2019-2022

MA KA HANA KA 'IKE

East Maui Community Food Assessment

Designing a food system from the ground up

The East Maui Community Food Assessment project set out to answer the question: "How can we increase and reaffirm food security in Hāna and the greater East Maui?" This isolated, rural area on the east coast of Maui Island in Hawai'i is much like an "island on an island." Hāna's nearest urban facilities are a two-hour drive each way on a hazardous single-lane roadway. As evidenced by a devoid of supermarkets and the high trucking fees and markups necessary to keep the doors open at Hāna's two convenience-size grocers, today's globalized agricultural system is particularly uneconomical and inapposite for this remote region.

East Maui is historically and traditionally an agricultural area, consisting of 145,000 lush acres, rich volcanic soils, and year-round sun and rainfall. Yet the farmer base is aging out and waning across our island. Conversely, large biochemical operations have assumed agricultural lands across Maui Nui, coinciding with dry terrain and dust storms uncharacteristic for subtropical soils. This East Maui Community Food Assessment is the first research effort of its kind to comprehensively assess local food systems and spark community-based solutions by and for Hāna's consumers and small-producer agricultural sector.

Consumer and producer trends presented herein were ascertained through interviews, record analysis, surveys, focus groups, and community-wide gatherings. Data and perspectives were collected from 'ohana (local households) and keiki (the student body), and Hāna's mid-tier consumers, including small grocers and the Hāna High and Elementary School cafeteria. East Maui's new and established agricultural producers were central to this research, reporting on their outputs, obstacles, and apparent opportunities to improve local agriculture. Other local agricultural stakeholders, agencies, and nonprofits contributed to this assessment.

How can we increase and reaffirm food security in Hāna and the greater East Maui?

Consumer Research

Farmer and Producer Research

Market and Distribution Research

In-Depth Interviews and Community Discussions

Formulating Community-Designed Plans

As compared to the rest of the state, which imports 90% of its food, Hāna ʻohana consumer research reveals a proclivity to local agricultural products: local, fresh foods constitute 24% of ʻohana grocery spending, and ʻohana are desirous of increasing their consumption of local foods, subject to increased availability and/or affordability. Keiki research, centering around cafeteria school lunches and thus eliminating subliminal economic prejudices, found a unanimous preference for local (over imported) agricultural products and a strong preference for Hawaiian cultural crops. Consumer receptiveness to Hawaiian cultural crops, like kalo (taro), ʻuala (sweet potato), ʻulu (breadfruit), and maiʻa (banana), is not surprising, given 71% of residents are of Native Hawaiian descent[1].

Our local farmer and producer research suggests certain supply surpluses and other shortfalls as compared to the Hāna-specific consumer base. In the greater Maui Nui and statewide contexts, demand vastly exceeds Hāna's production (exceeding $2 billion)[2]. Yet, Hāna's agricultural producers face obstacles to entering these markets relating to transport, aggregation, and product shelf-life. Community discussions with agriculture stakeholders across East Maui prompted collective solutions to overcome these supply chain obstacles, some even implemented over the course of this study.

Other interconnected obstacles to East Maui's new and established farmers necessitate further attention and funding, the top three being: (1) inadequate pay, or no pay at all, for farming work; (2) lack of access to land, farming inputs, and/or heavy machinery; and (3) lack of investment money.

While this East Maui Community Food Assessment reveals avenues for bridging Hāna's agricultural producers with the larger Hawaiʻi markets, a more evident takeaway is the apparent micro-local niche for culturally-significant local agriculture—both in raw and value-added forms.

(1) US Census 2020.
(2) Kent, George, *Food Security in Hawaiʻi*. University of Hawaiʻi, 2014.

About Ma Ka Hana Ka ʻIke

This project was led by Ma Ka Hana Ka ʻIke ("MKHKI"), a 501(c)(3) nonprofit organization with over two decades of experience in vocational training and community building in East Maui (Ma Ka Hana Ka ʻIke translates to "In Working, One Learns"). MKHKI is headquartered at the Hāna High and Elementary School campus, an educational and social hub for our Hawaiian community. Keiki attending Hāna School come from across East Maui, an expansive district encompassing the communities of Keanae, Wailua Nui, Nahiku, Hāna, Kipahulu, and Kaupō. MKHKI also stewards farming sites off-campus: our 10-acre community farm in Honomāʻele and 29 loʻi (wetland taro patches) in Wailua Nui, thus interfacing with farmers, producers, and ʻohana from the entire district.

Ma Ka Hana Ka ʻIke trains youth apprentices and community producers to harness the agricultural commodities abundant in and around Hāna. In doing so, MKHKI has become one of East Maui's largest food producers.

We created Mahele Farm in 2010 to bring keiki and kūpuna together in the growing and harvesting of organic fruits and vegetables, 100% of which are distributed to the Hāna community. Our Mālama Hāloa program began restoring loʻi some eight years ago, reconnecting Hāna's people with their traditional Native Hawaiian knowledge with a particular focus on kalo and helping to revive, for Hāna, the practice of kuʻi, or hand-pounding kalo into poi.

In part due to these research findings, MKHKI recently launched its Kahuʻai Pono program, which tandems Mahele Farm, loʻi, and on-campus farming to teach the distinct skills necessary for processing ʻāina-based local foods.

MKHKI's local partnerships helped buoy these research efforts. These partners include the Hāna Chapter of the Hawaiʻi Farmers Union United, Hāna High and Elementary School, Na Moku Aupuni O Koʻolau Hui, Hāna Ranch, LLC, and the Farm to School Hui of the Hawaiʻi Public Health Institute. The supportive cooperation of Hasegawa General Store and Hāna Ranch Store was likewise indispensable to this study.

East Maui Community Food Assessment:

Data Analysis and Report

Ma Ka Hana Ka ʻIke

Elizabeth Gross, Ph.D., Associate Professor, Department of Mathematics, University of Hawaiʻi at Mānoa

Ethan Lamb, Department of Mathematics, University of Hawaiʻi at Mānoa

Presented in this Data Analysis and Report are findings ascertained through interviews, record analysis, surveys, focus groups, and community-wide gatherings with ʻohana (local households) and keiki (the student body), Hāna's mid-tier consumers (including small grocers and the Hāna High and Elementary School cafeteria), East Maui's new and established agricultural producers, and other local agricultural stakeholders, agencies, and nonprofits.

A Deep Dive into Community-Based Research on Local Agriculture

Report Contents:

2019-2022

I. Total Respondents and Estimation of Purchasing Power in East Maui

Total Respondents and Estimated Community Representation

The respondent count across surveys is 94 keiki (youth), 72 ʻōpio (young adults), 89 mākua (adults; parents), and 66 kūpuna (elders), for a total of 321.

Survey	Keiki	ʻŌpio	Makua	Kūpuna
Student	**94**	**61**	**0**	**0**
ʻOhana	**0**	**3**	**66**	**44**
Farmer	**0**	**1**	**20**	**22**
Aspiring Farmer	**0**	**7**	**3**	**0**
Total	**94**	**72**	**89**	**66**

If we assume no duplication between different surveys, the total representation is 685 individuals (this total comes from persons who took the surveys, the number of people the ʻOhana Survey represents, and the number of workers the Farmer Survey represents). A comparison of names between the Farmer and the ʻOhana surveys did not produce any indication of duplication of respondents between these two surveys, but probabilistically, assuming the probability of being surveyed was the same for each individual in the community, some overlap is expected.

2019-2022

I. Total Respondents and Estimation of Purchasing Power in East Maui

Total Respondents and Estimated Community Representation

The expected value of the overlap between the two surveys is (402/2719)118 = 17.45 individuals (402 comes from the total number of people the ʻOhana Survey represents). The expected value of the number of duplicated keiki between the ʻOhana Survey and the Student Survey is 85 keiki (assuming 1.5 keiki per household and that each keiki had a 155/312 chance of being surveyed in the Student Survey). [Formula: 1.5x113x155/312 = number of keiki per family x number of households x (number of students surveyed/total students)].

Thus a conservative estimate of the total number of community members represented in all surveys is 582.

Purchasing Power in East Maui

Household purchasing power. Using the responses from the ʻOhana Survey (see section IV), we estimate that the purchasing power per person for groceries is between $199.38 and $321.14 per month, with a midpoint estimate of $260.26 per month. In addition, the estimated purchasing power per person specifically for local perishable foods is between $31.56 and $93.10 per month, with a midpoint estimate of $62.33 per month. The estimated purchasing power of Hāna for groceries per month (using the 2020 Census for Hāna or the Greater East Maui, 2,719 people) is between $542,114.22 and $873,179.99 per month (midpoint $707,646.94 per month). The estimated purchasing power of Hāna for local perishable foods per month is between $85,811.64 and $253,138.90 per month (midpoint $169,475.27 per month).

To get a sense of how these dollar amounts translate to poundage, if we assume $3/pound for local vegetables and fruit (for example, the local price of kalo is $3/pound), the yearly purchasing power of households in Hāna/Greater East Maui is between 343,422 and 1,012,555 pounds per year. The wide range is from the fact that the household grocery bill data is given in ranges, and the difference between the high and low values in each range compound as we multiply out to the whole population. For comparison, farmers in the Farmer Survey report growing a total of 319,420 pounds of fruits and vegetables per year.

Cafeteria Purchasing Power. The school cafeteria has a fixed weekly serving size for each grade level. For fruit it is: PreK - 1.25 cups/week, K - 8th - 2.5 cups/week, and 9th+ - 5 cups/week. For vegetables it is: PreK - 1.25 cups/week, K - 8th - 3.75 cups/week, and 9th+ - 5 cups/week.

For the cafeteria, the estimated annual (school year) amount spent on fruit is around $34,738.87 (this is calculated assuming ¼ cup serving to pre-K, ½ cup serving to K-8th, and 1 cup serving to 9th+ for four days a week of lower-priced fruit for each meal, one day a week of higher-priced fruit, and 328 prepared meals each day).

2019-2022

I. Total Respondents and Estimation of Purchasing Power in East Maui

Purchasing Power in East Maui

The estimated annual amount spent on vegetables is $41,608.13 (this is calculated assuming ¼ cup serving to pre-K, ¾ cup serving to K-8th, and one cup serving to 9th+ for four days a week of lower-priced vegetables for each meal, one day a week of higher-priced vegetables, and 328 prepared meals each day). The total annual purchasing power of the cafeteria for fruits and vegetables is $76,347.00.

Using the weekly serving size above, the cafeteria goes through 1,227.5 cups/week of fruits and 1,422.5 cups/week of vegetables, or 44,190 cups/school year of fruit and 51,210 cups/school year of vegetables. Assuming four cups for each pound, this translates to 11,047.5 pounds of fruit and 12,802.5 pounds of vegetables per year. For comparison, farmers in the survey reported growing 200,100 pounds/year of fruit and 119,320 pounds/year of vegetables.

II. Pairwise Comparison of Surveys to Identify Common Themes and Points of Difference

Comparison of ‘Ohana and Farmer Surveys

In the Farmer Survey, farmers expressed an interest in selling locally and in the ‘Ohana Survey households expressed an interest in buying locally.

II. Pairwise Comparison of Surveys to Identify Common Themes and Points of Difference

Comparison of ʻOhana and Farmer Surveys

For example, 13 out of the 47 people (28%) who responded to the open question, "Please provide specific details on difficulty ordering, market schedules and/or varieties of local foods you would enjoy," expressed either gratitude in the ability to purchase locally through the Hāna Farmers Market (ex: "The market does provide wonderful veggies and foods for us as a family wanting to rely more on local-bought-eating from the land") or expressed regret in not buying local more often (ex: "I need to be better at getting there and utilizing the market"). Furthermore, 58% (65/113) of respondents to the ʻOhana Survey chose over half of the provided choices when asked "What locally-grown, ʻāina foods would you be interested in purchasing more of, if readily available in Hāna?" On the farmer side, in a free response question, 30% (13/43) of farmers expressed that encouraging the community to purchase local (by either subsidizing the prices or educating the community on the benefits of local produce) would help farming and local food consumption be better achieved. While interest is definitely there, affordability is an obstacle (67% of large families listed affordability as an obstacle to buying more perishable products) and so is availability (74% of small families listed availability as an obstacle). In regards to the alignment between what households desire and what farmers grow:

- 50% (57/113) of families are interested in purchasing ʻuala. If we extrapolate to the entire population of the Hāna or Greater East Maui Census District (2,719 persons) and assume consumption to be a 1/4 pound (1 cup) of ʻuala per person every two weeks, the result is a local demand of 8,837 (2719 x .5 x .25 x 26) pounds/year. On the other hand, 26% (11/43) of farmers grow ʻuala for a total poundage of 3,960 pounds/year. This suggests a supply shortfall of 4,877 pounds/year of ʻuala.
- 40% (45/113) of families are interested in purchasing ʻulu. If we extrapolate to the entire district, assume consumption to be 1/4 pound (1/2 cup) of ʻulu per person every two weeks, and assume a 1.14 whole fruit to edible fruit ratio, this results in a local demand of 8,059 (2719 x .4 x .25 x 26 x 1.14) pounds/year. On the other hand, 53% (23/43) of farmers grow ʻulu for a total poundage of 43,582 pounds/year. This suggests a supply surplus of 35,523 pounds/year of ʻulu.
- 46% (52/113) of families are interested in purchasing kalo. If we extrapolate to the entire district and assume consumption to be 1/4 pound of kalo per person every two weeks, the result is a local demand of 8,129 (2719 x .46 x .25 x 26) pounds/year. On the other hand, 44% (19/43) of farmers grow kalo for a total poundage of 27,467 pounds/year. This suggests a supply surplus of 19,338 pounds/year of kalo. *Note: At the time of writing, MKHKI likewise consumes over 8,000 pounds/year of kalo for processing and distribution to the community. The estimated community demand is thus equal to or greater than 16,000 pounds/year.*
- 72% (82/113) of families are interested in purchasing leafy greens. If we extrapolate to the entire district and assume consumption to be 1/2 pound (1 cup) of leafy greens per person every week, the result is a local demand of 50,899 (2719 x .72 x .5 x 52) pounds/year for leafy greens. In the Farmer Survey, leafy greens were combined with other vegetables, so we cannot say exactly how much leafy greens are grown in the community, however, 58% (25/43) of farmers stated growing vegetables for a total poundage of 119,320 pounds/year.

II. Pairwise Comparison of Surveys to Identify Common Themes and Points of Difference

Comparison of ʻOhana and Farmer Surveys

- 50% (57/113) of families are interested in purchasing local fruits. If we extrapolate to the entire district and assume consumption to be 1 pound of local fruit per person every week, the result is a local demand of 70,694 (2719 x .5 x 52) pounds/year. 86% (37/43) of farmers grow local fruits (including cooking bananas) for a total poundage of 200,100 pounds/year. This suggests a supply surplus of 129,405 pounds/year of local fruits.
- The surveys suggest a significant gap between demand and supply for local meats and fish. 62% (70/113) of families are interested in purchasing local meat while only 9% (4/43) of surveyed farmers produce local meat for a total poundage of 1,100 pounds/year. 79% (89/113) of families are interested in purchasing local fish while 4% (2/43) of surveyed farmers produce local fish for a total poundage of 1,600 pounds/year.

Comparison of Student and Farmer Surveys

As with the ʻOhana Survey, the Student Survey also indicates interest in locally-grown products. For example, 100% (155/155) of the students reported that they would rather have a locally sourced banana over a non-locally-sourced banana. As for the products most desired by students, there is high interest in kalo (107/127 students said they would definitely eat kalo if provided by the cafeteria) and local fruit (110/127 students said they would definitely eat local fruit if provided by the cafeteria). Furthermore, 83/155 students selected kalo as either their top choice (51/155) or second choice (32/155) in their ranking of preferred starches. Palaoa (Bread) was ranked either fourth or fifth by 69/155 students while laiki (rice) was ranked last the most (38/155). It should also be noted that among K-8 students that answered the question, rice was the most repeated item (11/42) in the free response asking students which items they always throw away. Giving each ranking a numeric value from 1 to 5, with 1 being the top preference and 5 being the lowest, the average rankings were comparable (3.04 average for ʻuala, 3.2 for palaoa, 3.18 for ʻulu, and 3.01 for laiki) with the exception of kalo that received an 2.57 average (also implying a strong preference for kalo among the student body). To compare with the household demand and farmer production listed in the section above, we list the estimated yearly student demand for kalo and local fruit:

- If we assume the cafeteria serves three servings of local fruit a week, which is 726.5 cups (approx. 218 pounds) based on serving size and student composition, then the yearly cafeteria demand for local fruit would be 7,848 (218 × 36) pounds/year.
- If we assume the cafeteria serves one serving of kalo a week, which is 285.5 cups (approx. 83 pounds) based on serving size and student composition, then the yearly cafeteria demand for kalo would be 2,988 (83 × 36) pounds/year.

Finally, in the Farmer Survey, 8/43 farmers expressed that community education on farming and local produce is needed; 3/8 of those farmers stated that education should be taught to the students/youth.

II. Pairwise Comparison of Surveys to Identify Common Themes and Points of Difference

Comparison of Farmer Survey and Cafeteria Price List

There is strong interest among farmers to supply products to the cafeteria. 81.4% (35/43) of established farmers expressed an interest in diverting some of their food sales to the school. An item to note is that kalo is not served at the cafeteria, nor is local fresh fruit (although these are strong-expressed preferences by the students). 3/43 farmers expressed interest in selling kalo products to the school (kalo or poi), and 22/43 expressed interest in selling fruit products to the school (various fruit). The total poundage of kalo grown by the 3 farmers who expressed interest in selling kalo products to the cafeteria is 1,520 pounds/year, and the total poundage of fruit produced by the 22 farmers who expressed interest in selling fruit to the cafeteria is 123,000 pounds/year.

The top five items that farmers said they would be interested in selling to the school are: citrus (13/35), banana (10/35), leafy greens/herbs (9/35), papaya (4/35), and avocado (4/35). It should be noted that specific certifications would be required to sell to the Department of Education; however, of the 35 farmers interested in selling to the school, 15/35 indicated the "Inability to complete or afford certifications" as an obstacle to farming more food.

Some example cost comparisons when considering locally-grown produce as substitutes for other produce served in the cafeteria are as follows: One serving of Russet potatoes costs the school approximately $0.18 per student per meal (or $58.94 to serve the entire school for one day). In contrast, sweet potatoes (‘uala) cost the school approximately $0.70 per student per meal (or $218.40 to serve the entire school). One serving of kalo (using the USDA price of taro at $0.66/pound) costs the school approximately $0.12 per student per meal (or $40.41 for the entire school). If we were using the local price of $3/pound for kalo, the cost per student per meal would be $0.55 ($171.60 to serve the entire school).

One serving of apples costs $0.29 per student (or $94.17 to serve the entire school), while one serving of papaya costs $0.45 per student (or $147.42 to serve the entire school). These cost comparisons were calculated using the cafeteria price list, the approximate item weight per serving, and assuming 328 total meals are prepared each day.

Comparison of Farmer and New Farmer Surveys

Not enough time, the necessity for outside employment, and inadequate pay for farming work (or no pay for farming work) were recurring themes in both the Farmer Survey and the New Farmer Survey; of course, these three issues are interconnected.

As a free response, 11% (5/43) of established farmers expressed time as an obstacle preventing them from farming more, with 2 farmers explicitly stating they also have additional full-time jobs.

II. Pairwise Comparison of Surveys to Identify Common Themes and Points of Difference

Comparison of Farmer and New Farmer Surveys

80% (8/10) of new farmers reported unpaid farming occurs, and 30% (3/10) of new farmers reported non-farming work. For new farmers, the average salary reported "To cover the living expenses for you and your ʻohana" was $57,500, ranging from 30,000/year to 80,000/year (with one outlier removed that we believe was from a misunderstanding of the question).

The surveys also reveal differences between the needs of established and new farmers. For example, the most selected obstacle preventing farmers from farming more was "Unavailability of farming jobs/inadequate pay" (47% 20/43), while for new farmers it was "Lack of access to farming inputs, equipment, and/or heavy machinery" and "Lack of start-up money to help me get going" (both were selected by 80%, 8/10, of the respondents). In terms of lack of equipment, in the free-response section for established farmers, one farmer mentioned "a co-op for machinery" as a solution. For comparison, only 10% (1/10) of new farmers selected "Unavailability of farming jobs/inadequate pay as an obstacle," and 7% (3/43) of established farmers listed "Lack of access to farming inputs, equipment, and/or heavy machinery" and 21% (9/43), as a free response, listed "Lack of start-up money to help me get going" as an obstacle.

10% (1/10) of new farmers marked that they believe that there is an "Unavailability of agricultural training." In contrast, 9/43 of established farmers expressed a need for more education, workshops, and network meetings for farmers (ex. "More opportunities for local farmers to meet and share opportunities"). In the free-response question, "How can farming and local food consumption be better achieved in our East Maui community," 4/43 farmers noted that the Hāna Farmers Market has been helping: "Everyone is talking about the market." Indeed, 67% (29/43) of established farmers report selling to the farmers market: 4/6 backyard farmers, 7/15 large acreage farmers, 8/8 medium acreage farmers, and 10/14 small acreage farmers. For new farmers, the farmers market was the only commercial venue/purchaser utilized, with 2/10 of the new farmers reporting selling at the farmers market (no other new farmers other than the 2/10 reported selling produce, only giving away produce to other community members).

Comparison of Farmer Survey and Hasegawa General Store Interview

Hasegawa expressed an interest in wanting to buy local produce. In particular, in the interview, Hasegawa spoke about the needs of local farmers: "The next opportunity (like having a larger market to sell to) could help them produce more, and actually live off of that."

Hasegawa reported that they buy from local Hāna farms like Entabeni, and 2 other farmers reported selling to Hasegawa (Hana Gold and Hale Pueo).

II. Pairwise Comparison of Surveys to Identify Common Themes and Points of Difference

Comparison of Farmer Survey and Hasegawa General Store Interview

8/43 farmers marked a "lack of market for agricultural products" as a reason for not farming more. Furthermore, in a free response to the question "How can farming and local food consumption be better achieved in our East Maui community," 8/43 of farmers expressed a desire for more opportunities to sell their product (ex: "Need more opportunities to buy and sell.") We note that there is an overlap of 3 farmers in each of the 8/43 responses reported, thus, the total number of farmers expressing a desire for more selling opportunities somewhere in the survey is 13/43.

Hasegawa reported tomato, lettuce, onion, and potato as the items most in demand. Two of the disadvantages that Hasegawa noted regarding the obstacles in buying local were (1) consistency of supply and (2) consistency of product. Consistency of supply could be helped by the types of community resources that the farmers expressed a desire for in the survey, including: community aggregation (1/43 of farmers), equipment co-op (5/43 of farmers), and farming education (9/43 of farmers). For consistency of product, Hasegawa mentioned that "Established farmers know what's expected (quality, what it should look like, etc.)"; thus, peer-to-peer training could help overcome this obstacle. In fact, 9/43 of farmers expressed a desire for educational resources, including workshops and classes, internships, and consulting on when to plant, when to start seeds, and how to fertilize and build compost.

Hasegawa also mentioned that the "Farmers market is a good testing ground for the farmer." 29/43 of the farmers listed the farmers market as a venue where they sell produce and/or value-added products, with three farmers explicitly expressing in the free response that the farmers market is helping them (ex: "Hāna Farmers Market is the step in the right direction"). Hasegawa also mentioned that "A lot of the farmers aren't farming 100%, more part-time," with two farmers confirming this statement with one saying, "No other time to farm other than weekends due to a full-time job to ensure health benefits" in the free-response section to the question "Indicate any applicable factors preventing you from farming food, or farming more food."

Comparison of Farmer Survey and Hāna Ranch Store Interview

Like the 'Ohana Survey and the interview with Hasegawa, the interviews with managers at Hāna Ranch also affirmed the desire for local produce among community members. For example, Hāna Ranch mentioned that "a lot of times they will be setting up the local foods and customers are waiting there to buy them up" and "there's more of a want here than a supply."

One subsection to note is that this consumer demand and the desire of Hāna Ranch to carry local produce seems mismatched with farmers' perceptions about the local market.

II. Pairwise Comparison of Surveys to Identify Common Themes and Points of Difference

Comparison of Farmer Survey and Hāna Ranch Store Interview

For example, 13/43 farmers expressed a desire for more selling opportunities somewhere in the survey while only 1 backyard farmer reported selling to Hāna Ranch. A second item to note is that 86% (37/43) report selling locally, with the highest reported purchasers/venues being the farmers market, so while even though Hāna-farmed products are already going into the local market, the Hāna Ranch interview indicates that there is still a strong demand present.

Most popular produce at Hāna Ranch includes fruits (especially bananas), cucumber, cabbage, eggplant, mushroom, zucchini squash, tomato, lettuce, onion, and potato. Hāna Ranch also indicated that consumers often are interested in fresh to-go items (e.g. pre-made salads, healthy bentos, etc), but "they don't have the manpower or equipment like a certified kitchen" to make these products. In the Farmer Survey, 1 farmer also mentioned the need for a commercial kitchen in a free response to "How can farming and local food consumption be better achieved in our East Maui community?"

Comparison of New Farmer and ʻOhana Surveys

100% (10/10) of the new farmers surveyed reported giving produce to kūpuna, family, or friends, which shows a community connection to locally-grown produce. In addition, it should be kept in mind that this transfer of products is not accounted for when considering local demand and calculating community purchasing power.

Comparison of Student Survey and Cafeteria Price List

Kalo is not served at the cafeteria, however, through the Student Survey, students expressed a desire for kalo. In a free response question asking students about their favorite local dishes, 83/155 students expressed a desire for foods containing kalo or the kalo leaf. Furthermore, 83/155 students selected kalo as either their top choice (51/155) or second choice (32/155) in their ranking of preferred starches.

Regarding waste, 32/127 students who order school lunch reported throwing away the fruit provided. However, 107/155 students reported that if local fruit were provided at the cafeteria, then they would definitely eat it. 155/155 students reported that they would rather have a locally-sourced banana over a non-locally-sourced banana, indicating the desire for locally-sourced fruit. Overall, 136/155 students report throwing out some type of cafeteria food served, with 64/155 students expressing that they waste some fruit or vegetable. Assuming the student body is 312 students, this amounts to an estimate of 138 pounds of fruit per week thrown out and an estimate of 155.45 pounds of vegetables thrown out per week (these estimates were obtained by using sample lunch meal plans provided by the cafeteria and using the percentage of students that report throwing out food).

II. Pairwise Comparison of Surveys to Identify Common Themes and Points of Difference

Comparison of Student Survey and Cafeteria Price List

Yearly, the estimated waste is 4,968 pounds of fruit and 5,596 pounds of vegetables. This waste accumulates to a loss ranging between a conservative estimate of $229.64 and a high-range estimate of $959.79 spent on fruit weekly and a loss ranging between a conservative estimate of $178 and a high-range estimate of $1,497 spent on vegetables weekly (where the conservative estimates are calculated using the least expensive produce on the cafeteria's sample meal plan and the high estimates are calculated using the most expensive produce reported). A weighted average (using a mix of least expensive, weight = .8, and most expensive, weight = .2, produce) gives us the following estimates: $452.09 of fruit waste per week and $761.28 of vegetable waste per week. This comes out to an annual cost of $43,681.32 spent on fruits and vegetables that are thrown out.

Comparison of New Farmer Survey and Hasegawa General Store Interview

Hasegawa stated, "Established farmers know what's expected," in relation to farming expertise and knowledge. In the New Farmer Survey, we see that there are facets of the business of farming that are unknown, which supports a need for educational resources and networks. For example, 50% (5/10) of the new farmers reported that "I haven't researched this" when asked "What would [their] farming business expenses be in [their] first year (based on your research and/or experience, apart from personal living expenses)?" and 1 new farmer reported that they did not know what their annual income would need to be as a full-time farmer to cover the living expenses for themselves and their ʻohana. It should be noted however that 9/10 of the new farmers surveyed were under the age of 30 and 7/10 of the new farmers surveyed were under the age of 25, so we expect that the respondents of the New Farmer Survey are at earlier stages of their careers.

Comparison of New Farmer Survey and Hāna Ranch Store Interview

The consumer demand and the desire of Hāna Ranch to carry local produce seems mismatched with farmers' perceptions about the local market, where 13/43 of farmers believed there was a lack of selling opportunities. In contrast, only 1/10 of new farmers stated "Lack of market for agricultural products" as an obstacle to why they are not farming more. This matches the demand indicated by Hāna Ranch more closely.

Comparison of New Farmer Survey and Student Surveys

100% (10/10) of new farmers reported growing kalo and 100% (10/10) grow local fruits. This matches the demands from the students as 107/155 students marked that they would definitely eat table taro if served to them, and 127/155 students marked that they would definitely eat local fruit if served.

II. Pairwise Comparison of Surveys to Identify Common Themes and Points of Difference

Comparison of ʻOhana and Student Surveys

From the surveys we mostly see strong agreement between the preferences of students and the preferences of households. For reference, we compare the response in regards to kalo, ʻuala, ʻulu, and local fruit here. 39% (60/155) of students listed ʻuala as their first or second favorite starch and 52% (66/127) of students agreed that if given ʻuala coconut they would definitely eat it and 61% (77/127) of students agreed for ʻuala slices. 50% (57/113) of families reported that they would be "interested in purchasing" ʻuala if "readily available in Hāna."

30% (47/155) of students listed ʻulu as their first or second favorite starch, 46% (59/127) of students agreed that if given ʻulu lasagna they would definitely eat it, and 65% (82/127) agreed with ʻulu wedges. 40% (45/113) of families reported that they would be "interested in purchasing" ʻulu if "readily available in Hāna."

54% (83/155) of students listed kalo as their first or second favorite starch and 84% (107/127) of students said that if given table taro they would definitely eat it. 46% (52/113) of families reported interest in buying locally-grown kalo.

87% (110/127) of students said that if given local fruit they would definitely eat it. 50% (57/113) of families reported that they would be "interested in purchasing" local fruit if "readily available in Hāna."

We note that kalo and local fruit have the largest differences in reported preferences between the ʻOhana Survey and Student Survey. Some of this may be explained by what people grow at home. For example, in a free-response section in the ʻOhana Survey, 3 people noted they didn't select some of the options given when asked "What locally-grown, ʻāina foods would you be interested in purchasing more of, if readily available in Hāna?" because they already grow those options at home.

Finally, in the ʻOhana Survey, 55/113 households including 34/51 large households (households with 4 or more people) noted that affordability was an issue in preventing them from purchasing more fresh fruits, vegetables, and proteins for groceries. Serving local fruit and vegetables through the cafeteria would allow for more local consumption without putting an additional economic burden on families.

Comparison of ʻOhana Survey and Hāna Ranch Store Interview

Hāna Ranch reported that "Younger families are caring more about what they eat, swapping candy for fruit." Indeed, 56% (29/51) of large families (4+ household members) expressed an interest in purchasing locally-grown fruit if readily available in Hāna (57/113 total families).

II. Pairwise Comparison of Surveys to Identify Common Themes and Points of Difference

Comparison of ‘Ohana Survey and Hāna Ranch Store Interview

The local demand for local produce can be seen from both the ‘Ohana Survey and Hāna Ranch interview. For example, as a free response, 9/113 families said that availability of produce at the farmers market does not last long (meaning that the produce sells out quickly). This is similar to what Hāna Ranch reported, that "A lot of times they will be setting up the local foods and customers are waiting there to buy them up."

Comparison of New Farmer Survey and Cafeteria Price List

For new farmers, the average reported expenses needed in the first year of farming is $29,700. The median reported income needed to provide for themselves and their family is $65,000 (we took the median rather than average here since the sample size is small and there are some outliers). Thus, the estimated total amount a new farmer would have to earn in a year of farming would be $94,700.

The total annual purchasing power of the cafeteria for fruits and vegetables is $76,347.00. For comparison on how these totals relate, if the cafeteria only bought local fruits and vegetables, this could fully support 0.81 full-time farmers and 1.23 part-time farmers.

Comparison of Hasegawa General Store and Hāna Ranch Store Interviews

These two convenience-size grocers buy from Kula Produce (a distribution center on Maui), and it can be assumed that their purchasing lists are similar. Both stores incur costly trucking fees for grocery materials. Currently, in addition to the wholesale produce price, these grocers must pay around $100 per pallet for groceries and a 3% surcharge for rising gas prices; conversely, more central Maui grocers ordering foods from the contiguous U.S. pay the same wholesale price, including delivery to their door. Also differing from other central grocers where stocking and rotating of fresh product is taken care of with the wholesaler, this service is not available in East Maui where the two grocers must employ their own staff for these roles. Both stores sell produce at around a 60% markup.

Hasegawa and Hāna Ranch expressed that product consistency from local farmers is lacking and could/should be improved. Both stores notice that large distributors can meet their demand, and Hasegawa thinks that the price is better. However, Hāna Ranch noted that "Larger distributors’" supply hasn’t been great this past year; getting decent, quality food has been hard and "some products have been old."

Both stores report that people ask for locally-grown products (both tourists and residents), and both stores are open to a shift toward more local food sales. Hāna Ranch said that people want to buy local foods, and, although Hasegawa knows that it could be more expensive, the owner stated that "it will be better."

II. Pairwise Comparison of Surveys to Identify Common Themes and Points of Difference

Comparison of Hasegawa General Store and Hāna Ranch Store Interviews

Furthermore, both stores believe that pre-made salads and similar lunch products would sell well in their stores due to changing consumer habits.

For example, Hāna Ranch mentioned "Noticing a lot of changes with the working man...they are buying healthier products for lunch and breakfast." Both stores have bought aquaponics produce in the past and expressed enthusiasm about such products, with Hasegawa stating, "Aquaponics seem less risky (in terms of slugs and rat lungworm)."

Both stores noted that a lot of people are going to the farmers market, with Hāna Ranch stating their "sales have gone down a little bit because of the Friday farmers market." Hasegawa believes, due to the higher price point, that demand at the farmers market would not be the same without scripps provided to shoppers that are used to purchase produce from vendors.

Comparison of ‘Ohana Survey and Hasegawa General Store Interview

Although Hasegawa wants to purchase locally, the owner is also very concerned about slugs and rat lungworm disease when buying leafy greens from local farmers. However, in the ‘Ohana Survey, only 5% (6/113) of families expressed rat lungworm disease as an obstacle preventing them from buying locally. This could mean that consumers buying the products trust that the product is already thoroughly washed before it is sold to them, however, Hasegawa, a supplier, still thinks that products sold to them are potentially harmful.

Furthermore, Hasegawa also states, "I don’t think the demand [at the farmers market] would be that great without the scripps," recognizing that without the incentive of free produce, Hasegawa believes that the farmers market would not be as popular.

Although Hasegawa believes that "it will be better" to purchase locally, the owner knows that "it might be more expensive." This lines up with the ‘Ohana Survey where 49% (55/113) of the respondents listed affordability as an obstacle preventing them from buying more local perishable foods.

Comparison of Cafeteria Price List and Hāna Ranch Store Interview

The cafeteria and Hāna Ranch food price lists look similar. Some of the produce in the Kula Produce price list is significantly lower than the items in the cafeteria price list. For example, the cost of avocados from the cafeteria price list is $9.68/pound and from Kula Produce it is $3.65/pound. The cost of fuji apples for the cafeteria is $1.75/pound and the price from Kula Produce is $34.15/(case of 100ct), about 0.53/pound.

This indicates that the cafeteria is already buying at a higher price point than the grocery stores. Additionally, this implies, if the cafeteria buys directly from farmers (rather than a distributor), they may be able to pay a higher price to farmers than the grocery stores.

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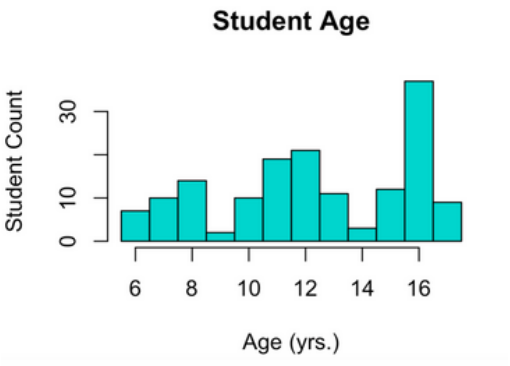
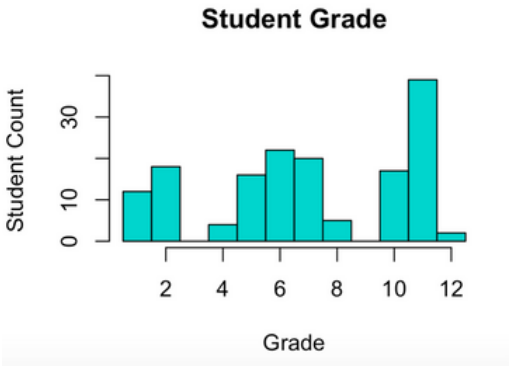
III. Keiki and ʻŌpio Student Survey Results

Demographics

There were 155 students surveyed with ages ranging from 6 to 17 years old, and grades ranging from first to high school senior. The average grade is 6-7th grade, and the average age is 12.34 years old. The mode grade was 11th grade, 39/155, and the mode age was 16 years old, 37/155.





How Would You Rate the Following Starchy Foods?

When asked, “How would you rate the following starchy foods? (1 being favorite, 5 being least favorite),” 54% (83/155) of students selected kalo as either their top choice (51/155) or second choice (32/155) in their ranking of preferred starches. ʻUlu was ranked third the most with 30% (46/155) of students ranking ʻulu third. Palaoa (bread) was ranked either fourth or fifth by 45% (69/155) of students while laiki (rice) was ranked last the most with 25% (38/155) of students ranking rice last.

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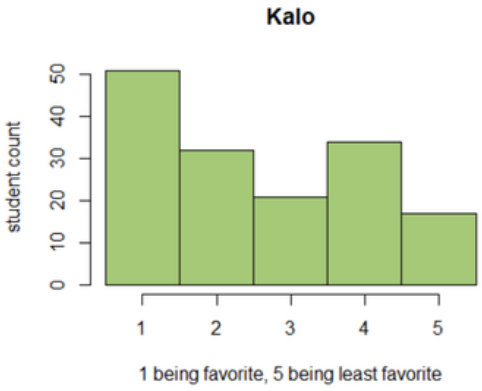
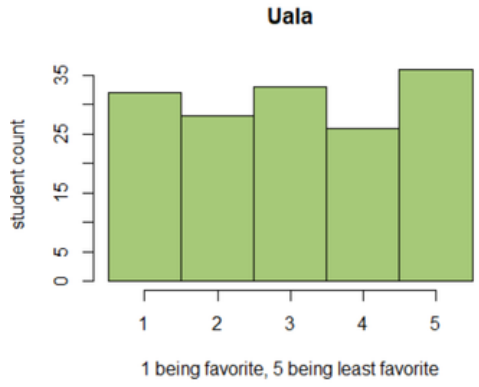
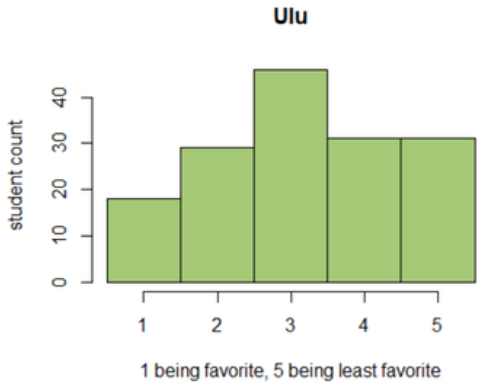
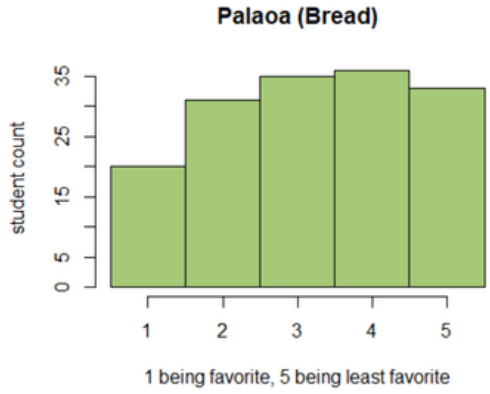
III. Keiki and ʻŌpio Student Survey Results

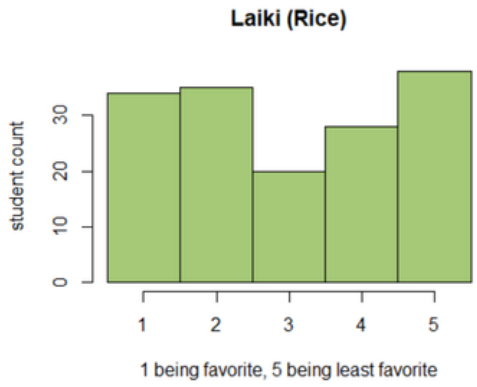
How Would You Rate the Following Starchy Foods?



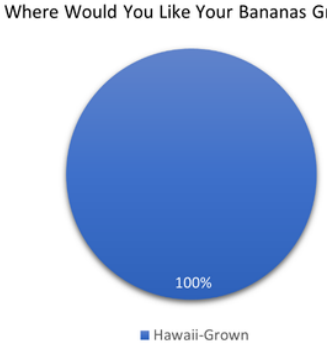








Would You Rather Eat a Banana Grown in Hawaiʻi or Outside of Hawaiʻi?



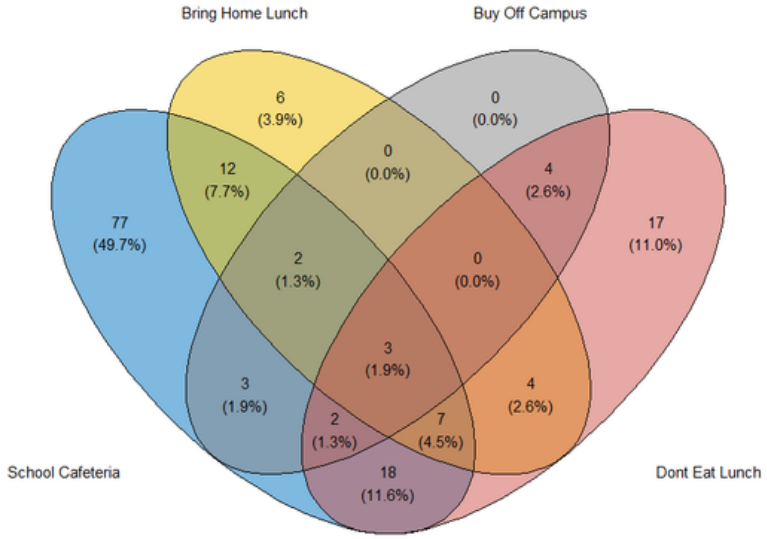
III. Keiki and ʻŌpio Student Survey Results

Would You Rather Eat a Banana Grown in Hawaiʻi or Outside of Hawaiʻi?

100% (155/155) of all students surveyed chose that they would prefer to eat a banana grown in Hawaiʻi when they were asked.

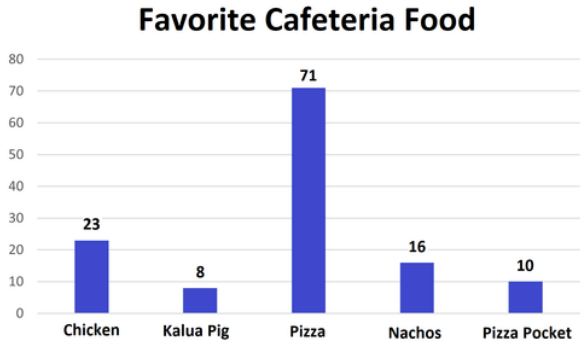
School Lunch vs. Home Lunch vs. Buy Off Campus vs. Donʻt Eat

When asked, “Where do you get lunch on school days? (Check all that apply)” 80% (124/155) of students selected “School Cafeteria,” 35% (55/155) of students selected “I do no eat lunch,” 22% (34/155) of students selected “I bring lunch from home,” and 9% (14/155) selected “I buy lunch off campus.” There is some overlap in the students’ choices.



Favorite Cafeteria Food

Of the 155 students surveyed, 131 students answered this question. In the free response question, “What is your favorite food to eat in the cafeteria?” pizza was the most popular response with 54% (71/131) of the students writing in pizza. The next four top choices were: Chicken (23/131), Nachos (16/131), Pizza Pocket (10/131), and Kalua Pig (8/131).

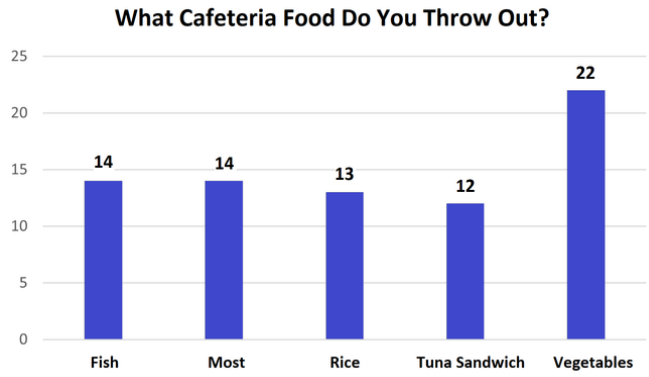


III. Keiki and ʻŌpio Student Survey Results

Cafeteria Food You Decline or Throw Away

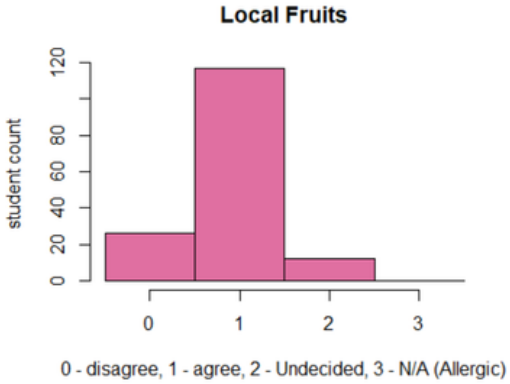
In the free response question, “What food do you decline or throw away most often from the cafeteria?” 88% (136/155) of students listed some cafeteria food product. 16% (22/136) of students wrote in vegetables, 10% (14/136) of students listed fish or “most,” 9.6% (13/136) listed rice, and 8.8% (12/136) wrote in tuna sandwich.

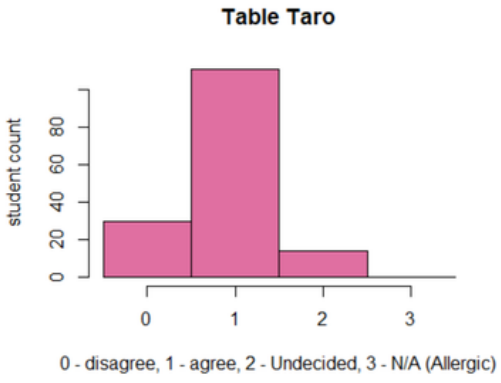
Of the write-ins, 63% (86/136) of students listed a vegetable (what the cafeteria lists as a vegetable) and 41% (56/136) of students listed a fruit.



Dishes You Would Eat

127/155 of the students were able to answer the question, "If these dishes were offered in school lunch, I would definitely eat them." The top-five choices were: 87% (110/127) chose local fruit, 84% (107/127) chose table taro, 69% (88/127) chose lūʻau stew, 68% (87/155) chose guacamole or avocado, and 65% (83/127) chose curry.





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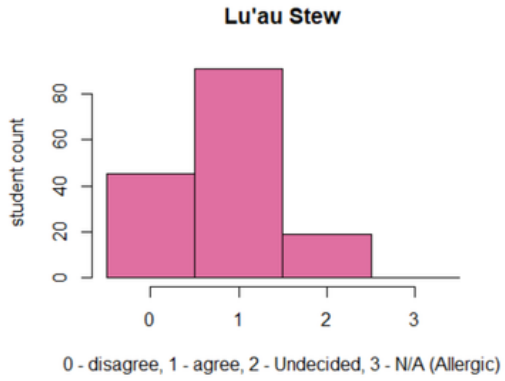
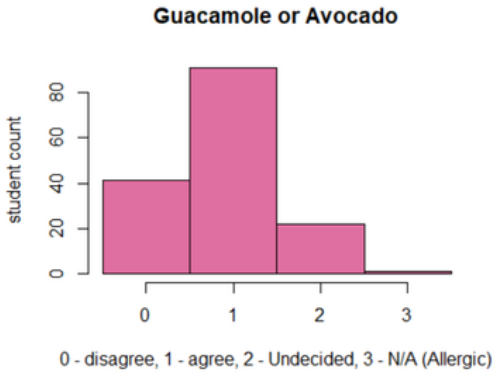
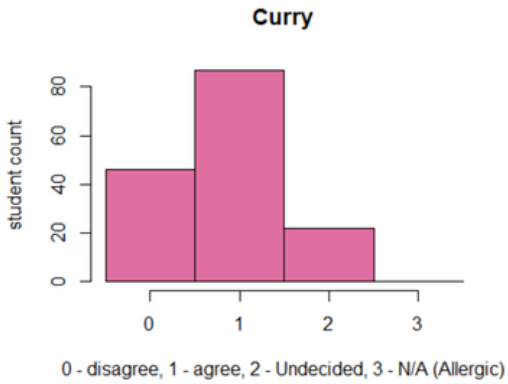
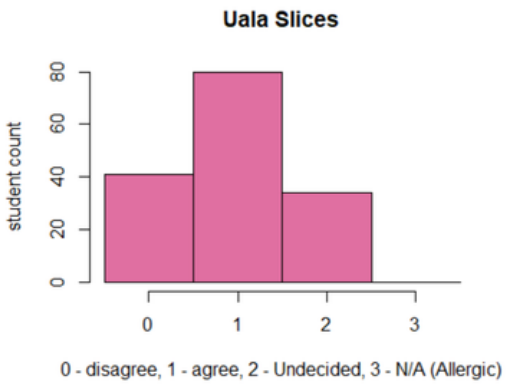
III. Keiki and ʻŌpio Student Survey Results

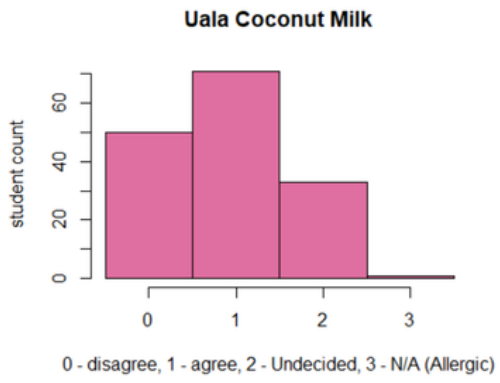
Dishes You Would Eat

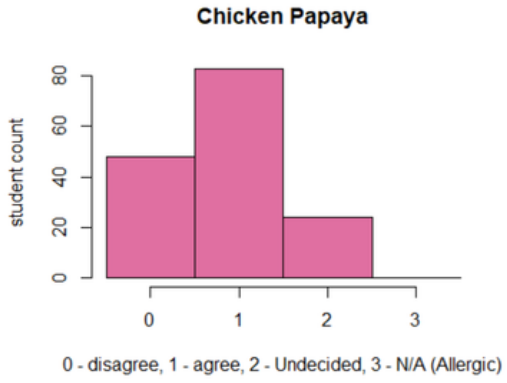


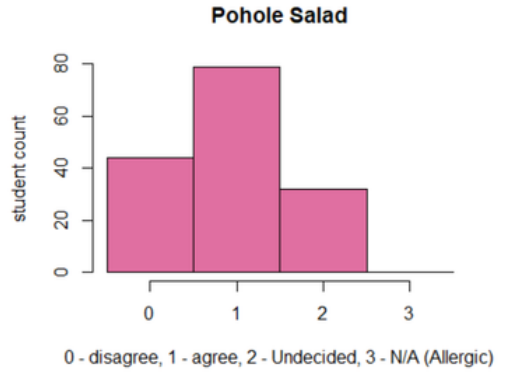


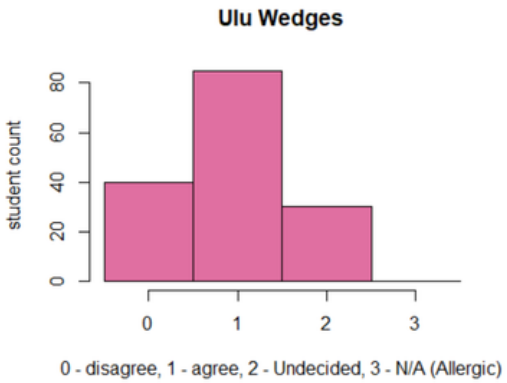






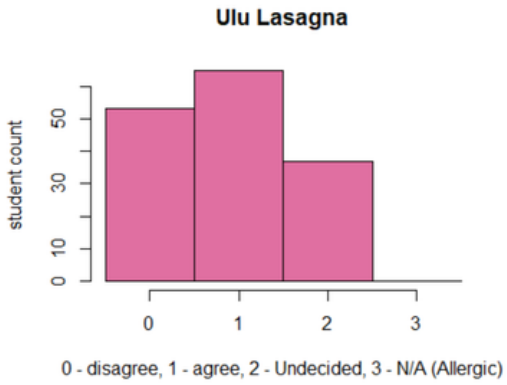






III. Keiki and ʻŌpio Student Survey Results

Dishes You Would Eat

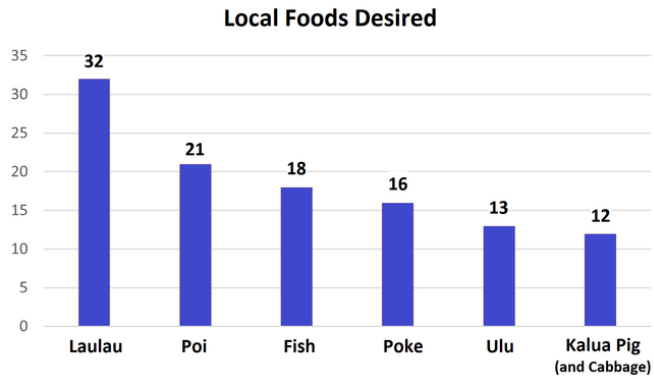


Note: 110 students agreed they would eat local fruit if offered at the school cafeteria.

This is interesting because 56 students said they usually throw out a type of fruit, fruit cocktail, or fruit in general. They might know the difference between a locally-grown fruit and a non-locally-grown fruit (or possibly between fresh fruit and canned fruit), and they want to support local. This is similar to the question regarding their preference between a Hawaiʻi-grown banana and a non-Hawaiʻi-grown banana.

Local Dishes

Of the 155 students surveyed, 150 answered this question: "Which local dishes that include veggies would you like to see at the school cafeteria?" Laulau was the most popular response, with 21% (32/150) of the students writing in laulau. The next top-five choices were: Poi (21/150), Fish (18/150), Poke (16/150), ʻUlu (13/150), and Kalua Pig (12/150).

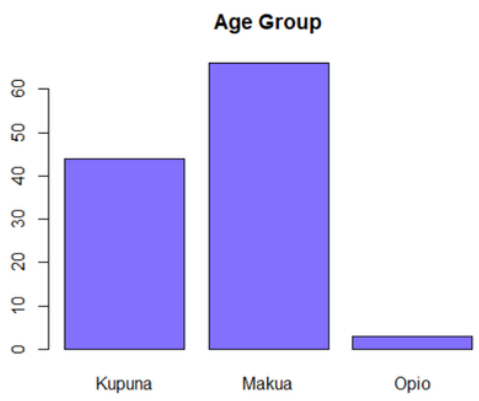


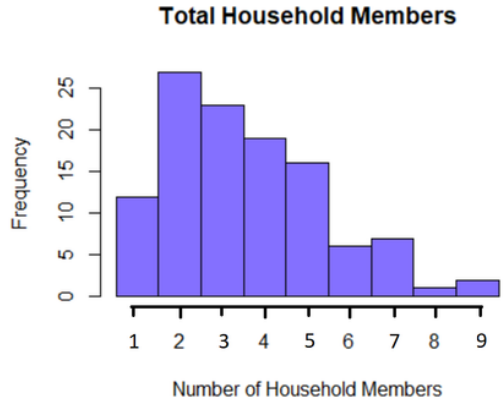
2019-2022

IV. ʻOhana/Family Survey Results

Age Group and Total Household Members

The count of families surveyed was 113, and of the people that were surveyed: 3 were ʻōpio (14-24 years old), 66 were mākua (25-54 years old), and 44 were kūpuna (55+ years old). These families represented 402 household members. The average household size is 3.55 household members.





Monthly Grocery Bill

When asked, "Which range most closely describes the average monthly grocery bill for your ʻohana?" 7.1% (8/113) of the families put in the free-response section an amount less than $500, 50.4% (57/113) put $500-$900, 28.3% (32/113) put $900-$1300, 12.4% (14/113) put $1300-$2000, and 1.8% (2/113) put $2000-$2400. The lower sample average is $709.29, and the upper sample average is $1,142.5. With a 95% confidence interval, we expect the true lower average to be between $641.40-$777.20 and the true upper average between $1061.20-$1223.80. The expected average midpoint amount is $932.6 per month per family.

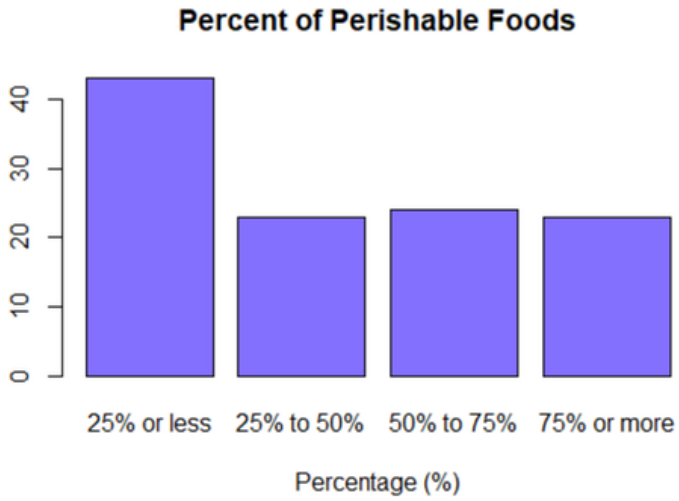
IV. ‘Ohana/Family Survey Results

Monthly Grocery Bill

Note: A 95% confidence interval is an interval constructed from the data such that 95% of the time the interval will contain the true value. In other words, we are 95% confident that the true average value lies within the interval. Taking half of the length of the interval gives us the margin of error.

Percent of Perishable Foods

When asked, "X% of my groceries are fresh, perishable foods, and the rest dry goods" 8.0% (9/113) put 15% or less, 27.4% (31/113) put 30%, 17.7% (20/113) put 45%, 15.0% (17/113) put 60%, and 31.9% (36/113) put 75% or more. The lower sample average amount is $348.83 (49.2% of Lower Grocery Bill Average) and the upper sample average amount is $581.68 (50.9% of Upper Grocery Bill Average). With a 95% confidence interval we expect the true lower average amount to be between $300.50-$397.16 and the true upper average amount to be between $516.44-$646.92. The expected average midpoint amount is $473.71 per month, per family.

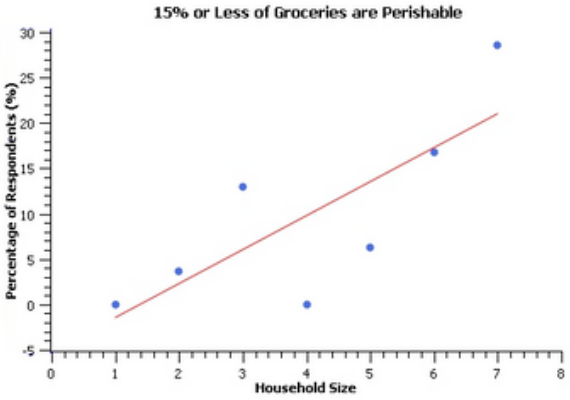


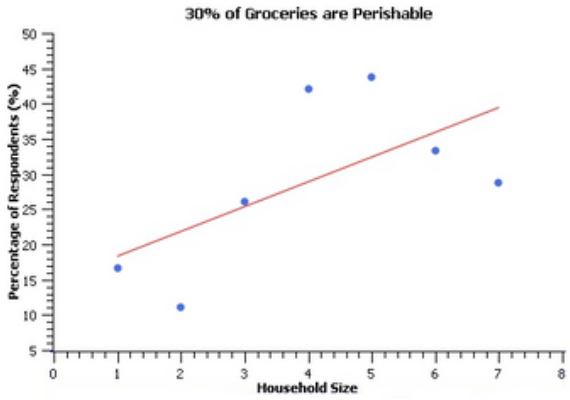
2019-2022

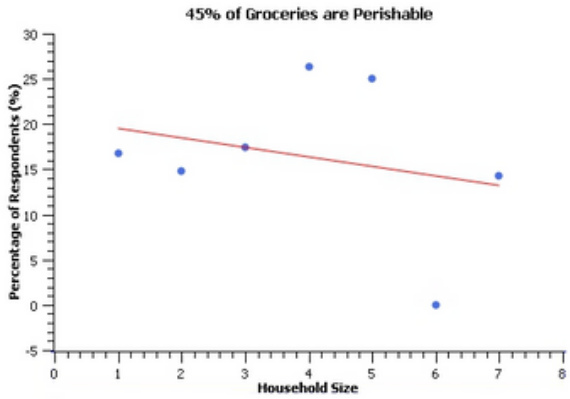
IV. ‘Ohana/Family Survey Results

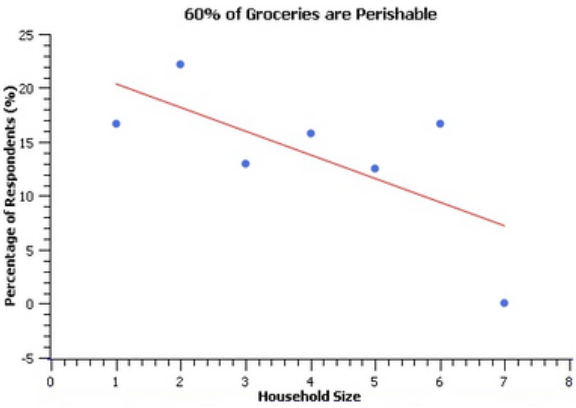
Percent of Perishable Foods

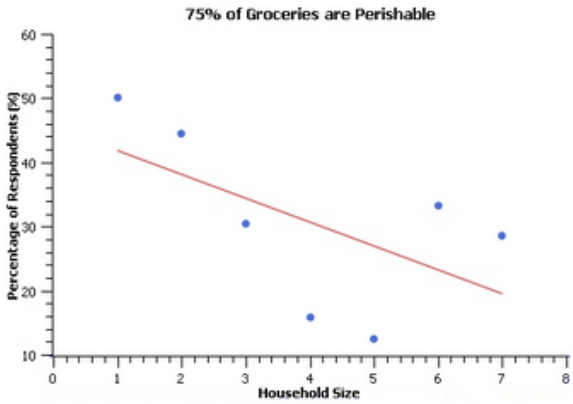
In the following graphs, for each possible survey choice, we plot household size against percentage of respondents and draw the trend line. *Note: Larger Households tend to purchase less perishable food relative to their grocery bill.*









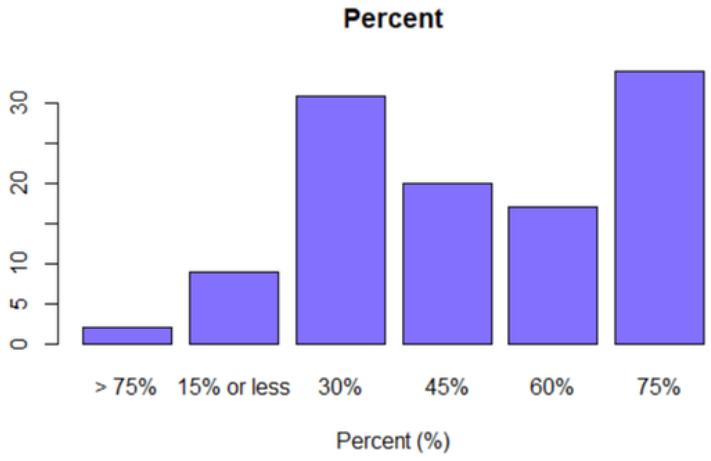


IV. ʻOhana/Family Survey Results

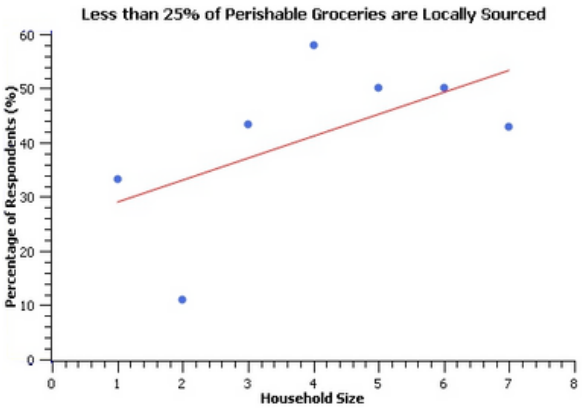
Locally-Sourced Perishable Foods

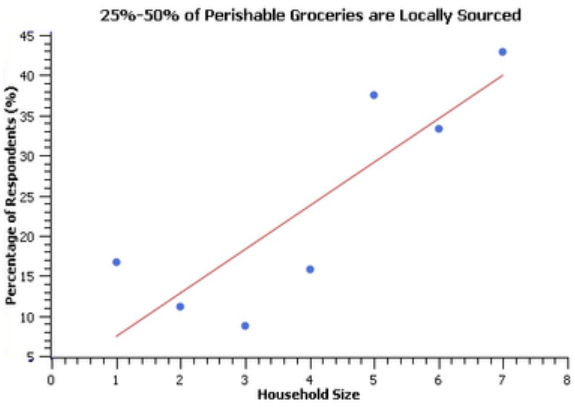
When asked, "Of the perishable foods your ʻohana consumes, approximately how much of it is locally sourced from Hāna and or Maui" 38.0% (43/113) put 25% or less, 20.4% (23/113) put 25%-50%, 21.2% (24/113) put 50%-75%, 20.4% (17/113) put 75% or more. The lower sample average amount is $123.09 (35.3% of Lower Perishable Average, 17.4% of Lower Grocery Bill Average), and the upper sample average is $344.94 (59.3% of Lower Perishable Average, 30.2% of Upper Grocery Bill Average).

With a 95% confidence interval, we expect the true lower average amount to be between $92.70-$153.48 and the true upper average amount to be between $268.75-$403.13. The expected average midpoint amount is $247.92 per month per family.



Trend in Comparison to Household Size: In the following graphs, for each possible survey choice, we plot household size against percentage of respondents and draw the trend line. It seems that as the family size increases the percent of perishable food and local-based foods decreases. Larger Households tend to purchase less local-based food relative to their perishable food.

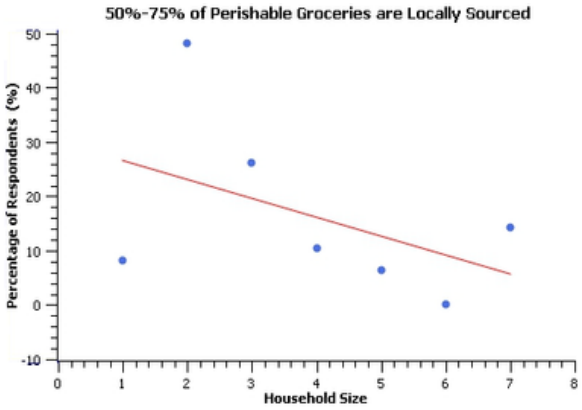


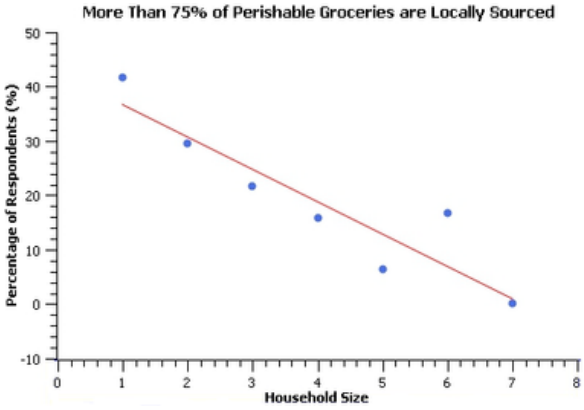


2019-2022

IV. ʻOhana/Family Survey Results

Locally-Sourced Perishable Foods

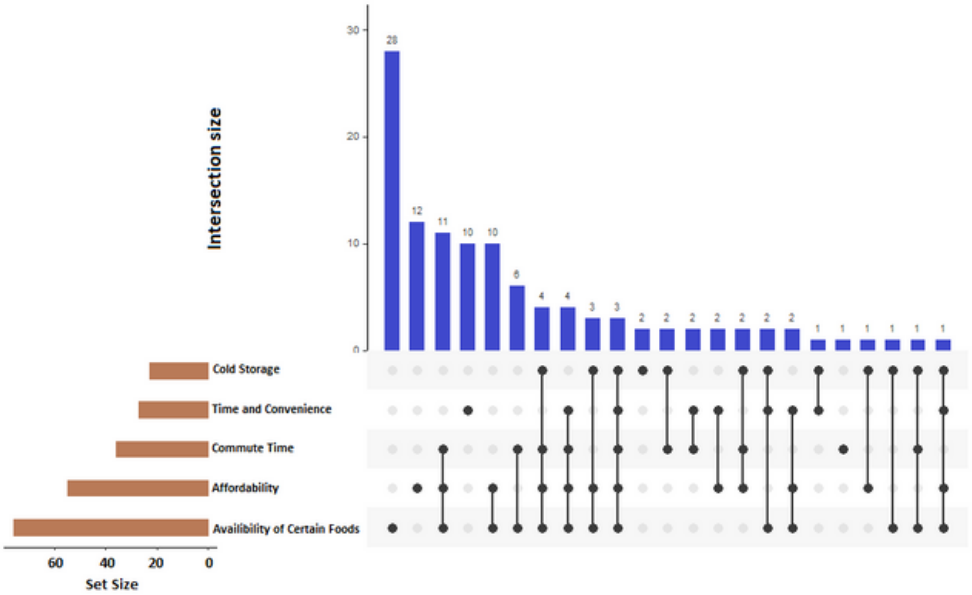




Obstacles to Purchasing More Fresh Foods

When asked, "What obstacles prevent you from purchasing more fresh fruits, vegetables, and proteins for groceries?" families reported the two most significant obstacles were affordability and availability. 48.7% (55/113) of families selected affordability, while 66.4% (75/113) selected availability. For larger families (4+ household members), 66.7% (34/51) selected affordability as an obstacle, and 56.9% (29/51) selected availability as an obstacle (43.1% (22/51) selected both). For smaller families (1-3 household members), 33.9% (21/62) selected affordability as an obstacle, and 74.2% (46/62) selected availability as an obstacle (25.8% (16/62) selected both).

Note: The graph below is an upset graph; it is a bar graph that displays the intersection count between multiple categories. The blue part of the graph displays the intersection count, the black bars and dots are the category (or categories) that the blue bars represent, and the brown bars on the left are the total count of responses that chose that category.

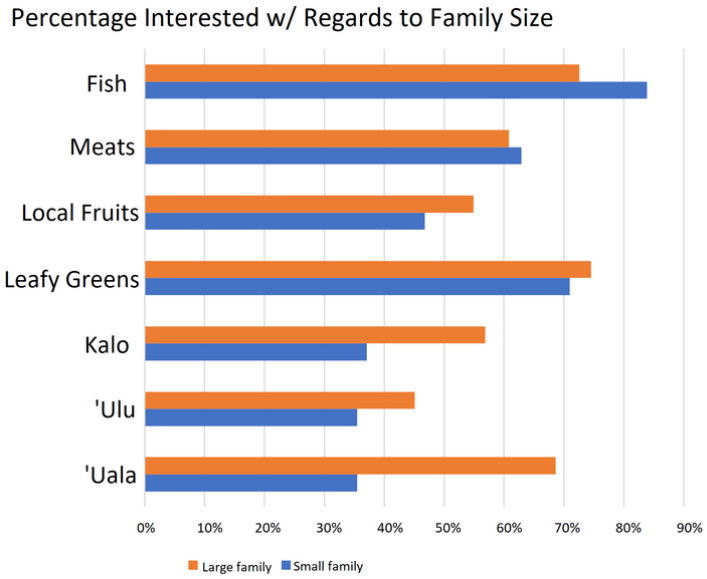


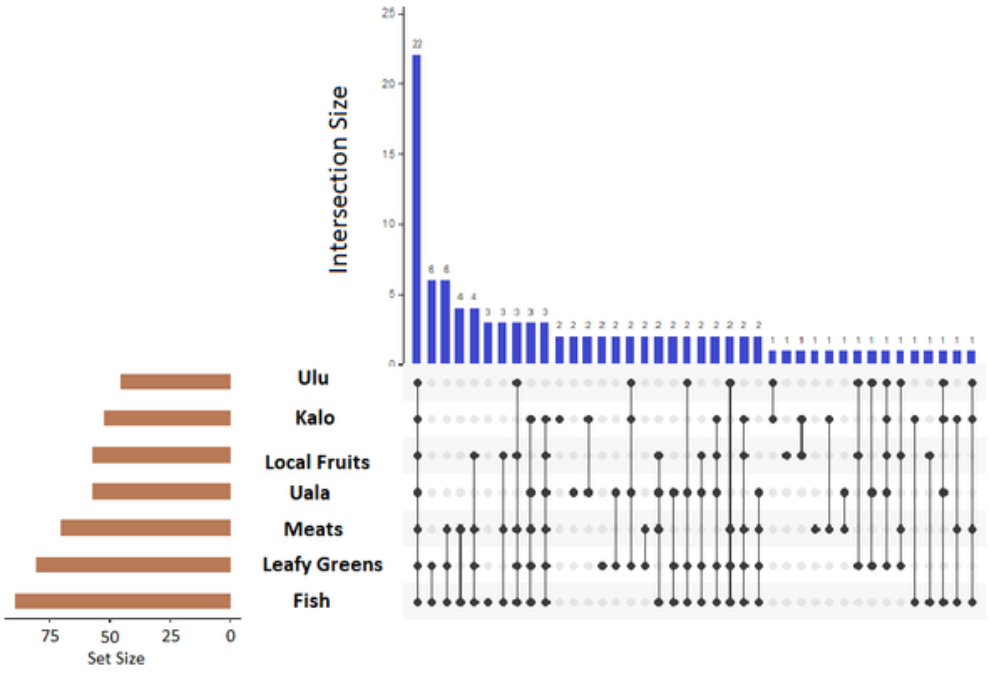
2019-2022

IV. ʻOhana/Family Survey Results

Foods ʻOhana Would Enjoy

Of the 113 families that answered, "What locally-grown, ʻāina foods would you be interested in purchasing more of if readily available in Hāna?" 58% (65/113) chose over half of the options provided, and 19.5% (22/113) chose all of the options provided. This could indicate that there is a want for more locally-produced perishable products.



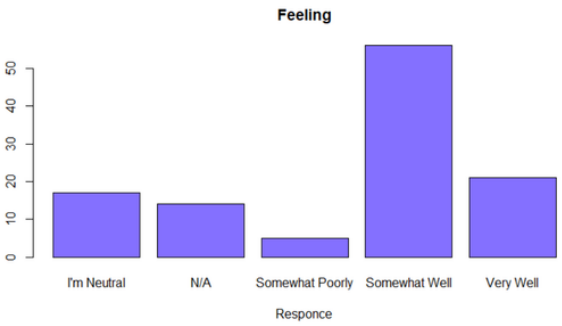


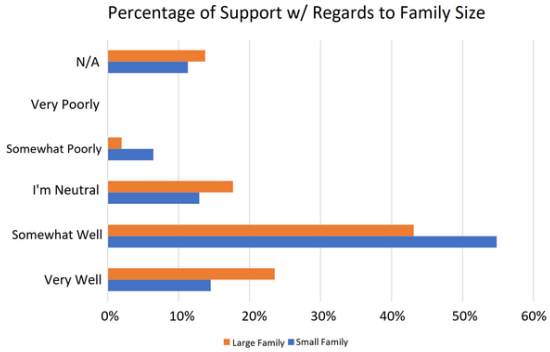
2019-2022

IV. ʻOhana/Family Survey Results

Does the Hāna Farmers Market Meet Your Needs?

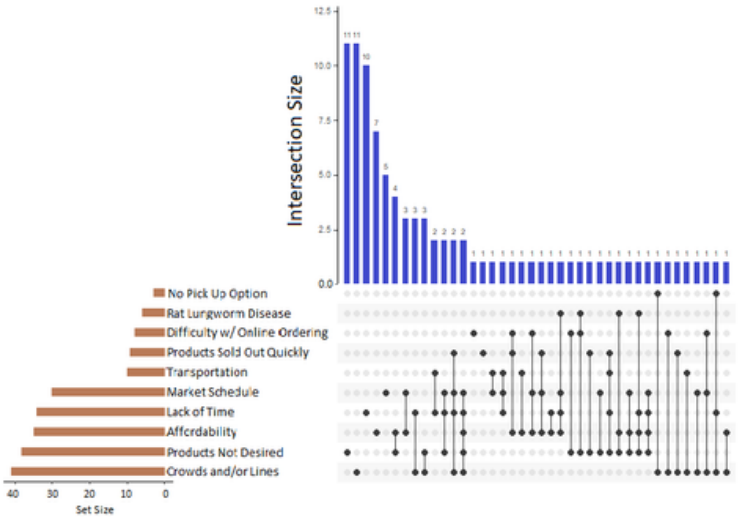
When asked, "How does the Hāna Farmers Market support your grocery needs with the fresh, local foods your ʻohana desires?" 18.6% selected "Very Well," 49.6% selected "Somewhat Well," 15.0% selected "I'm Neutral," 4.4% selected "Somewhat Poorly," 0.0% selected "Very Poorly," and 12.4% selected "N/A." 66.7% (34/51) of larger families think the Hāna Farmers Market does "Somewhat well" or "Very Well" at providing perishable foods for their families, and 69.3% (43/62) of smaller families think Hāna Farmers Market does "Somewhat well" or "Very Well" at providing perishable foods for their families.





Obstacles to Buying from Hāna Farmers Market

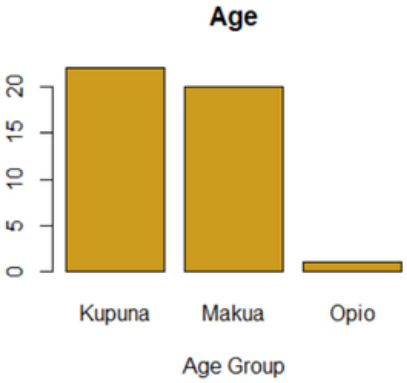
When asked, "What obstacles, if any, prevent you from buying all the fresh, local foods desired at the Hāna Farmers Market" the top five obstacles chosen were: Crowds and/or lines, 36.3% (41/113), Variety of foods doesn't match my shopping patterns, 33.6% (38/113), and Affordability and Lack of time, both 31.0% (35/113). In the free-response section, 12 families expressed that the availability of products does not last long at the farmers market, as they sell out fast. For larger families, the top four obstacles were: Crowd and/or lines at 37.3% (19/51), Affordability and lack of time at 35.3% (18/113), and Variety of foods doesn't match my shopping patterns at 27.5% (14/51). For smaller families, the Variety of foods doesn't match my shopping patterns came in at 38.7% (24/62), Crowds and/or lines at 35.5% (22/62), Market schedule at 29.0% (18/62), and Affordability and Lack of time at 27.4% (17/62).

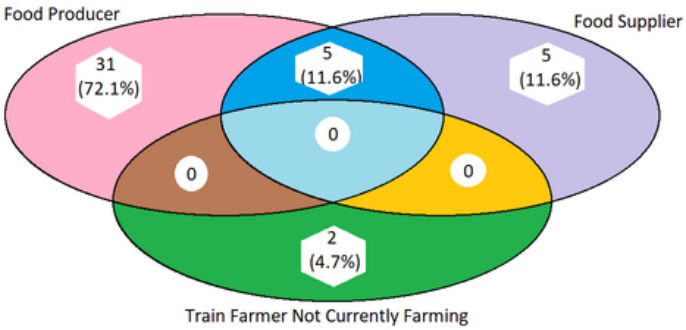


V. Established Farmer and Producer Survey Results

Identified Type of Farmer

The count of farmers surveyed was 43, and of the people that were surveyed: 1 was ʻōpio (14-24 years old), 20 were mākua (25-54 years old), and 22 were kūpuna (55+ years old). In addition, of the 43 farmers, 31 are exclusively food producers, 5 are exclusively food suppliers, 5 are both food producers and food suppliers, and 2 are trained farmers who are not currently farming.





Additional Labor on the Farm

Of the 43 farmers surveyed, 35 had additional labor help on their farms. There are 17 ʻōpio workers working across 6 farms, an average of 2.83 ʻōpio workers per farm, 33 mākua workers working across 21 farms, an average of 1.57 mākua workers per farm, and 25 kūpuna workers working across 25 farms, an average of 1.32 kūpuna workers per farm.

V. Established Farmer and Producer Survey Results

Identified Farm Type

Of the 43 farmers, when asked "How would you best describe your role as a food producer?" 14.0% (6/43) are backyard farmers, 32.5% (14/43) are small acreage farmers, 18.6% (8/43) are medium acreage farmers, and 34.9% (15/43) are large acreage farmers.

Poundage of Farmer Produce, Proteins, Products

The breakdown of farmers' produce, when asked "How many pounds (per year) do you produce of the following?", is as follows: two of the surveyed farmers produce a total of 600 pounds/year of meat products with certifications, two farmers produce a total of 500 pounds/year of meat products without certifications, two farmers produce a total of 1,600 pounds/year of seafood, 16 farmers produce a total of 8,395 pounds/year of eggs, 23 farmers produce a total of 43,582 pounds/year of ʻulu, 19 farmers produce a total of 27,467 pounds/year of kalo, 33 farmers produce a total of 85,965 pounds/year of banana (including cooking banana), seven farmers produce a total of 4,070 pounds/year of casava, 11 farmers produce a total of 3,960 pounds/year of ʻuala, 37 farmers produce a total of 200,100 pounds/year of fruits, 25 farmers produce a total of 119,320 pounds/year of vegetables, and 20 farmers produce a total of 135,920 pounds/year of value-added products.

PRODUCTS	# OF FARMS	TOTAL POUNDAGE (lb/year)	AVERAGE POUNDAGE PER FARM (lb/year)
Meat w/ cert	2	600	300
Meat w/o cert	2	500	250
Seafood	2	1,600	800
Eggs	16	8,395	524.7
ʻUlu	23	43,582	1,894.9
Kalo	19	27,467	1,445.6
Banana	33	85,965	2,605

2019-2022

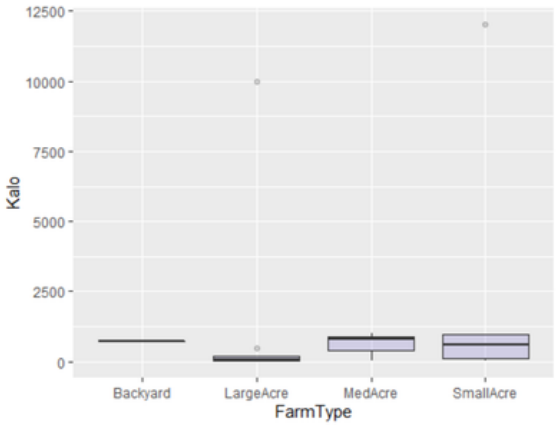
V. Established Farmer and Producer Survey Results

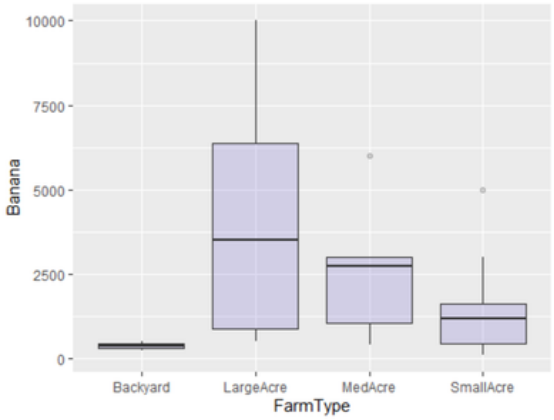
Poundage of Farmer Produce, Proteins, Products

PRODUCTS	# OF FARMS	TOTAL POUNDAGE (lb/year)	AVERAGE POUNDAGE PER FARM (lb/year)
Casava	7	4,070	581.4
ʻUala	11	3,960	360
Fruits	37	200,100	5,408.1
Vegetables	25	119,320	4,772.8
Value-Added	20	135,920	6,796

Box and whisker plots for the poundage for each item separated by the size of farm are below. These plots can give a sense of the expected poundage grown of an item by farm size.

Note: The box part represents 50% of the data for that category, the bottom end of the box represents the first quartile and the top of the box represents the third quartile. The "whiskers" then stretch to the maximum and minimum of the data. If there is a dot far above the plot then this dot represents an outlier.

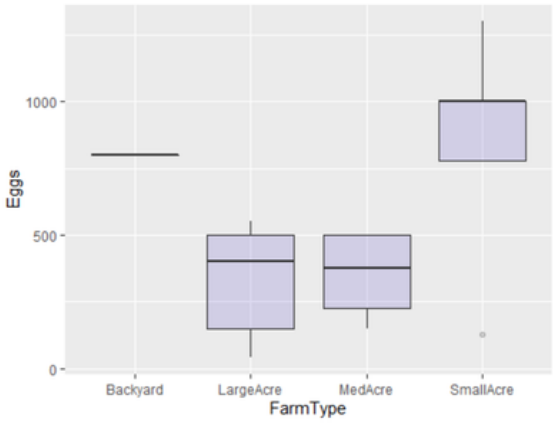


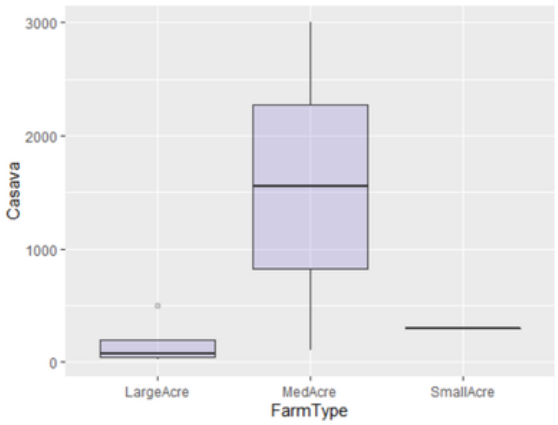


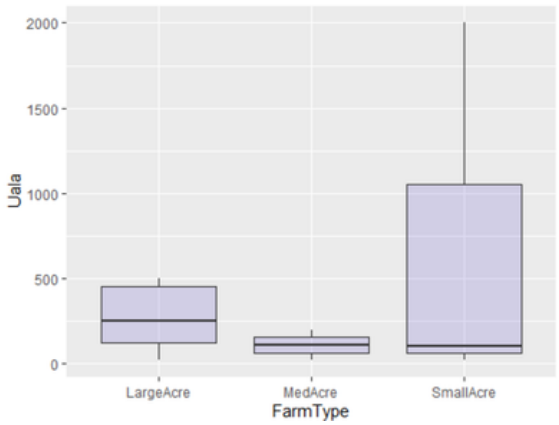
2019-2022

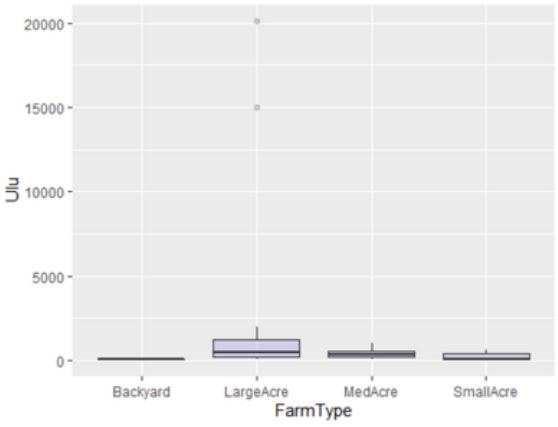
V. Established Farmer and Producer Survey Results

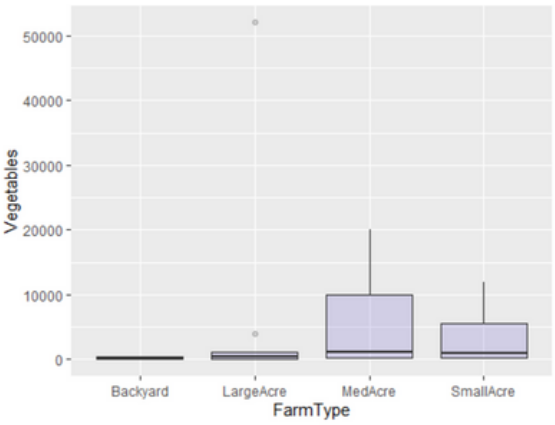
Poundage of Farmer Produce, Proteins, Products

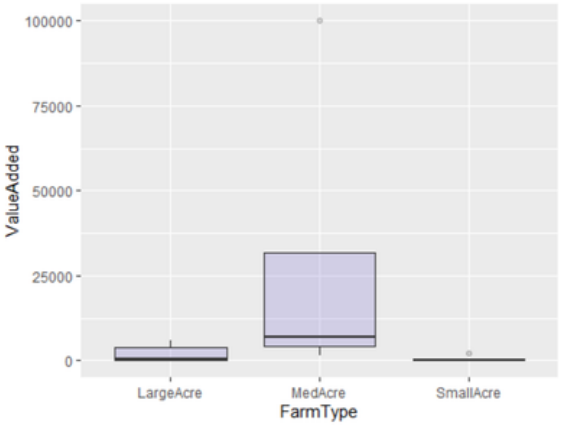


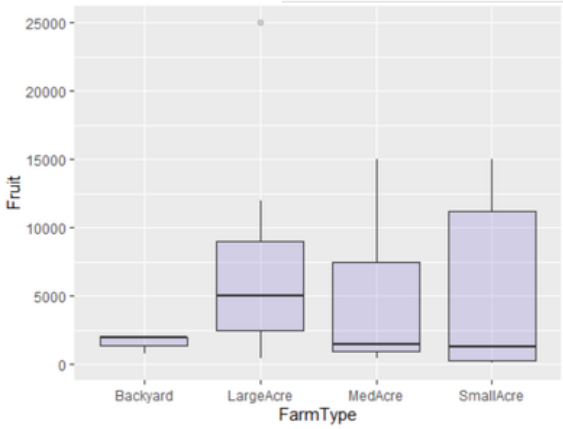












2019-2022

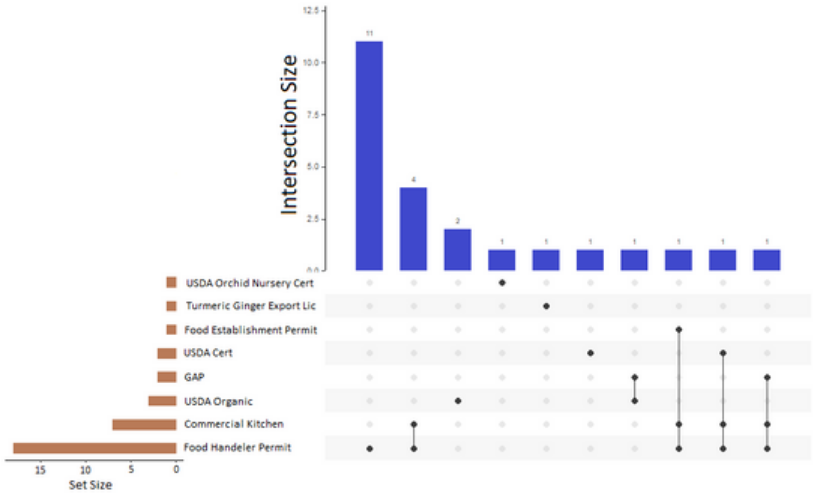
V. Established Farmer and Producer Survey Results

Selling Produce and Value-Added Products

When asked, "Do you currently sell produce or value-added products?" 86.0% (37/43) expressed that they did currently sell produce or value-added products. In the free-response section, there were 29 different places where produce or value-added products were sold. The top three locations were: Hāna Farmers Market, 78.4% (29/37), Farm Stand, 27.0% (10/37), and Hāna Farms, 21.6% (8/37).

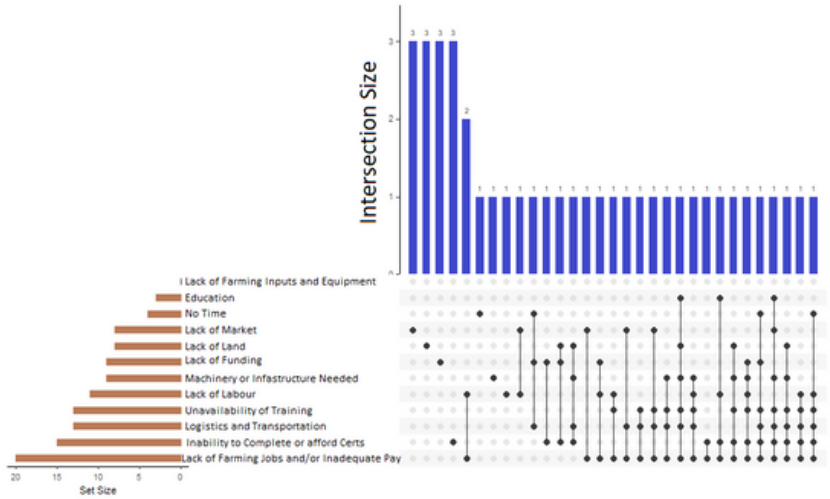
Certifications

When asked, "Indicate any food or food safety certifications your farm/establishment carries," 41.9% (18/43) listed that they had a Food Handler Permit (this was a free response), and 16.3% (7/43) had a Commercial Kitchen Permit. However, 44.2% (19/43) did not have any permits.



Obstacles to Farming Food or Farming More Food

The top-four responses when asked, "Indicate any applicable factors preventing you from farming food, or farming more food" are "Unavailability of farming jobs and/or inadequate pay," 46.5% (20/43), "Inability to complete or afford certifications," 34.9% (15/43), and "Unavailability of agricultural training" and "Logistics and transportation considerations," both 30.2% (13/43).



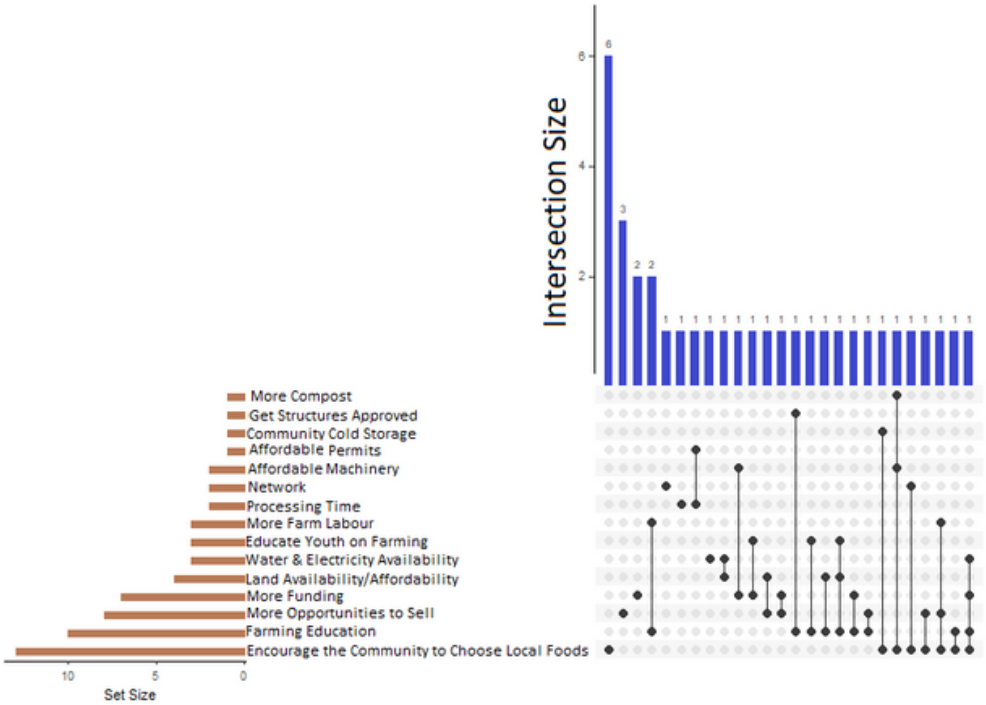
V. Established Farmer and Producer Survey Results

Producing and Selling Food to the Hāna School Cafeteria

When asked, "Would you be interested in producing and selling food for students' meals at Hāna School cafeteria?" 81.4% (35/43) expressed that they would like to. The top-five products listed to sell to the school are: Citrus and Banana, both 25.7% (9/35), Herbs and Leafy Greens, both 14.3% (5/35), and Papaya, 11.4% (4/35).

How Can Farming and Local Food Consumption be Better Achieved in our East Maui Community?

When asked, "How can farming and local food consumption be better achieved in our East Maui community?" the most popular free responses were to "Encourage community to buy local foods, 30.2% (13/43), "Educate farmers", 23.3% (10/43), and "More funding", 21.0% (9/43).

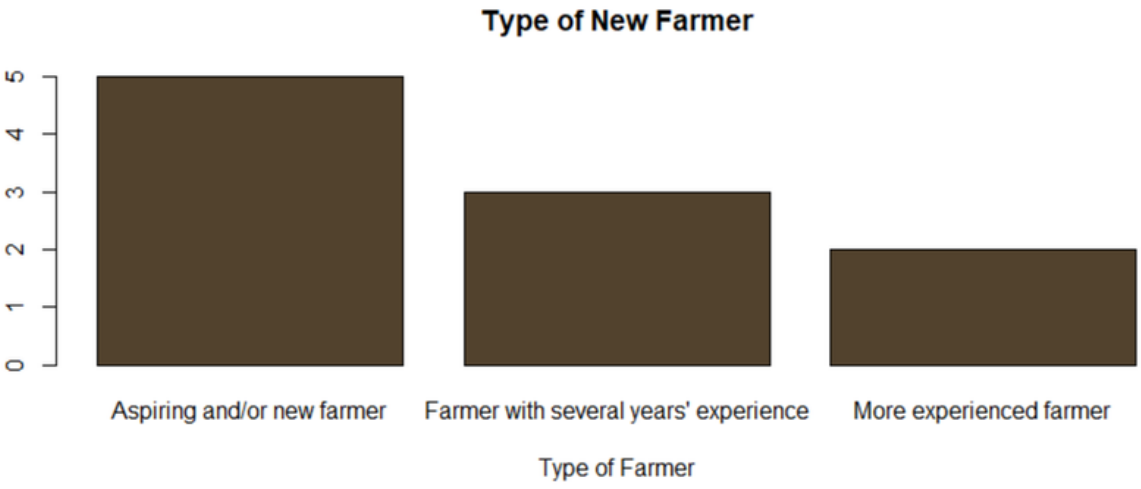


2019-2022

VI. Aspiring and New Farmer Survey Results

Demographics

There were 10 new farmers surveyed. The average age is 23.1 years old, and of the 10 new farmers surveyed, 5 are aspiring and/or new farmers (0-3 years of experience), 3 are farmers with several years' experience (3-5 years), and 2 are more experienced farmers, aspiring to improve (5+ years).



Breakdown of Hours Per Week

When asked to "Please provide a breakdown of hours per week you spend farming and/or working other jobs" all 10 new farmers indicate that they have paid farming work at least part time. However, 7 new farmers indicated that they also farm unpaid throughout the week and 3 new farmers indicated that they work an outside job in addition to farming.

VI. Aspiring and New Farmer Survey Results

Breakdown of Hours Per Week

Farming	0 Hours/Week	1-15 Hours/Week	15-30 Hours/Week
Paid Farming	0	2	1
Unpaid Farming	2	5	2
Non-Farming Work	7	1	1

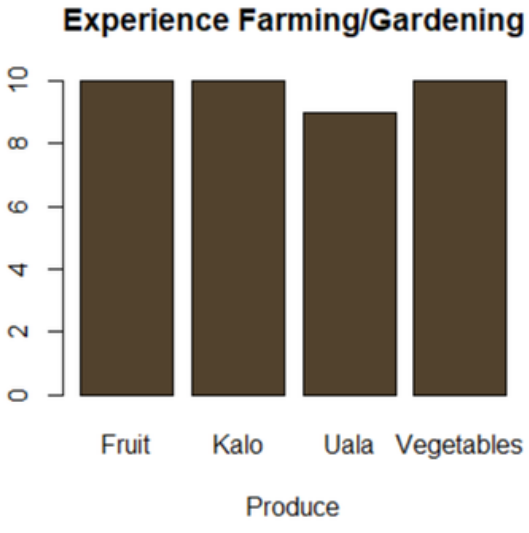
Aspiration

70% (7/10) of new farmers marked that they aspired to farm full-time, as their own business, 30% (3/10) indicated they aspired to farm part-time, as their own business, 20% (2/10) marked they aspired to farm full-time as an employee, and 10% (1/10) aspired to work part-time as an employee.

One new farmer indicated that they aspired to farm full-time with their own business, farm part-time with their own business, or farm full-time as an employee. Another farmer indicated that they wanted to farm part-time with their own business or farm part-time as an employee.

Experience with Farming and/or Gardening Certain Foods

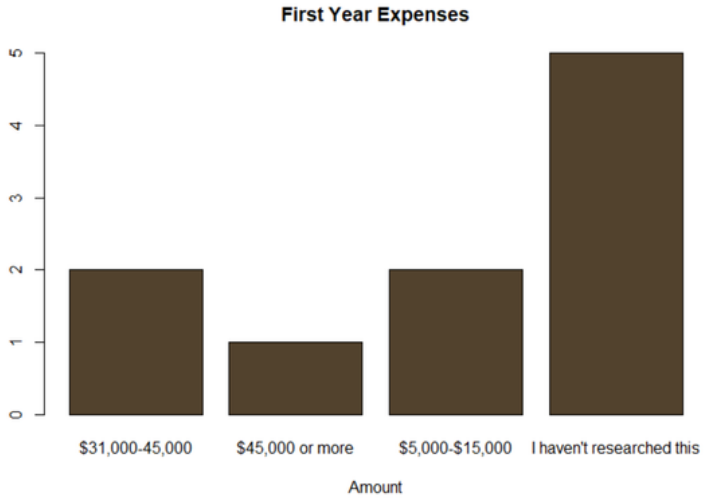
When asked to "Indicate any of the ʻāina based foods you have experience farming and or gardening" 100% (10/10) of new farmers indicated that they had experience farming/gardening kalo, 90% (9/10) of new farmers indicated that they had experience farming/gardening ʻuala, 100% (10/10) of new farmers indicated that they had experience farming/gardening fruit, and 100% (10/10) of new farmers indicated that they had experience farming/gardening vegetables.



VI. Aspiring and New Farmer Survey Results

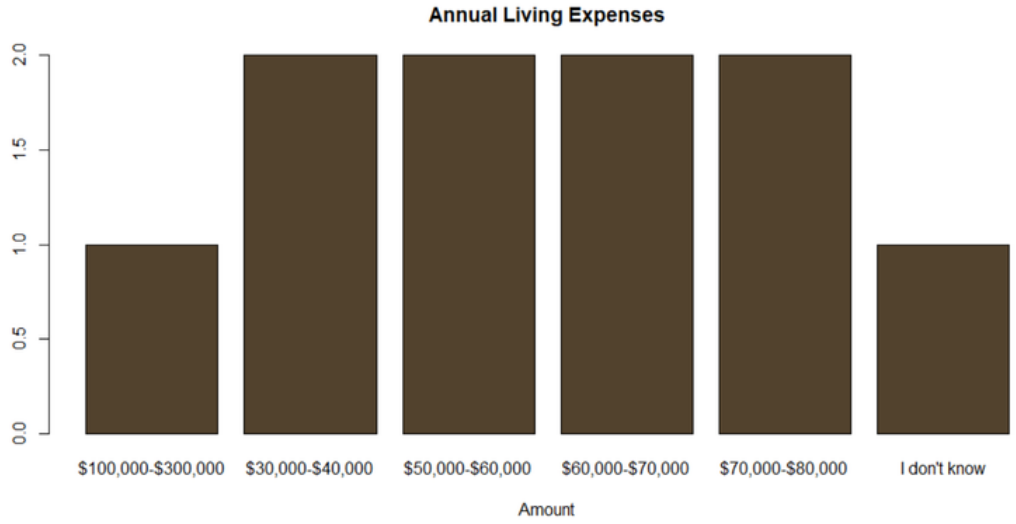
First-Year Farming Expenses

When asked, "What would your farming business expenses be in your first year?" 20% (2/10) of the new farmers marked $5,000-$15000, 20% (2/10) of the new farmers marked $31,000-$45000, and 10% (1/10) of the new farmers marked $45,000 or more. 50% (5/10) of the new farmers marked that they had not research what their first-year expenses would be yet.



Annual Income Needed for Living Expenses

When asked, "To cover the living expenses for you and your ʻohana, what annual income would you need to earn as a full-time farmer?" 20% (2/10) of the new farmers marked $30,000-$40,000, 20% (2/10) of the new farmers marked $50,000-$60,000, 20% (2/10) of the new farmers marked $60,000-$70,000, 20% (2/10) of the new farmers marked $70,000-$80,000, and 10% (1/10) of the new farmers marked $100,000-$300,000. 10% (1/10) of the new farmers marked that they did not know what their annual income would need to be to cover their living expenses.

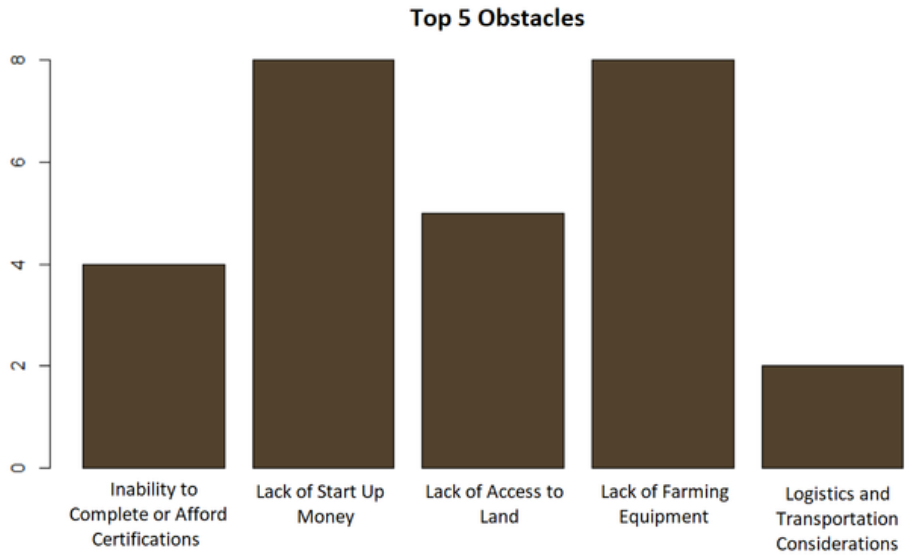


2019-2022

VI. Aspiring and New Farmer Survey Results

Obstacles Preventing Farming

The top-five responses when asked "Indicate any obstacles preventing you from farming food, or farming more food" are, "Lack of access to farming inputs, equipment, and/or heavy machinery" and "Lack of start up money to help me get going", both 80% (8/10), "Lack of access to land" and/or "Land ownership", both 50% (5/10), "Inability to complete or afford certifications", 40% (4/10), and 20% (2/10), "Logistics and transportation considerations." In addition, "Lack of market for agricultural products", "Unavailability of farming jobs and/or inadequate pay", and "Unavailability of agricultural training" all had one selection each.

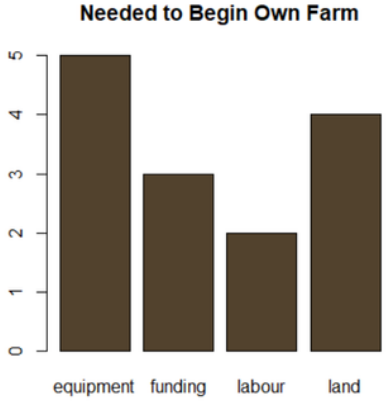


Selling Value-Added Products

Of the 10 new farmers, 8 marked "Yes" when asked "Do you currently sell and/or give away fresh produce or value-added products?". Of the 8 new farmers that sell/giveaway value-added products, when asked "To Whom?", 62.5% (5/8) sell/give to kūpuna, 37.5% (3/8) sell/give to family/friends, 25.0% sell/give to the public, and 25.0% sell at the Hāna Farmers Market.

What is Needed to Begin Your Own Farm?

The top-four free responses to the statement "Please explain what you think you would need in order to begin your own farm" are, "Equipment," 50% (5/10), "Land," 40% (4/10), "Funding," 30% (3/10), and "Labor," 20% (2/10).



East Maui Community Food Assessment:

Implementation and Looking Forward

Ma Ka Hana Ka ʻIke

In analyzing the community-based data on local agriculture, we identified and developed five plans focused on putting solutions into place.

I. Hāna School Garden to Cafeteria:

Under this plan, MKHKI and Hāna School are endeavoring to grow certain fresh foods on campus, to be used in school meals! This quest involves particularly stringent state regulations. The Farm to School Hui of the Hawaiʻi Public Health Institute's support has aided this plan and ongoing efforts to initiate Garden to Cafeteria in Hāna.

II. Farmer Entrepreneurship and Development:

This plan aims to help youth farmers in East Maui improve their productivity, organization, preparedness for startup challenges, and market access, enabling them to gain stable incomes and improve local food access in the long term. This plan draws on the insights and obstacles identified by local farmers in the East Maui Community Food Assessment and MKHKI's over two decades' experience in vocational training.

III. How to Supply the School:

This resource was shared with the East Maui small-farmer community and breaks down all food safety and insurance regulations and the schools' procurement and contracting processes. While this arena proved to be extremely complex, regulated, and especially challenging for the small farmer, this resource is indispensable to the prospect of collectively designing and implementing solutions that benefit East Maui's keiki and agricultural producers.

IV. Land Access Resources:

In response to the challenge of accessing affordable land, as identified by most aspiring farmers, MKHKI compiled some introductory information on accessing farmland in East Maui. This resource intends to demystify and prepare farmers ready for entrepreneurship to take advantage of: leases of State Lands through the Department of Land and Natural Resources Land Division, leases of State Lands through the Hawaiʻi Department of Agriculture, and farmland purchases through the USDA Farm Loan.

V. Food Hub Feasibility:

Information for this plan was collected in partnership with the Hawaiʻi Farmers Union United, Hāna Chapter. Now underway, Hāna's Food Hub provides a succinct distribution pathway from Maui farmers and food producers direct to the Hāna community members and visitors of East Maui.

If you or your organization are interested in learning more about our research and plans moving forward, please contact us at kokua@hanabuild.org.