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**POI CONSUMPTION:  
Consumption of a Traditional Staple in the Contemporary Era,  
in Honolulu, Hawaii**

Bryan W. Begley, Heinz Spielmann, and Gary R. Vieth



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**ABSTRACT**

Poi was the major staple of the people living in Hawaii when Captain Cook made his voyages to the Islands in the eighteenth century. Since that time other staples such as rice and Irish potatoes have become of greater importance than poi. This has occurred because of the settlement in Hawaii of ethnic groups from Asia, Europe, and the U.S. Mainland. But throughout the postcontact period of Hawaii history, poi has at least in the public mind been associated with Hawaiians. This is still the case today. But no attempt has been made to actually measure how much consumption of poi can be attributed to Hawaiians. A study was, therefore, initiated to interview a sufficiently large number of people at the point of sale to determine who today in Hawaii eats poi and how often.

This paper sets out the procedures employed and the results gained from interviewing, using for the exercise a purposive sample, poi users on the Island of Oahu, where more than 80 percent of the people of the Hawaiian Islands reside.

Per capita consumption of poi in Hawaii over the last 40 years has dropped drastically, and included in this paper is some discussion of probable causes of this drop. New strategies must be examined in order to market a traditional product in the present era of supermarkets and fast-food restaurant chains. Given, for example, changes in diet and buyer behavior that have occurred in the last 100 years, and today's emphasis on convenience foods, there is a need to consider changes

in the form, appearance, packaging, and indeed the total approach to marketing of poi or other products developed from taro.

**PART 1:  
CONTEMPORARY CONSUMER  
PREFERENCES FOR POI IN HAWAII**

**Introduction**

To the Hawaiian people, both before and after Captain James Cook's discovery of the Islands, poi was a staple food (3). Unlike their Polynesian relatives in Tahiti, Tonga, and Samoa, the Hawaiians steamed and pounded taro until it became the viscous product known as poi. This was and still is quite a different product from the baked taro widely used throughout Polynesia or the South Pacific. Poi is made by cooking the fresh roots or tubers, removing the outer skin and trimming by hand, and grinding and straining by machine while adding water. The product is packaged in plastic bags, then it is delivered to markets, restaurants, or institutions and stored at room temperature. In the course of time, fermentation takes place, lactic acid is produced, and during the aging process poi becomes sour. It was and still is most commonly eaten with fish or meat prepared in a distinctive Hawaiian fashion.

Following Cook's voyages and the immigration of Caucasians, Filipinos, Japanese, Chinese, and other ethnic groups to Hawaii, the position of poi as perhaps

the major staple in the Islands changed radically. Other ethnic groups brought with them their preferred staples, and today rice or even Irish potatoes are generally far more important than poi in Hawaii. Poi has slipped into the position of being a favored food for a small, though distinct, number of people in the State.<sup>1</sup>

While rice and Irish potatoes were becoming more important in relation to poi in people's diets during the nineteenth century, the displacement of poi from common usage appears to have speeded up rapidly in recent times. Forty years ago the quantity of poi being produced on the Island of Oahu was almost double that of today, and per capita consumption annually was then almost 30 pounds. Today, it is close to 5 pounds,<sup>2</sup> reflecting a marked falloff in per capita consumption at a time when the population itself was increasing rapidly. One can speculate about some of the factors that have caused this.

## **Factors Influencing Changes in Poi Consumption**

### *Hawaii: Local Demographic Trends*

In 1853 the Hawaiians comprised 95 percent of the total population in the Islands. By 1970, this number, including Part-Hawaiians, had shrunk to 9.3 percent. Meanwhile Caucasians, Japanese, and Filipinos, who together accounted for less than 5 percent 130 years ago, constituted 39, 28, and 12 percent, respectively, of Hawaii's population in 1970. The influx of Caucasians during the 30 years between 1940 and 1970 is particularly striking. Two-thirds, or almost 200,000 of the 300,000 Caucasians now living in Hawaii, arrived or were born here since 1940 (10). Few of these people are likely to have acquired a taste for poi.

### *Integration of Hawaii into United States Commerce*

Supermarkets have been in Hawaii for more than 25 years and some fast-food stores have been in operation for many years, but the current dramatic expansion in the number of fast-food restaurants is a recent phenomenon. What has made these developments entirely logical is the fusion of Hawaii and the U.S. Mainland into a single commercial system.

For example, an order for crab placed with a distributor in Los Angeles or Seattle by telephone in the morning can be available to diners the same day or the next day in a restaurant in Waikiki. Though bulky items are normally shipped by boat to Hawaii from the Mainland, Australia, or another part of the world, a serious shortage of an important staple can be remedied

by air shipments from a warehouse supplier within 48 hours from almost any point on the globe.

If, on the one hand, shipping, airlines, and the telephone have effectively bound Hawaii to the Mainland and ushered in push-button delivery of products, these same links have induced Hawaii's population to bring its consumption patterns in line with fashions evolved on the Mainland. Further, those who have settled in Hawaii can and do fully indulge the tastes they acquired prior to their arrival and may not be induced to explore island foods except on rare occasions. The Nebraskan settling in Hawaii may eat fewer potatoes than his father did 50 years ago, but he does eat potatoes. On arrival in the Islands he may try rice, but he is unlikely to treat poi as anything other than an exotic item to be sampled at a party.

### *Taste of Poi*

Poi has a taste that takes time to acquire. It is distinctive. It is different from anything to which a visitor or a new resident from the Mainland or Asia is accustomed. Perhaps its taste is somewhat analogous to fresh, pure yogurt. Yogurt is a product that in its original form also has a distinctive taste. Some consumers may be induced to acquire a taste for it but most have come to accept it in the form of one of its fruit-flavored varieties. In the case of poi, however, there is no sweetened form of the product; it still appears on the supermarket shelf in its traditional form.

### *Poi as a Starchy Food*

Poi also is a starchy food, a fact that takes on added importance in an era when many consumers are weight conscious; in that regard it faces the same problems that rice, Irish potatoes, or sweet potatoes face today. Merrill Bennett and Rosemond Peirie reported in their study of changes in the American National Diet between 1879 and 1959 (1) that the consumption of calories had dropped about 25 percent during that time. Calories derived from starchy foods had dropped from 50 to 24 percent of the diet. This alone would seem to suggest that some reduction in the amount of poi consumed would have occurred even if other factors were not at work.

In addition to characterizing the decline in the consumption of starchy foods as the most conspicuous feature of long-term changes, Bennett and Peirie also noted a sharp increase in the consumption of sugary foods and flavored foods, particularly during the early part of the period. This would appear to work against poi which, depending on individual tastes, has a bland or even bitter flavor.

Though there are other forces at work, those factors discussed above are probably most important in explaining why poi consumption per capita in Hawaii has dropped sharply over the last 40 years.

<sup>1</sup> Preliminary findings of research on sweet potato consumption in Hawaii, 1976/77.

<sup>2</sup> This is an estimate. See reference 2.

## *Scholarly Publications on Poi Consumption*

Poi was an important island food before and after Europeans and Asians came to Hawaii, and yet despite its historical importance, very little has been published on taro or poi either at the production or consumption stage of its cycle. One has to go back 25 years to find the last published report on poi. The report, by Edward Rada (2), dealt not with poi in Hawaii but with the potential mainland market for taro products. However, some comments were included regarding local consumption of taro products, and one of these noted that "in 1936 Hawaiians ate 70 percent of poi provided" (9). Patricia Kubo, in a term paper as part of a class project on the history of taro and taro products in 1970, was clearly conscious of the dearth of scholarly articles on poi. She turned to the local newspapers and, in the process, managed to unearth a considerable volume of material showing that during the 1930s and 1940s poi continued to receive a lot of attention in the press (6).

Despite the fact that poi was in common use up to and including the second World War period, no study was ever carried out that focused on who, in addition to the Hawaiians, ate poi in Hawaii, how much was consumed, what were patterns of consumption, and what brand preferences among family members existed. In addition, little is or has been written about foods customarily associated with poi, the manner in which price or nutrition influences consumption, and the degree to which income, occupation, or ethnicity influences the amount used and the frequency of use.

Though it is difficult to cite actual figures, there is sufficient indirect evidence to suggest that most people in Hawaii today do not eat poi or do so only when they attend special events such as luaus (a special feast offered by Hawaiians on festive occasions). If such is the case, it becomes rather unproductive to focus on the average person in Honolulu who eats poi perhaps once or twice a year at a luau. More useful results can be gained from focusing on that segment of the population that regularly consumes poi. This study focused on such consumers in 1976-1978 on the Island of Oahu, in Honolulu.

## **Background and Focus of Interview Questions**

### *Taro and Poi: Production and Consumption in Honolulu*

Between 60 and 70 percent of the wetland taro grown on the neighbor islands of Kauai, Maui, and Hawaii is shipped to Oahu. A small quantity of this, perhaps 3 percent,<sup>3</sup> is sold as table taro, and the balance is processed into poi. In contrast with the situation of 35 years ago, little commercial taro is grown on Oahu today. Most of what were formerly the taro lands of Oahu are today under hotels, highways, and house lots. But if

Oahu is no longer of importance as a production center, such is not the case with consumption. More than 80 percent of the people of the Hawaiian Islands live on Oahu (comprising the City and County of Honolulu), and the bulk of poi eaten in the State is consumed by people living in Waianae, Kailua, Waimanalo, Kapalama, and other suburbs of Honolulu. Clearly then, these are the logical places to carry out research on the consumption or marketing of poi.

### *Where Consumption Fits into the Total Root Crop Delivery System: Also Some Key Questions*

The total food delivery system begins with farmers raising taro in the taro patches of Hanalei on the Island of Kauai and concludes with poi being eaten in households in Nanakuli or Kapalama on the Island of Oahu, where interviews of consumers were conducted.

Under the heading of consumer utilization, there are many questions, but only a few major ones are covered in depth in this study. Taking as the target poi consumers, a sample of people were asked questions designed to determine:

- (1) Who in Honolulu buys poi?
- (2) How much, how often, and when is it used?
- (3) What factors best help explain consumption and purchasing patterns?

## **Procedures**

### *The Interview Form and Locations for Interviews*

During design of the original questionnaire, the time constraints that would be imposed on the interviewer were kept clearly in mind. He or she would be interviewing the customer close to where poi was displayed in a supermarket or near the check-out counter. Brevity and succinctness therefore became critical, clearly cutting down on the number of questions that could be asked.

The questionnaire was divided roughly into three parts. The information obtained in Part I was on frequency of usage, quantities regularly purchased, brand preferences, and age of product preferred. Information was also sought in order to position poi among other foods, so questions were asked in Part I on the time or occasions when poi was used, who in the household consumes it, and the various combinations of poi with other foods that were customarily served. In Part II, information on reactions to such factors as price, color,

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<sup>3</sup> This is the figure suggested by a Hawaii State Department of Agriculture official closely involved in the collection of data on production and movement of taro among the islands of Hawaii.

nutrition, and brand preferences was sought. Finally, in Part III, data were obtained on the background of the respondents and in particular on education, ethnicity, income, occupation, and household size. A copy of the questionnaire is set out in Appendix A.

### Conducting the Interviews

Traditionally, poi is associated with Hawaiians. Therefore, after constructing a purposive sample aimed directly at buyers of poi, interviews were arranged in marketplaces located in the heart of or close to areas where concentrations of people with Hawaiian ethnic background were to be found, such as in Waianae and Kalihi. Subsequent results justified this method but also pointed out a need to carry out interviews in areas where the proportion of Hawaiians was low. When this was done, it helped provide an understanding of the importance of poi to such ethnic groups as the Japanese, Chinese, Caucasian, and others in Honolulu.

It should be stressed here that this cannot be regarded as an in-depth study of consumption patterns for poi throughout Hawaii, or of the causes of changes in preferences over time for rice or potatoes in comparison to poi. This paper describes mainly who is buying and using poi and not why this is being done. In essence, this was a short and relatively inexpensive survey of people well acquainted with the use of poi to determine consumption frequencies and some of the socioeconomic characteristics of poi users on Oahu. It represents a first step in documenting, rather than a final statement on, the place of a traditional food in this super-market age.

### General Findings: Part I of the Questionnaire

The first set of questions asked sought information on items such as frequency of use, quantities purchased, yearly variations in usage, combinations of use with other foods, persons in the household consuming poi, brand preferences, preferences in degree of freshness, and the position of poi with respect to other staples.

### General Usage and Frequency of Purchase of Poi

#### *Purposive Sample*

As was noted earlier, there are reasonable grounds for believing that most people in Hawaii do not eat poi, at least on any regular basis. Therefore, we opted to work with those people who do eat poi and to identify their demographic characteristics. The data presented in the various tables in this paper refer to buyers of poi. We obtained a purposive sample of 716 people from a much larger group who were approached. To have obtained a similar size sample

using a random sampling technique would have incurred much more time and expense than were available or could be justified.

### The Approach

Before asking any of the questions on the interview form, interviewers first ascertained if the person shopping actually used poi. If the respondent used poi, then the interviewer continued with the interview. If not, the interview was terminated.

The 716 consumers in four areas of Honolulu were first asked the question: How often do you use poi in the course of a week? The answers are shown in Table 1.

**Table 1. Frequency of Use of Poi Among Sample Interviewed<sup>a</sup>**

Answers	Buyers (percent)
Less than once a week	34
Once a week	29
Twice or more a week	37
<b>TOTAL</b>	<b>100</b>

<sup>a</sup>The total number of people interviewed was 716, but not everybody responded to each question. So each table shows the actual percentages calculated on the basis of response, not on the total number of the people interviewed.

Though those interviewed were people who classified themselves as users of poi, more than 60 percent said they use poi only once a week or less. On the other hand, a third of those interviewed indicated that they consume poi two or more times a week. It is probable that these are the same individuals who buy several large packets of poi each week. Poi is not a product that is kept in the refrigerator. Therefore it could be predicted that there would be an association between frequency of usage and frequency of purchase. This would follow if we accept in principle that consumers do not keep poi in reserve but only make a purchase when they plan to use it within a day. In fact, just less than 60 percent of respondents bought a packet or less a week, which is close to the figure of slightly more than 60 percent who said they use poi once a week or less. Actual figures on purchases of poi are shown in Table 2.

**Table 2. Quantities Purchased by People in the Sample**

Answers	Buyers (percent)
Less than one packet <sup>a</sup> a week (large or small)	28
One packet a week (large or small)	31
Two or more packets a week	41
<b>TOTAL</b>	<b>100</b>

<sup>a</sup>Packets are the sealed plastic bags in which poi is packaged and sold on Oahu in 14- and 28-ounce sizes.

### Frequency of Use by Area

The data were gathered from various areas of Oahu and, as is shown in Table 3, there is considerable variation in the frequency of use by area. The most striking contrast is between the pattern in Waianae and that in the central part of Honolulu. Eighty-five percent of respondents in Waianae said they use poi one or more times a week, compared with 49 percent in Kalihi and 55 percent in the central eastern section of Honolulu (McCully to Hawaii Kai).

**Table 3. Frequency of Use by Poi Buyers in the Sample Population by Area**

Answers	Central			
	Windward	Kalihi	east	Waianae
Less than once a week	34	51	45	15
Once a week	30	28	31	25
Two or three times a week	14	14	12	35
Over three times a week	22	7	12	25
<b>TOTAL</b>	<b>100</b>	<b>100</b>	<b>100</b>	<b>100</b>

Though the importance of ethnicity in explaining consumption will be taken up in more detail later, it should be mentioned that the proportion of Hawaiians in the total sample of those interviewed in the central areas was significantly lower than in Waianae or in the Windward area. But in the Windward area where the proportion of Hawaiians in the sample was comparable to that of Waianae, 66 percent of respondents said they use poi once a week or more, which is considerably lower than the frequency of use figure of 85 percent found in the Waianae sample. This would appear to suggest that the use of poi among regular users is higher in Waianae than in the other areas of Honolulu where interviews were carried out.

### When Is Poi Used?

Several of the poi processors, more commonly known as millers, expressed interest in the answer to the question: "When do you most often use poi throughout the year?" Processors suggested that there is an increase in demand for poi during the summer. This is not reflected, however, in the answers received in the interviews (Table 4).

**Table 4. Time of Year Poi Used by People in the Sample**

Use	Frequency (percent)
Used only in summer	2
Used only in winter	<1
Used all year	97

However, processors' sales figures indicate that more poi is sold in summer than in winter. Special events or activities, such as luaus, commonly occurring in summer, may partially account for the increased sales recorded by processors. In addition, the fact that inexpensive fish—commonly associated with poi—is available only during the summer season would suggest that although people use poi year round they are likely to use more in summer than in winter.

From the processors' viewpoint, the increased summer demand for poi is not totally a boon. Higher air and water temperatures at that time result in a greater incidence of crop disease that often plays havoc with taro yields. Consequently, the quality of taro available is poorer, and the amount of taro needed to produce a given quantity of poi is much greater in summer than in winter.

### Which Household Members Use Poi?

In more than 80 percent of the cases where the male and female parents in households said they eat poi, more than 70 percent of sons and daughters also answered in the affirmative. But when respondents were asked whether relatives or others in the households also eat poi, more than 75 percent gave a negative response with respect to each of these two groups.

A possible explanation is that many of the respondents did not have relatives living with them permanently, and their answers indicated that as far as they knew their relatives did not eat poi.

### Information on the Product

A series of direct questions was asked concerning preferred state or condition of poi, poi brand preferences, combinations with other foods, and poi's rank among various staples.

### Condition of the Product

As mentioned earlier, poi ferments over time, becoming more sour in the process. In the supermarkets consumers have the options of buying poi that is fresh, day old, or two days old (quite sour), after which it is taken off the shelf. The relative preferences are shown in Table 5.

### Brand Preferences

Data collected on brand preferences have to be treated with considerable caution for several reasons. In the first place, a relatively small proportion of markets carries all three brands of poi sold on Oahu. Even some of the largest markets sell only one specific brand, which appears to be almost always the leading brand. Therefore, though the bulk of interviews—probably more than 90 percent—were carried out in markets display-

**Table 5. Age Preferences for Poi by the Poi Users Interviewed**

Age	Frequency (percent)
Fresh <sup>a</sup>	62
Day old <sup>a</sup>	30
Two days old	8
<b>TOTAL</b>	<b>100</b>

<sup>a</sup>Many people marked more than one line, indicating that they were indifferent in their choice between fresh or day-old poi.

ing at least two brands, it cannot be claimed that the figures represent true preferences. The figures, therefore, can be interpreted to mean that these are the brand preferences, given the limited range of choices available. In fact, a case could be made that the figures reflect availability rather than preferences, although that may overstate the position. The information on brand preferences by area is shown in Table 6.

**Table 6. Brand Purchases by People Included in the Sample by Area**

Brand	(percent population)			
	Windward	Central Kalihi	Central east	Waianae
A	58	44	55	46
B	5	19	3	13
C	10	26	9	37
No preference	27	11	33	4
<b>TOTAL</b>	<b>100</b>	<b>100</b>	<b>100</b>	<b>100</b>

What emerges from these figures first of all is that brand A, in addition to being the overall preferred brand leader, leads in all of the four areas. Brand C, however, is strong in Waianae and Central Kalihi. Second, except in Waianae and to a certain degree in Central Kalihi, many consumers expressed no clear preference. This is in line with responses to the question asked later in the interview: "When buying poi, is availability of a particular brand very important, unimportant, or of some importance?" More than 50 percent of those responding indicated that the availability of any given brand is unimportant.

*Poi's Position as a Staple and Its Association with Other Foods*

Both in this and in another survey carried out on consumer preferences for sweet potatoes, the overriding importance of rice in the diet of the people interviewed

clearly emerged. In the poi study, more than 71 percent of those interviewed said they usually have rice with their main meal. Less than 38 percent indicated that they regularly have poi as part of their main meal. This is a significant finding when it is kept in mind that these answers came from people who were poi users.

"Staple" carries with it several connotations, including frequency of use, regular associations of the staple with other foods (e.g., rice and beans), and the concept of a "filler" food, where the staple provides the bulk of calories. Interviews and discussions with buyers of poi support the belief that poi is eaten together with other foods such as fish or meat and, in the special case of luaus, with several Hawaiian dishes. However, the fact that almost twice as many of those interviewed said they are more likely to eat rice than poi on a regular basis brings up the question of whether poi is any longer a staple or "filler" food, except for a small percentage of the population.

**Buying Behavior: Part II of the Questionnaire**

*Importance of Price and Other Selected Factors to Consumers*

In the often-crowded conditions of a supermarket it is difficult to obtain satisfactory answers on why consumers buy or do not buy certain foods. Yet it was felt important that the survey obtain some information on consumers' attitudes on factors that might be expected to influence their buying behavior. A few factors considered to be important were listed and consumer reactions to them were recorded. Consumers were first asked how important they considered price, availability of a particular brand, and the color. Responses appear in Table 7A.

**Table 7A. Attitudes Toward Price, Brand Availability, and Color of Poi Among the Consumer Sample Interviewed**

Item	Very important	Of some importance	Unimportant	No answer
	(percent population)			
Price	28	21	50	<1
Availability of a particular brand	32	17	50	<1
Color	49	19	31	<1

Almost 50 percent of the respondents who were asked "How important is price to you?" indicated that price is relatively unimportant and 28 percent considered it very important. This first question on price is a general one and looks at the role of price, as against other factors, set in the context of inflation, recent price increases

for food, higher taxes, and the shrinking purchasing value of the dollar. The responses might indicate that poi is probably not out of line or perhaps that the price for poi is no worse than the prices for other food items given the changing prices that consumers expect today.

On the issue of color, almost half of the respondents said color was very important. To explain this, it is possible to hypothesize that color provides an indication of freshness. Another explanation could be that color is associated with brand.

Finally, on the question of the availability of a particular brand, as mentioned earlier, 50 percent said it is unimportant, while 32 percent considered it very important, and 17 percent said it was of some importance.

Shown in Table 7B are consumer reactions to a second statement on price, "Poi today costs too much." What the response of those who agree strongly probably means is that compared to 10 or 20 years ago the price today is high. But it should be kept in mind that answers to the earlier question on price suggest it may not be the most important factor influencing people to buy poi today.

**Table 7B. Attitudes Toward Poi in Terms of Taste, Relative Costs, Nutrition, and Availability Among Sample**

Attitude statement	Agree strongly	Dis-agree	Don't know	No answer
	(percent population)			
Poi tastes good	88	1	2	9
Poi today costs too much	48	27	17	8
Poi is nutritious	85	1	6	8
Good poi is readily available	62	14	16	8

What perhaps should be explored in further research is the degree to which the demand for poi is affected by price. Consumers may feel that prices are high for apples, eggs, or bread, but the critical question is whether they actually decrease their consumption of these items, or of poi, because of price charges, and if so by how much.

Many respondents said they regard poi as nutritious, possibly because of the widely held belief that it is good baby food and perhaps because many people know of its value in feeding children who are allergic to cereals. While it substantiates the digestible nature of poi, laboratory analysis has shown that poi has very little protein and therefore contradicts the assertion that poi in itself provides complete nutrition. The possible uses of poi by certain groups of children and sick adults were discussed in Derstine and Rada's paper in 1952 (4).

## Summary and Progression of the Paper

Up to this point the focus has been on questions such as the frequency of usage, preferences and position of the product relative to other staples or to foods combined with poi, the importance and influence of price, availability of brands, and nutritional value and taste of poi. All of this information was derived from questions posed in the first two sections of the questionnaire. In the third part of the questionnaire, attention was centered on the socioeconomic status of respondents.

## PART 2: SOCIOECONOMIC DATA AND KEY ASSOCIATIONS AMONG REGULAR CONSUMERS OF POI

### Socioeconomic Data: Part III of the Questionnaire

The purpose of asking questions about education, income, ethnicity, number of people in household, and occupation was to determine basic socioeconomic characteristics of those who consume poi and to assess the major and minor factors that influence consumption.

During in-store interviews, information was collected on household income and size, education, occupation, and ethnicity. In general, it is difficult to gather precise information on demographic variables such as these in the often crowded, noisy conditions of supermarkets. However, because it was believed that the place to locate poi buyers and users was in the markets, interviewers had little choice but to ask for personal data at the stores.

Before some of the cross-tabulations and subsequent statistical analysis are described, some brief comments are included here on demographic variables of the people interviewed.

In the cases of ethnicity, household size, occupation, and education, respondents were asked for precise data. In the case of income they were asked to mark off income categories. But it should be noted that given the type of interview technique that was used—face-to-face interviewing—and the conditions under which interviews took place it was hoped to obtain information that could be said to be reasonably, rather than precisely, accurate, as well as information that would allow broad associations to be deduced. On the actual data collected, several comments can be made.

Education was a more sensitive question for men than women, with 12.2 percent of the men and only 6.4 percent of the women not answering this question.

Approximately 8 percent of respondents did not answer the question on income, and another 8 percent were not asked what the household income was, at the insistence of the management of a supermarket chain.

The level of unemployment among males interviewed was 5 percent, approximately 2 percentage points below the state average. The percentage of unemployed women was approximately 7 percent, near the state average.

Over a third of respondents said they lived in households of 6 or more, and the modal value per household unit was 5 members. The percentage of households with 5 or more members was significantly higher in the sample than is found in the general population of Oahu, which was 3.56 in 1973.

Finally, the ethnic composition of the sample was markedly different from the composition of the state. As noted earlier, Hawaiians or Part-Hawaiians accounted for less than 10 percent of the population of the state in 1970, but the percentage of Hawaiians or Part-Hawaiians among the purposive sample was 60.3 percent. This came about simply because these were the people who most often said they bought poi. It may be useful at this point to describe once again how interviewers proceeded. They approached shoppers in the various markets and asked them, "Do you use poi?" If the answer was "Yes," the interviewer continued with the interview. If "No," the interview was terminated.

### Relationships Between Socioeconomic Variables and Consumption Patterns

The indication that 60 percent of respondents using poi had Hawaiian backgrounds established in a general way that ethnicity was related to consumption patterns. However, the frequency of poi use by Hawaiians needed to be further explored. In addition, it also was necessary to establish the importance of other variables such as occupation, education, and household income, and, if possible, to analyze their influence on poi consumption. In studying these major socioeconomic variables, it was recognized that these are often linked and operate collectively, rather than as a single variable, in influencing consumption behavior.

The first step in establishing the causal relationships was to construct a set of cross-tabulations to compare consumption with occupation, income, education, household size, and, of course, ethnicity. Table 8 shows

**Table 8. Frequency of Poi Use by Occupation Among Sample**

Frequency of use	Women		Men	
	House-wife (percent)	White collar (percent)	Blue collar (percent)	White collar (percent)
Less than once a week	28	43	33	48
Once a week	24	35	27	30
Twice or more a week	48	22	40	22
TOTAL	100	100	100	100

the frequency of poi use by people in the sample who constituted the largest categories of workers.

In general, it appears that housewives and blue collar male workers eat poi more frequently than white collar workers, either male or female. Also, the former are much more likely to use poi two or more times a week than white collar workers.

### Frequency of Use Among the Sample by Income

Data on frequency of use by income groups is shown in Table 9. Some association between household income and consumption emerges from the data but no

**Table 9. Frequency of Poi Use Associated with Household Income in the Sample Population**

Frequency of use	Less than \$10,000 (percent)	\$10,000-19,999 (percent)	\$20,000 or More (percent)
Less than once a week	29	36	43
Once a week	32	29	32
Two or more times a week	39	35	25
TOTAL	100	100	100

sharp contrasts are in evidence. At the lower end of the income scale (less than \$10,000) fewer people buy less than once a week than at the top of the income scale (\$20,000 plus). Secondly, those earning \$20,000 or more are markedly less likely to use poi two or more times a week than those earning less than \$10,000, but they are as likely to use poi once a week as those on lower incomes.

### Frequency of Use in the Sample by Education

Respondents were asked to indicate number of years they spent in high school and college. In Table 10, consumption by those who graduated from high school is contrasted with that of those who had some college education.

Consumption by females who graduated, shown in Table 10, and those who had some high school education but did not graduate (not shown in Table 10), was similar. Frequency-of-use patterns for males in the households with similar levels of education are very similar to those reported for females.

Table 10 shows that female respondents with some college education are more likely to use poi less than once a week than those who are high school graduates. On the other hand, a higher percentage of those with some college education are likely to use poi at least once a week. The sharpest contrast, however, is between those likely to use poi two or more times a week. More than 45 percent of those who are high school graduates—the figures are very similar for those with less than 12 years

**Table 10. Frequency of Poi Use by Education in the Female Portion of the Sample**

Frequency of use	High school graduate (percent)	Some college (percent)
Less than once a week	29	46
Once a week	25	36
Two or more times a week	46	18
TOTAL	100	100

of education—use poi two or more times a week as against 18 percent for those with some college education. These figures, as well as those in Table 8 (frequency and occupation), and to a slightly lesser degree as those in Table 9 (household income), are indicative of major contrasts between those respondents who are frequent (two or more times a week) and those who are casual users of poi (once or less than once a week).

#### *Ethnicity of the Sample*

Poi was the staple food of Hawaiians in the eighteenth century. Rada, in quoting a 1937 source who said that 70 percent of poi was consumed by Hawaiians, implied it was still important to them earlier in the twentieth century (8). Clearly the preliminary question asked of shoppers in this survey established that the Hawaiians were still the dominant poi consumers today. But beyond this, two important questions yet to be asked were: (a) how often is poi used among Hawaiians and others, and (b) how do consumption patterns differ between the ethnic groups using poi? The data on frequency of poi consumption by ethnic groups is shown in Table 11.

**Table 11. Frequency of Use by Ethnic Origin in the Female Portion of the Sample**

Frequency of use	Hawaiian and Part-Hawaiian (percent)	Japanese (percent)	Other (percent)
Less than once a week	20	47	74
Once a week	31	27	18
Two or more times a week	49	26	8
TOTAL	100	100	100

The contrasts between consumption among Hawaiians and those in the “other” category are very striking. The Japanese appear to occupy a position in the middle. Eighty percent of the Hawaiians in the sample eat poi at least once a week, almost 50 percent use it two or more times a week, whereas 74 percent of the “other” group consume poi less than once a week.

“Other” comprised Caucasian, Chinese, Filipino, Korean, and groups other than Hawaiian and Japanese. More than 27 percent of the Japanese eat poi once a week, and a similar proportion eat it two or more times a week. The actual number of people interviewed with Japanese ethnic background constituted a much smaller part of the sample than the Hawaiian group, both in percentage and absolute terms. However, among those Japanese interviewed who actually eat poi, consumption is fairly high.

#### **Further Analysis**

Though justifying the assertion that ethnicity is an important factor in explaining frequency of purchase and use of poi, cross-tabulations also indicate that factors such as household income, occupation, household size, and education also affect poi consumption. Some further work using factor analysis was, therefore, carried out in an attempt to differentiate statistically between major and minor variables in explaining consumption behavior.

Using factor analysis,<sup>4</sup> a single socioeconomic (SEC) measure was derived from the three variables of occupation, household income, and education. Then using analysis of variance, attempts were made to determine which were the major and which were the minor variables among ethnicity, household size, and the combined socioeconomic measure derived from occupation, income, and education. From this analysis it was possible to suggest that ethnicity was a major factor in explaining consumption. The combined socioeconomic variable, on the other hand, was not significant in explaining consumption. Among the three ethnic groupings analyzed, Hawaiians and Part-Hawaiians tend to consume more poi than the Japanese and “other” groups, a conclusion that could be anticipated from data in Table 11. Though the tabulation also suggested that household size is important, in fact, it appears that the critical factor in explaining consumption is the ethnicity of the household. Analysis showed that Hawaiian or Part-Hawaiian households are likely to consume poi more often than are non-Hawaiian households.

#### **CONCLUSIONS AND RECOMMENDATIONS**

The major factor in explaining poi consumption appears to be ethnicity. The Hawaiians are more likely to be regular users of poi than any other ethnic group. In the cross tabulations set out in Tables 8, 9, and 10, more frequent users of poi are households with incomes of less than \$20,000, housewives, men who could be classified as blue-collar workers, and people in the survey with a high school rather than a college education.

<sup>4</sup>Some of the analysis carried out is shown in Appendix 2.

From the factor analysis and from other data available it would appear that the case could be made that those are characteristics more commonly associated with Hawaiians rather than with the other ethnic groups in the sample.

Although the major consumers of poi are Hawaiian, the proportion of Hawaiians in the total population has decreased sharply over the past 100 years. During this time some major changes have taken place in peoples' diets and in the manner and style in which food is marketed, both on the Mainland and in Hawaii. All of this has consequences for the marketing of poi.

"If I were starting from scratch and marketing poi I would tackle the job differently from how it is done now. I would find the people in this State and on the Mainland who wanted a starchy food with a different taste and heavily promote it to them." Such were the comments of a Honolulu advertising executive discussing the marketing of poi recently. Certainly if the changes that have occurred in the marketing environ-

ment even over the past decade are not taken into account, in this era of the fast-food hamburger and T.V. dinner, a package of poi could become an anachronism if the necessary adaptations are not made in its form, packaging, and promotion.

The demographic picture has changed dramatically in Hawaii over the past 150 years. In 1828 poi was a staple for perhaps 95 percent of the population. A century later, in 1928, it was still an important food. Today it is perhaps a staple (i.e., used regularly) by 5 percent or even less of the population.

If there is to be a future for taro in Hawaii it is clearly necessary to evaluate the product currently being marketed and make whatever changes are necessary in form, packaging, and presentation. The Hawaiians may want to retain poi in its original form, and poi is clearly important to this ethnic group. But if poi is to have a profitable and lasting future then the flavor of the bulk of poi must change or other taro based products must be developed and marketed.

## APPENDIX A. QUESTIONNAIRE

UNIVERSITY OF HAWAII AT MANOA

College of Tropical Agriculture  
Department of Agricultural and Resource Economics  
Bilger Hall 2445 The Mall  
Honolulu, Hawaii 96822

CONFIDENTIAL

SUBJECT: Consumer Questionnaire on Poi

I would appreciate your cooperation in filling out the enclosed questionnaire. It is designed to obtain information on poi consumption in Hawaii and is part of a series of questionnaires given to growers, poi millers and consumers.

All information supplied by you will be treated in strict confidence. Information from this questionnaire will be used to identify key areas where research or assistance could help the industry.

Thanking you,

Bryan W. Begley  
Research Associate  
Agricultural & Resource Economics

- |  |  |  |  |                          |                          |                          |  |       |                          |                          |                          |                          |                          |       |       |       |       |       |  |
|--|--|--|--|--------------------------|--------------------------|--------------------------|--|-------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|-------|-------|-------|-------|-------|--|
| <p>1. Location</p> <p>_____ Windward</p> <p>_____ Waianae</p> <p>_____ Central, Kalihi</p> <p>_____ Central, East</p>  | <p>2. Frequency</p> <p>_____ Less than once a week</p> <p>_____ Once a week</p> <p>_____ Twice a week</p> <p>_____ 3-4 times a week</p>  | <p>3. When most used</p> <p>_____ Summer</p> <p>_____ Winter</p> <p>_____ Year round</p> | <p>4. How much per week</p> <p>_____ 1 small packet</p> <p>_____ 1 large packet</p> <p>_____ 2-3 packets</p> <p><input type="checkbox"/> large <input type="checkbox"/> small</p> <p>_____ 3+ packets</p> <p><input type="checkbox"/> large <input type="checkbox"/> small</p> |                          |                          |                          |  |       |                          |                          |                          |                          |                          |       |       |       |       |       |  |
| <p>5. Do you eat poi mostly on special occasions _____</p> <p style="text-align: center;">or</p> <p>Do you eat poi mostly as part of regular meals _____</p>   | <p>6. What do you eat poi with:</p> <p>on its own _____ with fish _____</p> <p>with shellfish _____ other (describe) _____</p> <p>with meat _____</p>  |  |  |                          |                          |                          |  |       |                          |                          |                          |                          |                          |       |       |       |       |       |  |
| <p>7. Who eats poi in the house</p> <p>_____ Father</p> <p>_____ Mother</p> <p>_____ Sons</p> <p>_____ Daughters</p> <p>_____ Relatives</p> <p>_____ Others</p>  | <p>8. Which are you most likely to have as part of the main meal?</p> <table border="0" style="width: 100%; text-align: center;"> <tr> <td>Rice</td> <td>Poi</td> <td>Potatoes</td> <td>Sweet Potato</td> <td>Other</td> </tr> <tr> <td><input type="checkbox"/></td> <td><input type="checkbox"/></td> <td><input type="checkbox"/></td> <td><input type="checkbox"/></td> <td><input type="checkbox"/></td> </tr> </table> |  |  | Rice                     | Poi                      | Potatoes                 | Sweet Potato   | Other | <input type="checkbox"/> |       |       |       |       |       |  |
| Rice   | Poi  | Potatoes   | Sweet Potato   | Other                    |                          |                          |  |       |                          |                          |                          |                          |                          |       |       |       |       |       |  |
| <input type="checkbox"/>   | <input type="checkbox"/>   | <input type="checkbox"/>   | <input type="checkbox"/>   | <input type="checkbox"/> |                          |                          |  |       |                          |                          |                          |                          |                          |       |       |       |       |       |  |
| <p>10. Which brand of poi do you usually buy</p> <table border="0" style="width: 100%; text-align: center;"> <tr> <td>Taro</td> <td>Kalihi</td> <td>Haleiwa</td> </tr> <tr> <td><input type="checkbox"/></td> <td><input type="checkbox"/></td> <td><input type="checkbox"/></td> </tr> </table> | Taro   | Kalihi   | Haleiwa  | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <p>9. Do you eat more _____ or less _____ now than you did as a youngster?</p> <p>11. When did you first eat poi</p> <p>12. Do you usually buy poi</p> <table border="0" style="width: 100%; text-align: center;"> <tr> <td>_____ Fresh</td> <td>_____ 2 Day old</td> </tr> <tr> <td>_____ Day old</td> <td></td> </tr> </table> |       |                          | _____ Fresh              | _____ 2 Day old          | _____ Day old            |                          |       |       |       |       |       |  |
| Taro   | Kalihi   | Haleiwa  |  |                          |                          |                          |  |       |                          |                          |                          |                          |                          |       |       |       |       |       |  |
| <input type="checkbox"/>   | <input type="checkbox"/>   | <input type="checkbox"/>   |  |                          |                          |                          |  |       |                          |                          |                          |                          |                          |       |       |       |       |       |  |
| _____ Fresh  | _____ 2 Day old  |  |  |                          |                          |                          |  |       |                          |                          |                          |                          |                          |       |       |       |       |       |  |
| _____ Day old  |  |  |  |                          |                          |                          |  |       |                          |                          |                          |                          |                          |       |       |       |       |       |  |
| <p>13. When buying poi</p> <p>Is price _____</p> <p>Is availability of a particular brand _____</p> <p>Is color _____</p>  | <table border="0" style="width: 100%; text-align: center;"> <tr> <td>Very Important</td> <td>Unimportant</td> <td>Of Some Importance</td> </tr> <tr> <td>_____</td> <td>_____</td> <td>_____</td> </tr> <tr> <td>_____</td> <td>_____</td> <td>_____</td> </tr> <tr> <td>_____</td> <td>_____</td> <td>_____</td> </tr> </table>   |  |  | Very Important           | Unimportant              | Of Some Importance       | _____  | _____ | _____                    | _____                    | _____                    | _____                    | _____                    | _____ | _____ |       |       |       |  |
| Very Important   | Unimportant  | Of Some Importance   |  |                          |                          |                          |  |       |                          |                          |                          |                          |                          |       |       |       |       |       |  |
| _____  | _____  | _____  |  |                          |                          |                          |  |       |                          |                          |                          |                          |                          |       |       |       |       |       |  |
| _____  | _____  | _____  |  |                          |                          |                          |  |       |                          |                          |                          |                          |                          |       |       |       |       |       |  |
| _____  | _____  | _____  |  |                          |                          |                          |  |       |                          |                          |                          |                          |                          |       |       |       |       |       |  |
| <p>14. Do you</p> <p>Poi tastes good _____</p> <p>Poi today costs too much _____</p> <p>Good poi is readily available _____</p>  | <table border="0" style="width: 100%; text-align: center;"> <tr> <td>Agree Strongly</td> <td>Disagree</td> <td>Don't Know</td> <td>with the following</td> </tr> <tr> <td>_____</td> <td>_____</td> <td>_____</td> <td></td> </tr> <tr> <td>_____</td> <td>_____</td> <td>_____</td> <td></td> </tr> <tr> <td>_____</td> <td>_____</td> <td>_____</td> <td></td> </tr> </table>  |  |  | Agree Strongly           | Disagree                 | Don't Know               | with the following   | _____ | _____                    | _____                    |                          | _____                    | _____                    | _____ |       | _____ | _____ | _____ |  |
| Agree Strongly   | Disagree   | Don't Know   | with the following   |                          |                          |                          |  |       |                          |                          |                          |                          |                          |       |       |       |       |       |  |
| _____  | _____  | _____  |  |                          |                          |                          |  |       |                          |                          |                          |                          |                          |       |       |       |       |       |  |
| _____  | _____  | _____  |  |                          |                          |                          |  |       |                          |                          |                          |                          |                          |       |       |       |       |       |  |
| _____  | _____  | _____  |  |                          |                          |                          |  |       |                          |                          |                          |                          |                          |       |       |       |       |       |  |

15. As well as poi, do you also buy at least once a week

- \_\_\_\_\_ Kulolo
- \_\_\_\_\_ Fresh taro
- \_\_\_\_\_ Freeze dried poi

17. Does housewife work? \_\_\_\_\_Yes \_\_\_\_\_No

16. Number of people in your household

\_\_\_\_\_

18. Occupation of man of house \_\_\_\_\_

Occupation of woman of house \_\_\_\_\_

19. Education

Shopper	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3	4	C+
Man of house	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3	4	C+

20. Approximate income

- (total)
- \_\_\_\_\_ Less than 5,000
  - \_\_\_\_\_ 5,000-9,999
  - \_\_\_\_\_ 10,000-14,999
  - \_\_\_\_\_ 15,000-19,999
  - \_\_\_\_\_ 20,000 plus

21. Ethnic Origin

	Shopper	Man of House
Hawaiian	_____	_____
Samoaan	_____	_____
Filipino	_____	_____
Chinese	_____	_____
Japanese	_____	_____
Portuguese	_____	_____
Black	_____	_____
Caucasian	_____	_____
Other (specify)	_____	_____

22. Age of shopper

- \_\_\_\_\_ Under 30
- \_\_\_\_\_ 30-49
- \_\_\_\_\_ 50+

23. Male \_\_\_\_\_

Female \_\_\_\_\_

**APPENDIX B.  
FACTOR ANALYSIS AND REGRESSION**

Table I. Results of Factor Analysis: Deviation of a Socioeconomic Status Variable

	Eigenvalue	Factor score
Occupation of Male	1.69	.44
Education of Male	.67	.45
Income	.64	.44

Table II. Analysis of Variance (Quantity by Ethnic Origin with Household Size and Socioeconomic Variable)

Source of variation	Sum of squares	DF	Mean square	Signif. of F
Household Size	326.659	1	326.659	0.000
Socioeconomic	10.197	1	10.197	0.091
Ethnicity	375.819	2	187.910	0.000
Explained	704.124	4	176.031	0.000
Residual	2293.314	644	3.561	
Total	2997.438	648	4.626	

Table III. Multiple Classification Analysis

Variable + category	N	Grand mean	Deviation from grand mean
1 Hawn. & Part-Hawn.	393	2.89	0.57
2 Japanese	170		-0.50
3 Other	86		-1.59
<b>Calculated means</b>			
Hawn. & Part-Hawn.	Japanese		Other
2.89	2.89		2.89
.57	-.50		-1.59
3.46	2.39		1.30

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NOTE: As part of a structural reorganization, the Hawaii Agricultural Experiment Station and the Hawaii Cooperative Extension Service have been merged administratively under the name HAWAII INSTITUTE OF TROPICAL AGRICULTURE AND HUMAN RESOURCES, College of Tropical Agriculture and Human Resources, University of Hawaii at Manoa.

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Hawaii Institute of Tropical Agriculture and Human Resources  
College of Tropical Agriculture and Human Resources, University of Hawaii  
Noel P. Kefford, Director of the Institute and Interim Dean of the College

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