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January 18, 2024

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

The Honorable Scott K. Saiki,
Speaker, and Members of the House of Representatives
Thirty-second 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 the Final Report on the Economic Study on Changes in Coffee Labeling Law as required by Act 222, SLH 2022. In accordance with Section 93-16, Hawaii Revised Statutes, I am also informing you that the report may be viewed electronically at https://hdoa.hawaii.gov/meetings-reports/legislative-reports/.

Sincerely,

Sharon Hurd

Sharon Hurd
Chairperson, Board of Agriculture

Enclosure

December 29, 2023

Economic Report on Changes in Hawai'i's Coffee Labeling Law

In response to RFP-052023-QAD

Prepared for:
State of Hawaii
Department of Agriculture- Quality Assurance Division

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GUILD CONSULTING

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(I) EXECUTIVE SUMMARY

The Hawaii Department of Agriculture, Quality Assurance Division (HDOA-QAD) released a Request for Proposals (RFP) on May 1, 2023, to "conduct an independent study to assess the economic impact on local coffee farmers and the local coffee industry from potential changes to coffee labeling requirements in section 486-120.6, Hawaii Revised Statutes." The RFP noted that Hawai'i is the only region in the world whose statutory regulations regarding coffee require only 10% of a product's content to originate in the geographic region indicated.

OBJECTIVE

Act 222 of June 27, 2022, directed the Hawaii Department of Agriculture to evaluate the economic impacts of three possible state regulatory labeling scenarios requiring coffees carrying the word "Kona" or "Ka'ū" on their packaging:

1. With **10%** geographic label blends – the current status continues.
2. Blending level raised to **51%** of the geographic label by way of a 3-year phase-in period, such as 20% for year 1, 30% for year 2, and 51% for year 3.
3. Level raised to **100%** of the geographic label.

METHODS

Given its relatively longer history and distinguishable beans and brand, the analysis focused mainly on the Kona coffee market, though potential economic impacts on the Ka'ū coffee market have also been considered and incorporated throughout the analysis. In addition to a review of relevant literature and the qualitative insights gained from interviews and group discussions, the following empirical methods were utilized and, duly acknowledging limitations, found as follows:

HEDONIC PRICING ANALYSIS

Using a rigorous regression-based hedonic pricing analysis, the value of the Kona brand relative to other coffee brands was established, underlining that the unique attributes of Kona coffee—taste, origin, and brand reputation—command a significant price premium over other brands. **This price premium, attributable to the Kona designation, suggests that consumers value Kona coffee, recognizing its unique qualities.**

Willingness-to-Pay

Quantifying the value of the Kona coffee brand relative to other coffees, the willingness-to-pay analysis illustrates a consumer readiness to pay higher prices for Kona coffee. This willingness varies between pure Kona/Kaʻū coffees and blends, signaling a need for clear and truthful labeling to reflect the product's authenticity. As expected based on the willingness to pay analysis, consumers' upper limits are positively linked to the percentage of Kona/Kaʻū coffee, in that consumers recognize its distinct quality, reflecting strong positioning in the market.

Costs of Production

Due to several challenges, including inconsistencies and disclosure restrictions in survey response as well as low response rate, conclusive insights could not be reliably drawn.

The project team thus relied on data from five operations managing over 25 acres, which were considered reasonable and consistent with industry norms for yields and operational costs. Calculated milling and roasting yields aligned with accepted industry ratios and reported state averages, considering recent disease and pest challenges. Sales prices varied greatly, ranging from $40 to $60 per pound, influenced by coffee type, location, and packaging, with premium products like Peaberry commanding the highest prices.

Stakeholder Perceptions

Various tools provided insight into Kona and Kaʻū coffee stakeholder views. Some stakeholders expressed resistance to changing the current 10% status, fearing economic and market instability, citing both supply and demand as unlikely to rise. Conversely, others advocate for increased Kona/Kaʻū coffee content, arguing it would lead to better quality products, fairer prices for farmers, and a more sustainable industry. With 51% blends and 100% Kona coffee, many stakeholders indicated anticipating increases in supply and demand. Perspectives varied widely, revealing a complex web of economic, cultural, and quality considerations that shape stakeholder stances on the proposed legislative changes. **While some are staunchly opposed to altering the status quo, many, in particular growers nearly unanimously, see an opportunity for improvement and greater authenticity in the market.**

KEY FINDINGS

The principal objective of this analysis sought to determine the economically ideal proportion of Kona coffee. Coffee labeled "Kona" has a high value, commanding a notable premium over other coffee brands, pointing toward support for premium pricing and demonstrating the necessity of protecting the brand against market distortions, as established by the hedonic pricing analysis. Coupled with the identified upper limits of consumers' willingness-to-pay and evaluating other market dynamics, there is compelling economic support for increasing Kona coffee content.

PROPOSED LEGISLATION

It is reasonable to anticipate that increasing the Kona coffee content to 51% or 100% will enhance the overall perception of the quality of Kona coffee, resulting in a rightward shift of the inelastic demand curve.

Transitioning from a 10% blend to a 51% blend or 100% Kona coffee redistributes the economic surplus (or "rents") from downstream intermediaries (e.g. blenders and roasters) to growers and consumers. This shift, detailed in Figure 4, suggests a net gain for the primary stakeholders in the coffee supply chain.

RECOMMENDATIONS

There is clear economic justification to increase the minimum content requirement for Kona coffee. As is often the case with compromises, few are pleased with the 51% Kona blend proposal, across stakeholder groups. Growers indicated a significant shift in their perspectives, with many who had initially considered the 51% blend as a viable compromise subsequently favoring 100% Kona coffee, a sentiment that was solidified even before they participated in the study.

Growers nearly unanimously, with some exceptions, indicated their support of 100% Kona coffee legislation. This is echoed by other industry stakeholders, particularly those who are involved in integrated retail, who voiced strong support for a move to 100% Kona.

While the proposed phased-in implementation strategy for increasing Kona coffee content may seem advantageous, the reality is more complicated in considering the implementation of new packaging and processing new proportions of Kona blends.

A more effective approach to mitigate industry shocks is to provide a longer lead time for the industry to prepare for the new regulation. This would help mitigate transition costs by allowing companies ample time to exhaust their existing packaging supplies and adjust their operations more smoothly.

Additionally, establishing a comprehensive regulatory framework, focused on the consumer market of roasted coffee, is strongly suggested in advance of any labeling changes. This framework should include provisions for inspection, certification, and a robust record-keeping system. It should also define specific triggers for inspections and violations, monitor compliance, and outline a clear penalty structure.

Economic Implications

The study concludes that increasing Kona coffee content requirements is likely to result in net economic benefit, an increase in demand that could be further strengthened by certification and enforcement efforts for roasted coffee, leading to an increase in price and thus, an increase in potential tax revenue.

Transitioning from a 10% blend to a 51% blend or 100% Kona coffee redistributes the economic surplus (or "rents") from downstream intermediaries (e.g. blenders and roasters) to growers and consumers. This shift, detailed in Figure 4, suggests a net gain for the primary stakeholders in the coffee supply chain. Growers, individually and collectively, and consumers collectively are better off, as a measure of economic surplus, with the change from:

- 10% Kona blend to 51% Kona blend
- 10% Kona blend to 100% Kona coffee
- 51% Kona blend to 100% Kona coffee

Increasing the required Kona coffee content to 51%, 100%, or any increment above the current standard, raises input costs, suggesting why some stakeholders prefer maintaining the existing regulations. In response to an increase in Kona coffee content, blenders might seek alternative blending strategies, particularly if moving to 100% Kona.

Limitations

The limited availability of data and the constrained project timeline significantly impacted the precision of the Report's conclusions. Despite extensive efforts and consultations with a variety of state and external entities, certain essential data needed for this analysis remained unattainable, as it was simply not available. The industry would benefit greatly from renewed efforts to establish regular data collection. Consequently, it was necessary to resort to formulating theoretical projections and estimates for many project objectives, which were meticulously constructed based on sound economic principles and backed by reliable sources to maintain analytical integrity.

Technological limitations faced by some stakeholders were also a limiting factor. While the team provided alternative methods for input, such as distributing paper surveys, it's conceivable that these measures did not fully bridge the participation gap.

(II) BACKGROUND

During the 2022 State Legislative session, a bill was passed, HB1517, directing the State of Hawaii Department of Agriculture (HDOA) to contract a qualified team to conduct an economic impact study.[1] Act 222 was subsequently enacted to appropriate the funding to HDOA Quality Assurance Division (HDOA-QAD) to contract the completion of the independent study.

LABELING REQUIREMENT SCENARIOS

Specifically, the project sought to assess the economic and other related impacts of three scenarios in which the minimum content requirement of Kona coffee is as follows :[2]

1. With **10%** geographic label blends – current status continues ("**Scenario 1**").
2. Blending level raised to **51%** of the geographic label by way of a 3-year phase-in period, such as 20% for year 1, 30% for year 2, and 51% for year 3 ("**Scenario 2**").
3. Level raised to **100%** of the geographic label ("**Scenario 3**").

HDOA-QAD subsequently issued a request for proposals to conduct a study to assess a number of factors; primarily, gauging the economic impact of the above three Scenarios. Following state procurement procedures, GUILD Consulting, a Honolulu-based management consulting firm, was selected, to be led by Lesley Harvey, assisted by Dr. Peter Adler, and joined by Dr. Oral Capps, Jr. Chief Economist and Managing Partner, Forecasting and Business Analytics, LLC and Co-Director, Agribusiness, Food, and Consumer Economics Research Center, (AFCERC), Department of Agricultural Economics, Texas A&M University, as well as his associates, Dr. H.L. Goodwin, agricultural economist from the University of Arkansas and research assistant , Loren Burns.[3] The project team's brief biographies can be found in Section (VI) Supplementary Materials – Author Bios. All members of the project team continue to be personally and professionally unaffiliated with Hawai'i coffee growers, blenders, and roasters.

This Report is intended to capture current market and other considerations in evaluating the economic impact of the three Scenarios. Evolving market conditions may necessitate further examination beyond the bounds of this project.

[1] www.capitol.hawaii.gov/session/archives/measure_indiv_Archives.aspx?billtype=HB&billnumber=1517&year=2022

[2] HDOA, Request for Proposals No. RFP-052023-QAD for *Economic Study on Changes in Coffee Labeling Law.* Released May 1, 2023.

[3] Replacing the initial project Economist, Paul Brewbaker; Dr. Capps, Dr. Goodwin, and Ms. Burns joined the project in late October. For brief details, as it concerns the project timeline, please see Section (V) - Limitations.

INTRODUCTION

The Kona coffee industry, located on the idyllic slopes of the Hualalai and Mauna Loa volcanoes on the Big Island of Hawai'i, is a testament to the delicate interplay between agriculture, culture, and commerce. Renowned for its exceptional flavor profile, Kona coffee has garnered international acclaim, positioning itself as a premium and sought-after variety. As the industry navigates a landscape marked by evolving consumer preferences; climate, culture, and community considerations, and an increasingly global economy, understanding the outcomes, as well as assessing the economic impacts of the Scenarios, as described above, was a significant undertaking that relied on the contributions of diverse industry stakeholders, careful curation of available data to produce meaningful economic inferences, and a dedicated project team to carry out the work in fewer than four months.

As we embarked on this *econo-ag* exploration, we aimed to address critical questions surrounding the economic viability of the three Kona coffee content Scenarios, and their subsequent impact on stakeholders. Through a rigorous analysis of empirical data, economic models, and stakeholder perspectives, notwithstanding limitations, this Report endeavors to contribute valuable insights to the ongoing Kona coffee discourse and decision-making, as well as providing some inferences applicable to the Ka'ū coffee industry. By dissecting the economic impacts of different coffee content labeling scenarios, we aspire to provide stakeholders, policymakers, and coffee enthusiasts with further understanding of the forces shaping the future trajectory of one of Hawai'i's most treasured agricultural goods.

Although this Report primarily focuses on Kona coffee, given its relatively long history and distinguishable beans and brand, impacts to Ka'ū coffee have also been considered and are noted in Section (V) Findings & Recommendations.

LABELING

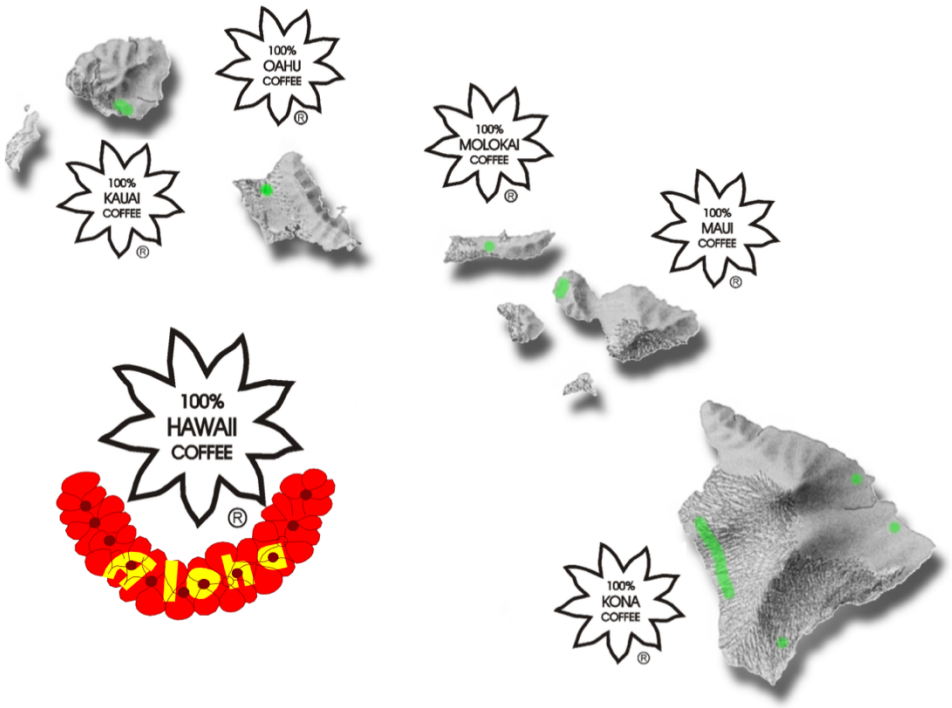
Historically, government intervention in labeling in the United States has served three main purposes: (1) to ensure fair competition among producers; (2) to increase consumers' access to information; and (3) to reduce risks to individual consumer safety and health (Hadden, 1986; Golan, Kuchler, and Mitchell, 2000). Empirical studies have found labels to be both successful (Ippolito and Mathios, 1990 and 1995) and unsuccessful (Variyam, Blaylock, and Smallwood, 1995 and 1997; Moorman, 1996) in educating consumers and changing consumption behavior. Often, consumers do not scrutinize food labels (Aldrich, 1999).

A 1993 study, in which 55 respondents reported their attitudes towards the use of "Kona" descriptors, indicated some consumer confusion (Hodgson and Bruhn, 1993). Additionally, these studies illustrate the fact that the format and context of the information are important elements in maximizing the possibility that labeled information will influence its audience. Consumers are more likely to read and understand labels that are clear and concise (Hadden, 1986; Viscusi and

Magat, 1992; Noah, 1994). Too much detailed product information may cause consumers to disregard the label completely.

Currently, there are six federal trademarks owned by HDOA and the Hawaii Coffee Association that protects green coffee beans, as identified by their geographic origin:

Figure 1: Hawai'i Federal Certification Trademarks[4]



The federal certification trademark, overseen and enforced by HDOA, applies exclusively to green coffee beans that are wholly sourced from the origin specified, as depicted in Figure 1. Typically, green beans are distributed to intermediaries, such as blenders and roasters, with federal trademark certification serving as a record of origin, before beans are processed for the consumer market. The current regulatory framework, per HRS 486-120.6, sets out labeling requirements for roasted or instant coffee, further requiring that intermediaries maintain records on the volume and origin of beans bought or sold, for two years to support regulatory enforcement. Although the certification process includes both the beans and the roasted or instant coffee at an intermediary stage, the final product purchased by consumers may not reflect this stringent certification.

[4] HDOA. 2002.

For over thirty years, Hawai'i has been the only region in the world that statutorily regulates its geographic names, at only 10% of the originating agricultural product. As such, additional purposes of labeling are to protect the reputation of Hawai'i-grown coffees, specifically Kona coffee, and to maximize economic interests of coffee growers, intermediaries (millers, blenders, and roasters), exporters, and consumers.

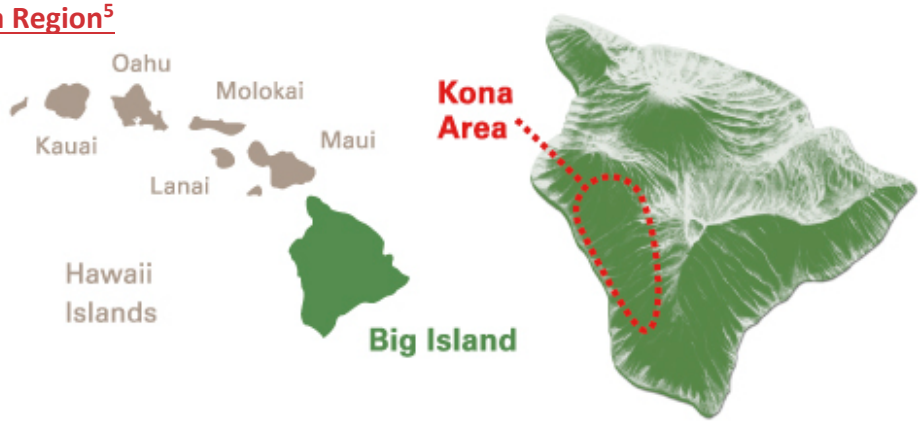
In 2018, a study sponsored by the Food and Agriculture Organization of the United Nations (FAO) and the European Bank for Reconstruction and Development concluded that Kona coffee "does not enjoy any strong protection of its name" from the State of Hawai'i.

Hawai'i law currently stipulates that blends must contain at least 10% Kona coffee (by weight). These coffees are sold via retail outlets and hotels, restaurants, and institutions (HRI) in Hawai'i as well as in the continental U.S. In Hawai'i, visitors represent a significant segment of the target audience. State law additionally requires certain packaging rules that include a statement of the percentage of Kona coffee on the bag, further requiring a minimum font size for this statement. This state law applies to all roasted coffee products that contain and advertise Hawai'i, and by extension Kona, coffee. However, Hawai'i blenders tend only to use Kona coffee as it carries more cachet than any other coffee-producing region in Hawai'i. Importantly, the labeling law does not apply to roasted coffee or green coffee beans exported outside the state of Hawai'i.

Kona Coffee Industry

Kona coffee is the most recognized and highest valued of all Hawai'i coffees. The Kona coffee region is located on the western side of the Big Island of Hawai'i. The area, often referred to as the Kona Coffee Belt is small, stretching along only 30 miles of coastline. The Kona District, mostly growing a unique type of arabica coffee on the leeward slopes of Hualalai and Mauna Loa volcanoes, benefit from the unique microclimate, elevation, and volcanic soil, contributing to the renowned quality of Kona coffee.

Figure 2: Kona Region[5]



[5] www.ucc-hawaii.com/farm/about-kona-coffee/

Table 1 Kona Coffee Produced in Hawai'i County (2016) [6]

Region	Farms/Farmers	Acreage	Average Yield
Kona	880/480	~3,800	4,200-7,000 lbs./acre
Ka'ū	83	660-830	3,000
Puna	20	70	3,500

Approximately 3,800 acres in Kona produce between two and three million pounds of green coffee annually, dependent upon weather and pest challenges. This coffee typically sells for between $20-$26 per pound, subject to the seasonal availability of supplies.

While there are a handful of larger Kona farms, two-thirds of Kona farms are three to nine acres in size. One-third of Kona growers are vertically integrated but rely on hand labor. Farms that are three to five acres in size tend to maintain solvency better than smaller farms. This tendency is notable, given that many Kona farms are three acres or fewer in size. Reportedly, Ka'ū farms are typically more than 10 acres in size and benefit from widespread mechanized practices.

Kona coffee in Hawai'i dates back hundreds of years, with the first seedlings arriving from Brazil in 1825. By the late 1800's, Kona coffee, having thrived in the temperate environment located in Kona, was becoming increasingly renowned across the globe. Kona coffee merchant Henry Nicholas Greenwell's coffee was honored at the 1873 World's Fair in Vienna. Over the next 100 years, the industry rode economic highs and lows from market shocks spanning the Great Depression and resulting price drops, to the Second World War's demand increases fueled by soldiers' newfound taste for coffee, as well as the annexation of Hawai'i into the United States.

Some of these historical shocks resulted in structural market changes that have continued to shape the industry today. For example, the structure of independent, family-run coffee farms – emerging from the contraction of the industry in the face of price drops resulting from the Great Depression – have continued. Additionally, the Guatemalan coffee variety introduced in 1892, eventually becoming known as Kona Typica (*Coffea arabica*), still sets the standard for Kona coffee and is the main variety grown today (Kinro, 2003).

[6] University of Hawai'i Center for Tropical Agriculture and Human Resources, 2016

Coffee varieties grown in Hawai‘i today are mainly “Kona Typica” and “Yellow Catuai”, two *Coffea arabica* botanical varieties of “Typica” and “Bourbon” that can be found around the world (Nerurkar, 2023). Most of the coffee in Kona, more than 90%, is Kona Typica and is described by the Hawaii Coffee Association as displaying “a sweet and balanced profile with hints of nuts and citrus” in warmer climates (2018). In addition to Kona, there are three (3) growing regions on the Island of Hawai‘i: Hamakua, Ka‘ū, and Hawai‘i/Puna. There is also one coffee growing region on each of the following Hawaiian Islands: Kauai, Maui, Moloka‘i, and Oahu.

In the 2022-23 coffee growing season, according to the United States Department of Agriculture National Agricultural Statistics Service (USDA-NASS), Hawai‘i’s utilized production was 25.2 million pounds of cherry at an average price of $2.35 per pound, with a total crop value of $59.1 million. As compared to the prior growing season, this reflects an 8% decrease in total utilized production and nearly a 5% decrease in total crop value, largely attributable to the impact of crop pests and diseases, as well as flooding, warmer temperatures, and drought (Table 2).

Table 2: Hawai‘i Coffee Production, Price, and Value (cherry)[7]

Total production (1,000 pounds)			
2020-21	2021-22	2022-23	Change
23,870	28,440	26,690	-6.15%

Utilized production (1,000 pounds)			
2020-21	2021-22	2022-23	Change
22,715	27,410	25,150	-8.25%

Price per pound (dollars)			
2020-21	2021-22	2022-23	Change
$ 2.13	$ 2.26	$ 2.35	3.98%

Value of utilized production (1,000 dollars)			
2020-21	2021-22	2022-23	Change
$ 48,383	$ 61,947	$ 59,103	-4.59%

Hawai‘i Legislative Efforts

The State of Hawai‘i has been embroiled in long standing disputes regarding the labeling of Kona coffee, with efforts to regulate the use of the Kona Geographical Indication (GI), to some degree, taking center stage. This issue has resulted in repeated legislative attempts to define the appropriate use of the terms "Kona" and "Kona Coffee Blend" on products sold within Hawai‘i. In 1992, the Hawai‘i Legislature enacted a law requiring *a minimum of 10% Kona coffee* to legally use the name "Kona" on packaging. Before this law, there were no minimum requirements for a product to be branded with the Kona name. However, the regulation's enforceability is limited at the consumer market level, as described on page 7.

[7] Percentage change from 2021-22 to 2022-23.

THE KONA COFFEE MARKET

Kona coffee is distinguished from all other coffees by its unique island microclimate, the care taken in production, often by generational farmers with long-standing roots in the region, exercising great care in the processing, from handpicking to milling. Kona coffee labeled as "10% blend" simply means combining 10% Kona coffee beans with 90% of other coffee varieties, while 100% Kona indicates a pure Kona product made without blending with other coffee varieties. The types or varieties that make up the other 90% content in the 10% Kona blends are neither identified on packaging nor publicly known.

Concerns of industry stakeholders include product quality, reputation, and image, characteristics that are essential to maintaining and/or expanding markets and addressing competition posed by other types of coffees. Kona coffee is identified as a specialty coffee and according to Mark Twain, "Kona coffee has a richer flavor than any other, be it grown where it may and call it by what name you please." Specialty coffees are commonly identified by their country of origin.

Relevant Terms

Federal Trademark: A form of intellectual property protection that identifies and distinguishes the source of the goods of one party from those of others. Trademarks can include any word, name, symbol, or device, or any combination used, or intended to be used, in commerce.

Federal Certification Mark: A specific type of trademark used to show consumers that particular goods and services, or their providers, meet certain standards. Certification marks in agriculture can signify r origin, method of production, quality, accuracy, or other unique characteristics.

Coffee Certification: A process in which coffee is assessed and verified by an independent third party to ensure it meets certain standards. In Hawai'i, HDOA is responsible for certification of green beans, indicating assurance of the origin in which the green coffee beans were truly grown.

INDUSTRY STRUCTURE – BROADLY OUTLINED

The Kona coffee industry is structured around cultivation, processing, and marketing:

1. **Coffee Farms:** Farms in the Kona region vary in size, from smaller family operations to larger estates.
2. **Cherry Harvesting:** During the harvesting season, coffee cherries are hand-picked, a labor-intensive process most often accomplished by farm workers or hired pickers.
3. **Processing Mills:** Coffee cherries are processed to extract the beans. While technique varies, processing mills de-pulp the cherries and air-/sun-dry the beans.
4. **Grading and Sorting:** After drying, the coffee beans are graded and sorted based on size and defects (see "General Coffee Grading and Qualitative Information", below).
5. **Roasters:** Roasting is a significant step in coffee production that greatly influences the flavor and aroma. Some farms have their own roasting facilities, while others sell green beans to coffee roasters.
6. **Differentiation:** Kona coffee is known for its unique qualities, and many producers emphasize these qualities to distinguish their product. Some may also seek certification to further differentiate their product.
7. **Local Market and Specialty Shops:** Kona coffee is often sold locally, with farms increasingly participating in on-site and/or online markets sold direct to consumers. Specialty shops and cafes in the Kona region, and throughout the state, also feature and sell Kona coffee.
8. **Export:** Beyond local markets, Kona coffee is exported to various regions around the globe. Online sales platforms have been reported to increasingly enable producers to reach a wider audience.
9. **Regulatory Oversight:** Regulation and broad enforcement maintain the quality and authenticity of Kona coffee green beans, regardless of the percentage Kona coffee content mandated. Certification previously involved visual inspection, by a limited number of HDOA Packaging and Labeling inspectors, to ensure roasted coffee met the 10% Kona standard. Currently, the HDOA-QAD, Commodities Branch certifies green beans but there is no certification labeling for roasted coffee.

STAKEHOLDERS

Various stakeholders within both the Kona and Kaʻū coffee industries contribute to the production and promotion of this unique Hawaiʻi coffee:

GROWERS – Integrated, Contracted, or Independent.

MILLERS – Toll millers or millers who buy and then mill. These green coffee beans are either sold for export (primarily to roasters in Japan, Korea, or the U.S. Mainland and Canada) or to other Hawaiʻi firms for roasting, or are roasted by millers who are also roasters.

ROASTERS – Roasters roast and market whole bean or ground 100% Kona *OR* roast and blend with other coffee acquired through importation if sold as 10% blend or, if below Prime grade, sold as Hawaiʻi coffee.

WHOLESALER/DISTRIBUTOR – Sold as own brand through integrated firms or sold to a wholesaler/distributor to retail outlets.

RETAILERS – Kona is retailed in roaster-owned shops, online by roasters, in convenience stores/gift shops (i.e, ABC Stores) or in grocery stores (i.e., Wal-Mart and Safeway), drug stores (i.e., CVS and Long's) or big box stores such as Costco and Sam's Club.

General Coffee Grading and Quality Information

Determined by size and foreign material/damaged kernels, Hawai'i coffee grades are size- and defect-based, without moisture or quality consideration. Lighter roasts have more 'appellation' factors detectable. Specific coffee types (Arabica versus Robusta) and origins have particular taste and aroma profiles that are further impacted by roast intensity, brew speed/time, push time (i.e., espresso), and other factors. Proper roasting techniques determine many flavor factors and preserve the unique flavor and aroma profiles. More intensive roasting drives off volatiles in order of volatilization temperatures, caramelizing the last organic compound to convert, sugars.

Acreage and Yields

Total number of Kona coffee farms and the acreage committed to Kona coffee were reported by HDOA until the recession in 2009. In 2010, HDOA laid off all of their statisticians in the recession's aftermath. Unfortunately, data from 2009-10 to 2022-23 simply do not exist. Because of disclosure concerns, USDA-NASS did not take over this task, as two of the state's Islands posed considerable issues with single-company totals for their production. In a nutshell, they felt it would reveal proprietary data. Data recorded until 2010 are presented below in Table 3.

The most recent publicly available estimates for Kona acreage and yield data were made by University of Hawaii Center for Tropical Agriculture and Human Resources (UH-CTAHR) in 2016, and presented to the Hawaii Coffee Association's annual meeting, also presented in Table 3.

An alternative approach is to assume the ratio of Kona acreage in the last year in which the HDOA publication and the USDA-NASS Census of Agriculture coincide, 2007. In that year, there were 1,521 coffee farms in Hawai'i operating on 7,891 acres. The ratio of Kona farms to all coffee farms is therefore 52% of all coffee farms and 38% of all coffee acreage. In 2012, there were 1,577 coffee farms (820 Kona farms) on 9,872 bearing acres (3,751 Kona acres) and in 2017, there were 1,477 coffee farms (768 Kona farms) operating on 9,300 bearing acres (3,534 Kona acres). However, we know from anecdotal observation that both the number of Kona farms and acres in production are increasing, as evidenced by the 2017 Ag Census. The 2017 Ag Census indicates that in Hawai'i County, there were 1,343 farms operating on 5,491 planted acres; it is not specified if this acreage is bearing or not due to disclosure restrictions. It is safe to assume, following the guidance of the UH-CTAHR, that practically all of these farms and acreage amounts are related to Kona producers.[8]

[8] There are 20 in Puna on 70 acres and 83 in Ka'ū on 660-830 acres netted out leaves roughly 4,600 acres of Kona, assuming no new plantings since 2017. The 2022 Ag Census should be released in mid-Spring 2024.

Table 3. Kona coffee Historical Yield & Acreage[9]

CROP YEAR	TOTAL FARMS (*NUMBER*)	TOTAL HARVESTED *(ACRES)*	TOTAL YIELD *(1,000 POUNDS)*	MARKETING *(1,000 POUNDS)*
1989-90	630	2,140	1.4	3,070
1990-91	624	2,180	1.2	2,460
1991-92	609	1,740	1.4	2,320
1992-93	594	1,530	1.2	1,790
1993-94	574	1,370	1.4	1,960
1994-95	575	1,425	1.5	2,100
1995-96	570	1,470	1.7	2,500
1996-97	550	1,720	1.3	2,300
1997-98	575	1,900	1.5	2,850
1998-99	600	2,170	1.6	3,500
1999-2000	635	2,400	1.2	3,000
2000-01	650	2,700	1.4	3,800
2001-02	675	2,850	1.1	3,100
2002-03	680	2,850	1.4	4,100
2003-04	690	3,000	1.3	4,000
2004-05	710	3,300	1	3,200
2005-06	745	3,300	1.8	5,800
2006-07	775	3,000	1.3	4,000
2007-08	790	3,000	1.3	3,900
2008-09	790	2,900	1.4	4,100

1 Coffee harvesting occurs throughout the year in Hawai'i. The main harvest normally begins in late summer and extends to the early part of the following year.
2 Average yields based on parchment equivalent marketings and harvested acreage.
3 Expressed in parchment equivalent pounds. Coffee marketed in cherry form was converted to an equivalent parchment weight and added to parchment marketings.
4 Represents an average farm price for parchment equivalent sales. Obtained by dividing farm revenues from the sale of cherry and parchment coffee by total marketings (parchment equivalent basis).

For purposes of this analysis, documentation of the annual cherry price is used, which can change during a season, generally going up and never down. Further collection of such data can be accomplished by supporting efforts of coffee grower organizations such as Synergistic Hawaii Agriculture Council (SHAC), Kona Coffee Farmers Association and the Kona Coffee Council to document and track yields and prices, resulting in quantifiable data to further assess economic impacts of the coffee industry on Hawai'i.

[9] Hawaii Agricultural Service

Representativeness of Information

An inventory of the total volume of Kona coffee produced and marketed annually by participants in this study effort, indicate that 2 to 3 million approximate pounds of green coffee equivalent is accounted for, either by green coffee export, roasted coffee sales at retail through packaged sales of brewed coffee, direct on-site sales at the farm, or online sales. Therefore, it may be inferred rather strongly that the opinions and information contained herein is indeed representative of the Kona industry and its current stakeholders.

(III) ECONOMIC ANALYSIS

This analysis examines the economic impact of the three scenarios identified as:

1. With **10%** geographic label blends – current status continues ("**Scenario 1**").
2. Blending level raised to **51%** of geographic label by way of a 3-year phase-in period, such as 20% for year 1, 30% for year 2, and 51% for year 3 ("**Scenario 2**").
3. Level raised to **100%** of the geographic label ("**Scenario 3**").

Based on currently available data, this economic analysis seeks to more thoroughly understand the variables affecting the Kona coffee industry as it relates to the proposed Scenarios. In addition to in-depth review of relevant literature, and the qualitative methods described, the following analytic methods were utilized to evaluate the economic impact of the three Scenarios:

- Hedonic Pricing: to gauge the value of the Kona coffee brand.
- Cost of Production: developed from grower cost surveys.
- Willingness-to-Pay: developed from consumer surveys.

In conjunction with qualitative data, the analysis concludes with an Economic Impact Analysis in Section (IV) as well as Findings & Recommendations in Section (V).

HEDONIC PRICING ANALYSIS – THE VALUE OF THE KONA BRAND

Before addressing the labeling issue associated with requiring a minimum of 10% blend, 51% blend, and 100% Kona coffee, the question that must be addressed is to ascertain the value of the Kona coffee "brand". To meet this objective, we develop and estimate a hedonic regression model related to the various coffee brands sold in retail grocery stores in Hawai'i. The hedonic regression approach has been extensively used in economics and, more specifically, it has been implemented in situations relating to labeling claims. In this approach, the dependent variable is the price of the coffee brand, and the explanatory variables are the attributes of the coffee brand believed to influence utility of consumers. Simply put, the price of coffee brands is modeled as a function of its characteristics (Abere 2010).

LITERATURE REVIEW

Hedonic regression dates to Waugh (1928) in analyzing the relationship of prices of asparagus, tomatoes, and hot-house cucumbers and their physical characteristics. The word "hedonic" is connected to feelings of pleasure and many purchases are related to hedonic impulses.

The term "hedonic pricing method" came from Court (1939) who analyzed the relationship between automobile prices and several characteristics of automobiles. Since this time, there have been numerous applications in the economics literature utilizing this methodology to examine food labeling claims.

Combris, Lococq, and Visser (1997) determined that the market price of Bordeaux wine was primarily impacted by the characteristics appearing on the label of the wine bottle. Anstine (2007) found that the "all natural" claim was associated with a 40% (or about 34¢ per ounce) price premium in yogurt. Steiner (2004) used hedonic price analysis to examine the demand for Australian wines in the British wine market. Li and Hooker (2009) investigated the use of safety messages on food and beverage product labels. A "preservative-free" claim on the label, for example, added an average of 5¢ per ounce to yogurt products. Satimanon and Weatherspoon (2010) found that fresh eggs that were labeled as "welfare-managed" had a price premium of 3.57¢ per egg. Finally, Muth *et al*. (2013) estimated the value of food labeling statements about health benefits associated with the consumption of breakfast bars and cereal products. To illustrate, the "no sugar added" label was ascertained to increase product price by 45.7% for granola and yogurt bars, 27.6% for ready-to-eat cereals, and 20.1% for granola or natural cereals.

MODEL DEVELOPMENT

Following past studies previously mentioned, the hedonic pricing model in this analysis mathematically is given as follows:

(1) Price of coffee brand = f (brand, flavor, form, and package size) + random error.

This framework is consistent with the work of Nerlove (1995). The dependent variable relates to prices of various coffee brands. The set of explanatory factors or control variables are brand, flavor, package size, and product form.

The price of coffee is measured in terms of dollars per ounce. In this analysis, the price of coffee is derived as the ratio of the cumulative coffee dollar sales over the 52-week period ending October 14, 2023, to the cumulative number of ounces sold over the same period. To arrive at the cumulative number of ounces sold for each coffee brand, we multiply the package size measured as ounces per unit (bag) by the number of units (bags) sold.

The datasets provided were comprised of 43 brands, including Hawaiian Isles Kona Coffee Company and Royal Kona as the two Kona brands and Don Francisco's, Folgers, Hualalai, Kauai Coffee, Lion, Lion Gold, Maui Coffee Company, Peet's Coffee, Royal Hawaiian, Starbucks, Yuban, and private label, among others as additional brands. We assign dummy variables, qualitative variables whose values are either 0 or 1, associated with the various brands. Each of the respective brands takes on the value of 1 for that brand and 0 otherwise. In particular, the Kona coffee brand equals 1 for the Kona brand (the Hawaiian Isles Kona coffee Company brand and the Royal Kona brand) and 0 otherwise, and the Private Label brand equals 1 for private label and 0 otherwise.

Coffee flavors relate to caramel, cinnamon, coconut, double chocolate, French vanilla, hazelnut, macadamia, mint chocolate, pumpkin, toffee, and vanilla nut, among others. Unflavored coffee is also included in this analysis. Product forms pertain to only ground and whole bean coffees. We do not consider instant coffee or coffee pods in this analysis. We capture the influence of the respective flavors and the respective product forms via the use of dummy variables, like the situation for coffee brands. As mentioned previously, package size refers to the number of ounces per unit (bag). We hypothesize that the Kona brands command price premiums, while the private label brand commands price discounts relative to the remaining brands. Additionally, we expect size and the price of coffee to be inversely related. Finally, we expect whole bean coffee to command a premium relative to ground coffee.

DATA

One of the largest grocery store chains in Hawai‘i serves as the source of the data for this analysis. As such, the focus is on choices made by Hawai‘i shoppers at this grocery store chain. The number of coffee products is 431. These observations constitute a cross-sectional data set. For each of the respective products, the brand, Universal Product Code (UPC), product description, flavor, package size, and product form are given. Unit sales (bags) and dollar sales are reported cumulatively for each coffee product over the 52-week period ending October 14, 2023. By multiplying the size (ounces) of the unit (bag) by the number of unit sales (bags), we derive the number of ounces sold cumulatively for each coffee product. Subsequently, the price of each coffee product is expressed as the ratio of cumulative dollar sales to the cumulative number of ounces sold. As such, price is measured in terms of dollars per ounce.

The average price per ounce was calculated to be slightly more than one dollar, ranging from $0.22 per ounce to $3.60 per ounce for the 431 respective coffee products. The principal brands in this analysis include Starbucks (96 observations), Private Label (72 observations), Peet’s Coffee (37 observations), Don Francisco’s (30 observations), Folgers (26 observations), and Lion (19 observations). These brands comprise 65% of the sample in this analysis. The Kona brands comprise almost 13% of the sample in this analysis (54 observations).

By far, unflavored coffee is the dominant flavor category, corresponding to close to 80% of the sample. That said, popular flavors are vanilla nut, hazelnut, caramel, and coconut. Ground coffee products account for 77% of the sample (330 observations), while whole bean coffee products account for the remaining 23% of the sample (101 observations). Finally, package size, a continuous measure, ranges from 3.17 ounces to 48 ounces per unit (bag). The median package size in this analysis is 12 ounces. The most common package sizes are 7 ounces (34 observations), 8 ounces (25 observations), 10 ounces (65 observations), 10.5 ounces (23 observations), 11 ounces (20 observations), 12 ounces (95 observations), 16 ounces (37 observations), and 18 ounces (27 observations). These package sizes comprise 75% of the sample observations.

The estimated coefficients, standard errors, t-statistics, and accompanying p-values associated with our hedonic price regression are exhibited in Table 4. We adopt a natural logarithmic transformation of the dependent variable to ensure that all predicted values associated with price per ounce are ***guaranteed*** to be positive. The explanatory variables pertaining to brand are labeled as KONA_INDICATOR and PRIVATE_LABEL. The reference category is all other remaining brands. The explanatory variable labeled as UNFLAVORED represents unflavored coffee. The reference category for comparison purposes is flavored coffee. Further, the explanatory variable labeled as GROUND represents ground coffee. The reference category for comparison purposes is whole bean coffee. Finally, the explanatory variable labeled SIZE refers to package size.

We use the econometrics software package EVIEWS 11.0 to obtain the estimated coefficients of the hedonic pricing model using the technique of ordinary least squares (OLS). The goodness-of-fit measure, R^2, is 0.54, meaning that the hedonic model accounts for 54% of the variability in the price per ounce of coffee. With the use of cross-sectional data, this goodness-of-fit is exceptional. At any reasonable level of significance, all estimated coefficients associated with the respective explanatory variables are significantly different from zero.

Table 4. Econometric Analysis Associated with the Hedonic Pricing Model

Dependent Variable: LOG(PRICE_PER_OUNCE)
Method: Least Squares
Sample: 431 observations

Variable	Coefficient	Std. Error	t-statistic	p-value
Constant	0.3661	0.0516	7.10	0.0000
KONA_INDICATOR	0.3757	0.0435	8.67	0.0000
PRIVATE_LABEL	-0.2852	0.0381	-7.49	0.0000
UNFLAVORED	0.0963	0.0348	2.77	0.0059
SIZE	-0.0292	0.0022	-13.24	0.0000
GROUND	-0.1502	0.0330	-4.55	0.0000
R-squared	0.5401			
Adjusted R-squared	0.5347			
SER[10]	0.2837			
F-statistic	99.83			
p-value(F-statistic)	0.0000			

[10] Standard error of the regression

NOTABLE FINDINGS

- The Kona brand commands a premium of 45.59% relative to other coffee brands excluding the private label brand.
- As expected, the private label brand receives a discount of 24.81% relative to other brands, excluding the Kona brand.
- Unflavored coffee commands a premium of 10.11% relative to flavored coffee.
- Ground coffee receives a discount of 13.94% relative to whole bean coffee.
- As expected, package size is inversely related to price.

CONCLUSION

Using a rigorous regression-based hedonic pricing analysis, we established the value of the Kona brand relative to other coffee brands. Accounting for other brands, flavor, package size, and product form, the Kona brand commands a sizable premium of roughly 46% relative to other coffee brands bought in Hawai‘i, excluding the private label brand. The Kona brand commands a premium of nearly 94% relative to the private label brand. Hence, the value of the Kona brand stands heads and shoulders above all other coffee brands in the eyes of Hawai‘i consumers.

GEOGRAPHICAL INDICATIONS & KONA COFFEE

Geographical Indications (GIs) describe the place of origin for particular agricultural products. GIs are typically used as a tool to protect a product’s quality, reputation, and its unique origin in a particular region, giving a product distinctiveness and differentiation from comparable goods in the marketplace. In addition, GIs are marketed directly to consumers, conveying valuable information to end-users regarding quality and uniqueness of products.

The economics underlying the notion and protection of GIs is largely based on the economic theories of information and reputation. Their importance in preventing market distortions, arising when there is asymmetry of information between producers, intermediaries, and consumers as well as averting the consequences of such asymmetry of information on the level of product quality, is well documented (Bramley and Kirsten, 2007; Moschini, Menapace, and Pick, 2008).

BACKGROUND

The issue of a more effective use of GIs is certainly warranted given the potential for consumer confusion and impassioned engagement of agricultural producers, including many of the Hawai‘i and Kona coffee industry participants. The animated responses from all sectors of the industry ---from coffee growers to millers, roasters, and blenders, and for market endpoints like exporters, wholesalers, and retailers --- attests to the fervor involved, fervor which has spilled over to the legislative and regulatory processes as the difficult question of how best to position and protect the highly regarded Kona name and roasted Kona coffee in the Hawai‘i coffee industry.

Classified as Arabica, either washed or unwashed, or Robusta, coffee is primarily sold by commodity grades determined by bean size and damage percentages (commodity, or “C” market). This presents the opportunity to ‘blend’ coffees of differing origins and grades to achieve certain flavor and aroma combinations, which can be sustained over time for consistency and economic efficiency for the firms. Indeed, since the dissolution of the International Coffee Agreement in 1989, coffee commodification has given birth to what is called ‘the coffee paradox’ – unstable prices at the consumer level and decreasing prices at the grower level. **The economic value of coffee today is largely determined NOT by the quality of green coffee beans BUT by the blends, roasts, and services provided at the market level for consumers.** The coffee market is no longer producer-driven but is a consumer-driven, value-added market supply chain (Gereffi et al, 2005; Ponte, 2002).

Given this evolution of the coffee market, there has been and continues to be interest in decommodifying coffee, simultaneously shifting some of the economic rents of coffee from downstream intermediaries (e.g. blenders and roasters) to producers of coffee cherries and green beans. Several approaches currently exist to preserve the unique attributes of products, production processes, and the use of the origin names in the marketplace. One of the key strategies is the implementation of GIs. In the United States, other methods such as trademarks, the formation of producer clubs, marketing orders, and exclusive cooperatives are also in use. The European Union has taken a step further by creating a comprehensive system of appellations to achieve similar goals. At the core of these methods for safeguarding origin-specific characteristics is the concept of GIs.

GENERAL DISCUSSION OF GEOGRAPHICAL INDICATIONS

GIs have become representative in a large measure with the intellectual assets related to a great many goods, and to the extent that the GIs are related to production practices and *terroirs*. As is the case in many agricultural and food products, these GIs are key factors in monetizing particular distinguishing quality characteristics of a range of products, from wines to sausages and cheeses to coffees.

The United States is a World Trade Organization, Trade-Related Aspects of Intellectual Property Rights (WTO TRIPs) signatory nation. WTO members and their nationals are increasingly recognizing the value of GIs as marketing tools to enhance their efforts, to increase their competitive positions, and as a form of Intellectual Property (IP), essentially being analogous to a trademark. The United States has long favored the use of trademarks over GIs to safeguard products associated with particular regions. For many years, the responsibility for granting these collective marks, which offer product protection upon request and subsequent approval, rests with the U.S. Patent and Trademark Office (USPTO).[11]

THE ECONOMICS OF INFORMATION AND REPUTATION

In the case of the Kona coffee industry, the problem of asymmetrical information stems from the fact that growers and/or intermediaries are more knowledgeable about product attributes than consumers. **Though six Hawai'i green coffee beans are regulated through federal certification trademarking of 100% origin-specific green beans, including 100% Kona coffee, consumers do not purchase green beans. The roasted coffee most purchased by consumers is not certified, nor regulated in the same manner as green beans. Roasters are mandated to include a minimum of 10% Kona coffee in their "Kona: blends; however, budgetary limitations hinder thorough inspections of roasted coffee.** Consequently, consumers risk purchasing substandard or inferior coffee products, due to adverse selection.

This information asymmetry negatively impacts the Kona coffee market. Growers, blenders, and roasters who maintain the quality of their coffee products are exposed to unfair competition from those who sell lower-quality products at the same price. To protect themselves against such behavior, consumers express their willingness to pay a premium for quality and reputation. This notion was substantiated by the consumer surveys conducted in which consumers expressed their maximum willingness to pay for 10% Kona blend, 51% Kona blend, and 100% Kona coffee.

GIs also reflect the inherent values and quality synonymous with a specific area, in this context, the Kona region. Therefore, a territory's role extends beyond mere information, becoming a critical differentiator and acquiring the characteristics of a key attribute. This distinctiveness associated with the location becomes embedded in products distinguished by the Kona GI, thereby fostering a *sustainable competitive edge*. Thus, the economic value of GIs is primarily based on the economics of product differentiation and niche marketing (Bramley and Kirsten, 1987; Moschini, Menapace, and Pick, 2008).

[11] Details of these processes are available online at www.uspto.gov/ip-policy/trademark-policy/geographic-indications#

Therefore the informative meaning of the geographic name, Kona, should be emphasized to reduce information asymmetries. In addition, the resources of the Kona region should be used to increase the value of Kona coffee products. The added value derived from these resources leads to differentiation based on product "qualities" and ultimately to the creation of niche or specialty markets.

Structures and Governance

The governance structures, or Codes of Practice, identify the exact geographic boundaries of product origin and the related intellectual property defining both the product process and quality. As a result, GIs can, by virtue of these Codes of Practice (CoP), operate to restrict label claims by producers to only those producers who abide by the agreed-upon CoP guidelines. Most commonly, such GIs may agree to share levies or other supporting resources, often with the agreement of governmental or development agencies and/or research institutions and trade organizations (Galthier et al, 2013).

CoP Specificity in Determining the Effectiveness of GIs in the Marketplace

The effectiveness of GIs is largely dependent upon the nature and specificity of CoPs that underpin the GIs. That is, with the various stakeholders (growers, millers, roasters, blenders) desiring different outcomes that will be most beneficial to them, there are most likely divergent views on just how the CoPs will be structured. Are geographic boundaries limited to create a more homogeneous product, or are they expanded to provide more volume for eventual sale and to extend economic benefits to a broader swath of stakeholders? Do processors/intermediaries (millers, roasters, blenders) desire a broader range of quality so that coffee from different regions can be blended to provide consistent flavor in the end products? Is there a desire for strong communal control to provide uniformity and group power or is there a desire to give individual growers greater autonomy by limiting communal authority over individual growers?

Impetus to Establish a PGI

Protection is gained by governance structures 'guaranteeing' quality and exclusivity for those participating in the market for the product offered by the PGI. In essence, a PGI is a legalized cartel (or rather, a consortium), whereby varying degrees of limited power are exerted over the market, thus supporting quality and pricing that is beneficial to PGI participants. Once a designation is acquired, the challenge is to maintain adherence to the agreed-upon CoP. Should any coffee producers fail to fulfill their commitments, the PGI may never realize its full potential in the economic advancement of coffee growers and the companies who chose to sign on to the PGI initially.

International law recognizes PGI labels (the representation of PGI designation) as valid that are created and administered under international law. In the case of the United States, this is achieved through USPTO or by other means, most prominently the establishment of a Federal Marketing Order (FMO) administered by the United States Department of Agriculture's Agricultural Marketing Service (USDA-AMS). HDOA currently manages six coffee trademarks associated with specific GIs. These trademarks apply to green coffee beans, however, roasted coffee, the product that is purchased at the consumer level, has little protection in Hawai'i and limited protection outside of the state. Exploring a trademark strategy for roasted Kona coffee is an option to support the aspirations of Kona coffee producers in Hawai'i, a topic that is addressed towards the conclusion of this report, along with the potential establishment of FMOs.

EXISTING PGIs IN THE COFFEE INDUSTRY

Seven different coffee GIs have been designated, or are in process of obtaining designation, from the following areas: Blue Mountain Coffee – Jamacia; Café' de Colombia – Colombia; Café' de Costa Rica – Costa Rica; Coffee of Kintamani – Indonesia; Harrar coffee – Ethiopia; Sidamo coffee – Ethiopia; Pico Duarte – Dominican Republic; and Yirgacheffe coffee – Ethiopia.

Blue Mountain Coffee has faced periodic legal disputes over its designation. Harrar and Sidamo coffees from Ethiopia have struggled with their long-standing market presence, without protection, being considered 'generic'. Conversely, Yirgacheffe has been Trademark protected through an agreement with Starbucks. Similarly, Café de Costa Rica has pursued trademark protection for their PGI representation.

COLOMBIAN PGI

Colombian coffee stands as a prominent example of a successful PGI, with comprehensive CoPs that strictly commit producers to its standards. This PGI, synonymous with consistent quality across both single-origin and blends from various sources within Colombia, has translated into secure market positions and favorable profit margins for industry participants. A detailed assessment of this PGI is presented in the piece, "Colombian Coffee: Boosting a Strategy of Differentiation by Origin" (FAO, 2018).

Eighty-five percent of their coffee is exported as green beans, four percent as roasted beans, and eleven percent is consumed in-country. Colombian coffee has built its quality reputation on the Juan Valdez trademark registered brand (1950s) and then the Café' de Colombia trademark registered in the 1980s. Their long-established strategy of product recognition by origin was further advanced to national recognition of Geographical Indication in 2004 and EU recognition in 2007. Results of the Colombian approach include increases in both absolute prices paid and the relative share of prices transmitted to growers, *a short-term decrease in quantity due to quality restrictions implemented by adoption of the CoP by Café' de Colombia*, quality improvement and control, and more equitable negotiations with middlemen. However, the designation has not eliminated the effect of price fluctuations in the world coffee market.

WILLINGNESS-TO-PAY – CONSUMER SURVEYS

Based on the hedonic pricing analysis, we quantified the quality, reputation, and image of the Kona coffee brand relative to other coffees from the viewpoint of consumers. Several key issues warrant attention:

(1) the ***willingness-to-pay*** of consumers for Kona blends and 100% Kona coffee;

(2) the ability of consumers to ***distinguish among*** Kona blends and 100% Kona coffee;

(3) the ***share*** of Kona coffee sales between the 10% Kona coffee blend and 100% Kona coffee; and

(4) the ***own-price-elasticities of demand*** for blended Kona coffee and for 100% Kona coffee.

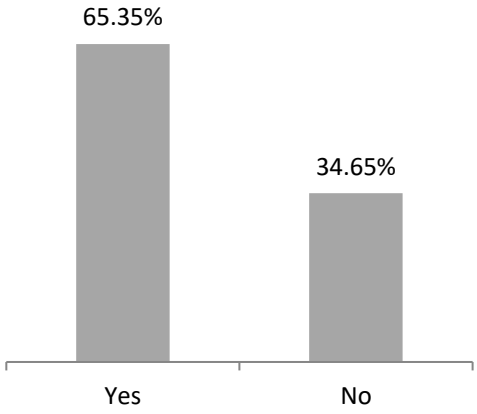
Here we address consumer willingness-to-pay for Kona blends and 100% Kona coffee via the use of online consumer surveys, targeting those residing within the state and those residing within the continental U.S. **It must be noted that reportedly, the majority of Kona coffee consumers are not Hawai'i residents, necessitating participation of consumers from outside of the state who purchase Kona/Ka'ū coffee to form a representative consumer sample.** The first survey targets consumers located in Hawai'i and the second survey targets consumers located in the continental United States. This analysis rests on the use of SurveyMonkey as the online survey software application. The protocol of SurveyMonkey requires all participants to be at least 18 years of age.

In this study, panelists were recruited until at least 900 responses were obtained for the continental U.S. survey, and until 300 responses were obtained for the Hawai'i survey. These numbers were chosen to satisfy statistical criteria, particularly a margin of error of plus or minus 3% and a confidence level of 95%[12] as well as to conform to budgetary restrictions, estimating *a priori* that roughly forty percent of the continental U.S. recruited respondents would be Kona coffee purchasers and roughly two-thirds of Hawai'i resident recruited respondents would be Kona coffee purchasers.

Each of the two surveys begins with whether panelists purchased Kona or Ka'ū coffee in the past year. **Only responses from panelists who purchased Kona or Ka'ū coffee in the past year are included in the analysis, filtering out those who have not purchased. Initially, we present the results from the Hawai'i survey, followed by the continental U.S. survey.**

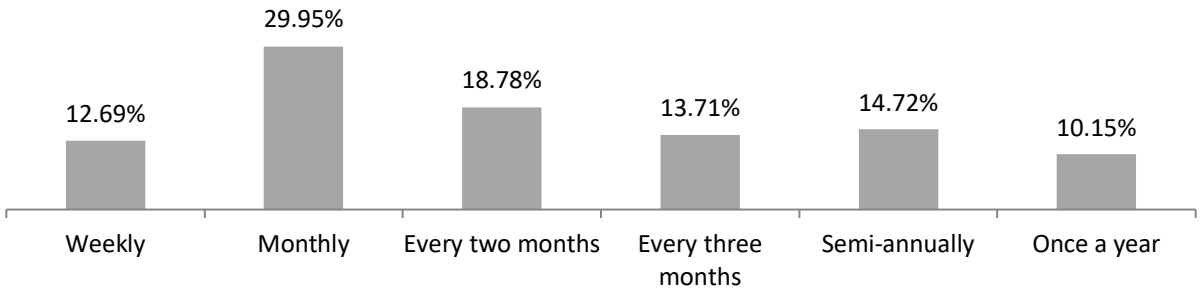
[12] https://www.surveymonkey.com/mp/sample-size-calculator/

QUESTION 1. HAVE YOU PURCHASED KONA OR KAʻŪ COFFEE IN THE PAST YEAR?



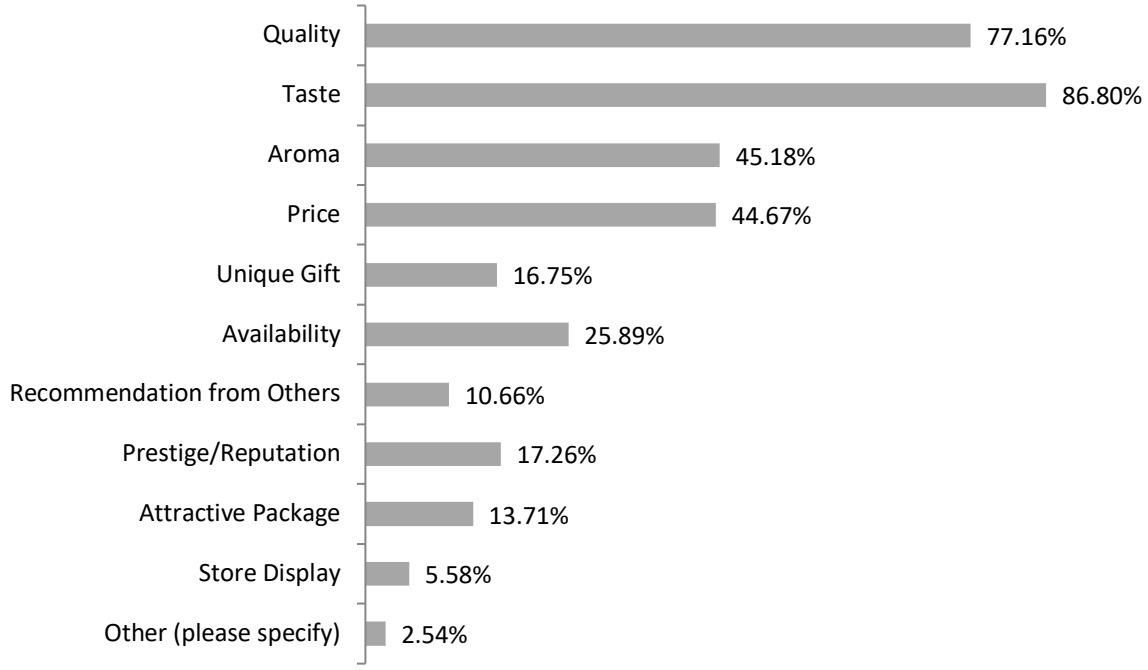
In the Hawaiʻi survey, 303 panelists were recruited. Based on the responses to Question 1, almost two-thirds of the panelists purchased Kona or Kaʻū coffee in the past year. Consequently, the Hawaiʻi analysis rests on 198 panelists. The market penetration for Kona or Kaʻū coffee is slightly more than 65% in Hawaiʻi, much higher than the market penetration in the continental U.S. (50%).

QUESTION 2. HOW OFTEN DO YOU PURCHASE KONA OR KAʻŪ COFFEE FOR HOME OR WORKPLACE BREWING?



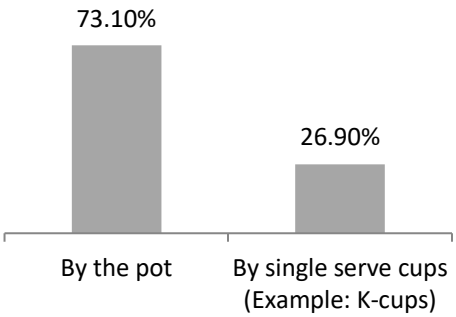
Based on the responses to Question 2, nearly 43% purchased Kona or Kaʻū coffee weekly or monthly for home or workplace brewing. Roughly 33% purchased Kona or Kaʻū coffee every two or three months, 15% made purchases semi-annually, and 10% made purchases once a year. These frequencies are different in comparison to the continental U.S. survey wherein nearly 60% purchased Kona or Kaʻū coffee weekly or monthly for home or workplace brewing. Roughly 20% purchased Kona or Kaʻū coffee every two or three months, 10% made purchases semi-annually, and 10% made purchases once a year.

QUESTION 3. WHICH OF THE FOLLOWING FACTORS WERE IMPORTANT IN YOUR DECISION TO PURCHASE KONA OR KA‘Ū COFFEE?



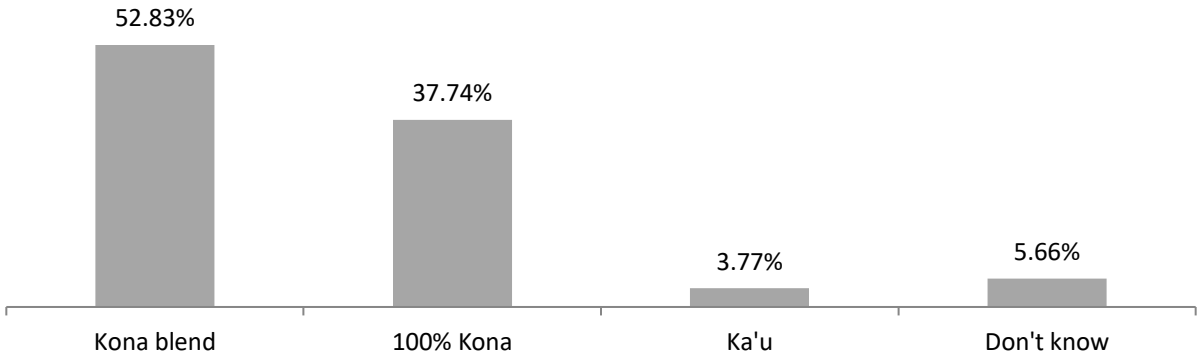
According to the responses exhibited in Question 3, taste (86.80%) and quality (77.16%) were by far the most important factors in the decision to purchase Kona or Ka‘ū coffee. Aroma (45.18%), price (44.67%), and availability (25.89%) were also key factors in the decision to purchase Kona or Ka‘ū coffee, followed by prestige/reputation (17.26%), unique gift (16.75%), attractive package (13.71%), recommendation by others (10.66%), and store display (5.58%). Importantly, product quality, reputation, and image play a vital role in the decision to purchase Kona or Ka‘ū coffee. This set of results is very similar to those from the continental U.S. survey.

QUESTION 4. WHAT IS THE PRIMARY WAY YOU PREPARE KONA OR KA‘Ū COFFEE?



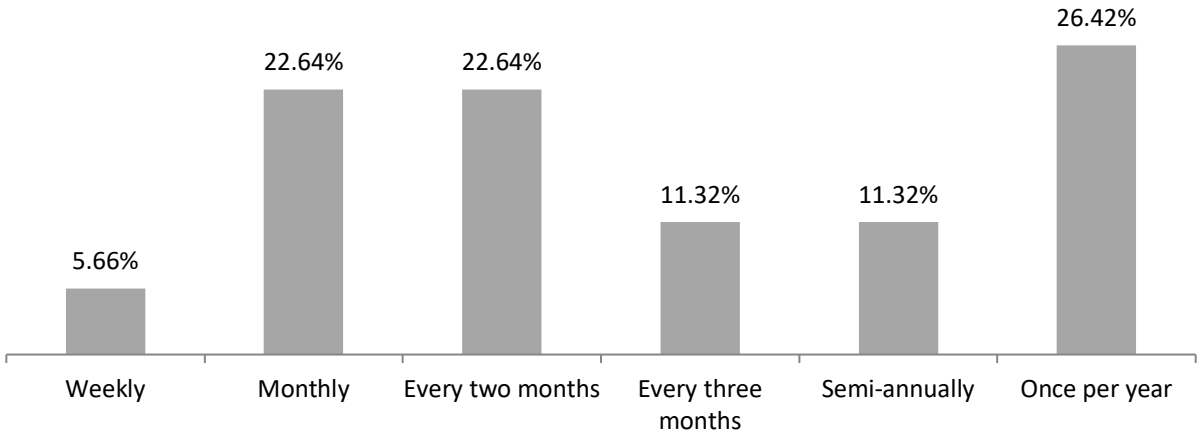
As shown by the responses to Question 4, 73.10% prepared Kona or Ka‘ū coffee primarily by the pot, and 26.90% prepared Kona or Ka‘ū coffee primarily by single serve cups. This result for Hawai‘i panelists is different from the continental U.S. panelists. In the continental U.S., 56.03% prepared Kona or Ka‘ū coffee primarily by the pot, and 43.97% prepared Kona or Ka‘ū coffee primarily by single serve cups.

QUESTION 5. WHICH TYPE OF KONA OR KA‘Ū COFFEE DO YOU PURCHASE, ASSUMING THAT THE PRIMARY METHOD OF PREPARATION IS BY SINGLE SERVE CUPS?



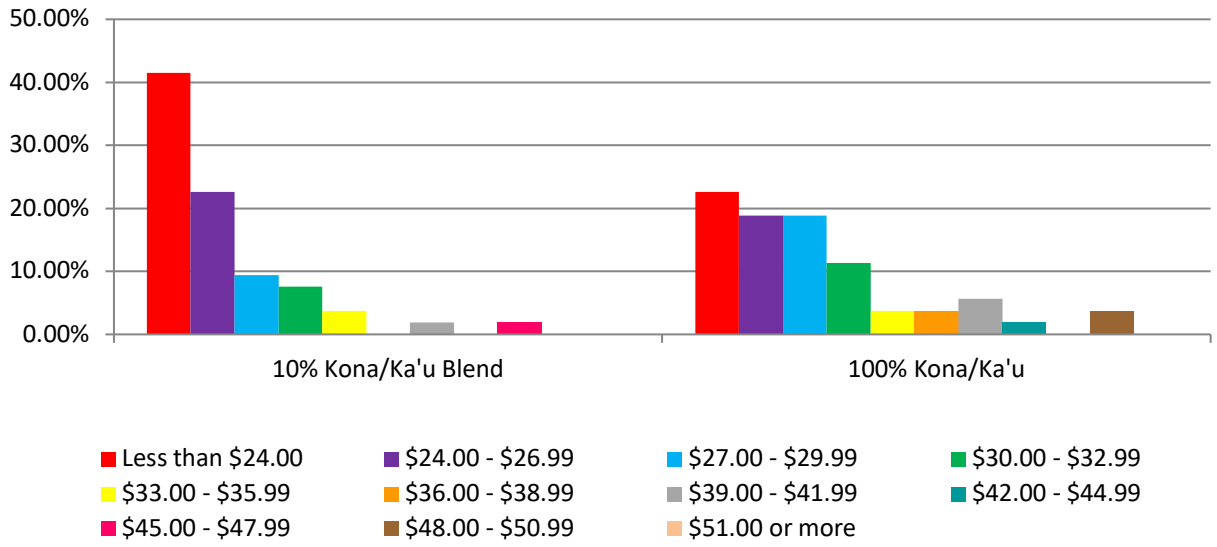
According to the responses shown in Question 5, based on panelists who prepared Kona or Ka‘ū coffee by single serve cups, roughly 53% purchased the 10% Kona blend, slightly less than 38% purchased 100% Kona coffee, and slightly less than 4% purchased coffee. Fewer than 6% of the sample did not know the type of coffee purchased.

QUESTION 6. HOW OFTEN DO YOU PURCHASE ONE 24-COUNT BOX (12 OUNCES) OF KONA OR KA‘Ū COFFEE FOR HOME OR WORKPLACE BREWING?



Based on the responses to Question 6, assuming that the primary method of preparation was by single serve cups, panelists purchased one 24-count box (12 ounces) predominantly monthly (22.64%), bi-monthly (22.64%), and annually (26.42%). These results differ sharply from those from the continental U.S. To illustrate, roughly 28% of respondents from Hawai‘i are frequent purchasers of Kona or Ka‘ū coffee, but approximately 50% of respondents from the continental U.S. are frequent purchasers of Kona or Ka‘ū coffee. Frequent purchasers are defined as those who purchase Kona or Ka‘ū coffee weekly or monthly.

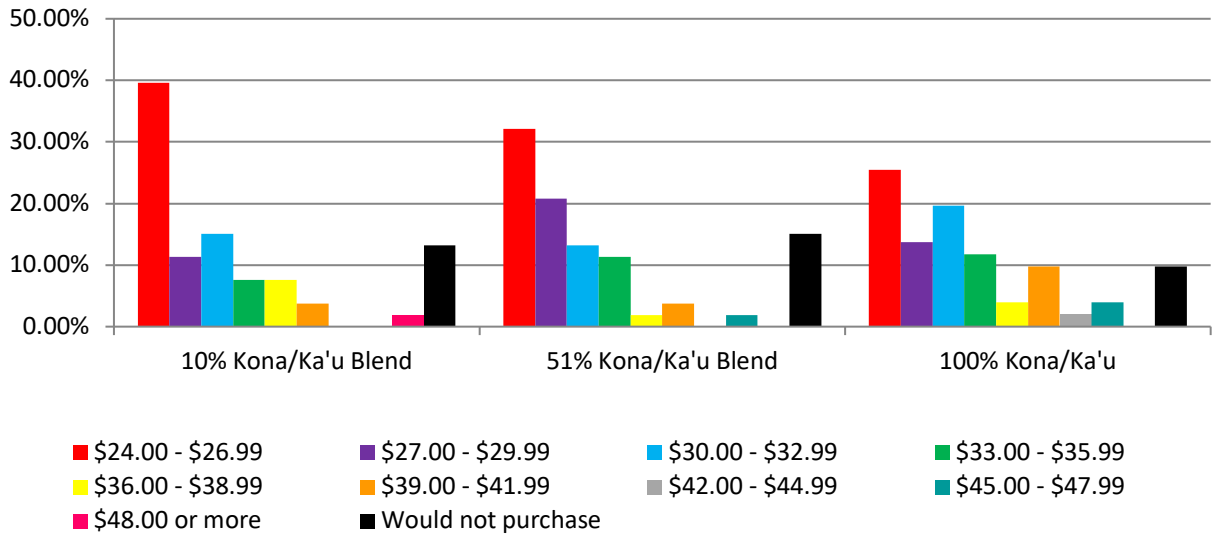
QUESTION 7. WHAT IS THE AVERAGE PRICE YOU CURRENTLY PAY PER 24-COUNT BOX FOR 10% KONA/KA‘Ū BLEND OR 100% KONA/KA‘Ū?



Based on the data presented in Question 7, for panelists who prepared Kona or Ka‘ū coffee by single serve cups, nearly 64% paid no more than $26.99 per 24-count box for the 10% Kona/Ka‘ū blend. About 17% paid between $27.00 and $32.99 per 24-count box for the 10% Kona/Ka‘ū blend. Thus, four out of five panelists paid no more than $32.99 for the 10% Kona/Ka‘ū blend per 24-count box, a similar finding from the continental U.S. survey.

On the other hand, for panelists who prepared Kona or Ka‘ū coffee by single serve cups, about 61% paid no more than $29.99 per 24-count box for 100% Kona/Ka‘ū coffee. Slightly more than 28% paid between $30.00 to $50.99 per 24-count box for 100% Kona/Ka‘ū coffee. Hence, nine out of ten panelists paid no more than $50.99 for 100% Kona/Ka‘ū coffee per 24-count box.

QUESTION 8. WHAT IS THE HIGHEST PRICE PER 24-COUNT BOX THAT YOU WOULD BE WILLING TO PAY FOR 10% KONA/KA‘Ū BLEND, 51% KONA/KA‘Ū BLEND, AND 100% KONA/KA‘Ū COFFEE?



Based on the data presented in Question 8, for panelists who prepared Kona or Ka‘ū coffee by single serve cups, roughly 66% were willing to pay no more than $32.99 per 24-count box for the 10% Kona/Ka‘ū blend. Approximately 19% were willing to pay between $33.00 and $47.99 per 24-count box for the 10% Kona/Ka‘ū blend. Almost 2% were willing to pay $48.00 or more per 24-count box for the 10% Kona/Ka‘ū blend, Interestingly, slightly more than 13% of the panelists would not purchase the 10% Kona/Ka‘ū blend 24-count box.

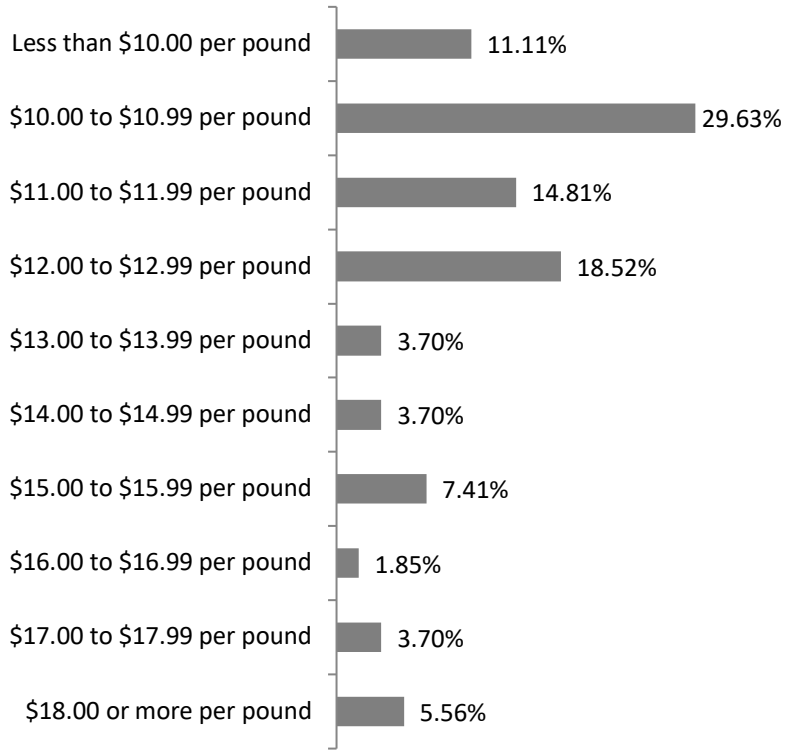
For panelists who prepared Kona or Ka‘ū coffee by single serve cups, slightly more than 32% were willing to pay no more than $26.99 per 24-count box for the 51% Kona/Ka‘ū blend. Roughly 45% were willing to pay between $27.00 and $35.99 per 24-count box, and 8% were willing to pay between $36.00 and $47.99 per 24-count box for the 51% Kona/Ka‘ū blend. Notably, roughly 15% of the panelists would not purchase the 51% Kona/Ka‘ū blend 24-count box.

For panelists who prepared Kona or Ka‘ū coffee by single serve cups, approximately 59% were willing to pay no more than $32.99 per 24-count box for 100% Kona/Ka‘ū coffee. About 26% were willing to pay between $33.00 and $41.99 per 24-count box for 100% Kona/Ka‘ū coffee. About 6% were willing to pay between $42.00 and $47.99 per 24-count box for 100% Kona/Ka‘ū coffee. Of note, about 10% of the panelists would not purchase 100% Kona/Ka‘ū coffee 24-count box.

QUESTION 9. WHICH TYPE OF KONA OR KA‘Ū COFFEE DO YOU PURCHASE, ASSUMING THAT THE PRIMARY METHOD OF PREPARATION IS BY THE POT?

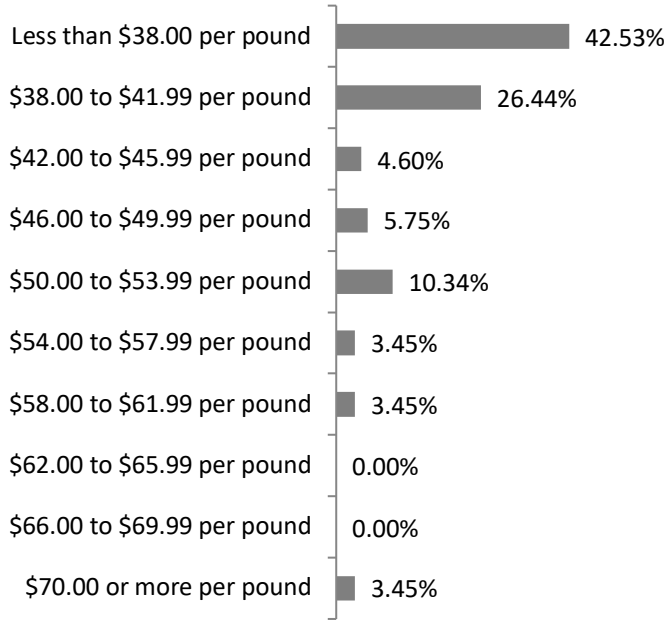
According to the responses shown in Question 9, based on the panelists who prepared Kona or Ka‘ū coffee by the pot, roughly 38% purchased the 10% Kona blend, 54% purchased 100% Kona coffee, and 7% purchased Ka‘ū coffee. Less than 2% of the sample did not know the type of coffee purchased.

QUESTION 10. WHAT IS THE AVERAGE PRICE PAID PER POUND FOR THE KONA OR KA‘Ū COFFEE 10% BLEND YOU PURCHASE, ASSUMING THAT THE PRIMARY METHOD OF PREPARATION IS BY THE POT?



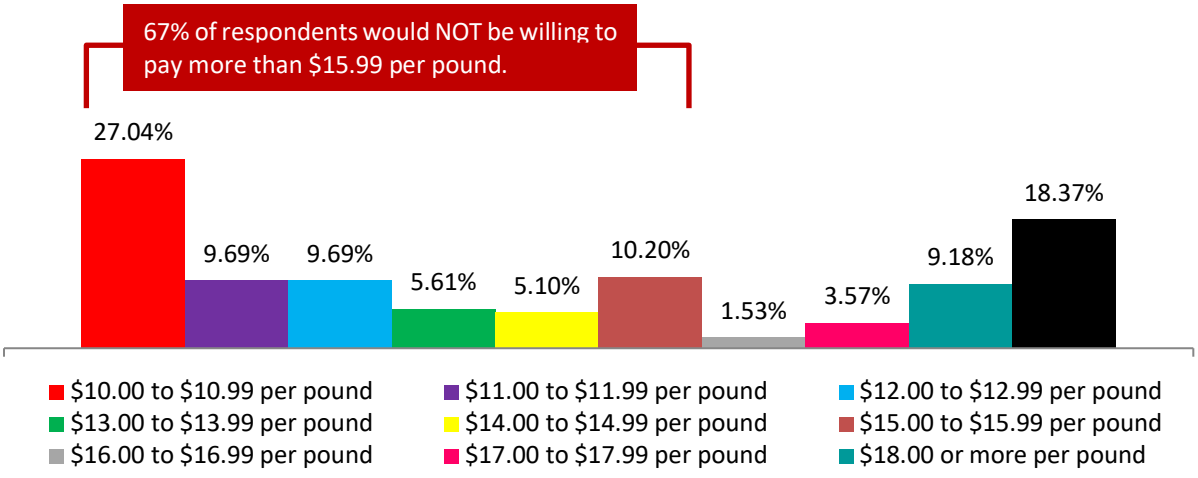
Based on the data presented in Question 10, for panelists who prepared Kona or Ka‘ū coffee by the pot, nearly 75% paid no more than $12.99 per pound for the 10% Kona/Ka‘ū blend. About 16% paid between $13.00 and $16.99 per pound for the 10% Kona/Ka‘ū blend. Thus, roughly 9% paid more than $17.00 per pound for the 10% Kona/Ka‘ū blend.

QUESTION 11. WHAT IS THE AVERAGE PRICE PAID PER POUND FOR 100% KONA OR KA'Ū COFFEE YOU PURCHASE, ASSUMING THAT THE PRIMARY METHOD OF PREPARATION IS BY THE POT?



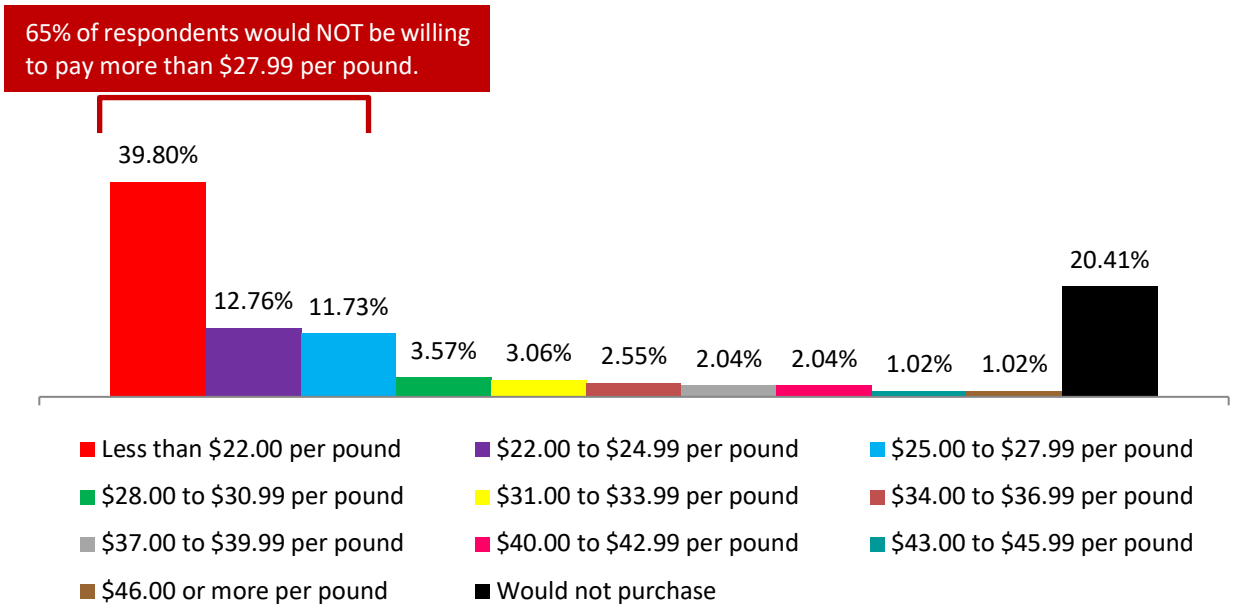
Based on the data presented in Question 11, for panelists who prepared Kona or Ka'ū coffee by the pot, nearly 43% paid no more than $37.99 per pound for 100% Kona/Ka'ū coffee, about 26% paid between $38.00 and $41.99 per pound for 100% Kona/Ka'ū coffee, about 27% paid between $42.00 and $61.99 per pound for 100% Kona/Ka'ū coffee, and roughly 4% paid more than $70.00 per pound for the for 100% Kona/Ka'ū coffee. Seven out of ten panelists paid no more than $41.99 per pound for 100% Kona or Ka'ū coffee.

QUESTION 12. WHAT IS THE HIGHEST PRICE PER POUND YOU WOULD BE WILLING TO PAY FOR A 10% KONA OR KA'Ū COFFEE BLEND, ASSUMING THAT THE PRIMARY METHOD OF PREPARATION IS BY THE POT?



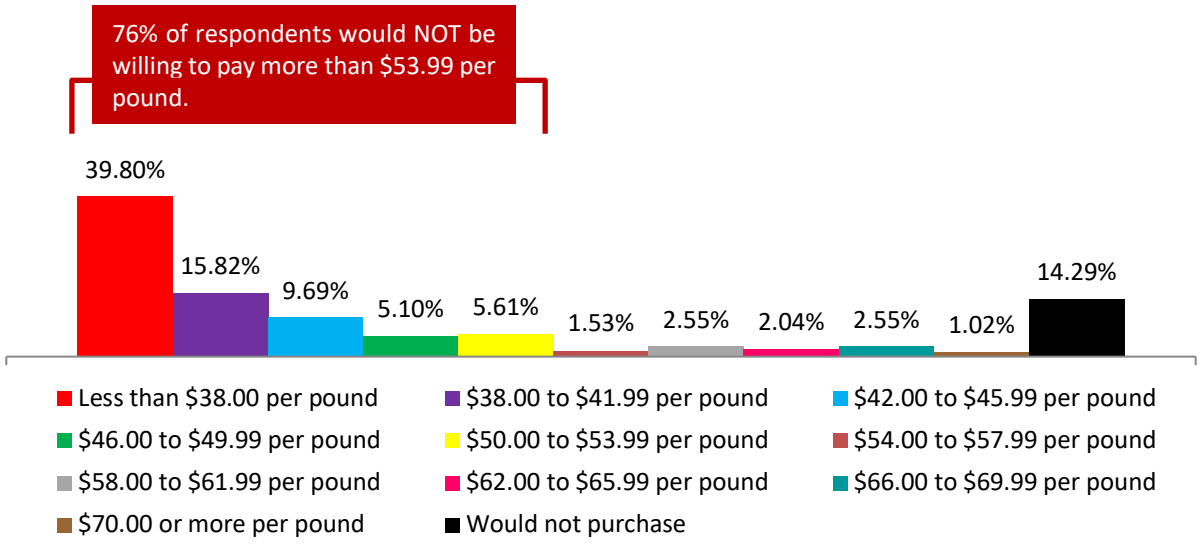
Based on the data associated with Question 12, for panelists who prepared Kona or Ka‘ū coffee by the pot, approximately 46% would not be willing to pay more than $12.99 per pound for the 10% Kona/Ka‘ū blend. About 21% would be willing to pay between $13.00 and $15.99 per pound for the 10% Kona/Ka‘ū blend. About 5% would be willing to pay between $16.00 to $17.99 per pound. Slightly more than 9% would be willing to pay more than $18.00 per pound. Interestingly, slightly more than 18% of the panelists would not purchase the 10% Kona/Ka‘ū blend at all.

QUESTION 13. WHAT THE HIGHEST PRICE PER POUND YOU WOULD BE WILLING TO PAY FOR A 51% KONA OR KA‘Ū COFFEE BLEND, ASSUMING THAT THE PRIMARY METHOD OF PREPARATION IS BY THE POT?



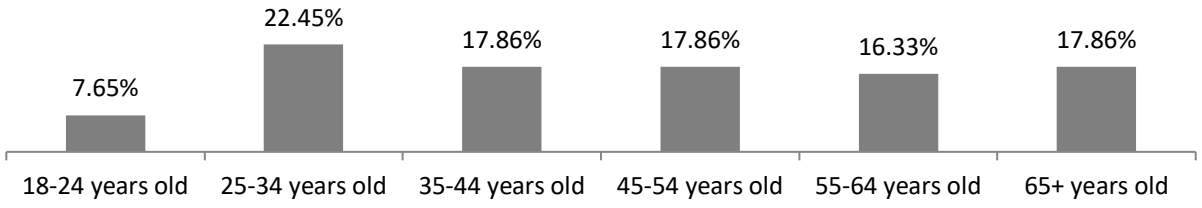
Based on the data associated with Question 13, for panelists who prepared Kona or Ka‘ū coffee by the pot, slightly less than 40% were willing to pay no more than $22.00 per pound for the 51% Kona/Ka‘ū blend. Slightly more than 24% were willing to pay between $22.00 and $27.99 per pound, and 14% were willing to pay between $28.00 and $45.99 per pound for the 51% Kona/Ka‘ū blend. Further, 1% of the panelists were willing to pay $46.00 or more per pound for the 51% Kona/Ka‘ū blend. Notably, slightly more than 20% of the panelists would not purchase the 51% Kona/Ka‘ū blend.

QUESTION 14. WHAT IS THE HIGHEST PRICE PER POUND YOU WOULD BE WILLING TO PAY FOR 100% KONA OR KA‘Ū COFFEE, ASSUMING THAT THE PRIMARY METHOD OF PREPARATION IS BY THE POT?



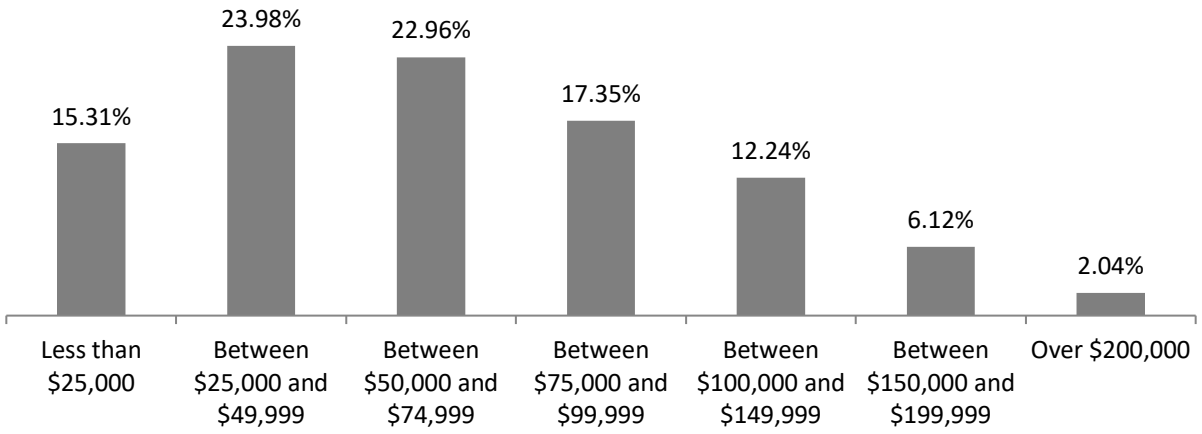
Concerning the data related to Question 14, for panelists who prepared Kona or Ka‘ū coffee by the pot, almost 40% were willing to pay no more than $38.00 per pound for 100% Kona/Ka‘ū coffee, about 36% were willing to pay between $38.00 and $53.99 per pound for 100% Kona/Ka‘ū coffee, and nearly 9% were willing to pay between $54.00 and $69.99 per pound for 100% Kona/Ka‘ū coffee. Further, slightly more than 1% of the panelists were willing to pay $70.00 or more per pound for 100% Kona/Ka‘ū coffee. Of note, about 14% of the panelists would not purchase 100% Kona/Ka‘ū coffee.

QUESTION 15. AGE DISTRIBUTION ASSOCIATED WITH THE PANELISTS/RESPONDENTS



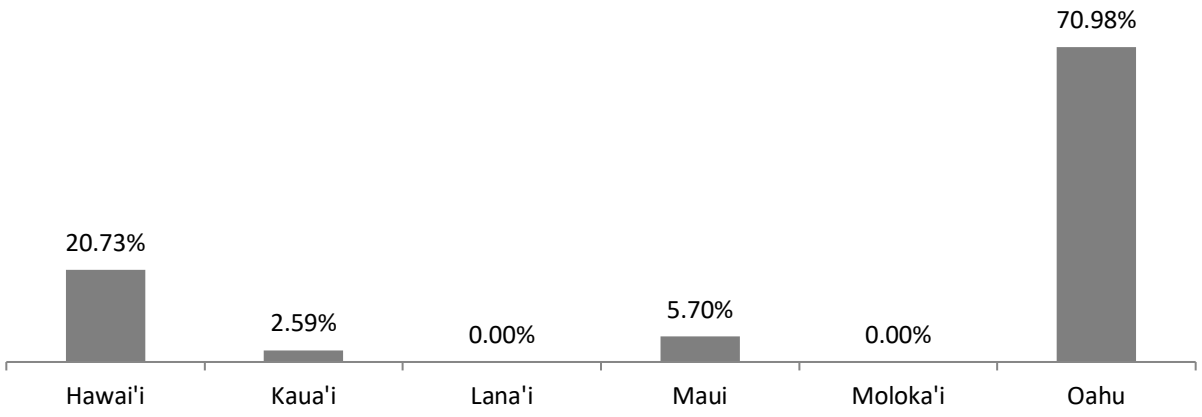
The data concerning the age distribution associated with the panelists is presented in the responses to Question 15. The age distribution is nearly uniform for those 35-44 years old, 45-54 years old, 55-64 years old, and 65+ years old. About 22% of the panelists were between the ages of 25-44, and roughly 8% were between the ages of 18-24.

QUESTION 16. DISTRIBUTION OF ANNUAL HOUSEHOLD INCOME OF THE PANELISTS/RESPONDENTS



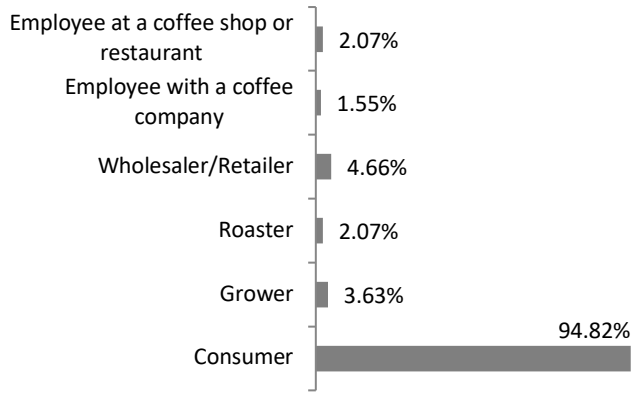
The data pertaining to the distribution of the annual household income associated with the panelists is presented in the responses to Question 16. About 40% of the panelists had annual household income less than $50,000, 40% had annual household income between $50,000 and $100,000, roughly 18% had annual household income between $100,000 and $200,000, and almost 2% had annual household income greater than $200,000. This income distribution differs substantially with that of the continental U.S. sample respondents in that in the Hawai'i sample, 64 percent had incomes between $25,000 and $100,000 versus 47 percent in the continental U.S. sample Similarly, just over 20 percent of the Hawai'i sample respondents had incomes over $100,000 and nearly 45 percent of continental U.S. respondents had incomes over $100,000.

QUESTION 17. DISTRIBUTION OF THE ISLAND OF RESIDENCE OF THE PANELISTS/ RESPONDENTS



Slightly less than 71 panelists were from the island of Oahu, and slightly less than 21% of the panelists were from the island of Hawai'i. The remainder was distributed between the island of Kaua'i (2.6%) and Maui (5.70%).

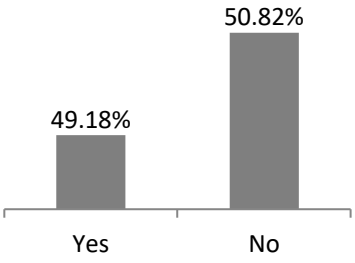
QUESTION 18. INVOLVEMENT WITH THE KONA OR KA‘Ū COFFEE INDUSTRY



Almost 95% of the panelists were consumers, with no involvement in the Kona or Ka‘ū coffee industry. Some panelists were affiliated with the industry, including growers (3.63%), roasters (2.07%), wholesalers/retailers (4.66%), employees with a coffee company (1.55%), and employees at a coffee shop or restaurant (2.07%).

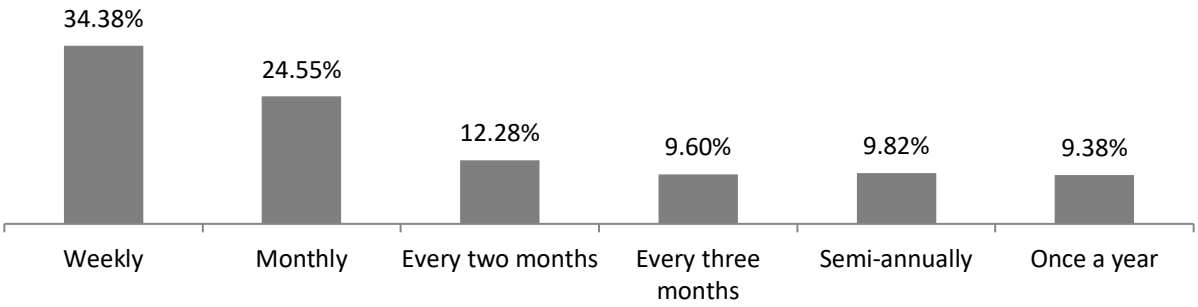
RESULTS FROM THE CONTINENTAL U.S. SURVEY

QUESTION 1. HAVE YOU PURCHASED KONA OR KA‘Ū COFFEE IN THE PAST YEAR?



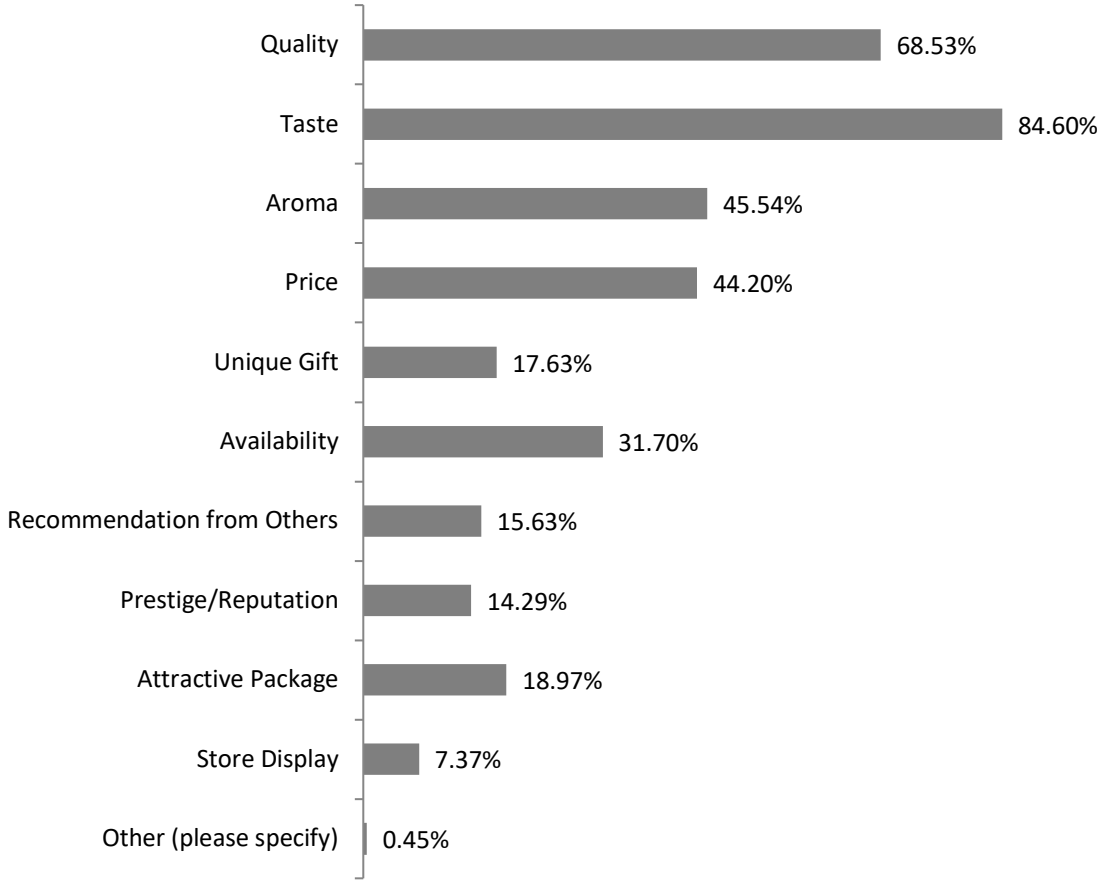
In the continental U.S. survey, 911 panelists were recruited. Based on the responses to Question 1, slightly less than 50% of the panelists purchased Kona or Ka‘ū coffee in the past year. Consequently, the continental U.S. analysis rests on 448 panelists. The market penetration for Kona or Ka‘ū coffee is close to 50% in the continental U.S.

QUESTION 2. HOW OFTEN DO YOU PURCHASE KONA OR KA‘Ū COFFEE FOR HOME OR WORKPLACE BREWING?



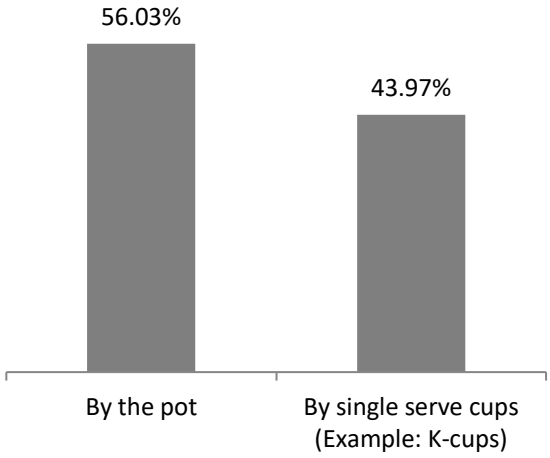
Based on the responses to Question 2, nearly 60% purchased Kona or Ka‘ū coffee weekly or monthly for home or workplace brewing. Roughly 20% purchased Kona or Ka‘ū coffee every two or three months, 10% made purchases semi-annually, and 10% made purchases once a year.

QUESTION 3. WHICH OF THE FOLLOWING FACTORS WERE IMPORTANT IN YOUR DECISION TO PURCHASE KONA OR KA‘Ū COFFEE?



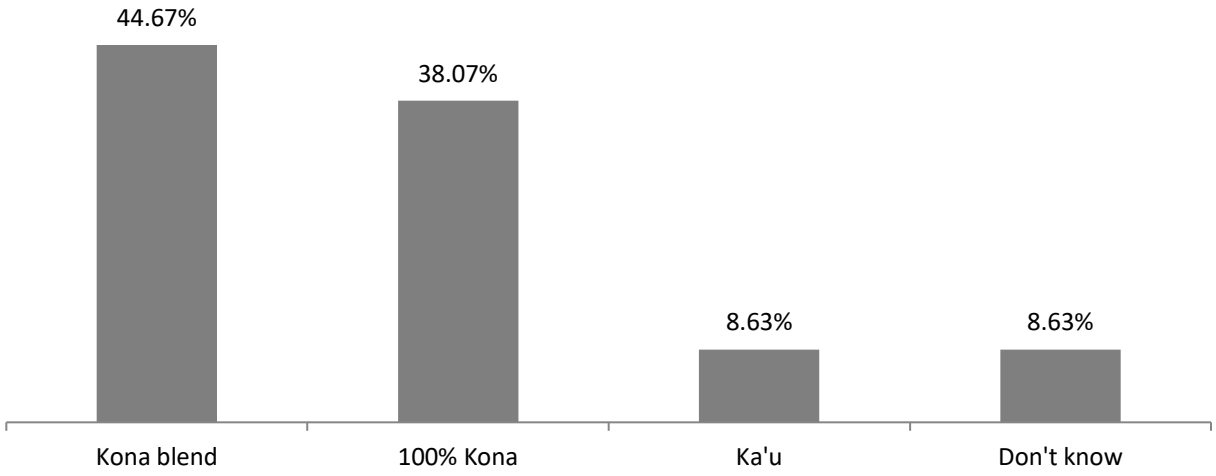
According to the responses exhibited in Question 3, taste (84.60%) and quality (68.53%) were by far the most important factors in the decision to purchase Kona or Ka‘ū coffee. Aroma (45.54%), price (44.20%), and availability (31.70%) were also key factors in the decision to purchase Kona or Ka‘ū coffee, followed by attractive package (18.97%), unique gift (17.63%), recommendation by others (15.63%), prestige/reputation (14.29%), and store display (7.37%). Importantly, product quality, reputation, and image play a vital role in the decision to purchase Kona or Ka‘ū coffee.

QUESTION 4. WHAT IS THE PRIMARY WAY YOU PREPARE KONA OR KA‘Ū COFFEE?



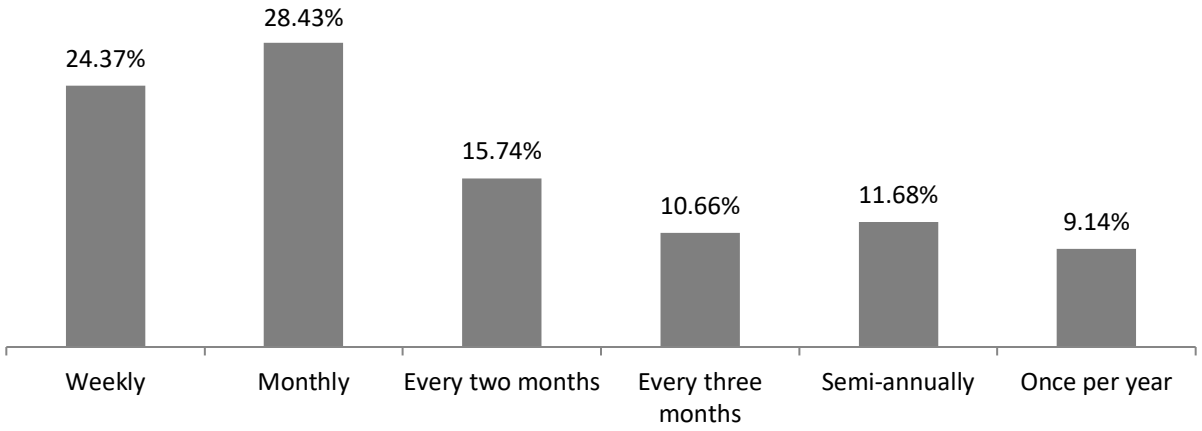
As shown by the responses to Question 4, 56.03% prepared Kona or Ka‘ū coffee primarily by the pot, and 43.97% prepared Kona or Ka‘ū coffee primarily by single serve cups.

QUESTION 5. WHICH TYPE OF KONA OR KA‘Ū COFFEE DO YOU PURCHASE, ASSUMING THAT THE PRIMARY METHOD OF PREPARATION IS BY SINGLE SERVE CUPS?



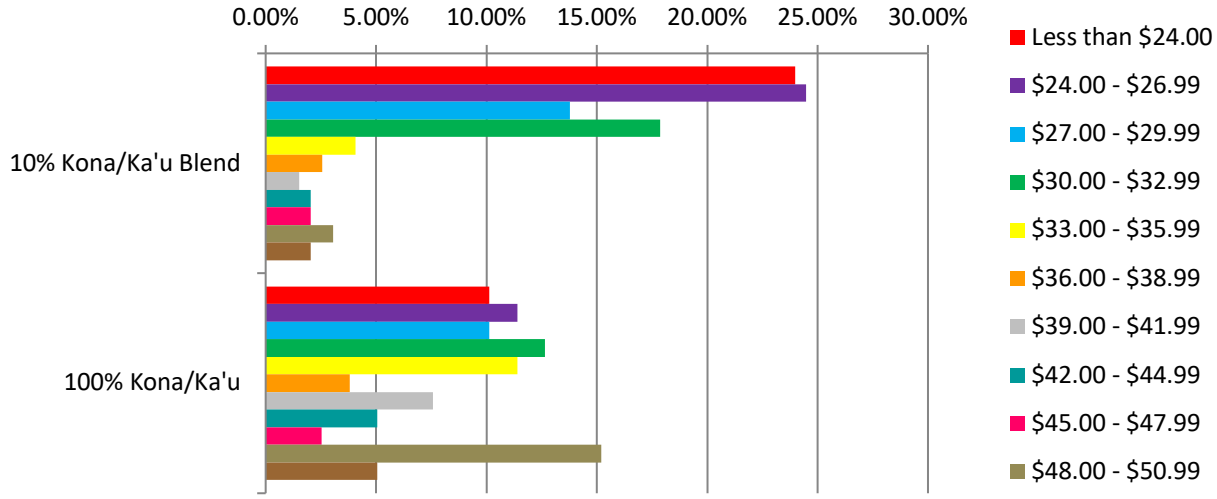
According to the responses shown in Question 5, based on panelists who prepared Kona or Ka‘ū coffee by single serve cups, roughly 45% purchased 10% Kona blend, slightly more than 38% purchased 100% Kona coffee, and slightly less than 9% purchased Ka‘ū coffee. Less than 10% of the sample did not know the type of coffee purchased.

QUESTION 6. HOW OFTEN DO YOU PURCHASE ONE 24-COUNT BOX (12 OUNCES) OF KONA OR KA‘Ū COFFEE FOR HOME OR WORKPLACE BREWING, ASSUMING THAT THE PRIMARY METHOD OF PREPARATION IS BY SINGLE SERVE CUPS?



Based on the responses to Question 6, assuming that the primary method of preparation was by single serve cups, panelists purchased one 24-count box (12 ounces) predominantly on a weekly basis (24.37%) or monthly basis (28.43%). The distribution of responses concerning frequency of purchase in Question 6 mirrors those responses to Question 2 previously discussed. More than 50% of respondents are frequent purchasers of Kona or Ka‘ū coffee. **Frequent purchasers are defined as those who purchase Kona or Ka‘ū coffee weekly or monthly.**

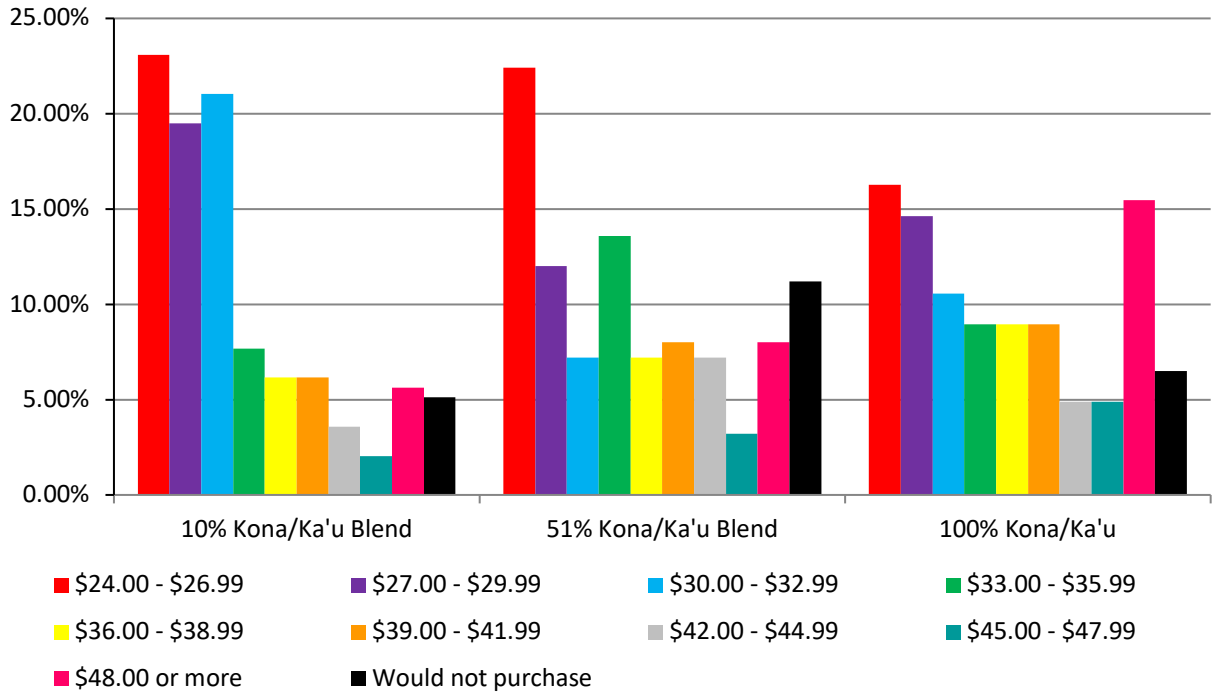
QUESTION 7. WHAT IS THE AVERAGE PRICE YOU CURRENTLY PAY PER 24-COUNT BOX FOR 10% KONA/KA‘Ū BLEND OR 100% KONA/KA‘Ū?



Based on the data presented in Question 7, for panelists who prepared Kona or Ka‘ū coffee by single serve cups, nearly 50% paid no more than $26.99 per 24-count box for the 10% Kona/Ka‘ū blend. Slightly less than 31% paid between $27.00 and $32.99 per 24-count box for the 10% Kona/Ka‘ū blend. Thus, four out of five panelists paid no more than $32.99 for the 10% Kona/Ka‘ū blend per 24-count box.

On the other hand, for panelists who prepared Kona or Ka‘ū coffee by single serve cups, almost 55% paid no more than $35.99 per 24-count box for 100% Kona/Ka‘ū coffee. Slightly more than 15% paid between $48.00 to $50.99 per 24-count box for 100% Kona/Ka‘ū coffee. Hence, eight out of ten panelists paid no more than $47.99 for 100% Kona/Ka‘ū coffee per 24-count box.

QUESTION 8. WHAT IS THE HIGHEST PRICE PER 24-COUNT BOX THAT YOU WOULD BE WILLING TO PAY FOR 10% KONA/KA‘Ū BLEND, 51% KONA/KA‘Ū BLEND, AND 100% KONA/KA‘Ū COFFEE?

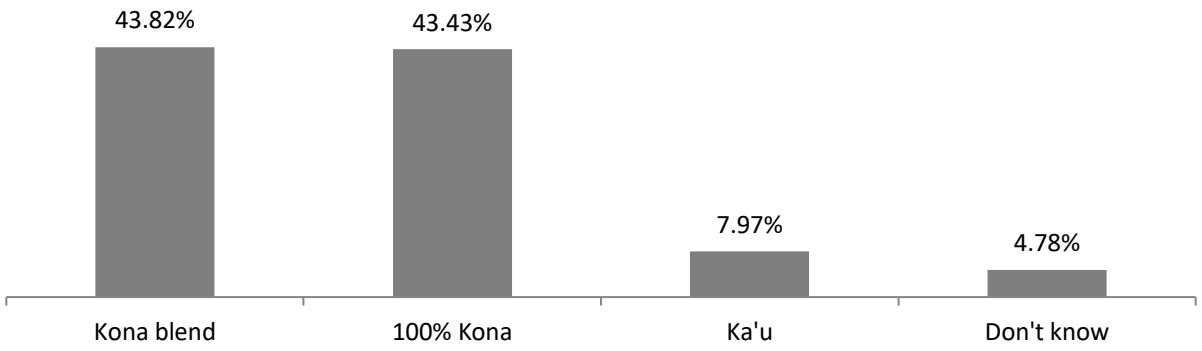


Based on the data presented in Question 8, for panelists who prepared Kona or Ka‘ū coffee by single serve cups, roughly 63% were willing to pay no more than $32.99 per 24-count box for the 10% Kona/Ka‘ū blend. Approximately 25% were willing to pay between $33.00 and $47.99 per 24-count box for the 10% Kona/Ka‘ū blend. Almost 6% were willing to pay $48.00 or more per 24-count box for the 10% Kona/Ka‘ū blend. Interestingly, slightly more than 5% of the panelists would not purchase the 10% Kona/Ka‘ū blend 24-count box at a price of $24.00 or higher.

For panelists who prepared Kona or Ka‘ū coffee by single serve cups, slightly more than 22% were willing to pay no more than $26.99 per 24-count box for the 51% Kona/Ka‘ū blend. Roughly 33% were willing to pay between $27.00 and $35.99 per 24-count box, and 25% were willing to pay between $36.00 and $47.99 per 24-count box for the 51% Kona/Ka‘ū blend. Further, 8% of the panelists were willing to pay $48.00 or more per 24-count box for the 51% Kona/Ka‘ū blend. Notably, slightly more than 11% of the panelists would not purchase the 51% Kona/Ka‘ū blend 24-count box at a price of $24.00 or higher.

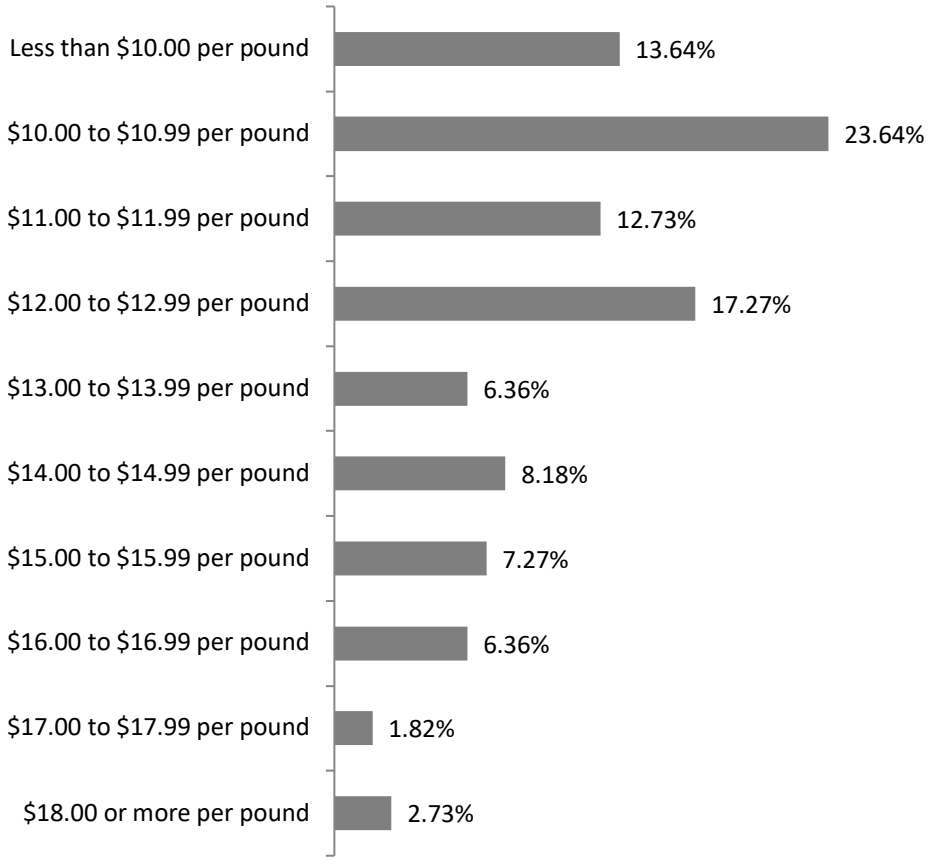
For panelists who prepared Kona or Ka‘ū coffee by single serve cups, approximately 42% were willing to pay no more than $32.99 per 24-count box for 100% Kona/Ka‘ū coffee. About 27% were willing to pay between $33.00 and $41.99 per 24-count box for 100% Kona/Ka‘ū coffee. About 10% were willing to pay between $42.00 and $47.99 per 24-count box for 100% Kona/Ka‘ū coffee. Further, roughly 15% of the panelists were willing to pay $48.00 or more for 100% Kona/Ka‘ū coffee 24-count box. Of note, about 6% of the panelists would not purchase 100% Kona/Ka‘ū coffee 24-count box at a price of $24.00 or higher.

QUESTION 9. WHICH TYPE OF KONA OR KA‘Ū COFFEE DO YOU PURCHASE, ASSUMING THAT THE PRIMARY METHOD OF PREPARATION IS BY THE POT?



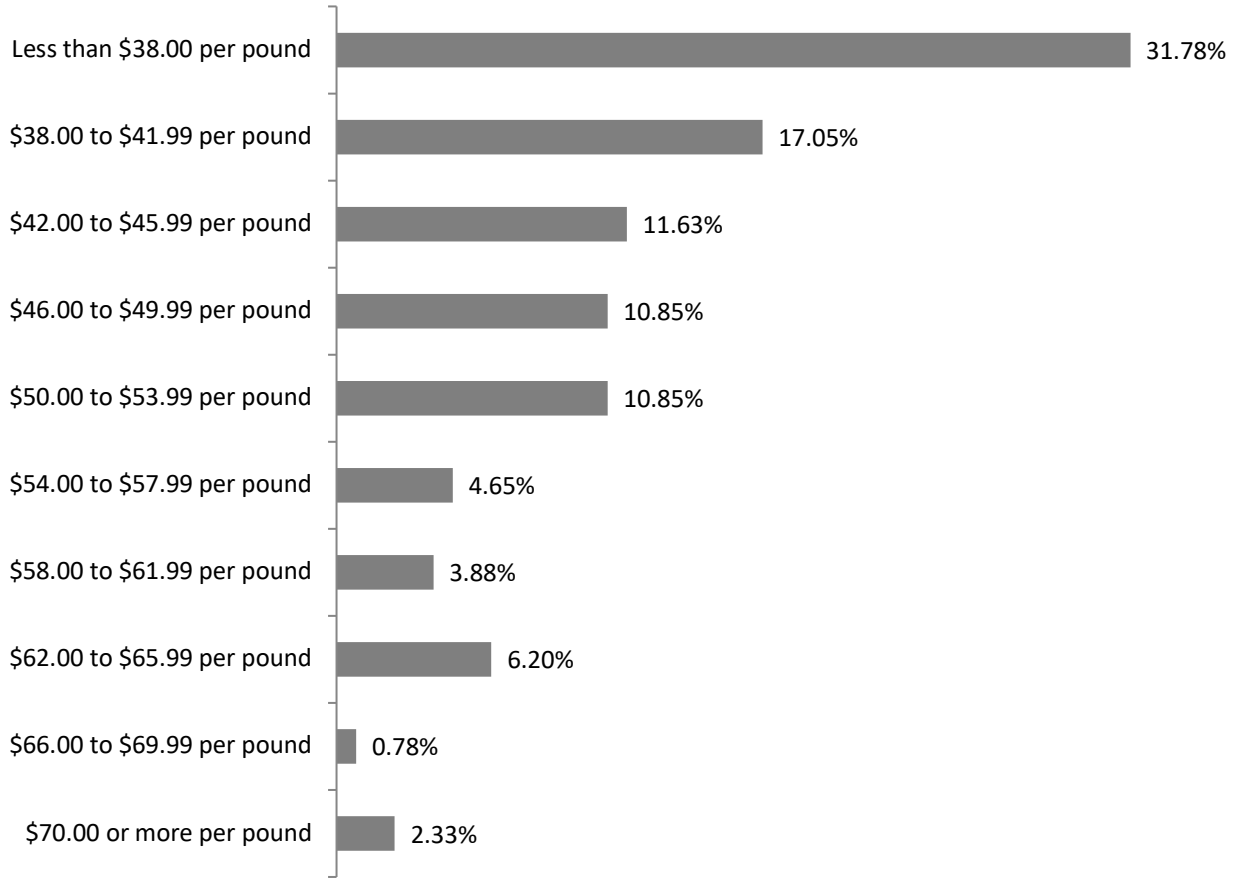
According to the responses shown in Question 9, based on panelists who prepared Kona or Ka‘ū coffee by the pot, roughly 44% purchased the 10% Kona blend, 43% purchased 100% Kona coffee, and 8% purchased Ka‘ū coffee. About 5% of the sample did not know the type of coffee purchased. Importantly, most panelists were aware of the distinct types of coffee purchased. Also, the percentage of panelists who prepared Kona or Ka‘ū coffee by the pot was nearly identical for the 10% Kona blend and 100% Kona coffee.

QUESTION 10. WHAT IS THE AVERAGE PRICE PAID PER POUND FOR THE KONA OR KA‘Ū COFFEE 10% BLEND YOU PURCHASE, ASSUMING THAT THE PRIMARY METHOD OF PREPARATION IS BY THE POT?



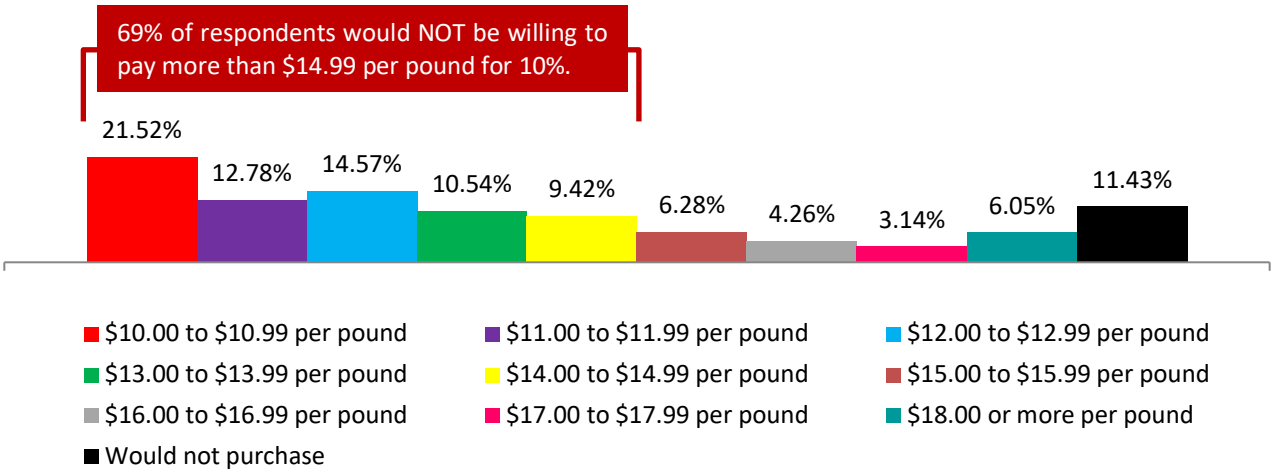
Based on the data presented in Question 10, for panelists who prepared Kona or Ka‘ū coffee by the pot, nearly 68% paid no more than $12.99 per pound for the 10% Kona/Ka‘ū blend. About 28% paid between $13.00 and $16.99 per pound for the 10% Kona/Ka‘ū blend. Roughly 4% paid more than $17.00 per pound for the 10% Kona/Ka‘ū blend.

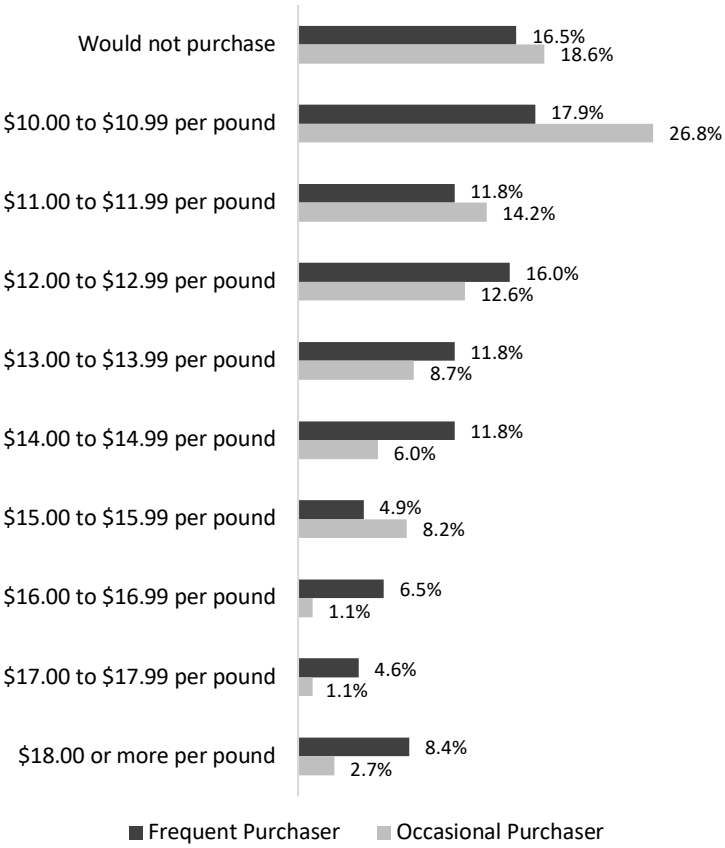
QUESTION 11. WHAT IS THE AVERAGE PRICE PAID PER POUND FOR 100% KONA OR KA‘Ū COFFEE YOU PURCHASE, ASSUMING THAT THE PRIMARY METHOD OF PREPARATION IS BY THE POT?



Based on the data presented in Question 11, for panelists who prepared Kona or Ka‘ū coffee by the pot, nearly 32% paid no more than $37.99 per pound for 100% Kona/Ka‘ū coffee. About 50% paid between $38.00 and $53.99 per pound for 100% Kona/Ka‘ū coffee. About 15% paid between $54.00 and $65.99 per pound for 100% Kona/Ka‘ū coffee. Roughly 3% paid more than $66.00 per pound for the 100% Kona/Ka‘ū coffee. Considerable variation in prices paid was evident concerning the average price paid per pound for 100% Kona or Ka‘ū coffee purchased, assuming that the primary method of preparation is by the pot.

QUESTION 12. WHAT IS THE HIGHEST PRICE PER POUND YOU WOULD BE WILLING TO PAY FOR A 10% KONA OR KA‘Ū COFFEE BLEND, ASSUMING THAT THE PRIMARY METHOD OF PREPARATION IS BY THE POT?





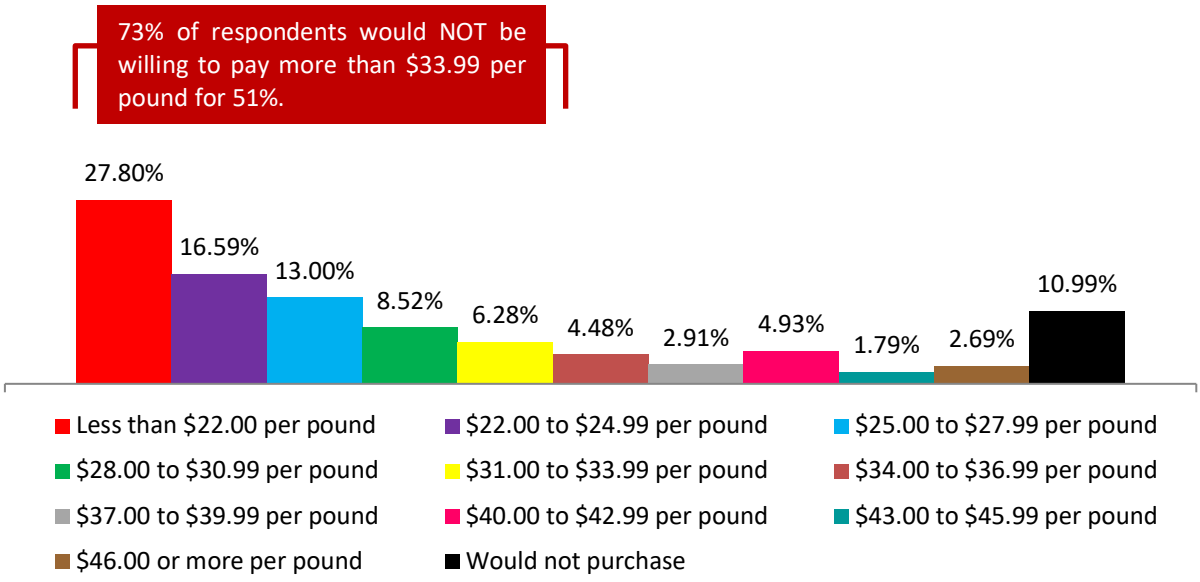
Based on the data associated with Question 12, for panelists who prepared Kona or Ka‘ū coffee by the pot, approximately 69% would not be willing to pay more than $14.99 per pound for the 10% Kona/Ka‘ū blend. About 14% would be willing to pay between $15.00 and $17.99 per pound for the 10% Kona/Ka‘ū blend. Slightly more than 6% would be willing to pay more than $18.00 per pound. Interestingly, slightly more than 11% of the panelists would not purchase the 10% Kona/Ka‘ū blend at all, suggesting that perhaps this 11% were bargain shoppers that bought Kona only when on ‘deal’ and were not regular purchasers.

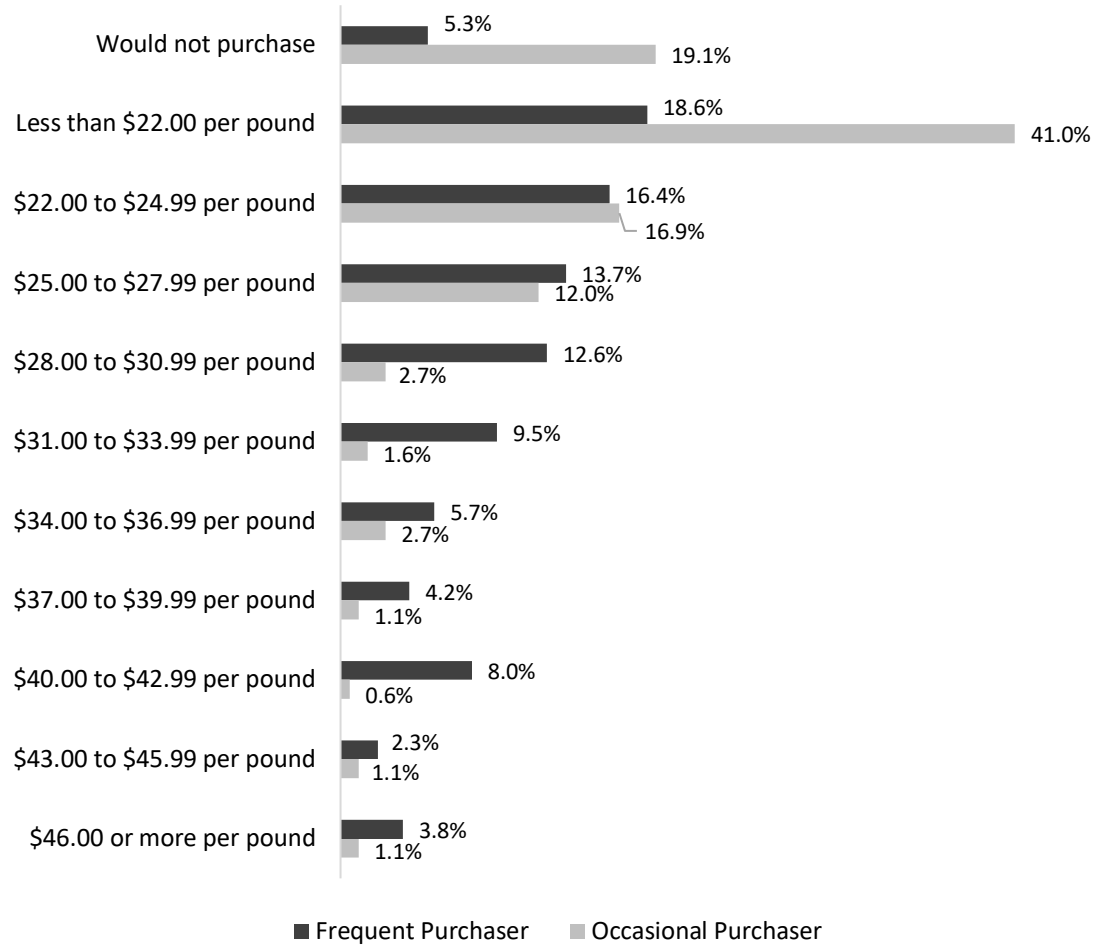
That said, the willingness-to-pay picture changes if we differentiate between frequent purchasers of the 10% Kona/Ka‘ū blend and occasional purchasers of the 10% Kona/Ka‘ū blend. The most notable change is the difference in the percentage of panelists who would not purchase the 10% Kona/Ka‘ū blend at all. Slightly more than 16% of the panelists who were frequent purchasers would not purchase the 10% Kona/Ka‘ū blend. However, about 19% of the panelists who were occasional purchasers would not purchase the 10% Kona/Ka‘ū blend.

In addition, for frequent purchasers, approximately 70% would not be willing to pay more than $14.99 per pound for the 10% Kona/Ka‘ū blend. Approximately 15% would be willing to pay between $15.00 and $17.99 per pound for the 10% Kona/Ka‘ū blend. Slightly more than 8% would be willing to pay more than $18.00 per pound. Visual inspection suggests that $15.00 is the point at which frequent buyers would substantially reduce their purchases.

Further, for occasional purchasers, approximately 69% would be willing to pay no more than $14.99 per pound for the 10% Kona/Ka‘ū blend. About 11% would be willing to pay between $15.00 and $17.99 per pound for the 10% Kona/Ka‘ū blend. Slightly more than 3% would be willing to pay more than $18.00 per pound. Visual inspection suggests that $14.00 is the point at which occasional buyers would substantially reduce their purchases.

QUESTION 13. WHAT THE HIGHEST PRICE PER POUND YOU WOULD BE WILLING TO PAY FOR A 51% KONA OR KA‘Ū COFFEE BLEND, ASSUMING THAT THE PRIMARY METHOD OF PREPARATION IS BY THE POT?





Based on the data associated with Question 13, for panelists who prepared Kona or Ka‘ū coffee by the pot, slightly less than 28% were willing to pay no more than $22.00 per pound for the 51% Kona/Ka‘ū blend.

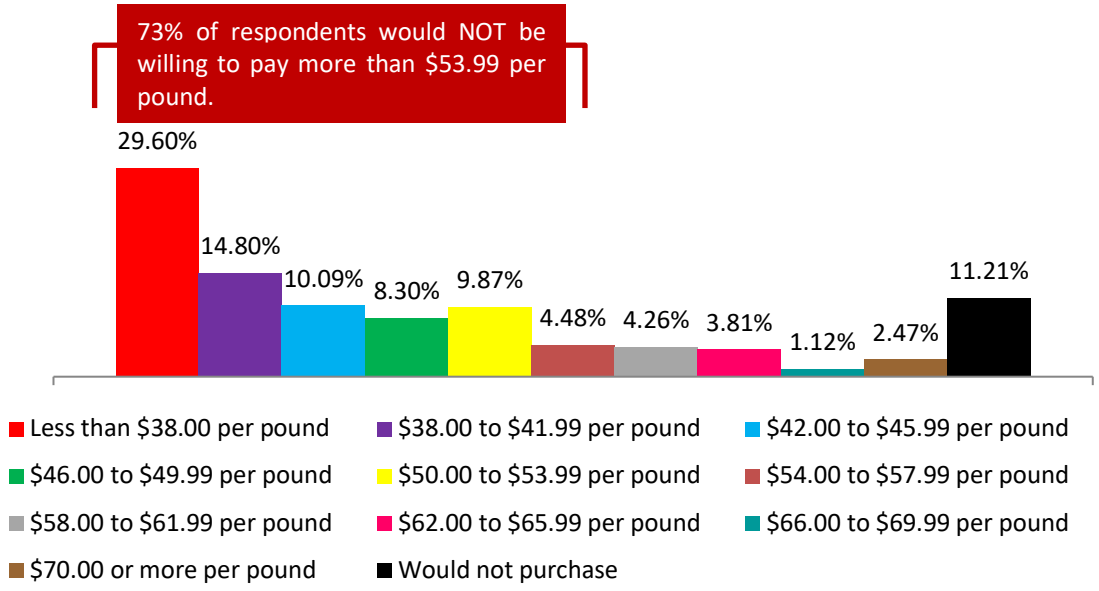
Slightly more than 44% were willing to pay between $22.00 and $33.99 per pound, and 14% were willing to pay between $34.00 and $45.99 per pound for the 51% Kona/Ka‘ū blend. Further, nearly 3% of the panelists were willing to pay $46.00 or more per pound for the 51% Kona/Ka‘ū blend. Notably, slightly more than 11% of the panelists would not purchase the 51% Kona/Ka‘ū blend.

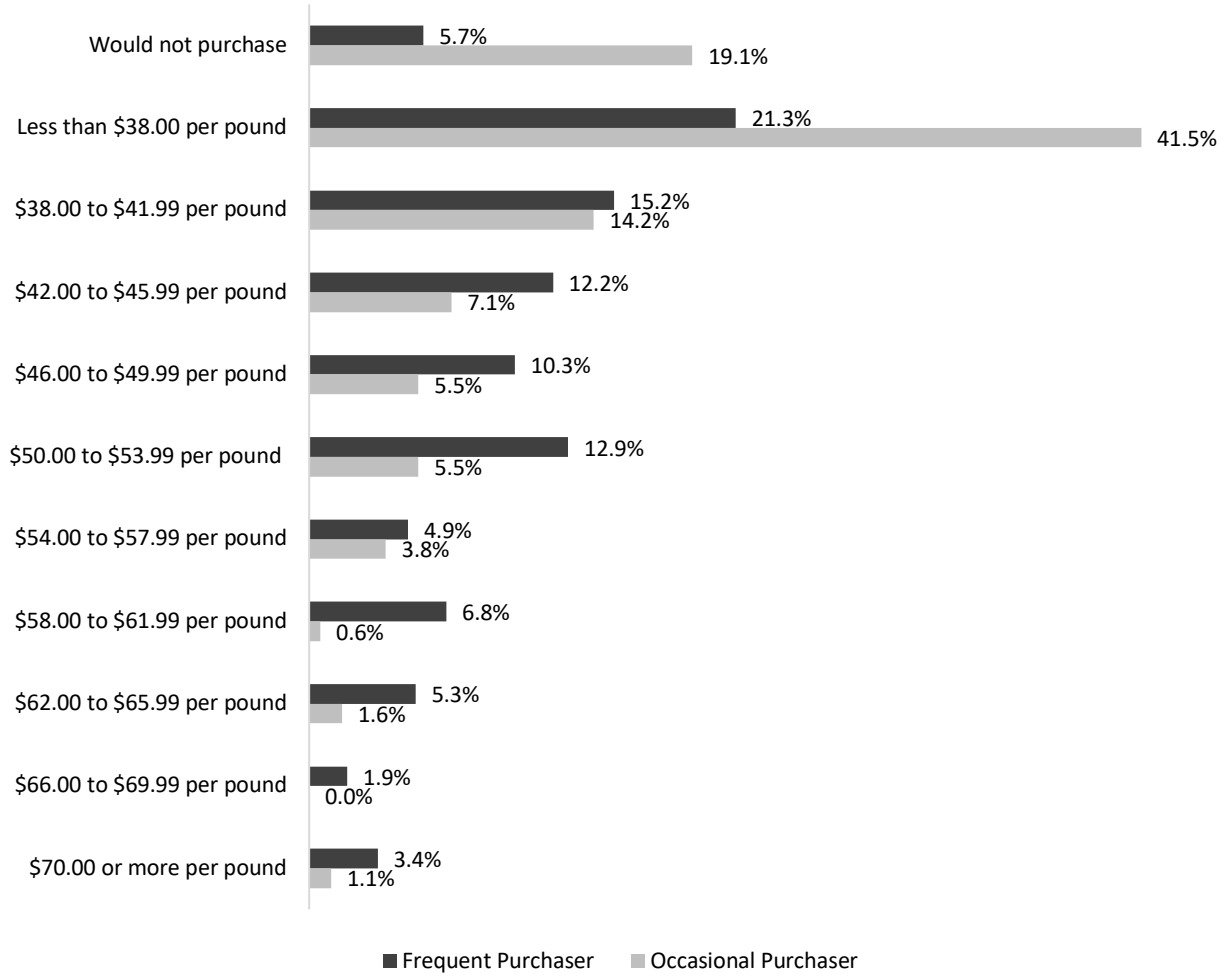
Like the situation for the 10% Kona/Ka‘ū blend, the willingness-to-pay picture changes if we differentiate between frequent purchasers of the 51% Kona/Ka‘ū blend and occasional purchasers of the 51% Kona/Ka‘ū blend. Again, the most notable change is the difference in the percentage of panelists who would not purchase the 51% Kona/Ka‘ū blend at all. Slightly less than 6% of the panelists who were frequent purchasers would not purchase the 51% Kona/Ka‘ū blend. However, about 20% of the panelists who were occasional purchasers would not purchase the 51% Kona/Ka‘ū blend.

In addition, for frequent purchasers, approximately 70% would not be willing to pay more than $33.99 per pound for the 51% Kona/Ka‘ū blend. Slightly more than 18% would be willing to pay less than $22.00 per pound for the 51% Kona/Ka‘ū blend. Approximately 20% would be willing to pay between $34.00 and $45.99 per pound for the 51% Kona/Ka‘ū blend. Slightly less than 4% would be willing to pay more than $46.00 per pound for the 51% Kona/Ka‘ū blend. Visual inspection suggests that $34.00 is the point at which frequent buyers would substantially reduce their purchases.

Further, for occasional purchasers, approximately 67% would not be willing to pay more than $27.99 per pound for the 51% Kona/Ka‘ū blend. Approximately 40% would be willing to pay less than $22.00 per pound for the 51% Kona/Ka‘ū blend. Roughly 11% would be willing to pay between $28.00 and $45.99 per pound for the 51% Kona/Ka‘ū blend. About 1% would be willing to pay more than $46.00 per pound for the 51% Kona/Ka‘ū blend. Visual inspection suggests that $28.00 is the point at which occasional buyers would virtually cease their purchases.

QUESTION 14. WHAT IS THE HIGHEST PRICE PER POUND YOU WOULD BE WILLING TO PAY FOR 100% KONA OR KA‘Ū COFFEE, ASSUMING THAT THE PRIMARY METHOD OF PREPARATION IS BY THE POT?





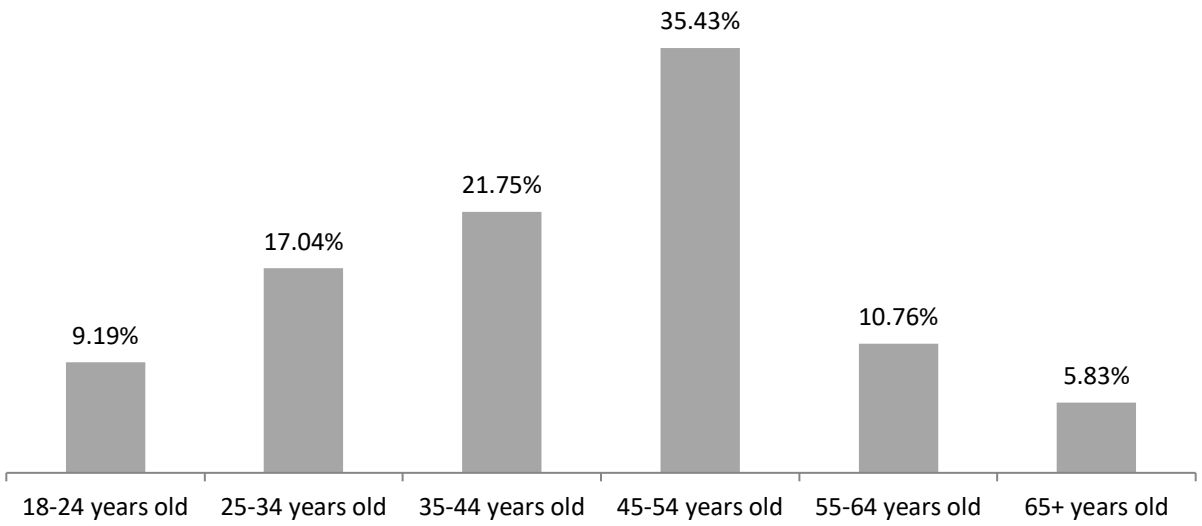
Concerning the data related to Question 14, for panelists who prepared Kona or Ka‘ū coffee by the pot, almost 30% were willing to pay no more than $38.00 per pound for 100% Kona/Ka‘ū coffee. About 43% were willing to pay between $38.00 and $53.99 per pound for 100% Kona/Ka‘ū coffee. Nearly 14% were willing to pay between $54.00 and $69.99 per pound for 100% Kona/Ka‘ū coffee. Further, slightly more than 2% of the panelists were willing to pay $70.00 or more per pound for 100% Kona/Ka‘ū coffee. Of note, about 11% of the panelists would not purchase 100% Kona/Ka‘ū coffee.

Similar to the 10% Kona/Ka‘ū blend and the 51% Kona/Ka‘ū blend analyses, the willingness-to-pay picture changes if we differentiate between frequent purchasers of 100% Kona/Ka‘ū coffee and occasional purchasers of 100% Kona/Ka‘ū coffee. Once more, the most notable change is the difference in the percentage of panelists who would not purchase 100% Kona/Ka‘ū coffee at all. Slightly less than 6% of the panelists who were frequent purchasers would not purchase 100% Kona/Ka‘ū coffee. However, slightly less than 20% of the panelists who were occasional purchasers would not purchase 100% Kona/Ka‘ū coffee.

In addition, for frequent purchasers, approximately 71% would not be willing to pay more than $54.99 per pound for 100% Kona/Ka‘ū coffee. About 21% would be willing to pay less than $38.00 per pound for 100% Kona/Ka‘ū coffee. Approximately 19% would be willing to pay between $54.00 and $69.99 per pound for 100% Kona/Ka‘ū coffee. About 4% would be willing to pay more than $70.00 per pound for 100% Kona/Ka‘ū coffee. Visual inspection suggests that $54.00 is the point at which frequent buyers would substantially reduce their purchases.

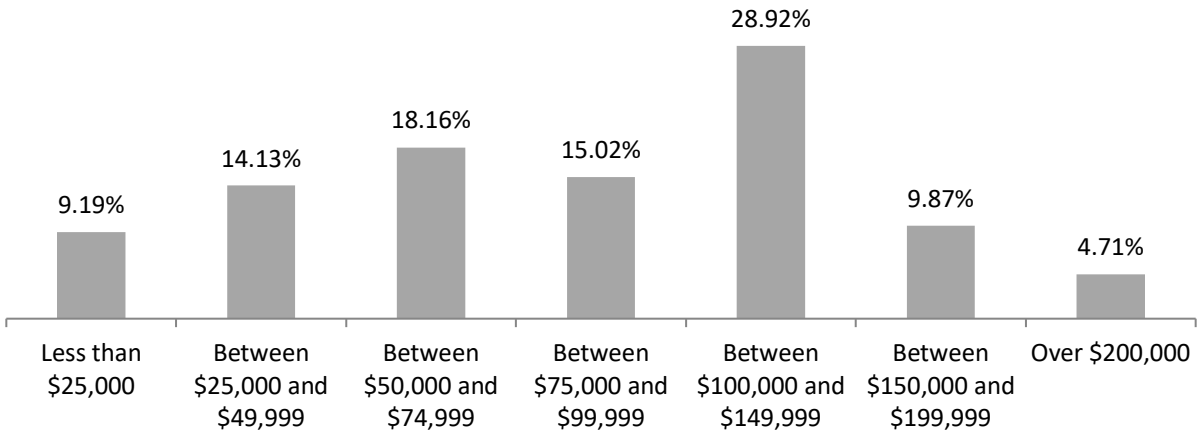
Further, for occasional purchasers, approximately 75% would not be willing to pay more than $57.99 per pound for 100% Kona/Ka‘ū coffee. About 41% would be willing to pay less than $38.00 per pound for 100% Kona/Ka‘ū coffee. At most 3% would be willing to pay between $58.00 and $69.99 per pound for 100% Kona/Ka‘ū coffee. Approximately 1% would be willing to pay more than $70.00 per pound for 100% Kona/Ka‘ū coffee. Visual inspection may suggest that $54.00 is the point at which occasional buyers would substantially reduce their purchases.

QUESTION 15. AGE DISTRIBUTION ASSOCIATED WITH THE PANELISTS/RESPONDENTS



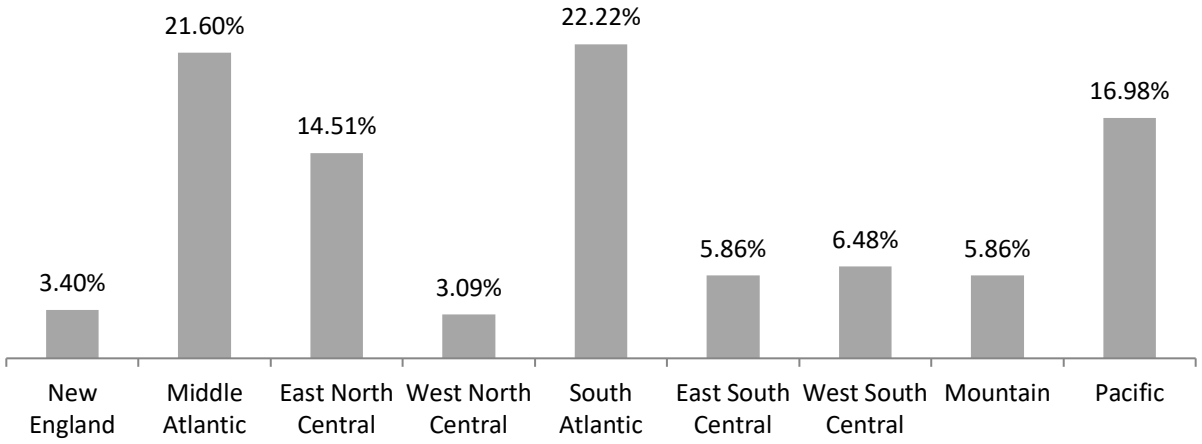
The data concerning the age distribution associated with the panelists is presented in the responses to Question 15. About 57% of the panelists were between the ages of 35-54, slightly more than 26% were between the ages of 18-34, and 17% were 55 years of age and older.

QUESTION 16. DISTRIBUTION OF ANNUAL HOUSEHOLD INCOME OF THE PANELISTS/RESPONDENTS



The data pertaining to the distribution of the annual household income associated with the panelists is presented in the responses to Question 16. About 23% of the panelists had annual household income less than $50,000, 33% had annual household income between $50,000 and $100,000, almost 39% had annual household income between $100,000 and $200,000, and almost 5% had annual household income greater than $200,000.

QUESTION 17. DISTRIBUTION OF REGION OF RESIDENCE ASSOCIATED WITH THE PANELISTS/RESPONDENTS



See Section (VI) – States in the Region for the list of states that comprise the regions indicated.

The data pertaining to the distribution of the region of residence associated with the panelists is presented in the responses to Question 17. About 75% of the panelists resided in the Mid-Atlantic, East North Central, South Atlantic, and Pacific regions of the United States. The remaining 25% of the panelists resided in New England, the West North-Central region, the East South-Central region, the West South-Central region, and the Mountain region.

MAJOR TAKEAWAYS FROM THE CONSUMER SURVEYS

- The demographic information concerning age, household income, and region serves to support the contention that this sample of panelists is representative of the population of the contiguous United States as well as the population of Hawai‘i.
- **The market penetration for Kona or Ka‘ū coffee is close to 50% in the continental U.S. The market penetration for Kona or Ka‘ū coffee is slightly more than 65% in Hawai‘i.**
- Nearly 60% of panelists purchased Kona or Ka‘ū coffee weekly or monthly for home or workplace brewing in the continental U.S., while 43% purchased Kona or Ka‘ū coffee weekly or monthly for home or workplace brewing in Hawai‘i.
- **Taste and quality were by far the most important factors in the decision to purchase Kona or Ka‘ū coffee.** Aroma, price, and availability were also key factors in the decision to purchase Kona or Ka‘ū coffee, along with attractive packages, unique gift, recommendation by others, and prestige/reputation. Importantly, product quality, reputation, and image play a vital role in the decision to purchase Kona or Ka‘ū coffee.
- In the continental U.S., for panelists who prepared Kona or Ka‘ū coffee by the pot, roughly 44% purchased the 10% Kona blend, 43% purchased 100% Kona coffee, and 8% purchased coffee. Among panelists who prepared Kona or Ka‘ū coffee by single serve cups, roughly 45% purchased the 10% Kona blend, slightly more than 38% purchased 100% Kona coffee, and slightly less than 9% purchased coffee.
- In Hawai‘i, for panelists who prepared Kona or Ka‘ū coffee by the pot, roughly 38% purchased the 10% Kona blend, 54% purchased 100% Kona coffee, and 7% purchased Ka‘ū coffee. For panelists who prepared Kona or Ka‘ū coffee by single serve cups, roughly 53% purchased the 10% Kona blend, slightly less than 38% purchased 100% Kona coffee, and slightly less than 4% purchased Ka‘ū coffee. Similar to the panelists from the continental U.S., most panelists were aware of the distinct types of coffee purchased.
- **Approximately 28% of Hawai‘i respondents and 50% of respondents from the continental U.S. are frequent purchasers of Kona or Ka‘ū coffee, defined as those who purchase Kona or Ka‘ū coffee weekly or monthly.**
- In the continental U.S. and in Hawai‘i, assuming that the primary method of preparation was by single serve cups, per 24-count box, four out of five panelists paid no more than $32.99 for 10% Kona/Ka‘ū blend. In the continental U.S., seven out of ten panelists paid no more than $50.99 for 100% Kona/Ka‘ū coffee. However, in Hawai‘i, nine out of ten panelists paid no more than $50.99 for 100% Kona/Ka‘ū coffee per 24-count box.
- In the continental U.S. and in Hawai‘i, for panelists who prepared Kona or Ka‘ū coffee by single serve cups, roughly 63% (continental U.S.) and 66% (Hawai‘i) were willing to pay no more than $32.99 per 24-count box for the 10% Kona/Ka‘ū blend. Slightly more than 5%

of the panelists (continental U.S.) and 13% (Hawai‘i) would not purchase the 10% Kona/Ka‘ū blend 24-count box.

- Roughly 80% (continental U.S.) and 85% (Hawai‘i) were willing to pay no more than $47.99 per 24-count box for the 51% Kona/Ka‘ū blend. Notably, slightly more than 11% of the panelists (continental U.S.) and 15% of the panelists (Hawai‘i) would not purchase the 51% Kona/Ka‘ū blend 24-count box.
- Approximately 77% (continental U.S.) were willing to pay no more than $50.99 per 24-count box for 100% Kona/Ka‘ū coffee. In Hawai‘i, 91% were willing to pay no more than $47.99 per 24-count box for the 100% Kona/Ka‘ū blend. Slightly less than 7% of the panelists (continental U.S.) and 10% of the panelists (Hawai‘i) would not purchase 100% Kona/Ka‘ū coffee 24-count box.
- For panelists who prepared Kona or Ka‘ū coffee by the pot, about 68% (continental U.S.) and 75% (Hawai‘i) paid no more than $12.99 per pound for the 10% Kona/Ka‘ū blend.
- In the continental U.S., for panelists who prepared Kona or Ka‘ū coffee by the pot, about 82% paid no more than $53.99 per pound for 100% Kona/Ka‘ū coffee. In Hawai‘i, 69% paid no more than $41.99 per pound for 100% Kona/Ka‘ū coffee. About 27% paid between $42.00 and $61.99 per pound for 100% Kona/Ka‘ū coffee.
- In the continental U.S., for panelists who prepared Kona or Ka‘ū coffee by the pot, approximately 69% would not be willing to pay more than $14.99 per pound for the 10% Kona/Ka‘ū blend. Slightly more than 6% of the panelists who were frequent purchasers would not purchase the 10% Kona/Ka‘ū blend. However, about 19% of the panelists who were occasional purchasers would not purchase the 10% Kona/Ka‘ū blend. In Hawai‘i, for panelists who prepared Kona or Ka‘ū coffee by the pot, approximately 67% would not be willing to pay more than $15.99 per pound for the 10% Kona/Ka‘ū blend. Slightly more than 18% of the panelists would not purchase the 10% Kona/Ka‘ū blend at all.
- In the continental U.S., for panelists who prepared Kona or Ka‘ū coffee by the pot roughly 72% were willing to pay no more than $33.99 per pound for the 51% Kona/Ka‘ū blend. Slightly less than 6% of the panelists who were frequent purchasers would not purchase the 51% Kona/Ka‘ū blend. But about 20% of the panelists who were occasional purchasers would not purchase the 51% Kona/Ka‘ū blend. In Hawai‘i, for panelists who prepared Kona or Ka‘ū coffee by the pot, about 64% were willing to pay no more than $27.99 per pound for the 51% Kona/Ka‘ū blend. Notably, slightly more than 20% of the panelists would not purchase the 51% Kona/Ka‘ū blend.
- For panelists who prepared Kona or Ka‘ū coffee by the pot, about 73% (continental U.S.) and 76% (Hawai‘i) were willing to pay no more than $53.99 per pound for 100% Kona/Ka‘ū coffee. Slightly less than 6% of the panelists who were frequent purchasers would not purchase 100% Kona/Ka‘ū coffee. However, slightly less than 20% of the panelists who

were occasional purchasers would not purchase 100% Kona/Ka‘ū coffee. Of note, about 14% of the panelists would not purchase 100% Kona/Ka‘ū coffee.

- **In the continental U.S., for seven out of ten panelists who purchased Kona or Ka‘ū coffee by the pot, the maximum willingness-to-pay rose from $14.99 per pound for the 10% Kona/Ka‘ū blend to $33.99 per pound for the 51% Kona/Ka‘ū blend, and to $53.99 per pound for 100% Kona/Ka‘ū coffee.**
- **Similarly, in Hawai‘i, for two out of three panelists who purchased Kona or Ka‘ū coffee by the pot, the maximum willingness-to-pay was $15.99 per pound for the 10% Kona/Ka‘ū blend. Three out of five panelists were willing to pay no more than $27.99 per pound for the 51% Kona/Ka‘ū blend. Three out of four panelists were willing to pay no more than $53.99 per pound for 100% Kona/Ka‘ū coffee.**
- Most panelists from the continental U.S. and from Hawai‘i have definitive upper limits about willingness to pay per pound for the 10% blend, 51% blend, and 100% Kona/Ka‘ū coffee. As expected, **consumer upper limits are positively linked to the percentage of Kona/Ka‘ū coffee content.** The maximum willingness to pay for the 10% blend, 51% blend, and 100% Kona/Ka‘ū coffee was different for panelists from the continental U.S. and for panelists from Hawai‘i.
- One of the prevailing opinions surrounding the Kona labeling discussion has been that tourists desire a unique Hawai‘i gift. Based on the consumer surveys conducted in the continental U.S. and in Hawai‘i, this prevailing opinion has been debunked. **Only about 17% of panelists in both surveys stated that Kona coffee as a unique gift was important in their decision to purchase the product.** Another prevailing opinion is that consumers are unclear on what percentage Kona they purchase. Fewer than 10% of panelists did not know the type of coffee purchased. This revelation could be attributed to panelists who are aware of the distinct types of coffee purchased. However, it could also be attributed to panelists who *think* they know what kind of coffee they purchase, and thus report their perception. **This is a hotly contested issue that requires further examination.**

COSTS OF PRODUCTION – GROWER SURVEY

A comprehensive cost of production data collection effort was undertaken by the project team. The budgetary collection form was developed in cooperation with Synergistic Hawaii Agriculture Council utilizing grower input. The resulting survey, included in full on page 105, was distributed in November 2023, to more than 120 Kona and Kaʻū coffee growers directly, as well as by way of a brief news release distributed to coffee associations, HDOA-QAD, and various news stations to ensure broad stakeholder reach. Response rates were not encouraging despite both general and specific grower follow-up attempts. The USDA-NASS Census of Agriculture 2017, the most recent publicly available data indicate there were 1,181 growers operating on less than five acres, 267 growers operating on 5 to 25 acres and 29 growers operating on more than 25 acres. There were seven responses of the less than five acres group, one response in the 5-25 acres group, and five responses in the greater than 25 acres group.

Unfortunately, the smallest-sized growers who responded did not provide useful information. Their data collection and accounting systems were incomplete and therefore yielded incomplete data fields. Much of the data they reported simply could not be true. For example, one grower reported both cherry and roasted yields as separate factors, which no doubt they are, but indicated all coffee was grown on that operation rather than being purchased. If this were true, yields would have been approaching 15,000 pounds of cherry per acre. Similar discrepancies were recorded for fertilization, weed control and pest control costs, but there was no apparent pattern, so no adjustments or estimates could be made. It was not possible to report data for the single grower with 5-25 acres because of disclosure restrictions.

Given the restrictions presented by the voluntarily reported data, the fallback option was to report the reasonable data shared by the five operations that were greater than 25 acres in size. These data are presented in summary form in Table 5, showing minimum, maximum, and average values for each operating cost category. Because the organizational and operational structures of each enterprise vary widely, no capital or overhead costs were included. All milling and roasting yields were calculated directly from the data shared and, as calculated, were within the bounds of the accepted industry norms of 6.25:1 cherry to green and 7:1 cherry to roasted. Yields per acre are consistent with the latest HDOA 2020 Report that indicated 3,952 pounds per acre for coffee in Hawaiʻi. Given that there have been disease and pest challenges in the past three years and that these numbers were for all coffee in the state, not just Kona and Kaʻū coffee, the numbers seem plausible. Importantly, they are comparable to the data shown in the latest 2023 USDA-NASS report indicating coffee yields of 3,950 pounds per acre.

Table 5. Cost and Yield Information for Kona Production Farms Greater than 25 acres, Excluding Capital, Taxes, and Overhead Costs, 2021-2022

	MINIMUM	MAXIMUM	AVERAGE
Years as a Grower	15	30	19.6
Total Number of Trees/Farm	20000	49131	8144
Total Acres/Farm	27.2	54.49	38.4
Cherry Yield, Lbs./Acre	3945	5625	4466
Green Bean Yield, Lbs./Acre	631	900	715
Roasted Bean Yield, Lbs./Acre	564	804	638
Fertilization Costs/Acre	$719	$1,254	$1,010
Weed Control Costs/Acre	$254	$2,121	$1,404
Pest Control Costs/Acre	$205	$462	$370
Labor Cost/Acre	$336	$1,871	$1,597
Other Growing Costs/Acre	$484	$782	$642
Picking Costs/Acre	$3,551	$,6750	$4,301
TOTAL COSTS PER ACRE, EXCLUDING CAPITAL AND OVERHEAD COSTS			***$9,324***

In addition, disclosure considerations preclude sharing of specific milling and roasting costs, although a composite per pound cost of each activity was calculated to be $0.25 per pound wet milling, $0.55 dry milling, $1.00 roasting and grinding, and $0.30 miscellaneous. In addition, packaging costs, marketing and brokerage fees add another $8.50-$9.00 per pound of roasted and packaged coffee sold. Average prices received at the farm, at retail and in e-commerce ranged from $40 to $60 per pound dependent upon the specific coffee type, the location, the grind, the package size and shipping and distribution costs, with Peaberry and other exclusive offerings, like single-sourced and extra fancy, fetching the highest price and mixed or estate blends fetching somewhat lower prices, particularly those in one pound or larger packages.

QUALITATIVE DATA

In addition to grower and consumer surveys, additional outreach efforts sought to support diverse industry representation. Although electronic platforms were relied on to expedite the project work plan, including virtual meetings and online surveys, efforts were made to engage those stakeholders in which technology is a barrier to participation. For example, paper copies of the grower survey were made available.

Industry stakeholders, as well as the broad public, were invited to sign up for periodic project updates that included soliciting feedback on a number of tools employed to collect data, mostly qualitative in nature. News releases supported broad project participation and were distributed on October 17, November, 16, and November 24.

While perspectives are generalized to avoid attribution to specific individuals, a list of those who contributed to this project is available in Section (VI) Supplementary Materials – Contributors.

GROUP DISCUSSION

The importance of stakeholder discussions lies in the diverse perspectives each stakeholder brings and their vested interest in the industry and preservation of the brand. These focused discussions, in which attendance was limited to specific stakeholder groups including retailers and growers, enabled the project team to gain a deeper understanding of those topics and themes of importance to various stakeholder groups.

RETAILERS

Two focus group discussions were conducted to explore the potential impacts of the 10%, 51%, and 100% Kona coffee scenarios. An invitation and several follow up reminders were sent to a group of retailers, buyers, blenders, and grocers. Only two individuals, both representing retailers, attended the scheduled discussion. Their view was a strong preference to continue the current 10% requirement. **They were skeptical about their ability to continue sales in Hawai‘i if the standard was either a phased-in 51% or 100% Kona coffee requirement.** However, they and many others we spoke with throughout the project were unclear about the economic implications of a 51% requirement since no existing production or sales data is available.

GROWERS

With the support of relevant coffee associations and the HDOA, approximately 25 Kona and Ka‘ū growers were contacted to take part in a focus group discussion, held in person in Kona, regarding grower impressions of the three Scenarios. Unfortunately, the timeframe of the scheduled discussion, taking place the week before Thanksgiving, didn’t lend itself to maximum participation. Ultimately about 35 more growers were contacted, resulting in 12 growers in attendance, in addition to members of the project team.

Grower participants were asked broadly, what they believed to be the economic and other impacts from the three labeling Scenarios. Participants were encouraged to speak candidly and engage in discussion with other grower attendees. Much of the insight gleaned occurred during Kona and Kaʻū coffee growers' lively discussions amongst themselves, revealing a comprehensive and deeply considered debate on the implications of the various coffee labeling Scenarios, particularly the impact of moving to 100% Kona coffee.

There was a strong emphasis on the need to maintain the quality and reputation of Kona coffee. Participants believed that moving to 100% Kona coffee content could provide a measure of protection, enhancing the brand's reputation and ensuring consumers receive a high-quality product. A few attendees revealed that while having once favored 51% legislation, their views evolved to support 100% Kona coffee efforts. **All grower attendees indicated a clear preference for 100% Kona/Kaʻū coffee, though potential obstacles and limitations were also discussed.**

Considerations of the sensitivity of consumers to price changes in specialty coffee and the importance of educating consumers about unique traits, such as origin and the resulting flavor profile, were highlighted. Participants discussed transparency in labeling, citing current conditions in which there are concerns in how consumers may misperceive current labeling. The group discussed consumer willingness to pay a premium and the challenges of enforcing 100% Kona coffee, especially outside of Hawaiʻi. The need to protect the Kona brand globally and the potential for mislabeling or blending outside of Hawaiʻi's jurisdiction was a significant concern. The group pondered how international markets would react and the possibility of influencing these markets through strict local standards.

Participants expressed concerns about the economic implications for some stakeholders, including small farmers and blenders, while noting all other stakeholders, including consumers, will benefit. The potential for initial market disruption and price corrections were also discussed, alongside the idea that the market would eventually adapt and stabilize.

The grower discussion group provided an uninhibited view of growers' perspectives, emphasizing their support of a shift to 100% Kona coffee, having weighed the benefits of improved quality and reputation against the challenges of market adaptation, price sensitivity, and regulatory enforcement.

PREDICTIONS OF SUPPLY AND DEMAND

To help inform the future of the 10%, 51%, and 100% regulatory scenarios, GUILD Consulting undertook a modest form of probabilistic predictions of five-year supply and demand under each of the three possibilities.

The survey, conducted through SurveyMonkey, was publicized in news releases and other channels, and was open to all who had expressed interest in the project and wished to respond.

THE SURVEY

Respondents were invited to indicate whether they agreed or disagreed with the following statements resulting in an increase in demand and/or supply:

> **Scenario 1**: The State of Hawai'i keeps the requirement for Kona label at minimum 10% Kona blend.
>
> **Scenario** 2: The State of Hawai'i raises the requirement for Kona label to minimum 51% Kona blend.
>
> **Scenario** 3: The State of Hawai'i raises the requirement for Kona label to 100% Kona coffee.

A fourth question asked respondents to identify their involvement/affiliation with the Kona or Ka'ū coffee industries.

THE RESULTS

A total of 88 individuals responded with some overlap. For example, some growers were also roasters, and some roasters were blenders. The majority identified themselves as consumers.

Grower	19.32%
Roaster	12.50%
Blender, wholesaler, or retailer	19.32%
Consumer	73.86%
Other (please specify)	9.09%

Substantive responses

Scenario 1: State of Hawai'i keeps the requirement for Kona label at minimum 10% Kona blend.

	AGREE	DISAGREE	TOTAL
Demand for Kona coffee will increase	13.95% 12	86.05% 74	86
Supply of Kona coffee will increase	19.54% 17	80.46% 70	87

Scenario 2: State of Hawai'i raises the requirement for Kona label to minimum 51% Kona blend.

	AGREE	DISAGREE	TOTAL
Demand for Kona coffee will increase	59.77% 52	40.23% 35	87
Supply of Kona coffee will increase	50.57% 44	49.43% 43	87

Scenario #3: State of Hawai'i raises the requirement for Kona label to 100% Kona coffee.

	AGREE	DISAGREE	TOTAL
Demand for Kona coffee will increase	71.59% 63	28.41% 25	88
Supply of Kona coffee will increase	68.97% 60	31.03% 27	87

Caveats and Interpretations

The survey drew a small percentage of all growers, roasters, blenders, sellers, and consumers. Market predictions are always subject to outside forces, including a globalized coffee business, insect and pathogen concerns, and the larger condition of Hawai'i's economy. The majority opinion reflects a decline in the demand and supply of Kona coffee if the State of Hawai'i maintains the 10% Kona blend (Scenario 1); a near 50-50 split of opinion about whether the demand and supply of Kona coffee increases or decreases if Hawai'i raises the requirement to 51% Kona blend (Scenario 2); and the majority opinion suggest a rise in the demand and supply of Kona coffee if Hawai'i raises the requirement to 100% Kona (Scenario 3).

PERSPECTIVES ASSOCIATED WITH THE THREE SCENARIOS

To support broad stakeholder participation, and in response to those stakeholders who expressed a desire to participate in focus groups but were unable to attend, a survey was conducted to re-create the main questions posed in the group discussions. Distributed through a press release, organizations and individuals were invited to provide their perspective on the impact of the three scenarios.

THE SURVEY

The survey posed three, open-ended main questions to collect respondents' perspectives as to the impact of the three Scenarios on "various stakeholder groups", defined as various Kona and Ka'ū coffee stakeholders, including but not limited to large- and small-scale growers, vertically integrated growers/operations, millers, roasters, blenders, retailers, consumers, etc.:

1. What is the impact of a (phased-in over 3 years) **51%** Kona/Ka'ū coffee requirement on the **various stakeholder groups?**
2. What is the impact of a **100%** Kona/Ka'ū coffee requirement on the **various stakeholder groups?**
3. What is the impact of **maintaining the 10%** Kona/Ka'ū coffee requirement (no change) on the **various stakeholder groups?**

The survey additionally asked for any further comments on this topic (open-ended), demographic information (zip code, role in industry), as well as optional contact information for follow up.

RESPONSES

Reoccuring themes from the 37 responses are indicated below. More than half of respondents identified as a "Grower", with a few further indicating an integrated or dual-role (i.e., "grower/roaster/processor/retailer" and "grower and consumer"). There were three (3) "blender, wholesaler, or retailer" responses and two (2) consumer responses though, as noted, respondents could self-identify as more than one category. Results typically demonstrate a statement relating to *economics* or *quality* justifications.

RESPONSES TO 10% KONA/KA'Ū COFFEE

Maintaining the 10% Kona/Ka'ū coffee requirement has elicited concern from stakeholders who predict ongoing negative consequences. A cited worry is the legal risk due to potentially deceptive labeling practices, with one fearing future lawsuits under the U.S. Lanham Act. Respondents argue that preserving the status quo is tantamount to "kicking the can down the road" and allowing fraudulent advertising to continue.

The current 10% requirement is seen as disproportionately beneficial to blenders, whose structure results in significant profit by selling mostly non-Kona coffee labeled as "Kona" at premium Kona prices. This is believed to harm the industry by keeping real Kona coffee prices low, with one response estimating that the economic loss to the average Kona coffee farm could exceed $20,000 per year due to "excess profits" diverted to blenders.

Several responses focused on farmers being expected to continue struggling economically under the 10% law, with the market model deemed unsustainable as it favors large companies over growers. The state's reputation is also deemed at stake, with the potential for its image to be "tarnished and cheapened" due to the association with inferior products.

Several responses express that maintaining the current legislation will perpetuate harm to both Kona coffee growers and consumers, misleading customers and damaging the integrity, quality, and reputation of Kona/Kaʻū coffee. There's a sentiment that the time for such a low requirement is over, and it does not allow consumers to experience the true flavor of Hawaiʻi agriculture, dismissed instead as a "marketing gimmick."

Some responses highlight the direct impact on growers, including the inability to afford necessary treatments like chemicals for rust due to the financial strain. The economic damages to consumers are viewed as real and substantial, with a call for more truthful labeling to ensure that products accurately represent what they imply to contain.

A few responses noted potential positive impacts to blenders by way of a modest profit margin, and also by ensuring the Kona/Kaʻū coffee remains in Hawaiʻi institutional markets, such as grocery stores and restaurants.

Responses to 51% Kona/Kaʻū coffee

Participants' responses regarding the impact of a phased-in 51% Kona/Kaʻū coffee requirement varied, with some expressing that it would bring labels to minimum standards within the industry and as established by the U.S. Federal Labeling Act. Others felt it would only marginally improve the protection of the Kona coffee brand and potentially mislead consumers by offering an inferior product under the guise of the Kona experience.

Most responses demonstrated a preference for increasing to 51% or more, noting a perceived positive impact to growers, improved consumer perception of Kona coffee, and improved quality of Kona coffee. **Some respondents believed that the move would benefit blenders financially by delaying the transition to 100% Kona coffee, thereby keeping prices high due to reduced supply.** There were concerns that this might perpetuate the sale of coffee labeled as "Kona" that is composed of significant quantities of imported coffee, misleading consumers. A shift to a 51% requirement is seen as a way to increase income for farmers by reducing the market saturation of cheap blends. **The change is expected to be good for coffee growers and consumers, providing moderate benefits and enhancing the brand reputation.**

However, some worried about reduced sales, increased packaging costs, and heightened customer confusion as well as blenders who will stop using Kona/Ka‘ū due to this requirement and growers who will go out of business without sufficient avenues to sell their coffee cherries. Some foresaw no impact from the change, while one respondent believed it would be reasonable and would not put blenders out of business. There was also an opinion that the change would undermine farmers. Notably, one detailed response highlighted the importance of the change for consumers, ensuring that they get what they expect when purchasing Kona blends, suggesting that a 51% content requirement would align with consumer expectations and correct misleading impressions created by current labels, though another stated that if the label includes “Kona” or “Ka‘ū”, it should be 100%.

Responses to 100% Kona/Ka‘ū coffee

The responses to the impact of a 100% Kona/Ka‘ū coffee requirement highlight a range of perspectives, emphasizing the potential for significant shifts in the market and stakeholder dynamics. **Those in favor largely cited positive impacts to growers and farmers, as well as secondary impacts (i.e., less reliance on imports). Potential higher production costs are additionally cited.** One respondent cited Jamaica Blue Mountain’s pricing and anti-blending stance as a model to emulate.

Those opposed noted potential market contraction, reduced sales, and a significant adverse impact to blenders. Some stakeholders, who have built their business predominantly on the name recognition of Kona/Ka‘ū coffee, might face financial losses or business closures. In contrast, stakeholders who have already based their business on a 51% or more content of Kona/Ka‘ū coffee are expected to experience more stability and potentially increased business.

The ethical and equitable nature of the 100% Kona coffee requirement was highlighted, with one response stating that “consumers deserve to know what they are really purchasing.” **It was suggested that this transparency could improve the reputation of Kona coffee, which has been compromised by inferior products. Some foresee the requirement as a “game changer” that could significantly expand demand and allow farmers to invest in improvements, potentially saving Kona coffee farmers from giving up their trade, enabling farmers to invest in improvements and pest control measures that are currently financially out of reach.** The protection of Kona coffee’s origin for roasted coffee was noted as essential. **However, there is concern that 100% Kona coffee could reduce the market considerably, limiting the number of bags that can be sold and potentially making it difficult to meet demand.**

ONE-ON-ONE DISCUSSIONS

Robust conversations with various stakeholders enabled the project team to fully understand diverse and unique perspectives, aiding in the investigation into the most significant variables to consider in conducting this economic analysis. While the information gleaned was qualitative in nature and not intended to provide conclusive answers, the transparency and unreserved nature of discussions provided invaluable insight to better understand noteworthy considerations. Efforts were made to speak with a wide variety of stakeholders to ensure a complete and comprehensive understanding of stakeholder perspectives.

Over the course of these interactions, spanning dozens of interviews, conversations, and small group discussions, we engaged in candid dialogue with industry stakeholders in-person and virtually, also making available tech-free opportunities for stakeholder participation. This approach allowed us to attain an initial, broad understanding of the historical context, cultural importance, and often, pointed our efforts to help identify additional factors for evaluation. The perspectives surrounding Kona and Ka‘ū coffee labeling practices are, in a word, multi-faceted. While it was not our primary aim to obtain definitive answers during these conversations, the transparency and unreserved nature of our discussions proved to be an invaluable resource guiding us in the direction of further examination. Stakeholders‘ willingness to share their insights without reservation contributed significantly to our grasp of the most pivotal considerations influencing the Kona coffee industry.

Diversity was a cornerstone of our data collection strategy, as we endeavored to ensure that our sample of stakeholders was as varied as possible. We recognized the importance of capturing as complete and comprehensive an understanding of the myriad of stakeholder perspectives that shape this industry as possible. As such, our efforts encompassed a wide spectrum of voices, ranging from coffee growers and producers, roasters to distributors, retailers, consumers, coffee associations, and governmental agencies. This holistic approach aimed to encompass the entire ecosystem of stakeholders, providing us with a well-rounded and nuanced perspective that forms the bedrock of our subsequent analysis.

In the pages that follow, we delve into the intricate details of these qualitative data collection methods, shedding light on the diverse array of insights we gleaned from our interactions with the stakeholders. These insights, while not conclusive in themselves, form a vital part of our broader investigation into the economic underpinnings of this industry, allowing us to build a more robust and accurate picture of the variables at play.

A full list of those who participated in this Report is provided in (VI) Supplementary Materials – Contributors.

GENERAL OBSERVATIONS

Broad stakeholder observations reveal a complex and evolving Hawai‘i industry with debates extending beyond the topic of blends. Other considerations include concerns about pests, climate change, protecting the heritage and cultural importance of Hawai‘i agriculture products, and environmental factors affecting coffee production. Also mentioned was the need for diversification and sustainable practices, as well as better consumer education and support for agritourism endeavors to contribute positively to the industry’s profitability.

Stakeholders interviewed shared various beliefs and perspectives about the potential impacts of the status quo and the proposed legislation. One interviewee who operates an integrated coffee production enterprise expects that any change in legislation towards more Kona coffee content will result in large blenders who will cease production of Kona blends and move to a commodity coffee profile, resulting in the premium for high-quality coffee to decrease. Consequently, an adjustment in retailer shelf space will occur due to decreased demand for Kona coffee. Some stakeholders suggested that, while a 51% blend is a step in the right direction, a 100% Kona coffee requirement would be the optimal solution to protect the reputation and market for Kona coffee. Others indicated that any change would result in the collapse of the industry. However, concerns regarding quality control, enforcement, and funding for monitoring and inspections were frequently cited.

One interviewee anticipated several immediate economic outcomes due to the proposed legislation: (1) price and demand to both fall in the immediate term; (2) Hawai‘i consumers who already face a price squeeze and will thus decrease their consumption of Kona coffee; (3) in the face of food service prices that are already high; (4) leading to a loss of jobs; and (5) distributors who will lose business volume and product mix, resulting in the volume of Kona coffee sold in Hawai‘i to decrease.

Stakeholders who argued that increasing the Kona coffee content would result in higher prices believe further it would render Kona coffee unaffordable for local residents, who would then reserve it for special occasions or opt for alternative brands like Yuban, Folgers, or other local coffee blends. It should be noted that residents of Hawai‘i are not believed to be consuming significant quantities of Kona coffee currently and there is, unfortunately, a void of Kona-specific coffee data available.

A major distributor projects a significant drop in coffee volumes but plans to balance this loss by adjusting and diversifying his product range to sustain his workforce and profit margins. In addition, it is expected that shelf space will be reallocated in stores to accommodate reduced Kona coffee demand and more Kona coffee will be available for export to Japan, Korea, and North America. This firm is concerned with the overall well-being of the Hawai‘i residents and problems such as mental health and homelessness, and not the affordability of Kona coffee.

While identifying consumer price sensitivity, some view a 51% Kona blend as a positive direction, with a near-unanimous grower preference for a 100% Kona as the ideal standard. Questions remain about who will shoulder the responsibilities and costs of testing, enforcing, and maintaining the quality of Kona coffee.

Some suggest market dynamics have evolved to the point in which it's possible to engineer and market "authentic" coffee flavors, diminishing consumers' pursuit of genuine coffee taste in favor of branded experiences. Additionally, given that farm gate values have risen annually under the 10% regulation, the necessity of regulatory change is questioned.

The "Kona" coffee name is largely seen as branding rather than as imbuing accurate information about product origin or key attributes. It was further noted that the use of "Kona" is unlike comparable GI products such as Napa Valley wine or Manuka Honey whose designations denote product differentiation, such as unique origin or cultural significance. While not unanimous, it's believed consumers often fail to distinguish between "Kona blend" and pure 100% Kona coffee for a variety of reasons. For example, consumer familiarity with single-origin coffees that are exclusively associated with, and identified by, a specific geographic designation, representing the whole product, unlike 10% Kona blends which bear the name but contain only a fraction of Kona-origin coffee.

With a push towards 100% Kona coffee, it's thought that operations will shift to provide products that are in demand, for example, offering smaller packages of 100% Kona coffee to appeal to visitors' tendency toward small, branded gifts, ultimately resulting in new demand. However, one firm pointed out that although there is enough land to expand in response to coffee price increases enticing new market entrants, there is currently a surplus of coffee, driven by world market conditions and interest rates that make this choice infeasible.

Currently, there is limited enforcement oversight, due to lack of manpower and budgetary constraints, for roasted coffee at the consumer market level. Some associations have attempted to self-regulate and have pointed out the pronounced nature of some counterfeiting; for example, a price point well below market price can indicate a product may be counterfeit. **Stakeholders who spoke about regulatory and enforcement topics overwhelmingly cited the need for better methods of enforcement at the consumer level.** Oritain, an Australian firm, was cited as a scientifically verifiable method of identifying coffee origins. Industry associations may step in to enforce regulations in the absence of government action, though there is consensus that farmers should not incur the costs.

Moreover, stakeholder perceptions, particularly those of growers, highlight the shift in industry attitudes over time, from a focus on blends to stronger advocacy for 100% Kona coffee. Stakeholder considerations, not otherwise categorized, included:

- "As we move forward in increasing Hawai'i's food production it is important to support local farmers and local products by not diminishing what being Hawai'i grown means. "
- "Parties opposed to the bill say it will be difficult to enforce given the lack of technological capacity in the State to test blended coffees to determine their authenticity. The U.S. Food and Drug Administration (FDA) faced an analogous challenge when it promulgated regulations requiring the amount of "added," as opposed to naturally occurring, sugars to be listed on the Nutrition Facts label. It was argued that testing methods could not distinguish between naturally occurring and added sugars in a product like apple sauce."

Additionally, there is a cultural aspect to the industry, highlighted by traditional farming practices and the significance of Kona coffee farming in Hawai'i. The demographic shifts among farmers and concerns about monocropping's ecological impact are also noted. Sustainable practices and diversification are mentioned as necessary responses to environmental challenges like pests and climate change.

Labeling and Consumer Education

The labeling of Kona coffee has been a point of debate for decades, encompassing labeling-adjacent themes including truth-in-labeling, asymmetric consumer information, enforcement of regulations, and related discussions. **Proponents maintain their intention is to protect the Kona coffee brand and reputation (including flavor profile, unique appeal, etc.), as well as improve consumer information access, preserve a significant cultural and agricultural product, and ensure the market structure provides a sustainable living for Kona coffee farmers.** Stakeholders cite observing increasing quality of coffee sold to intermediaries, as sorting technology improves, and stricter standards to deter fraud as further justification to ensure labeling is accurately perceived. Proponents additionally cite:

- "Misleading labeling is fraudulent – consumers should be able to know what they are actually paying for; use of the name without requiring the content exploits the region and deprives farmers of income; low quality coffee is being sold under a prestigious name and results in lowering standards and damaging the brand."
- "We urge you to protect truth in labeling, not half-truths in labeling or 51% truthful labeling; please amend the bill to require 100% genuine Hawai'i grown coffee when no other coffee regions except Hawai'i's are on the label."

Indicating a geographic location on packaging, without the entirety of the product coming from that region, is not typical in origin-protected coffee regions. Other regions' regulatory frameworks are often more comprehensive, not allowing for the sale of blends in the same "10%" manner that Hawai'i allows. Additionally, although the current regulatory framework includes beans and roasted/instant coffee at an intermediary stage, the final roasted coffee product purchased by consumers is not as stringently regulated. This is partially due to budgetary constraints that have resulted in fewer staff to enforce regulations, leading to a reliance on a complaint-based enforcement approach. Moreover, trademark certification applies only to products with 100% origin-specific claims and may not be indicated on all product labeling. Proponents of new labeling regulations additionally cited the following considerations:

- "This bill values the premier, specialty Hawai'i coffee industry and preserves the Hawai'i-grown coffee brand, protects customers from false advertising."
- "Competitors that falsely claim Hawai'i origin are not only misleading consumers but minimizing the consumer's experience of products made from the region and degrading the reputation of Hawai'i grown products."

REPUTATION AND QUALITY

Maintaining the reputation of Kona coffee is closely tied to quality control as well as regulation and enforcement of labeling. Kona coffee marketed as a premium good, rather than as a blend, is perceived to ensure quality and uphold brand perception. There's a noted interest in how consumers perceive Kona coffee and evaluate demand at various coffee content levels and price points. **Concerns were expressed about how labeling affects consumer perception of quality, with discussions on the implications of 51% blends and the potential for consumer confusion impacting the reputation of 100% Kona coffee.**

Other reputation and quality concerns cited include:

- "No need to give away our valuable names. Support our farmers by having "Kona Blend" be at least 51%. The blenders can still do business and demand for Kona coffee will increase. The same applies to other Hawai'i *terroirs*. Just look at Idaho potatoes and Napa wine etc. Want to support local agriculture? This bill does it."
- "This bill will prevent consumers from being misled, restore pride in the name "Kona coffee", and deliver some economic justice to hundreds of farmers."
- "This proposed legislation would both protect this brand and promote control of the pests that threaten it. Requiring that at least 51% is long overdue."
- "We need protection of our heritage brand. This bill will help stop fraudulent use of the Kona coffee name. Protect our community, local farmers, and consumers from false labeling."

- "We farmers have been working on this and wanting at least a 51% "blend" requirement for any coffee using our geographic name."
- "For far too long, blenders have been abusing the precious Kona coffee name to sell inferior products, with profits going to large continental U.S. corporations. Protect our heritage brand, our small local farmers, and consumers everywhere from fraudulent mislabeling."

ECONOMIC CONSIDERATIONS AND MARKET DYNAMICS

Kona coffee industry stakeholders who are in favor of changes to the current legislation cite anticipated positive economic impacts. Discussions reflect how changes in legislation might impact local farmers versus larger corporate entities. There's a strong sense of preserving the cultural heritage and economic well-being of local communities. Currently, the industry is challenged by varied economic factors such as the price of Kona coffee not keeping pace with inflation, the impact of pests, and the reliance on a visitor-based economy. There is a notable tension between maintaining revenue and the need for economic lifelines for the industry. Concerns regarding counterfeit sales highlight the need for accurate data and strict enforcement to protect the economic interests of genuine producers. Strategies such as cultivating direct-to-consumer sales channels that rely heavily on e-commerce are increasingly being pursued.

The market for Kona coffee is also reportedly fraught with misleading perceptions due to blends, which is viewed as diluting the brand's premium status and the distinct taste of Kona coffee, not reflecting true market demand for Kona coffee, and misleading consumers, consequently representing an unfair advantage to those stakeholders who benefit from consumers' perception of 10% as "Kona" and artificially depressing the price of (100%) Kona coffee. **Increasing the proportion of Kona coffee is expected to raise prices for growers, which could prompt blenders to seek out alternative products, such as blends that contain no Kona coffee at all.**

Stakeholders cite unmet demand, as well as Kona's high-quality and unique flavor reputation within the specialty coffee market, as demonstrating the potential for positive economic benefits from changes in the Kona coffee labeling laws. Global competition was further cited as indicating a need for maintaining high standards. Detailed discussions also mentioned the need for, and cost associated with, better certification, maintaining and changing the labeling laws, and ensuring sufficient enforcement.

Debates around the proportion of Kona in blends and the economic viability of various blending ratios were prevalent, as were discussions on the economic viability of various farm sizes, the impact of potential regulations within the industry, and strategic shifts that might be required in response to market changes This includes the adoption of new technologies, exploration of new market strategies, and global competition. Comparisons to similar agricultural products brought forth discussions about protectionist policies, appellation systems, and how other industries have navigated similar challenges.

Economic considerations additionally cited include:

- "Because 100% Kona requires a significant amount of labor, the sale of inferior blends at fire-sale prices makes it that much harder for small family farms to recoup their expenses, let alone realize a decent profit from their hard labor and passion for growing coffee."
- "Coffee farmers deserve to make money off coffee from Hawai'i and not have non-local companies profit from the names."
- "Moving up the required percentage of Hawai'i coffee to 51% of roasted coffee levels the economic playing field."
- "Let's be honest to consumers and let's also remember that the coffee farmers are a backbone of our community and also for tourist decisions and actions."

By and large, stakeholders indicated that 10% Kona coffee originally implemented 30 years ago was meant to be 51%. The quality of the blend is highly dependent upon the quality of the coffee with which Kona is blended. Blenders are perceived to be highly profitable and thus unwilling to compromise, and hoping that the current debate will fall in their favor. Those farmers who prefer 10% blends are perceived to be part of blenders' "stable" of farmers (older and/or more traditional farmers who are resistant to change because of long established and beneficial relationships). Though it was conceded that blenders remain appealing because farmers are paid quickly and reliably upon delivery of cherry to the mills, ensuring costs are covered, an important factor in farmers' loyalty and position.

OPPOSED TO CHANGES IN LEGISLATION

Those who favor maintaining current legislation cite an existing, successful product that is broadly accessible. Advocates assert that the distinctive Kona coffee remains accessible by diluting pure Kona beans with other varieties to extend the limited supply. By keeping prices low, particularly in the local markets, such as for institutional buyers and in the tourism-driven 'gift' market, they cater to a customer base that is highly sensitive to price changes. **The current high demand of 10% Kona is seen as proof of continued demand, as well as the steady visitor demand for lower-priced "souvenir" gifts.** Cited as concerning is the anticipated increase in production costs associated with more expensive (coffee) inputs. **There's a fear that removing blends could collapse the market, especially for in-state blenders.**

The current 10% labeling requirement is further seen as both protecting local markets from being overrun by cheaper coffee imports and providing consumers a choice in purchasing either a blend or pure Kona coffee products. **Those who favor maintaining 10% Kona coffee indicate that current labeling, which designates clear messaging that a product is a 10% Kona blend, is adequate in ensuring that consumers understand their product options and shouldn't be limited in their market choices.**

Those opposed to changes in the labeling law additionally cite:

- "Customers should have options for a range of 10-100% Kona coffee. An increase in the percentage of Kona coffee in products will significantly shift the taste. The price increase will impact the restaurant business and local shops who may have to transition purchasing from mainland or foreign brands."
- "This law would make it harder for businesses selling Hawai'i coffee to create labels that best suit their brand and make it harder to promote local coffee to consumers. Different ways of blending, roasting, and even brewing coffee create different products with different flavors and characteristics."
- "Requiring a higher percentage will alter the taste that many current restaurant customers enjoy. It will also raise costs, which will be a burden on our industry."
- "The proposed legislation would jeopardize our current Kona market. These changes would be devastating to the industry, especially the small to mid-size farms who depend on the green coffee market."
- "The proposed legislation requires blend labels to disclose geographic and regional origins and percentage by weight of the blended coffees. This can easily become a problem for roasters who use different blends of Hawai'i coffees – for instance, a 100% Hawai'i blend may need different components, and percentages of those components, even if all sourced from Hawai'i. Additionally, roasters who create 51% blends may also have to alter components depending on availability. This can be tougher for smaller roasters."
- "Costs will significantly increase, and this will negatively impact businesses further."

Opposed to 51%

The proposed legislation to increase the Kona coffee blend requirement to 51% has faced significant opposition from various industry stakeholders. **Concerns have been raised that a 51% blend will not be able to capture market share or command a premium price to justify the increased costs that warrant the higher price, as consumers may not perceive the value of the higher, but not pure, Kona coffee product.**

Farmers may benefit, but there is speculation that larger companies will resort to using lower-quality Kona and non-Kona beans to comply with the new requirements to maintain profit margins. **Introducing a 51% requirement is also feared to reduce the supply available for 100% Kona coffee, subsequently driving up its price.**

Although differentiation and quality substantiation through showcasing of awards and promoting consumer education could allow some companies to command higher prices, **there is concern that a shift to a 51% blend could erode Kona coffee's brand value, stemming from potential perceptions of reduced quality and the complexities of pricing the higher blend product.**

Considering the costs, a 51% blend could lead to a sale price of $35 per pound, assuming cherry prices of $2.50 translate to green bean costs of $15, plus milling and roasting at a cost of $10.50. In comparison, a 10% blend would sell for about $15 per pound. The market for higher-quality Kona beans (Extra Fancy and Fancy), which currently sell for around $27 as green beans, could be negatively impacted. **A suggested alternative is to adopt a lower percentage blend, such as 15-20%, to maintain the quality of 100% Kona.**

The perspective of one grower/roaster is that the 51% law would negatively affect mills by stripping away a profitable segment, degrade the overall quality of Kona coffee, and lead to the appearance of imitation products. They pointed out that while many consumers are indifferent to the origin of their coffee, the Kona name carries a premium. The introduction of this law, they argue, could result in reduced quality for 100% Kona coffee, with retail prices set too high for consumption, potentially causing consumers to switch to other products.

Stakeholders, by and large, expressed disapproval with the proposed 51% legislation. From those in favor of keeping the 10% blends to advocates for a shift to 100% Kona, there is a consensus that the suggested 51% legislation isn't reflective of market demand but is viewed as an arbitrary legislative middle ground that would attract neither 10% Kona coffee consumers nor 100% Kona coffee consumers.

ADVISORY COMMITTEE

At the outset of the project period, a small Advisory Committee was introduced as an additional stratum of impartiality. This Committee was convened to ensure guidance was dispensed from an unbiased standpoint, without exerting any direct influence on the decision-making process. The Committee members were deliberately *not* drawn from the pool of coffee stakeholders to avoid any potential conflicts of interest. By ensuring this stance, a detached viewpoint was upheld in providing guidance in the acquisition of needed information and data, as well as broad review.

The Committee was intended as a measure of equilibrium in response to enthusiastic public participation that extended into aspects not designated for communal input. This group's involvement was strictly consultative, designed to forge a sense of equilibrium in the project's progression, with their engagement limited to advisory capacities during brief meetings at the project's inception and its conclusion, totaling approximately four hours.

Juli Burden, Hunter Heaivilin, and Matt Strassberg were appointed and approved to participate on the small Advisory Committee. None are directly or immediately involved in the Kona coffee regulatory issues. Their biographical backgrounds can be found in (VI) Supplementary Materials – Contributors.

In early November, the Committee met for one and a half hours to review the project work plan and offer observations, guidance, and ideas for sourcing data. In December, an oral summary of the project's main empirical analyses and findings was provided to the Committee..

(IV) ECONOMIC IMPACT ANALYSIS

The economic impact analysis to be presented rests upon demand and supply considerations of Kona coffee. From this discussion, we are positioned to determine the well-being of producers and consumers because of the proposed legislation. Additionally, we are positioned to discuss ramifications to blenders, roasters, and exporters as summarized in this Report.

MARKETING CHANNEL

Before discussing the economic impacts of a proposed change in Hawai'i's labeling law from a minimum of 10% blend to a minimum coffee blend of 51% and to 100% Kona coffee, it is necessary to understand the marketing channels for the Kona blends and 100% Kona coffee. As exhibited in Figure 3, the principal stakeholders in the industry are growers, intermediaries (blenders, millers, roasters), wholesalers/retailers, exporters/importers; hotels, restaurants, institutions (HRI); and consumers.

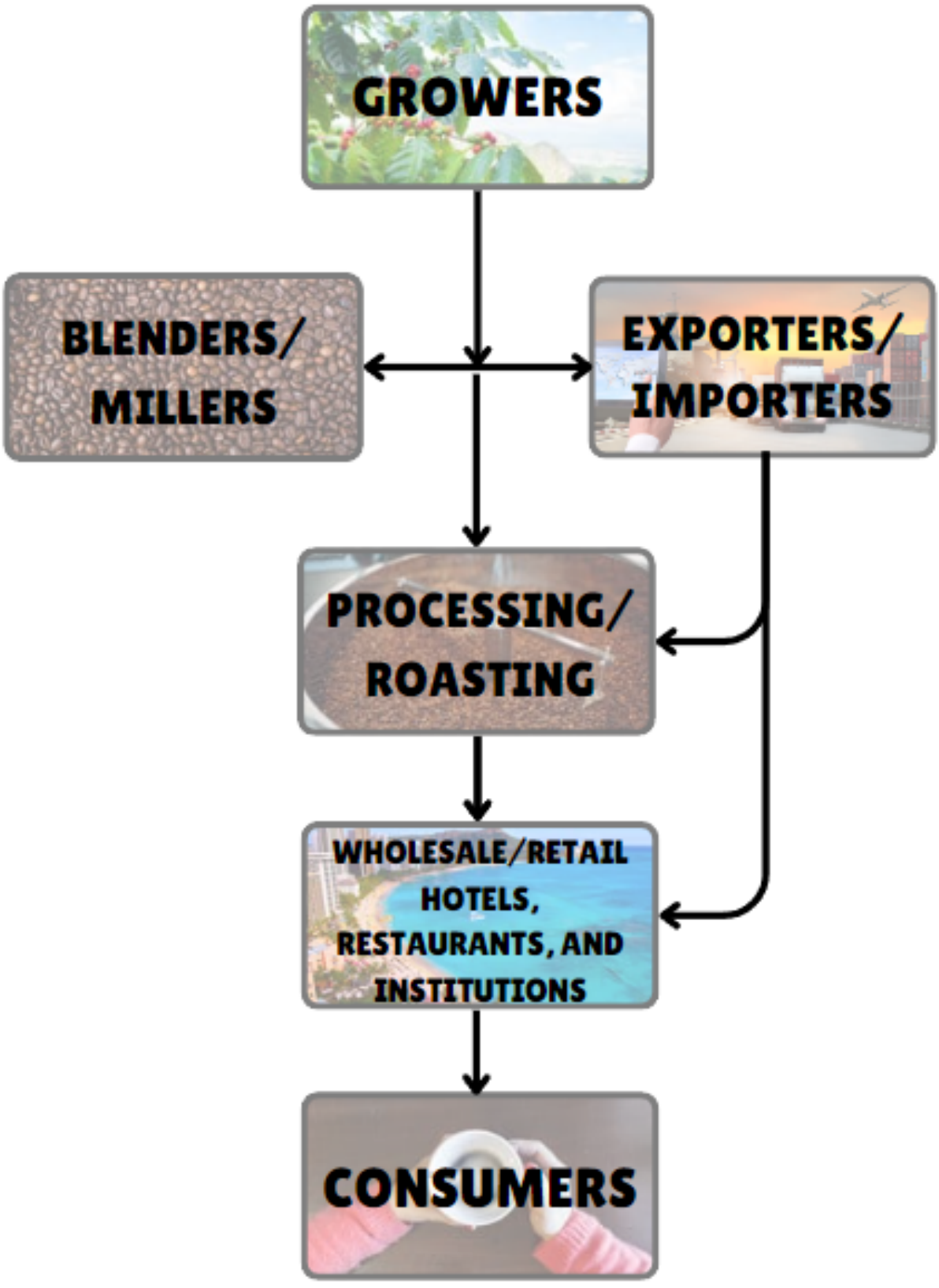
COFFEE GRADING AND QUALITY INFORMATION

Hawai'i coffee grades are based on size and foreign material/damaged kernels (defects) without considering moisture or quality. Grades include Peaberry, Extra Fancy, Fancy, Select#1, Sel ect, Prime, and 3X/Standard. Peaberry is a single fused bean and is said to have a more inten se Kona flavor profile. The 10% Kona blend typically comprises imported beans and Ko na Prime beans. Coffee grades below Prime typically go into Hawai'i blends. **Kona coffee is described as mellow and fruity, with low acidity, making it an ideal pairing to be blended with various types of coffee. The quality of the Kona blend is highly dependent upon the quality of the coffee with which it is blended, which is not disclosed or publicly available.**

Kona coffee is sold as either medium roast (more of the regional flavor taste) or dark roast (which some believe masks flavors). At approximately 196°C (385°F), the coffee will produce a cracking sound, referred to as the 'first crack', marking the beginnings of a lighter roast. At the first crack, a large amount of the coffee's moisture has been evaporated, and the beans will increase in size. The cracking occurs because the water trapped in the beans creates pressure as it turns to steam when temperature reaches about 395°F to 405°F. At around 440°F to 455°F, the buildup of carbon dioxide in the beans becomes too great for their increasingly brittle structure. The expansion causes a second audible crack or snap which occurs when coffee reaches dark roast. Roasting should stop not more than one minute into the second crack. Kona coffee is low in acidity and not as bold due to the lower altitude of many Kona farms compared to other coffees. Coffee cherries are picked when as ripe as possible, full red, and ideally should be processed in one day.

Growers produce Kona coffee and distribute the product to processors/roasters, blenders/millers, and to exporters. Growers also may distribute the product through wholesalers/ retailers who in turn sell the 10% Kona blend or 100% Kona coffee to consumers.

Figure 3. The Marketing Channel Associated with Kona Coffee



Kona coffee, similar to other coffee varieties, undergoes several processing steps from the raw cherry to the finished cup of coffee. From the perspective of blenders, the value added by blending Kona and non-Hawai'i coffees is based on the cost of the component green beans, plus the added costs of roasting and bagging. Blenders produce blended Kona coffee as well as 100% Kona coffee. Originally, blends were made for the HRI market because of their flavor and excellent cupping quality. One pound of coffee generally produces 45-60 cups brewed.

There are several reasons to produce a Kona blend. Blends capture a different market segment than 100% Kona coffee. The 10% Kona blend is more likely to appeal to consumers who are price conscious than appeal to consumers of 100% Kona coffee. Additionally, blenders and roasters desire to offer a full product line on a consistent basis. Roasters producing the 10% Kona blend for the tourist market via retail outlets are likely to have different goals and operating conditions than roasters targeting specialty coffee shops with 100% Kona coffee.

The vast proportion of the 10% Kona blend produced in Hawai'i comes from the Honolulu-based Hawaii Coffee Company. The now-defunct Hawaiian Isles Coffee Company (formerly, Hawaiian Isles Kona Coffee Company) was a large producer of blended coffee until they ceased operations in 2022.[13] Both companies also produced and marketed 100% Kona coffee. As these entities are privately held companies, as are all retail operations, sales information is not publicly available. **As such, it is not possible to address a key issue regarding the current distribution of sales, including projections of demand and pricing, for 10% and 51% blends and 100% Kona coffee.**

In agreement with Nakamoto and Halloran (1989), there is no single homogeneous market for Kona coffee. The product form is a consideration of whether the product is sold as 10% blend or 100% Kona coffee. The market channels concern the outlets through which Kona coffee reaches the end-user, the consumer. The respective market channels include hotels, restaurants, institutions (HRI); retail outlets consisting of grocery stores, mass merchandisers, and tourist shops; and specialty coffee outlets involving specialty coffee shops and mail order/internet businesses. **At present, there is no data to determine the current or projected market share proportion of the 10% or 51% Kona blend, 100% Kona, or Ka'ū coffee.**

[13] www.staradvertiser.com/2023/03/12/hawaii-news/debt-shuts-down-hawaiian-isles-water-coffee-companies

ECONOMIC ANALYSIS OF THE PROPOSED LABELING LAWS

Feldman (2010) conducted a preliminary analysis of the economic effects of blending Kona coffee with other coffees, concluding that blenders would gain up to $14.4 million in "economic rent" per year at the current Kona appellation. However, Kona coffee growers would experience economic losses that could be on that order or possibly greater than the benefit to blenders.

The economic effects associated with either the proposed 51% Kona blend or 100% Kona coffee labeling are dependent on three entities: (1) the demand curve associated with the 10% blend, the 51% blend, and 100% Kona coffee; (2) the supply curve associated with Kona coffee; and (3) the magnitudes of the shift(s) in the demand and supply. In the short run, defined as less than two to three years, we presume that no shift in the supply of Kona coffee will occur. Later we relax this assumption to ascertain the longer-run picture of the dynamics involved.

MARKET IMPACTS

As shown in Figure 4, the demand curve labeled as D_1 pertains to the 10% Kona blend. In agreement with Feldman (2010), given that we previously verified the perception of Kona as a premium specialty coffee brand, **it is reasonable to anticipate that moving to a 51% blend or eliminating Kona blends will enhance the overall perception of the quality of Kona coffee.** Consequently, we would expect the demand curve to shift to the right to D_2 (the demand curve associated with the 51% blend) or to D_3 (the demand curve associated with 100% Kona coffee). **With no change in supply, market clearing prices and quantities produced for the Kona product will rise from P_1 and Q_1 (10% Kona) to P_2 and Q_2 (51% Kona) to P_3 and Q_3 (100% Kona).**

This supposition aligns with the previously discussed survey conducted of 88 individuals who identified themselves as growers (19.3%), roasters (12.5%), blenders, wholesalers, and retailers (19.3%), or consumers (73.9%). Some growers were also roasters, and some roasters were blenders, hence the percentages sum to be greater than 100 due to this overlapping. Based on this survey, if the State of Hawai'i were to keep the requirement for the label at the minimum 10% blend, 86% of the respondents stated that the demand for Kona coffee would decrease. But if the requirement for the label were to be a minimum of 51% blend, 60% said that the demand for Kona coffee would increase. Finally, if the requirement for the label were to be 100% Kona, 72% said that the demand for Kona coffee will increase.

These rightward shifts in demand in the short run resemble that of a successful advertising/promotion program or a country-of-origin labeling for any agricultural commodity. **Due to the rightward shifts in the demand curve for Kona coffee, the consequences would likely be higher input prices paid by intermediaries (blenders, millers, and roasters) and received by growers, higher prices paid by exporters, and higher prices paid by consumers.**

Own-Price Elasticity of Demand and Supply

The curvature of the demand curve is directly related to the magnitude of the own-price elasticity defined as the percentage change in quantity demanded divided by the percentage change in price. Demand studies pertaining to the demand for coffee date back to 1958. Virtually all empirical studies of the U.S. demand rest on the estimation of models fitted with time-series data using various functional forms (linear, log-linear, log-log, and Box-Cox). In chronological order, these studies include: (1) Daly (1958), annual data from 1922-41; (2) Abaelu and Manderscheid (1968), quarterly data from 1953-61; (3) Hughes (1969), annual from 1920-41 and from 1947-66; (4) Parikh (1973), quarterly data from 1958-68; (5) Timms (1973), annual data from 1952-65; (6) Lawrence et al. (1977), annual data from 1946-76; (7) Huang et al. (1980), quarterly data from 1966-77; (8) Akiyama and Duncan (1982), annual data from 1963 to 1979; (9) Palm and Vodelvang (1986), quarterly data from 1972-80; (10) Goddard and Akiyama (1989), annual data from 1962 to 1984; (11) Okunade (1992), annual data from 1957-87; (12) Okunade and McLean-Meyinsse (1992), annual data from 1957-87; (13) Olekalns and Bardsley (1996), annual data from 1967 to 1992; and (14) Kutty (2000), annual data from 1978 to 1997; and (15) Houston, Santillan, and Marlowe (2003), annual data from 1967-1999.

International studies also confirm the inelastic nature of the demand for coffee. Hermann (1986) estimated the own-price elasticity of coffee to be -0.27 using annual data from 1966-81 based on a world coffee model. Akiyama and Varangis (1990) reported the own-price elasticity of coffee for 22 importing countries, ranging from -0.08 to -0.54. Using monthly data from the Netherlands over the period 1992-1996, Bettendorf and Verboven (2000) estimated the own-price elasticity of demand to be in the interval from -0.21 to -0.23. Using annual data ranging from 1962 to 1989, Feuerstein (2002) estimated the own-price elasticity of demand for the German coffee industry to be -0.18. Using annual data from 1978 to 1997, Kutty (2000) estimated the own-price elasticities of coffee for the United Kingdom, Australia, Belgium, Canada, France, Germany, Italy, Japan, the Netherlands, Spain, Sweden, and Switzerland. The respective own-price elasticities ranged from -0.22 to -0.43. Using monthly data for the German roasted coffee market over the period January 1992 to December 2000, Koerner (2002) estimated the own-price elasticity of demand to be more elastic, varying from -0.59 to -1.12. Using annual data over the period 1968-2002, Feleke and Walters (2005) estimated the own-price elasticity of demand for coffee in the United States, the European Union, and Japan to be -0.27, -0.17, and -0.28 respectively. Using annual data from 1961 to 2003, Durevall (2007) estimated the demand for roasted and ground coffee in Sweden to be -0.19.

This is further supported by analysis of fair-trade coffee. For example, a 2007 study found that the elasticity of fair-trade coffee, in which a premium price supports higher income and better conditions for producers, ranged from -0.02 to -0.29, indicating an inelastic demand curve (Valkila and Niemi, 2007).

No studies in extant literature estimate the own-price elasticity of demand for Kona coffee. That said, the preponderance of evidence not only from domestic studies but also from international studies suggests that the demand for Kona coffee is inelastic. Hence, the demand curve exhibited in Figure 4 is relatively steep.

In most of these studies, the domestic demand for coffee was estimated to be inelastic, that is, not sensitive to changes in price. We then expect the own-price elasticity of demand for Kona coffee to be less than 1 in absolute value. **Put another way, we expect the corresponding change in quantity demanded attributed to be less than the percentage change in price.**

In general, charging a higher price for a good will reduce the quantity sold, a principle in economics known as the law of demand. Notably, with inelastic demand, total revenue increases when price is increased because the price increase would be large enough to offset any resultant loss in the quantity sold. As such, revenues from the sale of Kona coffee should rise as a result of the proposed change to the Hawai‘i labeling law. **This result then suggests that tax revenue resulting from the sale of Kona coffee will rise with an increase in Kona coffee content requirements.**

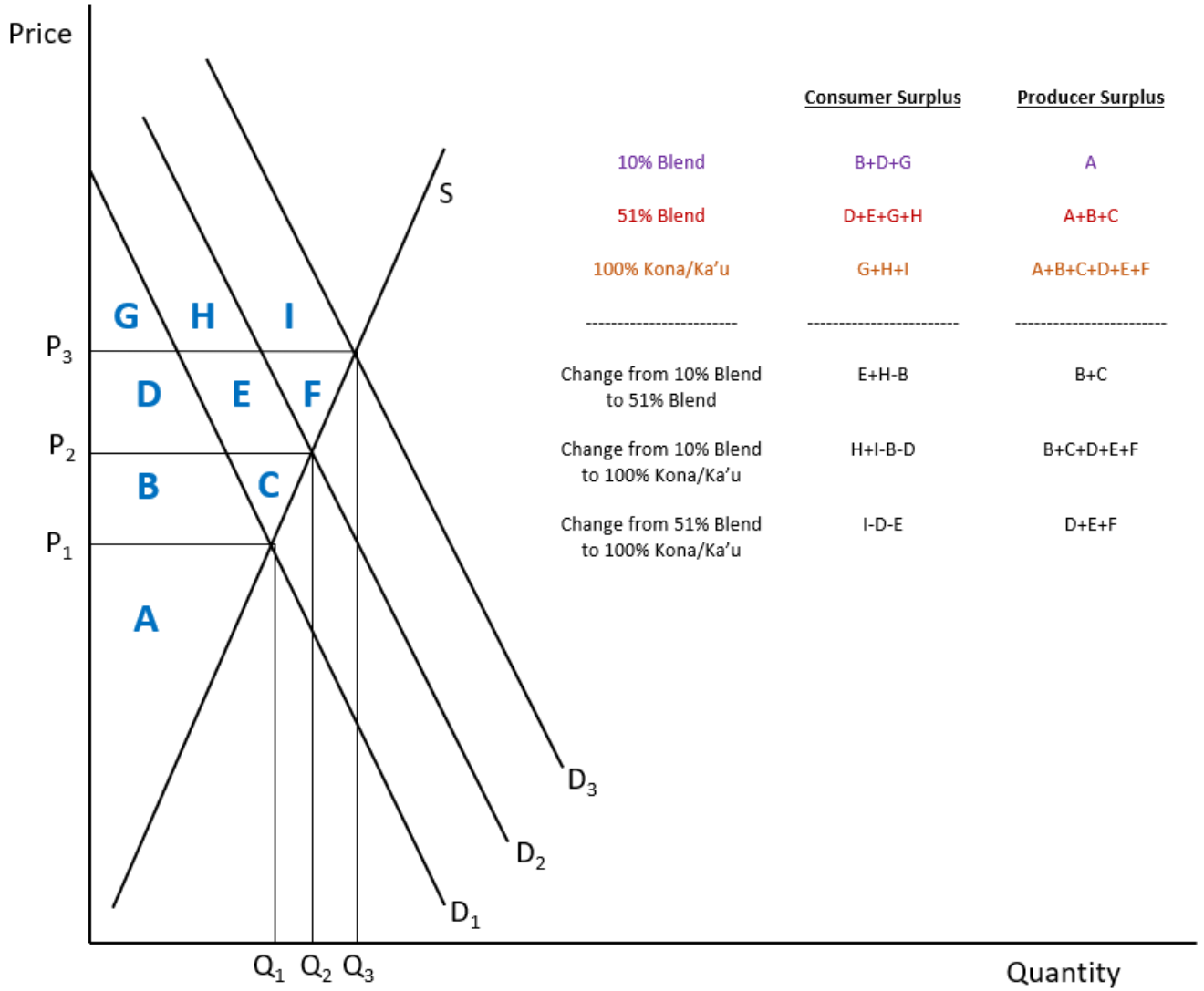
Similarly, no studies in extant literature estimate own-price elasticity of supply for Kona coffee. That said, in the short run the preponderance of the evidence for agricultural commodities suggests that the own-price elasticity of supply for Kona coffee also is inelastic. As such, the supply curve, at least in the short run, exhibited in Figure 4, is relatively steep.

Further, no evidence is available concerning the *magnitude* of the rightward shifts in demand attributed to the 51% Kona blend and 100% Kona coffee. Simply put, with the information available, it is not possible to quantify the magnitude of the rightward shifts associated with the demand curves for the 51% Kona blend and 100% Kona coffee. Nevertheless, we can at least begin to quantitatively assess the economic impacts of 10% , 51%, and 100% Kona coffee.

This assessment rests on the use of consumer surplus, producer surplus, and total economic surplus as welfare measures. Consumer surplus is a dollar figure that measures the well-being of consumers. Producer surplus is tantamount to grower profits and consequently is a dollar figure that measures the well-being of producers/growers. Total economic surplus is the sum of consumer surplus and producer surplus. Total economic surplus consequently is a dollar figure that measures the well-being collectively of growers and consumers of Kona coffee.

Based on the inelastic nature of the demand and supply for Kona coffee, coupled with the delineated magnitudes of the rightward shifts in demand, the magnitude of the change in prices exceeds the magnitude of the change in quantities of Kona coffee in the short run. In Figure 4, the dollar figures associated with the consumer surplus, producer surplus, and total economic surplus are represented as capital letters.

Figure 4. Assessing the Economic Impacts Inherent to 10% Kona Blend, the 51% Kona Blend, and 100% Kona Coffee



	Consumer Surplus	Producer Surplus	Total Economic Surplus
10% Blend	B+D+G	A	A+B+D+G
51% Blend	D+E+G+H	A+B+C	A+B+C+D+E+G+H
100% Kona/Ka'u	G+H+I	A+B+C+D+E+F	A+B+C+D+E+F+G+H+I
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Change from 10% Blend to 51% Blend	E+H-B	B+C	E+C+H
Change from 10% Blend to 100% Kona/Ka'u	H+I-B-D	B+C+D+E+F	C+E+F+H+I
Change from 51% Blend to 100% Kona/Ka'u	I-D-E	D+E+F	I+F

CHANGES IN CONSUMER, PRODUCER, AND TOTAL ECONOMIC SURPLUS

Consumer surplus linked to the 10% Kona blend is given as B+D+G, the producer surplus is denoted as A, and the total economic surplus is given as A+B+D+G. Similarly, the consumer surplus linked to the 51% Kona blend is given as D+E+G+H, the producer surplus is denoted as A+B+C, and the total economic surplus is given as A+B+C+D+E+G+H. Finally, the consumer surplus linked to 100% Kona coffee is given as G+H+I, the producer surplus is denoted as A+B+C+D+E+F, and the total economic surplus is given as A+B+C+D+E+F+G+H+I. **Conditional upon estimation of the demand and supply curves along with the magnitude of the rightward shifts in demand, we would be able to ascertain the various dollar amounts associated with growers and consumers collectively. Given no available data to assess equity and fairness within the industry, economic surplus is utilized as a theoretical measure.**

Importantly, we wish to measure the *changes* in consumer surplus, producer surplus, and total economic surplus attributed to the change from the 10% Kona blend to the 51% Kona blend, the change from the 10% Kona blend to 100% Kona coffee, and the change from the 51% blend to 100% Kona coffee. If we initially consider the change from the 10% Kona blend to the 51% Kona blend, the change in consumer surplus is calculated to be E+H-B, the change in producer surplus is calculated to be B+C, and the change in total economic surplus is calculated to be E+C+H. Provided that B is less than E+H, from a welfare standpoint, **growers, individually and collectively, and consumers collectively are better off with the change from the 10% Kona blend to the 51% Kona blend.**

Analogously, if we subsequently consider the change from the 10% Kona blend to 100% Kona, the change in consumer surplus is calculated to be H+I-B-D, the change in producer surplus is calculated to be B+C+D+E+F, and the change in total economic surplus is calculated to be E+C+H+F+I. Provided that the sum of B and D is less than the sum of H and I, from a welfare standpoint, **growers, individually and collectively, and consumers collectively are better off with the change from the 10% Kona blend to 100% Kona coffee.**

Finally, if we consider the change from the 51% Kona blend to 100% Kona, the change in consumer surplus is calculated to be I-E-D, the change in producer surplus is calculated to be D+E+F, and the change in total economic surplus is calculated to be F+I. Again, provided that the sum of D and E is less than I, from a welfare standpoint, **growers, individually and collectively, and consumers collectively are better off with the change from the 51% Kona blend to 100% Kona coffee.**

Importantly, conditional upon estimation of the demand and supply curves along with the magnitude of the rightward shifts in demand, we would be able to ascertain the various changes in dollar amounts attributed to the proposed changes in the Hawai‘i labeling law.

At a minimum, Figure 4 provides the template from which these respective calculations can be made and as such, the economic impacts associated with the proposed labeling changes.

Changes in Price

Unequivocally, it is expected that the proposed labeling changes will lead to a rise in the price of Kona coffee, with smaller changes in quantities grown or sold, at least in the short run. At this point, it is imperative to consider the price paid for the 10% Kona blend and 100% Kona coffee, and the maximum willingness to pay for the 10% Kona blend, the 51% Kona blend, and 100% Kona coffee. This information comes from the previously discussed consumer surveys.

Recall that about 75% (Hawai‘i) and 68% (continental U.S.) of consumers paid no more than $12.99 per pound for the 10% Kona blend. In Hawai‘i, 69% paid no more than $41.99 per pound for 100% Kona coffee. In the continental U.S., about 82% paid no more than $53.99 per pound for 100% Kona coffee. The maximum willingness to pay was $15.99 per pound for the 10% blend, $33.99 per pound for the 51% blend, and $53.99 per pound for 100% Kona coffee. This respective maximum willingness to pay represents upper bounds to the price changes that would occur with respect to the rightward shifts in demand attributed to the proposed increases in Kona coffee.

Due to the rightward shifts in the demand curve for Kona coffee, the consequences would be higher input prices to be paid by blenders, roasters, and exporters for each coffee product in the supply chain. Roasters and exporters then would have three options to maintain their profit margins: (1) raise their prices by a commensurate amount justifiable through product differentiation; (2) decrease costs elsewhere via efficiencies in production and/or marketing; and (3) accept a decreased margin and expect that the increase in volume would be enough to maintain profitability.

Blenders and roasters are oligopolists (in selling) and oligopsonists (in buying), given the existence of few firms, product differentiation, and barriers to entry. Oligopolists and oligopsonists typically engage in *non-price* competition, differentiating among themselves through services rendered (e.g., immediate payment terms or contract payments to growers) rather than competing on price. **To maintain optimum capacity, blenders likely would be forced to consider alternatives to the blending of Kona coffee, especially 100% Kona coffee. Moreover, blenders and roasters who can no longer cover minimum average variable costs of production, would subsequently exit the industry. If that situation occurs, then concentration (contraction) of blenders and roasters likely will occur because of the proposed legislation.**

Further, in all probability there would be a tradeoff between the volume of Kona coffee available for export use and the volume available for domestic use. This tradeoff could further exacerbate the increase in prices for Kona coffee. The issue then for Hawai‘i exporters is what happens to their competitive position associated with Kona coffee versus other specialty brands of coffee.

Interestingly, in discussions over the minimum Kona content requirement, terms such as ‘Hawai‘i coffee’ and ‘Kona coffee’ were often used interchangeably, implying a common misunderstanding of the difference between the two, suggesting that consumer confusion about these coffees persists. Producers most concerned with maintaining the quality of Kona have expressed a desire to utilize only the highest grades of Kona as 100% Kona coffee. The Prime and 3X grades could be used for blending and referred to as ‘Hawai‘i blend’, for example, thus maintaining availability of a Hawai‘i-labeled coffee at a lower price point for that segment of the market seeking more budget-friendly coffee or a lower-priced souvenir gift item.

Finally, in the short run, growers will receive higher prices that will ultimately provide incentives for entry of other growers and/or expansion of current growers in production of Kona coffee. Pertinent points to consider include:

- What will this entry and expansion do to the environment, the cost of land for production, and the impact on other Hawai‘i agricultural enterprises such as macadamia nuts?
- What about persistent problems with pests and diseases in coffee production?

These issues warrant attention to conditions that may be brought about by the proposed legislative changes.

(V) FINDINGS & RECOMMENDATIONS

The comprehensive examination of the proposed Scenarios – 10% blend, 51% blend, and 100% Kona coffee – reveals additional considerations that support a much broader industry strategy. However, because the objective of this analysis is focused on in-state impacts, some of those considerations have been excluded from this Report.

It is strongly recommended that actual outcomes be continuously monitored and evaluated. Those within the industry, as well as those seeking to support and otherwise advocate for industry interest, should be prepared to adapt to an industry environment that may evolve in unexpected ways. As stated by famed evolutionary biologist, Charles Darwin, **"It is not the strongest species that survives, nor the most intelligent, but the ones most responsive to change."**

PROPOSED LEGISLATION

It is reasonable to anticipate that increasing the Kona coffee content to 51% or 100% will enhance the overall perception of the quality of Kona coffee, resulting in a rightward shift of the inelastic demand curve.

The coffee market is characterized by inelastic demand, indicating that in general, consumers do not reduce their demand (consumption) in proportion to price increases, as demonstrated in Figure 4. **Therefore, any increase in Kona coffee content will result in an increase in prices and therefore increased revenue, indicating that tax income would also increase with a higher Kona coffee content mandate.**

Increasing the required Kona coffee content to any increment above the current standard, raises input costs, suggesting why some stakeholders prefer maintaining the existing regulations. **In response to an increase in Kona coffee content, blenders might seek alternative blending strategies, particularly if moving to 100% Kona. To offset higher costs and preserve margins, roasters and exporters could either adjust prices to reflect the enhanced product value, streamline production and marketing for cost savings, or accept lower margins with the hope that higher sales volumes would compensate.**

Transitioning from a 10% blend to a 51% blend or 100% Kona coffee redistributes the economic surplus (or "rents") from downstream intermediaries (e.g. blenders and roasters) to growers and consumers. This shift, detailed in Figure 4, suggests a net gain for the primary stakeholders in the coffee supply chain.

While there are no existing empirical studies detailing the price elasticity of Kona coffee demand, the project team submitted a request for, and subsequently secured, national Kona coffee sales data from a large data-collection firm. Data that had been unavailable during the course of this

project. **Quantitative data is crucial for a more accurate assessment of current and projected sales volume and prices, the estimation of the elasticity of demand for Kona coffee, and support meaningful inferences into projected tax revenue from various labeling scenarios**. Regrettably, the project time frame did not permit the gathering and analysis of this data for inclusion in the current Report. Nevertheless, the project team is prepared to continue this analysis, should furthering this inquiry be of interest.

CONSIDERATIONS

Increasing the Kona coffee content to 51% could yield mixed results. It has the potential to satisfy consumers seeking a more genuine Kona coffee experience at a price lower than 100% Kona, thus potentially broadening the consumer base. However, the presence of 49% non-Kona or unidentified beans in the blend may deter those who are willing to pay a premium.

A 51% blend may pose additional challenges, such as heightened difficulties in certification processes to validate the authenticity of the blend, which could drive up costs and add to the regulatory burden. In 2009, the HDOA Packaging and Labeling Section, responsible for coffee certification and enforcement, was eliminated, necessitating that the State revisit certification, protection, and enforcement potential.

Additionally, a 51% blend could exacerbate the information asymmetry between producers and consumers, potentially leading to confusion among consumers who may not fully grasp the distinction between a 51% blend and 100% Kona coffee. This confusion risks undermining the value of the Kona brand, as consumers might be misled about the quality and origin of the blend, which could, in turn, continue to depress the prices of (pure) Kona coffee.

Conversely, shifting to 100% Kona coffee could streamline the certification process, particularly with the involvement of companies like Oritain, which specialize in tracing the content origin of agricultural products. It is likely easier to certify and enforce 100% Kona coffee due to its singular origin. By moving to 100%, those intermediaries who benefit unduly at the expense of growers and consumers would have less opportunity to do so.

However, such a transition may also induce market shocks, as the industry adapts to supply constraints inherent in producing solely 100% Kona coffee. In the short run, a transition to a greater content of Kona coffee could also result in price volatility and potential supply shortages, affecting the stability of the Kona coffee market.

Employment levels in the short run for both growers and intermediaries (blenders and roasters) are expected to remain relatively stable. Over a longer horizon of two to three years, a rise in employment among growers is anticipated, in response to increased production demands. Contrastingly, intermediaries may experience a contraction in employment levels to

maintain profitability, and those whose costs regularly surpass their earnings will likely exit the industry. As such, consolidation and vertical integration is expected to increase over the longer run horizon.

The impact on intermediaries could materialize sooner, if firms decide to alter their production mixes in response. Pressure on growers in the intermediate run, if they elect to scale up production in response to market signals, may increase employment on a seasonal basis.

Historically, agricultural production and processing sectors have evolved through phases of consolidation and vertical integration, driven by competitive pressures and efforts to optimize efficiency. The next step, often occurring simultaneously, is vertical integration.

Potential Challenges

Legislative provisions for Kona coffee blends must emphasize the need for transparent labeling. Specifying the blend's composition, for instance, that a 51% Kona blend includes 49% Colombian or Brazilian beans, is essential to address information asymmetry. **Such measures ensure consumers are as informed as producers, preventing misinformed purchasing choices and fostering consumer trust.**

There are significant limitations to the current understanding of blend sales and production. For instance, the 51% blend does not currently exist, in any broad sense. From an economic perspective, there is little market incentive for producers to use higher-priced inputs than what is required by the law. Thus, the availability of 51% Kona blend products that are comparable to the proposed legislation is not known, making meaningful analysis, as well as projections of sales and volume, infeasible. The 51% Kona blends available are typically blended with another high-quality (as well as high-priced) coffee. For example, coupling 51% Kona coffee with 49% rare Geisha coffee is not representative of the proposed legislation. The absence of meaningful 51% Kona blend sales data hampers quantifiable economic analysis. **Furthermore, the cessation of Kona production data collection creates a knowledge gap regarding current production levels, volume, revenue, economic impacts, and costs. Similarly, there is no effective and consistent data collection of grower costs on which to base reasonable grower expense and revenue impacts that might result from a change in the labeling law.**

Notably, the practice of coffee blending, to the extent seen with Kona coffee, is not common in other coffee-producing regions. Stringent regulations typically govern these regions to protect the reputation and quality of the origin-specific coffee. Such regulations are designed to prevent misleading practices and ensure that consumers are well-informed about coffee purchased. These measures are essential in maintaining the integrity of coffee as a product, upholding the economic viability of this coffee-producing region and safeguarding consumer interests.

Based upon the full range of interviews and assessment of current conditions, the following, presented without any specific sequence, are likely outcomes for the Kona coffee industry as a result of increasing the required Kona coffee content:

1. Prices for Kona cherry rise initially, and quantity demanded of Kona coffee increases due to *any* increase in the minimum labeling requirement. Supply respon se due to higher prices received by growers will occur in three-to-five years as new coffee trees are planted and existing orchards are refurbished or replanted.
2. Increases in the minimum labeling blend requirement could result in quality decrease s due to mixing lower quality beans into Kona blends to maintain profit while meeting demand.
3. Prices for Extra Fancy (XF), Fancy (F), and Select increase and prices for Prime and 3 X decrease.
4. Quality of Kona sold to the continental U.S. does not change because there is no requirement as to the percentage of Kona coffee necessary in blends for Kona de signation, unlike Japan which requires 30% Kona content for designation, preferring XF and F grades.
5. With a move to 100% Kona and *Hawai'i blends* rather than Kona blends in the local market, gift shops accommodate the increased price due to increases in the perce ntage of Kona required for designation. In addition:
    a. Hawai'i producers and roasters move to all 100% Kona coffee from 'smaller' firms (boutique coffees) and pushes toward all integrated firms.
    b. The market moves to oligopolist behavior and differentiates products on non-price bases (quality awards, appeal of the region, specific quality appellations, etc.).
    c. The Kona coffee industry settles as a tiered industry with higher prices for top-gr ade coffee cherries, beans, and roasts at considerable premiums and l ower-grade cherries, beans, and roasts at discounted prices. This outcome results from aggressive differentiation efforts from key players in the i ndustry.

RECOMMENDATIONS

There is clear economic justification to increase the minimum content requirement for Kona coffee. As is often the case with compromises, few are pleased with the 51% Kona blend proposal, across stakeholder groups. **Growers indicated a significant shift in their perspectives, with many who had initially considered the 51% blend as a viable middle ground subsequently and decisively favoring 100% Kona coffee, a sentiment that was solidified even before they participated in the study.** This preference was unanimous among the participants of the grower focus group, though not among all growers interviewed or otherwise engaged in this project, and additionally highlights a broader trend. Other industry stakeholders, including a number of retail coffee shops in particular, have voiced strong support for a move to 100% Kona to bolster the authenticity of their product and enhance transparency for consumers, thereby reducing information asymmetry. Interestingly, a substantial number of the proponents for 100% Kona, spanning both growers and retailers, operate integrated businesses that oversee the entire production chain from cultivation to direct sales, underlining a commitment to the authenticity and quality associated with full Kona coffee offerings.

While the proposed phased-in implementation strategy for increasing Kona coffee content to 51% (or any increment above the current 10% legislation) may seem advantageous, the reality is more complicated in considering the implementation of new packaging and processing new proportions of Kona blends. When labeling requirements change, producers may be left with obsolete inventory that they need to use up or write off, which can be wasteful and costly. In addition, smaller producers may not have the scale to produce or procure packaging cost-effectively. A gradual phase-in may be more disruptive than an abrupt switch.

A more effective approach to mitigate industry shocks is to provide a longer lead time for the industry to prepare for the new regulation. This would help mitigate transition costs by allowing companies ample time to exhaust their existing packaging supplies and adjust their operations more smoothly. It may be more practical to set an extended deadline and then implement the change all at once, permitting businesses to recalibrate their blending equipment, processes, and packaging needs in one concerted effort.

Additionally, establishing a comprehensive regulatory framework, focused on the consumer market of roasted coffee, is strongly suggested in advance of any labeling changes. This framework should include provisions for inspection, certification, and a robust record-keeping system. It should also define specific triggers for inspections and violations, monitor compliance, and outline a clear penalty structure. For example, it might consider a graduated approach to violations, allowing for a certain threshold in the initial years, which would then be incrementally lowered, thereby encouraging compliance over time.

GEOGRAPHICAL INDICATIONS

The economic rationale for the concept of Geographical Indications (GIs) derives from the fact that place of origin may be used not only as a quality signal but also the resources of the region may be captured in the origin-labeled product as quality attributes. **The informative meaning of the geographic name "Kona" in roasted coffee should be emphasized to reduce information asymmetries in which consumers do not fully know what they are buying.** In addition, the resources of the Kona region should be used to increase the value of coffee products. The added value derived from these resources leads to differentiation based on product "qualities" and ultimately to the creation of niche or specialty markets.

Moreover, growers, blenders, and roasters should adopt strategies for creating a reputation for their products. The collective nature of Gis implies that the signals of reputation and quality are not limited to just a single grower/intermediary but to all growers/intermediaries within the designation that adhere to the code of practice. Notably, GIs are the result of a process whereby collective reputation is institutionalized to solve problems that arise from information asymmetry (Bramley and Kirsten, 2007).

At their core, registered GIs can be a valuable and effective tool to 'decommodify' agricultural and food products, but they are only as effective as the governance structures by which they operate, which is detailed in Section (III) – Geographical Indications & Kona Coffee.

TRUTH IN LABELING

The effectiveness of the labeling requirement hinges on the existence of standards, testing, certification, and enforcement services; or more simply, a truth in labeling program. Quality is a cornerstone of the Kona coffee industry, a point that was made abundantly clear in the consumer surveys of continental U.S. and Hawai'i residents. Complaints have been made and legal challenges have been carried out concerning irregularities in the production, harvesting, processing, grading, roasting, or some other facet in the handling of Kona coffee.

To establish credible, effective mandatory labeling, the government, industry-wide organizations, or third-party agents must ensure that the quality standards in question are clear and achievable; that testing services, if necessary, are available to measure the validity of labeling claims; that producers (and consumers) are able to certify or otherwise prove the validity of the quality claim; and that a mechanism for enforcing labeling rules exists, including a mechanism to penalize growers or intermediaries who make fraudulent claims. Mandatory labeling laws that are not supported by standards, testing, certification, and enforcement services result in increased incidents of fraudulent behavior. Stated simply, counterfeiting must be minimized and eliminated.

CERTIFICATION PROGRAM

A certification program in which consumers are assured that the product in question indeed is a stated Kona blend or 100% Kona coffee is recommended. This certification could be achieved by way of a seal of approval or certificate of authenticity. A precedent for this recommendation was evident in 1988 when the Kona Coffee Council initiated a seal of approval program (Nakamoto and Halloran, 1989).

The certification program must involve all parties involved in the production, processing, marketing, and selling of Kona coffee. Green Kona coffee is already graded and cupped. Random samples of bags obtained from processors by inspectors would be subject to testing for certification. A list of certified processors would subsequently be distributed to buyers and could be used in promotion programs. **To be sure, the certification program is far more easily applied to 100% Kona coffee. To support transparency, reporting must include the components of the blends to minimize fraudulent use.**

Unquestionably, some entity must administer the certification program. We have ascertained via interviews with the Hawaii Department of Agriculture that without adequate funding allocation and support, the State of Hawai‘i cannot undertake enforcement of any certification program. Consequently, we recommend the establishment of a market order authorized by the U.S. Department of Agriculture through the Agricultural and Marketing Agreement Act of 1937.

The advantages of the marketing order include coordinated activities for the orderly marketing of Kona coffee. These activities would eliminate duplicated efforts and maximize use of resources in the production, processing, and marketing of Kona coffee. In addition, FMOs can vote a levy on themselves, often referred to as a “checkoff”, to fund promotion, consumer education, inspection, certification, and origin testing by a third-party firm. Café’ de Colombian successfully implements a 6¢ per pound levy on all green coffee exported from the country to fund their activities. However, due to the lack of industry cohesion or fragmentation of the industry, the use of a marketing order is likely to be problematic. Yet a cohesive industry presents a united front or a single voice to the public (Nakamoto and Halloran, 1989). Perhaps the best route for a successful certification program is via a private management/administrative firm. Of course, the costs associated with certification likely will not be trivial but the benefits of certification will outweigh the costs.

INFORMATION, EDUCATION, AND PROMOTIONAL PROGRAMS

In agreement with Nakamoto and Halloran (1989), unequivocally we recommend the use of information, education, and promotional programs directed at all marketing levels from the grower to the final consumer. This recommendation has been dormant for 35 years. Agricultural checkoff programs have been shown to be effective in not only shifting the demand to the right due to information exchanges, education efforts, and promotional activities but also in providing a reasonable return on investment to stakeholders. Various promotional activities include generic advertising and attractive packaging and displays. The consumer surveys conducted in the continental U.S. and in Hawai‘i substantiate the effectiveness of these promotional activities. Again, the costs associated with information, education, and promotion programs likely will not be trivial but the benefits associated with these programs likely will far outweigh the costs.

KA‘Ū INFERENCES

Ka‘ū coffee is grown on the southern side of the Big Island, giving it a unique flavor profile that is described as having low-acidity, a rich and full-bodied flavor, and is sometimes noted for its sweetness. It is reasonable to expect, in terms of recommendations and broad market dynamics contained within this Report , a similar outcome for the Ka‘ū coffee industry. However, the Ka‘ū coffee industry has a much more recent history compared to the well-established brand, and brand value, of Kona coffee. While Ka‘ū coffee has been gaining attention for its unique flavor profile, it is a young industry and the recommendations may not be applicable at this time. Further evaluation of the Ka‘ū coffee market should determine the most practical strategies for development and inform when, and whether, the recommendations herewithin, are applicable.

While this study focused mainly on the Kona coffee market, other Hawai‘i agricultural products are likely to face similar challenges in the future. Consistency across agricultural products and their regulatory framework is a necessary consideration.

LIMITATIONS

The limited availability of data and the constrained project timeline significantly impacted the precision of the Report's conclusions. Access to comprehensive data is vital to fulfill the requested objectives of this project. For example, detailed data on the sales of 10% and 51% Kona coffee blends, alongside figures for 100% Kona coffee is necessary to enable the development of more precise demand and pricing forecasts and projections for each Scenario. Moreover, detailed sales data could facilitate an analysis of cross-price elasticity, illuminating the relationship between the market demand for Kona coffee blends and 100% Kona coffee. Additional data needs include:

1. **Historic dollar sales and quantities sold of the 10% Kona blend versus 100% Kona across various market channels**—HRI, retail outlets, tourists, and export—over time. This information would assist in addressing the fiscal revenue implications for the State of Hawai'i resulting from current blending requirements and the impacts of alternative requirements.
2. **Share of sales of the 10% Kona blend versus 100% Kona across various market channels**—HRI, retail outlets, tourists, and export.
3. **Quantities and dollar sales of products currently being sold, costs, and profitability of the 10% Kona blend and 100% Kona coffee.**
4. **Quantities and dollar sales of the 10% Kona blend and 100% Kona coffee currently being exported.** In addition, determining how sensitive exports are to changes in price of 10% Kona blend and 100% Kona coffee. That is, the sensitivity of changes in prices of the respective coffee products to the volume of exports.
5. **Reliable and consistent representative data on the actual costs of producing Kona and Ka'ū coffee.** Efforts in this study for voluntary self-reporting by small producers were not successful in deriving this cost data due to differences in record keeping methods and lack of clarity in responses. This could be overcome by conducting anonymously reported interviews of small farmers who comprise most producers but not the majority of production.

Despite extensive efforts and consultations with a variety of state and external entities, certain essential data needed for this analysis remained unattainable, as it was simply not available. The industry would benefit greatly from renewed efforts to establish regular data collection. Consequently, it was necessary to resort to formulating theoretical projections and estimates for many project objectives, which were meticulously constructed based on sound economic principles and backed by reliable sources to maintain analytical integrity.

Extending the project, coupled with adequate funding, would not only enhance data gathering and analytical rigor but also increase stakeholder engagement. This is particularly important considering the project's shortened timeline coincided with significant federal holidays, which inhibited stakeholder participation.

Technological limitations faced by some stakeholders were also a factor, the team provided alternative methods for input, such as distributing paper surveys. Nonetheless, it's conceivable that these measures did not fully bridge the participation gap. With more time, we could implement diverse and more inclusive engagement strategies, ensuring that all stakeholders have ample opportunity to contribute to, and shape, next steps.

The project's timeline was further strained by a delayed start. Initially, the approved project economist, despite being well-qualified, was compelled to resign due to well-intentioned, albeit misperceived, concerns regarding impartiality. This unforeseen change, although resolved by onboarding three specialist sub-contractors, pushed back the project schedule significantly as a suitable replacement was sought. The resulting delay meant that key project milestones commenced later than planned, affecting the overall project delivery.

Despite the project garnering considerable interest and engagement from the industry, some resistance to the established channels for participation was encountered. We deeply value the contributions of stakeholders who invested their time and shared valuable data and insights.

However, it's notable that a considerable number of stakeholders exhibited hesitancy in providing quantitative data, which posed a challenge to our comprehensive data collection efforts. It is worth considering why data was not more robustly contributed, considering the industry-wide interest in this project. As mentioned, the truncated time frame intermixed with major travel holidays played a role but the motivation of some may be intended to limit the conclusiveness of findings and to mitigate potential deviation from the status quo. This question should be evaluated and possible motivations for data-sharing reluctance should be considered and overcome. As a result, the economic analysis is less precise than what would be possible with robust data. Preferably, data would be collected by a governing agency with regular frequency and maximum stakeholder participation, so that more meaningful, *quantifiable* outcomes can be ascertained.

FURTHER STUDY

Further investigation into the specified areas would significantly enhance the understanding of the impacts stemming from the proposed amendments to Hawaii's labeling laws:

1. **The ability of consumers to distinguish among various levels of Kona blends and 100% Kona coffee.** It is not clear whether consumers are able to discern any differences, positive or negative, from Kona blends or 100% Kona. Robust taste test panels and focus groups are appropriate methods of obtaining information on the cupping abilities of consumers.
2. **Price elasticities of demand and supply.** Including own-price elasticities of demand for blended Kona coffee and 100% Kona coffee; cross-price elasticity of demand between blended Kona coffee and 100% Kona coffee; cross-price elasticity of demand between Kona coffee, blended and 100%, concerning other brands; and own-price elasticity of supply for Kona coffee. Analysis of elasticities requires the availability of current sales and production data, specific to the Kona region, not currently available.
3. **Consideration, and subsequent evaluation, of additional factors that could pose significant economic and other impacts**. For example, what are the economic and ecological impacts of importing green coffee?
4. **The extent to which the presence of Kona blends damages the overall image, reputation, and marketability of 100% Kona coffee.**

(VI) SUPPLEMENTARY MATERIALS

REFERENCES

Abaelu, J.N. & Manderscheid, L.V. (1968). "U.S. Import Demand for Green Coffee by Variety." *American Journal of Agricultural Economics*, 50, 232-42.

Abere, A. (2010). "Using Economics to Measure Damages in Private Advertising Litigation." *The Adviser*, 1(1), 14-17.

Akiyama, T. & Duncan, R.C. (1982). Analysis of the World Coffee Market. World Bank, Washington, D.C.

Akiyama, T. & Varangis, P.N. (1990). "The Impact of the International Coffee Agreement on Producing Countries." *The World Bank Economic Review*, 4(2), 157-173.

Aldrich, L. (1999). Consumer Use of Information: Implications for Food Policy. U.S. Department of Agriculture, Economic Research Service, Agricultural Handbook Number 715.

Anstine, J. (2007). "Organic and All Natural: Do Consumers Know the Difference?" *Journal of Applied Economics and Policy*, 26(1), 15-27.

Aubard, A. (2010). "The Use of Geographical Indications to Promote Economic Development: Issues, Opportunities, Policy Options," Presented at ACP regional workshops on Geographic Indications, Cape Town, South Africa, April-May.

Barham, E. (2003). "Translating Terroir: The Global Challenge of French AOC Labeling," Journal of Regional Studies, 19 (1), 127-138.

Bettendorf, L. & Verboven, F. (2000). "Incomplete Transmission of Coffee Bean Prices: Evidence from the Netherlands." *European Review of Agricultural Economics*, 27(1), 1-16.

Bramley, C., & Kirsten, J.F. (2007). "Exploring the Economic Rationale for Protecting Geographical Indicators in Agriculture," *Agrekon*, 46(1), March, 69-93.

Combris, P., Lecocq, S., & Visser, M. (1997). "Estimation of a Hedonic Price Equation for Bordeaux Wine: Does Quality Matter?" *The Economic Journal*, 107(441), 390-402.

Court, A.T. (1939). "Hedonic Price Indexes with Automobile Examples." The Dynamics of Automobile Demand, New York: The General Motors Corporation.

Daly, R.F. (1958). "Coffee Consumption and Prices in the United States." *Agricultural Economics Research,* 10, 61-71.

Daviron, B. & Ponte, S. (2005). The Coffee Paradox: Commodity Trade and the Elusive Promise of Development. London: Zed Books.

Durevall, D. (2007). "Demand for Coffee in Sweden: The Role of Prices, Preferences and Market Power." *Food Policy*, 32(5-6), 566-584.

Hawaii Coffee Association. (2018). Grown with Aloha: A Guide to Hawai'i's Coffee Industry: Yesterday, Today & Tomorrow.

Feldman, M. (2010). "Economic Effects of Blending Kona Coffee--A Preliminary Analysis," Report Prepared by Resource Decisions, February 10.

Feleke, S.T. & Walters. L.M. (2005). "Global Coffee Import Demand in a New Era: Implications for Developing Countries." *Review of Applied Economics*, 1(2), 223-237.

Feuerstein, S. (2002). "Do Coffee Roasters Benefit from High Prices of Green Coffee?" *International Journal of Industrial Organization*, 20(1), 89-118.

Food and Agriculture Organization of the United Nations (FAO). (2018). Strengthening Sustainable Food Systems Through Geographical Indications: An Analysis of Economic Impacts. FAO Investment Centre. European Bank for Reconstruction and Development.

Galtier, F., Belletti, G., & Marescotti, A. (2013). "Factors Constraining Indications for Coffee: Insights from a Dominican Case Study." *Development Policy Review*, 31(5), 597-615. Overseas Development Institute.

Gereffi, G., J. Humphrey, and T. Sturgeon. 2005. "The Governance of Global Value Chains." *Review of International Political Economy,* 12(1): 78-104.

Goddard, E.W. & Akiyama, T. (1989). "United States Demand for Coffee Imports." *Agricultural Economics*, 3(2), 147-159.

Golan, E., Kuchler, F., & Mitchell, L. (2000). "Economics of Food Labeling." Economic Research Service, U.S. Department of Agriculture. Agricultural Economic Report No. 793.

Grote, U. (2008). "Environmental Labelling, Protected Geographic Indications and the Interests of Developing Countries." *The Estey Centre Journal of International Law and Trade Policy*, 10 (1), 94-110.

Hadden, S.G. (1986). Read the Label: Reducing Risk by Providing Information. Boulder, CO: Westview Press.

Hawaii Department of Agriculture (2002). "100% Hawaii Coffee – Certified with Aloha!" Brochure.

Herrmann, R. (1986). "Free Riders and the Redistributive Effects of International Commodity Agreements: The Case of Coffee." *Journal of Policy Modeling*, 8(4), 597-621.

Hodgson, A.S. & Bruhn, C.M. (1993). "Consumer Attitudes Toward the Use of Geographical Product Descriptors as a Marketing Technique for Locally Grown or Manufactured Foods." *Journal of Food Quality*, 16, 163-174. DOI: https://doi.org/10.1111/J.1745-4557.1993.Tb00103.X.

Houston, J.E., Santillan, M., & Marlowe, J. (2003). "U.S. Demand for Mild Coffees: Implications for Mexican Coffee." *Journal of Food Distribution Research*, 34, 92-98. DOI: https://doi.org/10.22004/ag.econ.27956.

Huang, C.J., Siegfried, J.J., & Zardoshty, F. (1980). "The Demand for Coffee in the United States, 1963-77." *Quarterly Review of Economics and Business*, 20, 36-50.

Hughes, J. (2009). "Coffee and Chocolate- Can We Help Developing Country Farmers Through Geographical Indications?" Washington, D.C. International Intellectual Property Institute.

Hughes, J.J. (1969). "Note on the U.S. Demand for Coffee." *American Journal of Agricultural Economics*, 51, 912-14.

Ippolito, P.M., & Mathios, A.D. (1990). "Information, Advertising, and Health Choices: A Study of the Cereal Market." *Rand Journal of Economics* 21(3), 459-80.

Ippolito, P.M., & Mathios, A.D. (1995). "Information and Advertising: The Case of Fat Consumption in the United States." American Economic Review 85(2): 91-95.

Kinro, Gerald. "*A Cup of Aloha: The Kona coffee Epic*." University of Hawai'i Press, 2003.

Koerner, J. (2002). "The Dark Side of Coffee: Price War in the German Market for Roasted Coffee." FE Working Paper No. 0204, January. Available at: http://hdl.handle.net/10419/23590.

Kutty, P.U. (2000). "Demand for Coffee Imports: An Econometric Analysis." *Foreign Trade Review*, 35(2-3), 91-100.

Lawrence, N.A., Phillips, W.A., Riffkin, A.H., & Saleh, A.A. (1977). U.S. Coffee Consumption, 1946-76, USDA/FAS, Washington, D.C.

Lee, D., Johnson, M.A., Aristizábal, L.F., Shriner, S., Chan, C., Miyasaka, S., &Wall, M. (2023). "Economic Benefits from Managing Coffee Berry Borer (Hypothenemus hampei) in Hawaii." *Insects*, 14(4), 350. DOI: doi.org/10.3390/ insects14040350

Li, J. & Hooker, N.H. (2009). "Documenting Food Safety Claims and Their Influence on Product Prices." *Agricultural and Resource Economics Review*, 38(3), 311-322.

Mila, K. (2017). Starbucks and Ethiopia: A Trademark Tale. Available at: https://kristinegailmila.wordpress.com/2017/10/26/starbucks-and-ethiopia-a-trademark-tale-a-case-study-in-business-ethics/#:~:text=The%20U.S.%20Patent%20and%20Trademark%20Office%20(USPTO)%20approved,the%20trademark%20application%20for%20Yirgacheffe, October.

Moorman, C. (1996). "A Quasi Experiment to Assess the Consumer and Informational Determinants of Nutrition Information Processing Activities: The Case of the Nutrition Labeling and Education Act." *Journal of Public Policy and Marketing* 15(1): 28-44.

Moschini, G., Menapace, L., &. Pick, D. (2008). "Geographic Indications and the Competitive Provision of Quality in Agricultural Markets." *American Journal of Agricultural Economics*, 90(3), 794-812.

Muth, M.K., Zhen, C., Taylor, J., Cates, S., Kosa, K., Zorn, D., & Choiniere, C. (2013). "The Value to Consumers of Health Labeling Statements on Breakfast Foods and Cereals." *Journal of Food Products Marketing*, 19(4), 279-298.

Nakamoto, S.T. & Halloran, J.M. (1989). "The Markets and Marketing Issues of the Kona Coffee Industry." Prepared for the State of Hawaii, Department of Agriculture, Department of Agricultural and Resource Economics, College of Tropical Agriculture and Human Resources, University of Hawai'i.

Nerlove, M. (1995). "Hedonic Price Functions and the Measurement of Preferences: The Case of Swedish Wine Consumers." *European Economic Review*, 39(9), 1697-1716.

Nerurkar, P.V., Yokoyama, J., Ichimura, K., Kutscher, S., Wong, J., Bittenbender, H.C., & Deng, Y. (2023). "Medium Roasting and Brewing Methods Differentially Modulate Global Metabolites, Lipids, Biogenic Amines, Minerals, and Antioxidant Capacity of Hawai'i-Grown Coffee (*Coffea arabica*)." *Metabolites*, 13, 412.
DOI: https://doi.org/10.3390/metabo13030412

Noah, L. (1994). "The Imperative to Warn: Disentangling the 'Right to Know' from the 'Need to Know' about Consumer Product Hazards." *Yale Journal on Regulation,* 11(2), 293-400.

Okunade, A.A. (1992). "Functional Forms and Habit Effects in the U.S. Demand for Coffee." *Applied Economics*, 24(11), 1203-1212.
DOI: https://doi.org/10.1080/00036849200000130

Okunade, A.A. & McLean-Meyinsse, P.E. (1992). "Reliability Tests of Elasticity Estimates from Alternative Specifications of the U.S. Demand for Coffee." *Journal of Agribusiness*, 19-35.

Olekalns, N. & Bardsley, P. (1996). "Rational Addiction to Caffeine: An Analysis of Coffee Consumption." *Journal of Political Economy*, 104(5), 1100-1104.

Palm, F.C. & Vogelvang, E. (1986). "A Short-Run Econometric Analysis of the International Coffee Market." *European Review of Agricultural Economics*, 13, 451-476.

Parikh, A. (1973). "United States, European, and World Demand Function for Coffee." *American Journal of Agricultural Economics*, 55, 490-494.

Paxson, H. (2010). "Locating Value in Artisan Cheese: Reverse Engineering Terroir for New World Landscapes." *American Anthropologist*, 112 (3), 444-457.

Ponte, S. (2002). "The 'Latte Revolution'? Regulations, Markets and Consumption in the Global Coffee Chain." *World Development*, 30(7), 1099-1122.

Satimanon, T., & Weatherspoon, D. (2010). "Hedonic Analysis of Sustainable Food Products." *International Food and Agribusiness Management Review*, 13(4), 57-74.

Skilton, P. F. & Wu, Z. (2013). "Governance Regimes for Protected Geographic Indicators: Impacts of Food Marketing Systems." *Journal of Macromarketing*, 33(2), 144-159.

Steiner, B. (2004). "Australian Wines in the British Wine Market: A Hedonic Price Analysis." *Agribusiness*, 20(3), 287-307.

Timms, D.E. (1973). World Demand Prospects for Coffee in 1980. USDA ERS, Washington, D.C.

Tregear, A., Arfini, T., Belletti, G., & Mariscotti, A. (2007). "Regional Foods and Rural Development: The Role of Product Qualification." *Journal of Rural Studies,* 23, 12-22.

United States Patent and Trademark Office. Geographic Indications. Available at: https://www.uspto.gov/, Accessed December 10, 2023.

Valkila, J., & Niemi, N. (2007). The Price Elasticity of Demand for Fair Trade Coffee. International Journal of Business and Economics, 6(1), 71-84.

Vandecandelaere, E., Afrini, F., Belleti, G., & Marescotti, A. (2009). Linking People, Places, and Products: A Guide for Promoting Geographical Origin and Sustainable Geographical Indications, 2nd. New York: Food and Agricultural Organization of the United Nations (FAO) and SINER-GI. 2009.

Variyam, J., Blaylock, J., & Smallwood, D. (1995). "Modeling Nutrient Intake: The Role of Dietary Information." U.S. Department of Agriculture, Economic Research Service, Technical Bulletin Number 1842.

Variyam, J., Blaylock, J., & Smallwood, D. (1997). "Diet-Health Information and Nutrition: The Intake of Dietary Fats and Cholesterol." U.S. Department of Agriculture, Economic Research Service, Technical Bulletin Number 1855.

Viscusi, K., & Magat, W. (1987). Learning About Risk: Consumer and Worker Responses to Hazard Information, Cambridge, MA: Harvard University Press.

Waugh, F.V. (1928). "Quality Factors Influencing Vegetable Prices." *Journal of Farm Economics*, 10(2), 185-196.

Zografos, D. (2008). "Geographical Indications and Socio-Economic Development." Working Paper Number 3. IQsensato. Available at: https://ssm.com/abstract=1628534.

APPENDICES

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This project benefited greatly from the expertise and insights of many. Associations supported the distribution of materials and project participation.

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Hunter Heaivilin, a Principal with Supersistence and has over fifteen years of experience in food systems planning. He focuses on strategic governance and policy entrepreneurship to advance food systems equity and sustainability. As founder of Hawaiʻi-based consulting firm Supersistence, he works with organizations like food banks, farmer networks, and government planning offices to shift power in the food system towards democracy and justice. Concurrently, Hunter is a Ph.D. Candidate at UH Manoa's Department of Geography & Environment, where he researches the history and future of disaster resilience in Hawaiʻi's agricultural economy.

Matt Strassberg, Esq., leads the Hawaiʻi, California, New Hampshire, and Vermont USDA Certified Agricultural Mediation Programs. In addition to mediating thousands of environmental and agricultural disputes, Matt has led numerous projects involving the intersection of agriculture and the environment including evaluating the Kauai Agricultural Good Neighbor Program, working with stakeholders to update Vermont's statewide land use permitting law, reducing nutrient runoff from dairy farms, and increasing collaboration between meat producers and processors. He previously worked as an attorney for the Big Mountain Legal Office, the U.S. EPA Region IX in San Francisco, and the Vermont Environmental Board. Matt transitioned from law because of his preference for creative problem solving and collaborative processes over litigation.

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Vickie Lish

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Yukashi Smith

STATES IN THE REGIONS

New England: Connecticut, Maine, Massachusetts, New Hampshire, Rhode Island, Vermont
Middle Atlantic: New Jersey, New York, Pennsylvania
East North Central: Indiana, Illinois, Michigan, Ohio, Wisconsin
West North Central: Iowa, Kansas, Minnesota, Missouri, Nebraska, North Dakota, South Dakota
South Atlantic: Delaware, DC, Florida, Georgia, Maryland, North Carolina, South Carolina, Virginia, West Virginia
East South Central: Alabama, Kentucky, Mississippi, Tennessee
West South Central: Arkansas, Louisiana, Oklahoma, Texas
Mountain: Arizona, Colorado, Idaho, New Mexico, Montana, Utah, Nevada, Wyoming
Pacific: Alaska, California, Hawai'i, Oregon, Washington

GUILD CONSULTING

GROWER SURVEY

ANNUAL GROWER PRODUCTION AND HARVEST DATA
KONA AND KA'U COFFEE

INSTRUCTIONS: Please fill in the blue highlighted boxes below to the best of your ability. Thank you!
Once completed, please save this file and submit via email to: konalabel@guild.im

COFFEE REGION: **Please check all that apply*
☐ Kona ☐ Ka'u ☐ Other

TOWN OF YOUR FARM LOCATION:

ZIP CODE OF YOUR FARM LOCATION:

MAIN VARIETY OF COFFEE GROWN:

YEARS AS A GROWER ON THIS FARM:

YOUR TOTAL YEARS AS A GROWER:

Note: enter either tree count for whole farm or trees/acres, but not both.
If total tree count unknown, we will assume 647 trees/acre as recommended by University of Hawaii.

1 Total tree count =	
2 Total acres of coffee trees =	
3 Average interest rate on debt capital =	
4 Average interest rate on working capital =	%

ANNUAL GROSS REVENUE (for crop year 2020/21):

	% of Production of crop	*Lbs. of cherry*	*Avg Yield per tree (lbs.)*	*Price Received $/unit*
Coffee Cherry	%			$
Processed Green	%			$
Processed Roasted	%			$

ANNUAL OPERATING COSTS (for an average crop year):

I. Growing Operations

A. Fertilizing:

	Quantity per tree	*Cost per pound*
1 Granular Fertilizer		$
2 Foliar Fertilizer		$

B. Weed Control:

	Labor hours	*Labor cost/hour*	*Cost of chemicals*		*Cost per acre*
1 Herbicides (Round-up)		$	$		$
2 Other weed control (mowing)		$	$	*If you contract weed control, enter the contracted rate here:*	$
3 Other weed control (weed whacking)		$	$		$

C. Pest Control:

	Labor hours	*Labor cost/hour*	*Cost of chemicals*		*Cost per acre*
1 Coffee borer bettle		$	$		$
2 Coffee leaf rust		$	$	*If you contract pest control, enter the contracted rate here:*	$
3 Other:		$	$		$

E. Water Usage:

1	Do you utlize irrigation?		Yes	No

		Total gallons per week	*Weeks irrigated*	*Water costs (per thousand gal.)*
2	Irrigation costs			

F. Labor:

		Number of applications	*Hours per acre*	*Cost per hour (wage+benefits)*
1	Pruning/Suckering/Mulching labor			
2	Other growing labor:			

G. Other Expenses

1	Gasoline/Diesel/Oil	$
2	Utilities (ex. electricity)	$
3	Machinery and equipment repairs and maintenance	$

II. Harvest-Related Operations

A. Harvesting:

1	Picking labor - cost per pound	$
2	Processing costs per pound	
	Wet-milling of cherry	$
	Dry-milling, parchment to green	$
	Roasting	$

B. Marketing:

1	Website design/maintenance	$
2	Marketing materials & advertising	$
3	Packaging	$
4	Brokerage Fees	$
5	Other expenses	$

ANNUAL OWNERSHIP COSTS:

I. Capital Resource Costs

1	Planting costs per tree (including tree)	$		
2	Land grading and leveling	$		
3	Other improvements (ex. irrigation)	$		
4	Buildings	$		
5	Bldg property tax, insurance, repairs on:	$	at	%

II. Land Resource Costs

1	Rental or lease costs (annually)	$
2	Purchase price of land (if applicable)	$
3	Annual mortgage payment	$
4	Annual property tax	$

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Thank you very much for participating in this survey!
Your assistance is necessary and invaluable.

AUTHOR BIOS

LESLEY G HARVEY, MS ECON – PROJECT LEAD, GUILD CONSULTING PARTNER

Lesley Harvey is a long-time grant writer and non-profit/small business consultant, supporting companies' strategy with comprehensive analysis to increase effectiveness, leverage opportunities, obtain funding, and overcome challenges. Ms. Harvey has worked with large and small organizations, from startups to well-established enterprises and has supported Clients securing more than $60 million in funding since 2011 as the Founder + President of Grant Writing & Consulting. Ms. Harvey saw the need for more broad-based business consulting and established The Hawai`i Business Consultancy in 2019 before joining GUILD Consulting as a partner in 2021.

Lesley holds a Master of Science degree in Economics and a Bachelor of Arts in International Business. She is the Board President of Hawai'i Economic Association and has served as a director-at-large since 2013.

DR. PETER ADLER – GUILD CONSULTING PARTNER

Peter S. Adler, Ph.D. is a partner in GUILD Consulting and the former President and CEO of The Keystone Center (www.keystone.org). Dr. Adler's specialty is multi-party problem-solving for policy and governance disputes and for enterprises seeking strategy, alignment, and operational excellence. He has extensive national and international experience with business and policy negotiations and writes, trains, and teaches in areas of conflict management. Adler has held executive positions with the Hawai'i Supreme Court, Hawai'i Justice Foundation, and the Neighborhood Justice Center, and served as president of the Society of Professionals in Dispute Resolution. He has authored five books and other publications in the field of conflict management.

DR. ORAL CAPPS, JR. – AGRICULTURAL ECONOMIST

Over a long and distinguished career, Dr. Oral Capps, Jr. has been at the forefront of research on consumer demand issues and econometric modeling and forecasting methods. His research approach is a rigorous blend of theory-based econometric methodology and applications. He has published ground-breaking work concerning uses of scanner-derived information for managerial decision-making in food retailing; the analysis of expenditure patterns of pre-prepared foods and foods eaten away from home; the analysis of the food demand impacts of health and nutrition information; the unilateral price effects of mergers and acquisitions; and the evaluation of generic commodity advertising and promotion programs. His moniker is "an academician with a corporate mentality."

Currently Executive Professor, Regents Professor and Holder of the Southwest Dairy Marketing Endowed Chair in the Department of Agricultural Economics at Texas A&M University as well as Co-Director of the Agribusiness, Food, and Consumer Economics Research Center (AFCERC), Dr. Capps was educated at Virginia Tech. He earned a B.S. degree in Mathematics in 1975, M.S. in Agricultural Economics in 1977, M.S. in Statistics in 1979, and Ph.D. in Agricultural Economics in 1979. Dr. Capps is also Co-Founder, Chief Economist, and Managing Partner of Forecasting and Business Analytics, LLC, a consulting firm established in College Station, Texas in July 2001.

Dr. H.L. Goodwin, Agricultural Economist

Dr. H.L. Goodwin is Professor Emeritus in Agricultural Economics at the University of Arkansas in Fayetteville, AR. He joined the University of Arkansas Center of Excellence for Poultry Science as a faculty member in Agricultural Economics and Agribusiness in December 1997. Prior to that date he was the Agricultural and Food Systems Policy Advisor to Slovakia (January 1996-December 1999) and a Fulbright Scholar in Czechoslovakia (1991-92). Goodwin was on faculty of the Department of Agricultural Economics at Texas A&M University from 1982 through 1995 and served as the Associate Director of the Texas Agriculture Market Research Center from 1989 through 1995. During his 40-year research and extension career, he worked intimately with several agricultural producer groups, agribusinesses and food processors in the rice, fruits and vegetables, poultry and eggs and feed grains industries. His knowledge of survey design, interviewing and working with groups with divergent opinions is well regarded across agriculture. In addition, Dr. Goodwin's teaching duties in agribusiness sales, marketing management, professional growth and integrated poultry systems management have honed his ability to discover, assimilate, and communicate often difficult solutions to diverse audiences holding perspectives that are often at odds with one another.

Goodwin was Co-Director of the Southern Risk Management Education Center in the University of Arkansas' Division of Agriculture Cooperative Extension Service from 2009-2016 and served as the Director of Student Networking and Curriculum Enhancement for the Dale Bumpers College of Agriculture, Life and Food Sciences 2014-2018 and is on several industry advisory councils. He received his B.S in Agricultural Education in 1975 and his M.S. and Ph.D. in Agricultural Economics from Oklahoma State University in 1978 and 1982, respectively. He currently serves as Senior Lecturer in Agribusiness Sales Management and teaches the capstone course in Applied Sales and Leadership in the Walton College of Business at University of Arkansas, bringing his broad-reaching industry experiences alive in the classroom for future industry business leaders.

LOREN BURNS – RESEARCH ASSISTANT, AGRICULTURAL ECONOMICS

Mrs. Loren N. Burns is the Program Manager for the Agribusiness, Food, and Consumer Economics Center in the Department of Agricultural Economics at Texas A&M University and Associate for Forecasting and Business Analytics, LLC. She is responsible for managing the day-to-day operations of the Center, as well as maintaining account records that include directing authorization and allocation of funds. Mrs. Burns interacts with external and prospective clients to successfully define parameters, transaction terms, and limitations surrounding research projects for several faculty members. She edits and composes many different types of complex documents in addition to compiling and presenting periodic financial reports to meet the needs of the Department and University System. She has organized numerous events including an international conference, retirement celebrations, industry receptions, and college-wide seminars.

Prior to joining the Department of Agricultural Economics, Burns was a Proposal Administrator at both the Texas A&M Research Foundation and the Texas A&M University System Sponsored Research Services where she worked with TAMUS researchers to provide a smooth transition into proposal and project management. Mrs. Burns received her Bachelors of Science of Agribusiness with a Minor in Agricultural Economics from Texas A&M University in 2009.