



A Quantitative Analysis of the Sources and Uses of Capital in the Hawaiian Food System: 2018-2019

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Biography

Dr. Steven S. Vickner is a Clinical Professor in the Morrison School of Agribusiness and W. P. Carey School of Business at Arizona State University. He received his Ph.D. and M.S. in Agricultural and Resource Economics from Colorado State University, his M.B.A. in Management from the Daniels College of Business at the University of Denver, and his B.S., cum laude, in Economics with a minor in Mathematics from Bowling Green State University.

Dr. Vickner has taught over 100 courses ranging from undergraduate (B.S., B.A.) to graduate (M.B.A., M.S., M.A., Ph.D.) levels in all modalities - onsite, online, and hybrid. He has taught Ph.D. courses in financial economics, M.B.A. courses in financial modeling, and undergraduate courses in agribusiness finance. He has also taught courses in agribusiness management, agribusiness marketing, agricultural economics, microeconomics, regional economics, econometrics, data analytics, operations research, strategic management, and sustainability. He has been recognized for excellence in his teaching through several teaching-centric appointments within his professional academic associations, the 2013 Rodney F. Plimpton Outstanding Teacher Award for the *College of Food, Agricultural, and Environmental Sciences at Ohio State University*, and the 2006 Outstanding Undergraduate Teaching Award for the *Western Agricultural Economics Association*.

Dr. Vickner has published numerous scholarly contributions on agribusiness, agricultural economics, resource economics, sustainability, and econometrics. In addition to being widely cited in the popular business press, his academic publications have appeared in refereed books, refereed conference proceedings, and refereed journals including *American Journal of Agricultural Economics*, *Journal of Agricultural and Applied Economics*, *Agribusiness: An International Journal*, *International Food and Agribusiness Management Review*, *Journal of Agribusiness*, *Sustainability*, *Choices*, *Western Economics Forum*, and *Journal of Applied Econometrics*. He has been recognized for excellence in his research through editorial appointments within his professional academic associations, regional and national competitive extramural grants and funding, and the 1999 Outstanding Article Award for the *Journal of Agricultural and Applied Economics*.

Outside of academia, Dr. Vickner was a Vice President and Data Scientist at JPMorgan Chase & Company in Marketing Analytics within the Retail Financial Services line of business where he and his team of three Ph.D.-level direct reports developed and implemented predictive analytics and optimization models for all cross-selling campaigns. Additionally, he was a Bank Officer and Credit Policy Analyst at Citigroup in Risk Management where he developed and implemented predictive analytics and optimization models for all credit scoring initiatives. More recently, he served as a consultant for PNC Wealth Management.

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Disclaimer on Data Sources

The purpose of this study is to quantify the sources and uses of capital in the Hawaiian food system based on a wide array of diverse data sources. The values, quantities, and measurements within those data sources are often restated months after the initial reporting so a word of caution is given here; the data sources were documented at the time they were accessed over the past six months of this project. Moreover, as with any research project, this one was conducted in phases within a predefined time frame; only available data during each respective phase of the project were accessed. Finally, the government agencies, private businesses, foundations, trade associations, other reporting institutions, survey respondents, other reporting individuals, and any remaining data suppliers are ultimately responsible for the quality of their own data used in this research project.

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Introduction and Hawaiian Food System Definition

Vickner (2001) noted food system participants and the communities in which they are located are just as impacted, if not more so, by changes in global capital markets as they are by the much more identifiable culprits of weather, pests, invasive species, diseases, new technologies, policy, and competition. Moreover, the food system in general is quite slow to adopt new financing methods perhaps given its risk-averse agrarian heritage (Vickner, 2001). The purpose of this study is to quantitatively analyze the sources and uses of capital in the Hawaiian food system. In doing so, it will be possible to gain a deeper understanding of: 1) the market participants who supply capital; 2) the market participants who demand capital; 3) the range of capital products offered in the market; 4) any gaps in the market that may exist; and 5) how to improve the functioning of the market. This study begins with a thorough definition of the food system in Hawaii. It is followed by a visualization of financing trends in the U.S. food system to provide context to the Hawaiian food system. The study then systematically addresses the wide array of diverse publicly-available data on sources of capital and also identifies who uses capital replete with numerous case examples of relevant Hawaiian food system projects. The study concludes with a review of findings from a primary data collection effort on both the demand-side and supply-side of the market prior to making summary remarks and recommendations based on the foregoing analysis.

The starting point of this study was a rigorous input-output model analysis of the Hawaiian economy followed by a definition of its food system to identify the relevant market participants. The estimated size of the Hawaiian economy in 2018 was approximately \$93 billion in nominal GDP (USDC-BEA, 2020; IMPLAN, 2020; Vickner, 2020b; Vickner 2009). Hawaii ranked 38th in the nation based on 2018 nominal GDP. Only 6.92% of the Hawaiian GDP was due to the contribution of its food system (Table 1). Not surprisingly, the largest component of the Hawaiian food system was food retailing due to tourism-induced restaurant trade followed respectively by, though orders of magnitude smaller, food manufacturing and food wholesaling. In island economies lacking requisite levels of diversification,

Table 1 - Economic Contribution to Nominal GDP in 2018

	% of Hawaiian Economy	% of Hawaiian Food System
Input Suppliers	0.06%	0.80%
Farming	0.27%	3.83%
Ranching	0.06%	0.83%
Fishing	0.05%	0.74%
Food Manufacturing	0.74%	10.68%
Food Wholesaling	0.47%	6.76%
Food Retailing	5.29%	76.35%
Total	6.92%	100.00%

resilience, and sustainability (Bertram, 1986; McKee and Tisdell, 1990), such economic outcomes are not unexpected. Case in point, the seasonally adjusted unemployment rate in November 2020 in Hawaii was 10.1% and was the second highest in the nation (USD-L-BLS, 2020).

Figure 1 graphically depicts a typical generic food system as adapted to an island economy (Vickner 2020a). For the state of Hawaii, the Input Suppliers sector was composed of agrichemical and farm

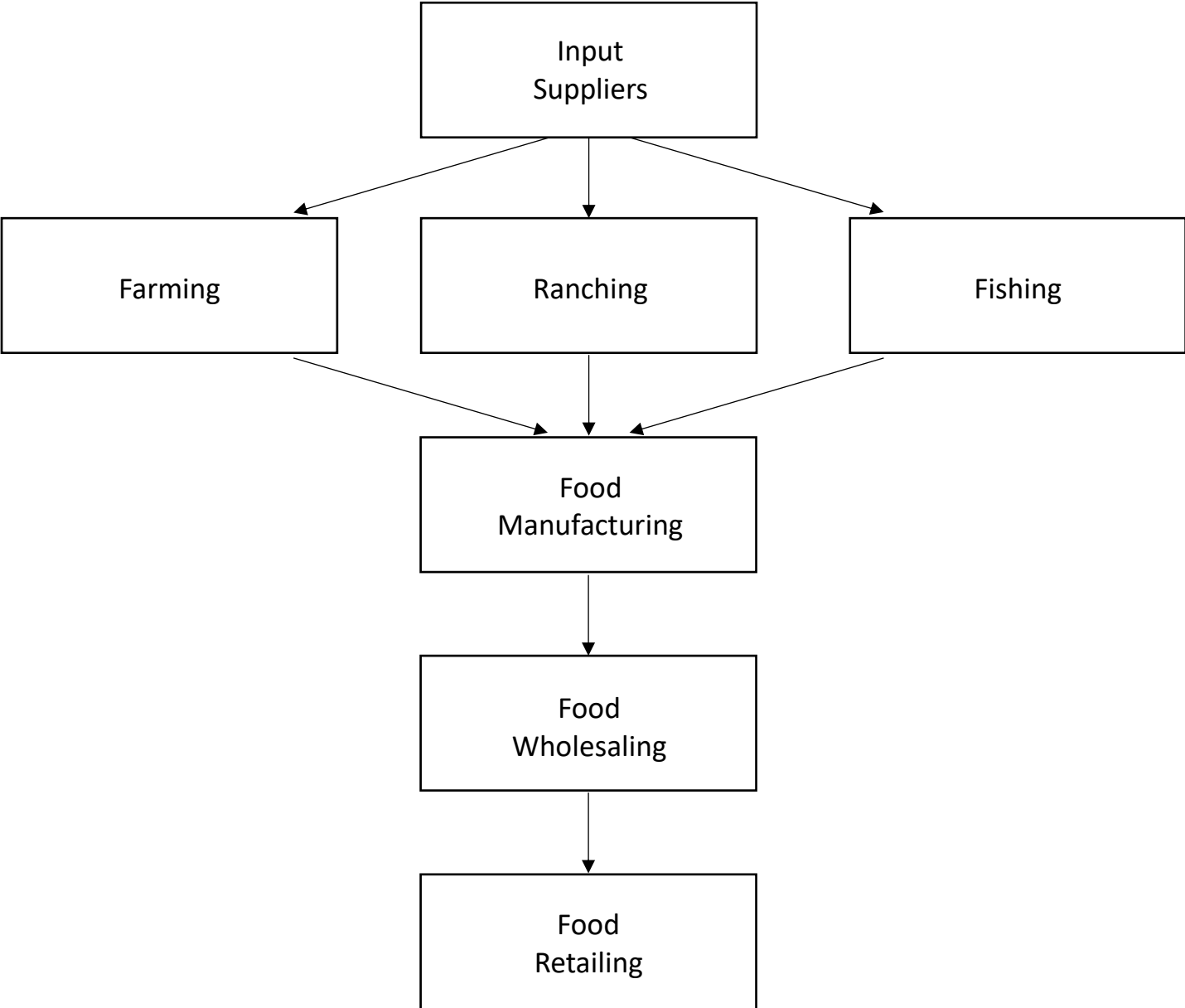


Figure 1 - Generic Food System Diagram

equipment sellers, as well as agricultural support activities. Farming was composed of all forms of plant agriculture, while ranching was composed of not only animal agriculture but also aquaculture. Fishing was composed of both commercial longline and commercial dayboat segments (USDC-NOAA, 2018). Food manufacturing was composed of plant agriculture processing, animal agriculture processing, and seafood processing, as well as Hawaiian agriculture-based supplements and other products. Food wholesaling was composed of traditional distributors, local wholesale food hubs/aggregators, and cooperatives. Food retailing is typically defined by the food-at-home (e.g., grocery) and food-away-from-home (e.g., restaurant) sectors. Although those respectively represent 0.98% and 4.31% of 2018 nominal GDP in Hawaii with the latter heavily dependent on tourism, the composition of food retailing was limited to just farmers markets, retail food hubs, community supported agriculture (CSA), and community support fisheries (CSF).

Financing Trends in the U.S. Food System

To provide necessary context to the sources and uses of capital in the Hawaiian food system, financing trends in the U.S. farm and ranch production sector (USDA-ERS, 2020) as well as the financing trends in the respective segments of the U.S. food system (WRDS, 2020) are discussed. Only liquidity and solvency measures are addressed.

Liquidity refers to the notion a firm can repay its current obligations without disrupting its normal course of business. The current ratio is one of the most common measures of liquidity and is calculated as the quotient of current assets and current liabilities. If it exceeds the value of one a firm is deemed liquid, otherwise the firm is deemed illiquid. Often, smaller firms target a value of 1.5 or 2 to have more short-term financial flexibility. Moreover, a liquid firm has positive working capital given working capital is the difference between current assets and current liabilities. Liquidity can provide insights into the need for short-term financing.

Solvency refers to the notion a firm can repay its creditors by selling all its assets in the event it exits the industry. The debt-asset ratio is one of the most common measures of solvency and is calculated as the quotient of total liabilities and total assets. If it takes on a value between zero and one, a firm is deemed solvent. The closer it is to the value of one, the more the firm relies on debt capital to finance its asset base. Whereas the current ratio utilizes current assets and current liabilities, the debt-asset ratio utilizes total assets and total liabilities. Given the accounting identity requires total assets to equal total liabilities plus owner's equity, then one minus the debt-asset ratio equals the equity-asset ratio.

Internal considerations such as a firm's management policies as well as external considerations such as prevailing interest rates can both influence the use of short-term and long-term debt capital. In Figures 2 and 3, estimates of the current ratio and debt-asset ratio are respectively chronicled for the U.S. Agricultural Input Supply industry from 2011 to 2019 (WRDS, 2020). The estimated value of the current ratio for the entire Hawaiian food system of 1.86 is provided for just 2019. Hence, the Hawaiian food system is liquid. The estimated value of the debt-asset ratio for the entire Hawaiian food system of 0.52 is provided for just 2019. Hence, the Hawaiian food system is solvent. The underlying data for the two Hawaiian food system ratios were collected in the demand-side survey effort discussed later in the report. This theme in data visualization is repeated respectively for U.S. Farming and Ranching in Figures 4 and 5 (USDA-ERS, 2020), U.S. Food Manufacturing in Figures 6 and 7 (WRDS, 2020), U.S. Food Wholesaling in Figures 8 and 9 (WRDS, 2020), U.S. Food Retailing (Grocery) in Figures 10 and 11 (WRDS, 2020), and U.S. Food Retailing (Restaurant) in Figures 12 and 13 (WRDS, 2020). In most of the U.S. series, the trends are quite stable and, in many cases, stationary or mean-reverting. U.S. Food Manufacturing, U.S. Food Retailing (Grocery), and U.S. Food Retailing (Restaurant) struggled with liquidity. However, the publicly-traded firms underlying these series are behemoths and have many options for financing short-term needs. All U.S series exhibited solvency, yet were debt-heavy likely due to lower prevailing nominal interest rates in the last decade.

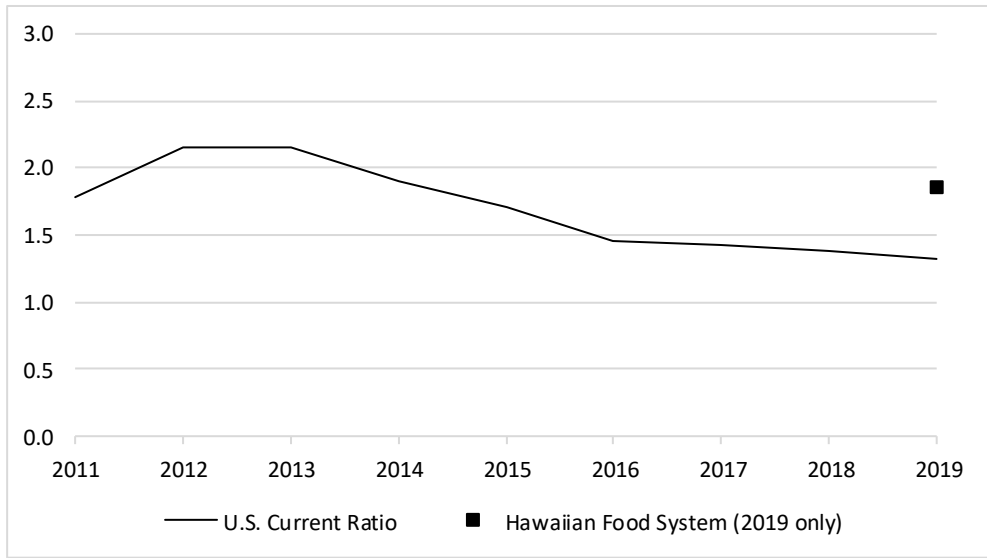


Figure 2 - U.S. Agricultural Input Supply Current Ratio, 2011-2019

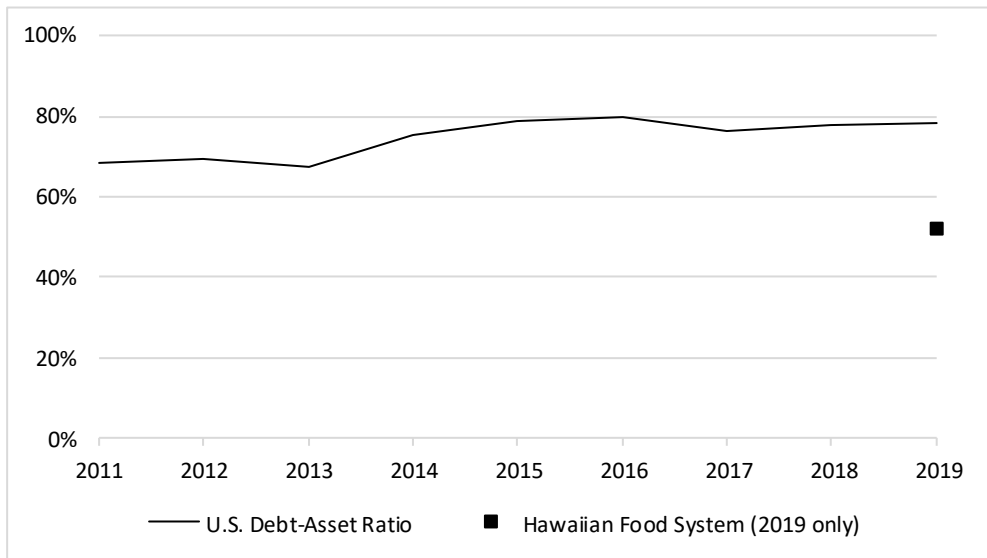


Figure 3 - U.S. Agricultural Input Supply Debt-Asset Ratio, 2011-2019

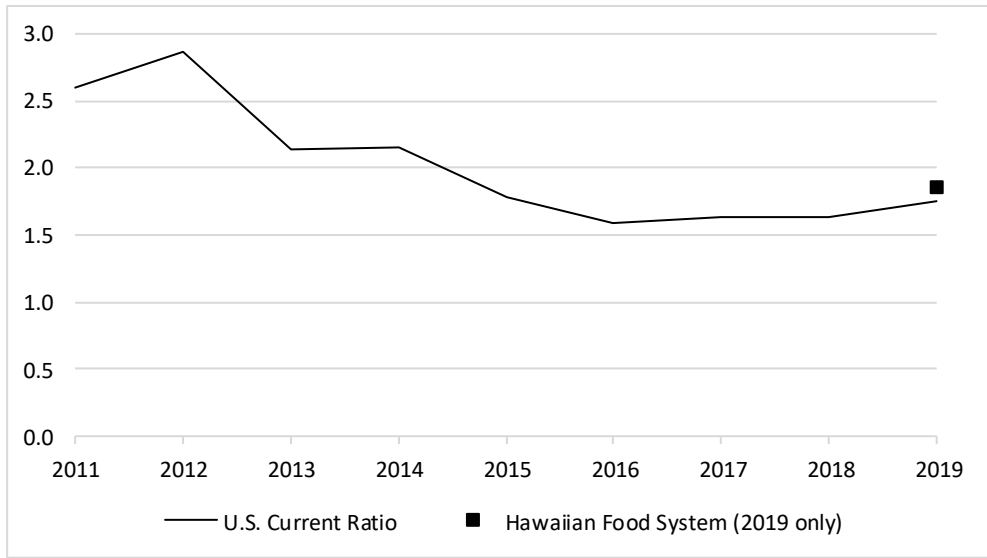


Figure 4 - U.S. Farming and Ranching Current Ratio, 2011-2019

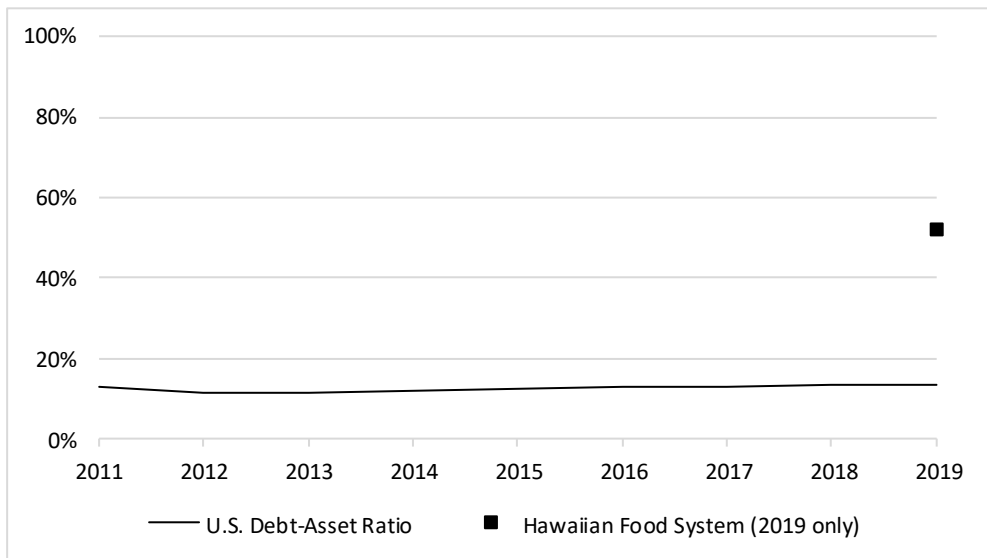


Figure 5 - U.S. Farming and Ranching Debt-Asset Ratio, 2011-2019

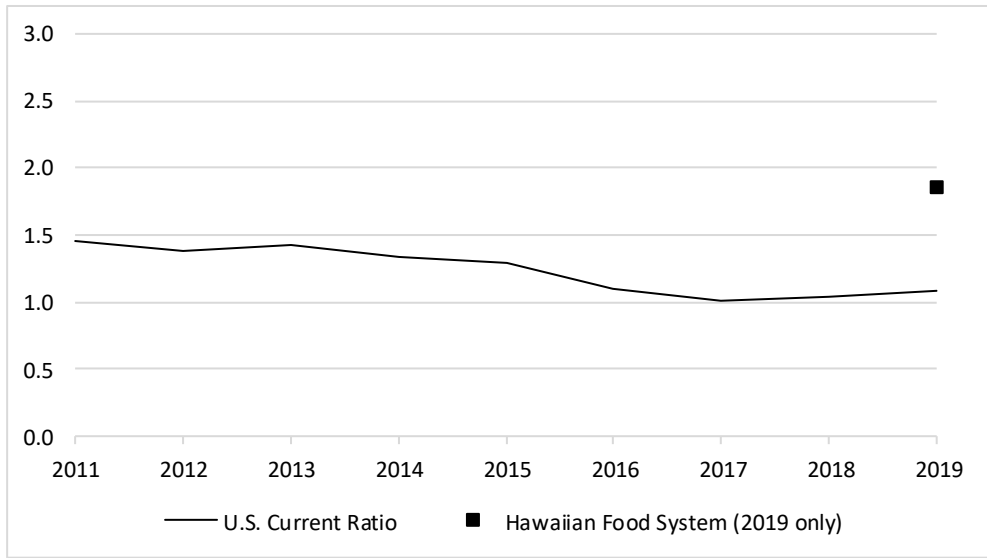


Figure 6 - U.S. Food Manufacturing Current Ratio, 2011-2019

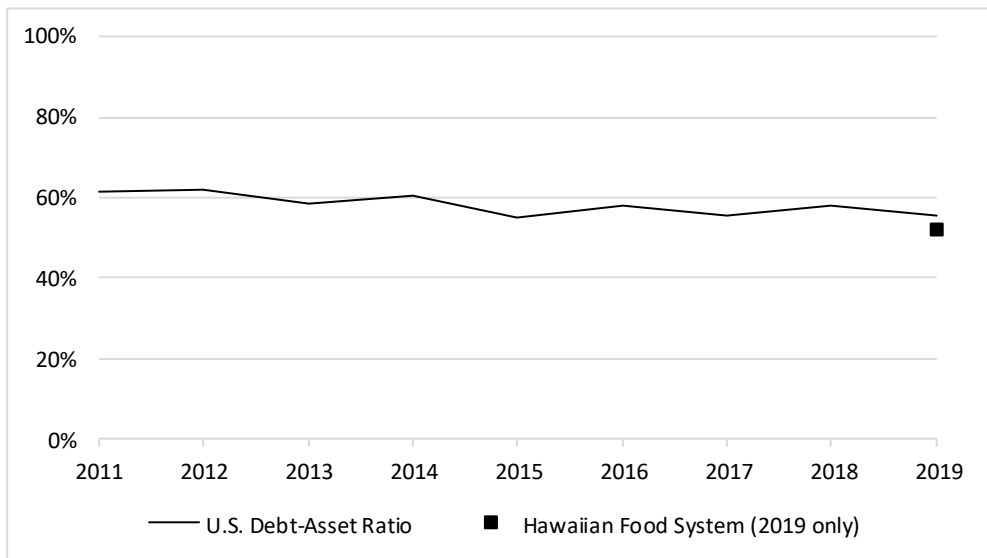


Figure 7 - U.S. Food Manufacturing Debt-Asset Ratio, 2011-2019

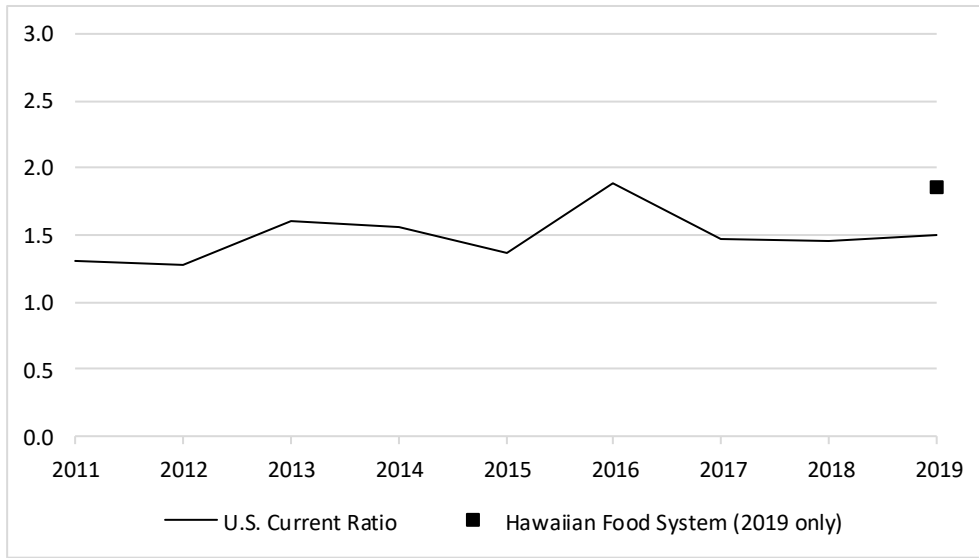


Figure 8 - U.S. Food Wholesaling Current Ratio, 2011-2019

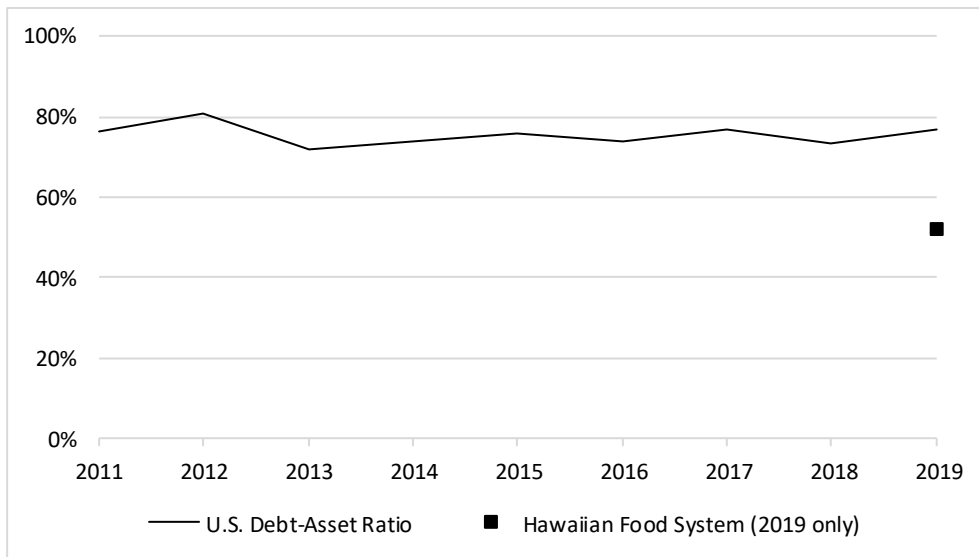


Figure 9 - U.S. Food Wholesaling Debt-Asset Ratio, 2011-2019

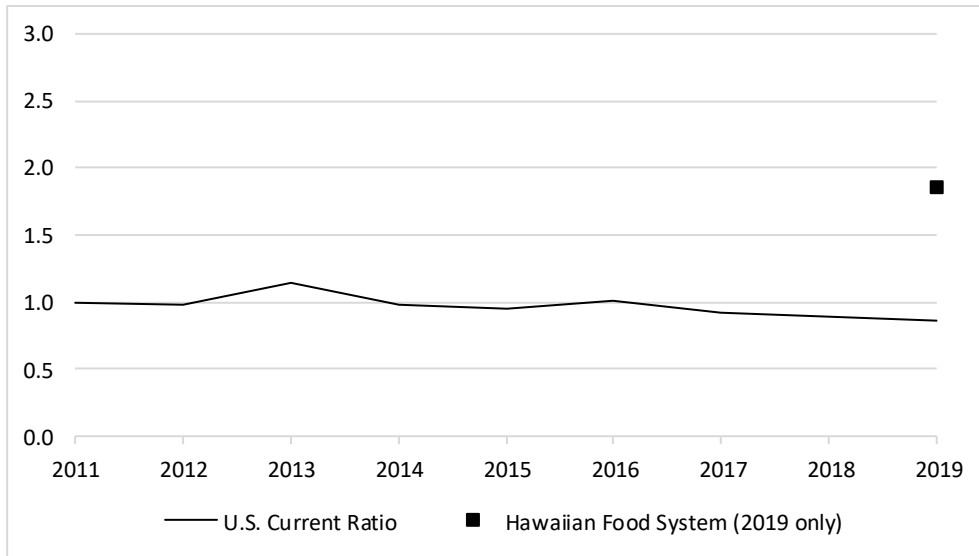


Figure 10 - U.S. Food Retailing (Grocery) Current Ratio, 2011-2019

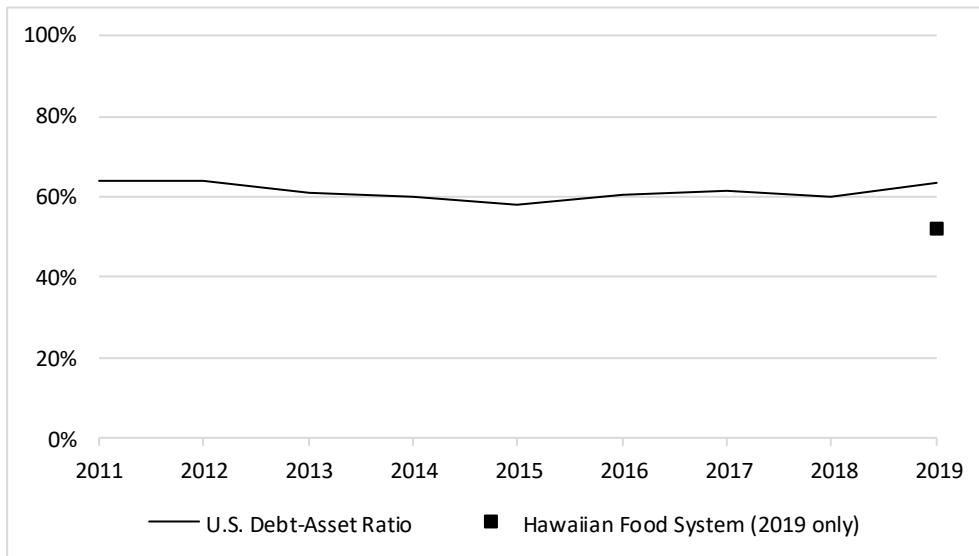


Figure 11 - U.S. Food Retailing (Grocery) Debt-Asset Ratio, 2011-2019

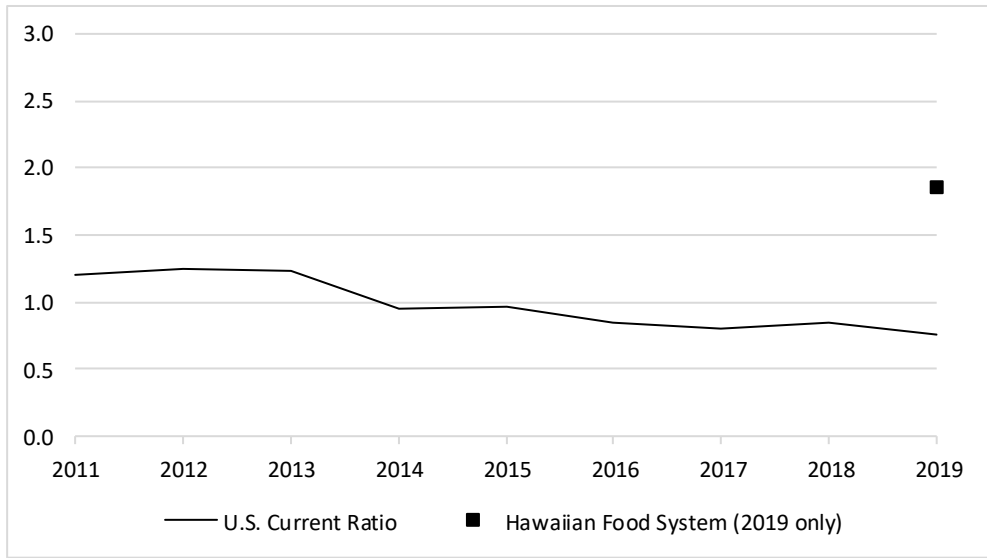


Figure 12 - U.S. Food Retailing (Restaurant) Current Ratio, 2011-2019

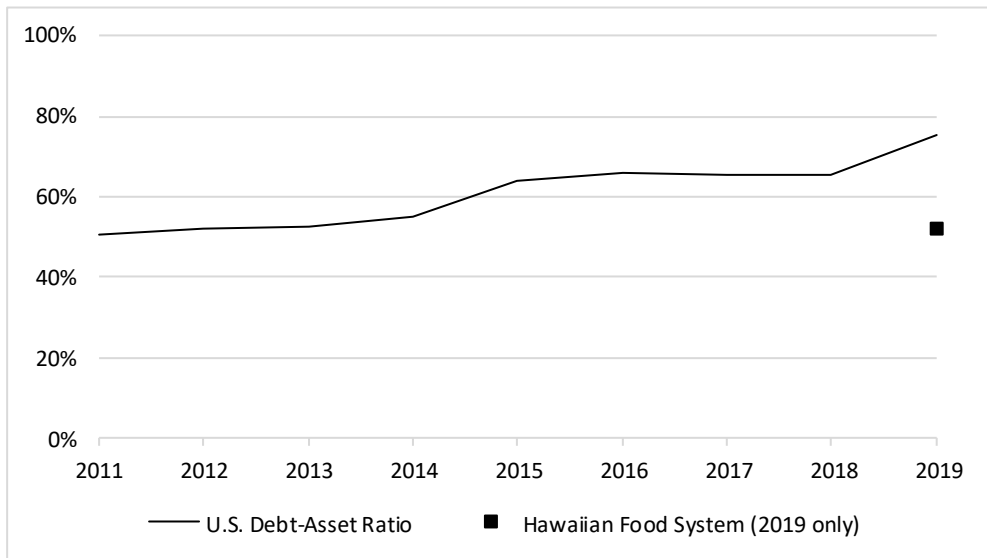


Figure 13 - U.S. Food Retailing (Restaurant) Debt-Asset Ratio, 2011-2019

U.S. Department of Agriculture Funding Programs

The U.S. Department of Agriculture (USDA) is a large federal agency with many initiatives focused on improving the of the food system. Any study of the sources and uses of capital specifically in the food system necessarily begins with a review of capital sourced from those initiatives. Tables 2 and 3 document the USDA Rural Development awards for 2018 and 2019 respectively (USDA-RD, 2020). In 2018 and 2019, awards totaled \$13,260,357 and \$2,005,201 respectively. They were made in the areas of Housing Preservation, Distance Learning and Telemedicine, Mutual Self-Help Housing Technical Assistance (TA), Rural Energy for America Program (REAP), Rural Business Development, Rural Cooperative Development, Socially-Disadvantaged Group, Value-Added Producer Grants, and Water and Waste Disposal. The programs covered a wide range of institutions spatially dispersed across the various counties in the state.

Table 4 is sourced from Foundation Directory Online (FDO) which is a data supplier discussed later in this report. While little detail is provided about the specific underlying projects, it is still informative to observe aggregate federal transfers to the food system in 2018. These totaled \$166,059,385. The largest program, the Food and Nutrition Service, collaborates with state government institutions to provide food purchasing assistance among other activities. The National Institute of Food and Agriculture and the Agricultural Research Service often provide funding to academic researchers to study relevant problems in production agriculture (USDA-CRIS, 2020). These activities would likely be affiliated with the University of Hawaii at Manoa, College of Tropical Agriculture and Human Resources (UH-CTAHR, 2020).

Table 2 - USDA Rural Development Awards, 2018

Institution	County	Program	Amount
Hawaii Health Systems Corporation	Honolulu	Distance Learning & Telemedicine Grants	\$215,093
Hawaii Pacific University	Honolulu	Distance Learning & Telemedicine Grants	\$70,411
University of Hawaii	Maui	Distance Learning & Telemedicine Grants	\$388,280
Hawaii Island Comm.	Hawaii	Mutual Self-Help Housing TA Grants	\$620,000
Self Help Housing	Honolulu	Mutual Self-Help Housing TA Grants	\$893,302
Andrades Slaughterhouse	Kauai	REAP	\$5,574
Andrades Slaughterhouse	Kauai	REAP	\$11,207
First Quality Building & Design, Inc.	Honolulu	REAP	\$16,927
Inhabit Hawaii LLC	Hawaii	REAP	\$13,683
Maui Leones LLC	Maui	REAP	\$8,493
Metrogrow Hawaii LLC	Honolulu	REAP	\$20,000
North Shore Maui Vacations LLC	Maui	REAP	\$11,616
Sakoda Holdings LLC	Hawaii	REAP	\$20,000
Wailua Meat Company LLC	Kauai	REAP	\$20,000
KBXTREME LLC	Hawaii	REAP	\$141,956
Maui Kuia Estate Chocolate LLC	Maui	REAP	\$87,042
Paint Cars, Inc.	Honolulu	REAP	\$103,598
Printer Pete, Inc.	Maui	REAP	\$30,404
The Kohala Center, Inc.	Hawaii	Rural Business Development Grants	\$16,817
The Kohala Center, Inc.	Hawaii	Rural Business Development Grants	\$29,680
The Kohala Center, Inc.	Hawaii	Rural Business Development Grants	\$75,000
Hawaii Ulu Producers Cooperative	Hawaii	Value-Added Producer Grants	\$104,173
Manoa Honey Company LLC	Honolulu	Value-Added Producer Grants	\$4,762
Department of Hawaiian Home Lands	Maui	Water & Waste Disposal Loans and Grants	\$1,592,333
Office of Housing & Community Dev.	Hawaii	Water & Waste Disposal Loans and Grants	\$1,071,000
Kumano I Ke Ala O Makaweli	Kauai	Water & Waste Disposal TA	\$504,448
Department of Hawaiian Home Lands	Honolulu	Water & Waste Grant - HI Homeland	\$1,592,333
Department of Hawaiian Home Lands	Honolulu	Water & Waste Grant - HI Homeland	\$1,592,333
Department of Hawaiian Home Lands	Honolulu	Water & Waste Grant - HI Homeland	\$1,999,946
Department of Hawaiian Home Lands	Honolulu	Water & Waste Grant - HI Homeland	\$1,999,946
Total			\$13,260,357

Table 3 - USDA Rural Development Awards, 2019

Institution	County	Program	Amount
Habitat Humanity	Hawaii	Housing Preservation Grants	\$59,785
Honolulu Habitat	Hawaii	Housing Preservation Grants	\$59,785
Kauai Habitat for Humanity, Inc.	Kauai	Mutual Self-Help Housing TA Grants	\$864,473
Self Help Housing	Honolulu	Mutual Self-Help Housing TA Grants	\$200,000
Cobycami LLC	Hawaii	REAP	\$23,222
Counter Culture LLC	Honolulu	REAP	\$15,173
Decaria, Vincent B	Hawaii	REAP	\$20,000
Delos Reyes, Samson Serafica	Honolulu	REAP	\$8,108
Delos Reyes, Samson Serafica	Honolulu	REAP	\$8,115
Highway Inn, Inc.	Honolulu	REAP	\$81,243
Honua Home Aina Organics LLC	Kauai	REAP	\$136,502
Kamiya Gold, Inc.	Honolulu	REAP	\$2,052
Kamiya Gold, Inc.	Honolulu	REAP	\$2,617
Maui Lani Veterinary Hospital LLC	Maui	REAP	\$15,352
Ocr, Inc. DBA Small Kine Farm	Honolulu	REAP	\$6,374
Ocr, Inc. DBA Small Kine Farm	Honolulu	REAP	\$6,400
The Kohala Center, Inc.	Hawaii	Rural Business Development Grants	\$20,194
The Kohala Center, Inc.	Hawaii	Rural Business Development Grants	\$100,806
The Kohala Center, Inc.	Hawaii	Rural Cooperative Development Grants	\$200,000
The Kohala Center, Inc.	Hawaii	Socially-Disadvantaged Groups Grants	\$175,000
Total			\$2,005,201

Table 4 - FDO Data - Federal Transfers, Food System, 2018

Institution	Amount
United States Food and Nutrition Service	\$149,944,003
United States National Institute of Food and Agriculture	\$6,019,345
United States Farm Service Agency	\$5,962,789
United States Forest Service	\$2,743,001
United States Agricultural Research Service	\$849,051
United States Rural Business Cooperative Service	\$541,196
Total	\$166,059,385

FDIC and NCUA Institution Call Report Data

The Federal Deposit Insurance Corporation (FDIC) institution Call Report data (FDIC, 2020) and the National Credit Union Administration (NCUA) institution Call Report data (NCUA, 2020) for both 2018 and 2019 are listed in Tables 5 to 10. In each table, the data are for the quarter ending December 31st. All eight FDIC institutions are based in the city of Honolulu. The FDIC institution Call Report data delineate between nonfarm and farm loans as shown in Tables 5 and 6. The farm loans make up a much smaller portion of the total loan portfolios for the four institutions that maintain them. As a point of comparison, for the USDA Farm Service Agency (FSA), at the end of 2019 there were 145 loans valued at \$46,730,000 in total in Hawaii (Frenzel, 2020). The NCUA institution Call Report data are reported for total loan value only.

Table 5 - FDIC Loan Activity, 2018

Institution	FDIC Cert. #	Nonfarm Loans		Farm Loans	
		Number	Dollar	Number	Dollar
Central Pacific Bank	17308	4,032	\$266,877,000	1	\$119,000
First Hawaiian Bank	17985	17,358	\$559,129,000	22	\$5,194,000
Bank of Hawaii	18053	2,268	\$244,816,000	21	\$891,000
Hawaii National Bank	18296	468	\$82,624,000	0	\$0
Finance Factors, Limited	25158	29	\$7,485,000	0	\$0
Territorial Savings Bank	30836	46	\$7,326,000	0	\$0
American Savings Bank	32526	2,226	\$128,300,000	14	\$432,000
Ohana Pacific Bank	58231	89	\$23,729,000	0	\$0
Total		26,516	\$1,320,286,000	58	\$6,636,000

Table 6 - FDIC Loan Activity, 2019

Institution	FDIC Cert. #	Nonfarm Loans		Farm Loans	
		Number	Dollar	Number	Dollar
Central Pacific Bank	17308	3,909	\$253,483,000	1	\$102,000
First Hawaiian Bank	17985	17,455	\$545,337,000	20	\$4,258,000
Bank of Hawaii	18053	2,181	\$237,962,000	23	\$961,000
Hawaii National Bank	18296	424	\$77,880,000	0	\$0
Finance Factors, Limited	25158	30	\$8,541,000	0	\$0
Territorial Savings Bank	30836	56	\$7,160,000	0	\$0
American Savings Bank	32526	2,019	\$113,893,000	9	\$236,000
Ohana Pacific Bank	58231	78	\$24,566,000	0	\$0
Total		26,152	\$1,268,822,000	53	\$5,557,000

Table 7 - NCUA Loan Activity, 2018 (Part 1)

Institution	Credit Union #	City	Total Loan Dollars
Big Island	1607	Hilo	\$46,733,453
Hawaiian Financial	1717	Honolulu	\$380,145,635
Hawaii State	1718	Honolulu	\$977,739,494
Hawaii Community	1719	Kailua Kona	\$344,657,478
Hickam	1733	Honolulu	\$277,924,527
Hawaii County Employees	1784	Hilo	\$29,974,855
Hawaii Schools	1785	Honolulu	\$30,278,199
HawaiiUSA	1815	Honolulu	\$883,850,595
Maui Teachers	1817	Wailuku	\$5,561,457
HFS	1829	Hilo	\$220,318,638
Honolulu	1830	Honolulu	\$167,305,188
Aloha Pacific	1845	Honolulu	\$534,905,327
Maui County	1866	Wailuku	\$144,038,582
Hawaiian Electric Employees	1869	Honolulu	\$11,227,274
Hawaii Law Enforcement	1870	Honolulu	\$98,593,512
Honolulu Fire Department	1880	Honolulu	\$35,657,295
Pearl Hawaii	1961	Waipahu	\$152,285,931
EWA	1987	Ewa Beach	\$3,816,003
Waialua	2049	Waialua	\$14,705,440
Kahuku	2275	Kahuku	\$4,597,924
Hamakua	2280	Pepeekeo	\$6,222,479
Hawaii	2403	Honolulu	\$54,318,841
Maui	2562	Kahului	\$34,628,641
Kauai Teachers	2577	Lihue	\$17,115,780
HELCO	2705	Hilo	\$18,504,685
McBryde	2713	Eleele	\$10,831,489
Total			\$4,505,938,722

Table 8 - NCUA Loan Activity, 2018 (Part 2)

Institution	Credit Union #	City	Total Loan Dollars
Lanai	2953	Lanai City	\$1,360,461
Onomea	3050	Papaikou	\$10,917,257
Valley Isle Community	3574	Kahului	\$47,732,740
Hawaii Pacific	4676	Honolulu	\$29,592,911
Kauai Government Employees	5487	Lihue	\$84,517,380
Schofield	7423	Wahiawa	\$15,690,680
Molokai Community	7471	Kaunakakai	\$11,249,026
Honea	7594	Fort Shafter	\$9,976,684
Ko'Olau	8435	Kailua	\$38,803,319
Hotel and Travel Industry	9115	Honolulu	\$15,688,119
Gather	9381	Lihue	\$286,721,053
St. Francis Medical Center	9719	Honolulu	\$6,515,715
Wailuku	9924	Kahului	\$43,513,167
Kahului	10399	Kahului	\$21,242,582
University of Hawaii	10465	Honolulu	\$206,734,096
Local Union 1186 IBEW	10882	Honolulu	\$2,518,707
Hawaii First	10938	Kamuela	\$24,355,334
Kuakini Medical and Dental	11494	Honolulu	\$6,292,596
Kamehameha	11553	Honolulu	\$10,020,897
Glover	12613	Honolulu	\$145,041
H M S A Employees	14303	Honolulu	\$11,416,044
McCabe Hamilton & Renny	17989	Honolulu	\$3,042,690
Plumbers & Fitters Local 675	24284	Honolulu	\$462,830
CU Hawaii	24630	Hilo	\$145,981,095
Garden Island	24796	Lihue	\$22,873,465
Oahu	24830	Honolulu	\$19,551,702
Hawaii Central	24839	Honolulu	\$148,154,000
Total			\$1,225,069,591

Table 9 - NCUA Loan Activity, 2019 (Part 1)

Institution	Credit Union #	City	Total Loan Dollars
Big Island	1607	Hilo	\$46,143,188
Hawaiian Financial	1717	Honolulu	\$414,898,997
Hawaii State	1718	Honolulu	\$1,089,356,675
Hawaii Community	1719	Kailua Kona	\$374,609,047
Hickam	1733	Honolulu	\$326,372,504
Hawaii County Employees	1784	Hilo	\$32,074,912
Hawaii Schools	1785	Honolulu	\$29,965,743
HawaiiUSA	1815	Honolulu	\$926,372,399
Maui Teachers	1817	Wailuku	\$7,806,153
HFS	1829	Hilo	\$232,418,480
Honolulu	1830	Honolulu	\$188,532,260
Aloha Pacific	1845	Honolulu	\$595,346,645
Maui County	1866	Wailuku	\$151,695,786
Hawaiian Electric Employees	1869	Honolulu	\$12,748,643
Hawaii Law Enforcement	1870	Honolulu	\$112,301,658
Honolulu Fire Department	1880	Honolulu	\$35,717,196
Pearl Hawaii	1961	Waipahu	\$166,254,082
EWA	1987	Ewa Beach	\$3,659,304
Waialua	2049	Waialua	\$15,419,412
Kahuku	2275	Kahuku	\$4,587,309
Hamakua	2280	Pepeekeo	\$7,390,190
Hawaii	2403	Honolulu	\$56,274,262
Maui	2562	Kahului	\$35,879,277
Kauai Teachers	2577	Lihue	\$17,508,322
HELCO	2705	Hilo	\$18,457,658
McBryde	2713	Eleele	\$13,062,310
Total			\$4,914,852,412

Table 10 - NCUA Loan Activity, 2019 (Part 2)

Institution	Credit Union #	City	Total Loan Dollars
Lanai	2953	Lanai City	\$1,461,050
Onomea	3050	Papaikou	\$11,567,927
Valley Isle Community	3574	Kahului	\$53,188,147
Hawaii Pacific	4676	Honolulu	---
Kauai Government Employees	5487	Lihue	\$88,925,864
Schofield	7423	Wahiawa	\$15,275,472
Molokai Community	7471	Kaunakakai	\$10,831,903
Honea	7594	Fort Shafter	\$8,830,201
Ko'Olau	8435	Kailua	\$38,989,364
Hotel and Travel Industry	9115	Honolulu	\$16,123,845
Gather	9381	Lihue	\$300,642,844
St. Francis Medical Center	9719	Honolulu	\$6,327,045
Wailuku	9924	Kahului	\$46,543,070
Kahului	10399	Kahului	\$21,737,943
University of Hawaii	10465	Honolulu	\$221,206,713
Local Union 1186 IBEW	10882	Honolulu	\$3,203,073
Hawaii First	10938	Kamuela	\$22,138,485
Kuakini Medical and Dental	11494	Honolulu	\$5,990,527
Kamehameha	11553	Honolulu	\$9,399,332
Glover	12613	Honolulu	\$90,626
H M S A Employees	14303	Honolulu	\$11,633,458
McCabe Hamilton & Renny	17989	Honolulu	\$3,306,763
Plumbers & Fitters Local 675	24284	Honolulu	\$349,316
CU Hawaii	24630	Hilo	\$138,700,897
Garden Island	24796	Lihue	\$29,700,176
Oahu	24830	Honolulu	\$20,534,074
Hawaii Central	24839	Honolulu	\$150,833,206
Total			\$1,237,531,321

U.S. Small Business Administration SBIR and STTR Programs

The U.S. Small Business Administration (SBA) manages the Small Business Innovation Research (SBIR) and Small Business Technology Transfer (STTR) programs (SBA-SBIR, 2020). The intent of the programs is to foster partnering between domestic small business and the federal agencies in the realm of research. Tables 11 and 12 contain the SBIR and STTR awards for 2018 and 2019 respectively. The recipient institution, its location, the award type, the partner agency, project phase, and dollar amount are provided. A small portion of the award portfolio related to the food system. In 2018, Forever Oceans Corporation collaborated on a project with the U.S. Department of Commerce, National Oceanic and Atmospheric Administration (NOAA) related to aquaculture. Global Algae Innovations partnered with the U.S. Department of Energy on algae-based fuels. Premier Solutions HI LLC collaborated with the U.S. Navy to improve the Fleet Food Service Management system. Smart Yields, Inc. partnered with the USDA to improve food safety. In 2019, Hawaii Ulu Producers cooperative collaborated with the USDA to expand the commercial breadfruit industry. Kampachi Farms LLC partnered with the USDA on an aquaculture project to improve yellowtail production. Premier Solutions HI LLC collaborated with the U.S. Navy to improve food logistics.

Table 11 - Small Business Administration SBIR and STTR Awards, 2018

Institution	Location	Type	Agency	Phase	Amount
ADNOVIV, Inc.	Honolulu	STTR	NSF	II	\$750,000
Experiad LLC	Honolulu	SBIR	DHHS-NIH	II	\$1,195,783
Forever Oceans Corporation	Kailua Kona	SBIR	DOC-NOAA	II	\$399,497
Global Algae Innovations, Inc.	Lihue	SBIR	DOE	I	\$150,000
Global Algae Innovations, Inc.	Lihue	STTR	DOE	I	\$150,000
H Nu Photonics LLC	Kahului	SBIR	DOD-DLA	II	\$999,972
H Nu Solar LLC	Kahului	SBIR	DOD-Army	I	\$100,000
Makai Ocean Engineering, Inc.	Kailua	SBIR	DOD-AF	I	\$149,999
Makai Ocean Engineering, Inc.	Kailua	SBIR	DOD-Navy	I	\$124,954
Nalu Scientific LLC	Honolulu	SBIR	DOE	II	\$1,009,838
Navatek LLC	Honolulu	SBIR	DOD-Navy	I	\$223,817
Navatek LLC	Honolulu	SBIR	DOD-Navy	I	\$124,998
Navatek LLC	Honolulu	SBIR	DOD-Navy	II	\$833,583
Navatek LLC	Honolulu	SBIR	DOD-Navy	II	\$820,382
North Star Scientific Corporation	Kapolei	SBIR	DOD-Navy	II	\$2,420,502
Oceanit Laboratories, Inc.	Honolulu	SBIR	DOD-SOC	I	\$150,000
Oceanit Laboratories, Inc.	Honolulu	SBIR	DOD-DHP	I	\$149,999
Oceanit Laboratories, Inc.	Honolulu	STTR	DOD-Navy	II	\$750,000
Oceanit Laboratories, Inc.	Honolulu	STTR	DOD-AF	I	\$146,000
Oceanit Laboratories, Inc.	Honolulu	STTR	DOD-Navy	I	\$125,000
Oceanit Laboratories, Inc.	Honolulu	SBIR	DOD-AF	II	\$750,000
Oceanit Laboratories, Inc.	Honolulu	SBIR	DOD-Army	I	\$100,000
Oceanit Laboratories, Inc.	Honolulu	SBIR	DOE	I	\$150,000
Oceanit Laboratories, Inc.	Honolulu	SBIR	DOE	II	\$1,500,000
Oceanit Laboratories, Inc.	Honolulu	SBIR	DOE	II	\$1,000,000
Oceanit Laboratories, Inc.	Honolulu	SBIR	DOE	I	\$224,999
Premier Solutions HI LLC	Honolulu	SBIR	DOD-Navy	II	\$488,796
Smart Yields, Inc.	Honolulu	SBIR	USDA	I	\$99,918
Spectrum Photonics, Inc.	Honolulu	SBIR	DOD-Navy	II	\$1,006,253
Spectrum Photonics, Inc.	Honolulu	SBIR	DOD-Army	II	\$781,324
Tridentis Adv. Marine Vehicles LLC	Kailua Kona	SBIR	DOC-NOAA	I	\$119,933
Tridentis Adv. Marine Vehicles LLC	Kailua Kona	SBIR	DOC-NOAA	II	\$399,975
Total					\$17,395,521

Table 12 - Small Business Administration SBIR and STTR Awards, 2019

Institution	Location	Type	Agency	Phase	Amount
Akabotics LLC	Kapaau	SBIR	NSF	II	\$750,000
Guide Star Engineering LLC	Kapolei	SBIR	DOD-Navy	I	\$124,519
H Nu Photonics LLC	Kahului	SBIR	DOD-AF	I	\$49,997
H Nu Photonics LLC	Kahului	SBIR	DOD-AF	I	\$49,998
Hawaii Biotech, Inc.	Aiea	SBIR	DHHS-NIH	II	\$839,920
Hawaii Ulu Producers Cooperative	Honolulu	SBIR	USDA	I	\$98,560
Kampachi Farms LLC	Kailua-Kona	SBIR	USDA	I	\$100,000
L. KRENK, INC.	Kahului	STTR	DHHS-NIH	I	\$149,943
Makai Ocean Engineering, Inc.	Kailua	SBIR	DOD-Navy	I	\$124,897
Makai Ocean Engineering, Inc.	Kailua	SBIR	DOD-Navy	II	\$500,000
Makai Ocean Engineering, Inc.	Kailua	STTR	DOD-Navy	II	\$999,944
Maui Innovation Group, Inc.	Kihei	SBIR	DOD-AF	I	\$50,000
Nalu Scientific LLC	Honolulu	SBIR	DOE	I	\$149,540
Nalu Scientific LLC	Honolulu	SBIR	DOE	I	\$149,828
Nalu Scientific LLC	Honolulu	SBIR	DOE	I	\$206,352
Nalu Scientific LLC	Honolulu	SBIR	NASA	I	\$124,783
Navatek LLC	Honolulu	STTR	NASA	I	\$124,980
Navatek LLC	Honolulu	SBIR	NASA	I	\$124,923
Neurobehavioral Research, Inc.	Honolulu	SBIR	DHHS-NIH	I	\$213,552
Oceanit Laboratories, Inc.	Honolulu	SBIR	DOD-Army	I	\$99,999
Oceanit Laboratories, Inc.	Honolulu	SBIR	DOD-Army	II	\$499,532
Oceanit Laboratories, Inc.	Honolulu	SBIR	DOD-AF	I	\$150,000
Oceanit Laboratories, Inc.	Honolulu	SBIR	DOD-AF	I	\$150,000
Oceanit Laboratories, Inc.	Honolulu	SBIR	DOD-AF	II	\$726,739
Oceanit Laboratories, Inc.	Honolulu	SBIR	DOD-DHP	II	\$1,000,000
Oceanit Laboratories, Inc.	Honolulu	SBIR	DOD-AF	II	\$748,575
Oceanit Laboratories, Inc.	Honolulu	SBIR	DOD-Army	I	\$100,000
Oceanit Laboratories, Inc.	Honolulu	SBIR	DOE	II	\$1,499,999
Oceanit Laboratories, Inc.	Honolulu	STTR	DOE	I	\$150,000
Premier Solutions HI LLC	Honolulu	SBIR	DOD-Navy	I	\$124,772
Premier Solutions HI LLC	Honolulu	SBIR	DOD-Navy	I	\$124,772
Spectrum Photonics, Inc.	Honolulu	SBIR	DOD-Navy	I	\$139,974
Tridentis Adv. Marine Vehicles LLC	Kailua Kona	SBIR	DOC-NOAA	II	\$399,984
Total					\$10,846,081

U.S. Small Business Administration 7(a) and 504 Loan Programs

The SBA manages the 7(a) loan program (SBA-7a, 2020). It is the main loan program for the SBA. Tables 13 and 14 contain partner institutions and lending statistics for 2018 and 2019 respectively. In 2018, loans were made to firms engaged in farming (2), fishing (1), food manufacturing (3), and food retailing (35). In 2019, loans were made to firms engaged in fishing (1), food manufacturing (5), and food retailing (18).

Similarly, the SBA manages the 504 loan program (SBA-504). Tables 15 and 16 contain third-party lender institutions and lending statistics for 2018 and 2019 respectively. The underlying certified development company (CDC) is the HEDCO Local Development Corporation in both tables. In 2018, one loan was made to a firm engaged in food retailing. In 2019, loans were made to firms engaged in food manufacturing (1), food wholesaling (2), and food retailing (2).

Table 13 - SBA 7(a) Loan Activity, 2018

Institution	Number of Loans	Total Loan Dollars	Average Loan
American Savings Bank, FSB	12	\$460,000	\$38,333
Bank of Hawaii	9	\$1,140,000	\$126,667
Central Pacific Bank	89	\$4,183,196	\$47,002
CU Hawaii FCU	1	\$50,000	\$50,000
First Hawaiian Bank	38	\$4,096,400	\$107,800
Gather FCU	3	\$1,996,000	\$665,333
Hawaii Community FCU	1	\$5,000	\$5,000
Hawaii National Bank	1	\$400,000	\$400,000
HawaiiUSA FCU	1	\$25,000	\$25,000
Ohana Pacific Bank	4	\$1,950,000	\$487,500
Total	159	\$14,305,596	\$89,972

Table 14 - SBA 7(a) Loan Activity, 2019

Institution	Number of Loans	Total Loan Dollars	Average Loan
American Savings Bank, FSB	4	\$130,000	\$32,500
Bank of Hawaii	2	\$230,000	\$115,000
Central Pacific Bank	51	\$2,396,000	\$46,980
CU Hawaii FCU	1	\$60,000	\$60,000
First Hawaiian Bank	16	\$2,012,900	\$125,806
Gather FCU	1	\$50,000	\$50,000
Hawaii Community FCU	1	\$50,000	\$50,000
Hawaii National Bank	1	\$350,000	\$350,000
HawaiiUSA FCU	---	---	---
Ohana Pacific Bank	3	\$315,000	\$105,000
Total	80	\$5,593,900	\$69,924

Table 15 - SBA 504 Loan Activity, 2018

Institution	Number of Loans	Total Loan Dollars	Average Loan
American Savings Bank, FSB	2	\$5,451,153	\$2,725,577
Bank of Hawaii	10	\$8,879,097	\$887,910
Central Pacific Bank	3	\$2,255,000	\$751,667
Finance Factors, LTD	---	---	---
First Hawaiian Bank	10	\$7,368,655	\$736,866
Hawaii National Bank	2	\$1,087,359	\$543,679
HawaiiUSA FCU	2	\$730,000	\$365,000
Total	29	\$25,771,264	\$888,664

Table 16 - SBA 504 Loan Activity, 2019

Institution	Number of Loans	Total Loan Dollars	Average Loan
American Savings Bank, FSB	3	\$5,365,000	\$1,788,333
Bank of Hawaii	10	\$8,845,875	\$884,588
Central Pacific Bank	---	---	---
Finance Factors, LTD	1	\$425,000	\$425,000
First Hawaiian Bank	12	\$10,432,937	\$869,411
Hawaii National Bank	3	\$2,201,460	\$733,820
HawaiiUSA FCU	1	\$217,350	\$217,350
Total	30	\$27,487,622	\$916,254

U.S. Department of Treasury CDFI Fund Program

The U.S. Department of the Treasury, Community Development Financial Institutions (CDFI) program provides both technical assistance (TA) and financial assistance (FA) to those respective institutions (USDT-CDFI, 2020). The awards are then allocated to projects intended to improve the quality of life for stakeholders in those respective regions. Tables 17 and 18 summarize the awards by institution, location, type, and amount for 2018 and 2019 respectively. Award types include variations of the Native American CDFI Assistance (NACA) program where some projects are considered Technical Assistance (TA) and some are deemed Financial Assistance (FA). The largest award was in 2018 for the Punawai 'O Pu'u'honua LLC for \$40,000,000 (CDFI-AWARD, 2020). It was a New Market Tax Credit (NMTC) program award.

Table 17 - CDFI Awards, 2018

Institution	Location	Type	Amount
Hawaii Central Federal Credit Union	Honolulu	NACA-FA	\$550,000
Hawaii First Federal Credit Union	Kamuela	NACA-FA	\$350,000
HHOC Mortgage	Honolulu	CDFI-FA	\$300,000
Lei Hoolaha	Kamuela	NACA-TA	\$149,990
Molokai Community Federal Credit Union	Kaunakakai	NACA-FA	\$550,000
Punawai 'O Pu'u'honua LLC	Honolulu	NMTC	\$40,000,000
Total			\$41,899,990

Table 18 - CDFI Awards, 2019

Institution	Location	Type	Amount
Council for Native Hawaiian Advancement	Kapolei	NACA-FA	\$300,000
Hawaii Community Lending, Inc.	Honolulu	NACA-FA	\$150,000
Hawaii Community Reinvestment Corporation	Honolulu	CDFI-TA	\$125,000
Hawaii First Federal Credit Union	Kamuela	NACA-FA	\$450,000
Homestead Community Development Corporation	Anahola	NACA-TA	\$150,000
Waianae Economic Development Council	Waianae	NACA-TA	\$149,886
Total			\$1,324,886

Foundation Directory Online Data

The Foundation Directory Online (FDO) was used to obtain data for grant-making activities in Hawaii and in the Hawaiian food system. As indicated previously, FDO was the source data for Table 4 on federal transfers for the Hawaiian food system in 2018. Tables 19 to 22 were assembled for Hawaii for 2018.

Table 19 - FDO Data - Top 25 Foundations, 2018

Institution	City	State/Country	Amount
The Queen Emma Foundation	Honolulu	HI	\$66,305,424
Hawaii Community Foundation	Honolulu	HI	\$34,291,836
The Church of Jesus Christ of Latter-Day Saints in Canada	Cardston	Canada	\$15,222,340
Simons Foundation	New York City	NY	\$8,243,085
Kuakini Foundation	Honolulu	HI	\$7,750,002
University of Hawaii Foundation	Honolulu	HI	\$7,370,715
The Hau'oli Mau Loa Foundation	Honolulu	HI	\$6,818,704
Aloha United Way, Inc.	Honolulu	HI	\$6,239,962
The Clarence T.C. Ching Foundation	Honolulu	HI	\$5,516,580
Chan Zuckerberg Foundation	Palo Alto	CA	\$5,000,000
Oak Foundation	Genève	Switzerland	\$5,000,000
McInerney Foundation	Honolulu	HI	\$3,826,700
The Roberts Foundation	Menlo Park	CA	\$3,177,500
Silicon Valley Community Foundation	Mountain View	CA	\$3,074,603
Atherton Family Foundation	Honolulu	HI	\$3,019,431
W.K. Kellogg Foundation	Battle Creek	MI	\$3,000,000
Hawaii Dental Service Foundation	Honolulu	HI	\$2,446,178
Kapi'olani Health Foundation	Honolulu	HI	\$2,314,505
National Philanthropic Trust	Jenkintown	PA	\$2,241,304
C.N. Wodehouse Faculty Benefit Trust at Punahou School	Honolulu	HI	\$1,832,933
Samuel N. and Mary Castle Foundation	Honolulu	HI	\$1,719,475
Maurice and JoAnna Sullivan Family Foundation	Honolulu	HI	\$1,615,000
Olelo Community Television	Honolulu	HI	\$1,591,382
Hawaii Cancer Consortium	Honolulu	HI	\$1,523,547
Mamoru & Aiko Takitani Foundation, Inc.	Honolulu	HI	\$1,476,100
All Other			\$88,086,601
Total			\$288,703,907

Table 20 - FDO Data - Foundations with Food System Initiatives, 2018

Institution	City	State/Country	Amount
The Hau'oli Mau Loa Foundation	Honolulu	HI	\$1,512,969
Hawaii Foundation for Agriculture Research	Honolulu	HI	\$597,802
Hawaii Community Foundation	Honolulu	HI	\$466,801
HMSA Foundation	Honolulu	HI	\$435,832
Mamoru & Aiko Takitani Foundation, Inc.	Honolulu	HI	\$400,000
Hawaii Ag and Culinary Alliance	Honolulu	HI	\$177,500
Atherton Family Foundation	Honolulu	HI	\$117,454
Grove Farm Foundation	Lihue	HI	\$75,520
Gertrude M. Damon Trust	Honolulu	HI	\$60,000
Friends of Hawaii Charities	Honolulu	HI	\$54,495
Sophie Russell Testamentary Trust	Honolulu	HI	\$32,333
Hawaii Farmers Union Foundation	Kapaa	HI	\$31,354
The Lanie Albrecht Foundation	Kaneohe	HI	\$25,000
Hawaiian Electric Industries Charitable Foundation	Honolulu	HI	\$20,000
Ululani Foundation	Kailua Kona	HI	\$15,000
The Makana Aloha Foundation	Kailua	HI	\$12,500
Central Pacific Bank Foundation	Honolulu	HI	\$10,000
Garmar Foundation	Honolulu	HI	\$10,000
The Kosasa Foundation	Honolulu	HI	\$10,000
North Kohala Community Resource Center	Hawi	HI	\$10,000
Ohuokalani Charitable Foundation	Aiea	HI	\$10,000
Seto Foundation	Honolulu	HI	\$10,000
Paupena Community Development	Kula	HI	\$10,000
HPM Building Supply Foundation	Keaau	HI	\$5,000
Nan Chul Shin Foundation	Honolulu	HI	\$5,000
Boutiki	Pearl Harbor	HI	\$2,500
E.H.W. Broadbent Foundation	Honolulu	HI	\$2,000
Herbert C. Shipman Foundation	Hilo	HI	\$1,000
The Michael B. Wood Foundation	Honolulu	HI	\$500
All Other (Not Based in HI)			\$865,806
Total			\$4,986,366

Table 21 - FDO Data - Federal Transfers, All Other, 2018 (Part 1)

Institution	Amount
United States Centers for Medicare and Medicaid Services	\$1,684,129,641
United States Department of Education	\$96,652,759
United States Federal Highway Administration	\$95,003,173
United States Federal Transit Administration	\$50,426,595
United States National Institutes of Health	\$41,393,872
United States Federal Aviation Administration	\$28,968,242
United States Environmental Protection Agency	\$27,023,449
United States Employment and Training Administration	\$26,535,819
United States Federal Emergency Management Agency	\$24,208,241
United States Administration for Children and Families	\$24,025,542
United States Office of Justice Programs	\$22,512,507
National Science Foundation	\$21,642,130
United States National Aeronautics and Space Administration	\$19,694,055
United States Department of Health and Human Services	\$16,739,035
United States Office of Insular Affairs	\$15,545,421
United States Fish and Wildlife Service	\$10,658,482
United States Substance Abuse and Mental Health Services Administration	\$7,838,738
United States Department of Energy	\$7,558,318
United States Administration on Aging	\$3,769,735
Corporation for Public Broadcasting	\$2,710,544
Community Development Financial Institutions Fund	\$2,524,990
National Park Service	\$2,142,856
United States Corporation for National and Community Services	\$1,892,949
United States Geological Survey	\$1,847,989
Total	\$2,235,445,082

Table 22 - FDO Data - Federal Transfers, All Other, 2018 (Part 2)

Institution	Amount
Legal Services Corporation	\$1,623,871
United States Occupational Safety and Health Administration	\$1,613,800
Small Business Administration	\$1,572,222
United States Office of Public and Indian Housing	\$1,511,967
United States Institute of Museum and Library Services	\$1,434,011
United States National Highway Traffic Safety Administration	\$1,265,720
United States Department of Commerce	\$1,074,317
National Endowment for the Arts	\$984,300
Veterans Health Administration	\$966,853
Office of National Drug Control Policy	\$941,598
United States Department of Transportation	\$934,012
United States Veterans Employment and Training Services	\$902,535
United States Agency for International Development	\$800,000
United States Coast Guard	\$774,753
United States National Institute of Standards and Technology	\$764,719
United States Maritime Administration	\$731,159
United States National Endowment for the Humanities	\$644,390
United States Bureau of Labor Statistics	\$594,246
United States Federal Motor Carrier Safety Administration	\$351,200
United States Assistant Secretary for Housing - Federal Housing Commissioner	\$268,841
United States Defense Logistics Agency	\$221,836
United States Department for Fair Housing and Equal Opportunity	\$153,003
United States Economic Development Administration	\$85,000
United States Internal Revenue Service	\$76,800
United States Department of State	\$39,550
Total	\$20,330,703

Angel Resource Institute HALO Report Findings and PitchBook Data

The underlying data for the Angel Resource Institute (ARI) Annual Report on Angel Investments is sourced in part by PitchBook (ARI, 2020). The Ag Tech industry segment was added for the first time in the ARI Annual Report on Angel Investments in 2019 as an emerging and promising sector; it had 1.15% of all Seed (pre-Series A) and Series A deals.

Using PitchBook to find Seed and Series A deals specifically for the Hawaiian food system from January 1, 2018 to December 16, 2020 (e.g., a much wider window and nearly 12 months past the year-end of 2019) yielded no search results (Harmon, 2020).

Demand-Side and Supply-Side Survey Data Description

Often, primary data collection and analysis is required to obtain deeper insights than publicly-available data. While the aforementioned publicly-available data sources were vast and extensively described the amounts and types of capital being assigned from suppliers to demanders, the primary data collection effort for the Hawaiian food system is intended to find more insights about sources and uses of capital. The survey design herein is entirely consistent with similar studies in the rigorous, peer-reviewed academic literature (Petrick, 2004; Petrick and Latruffe, 2006) as well as industry best practices (Dillman, 2000). However, the surveys are convenience, not probabilistic, surveys. Still, they can be insightful and informative to guide future discussions but not econometric modeling.

The demand-side survey results are presented in Tables 23 to 43. By December 24, 2020, after being active in the Qualtrics platform for over 3 weeks, only 169 individuals consented to take the survey. Of those, only 61 completed the survey nearly completely. The supply-side survey results are presented in Tables 44 to 47. By December 24, 2020, after being active in the Qualtrics platform for over 3 weeks, only 10 individuals consented to take the survey. Of those, only 7 completed the survey nearly completely. Only the reportable results which preserve anonymity are provided with brief explanations of selected results where useful. If you have any specific questions about the results of this portion of the study (ASU IRB #00012967), please contact Dr. Steven S. Vickner at steven.vickner@asu.edu. You may also contact the Arizona State University Office of Research Integrity and Assurance at research.integrity@asu.edu to discuss general problems, concerns, and questions, obtain information, or offer input with an informed individual who is unaffiliated with the specific research protocol.

Table 23 - Demand-Side Survey, Legal Structure

Legal Structure	Respondents	Percent
Limited Liability Company (LLC)	20	33%
Nonprofit	10	16%
Sole Proprietorship	9	15%
C Corporation	8	13%
S Corporation	8	13%
Partnership	2	3%
Cooperative	1	2%
Other	3	5%
Total	61	100%

'Other' included public benefit corporation.

Table 24 - Demand-Side Survey, Location

Location	Respondents	Percent
Oahu	27	49%
Hawaii	16	29%
Maui	3	5%
Molokai	2	4%
Multiple Islands	7	13%
Total	55	100%

Table 25 - Demand-Side Survey, Industry Classification

Industry Classification	Respondents	Percent
Farm and Ranch Inputs & Equipment Suppliers	1	2%
Support Activities for Agriculture	5	8%
Plant Agriculture	28	46%
Animal Agriculture	11	18%
Commercial Fishing	1	2%
Plant Agriculture Processing	4	7%
Animal Agriculture Processing	1	2%
Wholesaling	3	5%
Farmers Market, Retail Food Hub, CSA & CSF	7	11%
Total	61	100%

Only 20 of the 60 respondents indicated financial capital was the most-constrained resource in their business. Hence some evidence of credit rationing, or more generally financial capital rationing, may be present in the Hawaiian food industry. Still, two-thirds of all respondents indicated other resources as most-constrained with labor, land, and technical advice ranked respectively as second, third, and fourth.

Table 26 - Demand-Side Survey, Most-Constrained Resource

Most-Constrained Resource	Respondents	Percent
Financial Capital	20	33%
Labor	14	23%
Land	10	17%
Technical Advice	8	13%
Other	8	13%
Total	60	100%

'Other' included access to markets, better inter-island transportation, cold storage, affordable and available animal processing capacity, supply of cattle, and organic waste.

Table 27 - Demand-Side Survey, Types of Financing Used in 2019

Types of Financing Used in 2019	Respondents	Percent
Debt	7	11%
Grants, Donations & Subsidies (GDS)	9	15%
Equity	2	3%
Debt, GDS	7	11%
Debt, Equity	3	5%
GDS, Equity	3	5%
Debt, GDS, Equity	1	2%
Did Not Use Any Financing	29	48%
Total	61	100%

Of those respondents who financed with debt, 35% would have preferred to borrow more at the same term, interest rate, fees, etc. Hence some evidence of credit rationing may be present in the Hawaiian food industry. Still, nearly two-thirds of all respondents who financed with debt indicated they would not have preferred to borrow more, *ceteris paribus*.

Table 28 - Demand-Side Survey, Types of Debt Financing Used in 2019

Types of Debt Financing Used in 2019	Respondents	Percent
Loans (not mortgages)	3	17%
Mortgages	0	0%
Lines of Credit (not credit cards)	1	6%
Credit Cards	2	11%
Other	0	0%
Loans, Lines of Credit	3	17%
Loans, Credit Cards	2	11%
Loans, Credit Cards, Other	1	6%
Loans, Mortgages, Lines of Credit, Credit Cards, Other	1	6%
Mortgages, Lines of Credit, Credit Cards	3	17%
Mortgages, Lines of Credit, Other	1	6%
Lines of Credit, Credit Cards	1	6%
Total	18	100%

'Other' included USDA-FSA equipment loan and dealer equipment financing.

Table 29 - Demand-Side Survey, Types of Grant and Other Financing Used in 2019

Types of Grant and Other Financing Used in 2019	Respondents	Percent
Foundation Grants (FG)	1	5%
Conservation Easement Grants (CEG)	0	0%
Government Grants (GG)	6	32%
Family or Friend Donations (FFD)	1	5%
Donation-based Crowdfunding (DBC)	0	0%
Government Subsidies (GS)	0	0%
Other	0	0%
CEG, GS	1	5%
FG, CEG, GG	1	5%
FG, CEG, GG, FFD	2	11%
FG, GG	1	5%
FG, GG, FFD	2	11%
FG, GG, Other	1	5%
GG, FFD, GS	1	5%
GG, Other	2	11%
Total	19	100%

'Other' included sponsor donations and USDA Natural Resources Conservation Service (NRCS) Environmental Quality Incentives Program (EQIP) cost sharing program.

Table 30 - Demand-Side Survey, Grant and Other Financing Stipulations

Grant and Other Financing Stipulations	Respondents	Percent
Restricted	2	12%
Unrestricted	5	29%
Recoverable Grant	0	0%
Performance-based with Claw Back	0	0%
Reimbursement-based	4	24%
Other	0	0%
Reimbursement-based, Other	1	6%
Restricted, Reimbursement-based	2	12%
Restricted, Unrestricted	1	6%
Restricted, Unrestricted, Recoverable Grant	1	6%
Restricted, Unrestricted, Reimbursement-based	1	6%
Total	17	100%

'Other' included matching.

Of the 8 who chose 'Founder Equity', six indicated the percentage ownership of founders was 100%, one indicated the percentage ownership of founders was 80%, and one did not respond.

Table 31 - Demand-Side Survey, Types of Equity Financing Used in 2019

Types of Equity Financing Used in 2019	Respondents	Percent
Equity-based Crowdfunding	0	0%
Venture Capital	0	0%
Private 3rd Party Equity	0	0%
Founder Equity	8	100%
Other	0	0%
Total	8	100%

Only 18 of the 61 respondents applied for new financing. One-hundred percent had their debt financing application approved, and all of them then accepted the debt financing. Eighty percent had their GDS application approved, and all of them then accepted the GDS financing. Of those denied, they did not know why they were denied GDS financing.

Table 32 - Demand-Side Survey, Types of New Financing Applied for in 2019

Types of New Financing Applied for in 2019	Respondents	Percent
Debt	6	33%
Grants, Donations & Subsidies (GDS)	9	50%
Equity	0	0%
Debt, GDS	3	17%
Total	18	100%

Of the 61 respondents, 41% indicated gross revenue would decrease and 44% indicated net income would decrease in 2020.

Table 33 - Demand-Side Survey, COVID-19 and 2020 Gross Revenue

Expected Impact on 2020 Gross Revenue	Respondents	Percent
Decrease Significantly	17	28%
Decrease Moderately	8	13%
Stay Approximately the Same	14	23%
Increase Moderately	13	21%
Increase Significantly	9	15%
Total	61	100%

Table 34 - Demand-Side Survey, COVID-19 and 2020 Net Income

Expected Impact on 2020 Net Income	Respondents	Percent
Decrease Significantly	16	26%
Decrease Moderately	11	18%
Stay Approximately the Same	15	25%
Increase Moderately	12	20%
Increase Significantly	7	11%
Total	61	100%

Of the respondents, only 13% indicated total assets would decrease and only 16% indicated current assets would decrease in 2020.

Table 35 - Demand-Side Survey, COVID-19 and 2020 Total Assets

Expected Impact on 2020 Total Assets	Respondents	Percent
Decrease Significantly	0	0%
Decrease Moderately	8	13%
Stay Approximately the Same	32	53%
Increase Moderately	13	22%
Increase Significantly	7	12%
Total	60	100%

Table 36 - Demand-Side Survey, COVID-19 and 2020 Current Assets

Expected Impact on 2020 Current Assets	Respondents	Percent
Decrease Significantly	0	0%
Decrease Moderately	10	16%
Stay Approximately the Same	29	48%
Increase Moderately	16	26%
Increase Significantly	6	10%
Total	61	100%

Of the respondents, 37% indicated total liabilities would increase and 32% indicated current liabilities would increase in 2020.

Table 37 - Demand-Side Survey, COVID-19 and 2020 Total Liabilities

Expected Impact on 2020 Total Liabilities	Respondents	Percent
Decrease Significantly	0	0%
Decrease Moderately	5	8%
Stay Approximately the Same	33	55%
Increase Moderately	16	27%
Increase Significantly	6	10%
Total	60	100%

Table 38 - Demand-Side Survey, COVID-19 and 2020 Current Liabilities

Expected Impact on 2020 Current Liabilities	Respondents	Percent
Decrease Significantly	0	0%
Decrease Moderately	6	10%
Stay Approximately the Same	34	58%
Increase Moderately	12	20%
Increase Significantly	7	12%
Total	59	100%

Of the 61 respondents, only 7% indicated the number of FTE employees would decrease in 2020.

Table 39 - Demand-Side Survey, COVID-19 and 2020 FTE Employees

Expected Impact on 2020 FTE Employees	Respondents	Percent
Decrease Significantly	1	2%
Decrease Moderately	3	5%
Stay Approximately the Same	36	59%
Increase Moderately	16	26%
Increase Significantly	5	8%
Total	61	100%

Of the 60 respondents, only 5% indicated their use of financing would decrease and only 7% indicated their mix of capital products would change significantly in 2020.

Table 40 - Demand-Side Survey, COVID-19 and 2020 Use of Financing

Expected Impact on 2020 Use of Financing	Respondents	Percent
Decrease Significantly	0	0%
Decrease Moderately	3	5%
Stay Approximately the Same	35	58%
Increase Moderately	13	22%
Increase Significantly	9	15%
Total	60	100%

Table 41 - Demand-Side Survey, COVID-19 and 2020 Mix of Capital Products

Expected Impact on 2020 Mix of Capital Products	Respondents	Percent
Stay Approximately the Same	38	63%
Change Moderately	18	30%
Change Significantly	4	7%
Total	60	100%

Of the respondents, the average age was 50 years old.

Table 42 - Demand-Side Survey, Ethnicity

Ethnicity	Respondents	Percent
Native Hawaiian	9	16%
Native American or Native Alaskan	2	4%
Asian	9	16%
Asian American	1	2%
Hispanic or Latino	1	2%
Multi-racial or Biracial	5	9%
White or Caucasian	28	51%
Total	55	100%

Table 43 - Demand-Side Survey, Gender

Gender	Respondents	Percent
Female	23	40%
Male	34	60%
Total	57	100%

See the section of this report on ‘FDIC and NCUA Institution Call Report Data’ for a quantitative analysis of the number of loans and their value in the Hawaiian food system.

Table 44 - Supply-Side Survey, COVID-19 and 2020 Number of Total Loans

Expected Impact on 2020 Number of Total Loans	Respondents	Percent
Decrease Significantly	0	0%
Decrease Moderately	0	0%
Stay Approximately the Same	1	14%
Increase Moderately	5	71%
Increase Significantly	1	14%
Total	7	100%

Table 45 - Supply-Side Survey, COVID-19 and 2020 Value of Total Loans

Expected Impact on 2020 Value of Total Loans	Respondents	Percent
Decrease Significantly	1	14%
Decrease Moderately	0	0%
Stay Approximately the Same	1	14%
Increase Moderately	5	71%
Increase Significantly	0	0%
Total	7	100%

See the section of this report on ‘FDIC and NCUA Institution Call Report Data’ for a quantitative analysis of the number of loans and their value in the Hawaiian food system.

Table 46 - Supply-Side Survey, COVID-19 and 2020 Number of Ag Loans

Expected Impact on 2020 Number of Ag Loans	Respondents	Percent
Decrease Significantly	0	0%
Decrease Moderately	1	14%
Stay Approximately the Same	3	43%
Increase Moderately	2	29%
Increase Significantly	1	14%
Total	7	100%

Table 47 - Supply-Side Survey, COVID-19 and 2020 Value of Ag Loans

Expected Impact on 2020 Value of Ag Loans	Respondents	Percent
Decrease Significantly	1	14%
Decrease Moderately	0	0%
Stay Approximately the Same	2	29%
Increase Moderately	3	43%
Increase Significantly	1	14%
Total	7	100%

Summary and Recommendations

This study quantitatively analyzed all of the available sources and uses of capital in the Hawaiian food system to gain a deeper understanding of: 1) the market participants who supply capital; 2) the market participants who demand capital; 3) the range of capital products offered in the market; 4) any gaps in the market that may exist; and 5) how to improve the functioning of the market. This study began with a thorough definition of the food system in Hawaii followed by a visualization of financing trends in the U.S. food system. The study systematically addressed the wide array of diverse publicly-available data on sources of capital and also identified who used capital. The study also reviewed findings from a primary data collection effort on both the demand-side and supply-side of the market.

The Hawaiian food system was found to be both liquid and solvent which are considered internal strengths in strategic management parlance. However, in most cases, capital allocated to the Hawaiian food system was small relative to total, but that is entirely commensurate with the broader economic activity in Hawaii; the food system is small relative to the other sectors in the economy (Table 1). When the food system is redefined without traditional food retailing (e.g., grocery and tourism-centric restaurant sectors), it is actually miniscule relative to the other sectors in the economy. Hence this is a serious internal weakness without easy answers or policy recommendations. Numerous pro-growth and capacity-building activities come to mind for the food system, but suffice it to say, a concerted effort must be made to diversify the economy to improve resilience and sustainability. This study thus helped answer two of the classic three pressing strategic management questions – where are we now and where do we want to be – with more emphasis on the former than the latter. The most difficult question to answer in strategic management – how do we get there – is left to the stakeholders in Hawaii to best answer as they have the most skin in the game.

Regardless of size, capital markets adjust much faster than physical sectors of the economy. So as the food system eventually grows, so will capital allocated to it. A word of caution is noted here as there is some empirical evidence of an expected weakening of the income statement (e.g., decreasing top line and decreasing bottom line) as well as an expected weakening of the balance sheet (e.g., decreasing total and current assets, and increasing total and current liabilities) in 2020. Moreover, there does appear to be a slight but not insignificant perception of financial capital rationing generally, and credit rationing specifically, in the Hawaiian food system. Those gaps can be overcome through grants, donations, and subsidies (GDS capital products), as well as traditional loans through the SBA, USDA-FSA, etc. Ultimately, the exact mix of financial capital products – even the exotics – is unknown a priori, but can be influenced through sound public policy, industry engagement, and educational outreach initiatives.

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Appendix 1 - Recruitment Script for Qualtrics Demand-Side Survey

Greetings,

Arizona State University's W. P. Carey School of Business and Morrison School of Agribusiness have been contracted by Hawai'i Investment Ready to conduct an objective, third-party survey and analysis of financing activities of businesses in Hawai'i's food system. This capital scan project will quantify the use and availability of capital products from private sector, government, and philanthropic sources. You are receiving this invitation to take the survey because you have been recommended as an important provider of products and/or services in the food system.

Questions in the survey focus on three main areas: 1) General Business Information; 2) Financial Information in 2019; and 3) Impacts of COVID-19 in 2020. If you decide to participate in the survey, you will be asked a series of questions about your enterprise. The survey will take approximately 10-12 minutes to complete. There will be no direct benefit to you for taking part in this survey. We believe there is little to no risk to you in participating in this survey. Your responses will be completely anonymous and only highly summarized results based on the survey data, such as averages, will be used in the final project report. You may freely choose to take part or to not take part in this survey. There will be no penalty or loss of benefits for either decision. If you do agree to participate, you can stop at any time.

If you have any specific questions about this study (ASU IRB #00012967), please contact Dr. Steven S. Vickner in the Morrison School of Agribusiness, W. P. Carey School of Business, Arizona State University at steven.vickner@asu.edu or by mobile phone at 502-224-4669.

You may also contact the Arizona State University Office of Research Integrity and Assurance at research.integrity@asu.edu or 480-965-6788 to discuss general problems, concerns, and questions, obtain information, or offer input with an informed individual who is unaffiliated with the specific research protocol. Please visit <https://researchintegrity.asu.edu/human-subjects> for more information on your rights as a research participant.

Thank you very much for your time and participation!

Please click on the following link to access the Qualtrics survey:

https://asu.co1.qualtrics.com/jfe/form/SV_8G2tZCvYUa4nTAp

Best regards,

Dr. Steven S. Vickner
Clinical Professor
Morrison School of Agribusiness
W. P. Carey School of Business
Arizona State University

Appendix 2 - Recruitment Script for Qualtrics Supply-Side Survey

Greetings,

Arizona State University's W. P. Carey School of Business and Morrison School of Agribusiness have been contracted by Hawai'i Investment Ready to conduct an objective, third-party survey and analysis of financing activities of businesses in Hawai'i's food system. This capital scan project will quantify the use and availability of capital products from private sector, government, and philanthropic sources. You are receiving this invitation to take the survey because you have been recommended as an important financial services firm in the region.

Questions in the survey focus on aggregate lending behavior and impacts of COVID-19. If you decide to participate in the survey, you will be asked a series of questions about your enterprise. The survey will take approximately 5-10 minutes to complete. There will be no direct benefit to you for taking part in this survey. We believe there is little to no risk to you in participating in this survey. Your responses will be completely anonymous and only highly summarized results based on the survey data, such as averages, will be used in the final project report. You may freely choose to take part or to not take part in this survey. There will be no penalty or loss of benefits for either decision. If you do agree to participate, you can stop at any time.

If you have any specific questions about this study (ASU IRB #00012967), please contact Dr. Steven S. Vickner in the Morrison School of Agribusiness, W. P. Carey School of Business, Arizona State University at steven.vickner@asu.edu or by mobile phone at 502-224-4669.

You may also contact the Arizona State University Office of Research Integrity and Assurance at research.integrity@asu.edu or 480-965-6788 to discuss general problems, concerns, and questions, obtain information, or offer input with an informed individual who is unaffiliated with the specific research protocol. Please visit <https://researchintegrity.asu.edu/human-subjects> for more information on your rights as a research participant.

Thank you very much for your time and participation!

Please click on the following link to access the Qualtrics survey:

https://asu.co1.qualtrics.com/jfe/form/SV_e4dLws7fJYtEMZ

Best regards,

Dr. Steven S. Vickner
Clinical Professor
Morrison School of Agribusiness
W. P. Carey School of Business
Arizona State University

Appendix 3 - Qualtrics Demand-Side Survey Instrument

Start of Block: 1. OVERVIEW

ABOUT THIS SURVEY

Arizona State University's W. P. Carey School of Business and Morrison School of Agribusiness have been contracted by Hawai'i Investment Ready to conduct an objective, third-party survey and analysis of financing activities of businesses in Hawai'i's food system. This capital scan project will quantify the use and availability of capital products from private sector, government, and philanthropic sources. You are receiving this invitation to take the survey because you have been recommended as an important provider of products and/or services in the food system.

Questions in the survey focus on three main areas: 1) General Business Information; 2) Financial Information in 2019; and 3) Impacts of COVID-19 in 2020. For the financial part of the survey, it is recommended that you have access to information regarding all financial products that were in use in 2019 by your business, as well as a copy of your 2019 balance sheet and income statement.

Your responses will be completely anonymous and only highly summarized results based on the survey data, such as averages, will be used in the final project report.

Thank you very much for your time and participation!

End of Block: 1. OVERVIEW

Start of Block: 2. CONSENT

Consent to Participate in Research

Project Description: Arizona State University's W. P. Carey School of Business and Morrison School of Agribusiness have been contracted by Hawai'i Investment Ready to conduct an objective, third-party survey and analysis of financing activities of businesses in Hawai'i's food system. Questions in the survey focus on three main areas: 1) General Business Information; 2) Financial Information in 2019; and 3) Impacts of COVID-19 in 2020.

Activities and Time Commitment: If you decide to participate in the survey, you will be asked a series of questions about your enterprise. The survey will take approximately 10-12 minutes to complete.

Benefits and Risks: There will be no direct benefit to you for taking part in this survey. We believe there is little to no risk to you in participating in this survey.

Confidentiality and Privacy: Your responses will be completely anonymous and only highly summarized results based on the survey data, such as averages, will be used in the final project report.

Voluntary Participation: You may freely choose to take part or to not take part in this survey. There will be no penalty or loss of benefits for either decision. If you do agree to participate, you can stop at any time.

Questions: If you have any specific questions about this study (ASU IRB #00012967), please contact Dr. Steven S. Vickner in the Morrison School of Agribusiness, W. P. Carey School of Business, Arizona State University at steven.vickner@asu.edu or by mobile phone at 502-224-4669. You may also contact the Arizona State University Office of Research Integrity and Assurance at research.integrity@asu.edu or 480-965-6788 to discuss general problems, concerns, and questions, obtain information, or offer input with an informed individual who is unaffiliated with the specific research protocol. Please visit <https://researchintegrity.asu.edu/human-subjects> for more information on your rights as a research participant.

Accessing the Survey: If you are 18 years or older and agree to participate in the study, please select "Yes" below and continue to the next page. Otherwise, just close your browser to exit. Please keep a copy of this page for your reference.

Thank you very much for your time and participation!

Do you consent to participate in the survey?

Yes

End of Block: 2. CONSENT

Start of Block: 3. LEGAL STRUCTURE, YEAR FOUNDED & LOCATION

Section 1: Legal Structure, Year Founded, and Location

What is the legal structure of your business?

- Sole Proprietorship
- Partnership
- Limited Liability Company (LLC)
- S Corporation
- C Corporation
- Cooperative
- Nonprofit (501(c) or 501(c)(3))
- Other (please specify) _____

What year was it founded?

Where does your business operate? Please enter the primary zip code(s), or if you prefer, just indicate your island(s).

Please enter the primary zip code here (separate zip codes by commas if operating in multiple locations) _____

Hawai'i

Kaua'i

Lana'i

Maui

Moloka'i

O'ahu

End of Block: 3. LEGAL STRUCTURE, YEAR FOUNDED & LOCATION

Start of Block: 4. INDUSTRY CLASSIFICATION

Section 2: Industry Classification

What is the primary industry of your organization?

- Farm and Ranch Inputs & Equipment Suppliers
 - Support Activities for Agriculture (e.g., field prep, harvesting, labor contracting, veterinary, etc)
 - Plant Agriculture (e.g., vegetable farming, floriculture, etc)
 - Animal Agriculture (e.g., beef cattle ranching, etc)
 - Aquaculture
 - Commercial Fishing
 - Plant Agriculture Processing (e.g., canned vegetables, frozen fruit, etc)
 - Animal Processing (e.g., slaughtering, meat processing, etc)
 - Seafood Processing
 - Cosmetic & Supplement Processing
 - Wholesaling
 - Farmers Market, Retail Food Hub, CSA & CSF
-

Which sub-sector best represents your business?

- Inputs - Fertilizer Manufacturing & Mixing
 - Farm Machinery and Equipment
 - Other (please specify) _____
-

Which sub-sector best represents your business?

- Support Activities for Crop Production (e.g., field prep, harvesting, labor contracting, etc)
 - Support Activities for Animal Production (e.g., veterinary, etc)
 - Other (please specify) _____
-

Which sub-sector best represents your business?

- Vegetable and Melon Farming
 - Fruit Farming
 - Coffee Farming
 - Tree Nut Farming
 - Food Crops Grown Under Protection
 - Nursery Production
 - Floriculture Production
 - Grain Farming
 - Traditional Crop Farming (e.g., taro and breadfruit)
 - Other (please specify) _____
-

Which sub-sector best represents your business?

- Beef Cattle
 - Dairy Cattle and Milk Production
 - Poultry and Egg Production
 - Other (please specify) _____
-

Which sub-sector best represents your business?

- Aquaculture - Animal Protein, Seed Stock and Brood Stock
 - Aquaculture - Algae
 - Other (please specify) _____
-

Which sub-sector best represents your business?

- Longline Commercial Fishing
 - Dayboat Commercial Fishing
 - Other (please specify) _____
-

Which sub-sector best represents your business?

- Traditional Crop Processing (e.g., taro and breadfruit)
 - Chocolate and Confectionery Manufacturing from Cacao Beans
 - Coffee and Tea Manufacturing
 - Frozen, Canned, Dehydrated Fruits and Vegetables, Juices, and Related Products Manufacturing
 - Fluid Milk and Dairy Products Manufacturing
 - Other (please specify) _____
-

Which sub-sector best represents your business?

- Animal and Poultry Slaughtering
 - Meat Processed from Carcasses
 - Rendering and Meat Byproduct Processing
 - Other (please specify) _____
-

Which sub-sector best represents your business?

- Fish & Seafood Processing
 - Other (please specify) _____
-

Which sub-sector best represents your business?

- Cosmetics Manufacturing with Locally Grown Ingredients
 - Supplements Manufacturing with Locally Grown Ingredients
 - Other (please specify) _____
-

Which sub-sector best represents your business?

- Traditional Distributor
 - Wholesale Food Hub/Aggregator - Local Only
 - Cooperative
 - Other (please specify) _____
-

Which sub-sector best represents your business?

- Farmers Market
- Retail Food Hub
- Community Supported Agriculture (CSA)
- Community Supported Fisheries (CSF)
- Other (please specify) _____

End of Block: 4. INDUSTRY CLASSIFICATION

Start of Block: 5. REVENUE, ASSETS, LIABILITIES, EMPLOYEES, AND OTHER RESOURCES

Section 3: Revenue, Assets, Liabilities, Employees, and Other Resources

What was your Gross Revenue for the year ending 12/31/2019?

What was your Net Income for the year ending 12/31/2019?

For a Profit (please specify amount) _____

For a Loss (please specify amount) _____

What was the value of your Total Assets as of 12/31/2019?

What was the value of your Current Assets as of 12/31/2019?

What was the value of your Total Liabilities as of 12/31/2019?

What was the value of your Current Liabilities as of 12/31/2019?

Including yourself, how many full-time equivalent (FTE) employees did you have for the year ending 12/31/2019?

Of the following resources, which is in the shortest supply or constrains your business the most? In other words, having more of it would be the most helpful for growing your business.

- Land
- Labor
- Financial Capital
- Technical Advice (e.g., marketing/Internet, legal/regulatory, accounting/tax, engineering, etc)
- Other (please specify) _____

End of Block: 5. REVENUE, ASSETS, LIABILITIES, EMPLOYEES, AND OTHER RESOURCES

Start of Block: 6. FINANCING USED IN 2019

Section 4: Financing Used in 2019

Which types of financing were used in 2019? Select all that apply.

- Debt (e.g., loans, lines of credit, etc)
- Grants, Donations & Subsidies
- Equity
- Did Not Use Any Financing

End of Block: 6. FINANCING USED IN 2019

Start of Block: debt

Which types of debt financing did you use in your business in 2019? Select all that apply.

- Loans (not mortgages)
 - Mortgages
 - Lines of Credit (not credit cards)
 - Credit Cards
 - Other (e.g., dealer equipment financing, etc - please specify)
-

Consider your largest loan, mortgage, etc, for the following question. What amount was borrowed?

Consider your largest loan, mortgage, etc, for the following question. Would you have liked to borrow more for the same term, interest rate, fees, etc?

- Yes
 - No
-

Consider your largest loan, mortgage, etc, for the following question. What was the term or duration?
(please specify in months)

Consider your largest loan, line of credit, etc, for the following question. What was the interest rate?

Fixed % (please specify that rate) _____

Variable % (please specify the current rate)

Consider your largest loan, line of credit, etc, for the following question. Were there any fees?
Select all that apply.

No Fees

Fees Measured as a Percent of Amount Borrowed (please specify)

Fees Measured as a Dollar Amount (please specify)

Other (please specify) _____

Consider your largest loan, line of credit, etc, for the following question. Was collateral or a guarantee required?

Select all that apply.

- None Required
- Collateral Required
- Personal Guarantee Required
- Third-Party Guarantee Required
- Other (please specify) _____

End of Block: debt

Start of Block: grants-donations-subsidies

Which types of grant, donation, and/or subsidy financing did you use in your business in 2019? Select all that apply.

- Foundation Grants
 - Conservation Easement Grants
 - Government Grants
 - Family or Friend Donations
 - Donation-based Crowdfunding
 - Government Subsidies
 - Other (please specify) _____
-

Consider your grants for the following question. What was the total amount of grants? (if none, please leave blank)

Consider your donations for the following question. What was the total amount of donations? (if none, please leave blank)

Consider your subsidies for the following question. What was the total amount of subsidies? (if none, please leave blank)

Were there any grant, donation, and/or subsidy stipulations?
Select all that apply.

- Restricted
- Unrestricted
- Recoverable Grant
- Performance-based with Claw Back
- Reimbursement-based
- Other (please specify) _____

End of Block: grants-donations-subsidies

Start of Block: equity

Which types of equity financing did you use in your business in 2019? Select all that apply.

- Equity-based Crowdfunding
 - Venture Capital
 - Private 3rd Party Equity
 - Founder Equity
 - Other (please specify) _____
-

What was the total equity invested?

What was the percentage ownership of founders? (please specify a value from 1 to 100)

End of Block: equity

Start of Block: 7. NEW FINANCING APPLIED FOR IN 2019

Section 5: New Financing Applied for in 2019

Did you apply for new financing in 2019?

Yes

No

Which types of new financing were applied for in 2019? Select all that apply.

Debt (e.g., loans, lines of credit, etc)

Grants, Donations & Subsidies

Equity

Was the funding request approved or denied?

	Approved	Denied
Debt (e.g., loans, lines of credit, etc)	<input type="radio"/>	<input type="radio"/>
Grants, Donations & Subsidies	<input type="radio"/>	<input type="radio"/>
Equity	<input type="radio"/>	<input type="radio"/>

For funding requests that were approved, did you accept or decline it?

	Accepted	Declined
Debt (e.g., loans, lines of credit, etc)	<input type="radio"/>	<input type="radio"/>
Grants, Donations & Subsidies	<input type="radio"/>	<input type="radio"/>
Equity	<input type="radio"/>	<input type="radio"/>

For funding requests that were denied, what do think was the main reason for denial?

	Insufficient credit score	Inadequate collateral or guarantee	Insufficient cash flow	Too much financing already	Lack of a feasible business plan	Perceived risk	Do not know
Debt (e.g., loans, lines of credit, etc)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Grants, Donations & Subsidies	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Equity	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

End of Block: 7. NEW FINANCING APPLIED FOR IN 2019

Start of Block: 8. IMPACTS OF COVID-19 IN 2020

Section 6: Impacts of COVID-19 in 2020. As this year rapidly draws to an end, for the following questions try to characterize any disruptions COVID-19 had or may still have on your business.

Compared to the year ending 12/31/2019, you expect your Gross Revenue in 2020 to

- Increase Significantly
 - Increase Moderately
 - Stay Approximately the Same
 - Decrease Moderately
 - Decrease Significantly
-

Compared to the year ending 12/31/2019, you expect your Net Income in 2020 to

- Increase Significantly
 - Increase Moderately
 - Stay Approximately the Same
 - Decrease Moderately
 - Decrease Significantly
-

Compared to the year ending 12/31/2019, you expect your Total Assets in 2020 to

- Increase Significantly
 - Increase Moderately
 - Stay Approximately the Same
 - Decrease Moderately
 - Decrease Significantly
-

Compared to the year ending 12/31/2019, you expect your Current Assets in 2020 to

- Increase Significantly
 - Increase Moderately
 - Stay Approximately the Same
 - Decrease Moderately
 - Decrease Significantly
-

Compared to the year ending 12/31/2019, you expect your Total Liabilities in 2020 to

- Increase Significantly
 - Increase Moderately
 - Stay Approximately the Same
 - Decrease Moderately
 - Decrease Significantly
-

Compared to the year ending 12/31/2019, you expect your Current Liabilities in 2020 to

- Increase Significantly
 - Increase Moderately
 - Stay Approximately the Same
 - Decrease Moderately
 - Decrease Significantly
-

Compared to the year ending 12/31/2019, you expect your number of full-time equivalent (FTE) employees in 2020 to

- Increase Significantly
 - Increase Moderately
 - Stay Approximately the Same
 - Decrease Moderately
 - Decrease Significantly
-

Compared to the year ending 12/31/2019, you expect your use of financing in 2020 to

- Increase Significantly
 - Increase Moderately
 - Stay Approximately the Same
 - Decrease Moderately
 - Decrease Significantly
-

Compared to the year ending 12/31/2019, you expect the type or mix of capital products used in financing your business in 2020 to

- Stay Approximately the Same
- Change Moderately
- Change Significantly

End of Block: 8. IMPACTS OF COVID-19 IN 2020

Start of Block: 9. DEMOGRAPHICS

Section 7: Demographics. As a last component of our data collection effort, please provide the following demographics of the primary decision maker of the business (e.g., owner, executive director, managing director, etc)

Age

- Age (in years) _____
 - Prefer Not to Answer
-

Ethnic Identity

- Asian
 - Black or African American
 - Hispanic or Latino
 - Native American or Native Alaskan
 - Native Hawaiian
 - White or Caucasian
 - Multi-racial or Biracial
 - Not Listed (please specify) _____
 - Prefer Not to Answer
-

Gender

Female

Male

Not Listed (please specify) _____

Prefer Not to Answer

End of Block: 9. DEMOGRAPHICS

Appendix 4 - Qualtrics Supply-Side Survey Instrument

Start of Block: 1. OVERVIEW

ABOUT THIS SURVEY

Arizona State University's W. P. Carey School of Business and Morrison School of Agribusiness have been contracted by Hawai'i Investment Ready to conduct an objective, third-party survey and analysis of financing activities of businesses in Hawai'i's food system. This capital scan project will quantify the use and availability of capital products from private sector, government, and philanthropic sources. You are receiving this invitation to take the survey because you have been recommended as an important financial services firm in the region.

Questions in the survey focus on aggregate lending behavior and impacts of COVID-19. Your responses will be completely anonymous and only highly summarized results based on the survey data, such as averages, will be used in the final project report.

Thank you very much for your time and participation!

End of Block: 1. OVERVIEW

Start of Block: 2. CONSENT

Consent to Participate in Research

Project Description: Arizona State University's W. P. Carey School of Business and Morrison School of Agribusiness have been contracted by Hawai'i Investment Ready to conduct an objective, third-party survey and analysis of financing activities of businesses in Hawai'i's food system. Questions in the survey focus on aggregate lending behavior and impacts of COVID-19.

Activities and Time Commitment: If you decide to participate in the survey, you will be asked a series of questions about your enterprise. The survey will take approximately 5-10 minutes to complete. **Benefits and Risks:** There will be no direct benefit to you for taking part in this survey. We believe there is little to no risk to you in participating in this survey. **Confidentiality and Privacy:** Your responses will be completely anonymous and only highly summarized results based on the survey data, such as averages, will be used in the final project report. **Voluntary Participation:** You may freely choose to take part or to not take part in this survey. There will be no penalty or loss of benefits for either decision. If you do agree to participate, you can stop at any time. **Questions:** If you have any specific questions about this study (ASU IRB #00012967), please contact Dr. Steven S. Vickner in the Morrison School of Agribusiness, W. P. Carey School of Business, Arizona State University at steven.vickner@asu.edu or by mobile phone at 502-224-4669. You may also contact the Arizona State University Office of Research Integrity and Assurance at research.integrity@asu.edu or 480-965-6788 to discuss general problems, concerns, and questions, obtain information, or offer input with an informed individual who is unaffiliated with the specific research protocol. Please visit <https://researchintegrity.asu.edu/human-subjects> for more information on your rights as a research participant.

Accessing the Survey: If you are 18 years or older and agree to participate in the study, please select "Yes" below and continue to the next page. Otherwise, just close your browser to exit. Please keep a copy of this page for your reference.

Thank you very much for your time and participation!

Do you consent to participate in the survey?

Yes

End of Block: 2. CONSENT

Start of Block: 1. AGGREGATE LENDING BEHAVIOR

Section 1: Aggregate Lending Behavior

Which category best describes your type of financial services firm?

- FDIC-insured Institution
 - Credit Uniion
 - Other (please specify) _____
-

Section 1: Aggregate Lending Behavior

How many traditional small business loans and lines of credit did you book for the year ending 12/31/2019?

What was the value of the portfolio of traditional small business loans and lines of credit for the year ending 12/31/2019?

In just the food and agricultural sector, how many traditional small business loans and lines of credit did you book for the year ending 12/31/2019?

In just the food and agricultural sector, what was the value of the portfolio of traditional small business loans and lines of credit for the year ending 12/31/2019?

End of Block: 1. AGGREGATE LENDING BEHAVIOR

Start of Block: 2. IMPACTS OF COVID-19 IN 2020

Section 2: Impacts of COVID-19 in 2020. As this year rapidly draws to an end, for the following questions try to characterize any disruptions COVID-19 had or may still have on your business.

Compared to the year ending 12/31/2019, you expect your number of traditional small business loans and lines of credit booked in 2020 to

- Increase Significantly
 - Increase Moderately
 - Stay Approximately the Same
 - Decrease Moderately
 - Decrease Significantly
-

Compared to the year ending 12/31/2019, you expect the value of your portfolio of traditional small business loans and lines of credit in 2020 to

- Increase Significantly
 - Increase Moderately
 - Stay Approximately the Same
 - Decrease Moderately
 - Decrease Significantly
-

Compared to the year ending 12/31/2019, you expect your number of traditional small business loans and lines of credit booked in just the food and agricultural sector in 2020 to

- Increase Significantly
 - Increase Moderately
 - Stay Approximately the Same
 - Decrease Moderately
 - Decrease Significantly
-

Compared to the year ending 12/31/2019, you expect the value of your portfolio of traditional small business loans and lines of credit in just the food and agricultural sector in 2020 to

- Increase Significantly
- Increase Moderately
- Stay Approximately the Same
- Decrease Moderately
- Decrease Significantly

End of Block: 2. IMPACTS OF COVID-19 IN 2020
