, coconut, macadamia nuts, and others. For example, 10% Kona blend and flavored coffee are widely distributed in Hawai‘i, the mainland U.S., and the international market. The 10% coffee contains 10% of Kona coffee beans by weight, with the remaining 90% made up of beans from other regions. Coffee roasters can also produce a variety of flavored coffees using 10% Kona coffee or 100% imported green beans. Compared to 100% Hawai‘i-grown coffee, blend and flavored coffee are more affordable for residents and visitors, who often purchase them as gifts and souvenirs, while still offering a taste of Kona without the premium price of a pure Kona product. Unfortunately, there is no readily available data on roasted coffee production or green coffee imports that can be used to estimate local production of roasted coffee blends in Hawai‘i.

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<sup>1</sup> According to the USDA Census of Agriculture, bearing acreage refers to the land area occupied by orchards or groves that have reached an age where they can be expected to produce a commercially significant quantity of the crop.

**Figure 1** Hawai'i's Green Coffee Production, Price, Bearing Acreage, and Yield, 2014-2024



Source: United States Department of Agriculture (USDA), National Agricultural Statistics Service (NASS)

## **COFFEE LABELING AND BLEND REQUIREMENTS IN HAWAI‘I**

In the 1980s, Hawai‘i-grown coffee, particularly Kona coffee, began to command premium pricing as global demand for specialty coffee grew. Kona coffee’s reputation rapidly expanded within the specialty niche market, and its high prices attracted counterfeiting operations involving the sale of inexpensive, imported coffee under the Kona name. To address this issue, Hawai‘i enacted a law in 1991, requiring that coffee labeled with a regional name (e.g., Kona coffee) contain a minimum of 10% coffee beans, by weight, from that region. However, there were still concerns that coffee blending practices such as 10% Kona blend could harm local coffee growers. It was argued that consumers may unknowingly purchase substandard or inferior coffee blends marketed as premium coffee, thereby undermining the integrity and reputation of Kona coffee. In 2007, the Hawai‘i State Legislature acknowledged that existing labeling requirements caused consumer fraud and degraded the "Kona coffee" name. Despite this acknowledgement, no substantial reforms were made due to resistance from coffee processors and distributors who favored the existing standards. In 2019, Kona coffee farmers filed lawsuits against major distributors and retailers, accusing them of falsely advertising and labelling coffee as originating from the Kona region. Subsequently, the State Legislature passed the Hawaiian Coffee Labeling Act 211 in 2023 and Act 198 in 2024 to support the coffee growers. These acts established new coffee labeling standards and mandated that the percentage of Hawai‘i-grown beans in coffee blends be increased from 10% to 51% by weight, effective July 1, 2027.

It remains to be seen how the domestic market will respond to the new labeling and blend requirements. The Economic Report on Changes in Hawai‘i’s Coffee Labeling Law by Guild Consulting (2023) projects that increasing the Kona coffee content to 51% or 100% will enhance the perceived quality of Kona coffee in Hawai‘i and the mainland U.S., leading to higher consumption despite higher prices due to increased input costs. This report cites empirical studies indicating that the demand for Kona coffee would be inelastic in the United States. In other words, consumer demand for Kona coffee would remain stable even as prices rise. On the other hand, the new law poses challenges for coffee distributors and exporters who support the marketing of 10% coffee blends. For example, the 10% marketing strategy has made Kona coffee more accessible to consumers, increasing the quantities of coffee labeled as Kona coffee at a lower price point. The transition from 10% to a minimum of 51% would significantly increase the price of Kona coffee blends, which could then affect their sales negatively. Additionally, several coffee growers and processors in Hawai‘i reported that, because of the new labeling laws and lawsuits filed against the distributors and retailers, they are moving towards alternative blending strategies that do not involve Hawai‘i or Kona coffee beans. As a result, during the 2024-2025 harvest season, the price of Hawai‘i’s green coffee, particularly Kona coffee, was reported to have dropped by approximately 20%, due to an inventory surplus and reduced demand from the mainland U.S. distributors and roasters. This could potentially increase the availability of Hawai‘i-grown coffee for foreign markets at a lower price point.

## **TOTAL EXPORT VOLUME AND VALUE OF HAWAI'I COFFEE**

Hawai'i's coffee exports primarily consist of green and roasted coffee, categorized under Harmonized System (HS) codes 090111 and 090121, respectively. Figure 2(a) shows that the export volume of Hawai'i's green and roasted coffee gradually declined over the past decade. For example, the export volume of Hawai'i's green coffee fell by 82% from a peak of 884,050 pounds in 2015 to 158,420 pounds in 2024, while the export volume of Hawai'i's roasted coffee decreased by 52% from 1.1 million pounds in 2014 to 0.5 million pounds in 2024. On the other hand, Figure 2(b) shows that the total value of Hawai'i's green coffee exports increased from \$4.1 million in 2014 to \$7.5 million in 2022, primarily due to rising green coffee bean prices. However, since 2022, total exports to international markets sharply declined by half, reaching \$3.6 million in 2024. Similarly, Hawai'i's roasted coffee exports experienced a steady decline, falling from \$8.1 million in 2014 to \$3.7 million in 2024. This drop was likely driven by higher coffee prices, economic slowdown, dollar appreciation, and increasing global competition.

Figure 2(a) also shows that Hawai'i exported significantly more roasted coffee than green coffee, which would be impossible without importing green beans for roasting and re-exporting. However, green coffee was more valuable in terms of total export value compared to value added, roasted coffee since 2019. Figure 2(b) shows that the total export value of green coffee was \$5.8 million in 2023, about 1.5 times higher than the total export value of roasted coffee at \$3.8 million. This indicates that the export price of Hawai'i's green coffee was much higher than the export price of Hawai'i's roasted coffee in the international market. For instance, Figure 2(c) shows that the export price of green coffee shipped by ocean freight averaged \$29.09 per pound in 2023, compared to \$5.53 per pound for roasted coffee. This is because Hawai'i's coffee exporters supply not only roasted coffee beans with a 100% Hawai'i geographic origin (e.g., 100% Kona coffee), but also roasted coffee blends (e.g., 10% Kona coffee) that may contain prime or lower grade beans grown in Hawai'i, as well as lower-cost beans imported from other countries, thereby significantly reducing the average price of Hawai'i's roasted coffee in the international market.

As previously noted above, the export data shown in Figure 2 represents only coffee products produced and processed within the State of Hawai'i. However, a significant portion of Hawai'i's green coffee beans is purchased by mainland U.S. distributors and roasters, who may process them into various coffee products (e.g., 100% coffee and blended coffee products) for domestic and international sales. Unfortunately, data on the interstate movement of green coffee beans between Hawai'i and the mainland U.S. is not readily available and difficult to obtain due to proprietary information restrictions. Furthermore, it is practically impossible to trace how much of Hawai'i's green coffee beans shipped to the mainland U.S. are processed and/or re-exported to international markets. Therefore, the actual volume of Hawai'i coffee exported globally is likely much higher than the figures presented in Figure 2(a).

**Figure 2** Total Export Volume and Value of Hawai‘i’s Green and Roasted Coffee, 2014 – 2024



Source: U.S. Census Bureau, State Trade by Commodity and Country. USDA Foreign Agricultural Service.

## INTERNATIONAL MARKETS FOR HAWAI‘I’S COFFEE EXPORTS

Japan is the world’s fifth largest importer of coffee and coffee products. Japan is also known for its particular interest in specialty and high-quality coffee, which aligns well with Hawai‘i’s coffee offerings. Table 1 and 2 show that Japan has been the largest market for Hawai‘i’s coffee exports. For instance, in 2022, coffee was Hawai‘i’s top agricultural commodity exported to Japan, which purchased \$5.38 million worth of green coffee and \$4.58 million worth of roasted coffee, accounting for approximately 72% and 81% of Hawai‘i’s respective coffee export values. Canada was the second-largest market for Hawai‘i’s green coffee, importing \$1.61 million, while South Korea ranked second for Hawai‘i’s roasted coffee, with imports valued at \$0.95 million. Additionally, in 2022, Hawai‘i exported a combined total of \$2.1 million in green coffee to South Korea, Taiwan, China, France, Germany, United Kingdom, and Saudi Arabia, and a combined total of \$65,489 in roasted coffee to Canada, Taiwan, China, and Portugal. As discussed above, the total value of Hawai‘i coffee exported to Japan and other countries steadily declined over the past decade, reaching its lowest point in 2024. Especially, the total value of Hawai‘i’s green coffee exports to Japan fell by 65% from a peak of \$5.38 million in 2022 to \$1.89 million in 2024.

**Table 1.** Total Export Value (\$1,000) of Hawai‘i’s Green Coffee by Country, 2014 – 2024

	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024
Japan	2,286	5,047	3,064	2,772	3,621	3,282	3,614	4,632	5,382	3,832	1,893
Canada	793	892	298	626	663	379	574	1,102	1,613	1,628	1,438
South Korea	169	730	78	685	107	13	217	280	82	138	153
Taiwan	42	116	81	32	3	9	249	121	261	58	31
China	10	68	46	0	444	44	146	338	0	4	0
France	0	72	392	0	0	0	0	263	78	82	168
Germany	798	92	49	72	24	68	120	69	3	79	0
United Kingdom	40	8	8	48	81	19	249	36	48	10	0
Belgium-Luxembourg	0	0	0	0	0	0	29	0	0	0	5
Portugal	0	0	0	0	0	0	0	0	0	3	3
United Arab Emirates	0	0	0	0	0	0	0	0	0	4	0
Australia	0	3	0	0	0	0	0	0	0	0	0
Hong Kong	3	40	8	15	15	11	0	0	0	0	0
Israel	0	0	0	0	3	0	0	0	0	0	0
Macau	0	61	0	0	0	0	0	0	0	0	0
Russia	0	0	0	12	0	0	0	0	0	0	0
Saudi Arabia	0	0	0	0	0	0	0	8	3	0	0
Singapore	0	0	0	0	0	28	0	0	0	0	0
Spain	0	0	0	12	0	0	0	0	0	0	0
Switzerland	0	0	0	0	0	0	919	0	0	5	0
Total	4,139	7,129	4,024	4,273	4,961	3,853	6,116	6,848	7,470	5,842	3,691

Source: U.S. Census Bureau, State Trade by Commodity and Country. USDA Foreign Agricultural Service

**Table 2.** Total Export Value (\$1,000) of Hawai‘i’s Roasted Coffee by Country, 2014 – 2024

	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024
Japan	7,223	5,585	5,361	5,217	4,164	4,544	4,021	4,119	4,580	3,461	3,152
South Korea	389	63	321	210	225	266	289	518	946	254	353
Canada	184	5	45	1,114	381	149	21	24	35	19	27
Taiwan	33	12	37	29	75	70	26	35	55	47	50
Hong Kong	87	72	120	200	100	140	20	0	0	0	0
China	75	10	10	14	29	19	49	67	39	0	3
Germany	79	20	0	0	80	0	19	20	0	0	95
Switzerland	0	0	0	0	0	0	0	11	0	12	17
United Kingdom	0	0	0	0	0	22	0	0	0	0	5
Belgium-Luxembourg	0	0	0	0	78	0	0	0	0	0	0
France	0	0	0	66	0	0	0	0	0	0	0
Macau	11	0	0	0	0	0	0	0	0	0	0
Portugal	0	0	0	0	0	0	0	0	3	0	0
Marshall Islands	0	3	0	13	0	0	0	3	0	0	0
Philippines	0	0	0	0	0	0	5	0	0	0	0
Saudi Arabia	0	0	0	0	0	0	0	3	0	0	0
Singapore	0	0	0	0	37	8	0	0	0	0	0
Total	8,081	5,770	5,894	6,864	5,170	5,218	4,449	4,801	5,657	3,792	3,704

Source: U.S. Census Bureau, State Trade by Commodity and Country. USDA Foreign Agricultural Service

## MARKET SHARE OF MAJOR COFFEE EXPORTERS IN THE JAPANESE MARKET

Given Japan’s historical dominance in Hawai‘i’s coffee exports, this report presents a detailed analysis of the market share of green and roasted coffee imported into Japan. Table 3 shows that Japan’s total imports of green coffee declined by 23% from \$1.28 billion in 2014 to \$988 million in 2020, before returning to \$1.3 billion in 2023. Brazil, Colombia, and Vietnam dominated this market, with respective shares of 33.5%, 12.8%, and 17.9% in 2023. The United States exported approximately \$16 million worth of green coffee to Japan in 2023, accounting for a modest 1.2% market share. Among U.S. states that export green coffee to Japan, Hawai‘i was one of the top suppliers, accounting for 71% of the U.S. supply in 2020. However, its share declined to 25% in 2023 because California and other states experienced significant gains in market share at Hawai‘i’s expense. Furthermore, Washington was a leading exporter of green coffee in 2014 and 2017, accounting for 82% and 87% of the U.S supply, respectively. These states do not commercially produce green coffee beans, suggesting that they were likely re-exporting beans sourced from other countries or from Hawai‘i.

Japan’s total imports of roasted coffee increased by 11.8% from \$95.2 million in 2014 to \$106.4 million in 2020, before slightly decreasing to \$100.7 million in 2023. The United States, the largest exporter of roasted coffee to Japan, saw its market share decrease by 21.2 percentage points from 52.1% in 2014 to 30.9% in 2020, before rebounding to 41.3% in 2023. Among U.S. states that export roasted coffee to Japan,

Hawai‘i’s market share declined from 14.6% in 2014 to 8.3% in 2023, ranking third in total value of roasted coffee exports. In comparison, Nevada and Washington, the two leading states of roasted coffee exports, had a combined market share of 80% on average. Considering that Hawai‘i is the only state in the U.S. that grows coffee beans on a commercial scale, it is likely that Nevada, Washington, and other states supply value-added coffee beans imported from Brazil, Colombia, and other coffee producers including Hawai‘i.

**Table 3.** Share of Coffee Exports in the Japanese Market: Selected Coffee Exporters, 2014 – 2023

Product	2014			2017			2020			2023		
	Value (\$US millions)	Share in Japanese Market	Share in US Supply	Value (\$US millions)	Share in Japanese Market	Share in US Supply	Value (\$US millions)	Share in Japanese Market	Share in US Supply	Value (\$US millions)	Share in Japanese Market	Share in US Supply
Green Coffee												
World	1,284			1,173			988			1,302		
Brazil	488	38.0%		323	27.6%		292	29.6%		436	33.5%	
Colombia	236	18.4%		252	21.5%		201	20.4%		166	12.8%	
Vietnam	151	11.8%		185	15.9%		149	15.0%		234	17.9%	
USA	24	1.9%		22.2	1.9%		5.13	0.5%		15.6	1.2%	
Hawai‘i	2.3	0.18%	9.5%	2.8	0.24%	12.5%	3.6	0.36%	70.5%	3.8	0.29%	24.5%
California	0.7	0.05%	2.7%	0.7	0.06%	3.1%	0.45	0.05%	8.8%	5.3	0.41%	33.8%
New Jersey	0.04	0.00%	0.2%	0.1	0.01%	0.6%	0.04	0.00%	0.7%	0.25	0.02%	1.6%
Washington	21	1.64%	87.3%	18	1.53%	82.1%	0.27	0.03%	5.4%	0.09	0.01%	0.6%
Roasted Coffee												
World	95.2			96.5			106.4			100.7		
Switzerland	8.3	8.8%		16.5	17.1%		38.2	35.9%		22.3	22.1%	
United Kingdom	22.7	23.9%		22.1	22.9%		11.9	11.3%		1.5	1.5%	
Germany	0.3	0.4%		0.8	0.8%		5.5	5.2%		2.2	2.2%	
Italy	7.6	7.9%		6.4	6.7%		8.6	8.1%		8.8	8.7%	
Vietnam	0.8	0.9%		2.6	2.7%		5.5	5.2%		18.5	18.4%	
USA	49.6	52.1%		42.6	44.2%		32.9	30.9%		41.5	41.3%	
Nevada	20.4	21.4%	41.0%	26.2	27.2%	61.3%	21.2	19.9%	64.8%	21.6	21.4%	52.0%
Washington	9.5	10.0%	19.1%	8.5	8.8%	19.9%	4.9	4.6%	15.2%	11.2	11.1%	27.0%
Hawai‘i	7.2	7.6%	14.6%	5.2	5.4%	12.2%	4.0	3.8%	12.3%	3.5	3.5%	8.3%
California	10.7	11.2%	21.5%	1.5	1.6%	3.4%	0.6	0.6%	2.0%	1.0	1.0%	2.5%
Virginia	0.9	0.9%	2.0%	0.8	0.8%	1.8%	0.9	0.8%	3.0%	1.8	1.8%	4.4%
Pennsylvania	0.03	0.03%	0.1%	0	0.0%	0.0%	0.05	0.05%	0.2%	1.5	1.5%	3.7%

Source: UN Comtrade and USDA Foreign Agricultural Service

Note 1: The data for global coffee trade in 2024 are not fully available, as some countries have yet to provide their reports to the UN Comtrade. Therefore, the 2024 data for global coffee trade are not included.

Note 2: The percentage totals presented in Table 3 do not add up to 100% as the data represents selected countries and U.S. states.

Table 3 also shows that Hawai‘i’s green coffee maintained a relatively steady, albeit small, share of the Japanese market, ranging from 0.18% to 0.36% between 2014 and 2024, even with large fluctuations in total coffee exports to Japan. This suggests the existence of a niche segment in the Japanese market that favors green coffee beans from Hawai‘i. Similarly, Hawai‘i’s roasted coffee held a modest market share in Japan between 3.5% and 7.6% over the same period. However, this niche market for Hawai‘i’s roasted coffee steadily declined over the past decade, from 7.6% in 2014 to 3.5% in 2024, while Japanese imports of roasted coffee increased by 5.8%, from \$95.2 million in 2014 to \$100.7 million in 2024.

## MEASUREMENT OF COMPARATIVE ADVANTAGE

In addition to summary statistics on the market share of coffee exports in the Japanese market, which highlights the strength of Hawai‘i coffee’s standing in Japan, this report provides a formal assessment of Hawai‘i coffee’s comparative advantage in the Japanese market, using the Normalized Revealed Comparative Advantage (NRCA) index proposed by Yu et al. (2009). The NRCA index is widely used in international economics to measure a country’s comparative advantage in exporting specific goods or services. Compared to the traditional Revealed Comparative Advantage (RCA) index developed by Béla Balassa (1965), the NRCA index normalizes the RCA index to account for differences in country-specific factors, such as country size and economic structure, making it more comparable across countries and commodities. Moreover, as Yu et al. (2010) noted, while the RCA index is static and not easily comparable over time, the NRCA index is more useful for determining whether a country is gaining, losing, or maintaining its comparative advantage over time because of its normalization.

Yu et al. (2010) employed the NRCA index to assess Hawai‘i’s comparative advantage in selected agricultural products in the mainland U.S. market from 1995 to 2005, whereas Parcon et al. (2010) conducted a similar analysis for Hawai‘i’s agricultural exports to the Japanese market from 1995 to 2008. Using the same method and trade data from 2014 to 2024 (e.g., total export values of Hawai‘i coffee), this report measures the extent to which Hawai‘i has a comparative advantage or disadvantage in green and roasted coffee. According to the NRCA method, the comparative advantage of Hawai‘i coffee  $i$  (green or roasted) can be measured by the following formula:

$$NRCA_i^h = \frac{E_i^h}{E} - \frac{E_i}{E} \cdot \frac{E^h}{E}$$

where  $E_i^h$  denotes the supply of coffee product  $i$  to Japan from Hawai‘i,  $E_i$  denotes the supply of coffee product  $i$  to Japan from Hawai‘i and the rest of the world,  $E^h$  denotes the supply of all agricultural products to Japan from Hawai‘i, and  $E$  denotes the supply of all agricultural products to Japan from Hawai‘i and the rest of the world. The first term signifies the actual share of Hawai‘i’s coffee exports in the Japanese market, while the second term signifies the expected share of Hawai‘i’s coffee exports in the Japanese market,

assuming no comparative advantage or specialization. The difference between these two terms indicates comparative advantage or disadvantage. Specifically,  $NRCA_i^h > 0$  implies that Hawai‘i has a comparative advantage in its coffee product  $i$ ,  $NRCA_i^h < 0$  implies that Hawai‘i has a comparative disadvantage in its coffee product  $i$ , and  $NRCA_i^h = 0$  implies that Hawai‘i has neither a comparative advantage nor disadvantage in its coffee product  $i$ . The NRCA score is symmetrical around zero and bounded between -1 and 1. Additionally, the sum of the NRCA scores for a particular product (e.g. green or roasted coffee) is constant and equal to zero. This property makes it possible to show whether Hawai‘i is gaining or losing its comparative advantage at the expense of other suppliers in the Japanese market. In other words, the change in NRCA score reveals the shift of comparative advantage among Hawai‘i and its competitors (e.g., Brazil, Colombia, Vietnam, and/or other U.S. states in the Japanese market).

### **ANALYSIS OF HAWAI‘I COFFEE’S COMPARATIVE ADVANTAGE IN JAPAN**

Figure 3 shows that the NRCA index scores for Hawai‘i’s green and roasted coffee have been positive since 2014, suggesting a comparative advantage in both products. From 2014 to 2020, Hawai‘i’s roasted coffee consistently held a higher comparative advantage compared to its green coffee, with the two converging in 2021. However, the NRCA score for Hawai‘i’s roasted coffee steadily declined over the past decade from 1.00 in 2014 to 0.42 in 2024. In comparison, the NRCA score for Hawai‘i’s green coffee generally increased from 0.20 in 2014 to 0.56 in 2022, with a significant peak in 2015 (0.62), before falling to its lowest score (0.18) in 2024. This recent drop was mainly attributed to a sharp decline in Hawai‘i’s green coffee exports to Japan from \$5.38 million in 2022 to \$1.89 million in 2024. Additionally, international coffee prices reached an all-time high of \$2.95 per green pound by the end of 2024 and continue to rise into 2025. These trends may reflect broader economic factors in Japan and other countries, such as sluggish economic growth, dollar appreciation, inflation pressure, increasing competition, and the premium pricing of Hawai‘i coffee, negatively impacting the demand for Hawai‘i coffee in the Japanese market.

The NRCA analysis suggests that Hawai‘i’s coffee exporters may face challenges in maintaining its competitive edge. While Hawai‘i still holds a comparative advantage in green and roasted coffee, as indicated by the positive NRCA score, this advantage has been eroding over time, particularly for Hawai‘i’s roasted coffee, the majority of which includes blended coffee products in the Japanese market. The steady decline in comparative advantage of Hawai‘i’s roasted coffee is a concerning trend that warrants attention. As previously noted, Hawai‘i’s roasted coffee, exported under HS classification 090121, includes both premium products made with 100% Hawai‘i-grown beans and coffee blends that may contain lower-cost beans. Due to the aggregate nature of the data, it is not feasible to separately analyze their comparative advantages. However, it is reasonable to assume that the NRCA index for Hawai‘i’s roasted coffee is largely

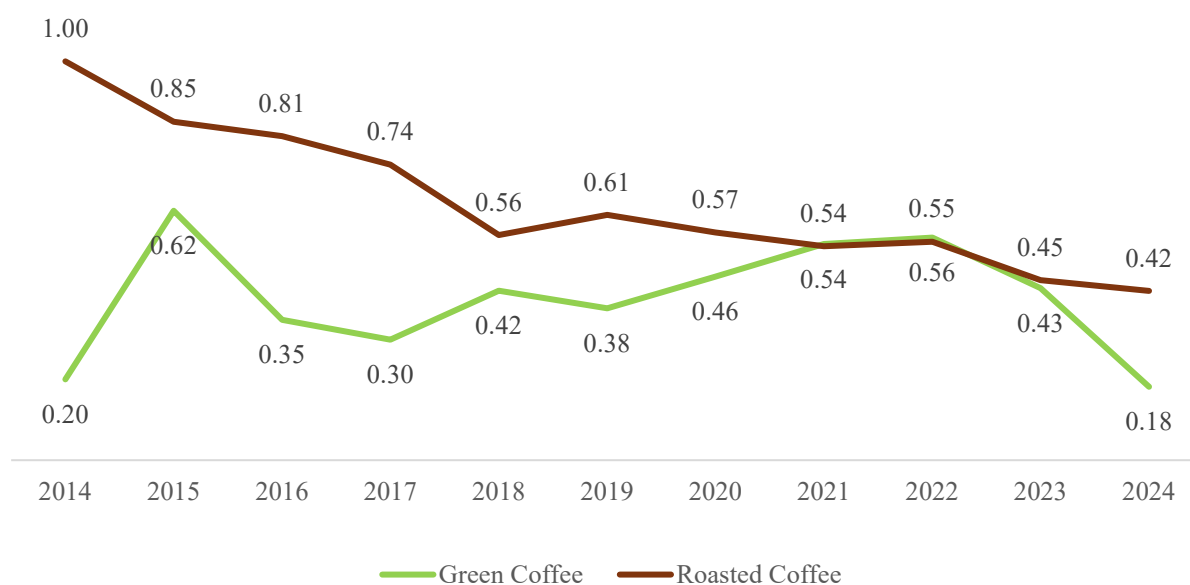
influenced by those blended coffee products, given that the export price of Hawai‘i’s roasted coffee is significantly lower than the export price of Hawai‘i’s green coffee, as shown in Figure 2.

As discussed above, coffee blends like 10% Kona coffee make it more affordable compared to 100% Kona Coffee, appealing to price-conscious consumers who still desire specialty coffee products. This affordability could partially explain why Hawai‘i’s roasted coffee generally held a higher comparative advantage than its green coffee in the Japanese market. However, Hawai‘i has been losing its comparative advantage in roasted coffee since 2014, which is consistent with a downward trend in Hawai‘i’s coffee exports to Japan. This decline indicates that Hawai‘i became relatively less competitive in its roasted coffee due to competition not only from other U.S. states (e.g., mainland U.S. roasters that operate roasting plants in Nevada, Washington, and multiple locations), but also from other countries like Switzerland and Vietnam. It is possible that Japanese consumers no longer recognize the unique attributes of Hawai‘i’s coffee blends such as its taste, origin, and brand reputation. These blends might be of lower quality compared to 100% coffee products or indistinguishable from other competing coffee products, yet they still have a price that is higher than alternative coffee products. Yohannes et al. (2016) showed that coffee products in the Japanese market, such as beans, powder, canned, and bottled coffee, are necessities and substitutes for one another, suggesting that Japanese consumers could switch to other coffee blends that offer similar quality but are cheaper.

However, it is important to note again that the NRCA index score reflects only Hawai‘i coffee produced and processed within the State of Hawai‘i, excluding coffee beans grown in Hawai‘i but processed elsewhere and re-exported to international markets. It is also likely that the NRCA index does not capture all direct-to-consumer (DTC) sales through e-commerce platforms, which allow Hawai‘i’s small and large coffee growers and roasters to sell and deliver their products worldwide. The DTC sales, coupled with subscription services, have become an important part of Hawai‘i’s coffee industry as a growing number of consumers prefer purchasing directly from Hawai‘i-based producers that offer high-quality and authentic coffee with brand storytelling.

Additionally, over the past years, major coffee roasters in Hawai‘i have either ceased operations or relocated their roasting facilities to the mainland U.S., which offers lower operating costs and a more favorable business and regulatory environment. As previously noted, the 2019 lawsuit and the subsequent changes in mandated blend ratios could have accelerated the closing and consolidation of roasting facilities in Hawai‘i. Unlike in Hawai‘i, roasters on the mainland might not necessarily be required to follow the state's blend requirements. This shift could have contributed to the growing market share of mainland U.S. roasters in Japan and the declining NRCA index score for Hawai‘i exports of roasted coffee to Japan. To some extent, the NRCA index score might be reflecting these structural changes that have occurred within Hawai‘i’s coffee industry.

**Figure 3** Comparative Advantage of Hawai‘i’s Green and Roasted Coffee in the Japanese Market Measured by the Normalized Revealed Comparative Advantage (NRCA) index, 2014 – 2024



Note: To facilitate the presentation, the NRCA score has been rescaled by a constant of 10,000.

### **HAWAI‘I’S COFFEE EXPORTS TO JAPAN UNDER THE NEW COFFEE LABELING AND BLEND REQUIREMENTS**

No formal or empirical study has examined the causes of the steady decline in Hawai‘i’s comparative advantage in coffee exports to Japan, especially for its roasted coffee. However, if we assume that this decline is at least partially due to Hawai‘i’s roasted coffee being marketed as premium products in a competitive market such as Japan, the new law could impact Hawai‘i’s comparative advantage to some extent. As discussed above, the Economic Report on Changes in Hawai‘i’s Coffee Labeling Law by Guild Consulting (2023) found that American consumers value Kona coffee, recognizing its unique qualities as a specialty coffee and demonstrating a willingness to pay premium prices. Similarly, Hawai‘i or Kona coffee can be recognized as a specialty coffee and caters to different consumer segments in the Japanese market. Therefore, strengthening the marketing of 51% Hawai‘i-grown coffee may help reverse the erosion of Hawai‘i’s comparative advantage in its coffee products. Japanese consumers, who are known for their mature coffee culture and willingness to pay a premium for superior quality and distinctive flavor profiles, may recognize the better quality of 51% Hawai‘i coffee. Given that it would still be priced lower than 100% Hawai‘i coffee, Japanese consumers may increase their consumption of 51% Hawai‘i coffee over time, improving Hawai‘i’s comparative advantage in Japan’s roasted coffee segment.

On the other hand, the price increase could be particularly pronounced, given Japan's economic downturns, weak currency, inflation pressure, and tariff escalation that have already increased the cost of imported goods for Japanese consumers. Price-conscious consumers might opt for alternative coffee products offering a similar taste experience at a more affordable price, potentially leading to a loss of market share for Hawai'i's coffee exporters and further diminishing their comparative advantage. A significant portion of Hawai'i's green coffee beans is purchased by roasters from the mainland U.S., Japan, and other countries. These domestic and foreign buyers operate roasting facilities in regions, where Hawai'i's labeling laws and blending requirements may not necessarily apply. These roasters could supply both 100% and blended coffee products, adjusting blend ratios to meet different consumer demands and preferences in the international market. Therefore, Hawai'i's coffee exporters could find themselves at a distinct disadvantage regarding price competitiveness and product variety, if they are required to adhere to stricter blend ratios. Consequently, the regulations aimed at protecting the integrity of Hawai'i coffee could inadvertently diminish its comparative advantage in roasted coffee exports, particularly in key markets like Japan.

## **CONCLUDING REMARKS**

Coffee is one of Hawai'i's most significant agricultural commodities, both culturally and economically. Hawai'i's green and roasted coffee have consistently ranked among the state's top export commodities by total dollar value. Recognized as a specialty commodity, Hawai'i coffee, particularly Kona coffee, commands premium pricing in the international market due to its high quality, distinct flavor, and limited supply. However, Hawai'i's coffee exports have steadily decreased over the past decade, especially its roasted coffee, most of which are blended products. The declining NRCA index score also indicates that Hawai'i might be losing its comparative advantage in the Japanese market, the predominant market for Hawai'i's coffee exports.

Despite these challenges, the NRCA index score remains positive, underscoring Hawai'i's continued specialization in coffee products, relative to other agricultural exports. It is also important to note that the decline in Hawai'i's NRCA index score does not necessarily indicate underperformance in the industry's ability to produce and export premium coffee. A myriad of factors such as pests and diseases, high input costs, labor shortages, regulatory changes, inflation, and a strong U.S. dollar could have contributed to a decrease in Hawai'i's coffee exports over the past decade. Moreover, the NRCA score may not fully account for structural changes within Hawai'i's coffee industry that could have increased the processing and re-export of Hawai'i-grown coffee through the mainland U.S., as well as direct-to-consumer sales through e-commerce platforms.

In conclusion, while premiumization has been challenging in the global coffee market, Hawai'i's coffee industry has successfully catered to a niche segment in the international market, where consumers

show a preference for Hawai‘i-grown coffee. In light of Hawai‘i’s regulatory shift to further protect the integrity and reputation of its coffee in recent years, it might be necessary for Hawai‘i’s coffee export sector to position itself more firmly within the premium specialty coffee segment in the global coffee market.

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